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EDINBURGH TRAM NETWORK

STAG Report: Line Two Appendices

28 November 2003

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Appendix A – AST1 Tables

Table 2.6 Appraisal Summary Table – Performance Against STAG Objectives – Scheme Option: West Edinburgh

Scheme Description: A radial tram route from the city centre, initially parallel to the main railway line to Edinburgh Park then adjacent to the A8 from Gogar to Edinburgh Airport and Newbridge, with opportunities for Park and Ride and accessibility to development at Edinburgh Park and along the A8 corridor.

Objective	Qualitative Impacts	Assessment Summary	Supporting Information
Transport Impact	What transport problems will be addressed, how successful is the scheme option at achieving this.	+2	Relieving congestion that may be a barrier to development on a major radial corridor, providing access to key employment sites and supporting growth at Edinburgh Airport.
Environmental Impact:	How will the option contribute towards reducing harmful emissions and promoting better air quality, particularly in response to the impacts of transport on the environment.		
Local Air Quality		+2	Mode switch from car to tram could significantly reduce the environmental impacts of traffic in the corridor and at key locations. Improved public transport mode share for trips to Edinburgh Park, Gyle and Edinburgh Airport will also have localised impacts.
Built Environment Resources		-1	Route parallels the existing railway from Haymarket to Edinburgh Park with no impact on existing train operations. City centre issues common with North Edinburgh would apply.
Natural Environmental Resources		0	No significant impact on the natural environment, water quality, drainage and flood defences.
Safety	How will the option enhance safety for different types of road user, are there any impacts on personal safety/security.		
Accidents		+1	Mode shift from car and reduction in vehicle kilometres will reduce traffic related accidents.
Security		+1	Improved security for public transport from major developments such as Edinburgh Park and the RBOS site at Gogarburn.
Economy:	What will be the effect on traffic volumes, journey times and reliability for different modes of transport, will there be a significant de-congestion effect.		
Journey Times		+2	Significant journey time benefits to and from important locations such as Edinburgh Airport, Edinburgh Park and The Gyle
Reliability		+2	Segregated alignment should provide much better reliability. De-congestion will benefit all road users including bus passengers.
Economic Activity:	How might the option contribute to attracting new employment opportunities and stimulating development, particularly if accessible to areas of high unemployment.		
Regeneration		+2	Supports the West Edinburgh Planning Framework (WEPF) for development along the A8 and to secure expansion of existing sites while mitigating against the impacts of extra traffic. Supports Edinburgh Airport expansion and Surface Access Strategy.
Wider Economic Impacts		+2	Promotes employment opportunities outside of Edinburgh city centre where land values are higher and infrastructure constraints apply.

Objective	Qualitative impacts	Assessment Summary	Supporting information
Accessibility:	How does the option affect accessibility for transport users including access to jobs, education and health facilities, and does it contribute to promoting social inclusion.		
Social Inclusion		+2	Increased access to jobs and facilities outside Edinburgh city centre and improved public transport provision for communities in West Edinburgh, such as Bramhall.
Access to the Transport System		+1	Increased reliability along this important corridor will improve access to other parts of the transport system.
Transport Integration:	How will the option promote or enhance integration of transport modes, including interchange.		
Integration		+1	Fully integrated with land use planning and transport provision in the A8 corridor and consistent with the WEPF.
Transport Interchange		+2	Interchange opportunities with rail at Edinburgh Park, Haymarket and Waverley, with bus at suburban and central interchange points and serves Edinburgh Airport. Opportunities for Park and Ride close to the regional motorway network.
Policy Integration:	How well does the option fit with wider policies at a local, regional or national level, including its integration with or contribution to land use policy.		
Land Use Policy		+1	Supportive of WEPF and the projected increase in population in West Lothian and Fife that would commute to Edinburgh. Park and Ride would be in green belt.
Financial Sustainability:	Can the option meet its on-going operating costs and how likely is the option to attract any additional funding that may be necessary	+2	Opportunity for developer contributions to capital costs. Cost of alignment can be partly offset through use of WEBS. Cost of spur to Hermiston prohibitive due to crossing of Edinburgh Bypass, Union Canal and A71. Revenues are likely to cover operating costs.
Technical Feasibility:	How straightforward is it to implement the option, does this prejudice the costs or technical options available for other proposals.	+1	CAA stipulations will impact on available alignments but this only affects route choice.
Operational Feasibility:	Are there any factors that may adversely affect the ability to operate the option over its projected life without significant additional costs.	+1	No operational impacts identified.

Part 1 AST

Proposal details			
Name and address of authority or organisation promoting the proposal		City of Edinburgh Council	
Proposal name	Integrated Transport Initiative for Edinburgh and South East Scotland (New Transport Initiative): Option - AM & PM Variant Cordon Congestion Charging with High Investment NTI Package	Name of Planner	
Proposal description	The proposal is for a transport investment package throughout the journey to work area for Edinburgh together with congestion charging within Edinburgh. The main components being considered include a new tram system, improvements to the bus network, enhancing the rail network, public transport customer care, park and ride, road maintenance, pedestrian routes, cycle facilities and city centre environmental improvements. The preferred congestion charging option will comprise ◦ a city centre cordon operating from 7am to 6.30 pm combined with ◦ an outer cordon operating from 7am to 10 am and 4pm-6.30pm. The charge will be £2 levied on inbound trips crossing either cordon with a maximum charge per day of £2 for any one vehicle. The relationship between the investment package and the congestion charge is based on the fair treatment of who pays and who gains and will cover the journey to work to Edinburgh area.	Estimated costs ◦ Capital *(undiscounted)* ◦ Annual	Estimated costs ◦ Capital – public transport £1057m; road user charging £11m ◦ Annual PT £71m per annum ◦ Annual RUC £9m per annum note: re-estimated rail costs used for this estimate
Funding sought from (if applicable)		Amount of application (if applicable)	

Proposal background	
Planning objectives	**To improve accessibility** – improvements, particularly for people without access to a car, on low incomes or whose mobility is impaired are fundamental to the achievement of both the social inclusion and economic development elements of the transport vision **To reduce pollution and environmental damage caused by traffic** – this is fundamental to the achievement of the environmental / sustainability aspiration and will contribute to the achievement of the safety element of the transport vision **To reduce traffic congestion** – this is fundamental to the achievement of economic development and environmental aims **To make the transport system safer and more secure for both users and non-users** – this is fundamental to the achievement of the safety and community elements of the vision and will contribute towards achieving the environmental and social inclusion elements
Performance against planning objectives	The transport investment package together with each of the congestion charging options considered were all deemed to meet the planning objectives set out above to a lesser or greater extent. The proposal would provide much more choice in getting around. Less traffic would mean less pollution and congestion, and there would be fewer accidents particularly for vulnerable groups such as pedestrians and cyclists.
Alternatives to proposal considered	In addition to the preferred option, 9 other options were evaluated: in each of the charging options, a high or low investment package was evaluated: these tests were undertaken on the basis of a 7AM to 7PM charging regime. • A base case with no congestion charging: all options were evaluated against this case • A scheme involving doubling of parking charges • A single cordon with "low investment package" • A double cordon with "high investment package " • AM and PM hybrid with high investment: in this the inner cordon is charged for 12hrs and outer cordon is charged AM (7-10) and PM (4- 7)); • AM only variant with high investment: in this the inner cordon is charged for 12 hrs and the outer cordon is charged AM only (7-10));Variant on the low investment package (switch in funding between trams and rail schemes); and • - 2 variants on the high investment package.
Comment on performance of alternatives	The parking charges option fails to deliver sufficient decongestion benefits to meet scheme objectives, with in particular a lower scale of public transport benefits. The preferred option performs better than all others in terms of decongestion benefits. Toll revenues are lower than the

Proposal background	
Comment on performance of alternatives (cont.)	all day double cordon option and the high investment package which was used in the tests takes longer to deliver; however, a reduced public transport investment package which will be tested in the next stage of the programme is expected to deliver a higher benefit cost ratio than the high investment package. Market research undertaken as part of the extensive public consultations on the proposals indicate that as much as 49% of the population would accept congestion charging as part of the NTI package. There is no significant difference between any of the options in terms of environmental effects, although this does not take account of impacts associated with specific proposals for infrastructure improvements and other proposed measures. In general terms, the more additional or improved infrastructure included in the package, the more environmental impacts and people affected there will be. These may be positive or negative. However, the options appraisal and EIA processes will help ensure that significant negative environmental effects are avoided. By the same token, it is also not possible to take account of local environmental improvements that will be provided. The full double cordon option less well than the preferred option in terms of decongestion benefits as the preferred option, but provides a greater level of toll revenues. However, public consultation strongly indicated that this option was not as acceptable as the preferred option, and has been rejected on this basis.
Rationale for selection of proposal Rationale for selection of proposal	The main criteria for selecting a preferred option were: • decongestion benefits; • environmental improvement; • improved public transport accessibility; and • public acceptability. The modelling undertaken for this exercise looked at combinations of both congestion charging options (single cordon, double cordon options or variants on these) and NTI investment packages (NTI high and low packages: within these there were several variations in terms of where investment was focused). This approach had in effect to pre-determine the likely public transport investment packages that would be implemented alongside road-user charging. Therefore the components of these packages are not optimal in the sense of maximising the time stream of benefits from investment of the road user charging revenues. In the next stage of the programme , it will be necessary to optimise the public transport investment package to both deliver maximum benefits (to both public transport users and to encourage modal shift) within an affordable funding package, determined in part by the toll revenues from road-user charging. This optimisation work still needs to be undertaken. The selection of the preferred options is therefore primarily based on the decongestion, environmental and public acceptability benefits, with the optimisation of the public transport investment package to be finalised in due course.

Proposal background	
	All options to date indicate that the public transport investment perhaps deliver larger-scale benefits, though the high cost of the packages suggest that some perhaps are not, on the basis of results to date, economically viable. It is apparent that the model has under-estimated public transport benefits, based upon the benchmarking of benefits for individual Tram schemes compared with other studies. Accordingly an adjustment has been made to these benefits to more realistically capture them, and this adjustment has been included in the NPV and BCR estimates. The preferred option delivers the highest level of decongestion benefits but is more publicly acceptable. The preferred option provides more tolling revenue than any of the single cordon options and would therefore deliver a greater scale of public transport improvements while still being publicly acceptable.
Spatial and social information	
Area context: general	Edinburgh, the capital city of Scotland, is recognised world wide, for its culture, history and townscape, its vibrant economy, as a tourism destination and for the quality of life. The city has a thriving, bustling centre, which has a mix of residential, commercial and retail uses, all of which are complemented by a stunning and unique setting. Central to Edinburgh's success is the mix of uses in the central Old and New Town area, which was designated a World Heritage Site by UNESCO in 1995. Residential, retail and academic occupants successfully co-exist alongside the city's large and growing service sector, where financial services, tourism and, more recently, information technology industries are all key players. The proposed ITI could affect all those who travel in and around the city for work or leisure.
Economic performance	The city is currently experiencing high levels of economic growth compared to the rest of Scotland and UK. Levels of unemployment are at a record low and there are major development proposals and pressures at a number of locations in and around the city. The cumulative effect of these factors together with rising house prices is the need to import an increasing percentage of the workforce from the surrounding areas. This in turn will put intense pressure on the existing transport systems. The following impacts are provisional estimates and are based around the high investment package, which is larger than that which would be implemented in practice under the peak hour outer cordon variant scheme., and therefore by optimising the public transport package based on a lower total level of expenditure it is expected that the NPV and BCR outcomes can be improved. On the basis of these and other assumptions (noted below), the scheme delivers a positive NPV of £593m and a benefit cost ratio of 1.31:1 based on 6% discount rate (£1285m and 1.55:1 at 3.5% discount rate. These estimates are provisional and are based on 10% upward adjustment to public transport benefits to capture those not included in or inadequately captured by the model. Growth across all modes of 1% per annum used for projections.
Deprivation / social exclusion	There is evidence of spatial concentrations of socially excluded people. There are five Social Inclusion Partnerships (SIPs) in Edinburgh.[1] In some SIP areas 44 to 51 percent of dependent children are in workless households - compared to 17

Proposal background	
	percent for the whole of Scotland. Up to 76 percent of children live in households with below 60 percent of the mean household income in the Edinburgh SIP areas - compared to 41 percent for the whole of Scotland.
Planning and environment	A Structure Plan Review is currently being undertaken in response to forecasts that employment and population in the city and its catchment area will grow significantly over the next 15 years. There are existing major development proposals for the city centre, Waterfront, Edinburgh Park and South east Edinburgh, and major pressures in other areas, in particular at the Western edge of the city. The environmental quality of the city centre needs to be improved to sustain its role as the focus of tourism, retailing and business activity in the area. Model outputs indicate that there will be no discernable change in carbon dioxide emissions from road traffic between 2001 and 2011. This is likely to be due chiefly to improvements in the fuel efficiency off-setting growth in traffic over this period. Modelling also indicates that between 2001 and 2011 there will be significant reductions in oxides of nitrogen (NO_x) and particulates (PM_{10}) emitted by road traffic in all the model zones. This is likely to be due to the improved pollution control standards required for new vehicles and replacement of old vehicles in the fleet over time, which is assumed to more than offset any increases in traffic predicted over these periods. However, studies undertaken by CEC suggest that much of the NOx emissions problem in the city arises from heavy diesel vehicles. These may not be reflected in the ITI modelling work, and will benefit from the traffic reduction and pollution control measures proposed in the ITI.
Spatial level of appraisal	The proposal will have effects throughout Edinburgh, the Lothians and adjoining areas covered by SESTRAN. Impacts will be assessed for Edinburgh and the SESTRAN journey to work in Edinburgh area.

Implementability appraisal	
Transport land-use integration	These proposals are in keeping with the general aspirations set out in the Edinburgh and the Lothians Structure Plan (Consultation Draft 2001). As far as detailed public transport proposals exist – the Waterfront Loop Tram, for example – no conflicts have been identified between these proposals and detailed published land-use policy. The proposal is contained within Edinburgh's Local Transport Strategy. It also forms a key element of the draft SESTRAN Regional Transport Strategy.
Policy integration	The proposal is consistent with the published goals of the five Social Inclusion Partnerships within the Edinburgh area. It also accords with the Council's "City Strategy" under the headings; Securing future prosperity; Unemployment and urban poverty – the divided city; Urban decline; Sustainability and the environment.
Distribution impacts	The appraisal work carried out to date indicates that existing public transport and slow mode users and those who switch to those modes will benefit from increased investment and drivers who pay a cordon charge will benefit from reduced congestion. In addition there will be indirect benefits accrued to all parts of the population from a reduction in transport related pollution. The investment package is designed to ensure fair treatment between those paying the charge and those who benefit.
Technical feasibility	Following a study of charging schemes, all options were considered technically feasible. Three of those use ANPR technology and are considered to be strong contenders. The individual elements of the investment package have all been appraised as

Implementability appraisal	
	being technically feasible.
Operational feasibility	No factors that might adversely affect the ability to operate the proposal over its projected life without major additional cost have been identified at this stage of the project.
Technical risks	Of the options considered feasible, the main risks are as follows: • Technological risk, that systems do not meet the required specification, or do not operate to specification. • Operational problems, for example inadequate enforcement, bringing the system into disrepute and undermining its effectiveness.
Other risks	• Political risk associated with Local Government and Scottish Parliament elections in May 2003. • Possibility that the scale or technical aspects of the proposal could generate substantial objections at the planning stage • The risk that there might be unforeseen major negative impacts once a system is in place causing problems for particular one or more stakeholder groups.
Affordability	A funding package based on a mix of congestion charging revenue and public investment will need to be agreed with government. The funding for up front projects will have to come principally from the public sector. Financial modelling has demonstrated that an indicative package of projects is fundable, based on four scenarios with different assumptions about the proportion of the funding from public sector and congestion charging revenue. It is assumed that the private sector will borrow private sector money to fund a proportion of the transport improvements with repayments made from charging revenue.
Financial sustainability	A twenty-two year quarterly period model has been developed to reflect the costs and revenue flowing from setting up a congestion charging scheme and the costs and revenues relating to 62 individual transport improvement projects. . The model demonstrates that the package is fundable from a mix of congestion charging and revenue and other (public sector) income.
Public acceptability	Extensive consultation has been carried out to date. There is consistently a significant level of public support for the principle of the charging and investment package. Most recent consultation showed greater support for a city centre cordon than for the double cordon operating all day. There is also a consensus that charges should operate from Monday to Friday and for daily inbound vehicle movements and that a package of infrastructure improvements must be in place prior to the introduction of a charging scheme. Some sectors of the business community have expressed concern about the impact of the proposals on city centre retailing and vitality. SESTRAN authorities have given support to the principle of a major transport investment initiative funded in part through congestion charging. West Lothian and Fife have, however, expressed concern about equity issues over an outer cordon. The preferred option has been developed to overcome as many concerns as possible while still retaining the benefits of the proposal.

Objective	Assessment Summary	Supporting Information
Transport: what are the transport impacts of the	Transport will benefit from a reduction in congestion within the charged area. The	The modelling undertaken indicates that charging by itself will address the problems of congestion with a reduction in traffic

Objective	Assessment Summary	Supporting information
proposal	investment package will bring major improvements to Public Transport, which will benefit existing users and encourage modal shift from car use. Major benefit	crossing the cordon, journey times reduced and average speeds increased. Adding the investment package will improve the quality, frequency, journey time and interchange facilities of public transport. The net result of this will to provide a better level of service for existing users and encourage modal shift from the car by offering an alternative choice for these users providing further congestion reduction benefits.
Environment: what will be the impacts on the environment Environment: what will be the impacts on the environment (cont.)	There will be no appreciable change overall in emissions of CO_2 and local air pollutants from traffic. Concentrations of local air pollutants will reduce significantly in the central area, incorporating the Air Quality Management Area although this will be offset in part by increases in North Edinburgh. Major benefit for city centre.	Overall, there is very little change in CO_2 emission levels over the area modelled as a whole. There will be a significant decrease in emissions in central Edinburgh These benefits are in part offset by increases in emissions of about 10% in North Edinburgh. Emission levels in most other zones remain largely unchanged (typically ± < 1%). There also will be very little change in emission levels of other local air pollutants over the area modelled as a whole. There would be further significant improvements in levels of NO_x emissions from road traffic in central Edinburgh. However, this would be offset in part by moderate increases in emissions in North Edinburgh. Similarly, there would be further moderate reductions in PM_{10} emissions in central Edinburgh, but offset in part by increases in North Edinburgh. Emission levels in other zones again remain largely unchanged (i.e. typically ± < 1%).
Safety: what will be the effects of the proposal on road and pedestrian safety	It is expected that a reduction in traffic will lead to a fall in accident levels. In addition the investment package will also target improvement in safety for vulnerable users. Major benefit	Model runs for the various charging options indicate that as charges are increased, safety performance improves, with greatest improvements evident when the charging cordon covers the widest area. The investment package also targets vulnerable users by including 20 mph zones throughout the city, further extension to the cycle network and pedestrian priority schemes particularly within the city centre.
Economy: what are the impacts in terms of transport economic efficiency	The model runs indicate that there is a net economic benefit for all tests of charging options. These benefits are increased	Overall economic benefit is positive for all tests, and within the range of charges tested, increasing the toll increases the economic benefit. These benefits are made up of a positive element from continuing users of the road network who gain from reduced

Objective	Assessment Summary	Supporting information
	when public transport improvements are added. Moderate benefit	congestion, combined with smaller disbenefit to those who change mode or cease to travel. When a reduction in generalised cost of public transport is added there is further benefit to users.
Economic activity: what will be the impacts in terms of employment Economic activity: what will be the impacts in terms of employment (cont.)	With the current low level of charge proposed it is not anticipated that there will be a noticeable impact. No or marginal benefit or impact at the Scotland level; moderate benefits at development areas within Edinburgh City.	The transport model indicates that total trips (in 2001) will be just under1% higher under the preferred option than in the reference case. While further analysis will be undertaken, this initial finding suggests that a marginally positive EALI impact could result from the preferred option, at the level of the SESTRANS area as a whole. It is likely that this would also represent a net gain at the Scotland level. Substantial development is expected to take place at three key areas served by planned tram schemes, namely Edinburgh Waterfront, the South East "wedge" and west Edinburgh. The tram network is essential for the success of these development areas. There is also potential for substantial employment increase at and around the airport, possibly to a level beyond that envisaged in the Structure Plan. Such development is likely to be stimulated by the provision of an east-west heavy rail link; access for employees could additionally require the development of a light rail link to the airport. Employment growth at these locations is likely to be largely additional at the SESTRAN area level but a smaller proportion is likely to be additional at the Scotland level. The scale and spatial distribution of employment within the SESTRAN area requires further investigation. It is expected that the location of some service sector activities will change in response to changes in accessibility and road user charging and it is also possible that rates of employment growth in certain sectors will be lower in the with road user charging case than in the reference case, while other sectors will experience higher rates of growth. These impacts will be considered in more detail in the STAG 2 appraisal.

Objective	Assessment Summary	Supporting Information
Accessibility: what will be the impacts on accessibility	The investment package will improve accessibility to/from and within Edinburgh. Moderate benefit	Improvements in public transport will lead to an increase in public transport miles offered in the area of concern. Some road-space reallocation will lessen the area exclusively available for private motorised transport – thus the ratio of transport availability (see *concentration of public transport* proxy for base accessibility, STAG 10.2.25 et seq) will definitely move in a positive direction. Turning to the *travel intensity* proxy (10.2.16 et seq), the proposals will reduce individuals' trip-rate by car and this, in combination with public transport improvements, will imply an increase in public transport trip rates (through mode switch and new journeys). The travel intensity ratio will therefore also move in the desired direction. Proposed improvements to the pedestrian environments are likely to lead to a reduction in severance (as numbers of controlled crossings are introduced and 20 mph speed limits applied). This will be mitigated to some extent by the introduction of trams which, when street running, add to the number of traffic streams to be negotiated. The sections of the tram network that adopt alignments currently functioning as cycle and pedestrian paths will evidently impose severance effects where they currently do not exist. The balance of impact is, however, expected to be positive as a result of the larger pedestrian flows in the areas where pedestrian improvements are deliberately implemented.
Transport integration: what will be the impacts in integrating transport modes and services	Integration of transport modes and services will benefit from the investment package. Moderate benefit	Proposals for integrated ticketing can be considered as evidence of "seamless ticketing". Infrastructure-related proposals (improvements of interchanges and new park & ride facilities) will bring benefits in terms of quality of facilities, the suitability of layout for the purpose of interchange and the completeness and intelligibility of information provided. The impact of the proposals will definitely be positive, therefore, and could be very significant. The proposals recognise the need to achieve an integrated public transport system for the proposal to be successful and further work is to be undertaken on this issue.
Policy integration: what will be the impacts of the proposal	The proposal integrates with wider government policies.	The proposal is consistent with the published goals of the five Social Inclusion Partnerships within the Edinburgh area. It also accords with the Council's "City Strategy" under the headings;

Objective	Assessment Summary	Supporting Information
against wider government policy	Small benefit	Securing future prosperity; Unemployment and urban poverty – the divided city; Urban decline; Sustainability and the environment.

Appendix B – AST2 Tables

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)	City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ		
Proposal Name:	*Edinburgh Tram Line Two, West Edinburgh - Preferred Route Alignment*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	The preferred route alignment operates from St Andrew Square via Haymarket and Edinburgh Park to Edinburgh Airport. A spur line will extend to Newbridge.	Estimated Total Public Sector Funding Requirement:	£336.3 M (@2003 incl. 31% Optimism Bias) £0 - £198.935 M
Funding Sought From: (if applicable)	Scottish Executive	Amount of Application:	£336.3 M (@2003 incl. 31% Optimism Bias)
Background Information			
Geographic Context:	The proposal will directly serve the corridor from Edinburgh city-centre to western Edinburgh including the communities of Dalry, Saughton, Broomhouse, Edinburgh Park, Gogar, Ingliston and Newbridge. The route will serve a mixture of commercial, residential and airport related land uses. The route will be predominately segregated and will minimise interaction with the built environment and will provide the opportunity to enhance the landscape adjacent to the Edinburgh – Glasgow rail line. The western section of the route will be within green belt. The west of Edinburgh currently suffers from growing congestion.		
Social Context:	There are a number of designated 'social inclusion partnerships' in the appraisal area, including geographical-focused initiatives operating in Broomhouse as well as more thematic initiatives operating in Sighthill and Stenhouse. The Scottish Indices of Deprivation 2003 indicate that some deprived wards lie within or adjoining the proposed route. West Edinburgh has a higher proportion of car ownership (72%) and availability rates per household than Edinburgh (60%) and Scotland (66%) averages.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors. The scheme will serve the commercial core of the city-centre, the major growth area at Edinburgh Park, Gyle Shopping Centre, the RBoS HQ and Edinburgh airport.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	• The preferred alignment will provide an efficient, accessible, safe and affordable public transport network to the West of Edinburgh. • Traffic congestion and environmental impacts will be reduced due to fewer private vehicles on the road network at peak periods. • Accessibility will be increased along the corridor, in particular to employment opportunities including the Gyle, Edinburgh Park and RBoS. • The preferred alignment will improve accessibility to the West of Edinburgh thereby supporting development and regeneration in the corridor catchment area. • The tram system will provide a safe and secure means of travel.

Rationale for Selection or Rejection of Proposal:	Overall the preferred route alignment best satisfies the planning objectives and the Scottish Executive's five objectives relating to Environment; Accessibility; Safety; Integration; and Economy. The proposal will enhance the current level of public transport service, provide a safe and secure means of travel, assist in reducing traffic levels at peak periods and provide improved accessibility along the western corridor.

Implementability Appraisal	
Technical:	The preferred route corridor has been designed in detail and will involve a number of major structures. The proposed alignment is technically feasible. The tram technology is tried and tested. Detailed alignments ensure that good operational speeds can be maintained.
Operational:	Journey times can be minimised to maximise the attractiveness of the service and minimise operating costs and rolling stock resources. Interface with other public transport operators and likely competition is potentially a risk to successful operation. The proposed depot site (at Gogar Roundabout) occupies a central position on the tram mainline and allows phased implementation. The depot site has no major impact on the surrounding area (for example, no nearby residences to be affected by noise).
Financial:	Capital costs will be provided by the Scottish Executive. On-going operating cost will be covered by revenue generated by the Tram Scheme. Patronage modelling has shown that there is sufficient demand potential for the scheme.
Public:	The options taken forward to form the preferred route corridor have all achieved public acceptability. The corridor offers a fast link between the city centre and Edinburgh Airport that has minimal impact on the existing road network, whilst offering a clear improvement in public transport provision. Results of the consultation show that there is broad support for trams in Edinburgh (84%) and broad support for Edinburgh Tram Line Two (86%).

Environment			
Mitigation Options Included: (Costs & Benefits)	A number of mitigation measures have been implemented along the route. A comprehensive description of mitigation measures is provided within the Environmental Statement.		
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	Generally, changes in traffic flows will have a neutral impact on noise levels. Acoustic barriers would be required at Balbirnie Place, Baird Drive, Hillwood Rise and Station Road at Ratho Station to reduce noise impacts from the tram.	Following the STAG methodology an additional 3 people would be annoyed by traffic and 4 people by tram noise. An additional 76 people would experience an increase in noise from the tram of more than 3 dB(A).	Construction impacts would be major negative in some locations but short term. Operational impacts would be moderate negative at one location but otherwise minor negative.
Air Quality - Overall	The scheme was predicted to be beneficial due to an overall reduction in traffic flows during peak periods.	Properties with Improved Air Quality 2011: 175,693; 2026: 165,425 Properties with Degraded Air Quality 2011: 101,315; 2026: 105,842	Operational impacts would be moderate positive.
CO_2 - Global	CO_2 emissions for the scheme were lower than the Do-Minimum for both 2011 and 2026.	2011: -8339 tonnes of CO_2 2026: -24912 tonnes of CO_2	Moderate Positive
PM_{10} - Local	Overall, the exposure to PM_{10} concentrations is predicted to reduce.	PM_{10} Index 2011: -11,334 2026: -17,780	Moderate Positive
NO_2 - Local	Overall, the exposure to NO_2 concentrations is predicted to reduce.	NO_2 Index 2011: -47,669 2026: -39,193	Moderate Positive

Water Quality, Drainage and Flood Defence	Water Quality may be affected by run-off from construction sites and during operation of the route. Where over-bridging or culverting is required at the Water of Leith and Gogar Burn plus minor tributaries, there may also be water quality impacts. Groundwater may be affected by penetration of contaminated run-off to aquifers. Flood Defence may be compromised at the Gogar Burn Area of Importance for Flood Defence.	None	Water Quality – Minor Negative Groundwater – Neutral Flood Defence – Minor to Moderate Negative Impact
Geology	No geological SSSIs or RIGS will be affected by the development. Mineral reserves will not be affected. Waste management issues relating to disposal of potentially contaminated waste during construction and operation may occur.	None	Geological sites – Neutral Impact Mineral Reserves – Neutral Impact Waste Management – Minor Negative Impact
Biodiversity	Several areas of habitat will be lost including sections of the wildlife corridor adjacent to the main Glasgow/Edinburgh railway line. The Gogar Burn Site of Interest for Nature Conservation (SINC) and Water of Leith Urban Wildlife Site (UWS) will be affected by the construction of bridges. Badgers at Gogar area in particular will be affected during construction and operation.		Habitats – Minor to Moderate negative impact Wildlife Corridors – Minor negative impact Badgers – Moderate negative impact
Visual Amenity	Various significant and negative visual impacts would result for receptors where the tram proposals, specifically the OHLE, poles, new and altered structures would fundamentally change views / visual amenity and impinge on iconic vistas and long views.		Visual impacts would be moderate negative for receptors in localised sections of the tram corridor. The only major negative impacts would occur for views from No. 4 Ingliston Rd, Princes St and St Andrew Sq.

Agriculture and Soils	Agriculture - There would be a Minor Negative impact for individual farming plots, because the area of land take is small in terms of the scale of the farming operations. However, land segregation would result from Tram Line 2 alignment and this is a Moderate Negative impact because of the combined effect of Class 2 Agricultural land take. Contaminated Land - Areas of contaminated land may be disturbed by the construction of Line 2.	Agriculture - The extent of agricultural land take will be quantified in the Book of Reference as part of the parliamentary bill submission. In addition, areas of agricultural land will be lost due to Tram Line 2 alignment as the remaining field area is too small for viable farming use (as discussed in AG2: Permanent Impacts).	Agriculture – Neutral to Moderate Negative Contaminated Land – Minor Negative
Cultural Heritage	Between Queen St and Haymarket visual effects would occur on the setting of the World Heritage Site, New Town Gardens Designed Landscape, New Town and West End Conservation Areas, and Listed Buildings. Potential direct effects may occur on a range of Listed Buildings and other features of architectural interest. Between Haymarket and Newbridge direct effects may occur on the Scheduled Ancient Monument at Huly Hill, Newbridge and other sites and areas of archaeological significance. Visual effects would occur on a range of Listed Buildings, and a minor direct effect would occur on the Jenners Depository.	1 World Heritage Site, 1 Inventory status Designed Landscape, 2 Conservation Areas, 140 Listed Buildings. Parts of 18 Listed Buildings may be directly affected. Three unlisted railings may be affected. 1 Scheduled Ancient Monument and up to 11 sites or areas of archaeological significance and 1 Listed Building would be directly affected. 22 Listed Buildings would be indirectly affected.	Queen Street – Haymarket: major negative Haymarket – Gogar Roundabout: minor negative Gogar Roundabout – Newbridge: moderate negative
Landscape	The World Heritage Site would be directly impacted by the proposals. The proposals would also impact on the character of sensitive townscape areas and wider landscapes including sections of the open Greenbelt landscape. Positive impacts would occur over localised areas due to the proposed mitigation by associated planting.		Landscape impacts would be major negative and significant for the townscapes associated with the World Heritage Site and moderate negative for occasional localised character areas.

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	Standard rates and methodology from NESA applied to calculate changes in highway accidents. A reduction in peak hour car trips is off set by an increase in off peak car trips due to the impact of regeneration.	+0.99M extra car trips per annum in 2026. +104 highway casualty accidents over 30 years operation.
	Change in Balance of Severity	The generation of extra trips leads to an increase of accidents. The increase in fatal accidents is negligible, i.e. is less than can be reliably estimated, but there is growth in damage accidents.	2026 accidents (i.e. negative indicates the situation is worse): Damage: –107 Slight: –5 Serious: –1 Fatal: 0
	Total Discounted Savings	PV 30 years Overall vehicle kilometres are reduced in the early years but increase as highway demand grows, leading to an overall increase in highway accidents.	-£ 2.906 M
Security		The proposals include additional lighting and CCTV at all stops. Positive design. Conductors present in all vehicles. Help points at all stops. The tramline will be mostly segregated and hence may in some locations be remote from human activity.	Moderate positive impact

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	Will provide rapid transit between the city centre, Edinburgh Park, the airport and Newbridge. The majority of the route will be segregated from general traffic. e.g. saving on AM peak car journey from Edinburgh Park to Princes St of 0.5 real minutes (2011), saving on AM peak PT journey from Edinburgh Park to Haymarket of 24 generalised minutes (2011).	£242.517 M
	User Charges	The change in user charges are dominated by PT fares. There is a negligible increase in car and highway user charges, due to a rerouting over the Forth Bridge.	£18.583 M
	Vehicle Operating Costs	Vehicle Operating costs increase due to the increase in off peak car journeys.	-£ 14.209 M
	Quality / Reliability Benefits	The majority of the route will be segregated from general traffic. Signal priority will be provided to tram along the route. Journey times should be reliable and adherence to scheduled timetable good.	
Private Sector Operator Impacts	Investment Costs	Undiscounted costs, 2003 prices: Design: -£11.270M; Preliminaries & Project costs: -£49.804M; Construction: -£235.597M; and Land: -£39.645M	-£218.222 M
	Operating & Maintenance Costs	The operating costs are assumed to grow by 0.5% over RPI due to wage inflation.	-£92.130 M
	Revenues	Tram Revenue = £89.539 M Change in bus and rail revenue = £30.612 M Change in Forth Bridge Revenue = -£0.485 M Change in off street parking revenue = £3.088 M	£122.753 M
	Grant/Subsidy payments	This includes land held by the public sector valued at £4.6 million at 2003 market price.	£218.222 M

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic impacts	The greatest employment impact will be in Edinburgh City. The greatest impact in gross added value will be achieved within the key sectors of finance and business, public administration and distribution and catering.	Total employment is projected to increase by 440 jobs during the period 2009 to 2025, 410 jobs of which will be in Edinburgh. Notional employment gains in total by 2025: Finance and business (61) Construction (14), Public administration (12), Other services (8).
	National Economic impacts	There will be small employment gains in selected parts of Lothian. West Lothian will experience a very minimal decline in overall employment. Similarly the largest proportion of growth in gross added value will occur at the Lothian level. The level of notional employment by industry/sector in Lothian shows that the greatest gains will occur within finance and business, construction, public administration and other services. The greatest impact in gross added value will be achieved within the key sectors of finance and business, public administration and distribution and catering.	Total employment is projected to increase by 440 jobs during the period 2009 to 2025, 30 jobs of which will be outwith Edinburgh. Total gross added value of £22m in Lothian. This comprises £8m added value each in finance and business, and public administration, with a further £6m added value in distribution and catering.
	Distributional Impacts	The Edinburgh and Lothian region is currently benefiting from continuing buoyancy in the economy and property market. There are likely to be some benefits gained in a number of local regeneration areas, which suffer from varying aspects of social exclusion and deprivation, e.g. Sighthill, Stenhouse. The tram line is likely to have positive impacts, particularly as it will increase accessibility to employment opportunities and the wider labour market. In employment terms, the potential growth in services and construction may provide opportunities for higher employment, especially in female working population and those wishing part-time employment.	The 410 jobs increase in Edinburgh by 2025, will provide job opportunities for many local communities. Employment for example in construction and other services will provide the greatest job prospects for many.

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	Integrated transport services and ticketing contribute to more "seamless" journeys across the public transport network. The proposals provide the opportunity for interchange at the city centre, Haymarket, Edinburgh Park, the Gyle, the Airport and at Park and Ride sites in West Edinburgh.	Minor - Moderate positive impact
	Infrastructure & Information	Infrastructure facilities at stations, greater opportunities for bus and rail interchange with the tram at key locations, real-time information at all stations.	Minor – Moderate positive impact
Land-use Transport Integration		Interfacing with the Airport, Edinburgh Park, Haymarket station and the city-centre the proposal integrates well with existing and planned land uses and public transport. In addition, there is improved linkage between West Edinburgh and the whole city. The proposals are consistent with local and national planning policies.	Moderate positive impact
Policy Integration		The proposal fits with general transport and health policies promoting public transport whilst reducing the need for private car use, and enhancing the environment. The corridor provides a link between the city centre and the Airport. Planned development of Edinburgh Park is well served by the proposal.	Minor positive impact

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	The proposal complements existing public transport by serving a catchment with limited existing bus services. By running with a dedicated route, the tram service will have efficient and reliable run times. The proposal will enhance access to employment and services in the city centre and West Edinburgh.	Minor - moderate positive impact
	Access to Other Local Services	Severance generally limited due to segregation of the tram line. Localised severance occurs where the tram line crosses existing walk / cycle routes, however appropriate mitigation measures will be implemented.	Neutral / Minor negative impact
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	The proposal has limited impact on social exclusion.	Neutral - minor positive impact
	Distribution/Spatial Impacts by Area	Improved access to employment and services in the city centre and West Edinburgh area.	Minor positive impact

Cost to Public Sector		
Item	Qualitative Information	Quantitative Information
Public Sector Investment Costs		£ 0.00 M
Public Sector Operating & Maintenance Costs		£ 0.00 M
Grant/Subsidy Payments	It is assumed that the public sector will provide a grant to the private sector for the full investment cost. Some of this may be in the form of subsidies or gifted land.	-£218.222 M
Revenues	There is an increase in city centre car parking revenues, due to the generation of off peak highway trips, due to improved transport accessibility and an element of long term parkers being replaced by multiple short term parking.	£ 19.920 M
Taxation impacts	Indirect taxation impacts consist of -£12.554 M from PT and £11.921 M from highway.	-£ 0.633 M

Monetised Summary	
Present Value of Transport Benefits	£274.608 M
Present Value of Cost to Government	-£198.935 M
Net Present Value	£ 75.673 M
Benefit-Cost to Government Ratio	1.38

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*Do Minimum*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	All committed transport schemes and proposals under construction or with statutory powers and funding available.	Estimated Total Public Sector Funding Requirement:	tie/CEC tie/CEC tie/CEC
Funding Sought From: (If applicable)	N/a	Amount of Application:	N/a
Background Information			
Geographic Context:	The proposal covers the entire City of Edinburgh Council area and provides benefits to the wider Lothian area. All land uses will to some extent be affected by the proposals. For this study, the geographic context of the proposal will be truncated to the corridor from Edinburgh city-centre to western Edinburgh including the communities of Dairy, Saughton, Broomhouse, Edinburgh Park, Gogar, Ingliston and Newbridge. The proposal will serve a mixture of commercial, residential and airport related land uses. The west of Edinburgh currently suffers from growing congestion.		
Social Context:	There are a number of designated 'social inclusion partnerships' in the West Edinburgh area, including geographical-focused initiatives operating in Broomhouse as well as more thematic initiatives operating in Sighthill and Stenhouse. The Scottish Indices of Deprivation 2003 indicate that some deprived wards lie within West Edinburgh.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors. The scheme will serve the commercial core of the city-centre, the major growth area at Edinburgh Park, Gyle Shopping Centre, the RBoS HQ and Edinburgh airport.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	The do-minimum assumes the continuation of the levels of funding for transport investment achieved in recent years. This focuses on low-cost measures, which seek to go as far as possible towards meeting objectives. They will ensure that the existing public transport network is fit for purpose. Although improvements could be achieved, especially on safety, congestion and pollution can be expected to increase under the do-minimum. Accessibility will not improve. Environmental impacts will increase as levels of traffic increase.
Rationale for Selection or Rejection of Proposal:	This option generally maintains the current level of public transport service and provides some safety improvements, it will have limited effect on reducing traffic levels, providing public transport priority and enhancements to streets as "civic spaces"; it will not address air quality in the most sensitive areas and it will not provide sufficient revenue to fund measures to bring about further mode shift. The do-minimum option does not satisfy the planning/LTS objectives.

Implementability Appraisal	
Technical:	There are no untested technologies involved in this scheme. CPO's/TRO's may be required to implement certain measures including WEBS. The do-minimum will have a detrimental impact to certain stakeholders.
Operational:	Increased road congestion alongside insufficient measures to encourage a modal shift away from the private car are key factors that will adversely affect the ability to operate the do minimum scenario.
Financial:	Assumes the continuation of the levels of funding for transport investment achieved in recent years.
Public:	Consultations undertaken revealed that the do-minimum option is not favoured. Consultation undertaken as part of the ITI revealed that 70% of Edinburgh residents support the need for congestion relief in the city centre and over 50% supports the need for congestion relief in other areas of the city. In addition, views on the need for substantial public transport improvements in and around the city are consistently high (over 70% in all cases).

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	Increase in traffic flows will increase congestion and have a detrimental impact on the environment.		
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence			
Geology			
Biodiversity			
Visual Amenity			
Agriculture and Soils			
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	Does not fulfil LTS / Planning objectives.	Neutral impact.
	Change in Balance of Severity	Does not fulfil LTS / Planning objectives.	Neutral.
	Total Discounted Savings		PV1
Security			Neutral/Minor positive.

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	In the short-term public transport experiences a minor positive benefit in the study area, however city-wide and with time, levels of congestion will increase.	PV2
	User Charges	Neutral.	PV3
	Vehicle Operating Costs	Minor / moderate negative impact.	PV4
	Quality / Reliability Benefits	Overall minor / moderate negative impact with minor positive localised impact in short term.	
Private Sector Operator Impacts	Investment Costs		PV5
	Operating & Maintenance Costs		PV6
	Revenues		PV7
	Grant/Subsidy payments		PV8

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts	Localised benefits will be achieved through the introduction of WEBS, with a positive impact upon Edinburgh Park/South Gyle. Levels of traffic congestion will continue to rise.	
	National Economic Impacts	West Edinburgh is an area of national significance. Localised positive impacts will be achieved through WEBS but levels of traffic congestion will continue to rise.	
	Distributional Impacts	Localised positive impacts will be achieved through WEBS but levels of traffic congestion will continue to rise.	

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	Overall negligible impact, however WEBS provides some opportunities for improved interchange.	
	Infrastructure & Information	Overall negligible impact, however WEBS provides some opportunities for improved infrastructure.	
Land-use Transport Integration		Overall negligible impact, however WEBS provides some opportunities for improved integration and is broadly consistent with local and national planning policies. Scale of impact does not meet objectives.	
Policy Integration		Will be broadly in line with national government policy, although scale of impact does not meet objectives.	

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	WEBS will provide better quality linkage to the city centre from West Edinburgh. Minor local positive impacts will be cancelled out by future traffic growth and congestion.	
	Access to Other Local Services	Minor local positive impact.	
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	WEBS will provide better quality linkage to the city centre from West Edinburgh. Minor local positive impacts will be cancelled out by future traffic growth and congestion.	
	Distribution/Spatial Impacts by Area	Minor positive improvement to employment and services in the city centre and West Edinburgh.	

Cost to Public Sector		
Item	Qualitative information	Quantitative information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation Impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*City Centre Option A (Princes Street)*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	Route from St Andrew Square, via Princes Street to Shandwick Place. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	Ref: Preferred route alignment AST2 Ref: Preferred route alignment AST2 Ref: Preferred route alignment AST2
Funding Sought From: (If applicable)	Scottish Executive	Amount of Application:	Ref: Preferred route alignment AST2
Background Information			
Geographic Context:	A single track one-way loop at St Andrew Square, double tracks along Princes Street then a central alignment along Shandwick Place. Remainder of route as per the preferred route alignment. This option provides closer links with existing bus and rail transport but will impact on views of the Castle and the Old Town skyline. Princes Street is already a major public transport corridor.		
Social Context:	City centre location and world heritage site. Variable architectural quality. A focus for shoppers and tourists.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors. The option will serve the commercial core of the city-centre.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	Good interchange with existing bus and heavy rail networks. High pedestrian flows. Less severe environmental impact compared to George Street. Safety comparable to George Street option. Will have a greater impact on highway operations when compared to George Street option.
Rationale for Selection or Rejection of Proposal:	Comparable capital costs to George Street option, run times faster, good accessibility and interchange. Takes traffic away from Princes Street. Environmental impacts less severe than George Street option. Preferred option during public consultation. This option has been selected as part of the preferred route alignment.

Implementability Appraisal	
Technical:	A moderate level of PU apparatus necessitating diversions will incur capital cost and associated construction disruption.
Operational:	Run time of 364 seconds between the Picardy Place and Shandwick Place stops. Significant number of road closures throughout year will necessitate alternative operational plan.
Financial:	Estimated capital cost overall of £15.3M, excluding PUs.
Public:	Princes Street was supported by 66% of public consultation respondents and considered to offer the best balance between accessibility for the public, visual impact and commercial gain for city centre businesses and tourist attractions.

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	Tram will not adversely impact upon already high daytime ambient noise level. However, during late evening and night (post 11:00pm) operating periods, tram will become dominant noise source.		Minor negative impact
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence	No significant impacts		
Geology	No significant impacts		
Biodiversity	No significant impacts		
Visual Amenity	Moderate impact on views to Castle across OHLE		Minor negative impact
Agriculture and Soils	No significant impacts		
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	Improvement in pedestrian safety arising from installation of pedestrian crossings and fixed track route for tram.	
	Change in Balance of Severity		
	Total Discounted Savings		
Security		Security improvements to those transferring from bus. High pedestrian volumes promotes safer environment.	Minor positive impact

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	Good penetration of commercial and business centre of Edinburgh. Good interchange with bus network and softer factors (tourism, safety and security) maximise patronage benefits.	Early testing indicated annual patronage of 10.51m p.a. (assuming railway corridor alignment at the Telford Road option)
	User Charges		
	Vehicle Operating Costs		
	Quality / Reliability Benefits		
Private Sector Operator Impacts	Investment Costs		
	Operating & Maintenance Costs		
	Revenues		
	Grant/Subsidy payments		

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts		
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	Good integration with bus network.	
	Infrastructure & Information		
Land-use Transport Integration		No significant impacts.	
Policy integration		Provision of Tram consistent with historic and existing policies for transport and land use planning.	

Accessibility & Social Inclusion			
Sub-objective	Item	Qualitative Information	Quantitative Information
Community Accessibility	Public Transport Network Coverage		
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial Impacts by Social Group		
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative Information	Quantitative Information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation Impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)	City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ		
Proposal Name:	*City Centre Option B (George Street)*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	Route from St Andrew Square, via George Street to Shandwick Place. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	N/A N/A N/A
Funding Sought From: (If applicable)	N/A	Amount of Application:	N/A
Background Information			
Geographic Context:	A loop at St Andrew Square, segregated alignment centrally along George Street then through Charlotte Square (with traffic) and then along Shandwick Place. Remainder of route as per the preferred route alignment. George Street and Charlotte Square are both architecturally significant streetscapes that are generally enclosed, designed vistas with a human scale to the buildings.		
Social Context:	City centre location and world heritage site. High architectural quality.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors. The option will serve the commercial core of the city-centre.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	No direct interchange with existing bus and heavy rail networks. 33% of pedestrian flows on Princes Street. Severe environmental impact on George Street and Charlotte Square. Safety comparable to Princes Street option. Less impact on highway operations when compared to Princes Street option.
Rationale for Selection or Rejection of Proposal:	Comparable capital costs to Princes Street option, run times slower, limited accessibility and interchange. The environmental impacts on the historic nature of the area and the streetscape would be severe. Not the preferred option during public consultation. This option has not been taken forward.

Implementability Appraisal	
Technical:	George Street has a high level of PU apparatus, resulting in high cost and extended construction period.
Operational:	Run time of 420 seconds between the Picardy Place and Shandwick Place stops. Some road closures throughout year will necessitate alternative operational plan.
Financial:	Estimated capital cost overall of £16.1m, excluding PUs.
Public:	Public consultation highlighted concerns about the environmental and heritage impact of running on George Street and Charlotte Square.

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative information**	**Quantitative information**	**Significance of Impact**
Noise and Vibration	Tram will not adversely impact upon already high daytime ambient noise level. However, during evening and night (pose 7:00pm) operating periods, tram will become dominant noise source. Tight radii at either end of George Street will likely lead to some wheel squeal.		Moderate negative impact
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence	No significant impacts		
Geology	No significant impacts		
Biodiversity	No significant impacts		
Visual Amenity	Large impact due to scale of vehicle related impact. OHLE wires and poles would impact on primary view along street. Connection to building facades possible, but listed building consents		Major negative impact

	may not be forthcoming. Strong objection from Historic Scotland to route through Charlotte Square.		
Agriculture and Soils	No significant impacts		
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative information**	**Quantitative information**
Accidents	Change in Annual Personal Injury Accidents	Reduced pedestrian conflict due to change to pelican from zebra crossing at three junctions.	
	Change in Balance of Severity		
	Total Discounted Savings		
Security		Security improvements to those transferring from bus. Low pedestrian activity outside business hours potentially increases risk.	Minor positive impact

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	Long run time reduced benefits to through trips. Good penetration of commercial and business centre of Edinburgh. Poor integration with bus network reduces potential benefits.	Early testing indicated annual patronage of 10.32m p.a. (assuming railway corridor alignment at the Telford Road option)
	User Charges		
	Vehicle Operating Costs		
	Quality / Reliability Benefits		
Private Sector Operator Impacts	Investment Costs		
	Operating & Maintenance Costs		
	Revenues		
	Grant/Subsidy payments		

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location impacts	Local Economic Impacts		
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	Poor integration with bus network.	
	Infrastructure & Information		
Land-use Transport Integration		No significant impacts	
Policy Integration		No significant impacts	

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage		
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial Impacts by Social Group		
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative Information	Quantitative Information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation Impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*Roseburn – Carrick Knowe Option A*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	This option will run along the south of the existing railway embankment. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	N/A N/A N/A
Funding Sought From: (if applicable)	N/A	Amount of Application:	N/A

Background Information	
Geographic Context:	This section runs for 3 km between the tram junction with Line 1 in the Roseburn area and Saughton Mains Road, west of the Carrick Knowe Golf Course. The alignment is adjacent to the Edinburgh-Glasgow mainline railway and includes junctions with three main roads. Option A crosses under the mainline railway using the existing bridge at Russell Road, the south alignment runs entirely south of the railway tracks between Russell Road and Saughton Mains Road. From Russell Road to Roseburn Street, the tracks run between a potential depot site (Russell Road) and the West Approach Road, before passing into the designated CERT corridor west of Roseburn Street. From here, the tram alignment runs adjacent to the mainline railway across the Water of Leith and behind Whitson Road, Stenhouse Avenue West and Stenhouse Drive until Saughton Mains Road. There would be an impact for some properties in Whitson Road and Stenhouse Avenue West.
Social Context:	There are a number of designated 'social inclusion partnerships' in the appraisal area, including geographical-focused initiatives operating in Broomhouse as well as more thematic initiatives operating in Sighthill and Stenhouse. The Scottish Indices of Deprivation 2003 indicate that some deprived wards lie within or adjoining the proposed route.
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors.

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	Good Accessibility to surrounding residential areas, does not severe Murrayfield area as well. Severe environmental impact on properties along Whitson Road and Stenhouse Avenue West. Comparable corridor impacts on traffic congestion to other options, but localised vehicle/tram interaction. This option would not provide the same level of safety and security for all users as Option B.
Rationale for Selection or Rejection of Proposal:	When appraised with the other options considered, this option scores well in terms of Accessibility but poorly in terms of Implementation/Engineering, Traffic/Transport, Safety, Environment and Integration. Whilst this option runs within the CERT alignment east of Balgreen Road and avoids impacts to Baird Drive residences, the impacts are transferred (with a higher degree of severity) to properties on Whitson Road. The south alignment is also subject to the alignment constraints at Russell Road under the mainline railway and includes several structural elements to bridge the railway lines around Westfield Road. This option has been rejected.

Implementability Appraisal	
Technical:	The south alignment is subject to alignment constraints at Russell Road under the mainline railway and includes several structural elements to bridge the railway lines around Westfield Road. A total of three heavy rail crossings are required and would require agreement with Network Rail and HMRI. Alignment would pass through the gardens of 148 properties on Whitson Road. One building on Stenhouse Avenue West would be demolished. Would serve a potential depot site at Russell Road well.
Operational:	Slow tram speeds through Russell Road section. A number of at-grade crossings required. The estimated run time between Haymarket station and Stenhouse Drive stop is 5 minutes. Two structures under and one over heavy rail lines are required and would require agreement with Network Rail and HMRI.
Financial:	Capital costs of the alignment would be increased by the elevated alignment and station at Roseburn Street, and some important structures over West Approach Road, Roseburn Street, Water of Leith, and under the railway line at Westfield road. Likewise, excavation for the alignment in Russell Road would increase capital costs. Capital costs would be requested from the Scottish Executive. On-going operating cost will be covered by revenue generated by the Tram Scheme. Patronage modelling has shown that there is sufficient demand potential for the scheme as a whole.
Public:	Of the three options for the Roseburn – Carrick Knowe section taken forward to public consultation, Option A received the least support (13%). Residents along Whitson Road are extremely distressed by the impacts of the tram alignment on their gardens. Residents are also concerned about noise and visual impacts from the tram.

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	The tram would result in the loss of gardens from properties on Whitson Road and Stenhouse Avenue and the partial demolition of a block of flats at Stenhouse Avenue West. The route would run close to over 250 residential properties along Whitson Road and Stenhouse Avenue West and the construction and operation of the tram would be likely to result in significant noise and visual impacts (depending on the effectiveness of mitigation measures). The rail embankment is a local wildlife corridor and this option would result in the loss of part of this corridor and mature trees.		Major Negative impact.
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence			
Geology			
Biodiversity			
Visual Amenity			
Agriculture and Soils			
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	Pedestrians, cyclists, and cars would cross the tram tracks along Russell Road. This crossing would be signalised to facilitate movements. An elevated structure over Roseburn Street would separate tram operations from car traffic and pedestrian activity. No at-grade tram crossing would be implemented.	Moderate negative impact.
	Change in Balance of Severity	Pedestrians, cyclists, and cars would cross the tram tracks along Balgreen Road. This crossing would be signalised to facilitate movements. Pedestrians and cyclists would cross the tram tracks on the walkway approach to Saughton Mains Road and from the pedestrian bridge at Carrick Knowe Avenue.	
	Total Discounted Savings		PV1
Security		The proposals include additional lighting and CCTV at all stops. Positive design. Conductors present in all vehicles. Help points at all stops. The tramline will be mostly segregated and hence may in some locations be remote from human activity.	

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	The estimated run time between Haymarket station and Stenhouse Drive stop is 5 minutes.	PV2
	User Charges		PV3
	Vehicle Operating Costs	Slower run times will increase operating costs.	PV4
	Quality / Reliability Benefits	The majority of the route will be segregated from general traffic. Signal priority will be provided to tram along the route.	
Private Sector Operator Impacts	Investment Costs		PV5
	Operating & Maintenance Costs		PV6
	Revenues		PV7
	Grant/Subsidy payments		PV8

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts	Commercial properties in Westfield Road (west of Roseburn Street) near the Haymarket Depot may be affected by the tram alignment.	Minor negative impact.
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport interchanges	Services & Ticketing	Residents along Whitson Road are extremely distressed by the impacts of the tram alignment to their gardens. They are also concerned about noise and visual impacts from the tram.	Major negative impact.
	Infrastructure & Information		
Land-use Transport Integration			
Policy Integration			

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	This option will enhance access to employment and services in the city centre and West Edinburgh from surrounding residential areas. Severance generally limited due to segregation of the tramline. Localised severance occurs where the tramline crosses existing walk / cycle routes, however appropriate mitigation measures will be implemented.	Minor positive impact.
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	This option will enhance access to employment and services in the city centre and West Edinburgh from surrounding residential areas (Stenhouse, Saughton).	Minor positive impact.
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative information	Quantitative information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation Impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*Roseburn – Carrick Knowe Option B*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	This option involves a route along the north of the existing railway embankment. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	Ref: Preferred route alignment AST2 Ref: Preferred route alignment AST2 Ref: Preferred route alignment AST2
Funding Sought From: (if applicable)	Scottish Executive	Amount of Application:	Ref: Preferred route alignment AST2
Background Information			
Geographic Context:	This section runs for 3 km between the tram junction with Line 1 in the Roseburn area and Saughton Mains Road, west of the Carrick Knowe Golf Course. The alignment is adjacent to the Edinburgh-Glasgow mainline railway and includes junctions with three main roads. Option B has the tram alignment along the northern edge of the Edinburgh-Glasgow mainline railway the entire distance between the Roseburn Junction and Saughton Mains Road. Heading west from the junction with Line 1, the Line 2 alignment will cross Russell Road at grade, passing through built-up sites near the ScotRail Haymarket Depot site before rising to cross Roseburn Street on an elevated track. The alignment runs next to Murrayfield Stadium at the existing railway level before passing over the Water of Leith, behind Baird Drive, over Balgreen Road, and along the Carrick Knowe Golf Course.		
Social Context:	There are a number of designated 'social inclusion partnerships' in the appraisal area, including geographical-focused initiatives operating in Broomhouse as well as more thematic initiatives operating in Sighthill and Stenhouse. The Scottish Indices of Deprivation 2003 indicate that some deprived wards lie within or adjoining the proposed route.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	Provides good accessibility to Murrayfield Stadium and residences north on Roseburn Street. Major environmental impact on properties along Baird Drive that would be countered with mitigation measures. Comparable corridor impacts on traffic congestion to other options, limited localised vehicle/tram interaction. This option would provide a better level of safety and security when compared to other options under consideration.
Rationale for Selection or Rejection of Proposal:	When appraised with the other options considered, this option scores well in terms of Implementation/Engineering, Traffic/Transport, Safety and Accessibility but poorly in terms of Environment. This option provides the most direct link between the junction with Line 1 and Saughton Mains Road and eliminates the alignment constraints of running under the Russell Road and/or Balgreen Road under bridges. This option provides faster travel times, lower costs and reduced traffic impacts on Russell Road and Balgreen Road. This option has been selected as part of the preferred route alignment.

Implementability Appraisal	
Technical:	The north alignment provides the most direct link between the junction with Line 1 and Saughton Mains Road and eliminates the alignment constraints of running under the Russell Road and/or Balgreen Road under bridges. This option provides faster travel times, lower costs and reduced traffic impacts on Russell Road and Balgreen Road. One heavy rail crossing is required and would need agreement with Network Rail and HMRI. Alignment would pass directly adjacent to the gardens of 52 properties on Baird Drive. Would not serve a potential depot site at Russell Road.
Operational:	Moderate to high speeds along section. The estimated run time between Haymarket station and Stenhouse Drive stop is 4.5 minutes. One structure over a heavy rail line is required and would need agreement with Network Rail and HMRI. Elevated structures over Roseburn Street and Balgreen Road would separate tram operations from the general traffic movements. Part of Russell Road would be shared between the tram and the traffic, however this is limited to a section of 100 metres of length. This option would remove the potential to use a depot site at Russell Road.
Financial:	Capital costs of the alignment would be increased by the elevated alignment and station at Roseburn Street and by major structures over Roseburn Street, Balgreen Road, Water of Leith and the Edinburgh-Glasgow mainline railway at Saughton Mains Road. Capital costs would be requested from the Scottish Executive. On-going operating cost will be covered by revenue generated by the Tram Scheme. Patronage modelling has shown that there is sufficient demand potential for the scheme as a whole.
Public:	Of the three options for the Roseburn – Carrick Knowe section taken forward to public consultation, Option B received the greatest support (38%). This is largely due to the tram alignment not running adjacent to as many residential properties. Residents along Baird Drive are concerned about noise and visual impacts from the tram (No property-takes are required in this section). Significant impact on Roseburn Street properties.

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	The tram would pass close to residences north of Russell Road and on Baird Drive. The tram would *not* result in the loss of gardens from properties on Baird Drive. However, the route would run close to 52 residential properties at Baird Drive and the construction and operation of the tram could result in significant noise and visual impacts (depending on the effectiveness of mitigation measures). The rail embankment is a local wildlife corridor and this option would result in the loss of part of this corridor and mature trees. The route crosses the Water of Leith, which is a designated Urban Wildlife Site, but permanent effects are likely to be negligible. The route also passes through an Area of Importance for Flood Control. The retaining structure over the rugby pitches could ensure no significant reduction in the volume of the flood retaining plain.		Moderate Negative impact.
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence			
Geology			
Biodiversity			
Visual Amenity			
Agriculture and Soils			
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	Pedestrians, cyclists, and cars would cross the tram tracks along Russell Road. This crossing would be signalised to facilitate movements. Adequate signalisation and traffic improvement would enable safe track sharing. An elevated track over Roseburn Street and Balgreen Road would separate tram operations from car traffic and pedestrian activity. No at-grade tram crossing would be implemented. Pedestrians and cyclists would cross the tram tracks on the walkway approach to Saughton Mains Road. Pedestrian access to stop platforms will require at grade crossing of the track within the stop area.	Neutral benefit impact.
	Change in Balance of Severity		
	Total Discounted Savings		PV1
Security		The proposals include additional lighting and CCTV at all stops. Positive design. Conductors present in all vehicles. Help points at all stops. The tramline will be mostly segregated and hence may in some locations be remote from human activity.	

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	The estimated run time between Haymarket station and Stenhouse Drive stop is 4.5 minutes	PV2
	User Charges		PV3
	Vehicle Operating Costs	Faster run times will reduce operating costs.	PV4
	Quality / Reliability Benefits	The majority of the route will be segregated from general traffic. Signal priority will be provided to tram along the route.	
Private Sector Operator Impacts	Investment Costs		PV5
	Operating & Maintenance Costs		PV6
	Revenues		PV7
	Grant/Subsidy payments		PV8

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts	Commercial properties near the Haymarket Depot would be affected by the tram alignment.	Neutral impact.
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	Residents along Baird Drive are concerned about noise and visual impacts from the tram. (No property-takes are required in this section.) Significant impact on Roseburn Street properties.	Minor negative impact.
	Infrastructure & Information		
Land-use Transport Integration			
Policy Integration			

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	This option will enhance access to employment and services in the city centre and West Edinburgh to/from Murrayfield stadium and surrounding residential areas. Severance generally limited due to segregation of the tramline. Localised severance occurs where the tramline crosses existing walk / cycle routes, however appropriate mitigation measures will be implemented.	Minor positive impact.
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	This option will enhance access to employment and services in the city centre and West Edinburgh from Murrayfield stadium and surrounding residential areas (Roseburn, Saughtonhall).	Minor positive impact.
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative information	Quantitative information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation Impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*Roseburn – Carrick Knowe Option C*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	This option is a hybrid of Options A and B. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	N/A N/A N/A
Funding Sought From: (if applicable)	N/A	Amount of Application:	N/A
Background Information			
Geographic Context:	This section runs for 3 km between the tram junction with Line 1 in the Roseburn area and Saughton Mains Road, west of the Carrick Knowe Golf Course. The alignment is adjacent to the Edinburgh-Glasgow mainline railway and includes junctions with three main roads. Option C alignment passes under the mainline railway on Russell Road and runs along the West Approach Road. As with Option A, it runs in the CERT corridor over the Water of Leith, but at Balgreen Road, the alignment passes under the mainline railway again using the existing bridge to join the alignment outlined in Option B. The alignment runs west from Balgreen Road between the mainline railway and the Carrick Knowe Golf Course, after which it crosses the mainline for a third time bridging over to join Saughton Mains Road south of the tracks.		
Social Context:	There are a number of designated 'social inclusion partnerships' in the appraisal area, including geographical-focused initiatives operating in Broomhouse as well as more thematic initiatives operating in Sighthill and Stenhouse. The Scottish Indices of Deprivation 2003 indicate that some deprived wards lie within or adjoining the proposed route.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	Provides good accessibility to surrounding residences. Reduces environmental impact on residential properties along Baird Drive and Whitson Road. Comparable corridor impacts on traffic congestion to other options, but localised vehicle/tram interaction. This option would not provide the same level of safety and security for all users as Option B.
Rationale for Selection or Rejection of Proposal:	When appraised with the other options considered, this option scores well in terms of Integration and Environment but poorly in terms of Implementation/Engineering, Traffic/Transport, Safety and Accessibility. Costs are increased by numerous alignment constraints, the requirement to pass under the railway at Russell Road and Balgreen Road, as well as structural elements under the railways near Westfield Road. In addition, this option results in slower travel times, which would result in a loss in patronage and an increase in operating cost. Although certain challenges on the north are reduced by the hybrid option (impacts to Baird Drive residences and increased use of CERT reserved right-of-way) the problems associated with the structural railway elements and the increased travel time more than offset the advantages. This option has been rejected.

Implementability Appraisal	
Technical:	The hybrid alignment has numerous alignment constraints, with the tram needing to pass under the railway at Russell Road and Balgreen Road, as well as the structural elements under the railways near Westfield Road. A total of five heavy rail crossings are required and would need agreement with Network Rail and HMRI. The alignment does not pass behind long tracts of residential properties,(such as Baird Drive or Whitson Road). The Royal Air Cadets property on Stenhouse Drive would be impacted. Could serve a potential depot site at Russell Road.
Operational:	The hybrid north-south option alignment avoids some of the problems of each the north and south alignments. The option results in slower travel times, which would result in a loss in patronage and an increase in operating cost. The estimated run time between Haymarket station and Stenhouse Drive stop is 5.6 minutes. Five structures over/under heavy rail lines are required and would need agreement with Network Rail and HMRI. The alignment would serve the potential depot site at Russell Road well
Financial:	Capital costs of the alignment would be increased by the elevated alignment and station at Roseburn Street, and some important structures over the West Approach Road, Roseburn Street, Water of Leith the Edinburgh-Glasgow mainline railway at Saughton Mains Road, and under the railway line at Westfield Road. Likewise, excavation for the alignment in Russell Road and Balgreen Road would increase capital costs. Capital costs would be requested from the Scottish Executive. Revenue will be reduced and operating cost will be increased due to the poor performance of the tram on this section. On-going operating cost will be covered by revenue generated by the Tram Scheme. Patronage modelling has shown that there is sufficient demand potential for the scheme as a whole.
Public:	Of the three options for the Roseburn – Carrick Knowe section taken forward to public consultation, Option C received 27% support. This option will not involve the tramline running adjacent to residential properties, thus public objections by residents are limited.

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	The tram alignment would not run adjacent to residential properties. Thus, noise and visual impacts of the tram would be significantly less than for Options A and B. This option would result in the demolition of a building associated with the Jenners Depository off Balgreen Road. The alignment to the south of the rail embankment would result in the loss of vegetation and matures trees, which are part of a local wildlife corridor.		Minor Negative impact.
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence			
Geology			
Biodiversity			
Visual Amenity			
Agriculture and Soils			
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	Pedestrians, cyclists, and cars would cross the tram tracks along Russell Road. This crossing would be signalised to facilitate movements. An elevated track over Roseburn Street would separate tram operations from car traffic and pedestrian activity. No at-grade tram crossing would be implemented.	Major Negative impact.
	Change in Balance of Severity	Pedestrians, cyclists, and cars would cross the tram tracks on both sides of the Balgreen Road underpass. This crossing would be signalised to facilitate movements. Pedestrians and cyclists would cross the tram tracks on the walkway approach to Saughton Mains Road.	
	Total Discounted Savings		PV1
Security		The proposals include additional lighting and CCTV at all stops. Positive design. Conductors present in all vehicles. Help points at all stops. The tramline will be mostly segregated and hence may in some locations be remote from human activity.	

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	The estimated run time between Haymarket station and Stenhouse Drive stop is 5.6 minutes.	PV2
	User Charges		PV3
	Vehicle Operating Costs	Slower run times will increase operating costs.	PV4
	Quality / Reliability Benefits	The majority of the route will be segregated from general traffic. Signal priority will be provided to tram along the route.	
Private Sector Operator Impacts	Investment Costs		PV5
	Operating & Maintenance Costs		PV6
	Revenues		PV7
	Grant/Subsidy payments		PV8

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts	Commercial properties in Westfield Road (west of Roseburn Street) and the Jenners Depository may be affected by the tram alignment.	Minor Negative impact.
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	The hybrid option allows integration with areas to the north and south of the heavy rail line without the adverse environmental impacts of Options A and B.	Minor positive impact.
	Infrastructure & Information		
Land-use Transport Integration			
Policy Integration			

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	This option will improve access to employment and services in the city centre and West Edinburgh to/from surrounding residential areas. Severance generally limited due to segregation of the tramline. Localised severance occurs where the tramline crosses existing walk / cycle routes, however appropriate mitigation measures will be implemented.	Minor negative impact.
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	This option will improve access to employment and services in the city centre and West Edinburgh to/from surrounding residential areas (Gorgie, Saughtonhall).	Minor negative impact.
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative information	Quantitative information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation Impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*Gogar Option A*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	This option involves the tram crossing Gogar Roundabout at-grade. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	N/A N/A N/A
Funding Sought From: (if applicable)	N/A	Amount of Application:	N/A
Background Information			
Geographic Context:	This option follows the CERT alignment and crosses Gogar roundabout at-grade. Trams would have priority signalling to allow faster journey times and this may add to traffic congestion at the roundabout. The tram stop would be located at South Gyle Broadway adjacent to the northern part of Edinburgh Park with The Gyle Shopping Centre accessed via a new crossing of South Gyle Broadway.		
Social Context:	There are a number of designated 'social inclusion partnerships' in the appraisal area, although none are directly located adjacent to this section of the route.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	Provides good accessibility to northern part of Edinburgh Park but is segregated from the Gyle Centre. There may be a slight increase to noise and air quality impacts as a result of increased traffic congestion on Gogar Roundabout. Comparable corridor impacts on traffic congestion to other option, but localised vehicle/tram interaction at Gogar Roundabout may increase congestion at this junction. Comparable level of safety and security for all users as for Option B.
Rationale for Selection or Rejection of Proposal:	When appraised with option B, this option scores less in all seven-appraisal categories and particularly poorly in terms of Economy and Integration. There may be a slight increase to noise and air quality impacts as a result of increased traffic congestion on Gogar Roundabout. The option would offer little scope for developer contributions or for attracting additional patronage. It will likely have increased run times over option B. Capital costs would likely be lower than for option B, however operational costs would likely be higher. This option has been rejected.

Environment			
Mitigation Options included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	There may be a slight increase to noise and air quality impacts as a result of increased traffic congestion on Gogar Roundabout.		Minor Negative impact.
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence			
Geology			
Biodiversity			
Visual Amenity			
Agriculture and Soils			
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	This option has a major traffic interface at Gogar Roundabout. There is the potential for OHLE to foul the airport flight safety envelope.	Moderate Negative benefit relative to other options considered.
	Change in Balance of Severity		
	Total Discounted Savings		PV1
Security		The proposals include additional lighting and CCTV at all stops. Positive design. Conductors present in all vehicles. Help points at all stops. The tramline will be mostly segregated and hence may in some locations be remote from human activity.	

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	Run times are estimated to be slower due to the at-grade crossing of Gogar Roundabout.	PV2
	User Charges		PV3
	Vehicle Operating Costs	Slower run times will increase operating costs.	PV4
	Quality / Reliability Benefits	The majority of the route will be segregated from general traffic. Signal priority will be provided to tram along the route.	
Private Sector Operator Impacts	Investment Costs		PV5
	Operating & Maintenance Costs		PV6
	Revenues		PV7
	Grant/Subsidy payments		PV8

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts	This option does not offer direct access to the Gyle Shopping Centre, which is the major retail development in West Edinburgh. However, it will provide direct access to the northern parts of Edinburgh Park.	Neutral impact.
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	This option does not provide the opportunity to interchange with other transport modes. It does not integrate well with planning and transport policies as it fails to serve the Gyle Shopping Centre directly and will likely exacerbate congestion on Gogar Roundabout.	Neutral impact.
	Infrastructure & Information		
Land-use Transport Integration			
Policy Integration			

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	This option will improve access to employment opportunities in West Edinburgh, particularly the northern part of Edinburgh Park. Severance generally limited due to segregation of the tramline. Localised severance occurs where the tramline crosses existing walk / cycle routes, however appropriate mitigation measures will be implemented.	Minor positive impact.
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial impacts by Social Group	This option will improve direct access to employment opportunities in West Edinburgh, particularly the northern part of Edinburgh Park.	Minor positive impact.
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative Information	Quantitative Information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation Impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*Gogar Option B*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	This option involves the tram by-passing Gogar Roundabout to the east and north and serving the Gyle Centre directly. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	Ref: Preferred route alignment AST2 Ref: Preferred route alignment AST2 Ref: Preferred route alignment AST2
Funding Sought From: (if applicable)	Scottish Executive	Amount of Application:	Ref: Preferred route alignment AST2
Background Information			
Geographic Context:	This option would cross South Gyle Broadway at-grade, pass through the existing Gyle car park, then under Glasgow Road by means of a new structure, east of Gogar Roundabout. This option would avoid all interaction with traffic at Gogar Roundabout and provide a stop at The Gyle Shopping Centre. Alterations would be necessary to The Gyle car park, however there is no impact on Gogar roundabout. This option would provide the opportunity to use land between Gogar Roundabout and the Airport for a depot.		
Social Context:	There are a number of designated 'social inclusion partnerships' in the appraisal area, although none are directly located adjacent to this section of the route.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	Provides good accessibility to the Gyle Shopping Centre. Could reduce noise and air quality impacts, but only slightly. Comparable corridor impacts on traffic congestion to other option, but potential to reduce congestion by directly serving the Gyle Centre. Comparable level of safety and security for all users as for Option A.
Rationale for Selection or Rejection of Proposal:	When appraised with option A, this option scores better in all seven-appraisal categories and particularly well in terms of Economy and integration. There may be a slight decrease to noise and air quality impacts as a result of the route directly serving the Gyle Centre. There is potential to provide interchange with buses at the Gyle Centre. The option would offer some scope for developer contributions and may attract additional patronage to/from the Shopping Centre. It will likely have decreased run times over option A. Capital costs would likely be higher than for option A, however operational costs would likely be lower. Achieved a high level of public support during Public Consultation. This option has been selected as part of the preferred route alignment.

Implementability Appraisal	
Technical:	This option would require a new structure under the A8 and a tight radius curve to the north of the A8. It should be possible to slide in a new structure under the A8, thereby minimising construction impacts in terms of traffic management. This would introduce a geotechnical risk. The option introduces a traffic and pedestrian interface within the Gyle Centre car park that will require to be mitigated. Vertical alignment is not constrained by Gogar roundabout carriageway levels, so there is scope to increase clearances between OHLE and the airport flight safety envelope.
Operational:	This option will avoid any direct negative impacts on traffic congestion at Gogar Roundabout. It would exacerbate traffic congestion where the route crosses South Gyle Broadway, however this location is less critical than Gogar Roundabout. It is expected to have decreased run times over option A and hence decreased operating costs. This route option would provide the opportunity to use land between Gogar Roundabout and the Airport for locating a depot.
Financial:	This option would offer scope for developer contributions and for attracting additional patronage from the Shopping Centre. Capital costs would likely be higher than for option A, however operational costs would likely be lower. Capital costs would be requested from the Scottish Executive. On-going operating cost will be covered by revenue generated by the Tram Scheme. Patronage modelling has shown that there is sufficient demand potential for the scheme as a whole.
Public:	Of the two options for the Gogar section taken forward to public consultation, Option B received an overwhelming 77% of support. Support was largely based on the minimal disruption this option would place on the busy Gogar Roundabout and the link with the Gyle Shopping Centre.

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	Potential to reduce congestion by directly serving the Gyle. Could reduce noise and air quality impacts, but only slightly.		Neutral impact.
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence			
Geology			
Biodiversity			
Visual Amenity			
Agriculture and Soils			
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	Option B avoids the traffic interface at Gogar Roundabout, but introduces a traffic and pedestrian interface within the Gyle car park.	Minor Negative impact.
	Change in Balance of Severity		
	Total Discounted Savings		PV1
Security		The proposals include additional lighting and CCTV at all stops. Positive design. Conductors present in all vehicles. Help points at all stops. The tramline will be mostly segregated and hence may in some locations be remote from human activity.	

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	Run times are estimated to be faster as route avoids Gogar Roundabout.	PV2
	User Charges		PV3
	Vehicle Operating Costs	Faster run times will decrease operating costs.	PV4
	Quality / Reliability Benefits	The majority of the route will be segregated from general traffic. Signal priority will be provided to tram along the route.	
Private Sector Operator Impacts	Investment Costs		PV5
	Operating & Maintenance Costs		PV6
	Revenues		PV7
	Grant/Subsidy payments		PV8

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts	This option provides direct access to the Gyle Shopping Centre, which is the major retail development in West Edinburgh. However, it will not provide direct access to the northern parts of Edinburgh Park.	Moderate positive impact.
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	This option provides the opportunity to interchange with bus services at the Gyle Centre. It should integrate well with planning and transport policies as it serves the Gyle Shopping Centre directly and will not exacerbate congestion on Gogar Roundabout.	Moderate positive impact.
	Infrastructure & Information		
Land-use Transport Integration			
Policy Integration			

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	This option will improve access to employment opportunities and services in West Edinburgh, particularly to the Gyle Shopping Centre. Localised severance occurs through the Gyle Centre car park where the tramline crosses existing walk / cycle routes, however appropriate mitigation measures will be implemented.	Moderate positive impact.
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial impacts by Social Group	This option will improve access to employment opportunities and services in West Edinburgh, particularly to the Gyle Shopping Centre.	Moderate positive impact.
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative information	Quantitative information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*Ingliston Option A (Loop)*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	The tram would run from the airport to the Royal Highland Showground and stop directly outside the north gate, before continuing across the A8 and on to Newbridge. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	N/A N/A N/A
Funding Sought From: (If applicable)	N/A	Amount of Application:	N/A
Background Information			
Geographic Context:	Long-term expansion proposals for Edinburgh Airport have not yet been agreed. This is a key consideration for the alignment of the tramline past the Royal Highland Showground. The tram would run from the airport to the Royal Highland Showground and stop directly outside the north gate, before continuing across the A8 and on to Newbridge. This option provides a direct route between the airport and Newbridge but may restrict expansion plans for the airport and future track re-alignment could be required. The onus would be on BAA to realign the tram within their expansion if required.		
Social Context:	There are a number of designated 'social inclusion partnerships' in the appraisal area, although none are directly located adjacent to this section of the route.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	Provides good accessibility to Edinburgh Airport and Royal Highland Showground. No significant noise impact. Possible negative visual impact. Localised vehicle/tram interaction may increase congestion on access roads to the airport. Perceived safety concern over two-way tram movements through an area of one-way road vehicle movements. Increased risk of pedestrian or vehicular impact over a spur /terminus option.
Rationale for Selection or Rejection of Proposal:	When appraised against a spur option, a loop scores better in terms of Accessibility, but poorly in terms of Implementation/Engineering, Traffic/Transport, Safety and Economy. In addition, BAA's formal response has stated strongly their objection to a loop option. A loop (through route) option has not been progressed.

Implementability Appraisal	
Technical:	There would be considerable disruption to the airport forecourt during construction. There is a perceived to be safety concern over two-way tram movements through an area of one-way road vehicle movements. BAA's formal response has stated their strong objection to a loop option, as it will restrict long-term expansion proposals for Edinburgh Airport.
Operational:	From an operational perspective, a loop would allow greater operational flexibility, as the capacity of a through-route would be higher than for a terminus. Traffic impact associated with this option would be high, especially with loss of car parking and pedestrian access to airport and a number of signalised crossings to control vehicular traffic and tram movements. A loop solution would involve higher capital expenditure than a spur due to the increased route length, number of signalised crossings, the traffic management measures required and disruption caused during construction. A larger area of land would need to be acquired from BAA.
Financial:	A loop solution would involve higher capital expenditure than a spur due to the increased route length, number of signalised crossings, traffic management measures and disruption caused during construction. A larger area of land would need to be acquired from BAA. Tram revenue would likely be less than for a spur, as it would be unfeasible to apply a premium charge to airport services when the loop continues to Newbridge. Capital costs would be requested from the Scottish Executive. On-going operating cost will be covered by revenue generated by the Tram Scheme. Patronage modelling has shown that there is sufficient demand potential for the scheme as a whole..
Public:	Responses from the public consultation have indicated no clear preference for this section. RHASS stated a clear preference for this Option; however, BAA's formal response has stated strongly their objection to any loop option.

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	No significant noise impact as there is high vehicular activity in this area already, and with aircraft movements the area is subject to fairly high ambient noise levels. There could be a negative visual impact, particularly from the OHLE equipment, due to the increased footprint of the tram when compared to the spur.		Minor Negative impact.
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence			
Geology			
Biodiversity			
Visual Amenity			
Agriculture and Soils			
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	There is a perceived safety concern over two-way tram movements through an area of one-way road vehicle movements. There would be a number of signalised crossings required for the tram to cross the airport road, increasing the risk for pedestrian or vehicular impact over a spur /terminus option.	Minor Negative impact.
	Change in Balance of Severity		
	Total Discounted Savings		PV1
Security		The proposals include additional lighting and CCTV at all stops. Positive design. Conductors present in all vehicles. Help points at all stops. The tramline will be mostly segregated and hence may in some locations be remote from human activity.	

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	Run times are estimated to be faster than for option B.	PV2
	User Charges		PV3
	Vehicle Operating Costs	Faster run times will decrease operating costs.	PV4
	Quality / Reliability Benefits	The majority of the route will be segregated from general traffic. Signal priority will be provided to tram along the route.	
Private Sector Operator Impacts	Investment Costs		PV5
	Operating & Maintenance Costs		PV6
	Revenues		PV7
	Grant/Subsidy payments		PV8

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts	From the perspective of the airport, a loop service would provide better accessibility than a spur, as all services would serve the airport. There would be the opportunity with a loop to provide additional stops at the airport, which may allow the tram to better serve the airport post-expansion. A larger area of land would need to be acquired from BAA.	Neutral impact.
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	Good integration with services at the airport – taxis, buses, long and short term parking areas.	No significance.
	Infrastructure & Information		
Land-use Transport Integration			
Policy Integration			

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	From the perspective of the airport, a loop service would provide better accessibility than a spur, as all services would serve the airport. There would be the opportunity with a loop to provide additional stops at the airport, which may allow the tram to better serve the airport post-expansion. However, a loop may impede access to the airport by other modes due to the number of signalised crossings of the access road and extra land take involved.	Moderate positive impact.
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	This option will improve direct access to employment opportunities at Edinburgh Airport.	Moderate positive impact.
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative information	Quantitative information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*Ingliston Option B (Loop)*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	The tram would run directly south from the airport, travelling through the fields to the east of the Showground, with a Showground stop near the A8. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	N/A N/A N/A
Funding Sought From: (if applicable)	N/A	Amount of Application:	N/A
Background Information			
Geographic Context:	Long-term expansion proposals for Edinburgh Airport have not yet been agreed. This is a key consideration for the alignment of the tramline past the Royal Highland Showground. The tram would run directly south from the airport, travelling through the fields to the east of the Showground, with a Showground stop near the A8. The tramline would then cross over the A8 and continue to Newbridge. This option would be likely to require a new road layout for the A8 but would allow for expansion plans at the airport.		
Social Context:	There are a number of designated 'social inclusion partnerships' in the appraisal area, although none are directly located adjacent to this section of the route.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors.		

Planning Objectives	
Objective:	**Performance against planning objective:**
• To improve accessibility. • To reduce pollution and environmental damage caused by traffic. • To reduce traffic congestion. • To make the transport system safer and more secure for both users and non-users.	Provides good accessibility to Edinburgh Airport and to lesser extent Royal Highland Showground. No significant noise impact. Reduced visual impact. Localised vehicle/tram interaction may increase congestion on access roads to the airport. Perceived safety concern over two-way tram movements through an area of one-way road vehicle movements. Increased risk of pedestrian or vehicular impact over a spur /terminus option.
Rationale for Selection or Rejection of Proposal:	When appraised with the spur option, a loop scores better in terms of Accessibility, but poorly in terms of Implementation/Engineering, Traffic/Transport, Safety and Economy. In addition, BAA's formal response has stated strongly their objection to a loop option. A loop (through route) option has not been progressed.

Implementability Appraisal	
Technical:	There would be considerable disruption to the airport forecourt during construction. There is a perceived safety concern over two-way tram movements through an area of one-way road vehicle movements. BAA's formal response has stated their strong objection to a loop option, as it will restrict long-term expansion proposals for Edinburgh Airport.
Operational:	From an operational perspective, a loop would allow greater operational flexibility, as the capacity of a through-route would be higher than for a terminus. Journey times would be slower than for Option A as a result of the more complicated route. Traffic impact associated with this option would be high, especially with loss of car parking and pedestrian access to airport and a number of signalised crossings to control vehicular traffic and tram movements. A loop solution would involve higher capital expenditure than a spur due to the increased route length, number of signalised crossings, the traffic management measures required and disruption caused during construction.
Financial:	A loop solution would involve higher capital expenditure than a spur due to the increased route length, number of signalised crossings, traffic management measures and disruption caused during construction. Tram revenue would likely be less than for a spur, as it would be unfeasible to apply a premium charge to airport services when the loop continues to Newbridge. Capital costs would be requested from the Scottish Executive. On-going operating cost will be covered by revenue generated by the Tram Scheme. Patronage modelling has shown that there is sufficient demand potential for the scheme as a whole.
Public:	Responses from the public consultation have indicated no clear preference for this section. RHASS stated a clear preference for Option A; however, BAA's formal response has stated strongly their objection to any loop option.

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	No significant noise impact as there is high vehicular activity in this area already, and with aircraft movements the area is subject to fairly high ambient noise levels. There could be a negative visual impact, particularly from the OHLE equipment, due to the increased footprint of the tram when compared to the spur.		Minor Negative impact.
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence			
Geology			
Biodiversity			
Visual Amenity			
Agriculture and Soils			
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	There is a perceived safety concern over two-way tram movements through an area of one-way road vehicle movements. There would be a number of signalised crossings required for the tram to cross the airport road, increasing the risk for pedestrian or vehicular impact over a spur /terminus option.	Minor Negative Impact.
	Change in Balance of Severity		
	Total Discounted Savings		PV1
Security		The proposals include additional lighting and CCTV at all stops. Positive design. Conductors present in all vehicles. Help points at all stops. The tramline will be mostly segregated and hence may in some locations be remote from human activity.	

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	Run times are estimated to be slower for this loop option.	PV2
	User Charges		PV3
	Vehicle Operating Costs	Slower run times will increase operating costs.	PV4
	Quality / Reliability Benefits	The majority of the route will be segregated from general traffic. Signal priority will be provided to tram along the route.	
Private Sector Operator Impacts	Investment Costs		PV5
	Operating & Maintenance Costs		PV6
	Revenues		PV7
	Grant/Subsidy payments		PV8

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts	From the perspective of the airport, a loop service would provide better accessibility than a spur, as all services would serve the airport. There would be the opportunity with a loop to provide additional stops at the airport, which may allow the tram to better serve the airport post-expansion..	Neutral impact.
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	Good integration with services at the airport – taxis, buses, long and short term parking areas.	No significance.
	Infrastructure & Information		
Land-use Transport Integration			
Policy Integration			

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	From the perspective of the airport, a loop service would provide better accessibility than a spur, as all services would serve the airport. There would be the opportunity with a loop to provide additional stops at the airport, which may allow the tram to better serve the airport post-expansion. However, a loop may impede access to the airport by other modes due to the number of signalised crossings of the access road and extra land take involved.	Moderate positive impact.
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	This option will improve direct access to employment opportunities at Edinburgh Airport.	Moderate positive impact.
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative Information	Quantitative Information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation Impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Proposal Details			
Name and address of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		City of Edinburgh Council, PO Box 12470, 1 Cockburn Street, Edinburgh EH1 1ZF Transport Initiatives Edinburgh, 91 Hanover Street, Edinburgh EH2 1DJ	
Proposal Name:	*Newbridge Spur*	Name of Planner:	Alex Macaulay / Geoff Duke
Proposal Description:	A spur line will extend to Newbridge from the Park and Ride site at Ingliston. Remainder of route as per the preferred route alignment.	Estimated Total Public Sector Funding Requirement:	Ref: Preferred route alignment AST2 Ref: Preferred route alignment AST2 Ref: Preferred route alignment AST2
Funding Sought From: (if applicable)	Scottish Executive	Amount of Application:	Ref: Preferred route alignment AST2
Background Information			
Geographic Context:	Long-term expansion proposals for Edinburgh Airport have not yet been agreed. This is a key consideration for the alignment of the tramline past the Royal Highland Showground. Leaving the Ingliston West stop the tram alignment will cross the eastbound carriageway of the A8 to then run along the central reserve. Once the tram has reached the west end of RHASS it will turn south crossing the westbound carriageway and striking across agricultural land to approach Ratho Station where the next stop will be located, adjacent to the heavy rail line at the top of Station Road.		
Social Context:	There are a number of designated 'social inclusion partnerships' in the appraisal area, although none are directly located adjacent to this section of the route.		
Economic Context:	The economic performance of the proposal area is influenced by the economic dynamics of the City of Edinburgh and its wider conurbation, and in particular Central and West Edinburgh. Edinburgh is the seat of administrative power for Scotland with the presence of the Scottish Parliament. The City and its city-region is also at the heart of the country's financial, business, legal, medical/healthcare and insurance markets, and therefore remains very strong in these key industries and sectors.		

Planning Objectives	
Objective:	**Performance against planning objective:**
» To improve accessibility. » To reduce pollution and environmental damage caused by traffic. » To reduce traffic congestion. » To make the transport system safer and more secure for both users and non-users.	Accessibility to the airport would be slightly impeded due to the operational constraint that a spur imposes. However, a spur option could offer better accessibility between Newbridge and the City Centre, as services could by-pass the airport thus offering faster journey times. No significant noise impact. Possible negative visual impact. Localised vehicle/tram interaction may slightly increase congestion on access road to the airport. Improved safety and security over loop option.
Rationale for Selection or Rejection of Proposal:	When appraised against the loop option, a spur scores better in terms of Implementation/Engineering, Traffic/Transport, Safety and Economy, but less well in terms of Accessibility. BAA, DfT and CEC have indicated a strong preference for a spur option, as it will not impact on airport expansion proposals. A spur option has been selected as part of the preferred route alignment.

Implementability Appraisal	
Technical:	A spur option would be comparatively easier to implement. Capital costs for a spur would be less, due to the shorter route length and reduced land acquisition requirement.
Operational:	A spur reduces operational flexibility, as the capacity of a terminus is less than that for a through-route. There would be minimal impact on traffic movements, as the spur would be almost entirely segregated from the main access road (Jubilee Road). A spur option would present the opportunity to apply premium charges to airport customers, thus significantly benefiting revenue.
Financial:	Capital costs for a spur would be less, due to the shorter route length and reduced land acquisition requirement. The most significant economic benefit is that a spur option would present the opportunity to apply premium charges to airport customers, thus significantly benefiting revenue. Capital costs would be requested from the Scottish Executive. On-going operating cost will be covered by revenue generated by the Tram Scheme. Patronage modelling has shown that there is sufficient demand potential for the scheme as a whole.
Public:	BAA's formal response strongly stated their objection to a loop option i.e. preference for a spur. RHASS formally responded that their preference is for a loop route on their northern boundary i.e. not a spur.

Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	Comparable environmental impact to a loop, in fact would offer a reduced visual impact due to the reduced footprint of the tram.		Neutral impact.
Air Quality - Overall			
CO_2 - Global			
PM_{10} - Local			
NO_2 - Local			
Water Quality, Drainage and Flood Defence			
Geology			
Biodiversity			
Visual Amenity			
Agriculture and Soils			
Cultural Heritage			
Landscape			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	A spur would avoid the signalised crossings of the main access road associated with the loop option, thus would offer a significantly reduced risk of accidents involving trams and road vehicles. Additionally there is no requirement for pedestrians to cross the tramline between the car park and airport terminal.	Minor positive impact.
	Change in Balance of Severity		
	Total Discounted Savings		PV1
Security		The proposals include additional lighting and CCTV at all stops. Positive design. Conductors present in all vehicles. Help points at all stops. The tramline will be mostly segregated and hence may in some locations be remote from human activity.	

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time		PV2
	User Charges		PV3
	Vehicle Operating Costs		PV4
	Quality / Reliability Benefits	The majority of the route will be segregated from general traffic. Signal priority will be provided to tram along the route.	
Private Sector Operator Impacts	Investment Costs		PV5
	Operating & Maintenance Costs		PV6
	Revenues		PV7
	Grant/Subsidy payments		PV8

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts	Accessibility to the airport would be slightly impeded due to the operational constraint that a spur imposes. However, a spur option could offer better accessibility between Newbridge and the City Centre, as services could by-pass the airport thus offering faster journey times. Only one area of the airport could be served, thus precluding the possibility of providing extra stops in the future to serve other areas of the airport post-expansion.	Moderate positive impact.
	National Economic Impacts		
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport interchanges	Services & Ticketing	Good integration with services at the airport – taxis, buses, long and short term parking areas.	No significance.
	Infrastructure & Information		
Land-use Transport integration			
Policy integration			

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	Accessibility to the airport would be slightly impeded due to the operational constraint that a spur imposes. However, a spur option could offer better accessibility between Newbridge and the City Centre, as services could by-pass the airport thus offering faster journey times. Only one area of the airport could be served, thus precluding the possibility of providing extra stops in the future to serve other areas of the airport post-expansion.	Minor positive impact.
	Access to Other Local Services		
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	This option will improve direct access to employment opportunities at Edinburgh Airport and Newbridge.	Minor positive impact.
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	Qualitative Information	Quantitative Information
Public Sector Investment Costs		
Public Sector Operating & Maintenance Costs		
Grant/Subsidy Payments		
Revenues		
Taxation Impacts		

Monetised Summary	
Present Value of Transport Benefits	
Present Value of Cost to Government	
Net Present Value	
Benefit-Cost to Government Ratio	

Appendix C – Environmental Worksheets

Proposal Title:	Edinburgh Tram Line 2	Worksheet AG1: Agriculture and Soils – Strategic 7 Project Level Baseline Information

Existing and Future Issues:	Existing: • All Class 2 agricultural land. This classes the land as high quality and suited to arable cropping and capable of producing a wide range of crops. • All the agricultural land affected by the proposals is in the hands of institutions and leased to farming companies. All the fields are currently under arable cultivation or under "set aside". Future: • Green Belt Local designation for this area would permit and enable the continued agricultural use of this land	Assessment Date:	November 2003

Location / Status	Attribute / Feature	Scale It Matters	Importance	Land Take	Trend / Status	Ease of Substitution
Field immediately north of the Gogar Roundabout and bounded by the Fife railway line	The land is cropped with cereal and potatoes and a portion of set-aside to the west. This ground is owned by the Royal Bank of Scotland (Meadowfield Development) and leased on an annual tenancy to Messrs Brewster of Bonnington Mains, Midlothian. It is considered that agricultural practices undertaken on this area of land are not	Regional – West Edinburgh Planning Framework Local – City of Edinburgh Council Rural West Edinburgh Local Plan, Policy E8 Protection of Prime Agricultural Land : "*Development will not be permitted on prime agricultural land unless it can be demonstrated that the land could be returned to its full agricultural potential in the future.*"	Medium – High quality agricultural land (Class 2)	Land take will be quantified in the Book of Reference as part of the parliamentary bill submission. The viability and capability of agricultural land, as a result of Tram Line 2 alignment, has been discussed in AG2: Permanent Impacts.	As this is a short-term lease, it is considered that the agricultural practices on this area of land are not part of a long term farming strategy system for this area. However, the Green Belt Local designation for this area would permit and enable the continued agricultural use of this land.	All fields are classified as Class 2 agricultural land, which refers to high quality arable land. Damage to soil structure (both sub-soil and top-soil) during construction may be repaired through a well designed and managed remediation strategy, including the repair and replacement of drainage, deep ripping of compacted sub-soils, careful cultivation of top-soils and the planting of a green manure or grass leys to improve top soil structure.
Field bounded by the A8 to the south, Edinburgh Airport to the north and the Gogar Roundabout to the east				Land take will be quantified in the Book of Reference as part of the parliamentary bill submission. The viability and capability of agricultural land, as a result of Tram Line 2 alignment, have been discussed in AG2: Permanent Impacts.		

Location / Status	Attribute / Feature	Scale It Matters	Importance	Land Take	Trend / Status	Ease of Substitution
Bounded by the Gogar Burn to the west, the access road to the Castle Gogar to the north and east and the A8 to the south.	critical to the wider agricultural activities of the surrounding areas.			Land take will be quantified in the Book of Reference as part of the parliamentary bill submission. The viability and capability of agricultural land, as a result of Tram Line 2 alignment, have been discussed in AG2: Permanent Impacts.		
Two fields situated adjacent to each other and bounded by the A8 to the south, Castle Gogar and Edinburgh Airport to the north and Gogar Burn to the east.	Arable cropping with no livestock and "set aside". The New Ingliston Estate own these two fields and lease them to Mr John Peace based in Tranent. It is considered that agricultural practices undertaken on this area of land are not critical to the wider agricultural activities of the surrounding areas.		Medium – High quality agricultural land (Class 2)	Land take will be quantified in the Book of Reference as part of the parliamentary bill submission. The viability and capability of agricultural land, as a result of Tram Line 2 alignment, have been discussed in AG2: Permanent Impacts.	As this is a short term lease, it is considered that the agricultural practices on this area of land are not part of a long term farming strategy system for this area. However, the Green Belt Local designation for this area would permit and enable the continued agricultural use of this land.	
Field bounded by Edinburgh Airport to the north, fields to the east and south and Eastfield Road to the west.	Currently cut down to grass. No current agricultural occupation. New Ingliston Limited owns the fields. They are not currently leased.		Medium – High quality agricultural land (Class 2)	Land take will be quantified in the Book of Reference as part of the parliamentary bill submission. The viability and capability of agricultural land, as a result of Tram Line 2 alignment, have been discussed in AG2: Permanent Impacts.	Agricultural practices on this area of land are not considered to be part of a long term farming strategy system for this area. However, the Green Belt Local designation for this area would permit and enable the continued agricultural use of this land.	

Location Status	Attribute / Feature	Scale It Matters	Importance	Land Take	Trend / Status	Ease of Substitution
North of the field above and with a small (derelict?) farmhouse situated on the site.				Land take will be quantified in the Book of Reference as part of the parliamentary bill submission. The viability and capability of agricultural land, as a result of Tram Line 2 alignment, have been discussed in AG2: Permanent Impacts.		
Field bounded to the north by the Edinburgh Airport Hilton Hotel, Gogar Burn and Edinburgh Airport to the east, fields to the south and Eastfield Road to the west.	Leased for grazing purposes. Owned by FHS Airports Ltd, managed by Powell Williams and Partners and leased to a third party.		Medium – High quality agricultural land (Class 2)	Land take will be quantified in the Book of Reference as part of the parliamentary bill submission. The viability and capability of agricultural land, as a result of Tram Line 2 alignment, have been discussed in AG2: Permanent Impacts.	This parcel of land has been earmarked for development. An outline planning application has been submitted by FSH Airport (Edinburgh) Services Ltd to the CEC for development comprising Class 4 office use, class 7 travel hotel (90 beds) and class 3 restaurant and petrol filing station (CEC planning ref: 01/02936/FUL). This would alter the land use of this area from agricultural to commercial. Planning permission was still pending as of October 2001. In addition, an application has been lodged for a temporary airport related Park and Fly and car rental facilities (CEC planning ref: 02/00070/FUL). Planning permission was still pending as of October 2001.	

Location / Status	Attribute / Feature	Scale it Matters	Importance	Land Take	Trend / Status	Ease of Substitution
Field between Ratho Station Village, the A8 and the Norton Mains farming fields	Arable cropping – no livestock due to risks of vandalism from the neighbouring field. Farmed by Mr Sandy Allison and rented from the City of Edinburgh Council on a 364-day lease. As this is a short term lease, it is considered that the agricultural practices on this area of land are not part of a long term farming strategy system for this area.		Medium – High quality agricultural land (Class 2)	Land take will be quantified in the Book of Reference as part of the parliamentary bill submission. The viability and capability of agricultural land, as a result of Tram Line 2 alignment, have been discussed in AG2: Permanent Impacts.	It is likely that farming practices may continue for this area of land. This is supported by the Green Belt Local designation for this area which would permit and enable the continued agricultural use of this land.	
Field to the south of the above	As above however leased on a secure tenancy.			Land take will be quantified in the Book of Reference as part of the parliamentary bill submission. The viability and capability of agricultural land, as a result of Tram Line 2 alignment, have been discussed in AG2: Permanent Impacts.		

Proposal Name:	Edinburgh Tram Line 2	Worksheet AG2: Agriculture and Soils – Strategic & Project Level, Impact Assessment PERMANENT IMPACTS

Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
Field immediately north of the Gogar Roundabout and bounded by the Fife railway line	Loss of the entire field. The field is proposed to be used as the location for the Tram Line 2 depot and has been included in the LOD	None	When: From construction commencing. Duration: Permanent loss of agricultural land	Low	Compensation has been assumed as the most appropriate mitigation measure.	Land take is small in terms of the scale of the farming operations = ***Minor Negative Impact.*** The combined effect of land take of Class 2 agricultural land = ***Moderate Negative Impact***
Field bounded by the A8 to the south, Edinburgh Airport to the north and the Gogar Roundabout to the east	Small pocket of agricultural land in the south of the field will be lost due to Tram Line 2 alignment as the remaining field area is too small for viable farming use	None	When: From construction commencing. Duration: Permanent loss of agricultural land	Medium	• Level crossing with warning lights will be built across access road to enable safe crossing of tram line. • Compensation has been assumed for the area of agricultural land which is no longer viable for farming use	Land take is small in terms of the scale of the farming operations = ***Minor Negative Impact.*** The combined effect of land take of Class 2 agricultural land = ***Moderate Negative Impact***

Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
Bounded by the Gogar Burn to the west, the access road to the Castle Gogar to the north and east and the A8 to the south.	Strip of agricultural land between the Tram Line 2 alignment and the A8 Glasgow Road will be lost for agricultural purposes due to the segregation of this area of land and the remaining field area being too small for viable farming use.	None	When: From construction commencement. Duration: Permanent loss of agricultural land	Medium	▪ Level crossing with warning lights will be built across access road to enable safe crossing of tram line. ▪ Compensation has been assumed for the area of agricultural land which is no longer viable for farming use	Land take is small in terms of the scale of the farming operations = ***Minor Negative Impact.*** The combined effect of land take of Class 2 agricultural land = ***Moderate Negative Impact***
Two fields situated adjacent to each other and bounded by the A8 to the south, Castle Gogar and Edinburgh Airport to the north and Gogar Burn to the east.	The corner of field in between the tram alignment and the western corner of the field bounded by Gogar Castle would be unsuitable for further agricultural use as the remaining field area is too small for viable farming use. In addition, the area of fields for farming has been reduced which will affect the efficiency with which it can be farmed.	None	When: From construction commencement. Duration: Permanent loss of agricultural land	Medium	▪ Level crossings with warning lights will be built across access road to enable safe crossing of tram line. ▪ Compensation has been assumed for the area of agricultural land which is no longer viable for farming use	Land take is small in terms of the scale of the farming operations = ***Minor Negative Impact.*** The combined effect of land take of Class 2 agricultural land = ***Moderate Negative Impact***

Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
Field bounded by Edinburgh Airport to the north, fields to the east and Eastfield Road to the west. It is expected that the Ingliston Park and Ride facility would have been built prior to the Tram Line 2 construction works, and this would be located to the south.	Strip of agricultural land between the Tram Line 2 alignment and the Ingliston Park and Ride, and in between the Tram Line 2 alignment and Eastfield Road to the western field boundary would be unsuitable for further agricultural use as the remaining field area is too small for viable farming use.	None	When: From construction commencement. Duration: Permanent loss of agricultural land	Medium	• To facilitate the safe crossing of the tram line in agricultural areas, level crossings with warning lights will be built. • Compensation has been assumed for the area of agricultural land which is no longer viable for farming use	Land take is small in terms of the scale of the farming operations = ***Minor Negative Impact.*** The combined effect of land take of Class 2 agricultural land = ***Moderate Negative Impact***
North of the field above and with a small (derelict?) farmhouse situated on the site.	The Tram Line 2 alignment would divide this field	None	When: From construction commencement. Duration: Permanent loss of agricultural land	Medium	• A level crossing with warning lights would be installed to allow continued access to either side of the field divided by the Tram Line 2 alignment.	Land take is small in terms of the scale of the farming operations = ***Minor Negative Impact.*** The combined effect of land take of Class 2 agricultural land = ***Moderate Negative Impact***
Field bounded to the north by the Edinburgh Airport Hilton Hotel, Gogar Burn and Edinburgh Airport to the east, fields to the south and Eastfield Road to the west.	The eastern end of this field would be lost due to the acquisition of land required for Tram Line 2 construction and operation.	None	When: From construction commencement. Duration: Permanent loss of agricultural land	Low	• Compensation	Land take is small in terms of the scale of the farming operations = ***Minor Negative Impact.*** The combined effect of land take of Class 2 agricultural land = ***Moderate Negative Impact***

Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
Field between Ratho Station Village, the A8 and the Norton Mains farming fields	Area of land in between the Tram Line 2 alignment and the eastern field boundary would be unsuitable for further agricultural use as the remaining field area is too small for viable farming use.	None	When: From construction commencement. Duration: Permanent loss of agricultural land	Medium	▪ To facilitate the safe crossing of the tram line in agricultural areas, level crossings with warning lights will be built. ▪ Compensation has been assumed for the area of agricultural land which is no longer viable for farming use	Land take is small in terms of the scale of the farming operations = ***Minor Negative Impact.*** The combined effect of land take of Class 2 agricultural land = ***Moderate Negative Impact***
Field to the south of the above	Strip of agricultural land between the Tram Line 2 alignment and the northern field boundary and the western end of the field in between the Tram Line 2 alignment and the Edinburgh/Glasgow Rail line would be unsuitable for further agricultural use as the remaining field area is too small for viable farming use.	None	When: From construction commencement. Duration: Permanent loss of agricultural land	Medium	▪ Compensation has been assumed for the area of agricultural land which is no longer viable for farming use	Land take is small in terms of the scale of the farming operations = ***Minor Negative Impact.*** The combined effect of land take of Class 2 agricultural land = ***Moderate Negative Impact***
Key Assumptions:	▪ For all agricultural land, the common residual impact is the loss of agricultural farming ground required for the construction and operation of the Tram Line ▪ Maximum permissible height under the power cables has been assumed as 5.5m, which is the height required by modern farm machinery. ▪ The Ingliston Park and Ride has been built ▪ In general, permanent impacts on the agricultural use of land are expected to arise from land segregation. Construction of a tram line will have implications on the viability and capability of this land for agricultural practices.					
Key Data Sources:	▪ Land Capability for Agriculture Maps 1:50 000, produced by The Macaulay Institute for Soil Research ▪ Land ownership or tenancy details were obtained and individual farmers were contacted. Details of the Tram Line 2 scheme were provided and discussions held, with the intention of determining, from an individual farming perspective, the expected impacts resulting from the Edinburgh Tram Line 2. This facilitated the development of specific mitigation measures to alleviate land use impacts relating to farming and agriculture.					

Proposal Name:	Edinburgh Tram Line 2	Worksheet AG2: Agriculture and Soils – Strategic & Project Level, Impact Assessment TEMPORARY IMPACTS

Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
Field bounded by the A8 to the south, Edinburgh Airport to the north and the Gogar Roundabout to the east	Temporary land take of small area of agricultural field	None	When: Start of construction Duration: Construction period	High	• Maintained access to agricultural fields during construction	Neutral Impact
Bounded by the Gogar Burn to the west, the access road to the Castle Gogar to the north and east and the A8 to the south.	Temporary land take of small area of agricultural field	None	When: Start of construction Duration: Construction period	High	• Maintained access to agricultural fields during construction	Neutral Impact
Field bounded by Edinburgh Airport to the north, fields to the east and Eastfield Road to the west. It is expected that the Inglision Park and Ride facility would have been built prior to the Tram Line 2 construction works, and this would be located to the south.	Temporary land take of small area of agricultural	None	When: Start of construction Duration: Construction period	High	• Care during construction. This would require possible stripping and storage of top soils to prevent soil structure damage during construction and repair and replacement of agricultural drains. • Reinstatement of agricultural fields to enable continued farming practices • Maintained access to agricultural fields during construction	Neutral Impact

Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
Key Assumptions:	▪ Impact Significance Assessment has assumed that mitigation measures relating to care during construction, maintenance of access and reinstatement has been carried out correctly ▪ Construction works would be limited to the Tram Line 2 corridor and construction compounds. ▪ In general, temporary impacts during construction are expected to be related to the impacts on the topsoil structure of agricultural fields used during construction and potential damage or disruption to existing agricultural under drainage systems. ▪ The Ingliston Park and Ride has been built ▪ Land Take required for construction compounds has a 'High' degree of uncertainty because final selection of construction compound sites is determined by the appointed Contractors. Construction compound areas are yet to be confirmed by the Engineer.					
Key Data Sources:	▪ Land Capability for Agriculture Maps 1:50 000, produced by The Macaulay Institute for Soil Research. ▪ Land ownership or tenancy details were obtained and individual farmers were contacted. Details of the Tram Line 2 scheme were provided and discussions held, with the intention of determining, from an individual farming perspective, the expected impacts resulting from the Edinburgh Tram Line 2. This facilitated the development of specific mitigation measures to alleviate land use impacts relating to farming and agriculture.					

Worksheet B1: Biodiversity –Project Level, Baseline Information

Proposal Name:	Edinburgh Tram Line 2			Worksheet B1: Biodiversity – Strategic & project Level, Baseline Information		
Existing & Future Issues:					Assessment Date:	
Location / Status	Attribute / Feature / Habitats / Species	Scale It Matters	Importance	Trend / Status	Ease of Substitution	Relevant Objectives
International Designated Features						
Gogar Roundabout to Edinburgh Airport	Badger – species of conservation concern. Present within route corridor.	National	High	Widespread, Fairly common throughout area	Moderate. Relocation of setts is possible in some circumstances.	Edinburgh BAP To safeguard population levels
Gogar Roundabout to Edinburgh Airport	Otter – Priority Species. Present in Gogar Burn. No known holts.	National	High	Increasing presence throughout region.	Unknown	UK BAP, Edinburgh LBAP – To maintain and extend current population levels
Murrayfield to Carrick Knowe	Otter – Priority Species. Present in Water of Leith. No known hols.	National	High	Increasing presence throughout region.	Unknown	UK BAP, Edinburgh LBAP – To maintain and extend current population levels
All of Route	Pipistrelle Bat – Protected Species. Present but no roosts known.	National	High	Records indicate presence	Unknown	UK BAP, Edinburgh LBAP Maintain current populations and range
Murrayfield to Carrick Knowe	Daubentons bats protected species. Present but no roosts known.	National	High	Daubentons bat present on Water of Leith, population unknown	Unknown	Edinburgh LBAP Maintain current populations and range
National Designated Features						
Gogar Roundabout to Edinburgh Airport	Gogar Burn - Water Vole Priority Species	National	High	Unknown	Unknown	UK BAP, Edinburgh LBAP – To maintain and extend current population levels

Murrayfield to Carrick Knowe	Water of Leith - Water Vole Priority Species	National	High	Unknown	Unknown	UK BAP, Edinburgh LBAP – To maintain and extend current population levels
Regional Designated Features						
Edinburgh Park	Gogar Burn Site of Importance for Nature Conservation (SINC)	Local	Lower	Man made Extensively modified habitat isolated from adjacent water bodies by culverts	High	Edinburgh LBAP Wildlife corridor and aquatic habitat – To maintain and enhance biological diversity.
Gogar Roundabout to Edinburgh Airport	Gogar Burn Site of Importance for Nature Conservation (SINC)	Local	Medium	Semi natural alignment and river habitat, with some alien species intrusion	Low	Edinburgh LBAP Wildlife corridor and aquatic habitat – To maintain and enhance biological diversity
Murrayfield to Carrick Knowe	Water of Leith SINC	Local	High	One of regions most important and extensive wildlife corridors	Low	Edinburgh LBAP Wildlife corridor and aquatic habitat – To maintain and enhance biological diversity
Local / Other Designated Features						
Gogar Roundabout to Edinburgh Airport	Gogar Burn at Edinburgh Airport	Local	Lower	Extensively modified banks. Tree belts along roads and field boundaries.	High	Edinburgh LBAP Wildlife corridor and aquatic habitat – To maintain and enhance biological diversity
Murrayfield to Carrick Knowe	Carrick Knowe Golf Course – Neighbourhood	Local	Lower	Extensive landscaped area with mosaic of habitats – of local interest	Very high	
Roseburn to Bankhead Drive	Rail network wildlife corridor	Local	Moderate	Mosaic of linked scrub, plantation woodland habitats along the main Edinburgh Glasgow	High	Edinburgh LBAP Wildlife corridor– To maintain and enhance biological diversity. Edinburgh

				railway		LBAP protect against the loss of existing woodland habitat
Carrick Knowe to Bankhead Drive	Drain/Stream running adjacent to amenity grass and rail line	Local	Lower	Significantly degraded but provides increase diversity to local area	High	
Throughout route corridor	Open areas of amenity grassland	Local	Negligible	Low diversity open grassland areas used for recreation	Very high	
Gogar Roundabout to Edinburgh Airport	Agricultural land	Local	Negligible	Agricultural land	Very high	Edinburgh LBAP, Protect the quality, diversity and extent of farmland habitats
Bankhead Drive to Gogar Roundabout	Plantation Woodland	Local	Negligible	Recent plantation amenity grass understorey limited diversity	Very High	Edinburgh LBAP protect against the loss of existing woodland habitat
Gogar Roundabout to Edinburgh Airport	Dense Scrub	Local	Lower	Derelict properties overgrown by dense scrub, developing into semi natural woodland	High	Edinburgh LBAP protect against the loss of existing woodland habitat

Worksheet B2: Biodiversity –Project Level, Impact Assessment

Proposal Name:	Edinburgh Tram Line 2			Worksheet B2: Biodiversity –Project Level, Impact Assessment		
Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
Full route	Disturbance to fauna from construction activities including noise, dust and plant and machinery movements	Low	Construction - Temporary	Some uncertainty as specific construction methods not determined at this time.	Appropriate best practice would ensure that impacts are minimised.	Minor Adverse Potential Major Negative on badgers.
	Loss of amenity grassland and agricultural land for construction compounds and access	Low	Construction Temporary	Location of all access points and construction compounds unknown at this time	Appropriate best practice would ensure that impacts are minimised.	Minor adverse
	Permanent loss of habitat and disturbance to fauna	Low	Operation - Permanent	Loss of habitat certain.	Replacement planting and habitat creation	Potential Minor to moderate benefits in some locations (see below). Moderate adverse impacts on protected species. (see badgers below)
City Centre (St Andrew Square to Haymarket)	Permanent loss of habitat and disturbance to fauna from operation of trams	Low	Operation - Permanent	No habitat loss.		Neutral
Haymarket to Roseburn	Loss of immature ecologically isolated low diversity plantation woodland compartments	Low	Permanent	Loss of habitat certain.	Replacement planting would enhance wildlife corridor.	Neutral
	Disused Railway UWS	Low	Permanent	Loss of habitat certain.	Replacement planting and habitat creation, but with limited space available.	Minor adverse.

Proposal Name:	Edinburgh Tram Line 2			Worksheet B2: Biodiversity –Project Level, Impact Assessment		
Location	Potential impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
Roseburn to Murrayfield	Loss of potential bat roosts	Low	Construction/permanent	High uncertainty of presence of bat roosts	Further surveys would need to be under taken prior to demolition to check for presence of bats.	Minor adverse
	Loss of part of Improved grassland/Scattered scrub habitat	Low	Construction/permanent	Loss of habitat certain.	Replacement planting	Minor adverse
	Loss of ecologically isolated dense scrub	Low	Construction/permanent	Loss of habitat certain.	Replacement planting	Minor adverse
Murrayfield to Carrick Knowe	Loss of significant % mature plantation Partial loss of integrity of rail network wildlife corridor behind Baird Drive. broadleaf woodland.	Cumulative loss of wildlife corridor.	Construction/Operation - permanent	Loss of habitat certain.	Appropriate replacement planting, protection of remaining areas during construction.	Minor/Moderate adverse
	Water of Leith UWS	Low	Construction/Operation - permanent	Minor loss of habitat certain.	Best practice during construction.	Minor adverse
	Loss of improved grassland habitat	Low	Construction/Operation permanent	Loss of habitat certain.	Replacement planting	Minor adverse
	Loss of transitory tall herb/ruderal habitat	Low	Construction/ permanent	Loss of habitat certain.	Replacement planting	Neutral
Carrick Knowe to Bankhead Drive	Loss of part of transitory ruderal habitat	Low	Construction/ permanent	Loss of habitat certain.	Replacement planting	Neutral
	Prevention of fly tipping and further degradation of the area through pollution and waste accumulation	Low	Construction/operation-permanent	Degree of success in deterring/preventing fly tipping		Minor positive
	Demolition of Buildings – Loss of potential bat roosts	Low	Construction/ permanent	High uncertainty of presence of bat roosts	Further surveys would need to be under taken prior to demolition to check for presence of bats.	Minor adverse

Proposal Name:	Edinburgh Tram Line 2			Worksheet B2: Biodiversity –Project Level, Impact Assessment		
Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
	Loss of areas of low ecological value amenity grassland/parkland	Low	Construction/ permanent	Loss of habitat certain.	Replacement planting	Neutral
Bankhead Drive to Gogar Roundabout	Loss of an area of ruderal/ephemeral habitat	Low	Construction/ permanent	Loss of habitat certain.	Replacement planting	Neutral
	Loss of agricultural land and field boundaries for construction compounds	Low	Construction Temporary	Specifics of construction methods not known at this time.	Appropriate best practice would ensure that impacts are minimised.	Minor adverse
	Loss of areas of low ecological value amenity grassland habitat	Low	Construction/ permanent	Loss of habitat certain.	Replacement planting	Neutral
	Disturbance of water borne protected species	Low	Construction - temporary	Low	Best practice	Minor adverse / neutral
	Loss of ecologically isolated immature plantation woodland	Low	Construction/Operation - Permanent	Loss of habitat certain.	Appropriate planting	Minor adverse
Gogar Roundabout to Edinburgh Airport	Disturbance of otters	Low	Construction and Operation- temporary	Occasional presence in Gogar Burn	Best practice during construction and ensuring free passage along Burn.	Minor adverse
	Disturbance of Badgers	Low	Construction /Operation temporary/permanent	Route runs very close to know Badger setts.	*Mitigation to be agreed with SNH prior to construction and to include possible realignment within LODs. Badger fencing and tunnelling as required.*	Moderate to Major adverse during construction. Moderate Adverse during operation (depending on success of mitigation).
	Loss of low diversity agricultural habitat	Low	Construction /permanent	Loss of habitat certain.	Appropriate alternative planting	Neutral
	Demolition of buildings – loss of potential bat roosts	Low	Construction/permanent	High uncertainty of presence of bat roosts	Further surveys would need to be under taken prior to demolition to check for presence of bats.	Minor adverse

Proposal Name:	Edinburgh Tram Line 2			Worksheet B2: Biodiversity –Project Level, Impact Assessment		
Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
	Loss of immature plantation woodland and scrub	Low	Construction/permanent	Loss of habitat certain.	Appropriate alternative planting	Minor adverse
	Loss of field boundary habitats	Low	Construction - permanent	Loss of habitat certain.	Appropriate alternative planting	Minor adverse
	Loss of integrity of Gogar Burn Site of Nature Conservation interest (SINC). But area dominated by Giant Hogweed.	Low	Construction / temporary	Loss of habitat certain.	Appropriate planting and clearance of invasive species.	Minor adverse
	Loss of mature trees	Low	Construction - Permanent	Total number of trees to be removed unknown at this time	Appropriate alternative planting	Minor adverse
	Loss of agricultural land and field boundaries for construction compounds	Low	Construction Temporary	Location of all access points and construction compounds	Appropriate best practice would ensure that impacts are minimised.	Neutral
Edinburgh Airport to Newbridge	Loss of agricultural land and field boundaries for construction compounds	Low	Construction Temporary	Location of all access points and construction compounds	Appropriate best practice would ensure that impacts are minimised.	Neutral
	Loss of low diversity agricultural habitat	Low	Construction /permanent	Loss of habitat certain.	Appropriate alternative planting	Neutral
	Partial loss mature plantation resulting in a break in the integrity of rail network wildlife corridor at Ratho Station (dismantled rail section)	Cumulative loss of wildlife corridor.	Construction/Operation - permanent	Loss of habitat certain.	Appropriate replacement planting, protection of remaining areas during construction.	Minor/Moderate adverse

Proposal Name:	Edinburgh Tram Line 2			Worksheet B2: Biodiversity –Project Level, Impact Assessment		
Location	Potential Impacts	Potential for Cumulative Effects	Timescales: When / Duration	Uncertainty	Mitigation	Impact Significance Assessment
Key Assumptions:	*Note on this draft - EIA not yet completed. Mitigation strategy to be finalised in tandem with landscape assessment and in consultation with SNH.*					
Key Data Sources:	Field surveys and desk studies undertaken as part of Tram Line 2 Environmental Statement (contains full list of sources). City of Edinburgh Rapid Transit (CERT) Environmental Statement including protected species reports. (1995), Edinburgh Local Biodiversity Plan, An Urban Nature Conservation Strategy for Edinburgh.					

Worksheet CH3: Cultural Heritage – Project Level, Baseline Information

Project Name:	Edinburgh Tram Line 2 West End: Shandwick Place to Roseburn	Worksheet CH3: Cultural Heritage – Project Level, Baseline Information			
Existing & Future Issues	Proposed construction of tram line between St Andrew Square, Edinburgh and Edinburgh Airport, with spur to Newbridge			Assessment Date:	13/11/03
Area/Location (Grid Ref)	Attribute/Feature	Scale it Matters	Importance	Trend/Status	Relevant Policy Objectives
Lothian Road to Haymarket Terrace	Feature Name	This route section lies within the Edinburgh New Town World Heritage Site, the New Town Gardens Inventory Status Designed Landscape and the New Town and West End Conservation Areas. There are 47 Listed buildings adjacent to this route section, 11 Category A, 22 Category B, and 12 Category C(s) and 2 Category C – further details provided below.			
	Description	See above	International / National	World Heritage Site Inventory Designed Landscape Conservation Areas – internationally important	Unique	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
Shandwick Place	Feature Name	19 Listed Buildings - 4 Lothian Road, The Caledonian Hotel, including Piers, Railings and Former Screen Entrance To Station; 2 and 4 Hope Street and 46 Queensferry Street; Queensferry Street, 4-8 (odd and Even nos); 1 Rutland Place, and 1 and 3 Rutland Street, Rutland Hotel and Bar, including railings and lamp standard; 2 Rutland Place and Rutland Street at Rear, Berkeley Casino (former St Thomas's Church, Latterly Scottish Tourist Board), including railings, piers and lamp standards; 3-11 (odd nos) Shandwick Place; Shandwick Place 2, 4 and 1-4 (consecutive nos) Queensferry Street; 13-23 (odd nos) Shandwick Place; 22-30 (evens) Shandwick Place; 25 and 27 Shandwick Place, The Maitland Hotel; 29-37 (odd nos) Shandwick Place, The Maitland Hotel; 32 Shandwick Place; 53-61 (odd nos) Shandwick Place, Wilkies Buildings; 63-65 (odd nos) Shandwick Place; 52, 54, 56 Shandwick Place; St George's West Church (c of S) Shandwick Place and Stafford Street; 85-87 (odd nos) Shandwick Place; 89-95 (odd nos) Shandwick Place; 97-101 (odd nos) Shandwick Place			
	Description	See above	International / National	Category A, B & C(s) listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
Coates Crescent / Atholl Crescent	Feature Name	6 Listed Buildings - Coates Crescent 1-11 and 2 Stafford Street (corner Block -11 and 1 Walker Street); 1-22 (inclusive nos) Atholl Crescent, including Railings, Lamp Standards and 9, 10, 13, 15, 18 and 20 Atholl Crescent Lane; Walker Street, 1-9 (corner Block:			

		1 and 11 Coates Crescent); Gladstone, W E Memorial Coates Crescent and Shandwick Place; Walker Street, 2-10 (corner Block 2 and 12 Coates Crescent); Coates Crescent 12-22 (corner Block - 12 and 2 Walker Street, 22 and 1 Manor Place)				
	Description	See above	International / National	Category A listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
West Maitland Street	Feature Name	15 Listed Buildings - Manor Place, 1-17 (corner Block:- 1 and 22 Coates Crescent); 1-13 (inclusive Nos) Atholl Place And 1 Torphichen Street, Including Railings; Coates Place 1-7 And 2 Manor Place And 1 Palmerston Place; 3-25 (odd Nos) Torphichen Street, Including Railings; 2-12 (even Nos) Torphichen Street, Including Railings; 14-22 (even Nos) Torphichen Street And 1, 1a Torphichen Place, Including Railings; 3-9 (odd Nos) Torphichen Place, Police Station; 252-264 (even Nos) Morrison Street, Including Railings; 266-270 (even Nos) Morrison Street; Palmerston Place, 3-21; 1-10a (inclusive nos) West Maitland Street; 272-276 (even nos) Morrison Street and 11-14 (inclusive nos) West Maitland Street; 1-25 (odd Nos) Grosvenor Street, Including Railings; 15-30 West Maitland Street; 31 and 32 West Maitland Street				
	Description	See above	International / National	Category A, B & C(s) listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
Haymarket	Feature Name	7 Listed Buildings - Haymarket, Heart of Midlothian War Memorial; 2-24 (even Nos) Grosvenor Street, Including Railings; 1-6 Clifton Terrace; Haymarket Terrace Ryrie's Formerly Haymarket Inn; Haymarket Terrace Haymarket Station Entrance and Office Block with Steps Railings and Lamp Standard; 8-15 Clifton Terrace; Haymarket Terrace Haymarket Inn (now Caledonian Alehouse)				
	Description	See above	International / National	Category A, B & C(s) listed; non-statutory C	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
Haymarket Terrace - Roseburn	Feature Name	No features of cultural heritage interest				
	Description	See above	N/a	N/a	N/a	N/a
Key Data Sources:		Statutory List of Buildings of Special Architectural or Historic Interest (for listed buildings); An Inventory of Gardens and Designed Landscapes; Central Edinburgh Local Plan 1997; Lothian Structure Plan (LSP) 1994				
Key Assumptions:		The Limits of Deviation (LOD) extends 5m either side of the proposed tram route, except where building frontages are present within 5m, in which case the frontage defines the limit of the LOD				

Worksheet CH3: Cultural Heritage – Project Level, Baseline Information

Project Name:	Edinburgh Tram Line 2 Princes St	Worksheet CH3: Cultural Heritage – Project Level, Baseline Information			
Existing & Future Issues	Proposed construction of tram line between St Andrew Square, Edinburgh and Edinburgh Airport, with spur to Newbridge			Assessment Date:	13/11/03
Area/Location (Grid Ref)	Attribute/Feature	Scale it Matters	Importance	Trend/Status	Relevant Policy Objectives
Princes St – North Bridge to Lothian Road	Feature Name	This route section lies within the Edinburgh New Town World Heritage Site, the New Town Gardens Inventory Status Designed Landscape and the New Town Conservation Area. There are 64 Listed buildings adjacent to this route section, 16 Category A, 44 Category B, and 4 Category C(s) – further details provided below. 3 unlisted features of architectural interest are present.			
	Description	See above	International / National	World Heritage Site Inventory Designed Landscape Conservation Area – internationally important	Unique	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
Princes St – North Bridge to The Mound	Feature Name	18 Listed Buildings - 1 Princes Street and 2-18 North Bridge, The Balmoral Hotel (former North British Hotel); Princes Street, Monument to Duke of Wellington; 10-15 (inclusive nos) Princes Street; 16-18 (inclusive nos) Princes Street; 19 and 20 Princes Street, Incorporating The Royal British Hotel; 21-23 (inclusive nos) Princes Street; 24 and 25 Princes Street; 30 Princes Street and South St Andrew's Street, Formerly Forsyth's; 39-41 (inclusive nos) Princes Street; 42-46 (inclusive nos) and 42a Princes Street and 1 South St David Street, Incorporating The Old Waverley Hotel; 47-52 (inclusive nos) Princes Street and South St David Street, Jenners Department Store; 60 Princes Street; 61-2 Princes Street, Romanes and Paterson; 70 and 71 Princes Street; 72 and 73 Princes Street; 74-75 Princes Street; 76 and 77 Princes Street and 1 Hanover Street; Royal Scottish Academy, Princes Street and The Mound			
	Description	See above	International / National	Category A, B & C(s) listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
East Princes St Gardens	Feature Name	5 Listed Buildings - Livingstone, Dr Statue East Princes Street Gardens Princes Street; Scott Monument East Princes Street Gardens, Princes Street; Black, Adam, Statue, East Princes Street Gardens Princes Street; Wilson, Professor Statue East Princes Street Gardens Princes Street; Princes Street At Royal Scottish Academy, Police Box			
	Description	See above	International / National	Category A & B listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5

Princes St – The Mound to Castle Street	Feature Name	12 Listed Buildings - 78 Princes Street and 2-4 Hanover Street; 79 and 79a Princes Street; 84-87 (inclusive nos) Princes Street, incorporating The New Club; 88-90 (inclusive nos) Princes Street; 94-96 (inclusive nos) Princes Street; 97, 97a and 98 Princes Street and 1 and 3 Frederick Street; 99 and 99a Princes Street and 2 and 4 Frederick Street; 99b, 100 and 100a Princes Street, incorporating Royal Overseas House; 104 and 105 Princes Street; 106 Princes Street; 109 and 110 Princes Street; 112 Princes Street, Debenham's (former Conservative Club)				
	Description	See above	International / National	Category A, B & C(s) listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
Princes St – Castle Street to Lothian Road	Feature Name	17 Listed Buildings - 118 Princes Street and 2 Castle Street; 119, 119a and 120 Princes Street; 121-122 Princes Street; 123 Princes Street; 125a and 126 Princes Street; 127 and 128 Princes Street; 129 Princes Street; 130 Princes Street; 131-133 (inclusive nos) Princes Street; 134 Princes Street, and 1 and 3 South Charlotte Street; Lothian Road, St John's Church (Episcopal), Hall, Churchyard, Boundary Walls, Steps, Railings, Gatepiers, Vaults and Monuments; 135 and 136 Princes Street and 2-8 (even nos) South Charlotte Street, Charlotte House; 137 and 138 Princes Street; 139 and 140 Princes Street and 5 Hope Street Lane; 141 Princes Street; 142 and 143 Princes Street, Royal Bank of Scotland; 144-147 (inclusive nos) Princes Street				
	Description	See above	International / National	Category A & B listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
West Princes St Gardens	Feature Name	12 Listed Buildings - Allan Ramsay Monument; The Cottage; Royal Scots Memorial; Statuary Group; Robert Louis Stevenson Memorial; Royal Scots Greys Monument; Scottish American Memorial; Thomas Guthrie Monument; Ross Fountain; Shelters; Police Box; Sir James Young Simpson Monument				
	Description	See above	International / National	Category A, B & C(s) listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
Princes St NT 250 738 – 256 739	Feature Name	Undesignated iron railings (3 no) present on boundary of East & West Princes St Gardens and at junction of Princes Street with Waverley Bridge				
	Description	See above	International / National	Undesignated, but within Conservation Area & inventory site	Part of unique townscape	NPPG 18; CELP CD4, CD5
Key Data Sources:	Statutory List of Buildings of Special Architectural or Historic Interest (for listed buildings); National Monuments Record of Scotland; An Inventory of Gardens and Designed Landscapes; Central Edinburgh Local Plan 1997; Lothian Structure Plan (LSP) 1994					
Key Assumptions:	The Limits of Deviation (LOD) extends 5m either side of the proposed tram route, except where building frontages are present within 5m, in which case the frontage defines the limit of the LOD					

Worksheet CH3: Cultural Heritage – Project Level, Baseline Information

Project Name:	Edinburgh Tram Line 2 Queen St to Princes St (St Andrew Square)	Worksheet CH3: Cultural Heritage – Project Level, Baseline Information				
Existing & Future Issues	Proposed construction of tram line between St Andrew Square, Edinburgh and Edinburgh Airport, with spur to Newbridge			Assessment Date:	13/11/03	
Area/Location (Grid Ref)	Attribute/Feature	Scale it Matters	Importance	Trend/Status	Relevant Policy Objectives	
Queen St to Princes St (St Andrew Square) NT 255 743	Feature Name	This route section lies within the Edinburgh New Town World Heritage Site, the New Town Gardens Inventory Status Designed Landscape and the New Town Conservation Area. There are 29 Listed buildings adjacent to this route section, 17 Category A, 10 Category B, and 2 Category C(s) – further details provided below.				
	Description	See above	International / National	World Heritage Site Inventory Designed Landscape Conservation Area – internationally important	Unique	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
Queen Street	Feature Name	3 Listed Buildings - 2 York Buildings; Scottish National Portrait Gallery with Lamp Standards; Queen Street Gardens, Railings and Gates				
	Description	See above	International / National	Category A & B listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
North St Andrew St	Feature Name	1 Listed Building - 1-3c (odd nos) York Place, and 15-19 (inclusive nos) North St Andrew Street, including Railings				
	Description	See above	International / National	Category A listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
North St David St	Feature Name	2 Listed Buildings - 2, 2a and 3 Queen Street and 12 North St David Street, Scottish Life, with Railings and Lamps; 7 and 9 North St David Street and Queen Street				
	Description	See above	International / National	Category A & C(s) listed	Part of unique	NPPG18; LSP

					townscape	Env 5; CELP CD2, CD4, CD5
St Andrew Square	Feature Name	20 Listed Buildings - 21 and 22 St Andrew Square and 1-5 (odd nos) North St David Street with Railings, Ibm Ltd; 23 and 23a St Andrew Square with Railings; 24 St Andrew Square with Railings; 25 St Andrew Square with Railings; 26 St Andrew Square with Railings; 28 St Andrew Square with Balustrading, Scottish Equitable; 35 St Andrew Square with Lamp Standards and Railings; 36 St Andrew Square, Dundas House, Royal Bank of Scotland Head Office, with Associated Additions, Walls, Gatepiers, Gates, Railings and Lamp Standards; St Andrews Square, Melville Monument With Boundary Walls And Railings; St Andrews Square, Monument To John, 4th Earl Of Hopetoun; George Street, At St Andrew Square, Pair of K6 Telephone Kiosks; 37 St Andrew Square, Bank of Scotland, with Railings and Lamp Standards; 38 and 39 St Andrew Square, Bank of Scotland with Lamp Standards; 12, 12a and 13 St Andrew Square, Guardian Royal Exchange; 42 St Andrew Square, Royal Bank of Scotland; 1 and 2 St Andrew Square and 16-22 (even nos) South St Andrew Street, Former Prudential Assurance Building, with Railings; 3 and 3a St Andrew Square; 4 and 5 St Andrew Square; 6 and 7 St Andrews Square and 7-19 South St David Street; 9 and 10 St Andrews Square				
	Description	See above	International / National	Category A, B & C(s) listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
South St Andrew St	Feature Name	3 Listed Buildings - 14 South St Andrew Street, Former Young Men's Christian Association; 5-9 (odd nos) South St Andrew Street; 6 and 10 South St Andrew Street				
	Description	See above	International / National	Category B listed	Part of unique townscape	NPPG18; LSP Env 5; CELP CD2, CD4, CD5
Key Data Sources:		Statutory List of Buildings of Special Architectural or Historic Interest (for listed buildings); An Inventory of Gardens and Designed Landscapes; Central Edinburgh Local Plan 1997; Lothian Structure Plan (LSP) 1994				
Key Assumptions:		The Limits of Deviation (LOD) extends 5m either side of the proposed tram route, except where building frontages are present within 5m, in which case the frontage defines the limit of the LOD.				

Worksheet CH3: Cultural Heritage – Project Level, Baseline Information

Project Name:	Edinburgh Tram Line 2 Ingliston to Newbridge	Worksheet CH3: Cultural Heritage – Project Level, Baseline Information				
Existing & Future Issues	Proposed construction of tram line between St Andrew Square, Edinburgh and Edinburgh Airport, with spur to Newbridge				Assessment Date:	13/11/03
Area/Location (Grid Ref)	Attribute/Feature	Scale it Matters	Importance		Trend/Status	Relevant Policy Objectives
Newbridge NT 123 726	Feature Name	Huly Hill, barrow & standing stones – prehistoric burial mound and remains of surrounding stone circle, partly excavated in1830				
	Description	See above	National	Scheduled Ancient Monument – nationally important	Regionally rare	NPPG5 LSP, Env 6 RWELP E30
Newbridge NT 121 733	Feature Name	Edinburgh Road, Newbridge – plough-truncated remains of a small ring-gully, ditches, pits and a stone structure discovered during archaeological evaluation in 2003				
	Description	See above	National	Undesignated site – regionally important	Part of regionally rare complex	NPPG5 LSP, Env 6 RWELP E31
Ratho Station NT 1330 7218	Feature Name	Ratho Low Level Station, opened 1842 and closed 1951; largely demolished, although a raised platform survives				
	Description	See above	Local	Undesignated site – lesser importance	Locally common	NPPG5 RWELP E31
Ratho Station NT 1367 7240	Feature Name	Ratho Station, possible buried remains of enclosure and internal structure visible on vertical aerial photographs taken in 1973				
	Description	See above	Local	Undesignated site – uncertain importance	Locally rare	NPPG5 RWELP E31
Ingliston NT 1471 7250	Feature Name	Ingliston House Lodge, gatepiers and boundary walls – single-storey picturesque lodge, built 1846 with later additions to rear; 4 polygonal ashlar gatepiers and rubble boundary walls				
	Description	See above	National	Category B listed –	Locally common	NPPG18

				regionally important		LSP, Env 5 RWELP E33
Middle Norton NT 146 724	Feature Name	6, 7, 8, 11-12 Glasgow Road, Middle Norton – series of early and mid 19th century single-storey cottages. 4 separate listings.				
	Description	See above	National	Category C(s) listed – locally important	Locally common	NPPG18 LSP, Env 5 RWELP E33
Norton House NT 1415 7351	Feature Name	Norton House Hotel, North Lodge with gate piers and policy walls – mid 19th century, single-storey lodge with late 19th century sandstone ashlar gatepiers and random rubble policy walls				
	Description	See above	National	Category C(s) listed – locally important	Locally common	NPPG18 LSP, Env 5 RWELP E33
Harvest Road NT 1323 7214	Feature Name	Hillwood House with former coach house and stables – later 19th century, 2-storey, 3-bay, rectangular plan villa				
	Description	See above	National	Category C(s) listed – locally important	Locally rare	NPPG18 LSP, Env 5 RWELP E33
Ingliston NT 1402 7274	Feature Name	West Mains of Ingliston farmhouse – 2-storey, 5-bay rectangular farmhouse, built in 18th century and showing two construction phases; associated steading demolished and replaced by modern office buildings				
	Description	See above	National	Category C(s) listed – locally important	Locally rare	NPPG18 LSP, Env 5 RWELP E33
Newbridge NT 1214 7270	Feature Name	Newbridge Inn – 2-storey gabled inn with lower 2-storey service block to rear, founded 1683				
	Description	See above	National	Category C(s) listed – locally important	Locally rare	NPPG18 LSP, Env 5 RWELP E33
Ingliston NT 1442 7276	Feature Name	Ingliston House – 2-storey baronial style mansion with attic and basement, built 1846, facing east				

	Description	See above	National	Category A listed – nationally important	Locally rare	NPPG18 LSP, Env 5 RWELP E33
Ingliston NT 1453 7284	**Feature Name**	Ingliston House, Stables and Gardener's Cottage – U-plan, single-storey, Scottish 17th century style stable block with 2-storey gardener's house in SW angle, built 1900/1902				
	Description	See above	National	Category A listed – nationally important	Locally rare	NPPG18 LSP, Env 5 RWELP E33
Norton Mains NT 1455 7205	**Feature Name**	Norton Mains, steading and garden walls. Earlier 19th century, 2-storey, 3-bay, rectangular plan farmhouse with later 19th century additions; high rubble garden walls to E & N; early 19th century quadrangular steading, with later additions				
	Description	See above	National	Category B listed – regionally important	Locally common	NPPG18 LSP, Env 5 RWELP E33
Key Data Sources:	Statutory List of Buildings of Special Architectural or Historic Interest (for listed buildings); National Monuments Record of Scotland (for archaeological sites); Edinburgh Tram Line 2 Environmental Statement. LSP – Lothian Structure Plan 1994; RWELP – Rural West Edinburgh Local Plan, finalised draft, 1999					
Key Assumptions:						

Worksheet CH3: Cultural Heritage – Project Level, Baseline Information

Project Name:	Edinburgh Tram Line 2 Gogar Roundabout to Edinburgh Airport	Worksheet CH3: Cultural Heritage – Project Level, Baseline Information			
Existing & Future Issues	Proposed construction of tram line between St Andrew Square, Edinburgh and Edinburgh Airport, with spur to Newbridge			Assessment Date:	13/11/03
Area/Location (Grid Ref)	Attribute/Feature	Scale it Matters	Importance	Trend/Status	Relevant Policy Objectives
Gogar NT 166 725	Feature Name	Nether Gogar, medieval and later settlement – a village with a population of 300 once stood at Nether Gogar, focussed on Gogar Parish Church; traces of medieval settlement have been revealed by recent excavations and buried remains are likely to survive along the proposed tram route beside Gogar Church			
	Description	See above	National	Schedulable site – nationally important	Rare locally	NPPG5 LSP, Env 6 RWELP E31
Castle Gogar NT 166 727	Feature Name	Castle Gogar, relict designed landscape – 17th to 19th century maps show that Castle Gogar formerly stood within a designed landscape of tree-lined enclosures; little survives apart from a tree-lined avenue, a listed lodge (below) and listed bridge			
	Description	See above	Local	Undesignated site – locally important	Common locally	NPPG5 RWELP E31
Castle Gogar NT 1687 7278	Feature Name	Castle Gogar, hearth – coal-fired hearth of unknown antiquity revealed during archaeological evaluation along CERT line in 1999			
	Description	See above	Local	Undesignated site – uncertain importance	Rare locally	NPPG5 RWELP E31
Ingliston NT 1573 7273	Feature Name	East Mains of Ingliston, possible pit alignment – the soil marks of what may be three pit alignments aligned E/W are visible on aerial photographs taken in 1946; they could be the remains of prehistoric land boundaries, but insufficient baseline information exists			
	Description	See above	Local	Undesignated site – uncertain importance	Rare locally	NPPG5 RWELP E31
Edinburgh Airport	Feature Name	Edinburgh Airport, pillbox – the remains of a WWII brick-built pillbox are located in scrubby, overgrown woodland at the edge of the			

NT 1536 7305		former RAF Turnhouse airfield, now Edinburgh Airport				
	Description	See above	Local	Undesignated site – locally important	Rare locally	NPPG5 LSP, Env 6 RWELP E31
Castle Gogar NT 1706 7252	Feature Name	Castle Gogar Lodge, Gates and Gatepiers – Single-storey L-plan lodge and gatepiers, c 1900; gates 17th century and reputed to have come from Caroline Park, Granton				
	Description	See above	National	Category B listed – regionally important	Locally common	NPPG18 LSP, Env 5 RWELP E33
Gogar NT 1682 7252	Feature Name	Gogar Parish Church and Graveyard – Former church, restored 1890-1 incorporating chancel of earlier 16th century church; graveyard contains 18th century monuments; church now a cabinet-maker's workshop				
	Description	See above	National	Category B listed – regionally important	Locally rare	NPPG18 LSP, Env 5 RWELP E33
Gogar Park NT 1705 7236	Feature Name	Gogar Park – early 19th century rambling plan villa set within landscaped ground and provided with two lodge buildings beside Glasgow Road to north				
	Description	See above	National	Category C(s) listed – locally important	Locally rare	NPPG18 LSP, Env 5 RWELP E33
Gogarburn House NT 1642 7293	Feature Name	Gogarburn House, built 1893 & modified 1896, set within landscaped grounds latterly occupied by the buildings of Gogarburn Hospital (currently under redevelopment as part of new Royal Bank of Scotland headquarters). The listed buildings comprise Gogarburn House and associated stable block, walled garden, coach house, policy walls and gateway				
	Description	See above	National	Category B listed – regionally important	Locally common	NPPG18 LSP, Env 5 RWELP E33
Gogar Mount NT 1587 7231	Feature Name	Gogar Mount, North Lodge with gates, gatepiers, walls and railings – early 19th century, single-storey, 3-bay, rectangular plan lodge with flat roofed addition to rear; low boundary walls and paired ashlar gatepiers				
	Description	See above	National	Category B listed – regionally important	Locally common	NPPG18 LSP, Env 5

						RWELP E33
Castle Gogar NT 1650 7310	Feature Name	Castle Gogar / Gogar House with Cottage, Gate House, Stables, Outbuildings, Gate and Gatepiers – L-plan baronial mansion built 1825, with later additions, replacing an earlier, 14th century building; 18th century cottage; gatepiers c 1730				
	Description	See above	National	Category A listed – nationally important	Locally rare	NPPG18 LSP, Env 5 RWELP E33
Key Data Sources:	Statutory List of Buildings of Special Architectural or Historic Interest (for listed buildings); National Monuments Record of Scotland (for archaeological sites); Edinburgh Tram Line 2 Environmental Statement. LSP - Lothian Structure Plan 1994; RWELP – Rural West Edinburgh Local Plan, finalised draft 1999					
Key Assumptions:						

Worksheet CH3: Cultural Heritage – Project Level, Baseline Information

Project Name:	Edinburgh Tram Line 2 Roseburn to Gogar Roundabout	Worksheet CH3: Cultural Heritage – Project Level, Baseline Information			
Existing & Future Issues	Proposed construction of tram line between St Andrew Square, Edinburgh and Edinburgh Airport, with spur to Newbridge			Assessment Date:	13/11/03
Area/Location (Grid Ref)	Attribute/Feature	Scale it Matters	Importance	Trend/Status	Relevant Policy Objectives
Russell Road NT 2337 7270	Feature Name	Russell Road, railway bridge (with retaining walls) – 3-arch viaduct with battered piers and retaining walls; part of Caledonian Railway, opened 1842.			
	Description	See above	National	Category B Listed – regionally important	Locally common monument type	NPPG18 LSP, Env 5 CELP CD2
Roseburn Street NT 2286 7296	Feature Name	64 Roseburn St, Roseburn Primary School including Janitor's House, Boundary Walls, Gates, Gatepiers and Railings – 3-storey T-plan Renaissance school built 1893, with 2-storey rectangular plan Janitor's House			
	Description	See above	National	Category B Listed – regionally important	Locally common monument type	NPPG18 LSP, Env 5 CELP CD2
Roseburn NT 2276 7293	Feature Name	Roseburn House including boundary walls and gatepiers – Burgess's tower built 1582 with 17th and 18th century additions			
	Description	See above	National	Category A listed – nationally important	Locally rare	NPPG18 LSP, Env 5 CELP CD2
Balgreen Road NT 2188 7244	Feature Name	140 Balgreen Road, Jenners Depository with Lodge, Garages, Gatepiers, Gates and Railings – commercial warehouse in austere classical style, with traditional lodge and functional garage block, built 1925-6; railings bound the site			
	Description	See above	National	Category B Listed – regionally important	Locally rare	NPPG18 LSP, Env 5 WELP DQ14-15
Carrick Knowe	Feature Name	Carrick Knowe golf course, old field boundary – field boundary recorded on second edition Ordnance Survey map of 1895; buried			

NT 2160 7225		remains of boundary ditch identified during archaeological evaluation along CERT line in 1999				
	Description	See above	Local	Undesignated – lesser importance	Locally common	NPPG5 WELP DQ21
Broomhouse Drive NT 203 717	Feature Name	Old Saughton House, former designed landscape – buried remains of the northern end of the former rectangular, compartmented designed landscape may survive in the landscaped grassland north of Broomhouse Drive				
	Description	See above	Local	Undesignated – locally important	Locally rare	NPPG5 WELP DQ21
South Gyle NT 180 722	Feature Name	Gogar Loch (site of) – buried remains of the former Gogar Loch may survive beneath modern development at South Gyle; the extent of survival is unknown				
	Description	See above	Local	Undesignated – locally important	Locally rare	NPPG5 WELP DQ21
Key Data Sources:	Statutory List of Buildings of Special Architectural or Historic Interest (for listed buildings); Ordnance Survey 1st and 2nd edition maps and other historic maps for the remaining features; Edinburgh Tram Line 2 Environmental Statement LSP 1994 - Lothian Structure Plan 1994; WELP – West Edinburgh Local Plan, consultation draft, 2001; CELP – Central Edinburgh Local Plan 1997					
Key Assumptions:						

Worksheet CH4: Cultural Heritage – Project Level

Proposal Name:	Edinburgh Tram Line 2 – Queen St to Haymarket		Worksheet CH4: Cultural Heritage – Project Level			
Existing & Future Issues	Proposed construction of tram line between St Andrew Square, Edinburgh and Edinburgh Airport, with spur to Newbridge		Assessment Date	13/11/03		
Site Name/ Location	Potential Impact		Compliance with Policy Objectives	Timescales When/Duration	Uncertainty	Enhancement/Mitigation Potential
	Opening Year	Assessment Year				
International Importance						
World Heritage Site / New Town Gardens Designed Landscape / New Town CA / West End CA	Overall indirect effect on setting – specific direct effects listed below		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	Low	Major adverse, with or without mitigation (direct effects assessed individually below)
National Importance (all Category A listed buildings)						
1-3c York Place and 15-19 North St Andrew S NT 2563 7427	Potential direct effect on iron railings		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation
7/9 North St David St NT 2551 7423	Potential direct effect on iron railings and lamp		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation

	standards					
21/22 St Andrew Square and 1-5 North St David Street, with railings NT 2552 7420	Potential direct effect on iron railings and lamp standards		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation
35 St Andrew Square with lamp standards and railings NT 2566 7415	Potential direct effect on iron railings and lamp standards		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation
36 St Andrew Square, Dundas House (RBS) with walls, gatepiers, gates, railings and lamp standards NT 2567 7413	Potential direct effect on iron railings and lamp standards		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation
Monument to John, 4th Earl of Hopetoun NT 2568 7430	Potential direct effect		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if feature removed, with or without mitigation
37 St Andrew Square, Bank of Scotland, with	Potential direct effect on iron railings and		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation

railings and lamp standards NT 2568 7410	lamp standards					
38-39 St Andrew Square, Bank of Scotland with lamp standards NT 2568 7410	Potential direct effect on iron railings and lamp standards		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation
42 St Andrew Square, Royal Bank of Scotland NT 2569 7406	Potential direct effect on iron railings and lamp standards		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation
St Johns Church, hall, churchyard, boundary walls, steps, railings, gatepiers etc NT 247 736	Potential direct effect on iron railings and gatepiers		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation
1-13 Atholl Place and 1 Torphichen St, including railings NT 243 734	Potential direct effect on iron railings		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Major adverse if features removed, with or without mitigation
Haymarket Station entrance and	Potential direct effect on iron		NPPG18; LSP Env 5; CELP CD2, CD4,	Construction / long term	High, as in LOD where nature of	Major adverse if features removed, with or without

office block with steps, railings and lamp standard NT 2397 7315	railings and lamp standards		CD5		works not known	mitigation
Regional Importance (all Category B listed buildings)						
1-2 St Andrew Square and 16-22 South Andrew St, with railings NT 2567 7405	Potential direct effect on iron railings		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Minor adverse if features removed, with or without mitigation
4 and 5 St Andrews Square NT 2562 7401	Potential direct effect on iron railings and lamp standards		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Minor adverse if features removed, with or without mitigation
West Princes St Gardens, Police Box NT 2482 7369	Potential direct effect		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as nature of works not known	Major adverse if feature removed, with or without mitigation
Coates Place, 1-7, 2 Manor Place, 1 Palmerston Place NT 242 733	Potential direct effect on iron railings		NPPG18; LSP Env 5; CELP CD2, CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Minor adverse if features removed, with or without mitigation
Local/Other Features						
Iron railings – Princes St /	Potential direct effect		NPPG18; LSP Env 5; CELP CD4, CD5	Construction / long term	High, as in LOD where nature of	Minor adverse if features removed, with or without

Waverley Bridge NT 2567 7394					works not known	mitigation
Iron railings – East Princes St Gardens NT 256 739	Potential direct effect		NPPG18; LSP Env 5; CELP CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Minor adverse if features removed, with or without mitigation
Iron railings – West Princes St Gardens NT 253 738	Potential direct effect		NPPG18; LSP Env 5; CELP CD4, CD5	Construction / long term	High, as in LOD where nature of works not known	Minor adverse if features removed, with or without mitigation
Heart of Midlothian War Memorial – cat C(s) listed NT 2412 7324	Potential direct effect		NPPG18; LSP Env 5; CELP CD4, CD5	Construction / long term	Moderate, as uncertain whether or not site can be avoided	Minor adverse, without mitigation; minor adverse or neutral with relocation mitigation
Haymarket Inn (Caledonian Alehouse) – Cat C(s) listed NT 2398 7320	Proposed direct effect (demolition)		NPPG18; LSP Env 5; CELP CD4, CD5	Construction / long term	Low	Minor adverse, with or without mitigation
Key Data Sources:	Statutory List of Buildings of Special Architectural or Historic Interest (for listed buildings); Edinburgh Tram Line 2 Environmental Statement. LSP – Lothian Structure Plan 1994; CELP – Central Edinburgh Local Plan 1997					
Key Assumptions	Overhead line equipment will not be fixed to listed buildings; the Limits of Deviation (LOD) extends 5m either side of the proposed tram route, except where building frontages are present within 5m, in which case the frontage defines the limit of the LOD					

Worksheet CH4: Cultural Heritage – Project Level

Proposal Name:	Edinburgh Tram Line 2 – Haymarket to Newbridge		Worksheet CH4: Cultural Heritage – Project Level			
Existing & Future Issues	Proposed construction of tram line between St Andrew Square, Edinburgh and Edinburgh Airport, with spur to Newbridge		Assessment Date	13/11/03		
Site Name/ Location	Potential Impact		Compliance with Policy Objectives	Timescales When/Duration	Uncertainty	Enhancement/Mitigation Potential
	Opening Year	Assessment Year				
International Importance						
National Importance						
Roseburn House NT 2276 7293	Indirect, visual effect		NPPG18, LSP Env 5, CELP CD2	Construction, long term	Low	Neutral – mitigation n/a
Nether Gogar NT 168 725	Direct effect		NPPG5, LSP Env 6, RWELP E31	Construction, long term	Low	Major adverse, without mitigation Neutral with mitigation
Castle Gogar NT 1650 7310	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Minor adverse without mitigation; minor adverse or neutral with mitigation
Ingliston Ho, Stables NT 1453 7284	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Neutral – mitigation n/a

Ingliston House NT 1442 7276	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Neutral – mitigation n/a
Huly Hill NT 123 726	Direct effect & indirect visual effect		NPPG5, LSP Env 6 RWELP E30	Construction, long term	Moderate	Moderate adverse, with or without mitigation
Regional Importance						
Russell Road railway bridge NT 2337 7270	Indirect, visual effect		NPPG18, LSP Env 5, CELP CD2	Construction, long term	Low	Neutral – mitigation n/a
Roseburn Primary School NT 2286 7296	Indirect, visual effect		NPPG18, LSP Env 5, CELP CD2	Construction, long term	Low	Neutral – mitigation n/a
Jenners Depository NT 2188 7244	Direct effect on railing, indirect visual effect		NPPG18, LSP Env 5, WELP DQ 14-15	Construction, long term	Low	Minor adverse, without mitigaton Minor adverse or neutral with mitigation
Castle Gogar lodge NT 1706 7252	Indirect, visual & noise effects		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Moderate – nature of works uncertain	Moderate adverse, without mitigation Minor adverse, with mitigation
Gogar Parish Church NT 1682 7252	Indirect, visual & noise effects		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Moderate – nature of works uncertain	Moderate adverse, with or without mitigation
Gogarburn House NT 1642 7203	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Neutral – mitigation n/a

Gogar Mount lodge NT 1587 7231	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Neutral – mitigation n/a
Ingliston Ho lodge NT 1471 7250	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Moderate adverse without mitigation, minor adverse with mitigation
Norton Mains NT 1455 7205	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Neutral – mitigation n/a
Edinburgh Rd, Newbridge NT 121 733	Direct effect		NPPG5, LSP Env 6, RWELP E31	Construction, long term	Low	Moderate adverse, with or without mitigation
Local/Other Features						
Carrick Knowe field boundary NT 2150 7225	Direct effect		NPPG5, WELP DQ21	Construction, long term	Low	Minor, adverse, without mitigation; neutral with mitigation
Old Saughton House landscape NT 203 717	Potential direct effect		NPPG5, WELP DQ21	Construction, long term	High – condition of site not known	Uncertain
Gogar Loch NT 180 722	Potential direct effect		NPPG5, WELP DQ21	Construction, long term	High – condition of site not known	Uncertain
Gogar Park NT 1705 7236	Indirect, visual effects		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Neutral – mitigation n/a
Castle Gogar hearth NT 1667 7278	Direct effect		NPPG5, RWELP E31	Construction, long term	Moderate – significance of site not known	Uncertain

Castle Gogar landscape NT 166 727	Direct effect		NPPG5, RWELP E31	Construction, long term	Moderate – extent of remains not known	Minor adverse, with or without mitigation
E Mains Ingliston NT 1573 7273	Potential direct effect		NPPG5, RWELP E31	Construction, long term	High – condition of site not known	Uncertain
Edinburgh Airport pillbox NT 1536 7305	Potential direct effect		NPPG5, LSP Env 6, RWELP E31	Construction, long term	High – nature of proposed works not known	Minor adverse without mitigation; minor adverse or neutral with mitigation
Middle Norton (4 listings) NT 146 724	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Moderate adverse without mitigation, minor adverse with mitigation
Norton House lodge NT 1415 7251	Indirect, visual effect & potential direct effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Minor adverse; neutral with mitigation if no direct effect, otherwise minor adverse
West Mains of Ingliston NT 1402 7274	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Neutral – mitigation n/a
Ratho Station, enclosure NT 1387 7240	Potential direct effect		NPPG5, RWELP E31	Construction, long term	High – condition of site not known	Uncertain
Ratho Station NT 1330 7218	Direct effect		NPPG5, RWELP E31	Construction, long term	Low	Minor adverse, with or without mitigation
Hillwood House NT 1323 7214	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Neutral – mitigation n/a

Newbridge Inn NT 1214 7270	Indirect, visual effect		NPPG18, LSP Env 5, RWELP E33	Construction, long term	Low	Neutral – mitigation n/a
Key Data Sources:	Statutory List of Buildings of Special Architectural or Historic Interest (for listed buildings); National Monuments Record of Scotland (for archaeological sites); Edinburgh Tram Line 2 Environmental Statement. LSP – Lothian Structure Plan 1994; RWELP – Rural West Edinburgh Local Plan, finalised draft, 1999; WELP – West Edinburgh Local Plan, consultation draft, 2001; CELP – Central Edinburgh Local Plan 1997					
Key Assumptions	Overhead line equipment will not be fixed to listed buildings					

Worksheet CH5: Cultural Heritage – Project Level, Assessment Score

Proposal Name:	Edinburgh Tram Line 2			Worksheet CH5: Cultural Heritage – Project Level, Assessment Score			
Historic Features	Major Negative	Moderate Negative	Minor Negative	Neutral / Uncertain	Minor Positive	Moderate Positive	Major Positive
International	1	To be completed					
National	12	1	1	4			
Regional	1	2	8	5			
Local/Other			9	6/5			
Key Data Sources:							
Key Assumptions:							

Worksheet G1: Geological Features –Project Level

Proposal Name:		Edinburgh Tram Line 2				Worksheet G1: Geological Features – Strategy and Project Level			
Existing and Future Issues:		None known					Assessment Date:		28 October 2003
Scale It Matters	Attribute / Feature / Designation	Location / Status	Relevant Objectives	Potential Impact	Ease of Substitution	Timescales: When/ Duration	Uncertainty	Mitigation	Impact Significance Assessment
Geological Sites									
Edinburgh Castle Rock	SSSI	National	N/A	None	N/A	N/A	N/A	N/A	Neutral
Mineral Reserves									
No identified sites within Mineral Local Plan suitable for exploitation within route corridor.	N/A	N/A	NA	None	N/A	N/A	N/A	N/A	N/A
Key Assumptions:		Line 2 is sufficiently distance from the Castle Rock SSSI to have no impact on it during construction or operation There are no exploitable mineral resources with the City of Edinburgh. In Rural West Edinburgh, the only potential mineral resource is already being exploited or lies beneath currently developed areas and/or green belt, where there is a presumption against mineral extraction.							
Key Data Sources:		Tram Line 2 ES. Scottish Natural Heritage, City of Edinburgh Council, British Geological Survey.							

LANDSCAPE WORKSHEET L1: LANDSCAPE CHARACTER AREA SUMMARY

Landscape Character Summary for Area A: Historic City Core	
Landscape Attributes	**Description**
Positive Character	Historic and attractive townscape of international renown (A1, A2, A3); Princes Street Gardens and the Castle/ High Street form a dramatic backdrop to Princes Street (A2); Dramatic axis of Princes Street looking towards Calton Hill (A2); Classic architectural "set pieces" of St. Andrew Square (A1) and Shandwick Place (A3)
Negative Character	Constant, heavy traffic; especially buses Street clutter from signs, bus shelters and other uncoordinated street furniture; "one-sided" nature of Princes Street
Sensitivity	High(A1, A2, A3) Medium (A4) Low (A5)
Quality	Highest Quality (A1, A2) Very attractive (A3) Good (A4) Ordinary/Poor (A5)
Magnitude	Major
Landscape Impact	Moderate – Major Negative
Landscape Character Summary for Area B: Urban and Suburban Residential with Urban Green Space	
Landscape Attributes	**Description**
Positive Character	Areas of intact town houses and traditional buildings such as at Coates and the West End (B3, B4, B8) Blend of old and new buildings to maintain intact streetscape such as in Roseburn (B5) Housing areas to the north of the main railway line viewed against backdrop of Corstorphine Hill (B2) Housing areas to the south of the railway line viewed against and visually enclosed by the Pentland Hills (B1, B9) Linear corridor providing a green link for pedestrians and cyclists separate from busy roads and traffic (B12)
Negative Character	Incongruous mix of housing types and light industrial uses (B7, B10) Communal garden surrounds and parking areas (B1) Fast moving traffic and congested streets (all main through routes) Uninteresting layout and featureless landscape surrounds (B1, B10)
Sensitivity	High (B2, B5, B12) Medium – High (B11)

	Low (B1, B9, B10)
Quality	Very attractive (B3,B4,B8,B11,B12) Good Landscape – Very attractive (B5) Good Landscape (B2,B6) Ordinary Landscape (B1, B7, B9, B10)
Magnitude	Low - High
Landscape Impact	Minor Positive – Moderate Negative
Landscape Character Summary for Area C: Landscape dominated by large scale business and office- related developments	
Landscape Attributes	**Description**
Positive Character	Modern buildings with generous parking areas (C1and C3) Spacious landscaped grounds and generous parking areas (C1 and C3) Attractive waterside park areas (C1) Bustling modern shopping / leisure areas (C8,C9)
Negative Character	Modern block office developments contrasting with prestigious dwellings such as at Coates (C3) Incongruous architectural styles (C8,C9) Congested and chaotic layout (C5, C6, C7) Poorly maintained landscaped areas (C5, C6, C7) Declining heavy industrial area (C7)
Sensitivity	High at Huly Hill (C5) Medium (C1) Low (C2, C5, C6, C8)
Quality	Very attractive (C1, C3) Poor Landscape(C2, C4,C7) Elsewhere: Ordinary Landscape
Magnitude	Low – High
Landscape Impact	Minor Positive – Minor Negative
Landscape Character Summary for Area D: Urban Fringe Character Greenbelt Dominated by Infrastructure	
Landscape Attributes	**Description**
Positive Character	Rural matrix of predominantly arable farmland (D1, D3) Subtle topographic and woodland features (D2)
Negative Character	Multiple urban expansion pressures including scattered development and expansion of the airport and showground (D4,D5) Prominent quarrying impacts and views to unsightly shale bings

Sensitivity	High (D2, D3) Medium (D1) Low (D4,D5, D6, D7)
Quality	Very attractive (D1,D2,) Good Landscape (D3) Ordinary (elsewhere)
Magnitude	Low – High
Landscape Impact	Minor Positive – Moderate Negative

Proposal Name:	Edinburgh Tram Line 2	Existing & Future Noise Issues:		Works Set N2: Noise – Project Level	
Location:	St Andrew Sq to Newbridge via Edinburgh Airport	Previous Calculations:		Date of Assessment:	November 2003
				Assessment Year:	2011

Road Traffic Noise LA10, 18 hour (dB)	Estimated Population Exposed			No. Properties with a change in Noise Levels >3dB(A)		% Highly Bothered/ Annoyed by Noise	Estimated Population Highly Bothered / Annoyed			Spatial/ Social Groups Affected	Mitigation/ Enhancement Description in Words	Impact Significance Assessment
	Existing	Do-Min	Proposed	Proposed vs. Do-Min			Existing	Do-Min	Proposed			
	A	B	C	-ve	+ve		=A*%	=B*%	=C*%			
<57		731	729	0	0	<10%		73	73	Residential	No permanent noise attenuation is required with respect to traffic noise.	An increase of 3 people annoyed is predicted. This is considered to be a Neutral Impact.
57-59		497	479	0	0	11%		55	55	Residential		
60-64		455	446	0	0	16%		73	71	Residential		
65-69		294	313	0	0	26%		76	81	Residential		
70-74		35	37	0	0	39%		14	14	Residential		
>74		0	0	0	0	>48%		0	0	Residential		
Estimated Population Annoyed by Road Traffic Noise:								291	294			
Railway Noise LAeq, 18 house (dB)												
<55		610	568	0	15	<11%		67	62	Residential	Noise barriers would be required at Balbirnie Place, Baird Drive, Hillwood Rise and Station Road at Ratho Station.	An increase of 4 people annoyed is predicted. This is considered to be a Neutral Impact. However, 76 would experience an increase of more than 3dB(A).
55-59		646	711	0	61	12%		78	85	Residential		
60-64		143	143	0	0	18%		26	26	Residential		
65-69		0	7	0	0	25%		0	2	Residential		
70-74		0	0	0	0	34%		0	0	Residential		
>74		0	0	0	0	38%		0	0			
Estimated Population Annoyed by Railway Noise:												
Total Population Annoyed by Railway Noise:								171	175	Noise Related Objectives (where appropriate)		

Key Assumptions:	Traffic data for the year 2011 was used. STRUMAP was used to estimate number of properties affected by noise and noise changes and estimates were made of the percentage of these which are residential. A factor of 2.3 was used to convert the number of residential properties to a population. There is a relatively high margin of error using STAG methodology and the number of people benefiting from a reduction in traffic noise may be underestimated.
Key Data Sources:	Tram Line 2 ES (FM, 2003). Traffic data supplied by FM.

VISUAL AMENITY WORKSHEET VA1: BUILDINGS

Ref.	Receptor/ Address/ Type/ Storeys/ Room Nos.& type/ Location/ Context	Sensitivity of Receptor	Change/ Effect	Magnitude	Visual Impact
179	Calton Hill Aligned with Princes Street axis. Long views along Princes Street. Other views across city and Old Town.	High - Medium	Distant views to tram alignment in centre of Princes Street within wider panoramic views.	Low	Neutral
183	3 to 4 storey townhouses on Queen Street, east of North St Andrew Street. Offices and shops. Short views enclosed within street to buildings opposite. Oblique views along Queens Street.	Medium	Oblique views to tram alignment in centre of Queen Street and as it turns onto North St Andrew Street. Views of OLE attached with building fixings.	Low	Neutral
184a	3,5 storey townhouses on Queen Street. Short views enclosed within street by buildings or gardens opposite. Oblique views along Queens Street.	Medium	Direct views to tram alignment in centre of Queen Street and as it turns onto North St Andrew Street and North St David Street. Views of OLE attached with building fixings and concentration of poles around corners.	Low	Minor to Moderate
184b	National Gallery on Queen Street. Short views enclosed within street to buildings and gardens opposite. Oblique views along Queens Street.	Low	Direct views to tram alignment in centre of Queen Street and as it turns onto North St Andrew Street and North St David Street. Views of OLE attached with building fixings.	Low	Minor Negative

189	Townhouses on Abercromby Place Direct views to Queen Street Gardens with glimpses of buildings beyond.	Medium	Glimpse views of OLE and passing trams in distance.	Low	Neutral
188	3 to 6 storey offices on George Street. Short views enclosed within street to buildings opposite. Oblique views to St Andrew Square.	Low - Medium	Oblique views to tram alignment on St Andrew Square (east). Views of OLE attached with building fixings and columns and passing trams set against mature vegetation of St Andrew Square.	Low	Neutral
187	6 and 7 storey buildings on South St David Street Shops at street level, offices above. Short views enclosed within street by buildings opposite. Oblique views to Scott Monument, gardens and Old Town.	Medium	Direct views to tram alignment and tram stop in centre of Street. Views of OLE attached with building fixings. Oblique views of concentration of poles associated with tram turning between Princes Street and South St Andrew Street.	Low - Medium	Minor - Moderate Negative
186	4.5 to 6 storey offices on St Andrew Square (north and south) Direct views over street to St Andrew Square	Low - Medium	Oblique views to tram alignment in centre of Street, St Andrew Square (east and west) Views of OLE attached with building fixings and columns and passing trams.	Low	Minor Negative
185	5 to 6 storey office buildings and 4 storey tenement offices on North St David Street. Short views enclosed within street by buildings opposite. Oblique views to St Andrew Square, Queen Street Gardens and distant views to Scott Monument and Firth of Forth.	Low - Medium	Direct views to tram alignment in centre of Street and more oblique views as it turns onto Queen Street. Views of OLE attached with building fixings.	Low	Minor Negative

182	4,5 and 5 storey buildings on North St Andrew Street Bus Station, shops and offices. Short views enclosed within street to buildings opposite. Oblique views to St Andrew Square and distant views to Firth of Forth.	Medium	Direct views to tram alignment in centre of Street and as it turns onto Queen Street. Views of OLE attached with building fixings.	Low	Minor Negative
181	Royal Bank of Scotland and Bank of Scotland Buildings, Harvey Nichols and other offices on St Andrew Square (east and west) 3 to 6 storey buildings. Direct views over street to St Andrew Square.	Medium	Direct views to tram alignment in centre of Street. Views of OLE attached with building fixings and columns and passing trams set against mature vegetation of St Andrew Square.	Low - Medium	Minor to Moderate
180	5 to 6 storey buildings on South St Andrew Street. Shops and offices. Short views enclosed within street to buildings opposite. Oblique views to St Andrew Square, Princes Street and Old Town beyond.	Medium	Direct views to tram alignment and tram stop in centre of St Andrew Street. Views of OLE attached with building fixings. Oblique views of concentration of poles associated with tram turning between Princes Street and South St Andrew Street.	Low - Medium	Minor - Moderate Negative
178	Buildings on Princes Street between South St Andrew Street, to opposite the Balmoral Hotel. Shops and offices. Views across Princes Street to Balmoral hotel. Oblique views towards gardens and Old Town.	Medium	Mid ground oblique views of tram alignment in centre of Princes Street turning on to South St Andrew Street and concentration of poles. Views of OLE attached with building fixings and columns on Gardens side, and pavement delineation.	Low	Neutral
177	Princes Mall Shopping mall, tourist office and urban plaza. Limited views from shops. Direct views from plaza to Princes Street. Other views over gardens towards Old Town and Castle.	Medium	Mid ground oblique views of tram alignment in centre of Princes Street turning on to South St Andrew Street and concentration of poles. Views of OLE attached with building fixings and columns on Gardens side, and pavement delineation.	Low - Medium	Minor – Moderate

176	Balmoral Hotel. 6 storey landmark hotel building. Direct views overlooking Princes Street. Long views along Princes Street and over gardens towards Old Town and Castle.	Medium	Mid to distant views of tram alignment in centre of Princes Street turning on to South St Andrew Street. Views of OLE attached with building fixings and columns on Gardens side, and pavement delineation.	Low	Minor Negative to Neutral
175	Buildings on Princes Street between South St David Street and South St Andrew Street. Shops, hotel and offices. Open views across Princes Street to Scott Monument, Gardens and Old Town. Lack of vertical columns along Princes Street enhances open views.	Medium - High	Views to tram alignment and tram stop in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against open views to Gardens and Old Town. Concentration of poles as tram turns between Princes Street and both South St David Street and South St Andrew Street.	Low	Minor to Moderate Negative
174	Various buildings within Old Town. From Bank of Scotland building east to Waverly Bridge. Views overlooking Princes Street Gardens and Waverly Station towards Princes Street. Mix of offices, residential and retail.	Medium	Views to tram alignment in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against buildings. Views partially obscured by trees within Princes Street Gardens.	Low	Neutral
173	Buildings on Princes Street between Hanover Street and South St David Street. Shops, hotel and offices. Open views across Princes Street to National Galleries, Gardens and Old Town. Lack of vertical columns along Princes Street enhances open views.	Medium - High	Views to tram alignment and tram stop in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against open views to Gardens and Old Town. Concentration of poles as tram turns between Princes Street and both South St David Street and South St Andrew Street.	Low - Medium	Minor to Moderate Negative
172	Buildings on Hanover Street. Shops, restaurants, offices, some residential. Short views enclosed within street by buildings opposite. Oblique views to Princes Street, Gardens and National Galleries.	Medium	Oblique views to tram alignment in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against views of Gardens and National Galleries.	Low	Minor Negative to Neutral

171	National Galleries This receptor addresses the impact on views from within the Galleries. The impact on the direct views gained from northern steps to Princes Street and other views to Gardens, Castle and Old Town have been assessed within Receptor R30.	Medium - Low	Glimpsed views to tram alignment and tram stop in centre of Princes Street from within the building. Glimpsed views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams from within the building.	Low	Minor Negative to Neutral
170	Castle Hill Various historic buildings within Old Town with elevated views overlooking Gardens to Princes Street and beyond across North Edinburgh. Mainly offices and residential properties.	High - Medium	Elevated views to tram alignment and tram stop in centre of Princes Street which would form midground elements within the wider view. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against buildings. Views partially obscured by trees within Princes Street Gardens.	Low	Neutral
169	4.5 and 5 storey Buildings on Princes Street between Frederick Street and Hanover Street. Shops, hotel and offices. Views across Princes Street to National Galleries, Gardens, Castle and Old Town. Lack of vertical columns along Princes Street enhances open views.	Medium - High	Views to tram alignment and tram stop in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against open views to Gardens and Castle.	Low - Medium	Minor to Moderate Negative
168	4 and 5 storey buildings on Frederick Street. Shops and offices, some residential. Short views enclosed within street by buildings opposite. Oblique views to Princes Street, Gardens and Castle	Medium	Oblique views to tram alignment in centre of Princes Street. Oblique views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against views of Gardens.	Low	Minor Negative to Neutral
167	Edinburgh Castle Edinburgh's top tourist attraction. Elevated views in all directions over Edinburgh, particularly to the North in which views to Princes Street form part of mid ground views.	High - Medium	Elevated views to tram alignment and tram stop in centre of Princes Street which would form mid ground elements within the wider panoramic view. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against buildings. Views partially obscured by trees within Princes Street Gardens.	Low	Neutral

166	4.5 and 5 storey Buildings on Princes Street between Castle Street and Frederick Street. Shops and offices. Open views across Princes Street to Gardens, Castle and Old Town. Lack of vertical columns along Princes Street enhances open views.	Medium - High	Views to tram alignment and tram stop in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams viewed against open views to Gardens and Castle.	Low - Medium	Minor to Moderate Negative
165	3.5 to 5 storey buildings on Castle Street. Shops, restaurants and offices. Short views enclosed within street to buildings opposite. Oblique views to Princes Street, Gardens and Castle.	Medium	Oblique views to tram alignment in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against views of Gardens.	Low	Minor Negative to Neutral
164	Buildings on Princes Street between South Charlotte Street and Castle Street. Shops and offices. Open views across Princes Street to Gardens and Castle. Lack of vertical columns along Princes Street enhances open views.	Medium - High	Views to tram alignment and tram stop in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against open views to Gardens and Castle.	Low - Medium	Minor to Moderate Negative
163	3.5 and 4.5 storey building on South Charlotte Street. Mix of offices, shops, restaurant and residential. Short views enclosed within street by buildings opposite. Oblique views to Princes Street and Gardens.	Medium	Oblique views to tram alignment in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against views of Gardens.	Low	Minor Negative to Neutral

162	3.5 to 6 storey buildings Princes Street between Lothian Road and South Charlotte Street. Offices and shops with main views from street level. Short views across Princes Street to St Johns Church and along Lothian Road. Oblique views to Gardens and Castle. Lack of vertical columns along Princes Street enhances open views.	Medium	Views to tram alignment in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against views of Church and Gardens.	Low	Minor Negative
161	Caledonian Hotel Large 6 storey hotel. Views in all directions including towards Princes Street, Edinburgh Castle and gardens.	Medium	Views to tram alignment in centre of Princes Street. Views of OLE attached with building fixings and columns, pavement delineation and passing trams viewed against buildings and existing streetscape. Glimpse views of tram stop on Princes Street from upper floors.	Low	Minor Negative
159	St Johns Church Free-standing church building adjacent to Princes St and Princes St Gardens. No windows with views. Views from main entrance towards Lothian Road and busy traffic junction.	Low	Views to tram alignment in centre of Princes Street. Views of OLE attached with building fixings and columns, pavement delineation and passing trams set amongst existing streetscape. ,	Low	Minor Negative to Neutral
160a	Offices on corner of Lothian Road and King Stables Road. Views towards busy junction of Princes Street and Lothian Road. Views to Edinburgh Castle and gardens	Low - Medium	Distant view to tram alignment on Princes Street. Views of OLE attached with building fixings and columns, and passing trams set amongst existing streetscape.	Low	Neutral
160b	Castle Terrace Office buildings on King Stables Road. Views towards road and beyond to Castle and gardens and Princes Street in distance.	Low - Medium	Distant view to tram alignment on Princes Street. Distant, glimpsed views of OLE attached with building fixings and columns, and passing trams set amongst existing streetscape.	Low	Neutral

158	3.5 Storey buildings on Hope Street. Post office, offices and restaurant. Short views enclosed within street by buildings opposite. Oblique views to Charlotte Square and Rutland Place.	Low - Medium	Oblique views to tram alignment on Rutland Place. Views of OLE attached with building fixings and columns, pavement delineation and passing trams set amongst existing streetscape.	Low	Minor Negative to Neutral
157	3.5 to 5 storey buildings on Queensferry Street. Mix of bars, restaurants, retail and residential. Short views enclosed within street by buildings opposite. Oblique views to Rutland Place and glimpses on Edinburgh Castle.	Medium	Oblique views to tram alignment on Rutland Place. Views of OLE attached with building fixings and columns, pavement delineation and passing trams set amongst existing streetscape.	Low	Minor Negative to Neutral
156	Various buildings behind Athol Crescent. Slot views towards Shandwick Place and Coates Crescent. Views partially obscured by other buildings.	Low - Medium	Glimpse slot views to passing trams and OLE on Shandwick Place.	Low	Neutral
155	Shandwick Place. 3. 5 storey buildings. Church, retail shops, offices, residential properties and bars/restaurants. Short views enclosed within street to buildings opposite. Busy streetscape, including, pedestrians, traffic and busses.	Medium	Direct views to tram alignment in centre of Street. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing streetscape.	Low - Medium	Minor - Moderate Negative
154	Townhouses on Melville Street. Narrow views along Stafford Street to towards Shandwick Place.	Medium - Low	Distant narrow views to tram alignment on Shandwick Place. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing streetscape.	Low	Neutral

153	3 and 3.5 storey buildings on Stafford Street. Retail shops and offices. Short views enclosed within street to buildings opposite. Oblique views to Shandwick Place.	Medium	Oblique views to tram alignment on Shandwick Place. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing streetscape.	Low	Neutral
152	4 Storey buildings on Rothesay Terrace. Offices and residential Narrow views along Walker Street to statue and beyond to gardens at Athol and Coates Crescents.	Medium	Distant, partially obscured views to tram alignment and tram stop and columns in centre of Crescent. Views partially obscured by planting in crescent gardens.	Low	Neutral
151	4 Storey offices on Melville Crescent. Direct views to statue of Robert Viscount Melville, road junction, and along walker street to gardens at Athol and Coates Crescents.	Medium - Low	Distant, partially obscured views to tram alignment and tram stop and columns in centre of Crescent. Views partially obscured by planting in crescent gardens.	Low	Neutral
150	Residential and office buildings on Walker Street Short views enclosed within street by buildings opposite. Oblique views to gardens at Athol and Coates Crescents.	Medium	Partially obscured views to tram alignment and tram stop in centre of Crescent. Views of OLE, columns, pavement delineation and passing trams set amongst gardens and existing road.	Low	Neutral
149	4.5 storey townhouses on Athol Crescent. Mainly offices, some residential. Direct views to gardens and across to Coates Crescent. Some longer views down Walker Street.	Medium - High	Tram alignment to travel along centre of Crescent. Tram stop located in centre of crescent at focal point of views. Loss of some trees. Views of OLE, columns, pavement delineation and passing trams set amongst gardens and existing road.	Medium - Low	Moderate to Minor Negative

148	3.5 to 4.5 storey townhouses on Coates Crescent. Mainly offices, some residential. Direct views to gardens and across to Athol Crescent	Medium - High	Tram alignment to travel along centre of Crescent. Tram stop located in centre of crescent at focal point of views. Loss of some trees. Views of OLE, columns, pavement delineation and passing trams set amongst gardens and existing road.	Medium - Low	Moderate to Minor Negative
147	3.5 and 4 storey townhouses on Manor Place. Offices. Short views enclosed within street by buildings opposite. Oblique views along street towards Athol Place.	Medium - Low	Oblique views to tram alignment on West Maitland Street. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing streetscape.	Low	Neutral
146	4 Storey townhouses on Coates Place. Offices, restaurants and residential. Short views enclosed within street by buildings opposite. Street contains busy traffic, including buses.	Medium	Tram alignment to travel along centre of street. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing streetscape.	Low - Medium	Minor – Moderate Negative
145	4 Storey townhouses on Athol Place. Offices, restaurants and residential. Short views enclosed within street by buildings opposite. Street contains busy traffic, including buses.	Medium	Tram alignment to travel along centre of street. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing streetscape.	Low - Medium	Minor – Moderate Negative
144	Various buildings on and overlooking Torphichen Street. 2 to 7 Storey buildings, mainly offices. Short views within street, longer views along Torphichen Street to busy road junction.	Low - Medium	Distant views, often oblique to tram alignment at road junction of Torphichen and Shandwick Street. Views of OLE attached with building fixings and columns, pavement delineation and passing trams set amongst buildings and existing busy streetscape.	Low	Neutral

143	Office buildings on Torphichen Street. Direct views to busy road junction including passing busses.	Low - Medium	Tram alignment to travel along centre of West Maitland Street and through road junction. Views of OLE attached with building fixings and columns, pavement delineation and passing trams set amongst buildings and existing busy streetscape.	Low - Medium	Minor – Moderate
142	Palmerston Place (east side) 4 storey offices and residential properties. Short views enclosed within street by buildings opposite. Oblique views along street towards West Maitland Street and Coates Place.	Medium	Oblique views to tram alignment on West Maitland Street and Coates Place. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing busy streetscape.	Low	Neutral
141	Palmerston Place (west side) Church and 4 storey offices and residential. Short views enclosed within street by buildings opposite. Oblique views along street towards West Maitland Street and Coates Place.	Medium	Oblique views to tram alignment on West Maitland Street and Coates Place. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing busy streetscape.	Low	Neutral
140	3 and 4 storey mixed use buildings West Maitland Street Shops on street level, residential above. Short views enclosed within street by buildings opposite. Street contains busy traffic, including busses.	Medium	Tram alignment to travel along centre of street. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing busy streetscape.	Low - Medium	Minor - Moderate Negative

139	Hilton Hotel and Residential town houses. 4.5 storey buildings on southern end of Grosvensor Street. Short views enclosed within street by buildings opposite. Oblique views along street towards West Maitland Street.	Medium	Oblique views to tram alignment on West Maitland Street. Views of OLE attached with building fixings, pavement delineation and passing trams set amongst buildings and existing busy streetscape.	Low	Neutral
138	Hotel and office buildings 5 Storey buildings on Morrison Street. Short views enclosed within street by buildings opposite. Slot views towards road junction at Clifton Terrace.	Low	Slot views to tram alignment at Clifton Terrace. Views of columns, OLE and passing trams set amongst busy urban environment.	Low	Neutral
137	Various buildings south of railway corridor. 4 Storey flats, and tenements, and office building. Front on to oblique views of Haymarket Station. Slot views to traffic on Clifton Terrace. Lower floor views obscured by walls.	Low - Medium	Slot views over rail corridor to tram alignment as it runs along to Clifton Terrace. Views of columns, OLE and passing trams set amongst busy urban environment.	Low	Neutral
136	Haymarket Goods Yard. Potential Development site currently being used as car park. Views screened by fencing and advertising billboards.		No View		
135	2.5 Storey Terraces Nos. 1-6 Clifton Terrace consisting of Offices, club and hotel. 5 Storey office and retail building. Short views to busy road junction of Clifton Terrace and Dalry Road. Mid ground views to Railway station forecourt and advertising billboards.	Low	Tram alignment travels in foreground view along Clifton Terrace. Views of columns, OLE and passing trams set amongst busy urban environment.	Medium	Minor Negative

134	Ryrie's Public House 2 Storey building corner of Clifton Terrace and Dalry Road. Most windows are stained glass restricting views out.	Low	Tram alignment travels in foreground view along Clifton Terrace. Views of columns, OLE and passing trams set amongst busy urban environment.	Low	Neutral
133	Residential Properties Various 2.5 storey terraces on Dalry Road, Walker Terrace and Lewis Terrace. Mid to distant views towards Haymarket Station.	Low - Medium	Views over rail corridor to tram alignment as it runs along to Clifton Terrace. Views of columns and passing trams set amongst busy urban environment.	Low	Neutral
132	Haymarket Railway Station Station entrance and forecourt with taxi rank and bus stop. Views from forecourt to busy traffic on Haymarket Terrace.	Low - Medium	Direct views to Tram Alignment and tram stop. Alignment moves from side of road to shared running. Columns on southern side of road, building fixings on northern side. Caledonian Ale House to be demolished to cater for tram alignment and stop.	Medium	Minor - Moderate Negative
131	8 Storey office building on Clifton Terrace Views overlooking Clifton Terrace to railway station, car park and Caledonian Ale House opposite.	Low	Direct views to Tram Alignment and tram stop. Alignment moves from opposite side of road to shared running. Columns on southern side of road, building fixings on northern side. Caledonian Ale House to be demolished to cater for tram alignment and stop.	Low	Minor Negative
130b	Residential Properties 4.5 storey tenement flats on Rose Crescent Short views enclosed within street to buildings opposite. Oblique views along street towards Haymarket Terrace	Low - Medium	Oblique views to Tram Alignment on Haymarket Terrace.	Low	Neutral

130a	Residential and Commercial Properties 4.5 storey tenement flats with street level shop frontages. Nos. 2-6, 8-16, 18-24, 28-38, 40, 44-46 Haymarket Terrace and 12-15 Clifton Terrace Views overlooking busy road to buildings and railway station opposite.	Medium	Direct view of alignment across Haymarket Terrace as it passes in front of Rosebery House. Views to tram stop adjacent to Haymarket Station. Caledonian Ale House to be demolished to accommodate for tram alignment and stop.	Medium - Low	Minor – Moderate Negative
129	Residential and Commercial Properties 4.5 storey tenement flats with street level shop frontages. Nos. 48-54 and 58-62 Haymarket Terrace Views overlooking Haymarket Terrace to buildings opposite.	Low - Medium	Oblique views to Tram alignment as it passes in front of Rosebery House. Distant oblique views to tram stop adjacent to Haymarket Station.	Low	Neutral
128	Rosebery House 4 Storey office building. Corner of Haymarket Terrace and Haymarket Yards. Views over car park to Haymarket Terrace.	Low	Tram alignment to travel adjacent to building through existing car park with removal of adjacent trees. Direct views of tram and alignment. Oblique views to tram stop adjacent to Haymarket Station.	Medium	Minor – Moderate
127	Residential Flats 5 storey tenement flats on Haymarket Terrace. Street level occupied by retail premises. Views to office buildings and glimpse of rail corridor from back of properties.	Low - Medium	Tram alignment to travel between buildings on currently disused land and on existing roads. Direct views from back of building. Substation in view.	Low	Minor Negative
126	Office Buildings Mix of 3 to 5 storey office buildings on Haymarket Terrace and Haymarket Yards. Windows with views facing other offices and parking areas.	Low	Tram alignment to travel between buildings on currently disused land and on existing roads. Direct views from buildings. Substation in view.	Low	Minor Negative

125	Office Buildings Located on Devon Place and West Coates. Slot views towards rail corridor and other buildings.	Low	Slot glimpsed views to passing trams and poles.	Low	Neutral
124	Residential Properties Single storey terraces. Nos. 1 to 4 Devon Place. Views to street and surrounding office buildings.	Low	Partially obscured views along alignment as it travels between office buildings.	Low	Neutral
123	Residential Properties 4 Storey tenement flats on Dalry Road Slot views between buildings towards rail corridor.	Medium	Distant glimpses of alignment and passing trams beyond rail corridor.	Low	Neutral
122	Commercial Premises 18 Devon Place 3 south facing windows looking over wall to CA House and rail corridor. Views from east facing windows partially screened by vegetation.	Low	Alignment to travel in close proximity to property. Between property and CA House. Passing trams would be visible within a few metres of windows.	Medium	Minor to Moderate
121	CA House 4 Storey office building on Haymarket Yards. Windows on all sides looking across parking areas, rail corridor and other buildings.	Low	Alignment to travel adjacent to front entrance of building within external grounds. Redevelopment of outdoor green space and entry road to accommodate alignment.	Medium	Minor - Moderate

120	Residential Properties Various 4 storey flats on southern edge of railway corridor. Facing perpendicular to railway corridor. Oblique views over railway corridor to flats, and offices beyond. Direct views to other flats.	Low	Oblique views of tram alignment adjacent to far side of railway corridor. Some longer views down alignment.	Low	Neutral
119	Residential Properties Various 4 storey flats on southern edge of railway corridor. Orientated directly towards Railway corridor. Direct views over railway corridor to flats, and offices beyond.	Low - Medium	Views of tram alignment adjacent to far side of railway corridor.	Low	Neutral
118	Residential Properties 2 storey terraces Nos. 1 to 10 Sutherland Street Views from upper floors over stone wall towards offices, flats and rail corridor. Ground floor views enclosed by wall.	Low - Medium	Views towards alignment as it travels parallel to rail corridor and then between properties and office buildings. Upper floors would have direct views of OLE, poles and passing trams.	Low	Minor Negative
117	Residential Flats 3 storey flats Nos. 64 and 65 Balbirnie Place. Close direct views over planted strip to railway corridor and passing trains and flats beyond	Low - Medium	Tram alignment would travel immediately adjacent proximity to properties; between properties and railway corridor within existing planted strip. Direct views from upper floors to alignment. Lower views partially obscured by fence.	Medium	Moderate Negative
116	Various Residential Properties Located in area north of Balbirnie Place. Occasional upper windows with slot views towards rail corridor.	Medium	Slot views towards alignment travelling adjacent to railway corridor.	Low	Neutral

115	Residential Flats 3 storey flats Nos. 54, 56, 60 and part of 62 Balbirnie Place. Direct views of car parking and other flats. Side views towards rail corridor.	Medium - Low	Tram alignment to travel adjacent to railway corridor within existing planted strip. Oblique views from upper floors to alignment. Lower views partially obscured by fence.	Low	Minor Negative
114	Residential Flats 3 storey flats Nos. 53, 57, 58, 59, 63 and part of 62 Balbirnie Place. Direct views to towards railway corridor beyond planted strip and fence.	Medium	Tram alignment to travel adjacent to railway corridor within existing planted strip. Direct views from upper floors of alignment. Lower views partially obscured by fence.	Low - Medium	Minor Negative
113	Residential Flats 3 storey flats Nos. 50 and 51 Balbirnie Place. Direct views to vegetated embankment and screen planting. Upper floors view railway corridor.	Medium	Tram alignment to travel adjacent to railway corridor. Loss of screening vegetation. Direct views from upper floors to alignment. Lower views partially obscured by fence.	Low	Minor Negative
112	Residential Flats 2 storey flats on Balbirnie Place. Short views to vegetated embankment and narrow access street.	Medium	Distant glimpse views of tops of poles as tram alignment travels adjacent to rail corridor.	Low	Neutral
76	Industrial Building and Car Showroom to the south of Railway Corridor View from occasional upper windows orientated towards Haymarket railway depot.	Low	View to delta junction and alignment to north of railway depot. Views partially obscured by stationary rail stock at depot. Loss of vegetation in distance associated with disused railway corridor.	Low	Neutral

75	Residential Flats 5 blocks of modern 5.5 storey flats on Russell Road Varying extent of views: ground floor views contained by rail corridor and upper floor views open and panoramic over railway corridor, to Pentland Hills.	Medium	Alignment would run immediately to the north of the railway corridor and then on new over bridge structure across Russell Road with a delta junction. Loss of vegetation associated with disused railway corridor which screens views of residential areas to the east.	Low - Medium	Moderate Negative
74	Roseburn Bar and various residential flats 4 storey tenement flats on Roseburn Street and more modern 3-5 storey flats on Russell Road. Various distant views to railway corridor. Shorter views contained by adjacent buildings.	Low - Medium	Alignment would run immediately to the north of the railway corridor. Various distant views towards alignment. Loss of some vegetation along railway embankment in distance.	Low	Neutral
72	Office buildings 3 and 4 storey buildings on Russell Road Various views towards railway corridor	Low	Alignment would run immediately to the north of the railway corridor. Various views towards alignment. Loss of some vegetation along the railway embankment which partially diffuses existing views.	Low	Neutral
73	Royal Mail Sorting Office on Russell Road Large warehouse building with no windows with views restricted to areas of car parking and vehicle activity within site. External space has direct views of adjacent railway corridor	Low	The retaining structure for the alignment would border the southern edge of the building, with the tram alignment running to the south of it. Direct views from external areas	Low	Neutral
71	Russell Gardens, 4 storey residential flats. Windows on all sides, Most views contained within site by adjacent properties and boundary wall. Upper floor views extend beyond	Medium	Tram alignment runs to the south of the properties. Views to OLE system, poles and passing trams Upper floors would have wider views of tram alignment although they would comprise a relatively small element of the overall view.	Low	Neutral

70	Upper floors of Roseburn Primary School and adjacent 4 storey tenements on Roseburn Street. Views over street to industrial premises and railway corridor. Elevated more extensive views across city.	Medium	Alignment would travel behind industrial premises to the north of the rail depot and rail corridor. Views from upper floors of OLE, poles and passing trams	Low	Neutral
69	Light Industrial Premises on Roseburn Street Properties mainly orientated towards street, rail depot and railway corridor to rear	Low	Alignment would travel to the rear of buildings adjacent to rail depot and railway corridor. Views from some external loading areas direct to trams.	Low	Neutral
68	Cluster of residential properties off Roseburn Street. 2 to 2.5 Storey semi-detached properties and 1 storey bungalow Most views contained by adjacent properties and planting within gardens. Other views of street and light industrial frontages beyond.	Low - Medium	Views towards tram stop and alignment Trams to be 3 metres above grade at tram stop increasing visibility to residences. Building to be demolished to create area for tram stop. Loss of some mature trees in distance Longer views to over bridge structure as the tram crosses Roseburn Street.	Low	Neutral
67	Murrayfield Rugby Stadium and Grounds, Murrayfield Ice Rink. Large national rugby stadium, grass pitches, clubhouse, ice rink. Views generally from outdoor areas and clubhouse. Most views contained by perimeter planting. Railway corridor runs along southern edge of property.	Medium	Tram alignment would run along southern edge of property to the immediate north of the railway corridor. Alignment on over bridges to cross Water of Leith to the west and Roseburn Street to the east, to be located at both ends of premises. Tram stop to be located immediately across from principal entry gates on Roseburn Street. Views from outdoor areas and clubhouse to alignment, over bridges and tram stop. Loss of some vegetation along railway corridor.	Low	Neutral

63	Residential Properties. 2 and 2.5 Storey semi-detached properties on Baird Drive with rear gardens back on to railway corridor Views to rail corridor largely screened by mature deciduous planting.	Medium	Alignment would travel between existing railway corridor and rear garden boundaries. Loss of vegetation currently screening railway resulting in direct view of passing trams, OLE and poles.	Medium	Moderate Negative
64	2 Storey detached residential property on Riversdale Road. Large windows on upper storey gable end which take advantage of views along Water of Leith Lower views screened by hedges	Medium - High	Distant views towards alignment on bridge structure as it crosses the Water of Leith Distant glimpsed views of passing trams, OLE and poles.	Low	Neutral
65	Residential Properties: 1 and 1.5 storey bungalows on Baird Grove and Baird Terrace Views largely obscured by adjacent properties and planting resulting in slot views.	Medium	Narrow, glimpsed views of alignment adjacent to rail corridor. Loss of mature vegetation on railway embankment.	Low	Neutral
66	Residential Properties: 2 Storey semi-detached properties along the northern side of Baird Drive. Short views across street to properties with glimpsed views of railway corridor between properties. Hedges and occasional tree planting restricts views.	Low - Medium	Views of tram alignment largely obscured by buildings and localised planting. Loss of mature vegetation on rail embankment.	Low	Neutral
62	Scotmid Grocery Store and Residential Properties: Mix of 1 and 2 storey semi-detached properties. Filtered oblique ground level views across road junction to railway corridor and rail over bridge	Low – Medium	Oblique views of at-grade crossing of Balgreen Road. Obscured views of tram stop.	Low	Neutral

61	2 Storey semi-detached residential properties, on corner of Baird Drive and Saughtonhall Drive Views out filtered by deciduous trees and low hedges. Views across road junction to railway corridor, Jenner's Depository and mature planting.	Low – Medium	Filtered view towards tram stop and at grade crossing of Balgreen Road Loss of vegetation at tram stop.	Low	Neutral
60	Jenner's Depository on Balgreen Road. Large 5 storey warehouse building (listed) with windows on all sides. Other small buildings within site boundary. Site surrounded by mature planting to the south and west. Views from upper floors of main building towards rail corridor.	Low	Alignment and tram stop to be located adjacent to southern curtilage of site along disused railway corridor embankment At grade crossing of Balgreen Road and associated loss of vegetation. Filtered views to alignment, tram stop, substation and at grade road crossing.	Low	Neutral
59	2 storey semi-dstached residential properties on Glendevon Road Most views enclosed by mature deciduous planting and embankment of disused railway corridor.	Medium – Low	Alignment would run to the north of the existing railway corridor, along a section of the disused railway /footpath. Filtered view of tram alignment through vegetation.	Low	Neutral
58	2 and 3 Storey Residential flats on Whitson Road. Filtered views through trees over railway corridor towards golf course and beyond.	Medium	Alignment would travel through open space between golf course and railway corridor. Filtered views from upper storeys over railway corridor of poles and passing trams. Loss of some tree planting in open space.	Low	Minor Negative
56	The Fairways, 4 storey modern residential flats Wide views over golf course and along railway corridor to Edinburgh city centre and Castle in distance Some views partially screened by mature deciduous trees.	High	Views along alignment as it travels adjacent to railway corridor. Southern end of block will have direct views of over bridge structure.	High – Medium	Moderate Negative

57	Residential properties, 2 to 2.5 storey semi-detached properties on Carrick Knowe Avenue backing on to golf course Upper storey views over golf course Lower views mostly screened by localised planting and landform	Medium - High	Oblique mid ground view to alignment running adjacent to railway corridor. View of OLE, poles and passing trams.	Low	Neutral
55	3 Storey residential flats, located on Stenhouse Drive and Stenhouse Avenue West Open views across railway corridor to golf course and Costorphine Hill in distance. Existing view of pedestrian/cycle over bridge.	Medium	Direct view of over bridge structure and adjacent alignment. Concentration of vertical poles due to curve of alignment.	Low	Minor Negative
54	1, 2 and 3 storey residential properties. Mix of flats, terraces and semi-detached properties, mainly located on Saughton Mains Street Various types and angles of view towards road junction, footbridge and beyond.	Low - Medium	Various angles of glimpsed view to alignment and over bridge. Concentration of vertical poles due to curve of alignment.	Low	Neutral
53	4 storey residential flats on corner of Stenhouse Drive and Saughton Mains Street. Direct views to road junction, properties and beyond to railway corridor and pedestrian/cycle footbridge.	Low - Medium	Direct elevated views to over bridge and alignment. Concentration of vertical poles due to curve of alignment. Possible loss of some trees.	Low	Minor Negative
52	2 storey semi-detached residential properties on Carrick Knowe Road Generally second storey views directly across railway corridor to allotment gardens and flats beyond. Lower views generally screened by localised vegetation.	Medium – Low	Tram alignment would travel through green space. Distant, intermittent views of tram alignment, poles and passing trams viewed through existing rail corridor. Loss of some mature trees within green space.	Low	Neutral

51	Low key commercial premises, located on Saughton Mains Street between green space and Railway corridor. Consists of sheds, temporary structures, external workspace and car parking. Views to railway and green space.	Low	Tram alignment would travel through green space. Direct views to alignment, poles and passing trams. Loss of some mature trees within green space.	Medium	Minor Negative Neutral
49	4 storey residential flats on Stenhouse Drive Direct views across road to green space, low key commercial premises and railway corridor.	Low – Medium	Tram alignment would travel through green space. Direct view of alignment, OLE, poles, passing trams and new structure over Saughton Road. Loss of some mature trees within green space.	Low	Minor Negative
50	4 storey residential flats mainly located on Saughton Mains Park and Saughton Mains Terrace Oblique glimpsed views between buildings to road corridor, green space, low key commercial premises and railway corridor beyond.	Low – Medium	Tram alignment would travel through green space. Glimpsed views of alignment, OLE, poles and passing trams and new structure over Saughton Road. Loss of some mature trees within green space.	Low	Neutral
47	Residential flats. 16 blocks of 4 storey flats on Saughton Road Front and side on glimpsed views towards road, road junction, open grass verge and railway corridor beyond. Partial screening by mature deciduous trees.	Low – Medium	Mid ground view to construction compound, tram stop, alignment and new structure over Saughton Road.	Low	Neutral
48	2 storey semi-detached residential properties on corner of Saughton Road and Broomhouse Terrace. Occasional oblique upper level views to road junction, open grass verge and railway corridor beyond, often blocked by adjacent buildings and localised planting.	Low – Medium	Oblique views of alignment and new structure crossing Saughton Road from upper windows.	Low – Low	Neutral

45	2 storey semi-detached houses, located on Bloomfield Crescent and Saughton Road North. Views towards railway corridor embankment. Upper level views more distant towards Government buildings and backdrop of Pentland Hills.	Low - Medium	Views towards OLE, poles and passing trams. Direct view of tram alignment would be obscured by railway embankment and passing trains. Possible distant views of high sided structures and vehicles within construction compound.	Low	Neutral
46	Saughton House, Government building. Large 2 storey building with numerous wings containing Government offices with windows on all sides. Filtered views through trees to open grass area and railway corridor beyond. Main views are contained by the property.	Low	Filtered views of tram alignment as it travels through wide grass verge adjacent to railway corridor and more oblique views of new structure over Saughton Road. Close views of construction compound and tram stop to be built on north side of Broomhouse Drive.	Low	Neutral
44	2 and 3 storey residential flats on Forrester Park Avenue and Forrester Park Green. Views across railway corridor to open green space, offices and flats beyond. Localised deciduous planting partially screens some views.	Low - Medium	View of alignment as it runs on embankment with level views of OLE, poles and passing trams. Longer views towards construction compound and distant oblique views towards tram stop.	Low	Neutral
41	5 blocks of 3 storey residential flats on Broomhouse Drive. Views of road to wide grass verge and railway corridor beyond.	Low - Medium	Direct foreground views would be dominated by tram alignment as it travels largely at grade but with some sections on embankment through wide grass verge adjacent to railway corridor. Views set against railway corridor in background.	Medium	Minor Negative
42	3 storey residential flats set 90° to Broomhouse Drive Oblique views over road to green space and railway corridor beyond. Short more immediate views of car parking and contained by adjacent flats. Lower level views slightly obscured by planting.	Low	Oblique views towards tram alignment as it travels through green space adjacent to railway corridor. Views set against railway corridor in background.	Low	Neutral

43	Residential properties; mixture of 3 storey flats, 2 storey semi-detached and terrace properties and single storey bungalows. Properties mainly located on Broomhouse Park and Broomhouse Street North. Occasional glimpsed views towards green space and railway corridor. Views are short and contained by surrounding buildings.	Low	Distant, glimpsed views towards tram alignment as it travels through green space adjacent to railway corridor. Views set against railway corridor in background.	Low	Neutral
40	Mix of 3 and 4 storey residential flats on Forrester Park Drive and Forrester Park Loan. Views from upper floors south over railway corridor and beyond.	Low - Medium	View across railway corridor to alignment on embankment as it runs in green space and of new structure over Broomhouse Road. OLE, poles and passing trams would be visible.	Low	Neutral
39	Mix of 3 storey flats and 2 storey terrace properties. Views of open grass verge surrounding roundabout and railway corridor.	Low - Medium	Mix of views towards tram alignment as it travels through green space adjacent to railway corridor. Views of new structure over Broomhouse Road.	Low - Medium	Neutral
38	2 Storey semi-detached residential properties. Nos. 255, 257, 259, 261, 263, 275, 277, 279, 281, 283, 285, 287, 289 Broomhouse Road Main views orientated towards Broomhouse Road and Sighthill community park beyond. Low hedges screen some views.	Medium	Mix of views towards tram alignment as it travels on embankment through green space adjacent to railway corridor. View of new structure over Broomhouse Road.	Low	Neutral
36	High rise flats in Sighthill. Approximately 15 storey buildings with wider open views across Edinburgh.	Medium	Tram alignment would travel through grass verge adjacent to railway corridor. Tram system including stops would form barely discernible elements within their wider overall views.	Low	Neutral

35	Power League single storey building and 5 aside football pitches. Windows with views towards railway corridor and open green space and disused land.	Low	Tram alignment would travel through grass verge adjacent to railway corridor. Tram stop would be located to the west, adjacent to junction with South Gyle Access. Mid ground views of alignment viewed against railway corridor. Views partially screened by planting.	Low	Neutral
37	Stevenson College, 2 large, 8 storey (approx.) buildings Windows on all sides with views from upper floors across Edinburgh	Low	Tram alignment would travel through grass verge adjacent to railway corridor. Tram system including stops would form barely discernible elements within their wider overall view.	Low	Neutral
34	Macro No windows - no view from building. Views within car park are short and contained to the north by deciduous screen planting	Low	Possible occasional glimpsed view from car park towards alignment although fairly mature screen planting would obscure all but very occasional views.	Low	Neutral
33	2 storey industrial Buildings in Bankhead Industrial Estate and other light industrial buildings on Bankhead Road. Various size windows with elevated views towards railway corridor and adjacent corridor of disused land used for flytipping.	Low	Tram alignment would travel through disused land adjacent to railway corridor in Minor cutting and on embankment. Tram stop would be located at eastern end of receptors. Alignment would be viewed against railway corridor.	Low	Neutral
32	Various Light Industrial Buildings, mainly on Bankhead Crossway North. 3 to 4 storey industrial units with varying views (glimpsed, obstructed, oblique) towards railway corridor across disused land used for flytipping. Industrial buildings in view beyond railway corridor	Low	Tram alignment would travel through disused land. Glimpsed views of alignment, OLE, poles, passing trams	Low	Neutral

31	Car Show Rooms and Light Industrial Units on Bankhead Drive Views towards railway corridor across disused land used for flytipping. Industrial buildings beyond railway corridor	Low	Tram alignment would travel through disused land with alignment, OLE, poles, passing trams all highly visible in immediate views.	Low	Neutral
30	Hermiston Gait retail units and car park. Views from retail unit entry doors across car park and towards A720 City Bypass. Views from car park to Edinburgh Park Station construction works, A720 and Edinburgh Park.	Low	Tram stop would be adjacent to retail premises and would read as an extension of Edinburgh Park rail station. New over bridge structure carrying alignment would be visible from car park. Construction compound would be visible in a similar location as existing one for the works associated with Edinburgh Park station.	Low	Neutral
29	Royal Mail Building Mid New Cultins Road. Large light industrial warehouse with windows Wide views north towards Edinburgh Park, railway corridor, disturbed land, A720, localised planting, and structures	Low	View of construction compound and alignment on new over bridge structure.	Low	Neutral
28	Various Office Units in Edinburgh Park and South Gyle park Business Estates. Generally 3 Storey Office Buildings. Elevated views from upper floors over car park, scrub and disturbed land towards Hermiston Gait, over bridge structures across railway corridor, A720 and hills beyond.	Low	Distant elevated views towards new over bridge structure, alignment, OLE, poles and trams.	Low	Neutral
23	Office Buildings in Edinburgh Park, fringing western side of linear water feature. Large 3 storey office buildings with large windows dominating façades which overlook high quality landscape corridor including water feature and planting, car parking at rear	Medium	Tram alignment would run parallel to buildings through landscaped corridor on the far side of water feature. Tram Stop to be located within landscaped corridor.	Low	Minor Negative

24	Ritz Bar & Grill, The Edge Gym and 2 office buildings east of landscape corridor in Edinburgh Park Single storey and 2 story buildings with large windows dominating façade. Views looking towards landscape corridor and office buildings beyond.	Medium	Tram alignment would run parallel to buildings through landscape corridor in immediate view from receptors. Tram Stop to be located within landscape corridor adjacent to office buildings. Structure associated with tram stop, OLE, poles and passing trams would impact on views.	Medium	Moderate Negative
26	Office Buildings east of Edinburgh Park. Distant glimpsed views from elevated points into Edinburgh Park and beyond	Low	Elevated, distant and glimpsed views of tram alignment through Edinburgh Park.	Low	Neutral
25	Scottish Equitable Building in Edinburgh Park. 4 storey building with large windows. Ground floor views partially screened by mature planting and landform Views from upper floors towards landscape corridor and beyond.	Low - Medium	Alignment would run parallel to Lochside Crescent. Upper floors would have elevated views of alignment. Views would be more prominent during winter. Views from North west corner of building would include section of alignment as it runs through The Gyle car park.	Low	Neutral
22	Office Building at northern end of Edinburgh Park. 3 Storey building with large windows dominating building façade - partially occupied. Elevated views of landscape areas, Gogar roundabout, The Gyle and beyond.	Medium	Partially screened elevated views towards depot, The Gyle tram stop and alignment. Direct views of alignment as it crosses South Gyle Broadway.	Low	Neutral

21a	Office Building at northern end of Edinburgh Park. 3 Storey building, glazed on all sides. Elevated views over Gogar roundabout, The Gyle and beyond. Currently unoccupied	Medium	Partially screened elevated views towards depot, The Gyle tram stop and alignment.	Low	Minor Negative
27	The Gyle Shopping Centre (Central and Eastern section) Elements which feature in general views at The Gyle include, landscape screen planting around site and in car park, car park, lighting columns, vehicle traffic and petrol station. Views from within The Gyle retail development are contained with few outward views.	Low	Tram alignment would run through the car park to the west of this area. Views towards alignment partially screened by localised structures, planting, lighting and vehicles	Low	Neutral
20	The Gyle Shopping Centre (Safeway end). Views from Safeway are largely contained with few outward views. Elements which feature in external views include car park, formal planting and lighting columns. Views towards Gogar roundabout and adjacent feeder roads are screened by mixed woodland planting.	Low	Tram alignment and Tram Stop would be located within car park area adjacent to Safeway building.	Low	Neutral
18	SGA Packaging Scotland industrial units between Turnhouse Road and railway. No windows, views limited to external space for goods vehicles/loading areas.	Low	Depot site would be located adjacent to the receptor which would include OLE, poles, structures, lighting and trams.	Low	Minor Negative
16	East Lodge House, single storey property along southern edge of A8. Surrounding by mature planting and low wall. 2 side windows with views of A8 and Gogar roundabout and fields beyond.	Low	Alignment would run parallel to A8 on northern side. View of alignment, OLE, poles and trams from property.	Low	Neutral

17	2 Houses (2 storey) and farm buildings on Turnhouse Road and Meadowfield Road. Upper level views across agricultural fields towards Gogar roundabout and Pentland Hills in distance.	Medium	Possible glimpsed views of OLE, poles and lighting in depot site from upper windows. Seen in conjunction with existing lighting columns at Gogar roundabout.	Low	Neutral
19	Castle Gogar Lodge House. Single storey property on northern edge of A8. Very well screened by surrounding wall and planting with only filtered views towards agricultural fields. 3 windows would directly face alignment.	High	Tram alignment would pass immediately to the north of the property. Close filtered views of alignment, OLE, poles, and trams.	Medium	Moderate Negative
13	Gogar Church and graveyard. Church building used as cabinet works business Attractive visual setting with mature trees and open views across agricultural fields to airport in distance. Over bridge structure across to RBS site is currently under construction adjacent to property.	Medium - High	Tram alignment would run on an elevated structure to immediate west of receptor. Visual intrusion into views from earthworks, OLE, poles and passing trams.	Medium	Moderate to Minor Negative
21b	Royal Bank of Scotland World Headquarters Currently under construction Large business park with various buildings. Mature vegetation restricts views out from site.	Medium	Alignment would travel on opposite side of A8 turning north into agricultural fields. Adjacent residential buildings would be demolished to cater for tram stop. View of alignment, OLE, poles and trams tram stop from some buildings and some areas of site.	Low	Neutral
7	Castle Gogar Listed building. Surrounded by mature deciduous planting with diffuse views to the south in winter Views across agricultural fields from small upper storey windows.	Medium	Distant views towards tram alignment and stop at Ingliston which would be viewed in context with the (would be existing) Park and Ride development (P&R). Distant views of tram alignment as it travels across agricultural fields to the south.	Low	Neutral

5	Gogar Mains Estate Office, 2 Storey office and estate buildings at the end of Gogar Mains Farm Road. Well maintained property and grounds. Open views south across agricultural fields	Medium	Direct view towards alignment in mid ground as tram runs across agricultural fields. Slightly obscured views of tram stop in distance, which would be viewed against the (would be existing) P&R.	Low	Minor Negative
15	Gogar Mount House, single storey bungalow off A8. Main view contained by gates and wall. Side windows facing A8 with views across road and fields to distant hills.	Low - Medium	Possible view of OLE, poles and top of trams set against hills in the distance	Low	Neutral
14	2 Bungalows on Gogar Station Road Glimpsed oblique views across A8 towards fields and airport	Low	Possible view of OLE, poles and top of trams in distance.	Low	Neutral
3	2 Storey House and outbuilding to north of A8. 15 Caravans stored but appear to be un-occupied within property curtilage. 2 small upper storey windows with open views across agricultural fields towards airport. Fence and hedge screen views from garden and ground floor rooms.	Low - Medium	Views along and across alignment, with tram stop viewed against (would be existing) P&R.	Low	Minor Negative
2	1.5 storey house and Farm Buildings (3 no.) off Eastfield Road 1 upper floor gable end window with views towards agricultural fields and (would be existing) P&R. Planting screens lower level views.	Low - Medium	Tram Stop and Tram alignment in mid ground view, viewed in context and against (would be existing) P&R.	Low	Neutral

7	Snack Bar and Car Park off Eastfield Rd. 1 Temporary cabin structure and informal parking for 10+ vehicles. Open views across agricultural fields towards Castle Gogar, airport with (would be existing) P&R dominating foreground views.	Low	Tram Stop and alignment would dominate foreground views, although they would be viewed in conjunction with the P&R.	Low	Minor Negative
8	East Ingliston House, 2 Storey house on Eastfield Road Views from upper storey towards fields, airport and beyond and (would be existing) P&R. Glimpsed views from ground floor level due to mature screen planting. Overlooking roundabout and construction works.	Medium	Mid ground views of tram alignment and stop viewed partly in the context of the (would be existing) P&R.	Low	Minor Negative
9	No. 20 Eastfield Road. Single storey terrace residential properties. Low level views of Eastfield Road and agricultural fields beyond.	Medium - High	Midground view of alignment including OLE, poles and passing trams.	Low	Minor Negative
10	East Mains of Ingliston Small Holdings. Single storey residential property with conservatory and out building. Lower views screened by hedge planting. Property is orientated towards road.	Medium	Glimpsed views from conservatory and garden of alignment, OLE, poles and passing trams.	Low	Minor Negative
11	Hilton Hotel at the Airport. 3 storey building and outdoor car park Views from side and rear of hotel towards Gogar Burn. Vegetation associated with Burn and planting within car park contain lower level views. Upper level views extend across agricultural fields beyond.	Low	Tram alignment would run along eastern edge of car park. Direct views of OLE, poles and passing trams. Tram stop would be viewed as a distant element adjacent to (would be existing) P&R.	Medium	Minor Negative

12	Edinburgh Airport Views at the airport range from the visual experience generated in the arrival and departure sequence and from within the Terminal Building and associated infrastructure. Elements which feature in such views include, car parks, lighting columns, advertising, various structures and construction works.	Low - Medium	OLE, poles and trams would be visible as the alignment runs into the airport core area. The tram terminus adjacent to the Terminal Building would also be visible. This scale and type of infrastructure/ construction work would not be uncommon in an airport environment.	Low	Minor Positive
4	Airport Cargo Buildings including Hangars, Control Tower and warehouses.	Low	Distant views along and across alignment and towards Tram Stop. Proposals would form a small Neutral element within existing wider views.	Low	Neutral
6	Turnhouse Golf Course Clubhouse and adjacent residential properties at the junction of Turnhouse Road and Craigs Road. Views across airport to distant hills.	Medium	Distant views towards tram alignment. Proposals too distant to impact on view.	Low	Neutral
77	No. 5 Ingliston Road Two single storey bungalows and adjacent industrial sheds. Partially obscured and oblique views over open grassland to long stay airport car park. Views of cars, security fencing and lighting columns dominate the view.	Low	Tram alignment would run through long stay car park from Eastfield Road crossing. Views of OLE, poles and passing trams would be viewed against the existing long stay car park. Tram stop would also be visible.	Low	Neutral
78	Little Flyers Nursery, single storey building on Ingliston Road. Heavily screened by mature coniferous planting. Side views from outdoor play area to long stay airport car park.	Low	Tram alignment would run through long stay car park and adjacent to rear of property. Largely filtered views of alignment and tram stop through dense coniferous vegetation.	Low	Neutral

79	No. 4 Ingliston Road bungalow with outbuilding. Direct views of long stay airport car park dominated by cars, security fencing and lighting columns. Some views partially screened by outbuildings and some coniferous planting and along southern boundary towards A8 by mixed planting.	Low - Medium	Tram alignment would run to the north of the property and cut through corner of garden space and entrance drive. Ingliston West tram stop would lie to the north east of the property in view. The alignment would also be in view as it runs through the long stay car park.. Loss of some mature trees within property curtilage.	High	Major Negative
80	Ingliston Kennels and Cattery on Ingliston Road Deciduous planting partially obscures views along Ingliston Road.	Low	Partially obscured distant views along Ingliston Road towards at grade tram crossing.	Low	Neutral
81	BP Petrol Station, adjacent to westbound carriageway of the A8. Frontage of shop orientated to petrol station forecourt away from junction of A8 and Ingliston Road. Views from forecourt to A8.	Low	Tram alignment would cross into centre of A8 at junction with Ingliston Road. Central reserve to be widened to cater for tram alignment.	Low	Neutral
82	Residential properties adjacent to A8. Ingleview (Single storey), Fairview (1.5 storey), Ingliston Lodge (single storey Grade B listed building) Varying views to A8 and A8 junction with Ingliston Road. Other views across fields and to Pentland Hills Some lower level views obscured by low walls and deciduous planting.	Low - Medium	Tram alignment would cross into centre of A8 at junction with Ingliston Road. Central reserve to be widened to cater for tram alignment.	Low - Medium	Minor Negative
83	Middle Norton, cluster of Grade C listed single storey cottages and terrace properties. Properties fringe the A8 which dominates foreground views.	Low	Tram alignment would run along central reserve of A8. Central reserve to be widened to cater for tram alignment. Adjustment to traffic lanes on A8	Medium	Minor Negative

84	Norton Mains Cottages; 2 Single storey residential cottages set back to the south of the A8. Filtered views across agricultural fields to A8 in distance. Surrounded by mature vegetation and arable fields.	High	Tram alignment would travel along central reserve of A8. Distant glimpsed views of OLE, poles and passing trams within A8 corridor.	Low	Neutral
85	Norton House Hotel Lodge House and adjacent property on southern side of A8. Single storey residential properties with windows on all sides. Foreground views to A8 partially obscured by pockets of mature mixed planting and stone wall	Medium - Low	Tram alignment would travel along central reserve of A8. Central reserve to be widened to cater for tram alignment.	Medium - Low	Minor Negative
86	Inglistion Park Lodge B&B, single storey property on the corner of the A8 and Hallyards Road. Immediate foreground views of A8 and rolling arable fields and mature woodland planting beyond.	Low - Medium	Tram alignment would cross from central reserve running along the A8 at Hallyards Road north across agricultural fields. Immediate views of junction and more extensive views of alignment within agricultural fields	Medium - Low	Moderate to Minor Negative
87	The Rural Centre, 1 and 2 Storey office buildings off Hallyards Road Various views towards airport, airside space, showground, agricultural fields to wooded ridgeline beyond. Views of A8 screened by coniferous hedgerow planting	Medium	Distant views of alignment as it rises across the agricultural fields to reach the wooded ridgeline. OLE, poles and passing trams would be viewed in the distance against the wooded backdrop and not against the skyline.	Low	Neutral
88	Residential properties at Ratho station. 2 Storey terraces and single storey bungalows Various views across adjacent playing fields with glimpses of A8 corridor and agricultural fields beyond. Foreground views often semi-obscured by adjacent properties and localised planting.	Medium - Low	Tram alignment would run through agricultural fields from shared running along the A8. Views of alignment partially obscured by vegetation, landform and adjacent residential properties.	Low	Neutral

89	Residential properties in Ratho Station: 2 Storey terrace on Hillwood Terrace Direct views from upper floors to area of young planting and agricultural fields beyond Lower views screened by planting	Medium - High	Tram alignment would run through agricultural fields. Distant views from upper floors to alignment partially obscured by vegetation and landform	Low	Neutral
90	2 Storey terrace properties in south east part of Ratho Station. Rear views towards agricultural fields screened by dense deciduous planting. Seasonal variations in view particularly evident.	Medium	Tram alignment would run through agricultural fields to rear of properties Loss of some vegetation as alignment crosses into railway corridor Filtered views of alignment during winter but most summer views would be screened by existing and proposed planting.	Low	Neutral
91	Cluster of residential properties, nos. 70 to 84 Station Road Single storey bungalows and 1.5 storey detached properties. Railway corridor runs close to properties largely in cutting. Views generally contained by landform, railway corridor, adjacent properties and localised planting.	Medium - Low	Alignment would run on embankment along rail corridor, to south of properties. Side views from properties towards tram stop. Direct and partially obscured views of OLE, poles and passing trams. Loss of some vegetation within railway corridor	Low	Minor Negative
92	Residential Properties Mainly 2 storey terraces located in lower parts of Ratho Station with glimpsed upper level views towards railway corridor to south of Ratho Station.	Low - Medium	Distant, occasional glimpsed views towards a section of tram alignment adjacent to railway corridor.	Low	Neutral
93	Ratho Park/ 4 Storey office building Glass façade with southern distant views towards ridge line/railway corridor.	Low	Distant, occasional glimpsed views towards a section of tram alignment adjacent to railway corridor.	Low	Neutral

94	Hillwood House. 2 Storey detached, Grade C listed property with grounds and outbuilding. Grade C listed building Situated on ridge with extensive elevated views overlooking Ratho Station and beyond. Adjacent rail corridor largely hidden from view in cutting. Mature deciduous tree planting largely obscures views to the east.	High	Tram alignment would run within and adjacent to rail corridor, largely on embankment rather than in cutting like the railway. Tram stop would be in immediate view to the north of the property. Views from upper storey windows to tram alignment and stop. Loss of some vegetation within railway corridor	Medium	Minor Negative
95	Residential properties; Woodlea, 1.5 storey detached property and Beechbank, 2 storey detached property, set back off Harvest Road Views of Harvest Road partially obscured by mature deciduous tree planting	Low - Medium	Tram alignment would be shared running along Harvest Road Filtered views of OLE, poles and passing trams seen in conjunction with existing traffic.	Low	Minor Negative
96	2 industrial warehouse units on corner of Harvest Road and Harvest Drive. No Windows, premises are surrounded by embankment and deciduous tree planting with views from loading bays and yard areas to surrounding roads.	Low	Glimpsed views of OLE, poles and passing trams as alignment travels along Harvest road	Low	Neutral
97	The ERDC Group. 2 storey office building on Harvest Road. Large windows overlooking car park with views contained by Harvest Road and woodland planting on railway embankment.	Low	Direct mid ground views of shared running of trams along Harvest Road	Low	Minor Negative
98	Class Harvest Centre, single storey industrial unit and shop Elevated position with deciduous tree planting filtering views towards other industrial buildings	Low	Shared running of tram alignment along Harvest Road would be generally hidden from view by landform and planting although OLE and poles would be in oblique view of passing trams on Clifton Hall Road.	Low	Neutral

99	Applied Material Ltd and Alexandra Workwear, 2 storey office building on Clifton Hall Road. Large windows overlooking car parking, road and other industrial buildings.	Low	Direct views of shared running of tram alignment along Clifton Hall Road and views along alignment on Newbridge Road. Passing trams, OLE and poles in full view although viewed against large scale industrial units.	Low	Minor Negative
111	Industrial Buildings Large warehouse buildings on Clifton Hall Road Loading bays and outdoor car parking space, few insignificant windows. Views towards other industrial properties.	Low	Distant oblique view to alignment on Clifton Hall Road.	Low	Neutral
100	Large light industrial warehouse buildings, car parking and yard areas off Newbridge Road. Occasional windows and entrances with views to car parking, street and other buildings. Views generally limited to external parking and loading space only.	Low	Tram alignment along Clifton Hall and Newbridge Roads would be visible as would the tram stop and section of alignment from the stop north, adjacent to Huly Hill. Views limited and from occasional windows entrances and external parking and loading space only.	Low	Neutral
101	Residential Properties 2 storey semi-detached properties and 2 storey terraces. South western part of Newbridge residential area. Views mainly to street and other properties within Newbridge.	Low – Medium	Mid ground to distant views from upper floors to tram alignment turning from Newbridge Road to Old Liston Road. Glimpses from lower floors to poles and passing trams.	Low	Neutral
108	Royal Bank of Scotland Corner Old Liston Road and Bridge Street Single storey building with windows and entrance facing south towards landscaped areas of bus area, Huly Hill and Newbridge entry.	Low	Distant views towards alignment as it turns from Newbridge Road to Old Liston Road. Views will consist of poles and passing trams.	Low	Neutral

109	Newbridge Inn and Single Storey Residential Property at no. 16 Old Liston Road Glimpsed views towards landscaped areas of bus area, Huly Hill and Newbridge entry.	Medium	Distant views towards alignment as it turns from Newbridge Road to Old Liston Road. Views will consist of poles and glimpses of passing trams.	Low	Neutral
110	Residential Properties 1.5 storey terraces on Bridge Street. Views from upper floors to Huly Hill. Lower views to street or contained within property.	Medium	Distant upper level views towards alignment as it turns from Newbridge Road to Old Liston Road. Views will consist of poles and glimpses of passing trams.	Low	Neutral
107	Edinburgh Interchange Warehouse and 2 storey office buildings on Old Liston Road Landscaped bund screening direct views to road. Views from upper level towards Huly Hill.	Low	Alignment to travel adjacent to Old Liston Road at the edge of Huly Hill. Some loss of vegetation and earthworks to cater for alignment.	Low	Neutral
106	Texaco Petrol Station and McDonalds Restaurant Slightly elevated off Old Liston Road. Landscaping treatment within grounds. Angled views towards Huly Hill.	Low	Alignment to travel adjacent to Old Liston Road at the edge of Huly Hill. Some loss of vegetation and earthworks to cater for alignment.	Low	Minor Negative
105	Industrial Buildings Large warehouse buildings east of Newbridge Roundabout. Some windows facing A8. Outdoor areas with containers and portacabins.	Low	Alignment to travel adjacent to opposite side of Newbridge Roundabout.	Low	Neutral

104	Post office and residence 64 and 66 Bridge Street Single storey property Direct views through petrol station to.Edinburgh Road, open land and M9 beyond. Views regularly obscured by heavy good vehicles within petrol station area.	Low	Semi-obscured distant views through petrol station to tram stop.	Low	Neutral
103	Shell Petrol Station Edinburgh Road. Large forecourt area with van and bus parking. Shop windows with slightly angled views through forecourt to Edinburgh Road, open land and M9 beyond.	Low	Views from shop and forecourt area to Tram stop located across Edinburgh Road.	Low	Minor Negative to Neutral
102	Marshals Chunky Chicken Factory, Lexus car showroom and Mercedes Benz Truck Showroom. Windows facing Edinburgh Road and external loading and car spaces.	Low	Views from outdoor spaces to adjacent tram stop.	Low	Minor Negative to Neutral

VISUAL AMENITY WORKSHEET VA1: FOOTPATHS

Ref.	Receptor/ Address/ Type/ Storeys/ Room Nos.& type/ Location/ Context	Sensitivity of Receptor	Change/ Effect	Magnitude	Visual Impact
F21	Pedestrian and cycle route. Connecting disused railway corridor path with Haymarket Terrace. Path runs adjcent to railway corridor and alongside residential flats and office buildings. Short views contained within an urban environment, dominated by the existing railway corridor.	Low	Tram alignment to run adjacent to and cross path alignment. Path alignment would be modified in parts to accommodate tram.	Medium	Minor Negative
F1	Roseburn section of disused railway corridor used by pedestrians and cyclists. Views are mainly contained by deciduous vegetation enclosing the corridor. At the southern end of the corridor elevated views open out towards the general urban fabric including the railway corridor, Western Approach Road and Tynecastle with a backdrop of the Pentland Hills.	Medium	The tram alignment, delta junction and new structure over Russell Road would form immediate, dominant structures in views for path users. Path would be realigned to accommodate tram alignment with some vegetation loss.	Medium	Moderate Negative
F2	Section of Water of Leith footpath/cycle path. Follows Water of Leith which forms focus for immediate views. Longer views contained by properties largely to the west with pockets of planting forming filtered views towards Murrayfield stadium and beyond. Views south are contained by railway corridor and embankment planting.	Medium - High	Tram alignment would cross Water of Leith on a new bridge resulting in the loss of some adjacent vegetation and continue towards Murrayfield on embankment and along Baird Drive in a false cutting all of which would be in view from walkway although, often partially screened by localised planting.	Low – Medium	Minor Negative

F3	Section of footpath/cycle path along disused railway corridor embankment. Pockets of dense planting contain views along sections of the path with filtered, slightly elevated views across to railway, residential properties, Jenner's Depository, golf course and allotments.	Medium	Tram alignment would travel along section of disused railway corridor which path currently occupies resulting in realignment of path to accommodate tram and tram stop A large section of dense vegetation would be lost and views immediately approaching the tram stop would be permanently changed through the introduction of the tram and associated earthworks. Visual amenity of sections of route more distant from stop would have only glimpsed views of tram alignment at distance.	Low	Moderate Negative
F6	Pedestrian/Cycle connection over railway corridor From Carrick Knowe Avenue to Stenhouse Drive Elevated open views along rail corridor, golf course, and surrounding area.	Low - Medium	Direct level view to tram alignment over bridge structure. Long views to alignment within green space including OLE, poles, passing trams. Elevated view to tram stop. Loss of some mature trees within green space.	Low	Neutral
F40	Section of Public Right of Way (PRW) Travelling beneath the A720 Road towards Edinburgh Park. Open views to Edinburgh Park office buildings, car parks, open spaces, Railway corridor and new railway station.	Low - Medium	Views to tram alignment crossing railway and travelling through disused land and into Edinburgh Park. Over bridge structure, trams, columns and OLE visible against an urban backdrop.	Low	Minor Negative
F4	Section of Public Right of Way (PRW) from junction of A8 and Ingliston Road to Ratho Station Varying views along the route but mainly across adjacent agricultural fields. Often lined by mature trees, woodland and hedgerows which contain/filter views.	Medium - High	At the junction of A8 and Ingliston Road the tram alignment as it crosses into central reserve of the A8 would be in view from the PRW. Further west along the PRW, glimpsed, distant views of the tram as it runs along the A8 would be visible, particularly as it leaves the A8 and crosses the agricultural fields. The tram alignment would cross the PRW with a pedestrianised level crossing and would remain in partial view as it runs adjacent to railway corridor. Glimpsed views of tram stop would also be evident.	Medium - Low	Minor Negative

F5	Pedestrian/Cycle connection over railway corridor From Station Road to Harvest Road Overgrown planting surrounding path Poorly maintained	Low	Tram travel adjacent and to cross path alignment. Minor realignment of path to cater for tram Loss of some vegetation	Medium	Moderate Negative
F20	Pedestrian and Cycle over bridge. Over Newbridge roundabout. Elevated views over wide area. Immediate views dominated by roundabout interchange.	Low - Medium	Tram stop and alignment visible from bridge. Alignment crosses path at western end of over bridge. Various distant views to parts of alignment.	Low	Neutral

VISUAL AMENITY WORKSHEET VA1: PUBLIC OPEN SPACES

Ref.	Receptor/ Address/ Type/ Storeys/ Room Nos.& type/ Location/ Context	Sensitivity of Receptor	Change/ Effect	Magnitude	Visual Impact
L30a	Gardens surrounding Scott Monument. Lawns, benches and planting. Close views dominated by traffic on Princes Street. Other views across gardens to Old Town and Castle.	Medium	Views to tram alignment in centre of Princes Street. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against buildings.	Medium – Low	Minor – Moderate Negative
L30b	Scott Monument Dramatic long vistas from street level views along Princes Street, South St David Street towards St Andrew Square and Calton Hill. From top of the monument elevated panoramic views of Edinburgh in which Princes Street, Castle and gardens form important elements.	High	Immediate views of the tram alignment both along Princes Street and particularly the concentration of poles as it turns onto South St David Street which would fundamentally change the view in this direction. Views of OLE attached with building fixings and columns on Gardens side, pavement delineation and passing trams set against buildings.	Medium	Moderate Negative
L8	Beechwood Bowling Club Bowling green enclosed by surrounding buildings Clubhouse windows over look green with wider views towards railway corridor, industrial premises and adjacent buildings.	Low - Medium	Tram alignment would be Slightly elevated running behind adjacent buildings. Glimpses of OLE, poles and passing trams from green and clubhouse.	Low	Neutral

L7	Allotment Gardens Open views towards railway corridor, open space and planting beyond and golf course to the west. Views contained by disused railway corridor embankment and planting on northern edge.	Medium	Alignment would travel adjacent to allotments within green space. Alignment would climb up to level of old railway corridor with some loss of planting along disused railway corridor embankment. Open views of alignment, OLE, poles and passing trams.	Medium	Minor Negative
L6	Carrick Knowe Golf Course and Clubhouse Open views throughout course with the railway corridor forming a dominant element along the southern boundary.	Medium	Alignment would travel through open space between golf course and railway corridor. Views of alignment, OLE, poles and passing trams and of new structure crossing railway line would be particularly prominent from the first three holes. Loss of some trees in open space. Oblique views from clubhouse towards alignment.	Low	Neutral
L5	Allotment Gardens Located between railway corridor and green space to north of Stenhouse Drive. Views partially enclosed by deciduous hedgerow planting.	Medium – Low	Tram alignment would travel through green space. Foreground, partially obscured views of tram alignment, OLE, poles and passing trams. Distant view of new over bridge structure Loss of some trees within green space.	Low	Minor Negative
L4	Sighthill Community Park Open space with mixed woodland planting blocks with paths cutting through. Views of road junction and rail corridor from northern end of park. Northern end used for pedestrian access from Bankhead Drive to Stevenson College rather then for leisure pursuits.	Low	Views of tram alignment as it travels through open grass verge adjacent to railway corridor. View also of new structure over Bankhead Drive.	Low	Neutral

L3a	Open Space Landscape corridor centred on water feature at Edinburgh Park. Southern end of corridor. Enclosed by buildings on east and west edges. High quality landscape used by office workers during lunch, walking, sitting	Medium - high	Tram alignment would run parallel to buildings through landscape corridor. Tram Stop would be located within landscaped corridor.	Medium	Moderate Negative
L3b	Open Space Landscape corridor centred on water feature at Edinburgh Park. Northern end of corridor. Buildings along western edge. Road adjacent to eastern edge. High quality landscape used by office workers during lunch, walking, sitting	Medium - high	Tram alignment would run parallel to buildings and road through landscape corridor.	Low	Minor Negative
L2	Gogarburn Golf Course Glimpse views from northern section of course towards A8, agricultural fields and distant skyline. Attractive mature planting and well maintained grounds.	Low	Possible view of OLE, poles and top of trams set against hills in the distance	Low	Neutral
L1	Port Royal Golf Driving Range. Views orientated towards Eastfield Road and peripheral airport buildings.	Low	Glimpsed distant views of the tram alignment to the east and possible very oblique views of the alignment to the south.	Low	Neutral
L10	Royal Highland Showground Largely subdivided by open space, pockets of mature planting, various buildings and structures with columns and poles scattered throughout site. Generally attractive area. Views mainly contained within the showground and to the south by wall adjacent to A8.	Medium	Tram alignment would travel in central reserve of A8. Glimpsed views of OLE, poles and passing trams through vegetation. Outer fields used mostly for parking would have most open views towards alignment with distant views of alignment as it runs towards ridge within agricultural fields.	Low	Neutral

L12	Ingliston Sunday Market Located between airport and showground Views from site partially obscured by planting and building. Distant views to surrounding hills.	Low	Distant views of tram alignment as it would rise through agricultural fields to wooded railway corridor. Views partially obscured by landform and mature trees.	Low	Neutral
L11	Playing fields and children's playground at Ratho Station Views towards A8, residential properties, agricultural fields and woodland along ridge top. Scattered vegetation mainly on perimeter of site.	Medium - Low	Tram alignment would travel through adjacent agricultural fields. Views of alignment partially obscured by localised vegetation, landform and residential properties.	Low	Minor Negative to Neutral
L20	Bowling Club Single storey clubhouse and green. Views generally enclosed to green.	Low - Medium	Distant glimpse views to tops of poles as alignment turns from Newbridge Road to Old Liston Road.	Low	Neutral
L21	Huly Hill Scheduled Ancient Monument Barrow and standing stones set in open grass with surrounding vegetation. Major views enclosed within site by planting, some views out towards surrounding roads and buildings particularly to the east.	Medium	Alignment would travel along edge of site adjacent to Old Liston Road and Newbridge Roundabout. Earthworks and loss of some planting to accommodate for alignment. View of trams and alignment obscured in parts by vegetation.	Medium - Low	Moderate to Minor Negative

VISUAL AMENITY WORKSHEET VA1: ROADS

Ref.	Receptor/ Address/ Type/ Storeys/ Room Nos.& type/ Location/ Context	Sensitivity of Receptor	Change/ Effect	Magnitude	Visual Impact
R34	Section of Queen Street. Wide street heavily trafficked by cars and buses. Views generally contained by adjacent buildings but open to the north with views of gardens and glimpsed side on views of vistas towards St Andrew Square and north to Fife.	Low - Medium	Tram alignment in centre of Queens Street. OLE attached with building fixings and columns with concentration of poles around junctions where tram turns onto Queen Street. Change in surface treatment to delineate pavement	Medium	Minor Negative
R33	North and South St David Street and North and South St Andrew Street which fringe St Andres Square. Heavily trafficked by cars and busses as well as pedestrians moving around the square. Many long important vistas are generated from these axis around St Andrew Square; south towards the Scott Monument, west along George Street and north to Fife. Oblique views largely contained by buildings which surround the Square often diffused by the planting in the gardens in the centre.	Medium - High	Tram would run along the streets which form the north south axis of the Square. OLE attached with building fixings and columns with concentration of poles around junctions where tram turns onto Princes Street and Queen Street. The OLE and poles would fundamentally change the iconic vistas and long views currently experienced from these axial routes. Change in surface treatment to delineate pavement	Medium - High	Moderate Negative
R30	Princes Street Key tourist attraction and popular tourist corridor particularly for pedestrian users. Also a busy thoroughfare mainly bus and taxi traffic. Restriction on cars eastbound. Bounded by busy pedestrian paths, shops and buildings on northern edge. Open iconic views to Princes St Gardens, Castle and Old Town to the south. Views east down Princes Street are focused on Calton Hill, framed by shops, National Galleries and the Scott Monument. Lack of vertical columns along Princes Street enhances open views.	Medium - High	Tram alignment and two tram stops in centre of Princes Street. OLE attached with building fixings and columns on Gardens side would fundamentally change the iconic vistas and long views currently experienced along Princes Street. Change in surface treatment to delineate pavement	High - Medium	Moderate Negative

R32	Hanover Street to The Mound. Used by pedestrians, vehicles and designated cycle route. Busy traffic, signalised intersection with Princes Street. Open views to Princes Street Gardens from the Mound and panoramic views across the New Town to Fife. National Galleries form a focal point to Hanover Street. Side views along Princes Street. Other views contained by buildings.	Medium	Tram alignment in centre of Princes Street. OLE attached with building fixings and columns which would intrude into various foreground views, seen against buildings and the skyline. Change in surface treatment to delineate pavement	Low - Medium	Moderate Negative
R31	Shandwick Place, West Maitland Street and Haymarket Terrace. Busy thoroughfare including bus routes. Mainly bounded by 3 to 5 storey buildings on either side. Views generally focussed towards Haymarket to the west and Princes Street to the east. Passes through Coates and Athol Crescents.	Low - Medium	Tram alignment in centre of road and tram stop in centre of Coates and Athol Crescents. OLE attached with building fixings and columns. Change in surface treatment to delineate pavement	Medium	Minor Negative
R11	Section of Russell Road and adjacent footpath from junction with Roseburn Street to railway corridor over bridge, used by local and through traffic. Views contained by adjacent buildings, advertising hoardings, and rail corridor	Low	Alignment would run immediately to the north of the railway corridor parallel to the south side of Russell Road on embankment and then on a new structure over Russell Road to connect with a delta junction with Line 1. Views currently of the railway corridor would be replaced by more immediate views of the tram.	Low	Minor Negative
R10	Section of Roseburn Street and adjacent footpath from X to railway over bridge used by local, light industrial and through traffic and traffic for Murrayfield Stadium. Views are contained largely by industrial premises and residential properties which fringe the street, advertising hoardings and railway corridor. Views are dominated by Murrayfield Stadium.	Low	Alignment would run on a new structure over Roseburn Street adjacent to existing rail crossing and on embankment to the north of Haymarket rail depot. Tram stop would be located immediately adjacent to road in place of National Car rentals buildings which would be demolished.	Low	Minor Negative
R23	Railway Corridor Includes the main Edinburgh to Glasgow line. Various views from carriages ranging from countryside to urban environments.	Medium	Tram alignment to be visible from various points along the corridor. Alignment to travel adjacent to corridor in parts.		Neutral

R9	Section of Balgreen Road and adjacent footpath between junction with X to railway over bridge, used by local and through traffic. Height restriction in place under railway bridge restricting bus and HGV access. Views enclosed by residential properties and planting associated with railway embankment. Jenner's Depository is a key landmark building along this section of road.	Low	Alignment would cross Balgreen Road at grade to north side of rail over bridge. Passing side views of adjacent tram stop where loss of vegetation would result.	Low	Neutral
R8	Section of Bankhead Drive, Broomhouse Drive and Stenhouse Drive from South Gyle Access junction to Carrick Knowe over bridge and adjacent footpaths. Busy section of road used by car and bus traffic consisting of residential, commuter and through traffic. Views are largely contained along southern edge by flats but more open to the north, across wide grass verge to rail corridor.	Low	Tram alignment would travel through open green space between road and railway corridor. Tram stops located to north side of road.	Low	Neutral
R7	Section of Bankhead Drive and adjacent footpath from Hermiston Gait to South Gyle Access junction generally used by traffic serving industrial estate. On street parking along both sides of road with views from road contained to the south by car showrooms, commercial / industrial premises and more open to the north across flytipping to railway corridor.	Low	Tram alignment would travel through disused land between railway corridor and road with a tram stop located at eastern end near South Gyle Access junction. Passing side views of alignment would be seen set against railway corridor with short-lived views with corridor in line of vision.	Low	Neutral
R26	Cutlins Road Road continuation blocked on either side of railway corridor. Very quiet dean end. Used as an illegal dumping area.	Low	Tram alignment to travel adjacent to railway corridor and cross road within blocked off area.	Low	Neutral
R6	A720 from Edinburgh Park to Hermiston Gait. Elevated open views west towards fields and woodland. Elevated open views east towards Edinburgh Park, undeveloped land, industrial/ commercial premises and construction works associated with Edinburgh Park Station.	Low	Passing side on views seen at speed of tram alignment on new structure over railway corridor and tram stop would be viewed against existing urban fabric.	Low	Neutral

R26	Lochside Crescent and other roads within Edinburgh Park. Traffic associated with Edinburgh Park. Various views to office buildings, car parks and open space within Edinburgh Park	Low - Medium	Tram alignment to run adjacent to roads through open space within Edinburgh Park. Alignment crosses South Gyle Broadway at grade.	Low	Neutral
R5	Turnhouse Road Intermittent side on views across fields to the south. Sometimes screened by roadside planting and landform.	Low	Distant, glimpsed views towards depot and alignment.	Low	Neutral
R4	Gogar Roundabout and on/off ramps Passing side on elevated views over fields, towards industrial areas and Edinburgh Park business estate. Earth bunds and planting contain views to the north of Gogar roundabout. The roundabout acts as a gateway to Edinburgh from traffic from the west.	Low	Depot site would be visible to the immediate north of Gogar roundabout in significant cutting with upper parts of structures in view including retaining wall, buildings, OLE, poles, lighting and trams.	Low	Neutral
R3	Section of A8 and adjacent footpaths, cycleway from RBS over bridge to Gogar roundabout on/off ramps Views from road are contained in part by wall and mature planting. Existing lighting columns and adjacent construction works also form distinct elements in passing views.	Low - Medium	Tram alignment would run parallel to road on northern side with passing glimpsed views of OLE, poles and passing trams.	Low	Neutral
R1	Section of A8 and adjacent footpaths, cycleway from Eastfield Rd Junction to Royal Bank of Scotland (RBS) Junction. Passing side on views across agricultural fields towards airport. Views slightly elevated in sections. Existing lighting columns along road. Heavy, fast moving traffic; one of the main arterial routes into Edinburgh from the west.	Low	Views along and across alignment and Tram Stop. Passing distant views at speed towards alignment as it runs through agricultural fields to north of A8 and tram stop seen in conjunction with (would be existing) P&R.	Low	Neutral

R2	Eastfield Road and adjacent footpaths. Busy road, mainly serving airport traffic. Glimpsed side views across agricultural fields. Direct views of airport and airport car parks. Views occasionally screened by roadside vegetation.	Low	Glimpsed side views in foreground and mid ground of alignment and tram stop which would be seen against (would be existing) P&R. Tram elements would not form the main focus of views.	Low	Neutral
R13	Section of Ingliston Road and adjacent footpaths from A8 junction to Ingliston Kennels and Cattery. Used by local traffic accessing properties, show ground and car auction Particular peak fluxes in traffic flows during Royal Highland Show events and more regular car auctions.	Low	Tram alignment would cross road at grade with possible temporary road closure/traffic diversions during construction period.	Low - Medium	Neutral
R14	Sections of A8 and adjacent footpath/cycleway from Eastfield Road to eastern edge of development at Ratho. Heavy, fast moving traffic; one of the main arterial routes into Edinburgh from the west. Passing side views across agricultural fields to blocks of woodland, showground and open airport land. Views are also partially contained along sections, by pockets of mature roadside planting and stone wall and mature tree planting surrounding showground. Existing lighting columns along road.	Low	Tram alignment would cross into and run along central reserve of A8 at junction with Ingliston Road and would leave the A8 and cross into agricultural fields at Hallyards Road. Central traffic reserve would be widened to allow sufficient space for dedicated tram alignment, resulting in adjustment to traffic lanes on A8. The tram alignment would be visible in line of vision for the direction of travel.	Low - Medium	Minor Negative
R15	Section of Harvest Road and adjacent footpath from railway crossing to junction with Clifton Hall Road used by local and through traffic. Mainly residential, light industrial and heavy quarry related traffic. Most views are contained by roadside planting and landform with elevated views from higher points to the north.	Low	Tram alignment would be shared running along Harvest Road and therefore visible in immediate line of vision for road users.	Medium - Low	Minor Negative
R16	Section of Clifton Hall Road and Newbridge Road used by traffic serving/accessing industrial area. Views mainly of industrial buildings and car parking which fringe roads.	Low	Tram alignment would be largely shared running along Clifton Hall and Newbridge Roads apart from the northern end section of Newbridge Road where it would run to the immediate east of the road.	Low	Minor Negative

R20	A89 Edinburgh Road Relatively busy traffic Side views to car yards, open areas and M9. Existing lighting columns and signage.	Low	Tram crosses road alignment near roundabout junction. Tram stop adjacent to northern edge of road.	Low	Neutral
R22	M9, M8 and M9 slip road. Busy motorway traffic. Various views from high points to open space, industrial and residential Landuse. Road in cut below Newbridge roundabout.	Low	Tram stop and alignment visible from sections of M9 and M9 slip. Distant glimpse views to alignment adjacent to roundabout from M8.	Low	Neutral
R21	Newbridge Roundabout Junction of M9, M8, A8 and A89. Large signalised roundabout with heavy traffic. Various views and landscaping treatment	Low	Tram alignment to travel adjacent to roundabout at one point, then cross the A89 at grade.	Low	Minor Negative
R50	Old Liston Road From Newbridge entry feature to Newbridge Roundabout. Local Newbridge and Industrial traffic. Attractive well maintained setting. Bounded by Huly Hill to north and landscape bund, footpath and specimen trees to south. Newbridge town entrance feature at western end of road.	Medium	Signalised at grade crossing towards western end. Alignment to travel adjacent to Old Liston Road at the edge of Huly Hill. Some loss of vegetation and earthworks to cater for alignment.	Low	Minor Negative

Worksheet W1: Water Quality, Drainage and Flooding

Proposal Name			Edinburgh Tram Line 2					Worksheet W1: Water Quality, Drainage and Flooding – Strategic / Project Level		
Existing and Future Water Issues:			Improving water quality prompted by SEPA Flood Prevention Schemes prompted by CEC. Development of Water Catchment Plans under the Water Framework Directive					Assessment Date:		Oct 2003
Location	Water Use	Resource Quality / Status	Objectives	Scale It Matters	Potential Impacts	Timescales: When/ Duration	Ease of Substitution	Uncertainty	Mitigation Potential	Impact Significance Assessment
Surface Waters										
Water of Leith	Recreation	Class B (Fair)		Regional	Run off from construction and operation. Physical Damage due to over-bridging.	Construction and Operational/ Permanent	Low	Low	Environmental management of construction sites and operational activities	Minor negative impact
Loch Ross (Gogar Burn)	Recreation	Class B (Fair)		Local	Run off from construction and operation.	Construction and Operational/ Permanent	Low	Low	Environmental Management of construction sites and operational activities	Neutral
The Gogar Burn	None	Class B (Fair) and Class C (Poor)	To improve all watercourses to at least Class B by 2005	Local	Run off from construction and operation. Physical Damage due to new structure crossing the burn.	Construction and Operational/ Permanent	Low	Low	Environmental Management of construction sites and operational activities	Minor negative impact
River Almond	Recreation (lower reaches)		To improve all watercourses to at least Class B by 2005	Regional	Run off from construction and operation.	Construction and Operational/ Permanent	Low	Low	Environmental Management of construction sites and operational activities	Neutral
Un-named ditches close to Edinburgh	None	N/A		Local	Run off from construction and	Construction and Operational/	Medium	Low	Environmental Management of construction	Neutral

Worksheet W1: Water Quality, Drainage and Flooding

Airport					operation. Physical Damage due to new culvert crossing the ditch.	Permanent			sites and operational activities	
Groundwater										
Shallow Groundwater	Possible limited private abstraction for irrigation	Not known	Not known	Local	Run off from construction and operation.	Construction and Operational/ Permanent	Low	Low	Environmental Management of construction sites and operational activities	Neutral
Aquifer within Lower Oil Shale	Possible limited private abstraction for irrigation	Aquifers are moderately to weakly permeable	Not known	Regional	Run off from construction and operation.	Construction and Operational/ Permanent	Low	Low	Environmental Management of construction sites and operational activities	Neutral
Land Drainage / Flood Defence										
Murrayfield	Flood Plain	Area of Importance for Flood Control	Currently of value for water storage in the event of flooding	Local	Loss of flood plain area due to development of tram route	Permanent	Low	Low	Place tram on concrete supports rather than embankment	Minor negative impact
Gogar Burn	Flood Plain	Area of Importance for Flood Control	Currently of value for water storage in the event of flooding	Local	Loss of flood plain area due to development of tram route. Also construction of culvert over the Gogar Burn.	Permanent	Low	Low	Excavation of channel beside the alignment. Ensure design does not interfere with flood-water provision.	Minor to moderate negative impact
Key Assumptions:	Environmental management plan for construction and operation would be implemented.									
Key Data Sources:	Tram Line 2 ES (contains full list of sources).									

Overall Impact of Scheme: 2011

Road Section	Assessments	
	PM_{10}	NO_2
Balgreen Road	16	560
Bankhead Avenue	43	9
Belford Road	142	2110
Broomhouse Road	-113	-1017
Broomhouse Terrace	-47	178
Broughton Road	-351	-2078
Broughton Street	-132	-43
Brunswick Road	-584	-3803
Brunsfield Place	-123	1475
Calder Road	139	-1596
Causewayside	-102	-365
Claremount Park	-151	-1062
Clermiston Road	-77	-808
Cluny Gardens	-1	19
Coburg Street	-30	-897
Colinton Road 2	-7	-56
Colinton Road	-108	119
Comiston Road	-55	-603
Commercial Street	-91	-653
Constitution Street	-155	217
Corbiehill Road	146	1226
Corstorphine High Street	51	759
Corstorphine Road	-498	-3446
Craigcrook Road	51	59
Craigentinny Avenue	8	-126
Craighall Road	-119	-239
Craigleith Crescent	-5	115
Crewe Road North	-53	-82
Crewe Road South	-9	-5
Dalkeith Road	-31	-353
Dalry Road	-460	-5242
Dean Street	38	-511
Douglas Crescent	11	-189
Drum Brae	52	-494
Drummond Place	-211	-1219
Dublin Street	-44	-218
Duddingston Park South	-45	-21
Duke Street	-26	-344
Dundas Street	-128	-93
East Claremont Street	-427	-3724
East Fettes Avenue	-148	-513
East Preston Street	-23	41
Easter Road	-406	-437
Ferry Road	-371	-52
Fountain Bridge	115	4137
Frogston Road	-42	-73
Gamekeepers Road	69	0
George Street	-27	-179
Gillespie Road	-4	6
Gilmerton Dykes Road	-263	-529
Gilmerton Road	-416	239
Glasgow Road	725	1265
Gorgie Road	148	1082
Granton Road	-148	-584
Gray's Loan	7	18
Great King Street	-86	-651
Greenbank Crescent	-64	-369
Groathill Road North	13	-164
Grovsner Crescent	-144	-1587
Haymarket Terrace	-1867	-8874
Henderson Row	-341	-2606
Heriot Row	-193	-376
Hillhouse Road	77	266
Howe Street	-105	-429
Inverleith Row	-66	-167
Junction Street	-41	-975
Lady Road	-18	-18
Lanark Road	22	518
Lasswade Road	-438	-1655
Lauriston Farm Road	21	117
Lauriston Gardens	-58	-1055
Lawiston Place	-178	-3736
Leith Walk	-389	-1916
Liberton Brae	-19	-79
Liberton Road	-18	-42
Lindsay Road	-278	5
Lochside Crescent	4	0
London Road	-344	-3738
Longstone Road	14	-37
Lothian Road	54	971
Lower Granton Road	-53	7
Manor Place	-408	-2169
McDonald Road	-287	-1476
Milton Road/Milton Road West	-22	5
Morrison Street	-534	-5327
Mount Vernon Road	148	2822
Mountcastle Drive North & South	-21	-183
Muirhouse Parkway	5	-75

Newcraighall Road	-16	-115
Niddrie Mains Road	-40	47
Northfield Broadway	16	-34
Northumberland Street	-75	-386
Old Dalkeith Road	-27	-24
Oxgangs Farm Drive	-22	-275
Oxgangs Road North	-35	-86
Oxgangs Road North 2	17	-91
Palmerston Place	-193	-461
Parkhead Drive	57	30
Pennywell Road	-25	-70
Ponton Street	36	513
Portobello Road	-38	-67
Princess Street	-5	-124
Queensferry Road	-18	2373
Queensferry Road 2	75	185
Raeburn Place	-169	-663
Ravelston Dykes	-36	-489
Redford Road	10	-1
Regent Road	-45	1061
Salamander Street	79	-66
Saughton Road	128	2991
Seafield Road	17	-139
Shandwick Place	-635	-5081
Sir Harry Lauder Road	-15	-6
Stateford Road	526	788
South Gyle Broadway	-192	-1037
Spittal Street	-40	22
St Leonards Street	50	1059
Strachan Road	19	-25
Telford Road	-23	-31
The A1	-6	8
The A7 & A701	-516	1213
The Grassmarket	-204	655
The West Approach Road	254	-148
The Wisp?	4	10
Union Canal?	73	2076
West Granton Road	-27	-1
West Mains Road	-9	199
Wester Hailes Road	114	41
Whitehouse Road	-64	-552
Willowbrae Road	56	240
Total	-11314	-47669

Balgreen Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	256	428	395	422	1499
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	256	277	217	211	961
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	256	341	257	232	1086
	Do-Nothing	Do-Something	Difference	EU PM_{10} Annual Mean Limit	NO_2 Annual Mean Limit
Roadside PM_{10}	18.69	18.70	0.02	40	
Roadside NO_2	37.82	38.28	0.46		40

Bankhead Avenue

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	11	57	141	213	422
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	11	37	78	107	232
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	11	46	92	117	265
	Do-Nothing	Do-Something	Difference	EU PM_{10} Annual Mean Limit	NO_2 Annual Mean Limit
Roadside PM_{10}	18.15	18.34	0.18	40	
Roadside NO_2	37.01	37.04	0.03		40

Belford Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	403	433	488	497	1821
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	403	281	268	249	1201
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	403	346	317	273	1340
	Do-Nothing	Do-Something	Difference	EU PM_{10} Annual Mean Limit	NO_2 Annual Mean Limit
Roadside PM_{10}	19.32	19.44	0.12	40	
Roadside NO_2	45.98	47.55	1.57		40

Broomhouse Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	434	569	676	670	2279
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	434	369	372	335	1480
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	434	479	439	314	1666
	Do-Nothing	Do-Something	Difference	EU PM_{10} Annual Mean Limit	NO_2 Annual Mean Limit
Roadside PM_{10}	18.66	18.58	-0.08	40	
Roadside NO_2	36.20	35.59	-0.61		40

Broomhouse Terrace

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	253	307	245	241	1046
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	253	200	135	121	708
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	253	246	159	133	790
	Do-Nothing	Do-Something	Difference	PM_{10} Annual Limit	NO_2 Annual Limit
Roadside PM_{10}	18.01	17.94	-0.07	[illegible]	-
Roadside NO_2	33.82	34.05	0.23	-	[illegible]

Broughton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1404	747	927	1165	4243
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1404	486	510	583	2982
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1404	598	603	641	3245
	Do-Nothing	Do-Something	Difference	PM_{10} Annual Limit	NO_2 Annual Limit
Roadside PM_{10}	18.99	18.88	-0.12	[illegible]	-
Roadside NO_2	45.12	44.48	-0.64	-	[illegible]

Broughton Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	829	625	809	833	3099
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	829	406	445	417	2099
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	829	502	526	458	2315
	Do-Nothing	Do-Something	Difference	PM_{10} Annual Limit	NO_2 Annual Limit
Roadside PM_{10}	18.06	17.99	-0.08	[illegible]	-
Roadside NO_2	39.13	39.12	-0.02	-	[illegible]

Brunswick Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	977	764	1092	1185	4018
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	977	497	601	593	2667
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	977	611	710	652	2950
	Do-Nothing	Do-Something	Difference	PM_{10} Annual Limit	NO_2 Annual Limit
Roadside PM_{10}	17.67	17.45	-0.22	[illegible]	-
Roadside NO_2	33.03	31.74	-1.29	-	[illegible]

Bruntsfield Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	2106	1609	1440	1171	6326
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	2106	1045	792	586	4529
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	2106	1287	936	644	4973
	Do-Nothing	Do-Something	Difference	PM_{10} Annual Limit	NO_2 Annual Limit
Roadside PM_{10}	18.85	18.83	-0.03	[illegible]	-
Roadside NO_2	44.55	44.84	0.30	-	[illegible]

Calder Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	400	566	675	742	2383
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	400	365	371	371	1510
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	400	453	439	408	1700
	Do-Nothing	Do-Something	Difference	PM_{10} Annual Limit	NO_2 Annual Limit
Roadside PM_{10}	18.70	18.79	0.09	[illegible]	-
Roadside NO_2	43.99	43.05	-0.94	-	[illegible]

Causewayside

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	486	576	521	464	2047
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	486	374	287	232	1379
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	486	461	339	255	1541
	Do-Nothing	Do-Something	Difference	PM_{10} Annual Limit	NO_2 Annual Limit
Roadside PM_{10}	18.47	18.39	-0.07	[illegible]	-
Roadside NO_2	36.69	36.52	-0.17	-	[illegible]

Claremount Park

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	268	391	534	438	1629
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	268	254	294	219	1033
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	268	313	347	241	1167
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.54	17.40	-0.15	[illegible]	
Roadside NO_2	30.73	29.82	-0.91		[illegible]

Clermiston Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	264	329	329	413	1335
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	264	214	181	207	865
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	264	263	214	227	968
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.78	17.69	-0.09	[illegible]	
Roadside NO_2	30.23	29.40	-0.83		[illegible]

Cluny Gardens

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	358	512	392	307	1369
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	358	203	216	154	930
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	358	250	255	169	1031
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.36	18.36	0.00	[illegible]	
Roadside NO_2	37.21	37.23	0.02		[illegible]

Coburg Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	144	446	445	489	1524
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	144	290	245	245	923
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	144	357	289	269	1059
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.97	17.94	-0.03	[illegible]	
Roadside NO_2	35.90	35.05	-0.85		[illegible]

Colinton Road 2

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	234	141	116	120	611
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	234	92	64	60	449
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	234	113	75	66	488
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.60	17.58	-0.02	[illegible]	
Roadside NO_2	30.25	30.13	-0.12		[illegible]

Colinton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	420	657	816	538	2231
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	420	427	339	269	1455
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	420	526	406	296	1642
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.54	18.47	-0.07	[illegible]	
Roadside NO_2	37.61	37.68	0.07		[illegible]

Comiston Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	517	287	211	238	1253
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	517	187	116	119	939
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	517	230	137	131	1015
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.09	17.94	-0.06	[illegible]	
Roadside NO_2	34.11	33.52	-0.59		[illegible]

Commercial Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	464	613	608	577	2262
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	464	398	334	289	1485
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	464	490	395	317	1667
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.53	18.47	-0.06	[illegible]	
Roadside NO_2	40.89	40.50	-0.39		[illegible]

Constitution Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	585	716	682	990	2973
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	585	465	375	495	1921
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	585	573	443	545	2146
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.46	17.38	-0.08	[illegible]	
Roadside NO_2	31.96	32.07	0.10		[illegible]

Corbiehill Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	139	144	197	195	675
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	139	94	108	98	438
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	139	115	128	107	490
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.56	18.89	0.33	[illegible]	
Roadside NO_2	36.06	38.56	2.50		[illegible]

Corstorphine High Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	287	303	344	298	1232
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	287	197	189	149	822
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	287	242	224	164	917
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.08	18.14	0.06	[illegible]	
Roadside NO_2	34.27	35.10	0.83		[illegible]

Corstorphine Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	764	863	864	811	3302
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	764	561	475	406	2206
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	764	690	562	446	2462
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.85	19.62	-0.23	[illegible]	
Roadside NO_2	45.96	44.56	-1.40		[illegible]

Craigcrook Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	332	796	289	209	1120
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	332	189	159	105	784
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	332	232	188	115	867
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.63	17.69	0.07	[illegible]	
Roadside NO_2	30.57	30.64	0.07		[illegible]

Craigentinny Avenue

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	172	180	232	235	799
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	172	104	128	118	521
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	172	128	151	129	580
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.24	17.26	0.02	[illegible]	
Roadside NO_2	27.69	27.47	-0.22		[illegible]

Craighall Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	350	327	329	289	1295
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	350	213	181	145	888
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	350	262	214	159	984
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.29	17.16	-0.13	[illegible]	
Roadside NO_2	28.12	27.88	-0.24		[illegible]

Craigleith Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	78	218	177	146	619
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	78	140	97	74	390
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	78	173	115	81	447
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.60	17.58	-0.01	[illegible]	
Roadside NO_2	30.00	30.25	0.26		[illegible]

Crewe Road North

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	318	377	354	187	1236
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	318	245	195	94	851
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	318	302	230	103	953
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.31	17.22	-0.10	[illegible]	
Roadside NO_2	27.82	27.74	-0.08		[illegible]

Crewe Road South

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	152	444	402	391	1389
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	152	289	221	196	857
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	152	355	261	215	984
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.66	17.65	-0.01	[illegible]	
Roadside NO_2	31.48	31.47	-0.01		[illegible]

Dalkeith Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	563	526	516	461	2065
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	562	342	284	231	1418
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	562	421	335	254	1572
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.05	18.04	-0.02	[illegible]	
Roadside NO_2	37.73	37.51	-0.22		[illegible]

Dalray Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1080	903	1283	1202	4448
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1080	587	706	601	2954
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1080	722	834	661	3277
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.21	19.05	-0.16	[illegible]	
Roadside NO_2	47.36	45.76	-1.60		[illegible]

Dean Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	461	755	722	718	2656
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	461	491	397	359	1708
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	461	604	469	395	1929
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.89	17.91	0.02	[illegible]	
Roadside NO_2	35.34	35.07	-0.27		[illegible]

Douglas Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	226	317	286	319	1148
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	226	206	157	160	749
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	226	254	186	175	841
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.39	18.41	0.01	[illegible]	
Roadside NO_2	39.85	39.62	-0.22		[illegible]

Drum Brae

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	293	462	485	532	1772
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	293	300	267	266	1126
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	293	370	315	293	1270
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.73	17.77	0.05	[illegible]	
Roadside NO_2	32.61	32.23	-0.38		[illegible]

Drummond Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	292	389	718	668	2067
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	292	253	395	334	1274
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	292	311	467	367	1437
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.04	17.87	-0.17	[illegible]	
Roadside NO_2	37.09	36.24	-0.86		[illegible]

Dublin Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	210	172	344	422	1148
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	210	112	189	211	722
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	210	138	224	232	803
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.53	17.47	-0.06	[illegible]	
Roadside NO_2	32.39	32.13	-0.26		[illegible]

Duddington Park South

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	338	466	348	404	1556
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	338	303	191	202	1034
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	338	373	226	222	1159
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.09	18.05	-0.04	[illegible]	
Roadside NO_2	39.58	39.56	-0.02		[illegible]

Duke Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	346	294	618	466	1724
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	346	191	340	233	1110
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	346	235	402	256	1239
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.07	18.05	-0.02	[illegible]	
Roadside NO_2	35.61	35.33	-0.28		[illegible]

Dundas Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	713	584	705	711	2713
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	713	380	388	356	1836
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	713	467	458	391	2030
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.24	18.17	-0.07	[illegible]	
Roadside NO_2	35.48	35.44	-0.04		[illegible]

East Claremont Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	402	550	563	664	2179
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	402	358	310	332	1401
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	402	440	366	365	1573

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.46	19.17	-0.30	[illegible]	
Roadside NO_2	46.65	46.28	-2.37		[illegible]

East Fettes Avenue

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	526	633	646	667	2472
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	526	411	355	334	1626
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	526	506	420	367	1819

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.53	17.44	-0.09	[illegible]	
Roadside NO_2	29.26	28.98	-0.28		[illegible]

East Preston Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	264	356	542	556	1712
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	264	228	298	278	1068
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	264	285	352	306	1207

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.34	18.32	-0.02	[illegible]	
Roadside NO_2	35.89	35.92	0.03		[illegible]

Easter Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1885	1778	1272	1326	6261
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1885	1156	700	663	4403
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1885	1423	827	729	4864

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.09	18.00	-0.09	[illegible]	
Roadside NO_2	35.79	35.70	-0.09		[illegible]

Ferry Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1729	1623	1804	1802	6758
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1729	1055	992	901	4567
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1729	1298	1043	991	5061

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.81	19.72	-0.08	[illegible]	
Roadside NO_2	46.80	46.79	-0.01		[illegible]

Fountain Bridge

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	918	985	1163	1821	4887
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	918	647	634	911	3109
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	918	796	749	1002	3465

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.36	19.39	0.04	[illegible]	
Roadside NO_2	50.68	51.87	1.19		[illegible]

Fregston Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	99	190	210	228	727
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	99	124	116	114	452
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	99	152	137	125	513

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.21	17.12	-0.09	[illegible]	
Roadside NO_2	27.06	26.92	-0.14		[illegible]

Gamekeepers Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	210	193	240	297	940
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	210	125	132	149	616
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	210	154	156	163	684
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	16.09	16.20	0.11	61	-
Roadside NO_2	33.26	33.26	0.00	-	0

George Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	151	333	289	171	944
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	151	216	159	86	612
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	151	266	186	94	699
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.30	18.26	-0.04	47	-
Roadside NO_2	36.78	36.52	-0.26	-	193

Gillespie Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	28	73	110	153	364
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	28	47	61	77	212
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	28	58	72	84	242
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.01	18.00	-0.02	-	-
Roadside NO_2	32.85	32.88	0.03	-	0

Gilmerton Dykes Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	432	534	618	634	2218
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	432	347	340	317	1436
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	432	427	402	349	1610
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.92	17.73	-0.18	205	-
Roadside NO_2	33.86	33.54	-0.32	-	420

Gilmerton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	593	717	749	749	2808
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	593	466	412	375	1846
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	593	574	487	412	2065
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.19	17.96	-0.23	411	-
Roadside NO_2	33.88	33.99	0.12	-	451

Glasgow Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	224	218	214	367	1023
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	224	142	118	184	667
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	224	174	139	202	739
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	20.28	20.62	0.34	71	-
Roadside NO_2	42.23	43.94	1.71	-	1146

Gorgie Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1737	1343	1381	1140	5611
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1737	873	765	570	3945
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1737	1074	904	627	4343
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.64	19.86	0.04	119	-
Roadside NO_2	47.16	47.41	0.25	-	1011

Granton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	469	324	311	316	1420
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	469	211	171	158	1009
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	469	259	202	174	1104
	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.13	17.99	-0.15	[illegible]	
Roadside NO_2	31.79	31.26	-0.53		[illegible]

Gray's Loan

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	67	100	128	197	492
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	67	65	70	99	301
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	67	80	83	108	339
	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.39	18.41	0.02	[illegible]	
Roadside NO_2	37.61	37.54	-0.03		[illegible]

Great King Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	327	563	698	834	2422
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	327	366	384	417	1494
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	327	450	454	459	1690
	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	17.95	17.89	-0.06	[illegible]	
Roadside NO_2	36.20	35.82	-0.39		[illegible]

Greenbank Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	480	340	548	571	1939
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	480	221	301	286	1288
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	480	272	356	314	1422
	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	17.37	17.32	-0.05	[illegible]	
Roadside NO_2	27.63	27.37	-0.26		[illegible]

Greathill Road North

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	187	188	193	189	757
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	187	122	106	95	510
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	187	150	125	104	567
	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	17.30	17.33	0.03	[illegible]	
Roadside NO_2	28.14	27.87	-0.27		[illegible]

Grovsner Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	223	275	359	517	1474
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	223	179	197	309	908
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	223	220	233	330	1016
	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.17	18.01	-0.16	[illegible]	
Roadside NO_2	37.53	35.97	-1.56		[illegible]

Haymarket Terrace

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	533	542	626	743	2444
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	533	352	344	372	1601
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	533	434	407	409	1782
	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	21.46	20.38	-1.17	[illegible]	
Roadside NO_2	64.02	59.04	-4.98		[illegible]

Henderson Row

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	970	931	1114	998	4013
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	970	605	613	499	2687
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	970	745	724	549	2988
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Element	NO_2 AQS Element
Roadside PM_{10}	18.23	18.10	-0.13	101	
Roadside NO_2	36.79	35.92	-0.87		100

Heriot Row

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	510	660	751	861	2782
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	510	429	413	431	1783
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	510	528	488	474	2000
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Element	NO_2 AQS Element
Roadside PM_{10}	17.92	17.81	-0.11	100	
Roadside NO_2	32.93	32.74	-0.19		95

Hillhouse Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	332	305	300	322	1259
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	332	198	165	161	856
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	332	244	195	177	948
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Element	NO_2 AQS Element
Roadside PM_{10}	19.87	19.96	0.09	77	
Roadside NO_2	45.03	45.31	0.28		105

Rows Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	941	836	868	895	3540
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	941	543	477	448	2409
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	941	669	564	492	2666
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Element	NO_2 AQS Element
Roadside PM_{10}	18.12	18.08	-0.04	101	
Roadside NO_2	34.50	34.66	0.16		92

Inverleith Row

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	773	581	438	446	2238
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	773	378	241	223	1615
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	773	465	285	246	1768
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Element	NO_2 AQS Element
Roadside PM_{10}	18.22	18.18	-0.04	101	
Roadside NO_2	33.76	33.69	-0.09		107

Junction Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1211	823	735	965	3734
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1211	535	404	483	2633
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1211	656	478	531	2878
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Element	NO_2 AQS Element
Roadside PM_{10}	18.40	18.38	-0.02	101	
Roadside NO_2	39.92	39.58	-0.34		91

Lady Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	41	71	128	102	342
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	41	46	70	51	209
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	41	57	83	56	237
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Element	NO_2 AQS Element
Roadside PM_{10}	17.93	17.84	-0.09	100	
Roadside NO_2	35.14	35.07	-0.07		91

Lanark Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	217	158	144	228	747
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	217	103	79	114	513
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	217	126	94	126	562

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.70	17.74	0.04	21	
Roadside NO_2	29.96	30.51	0.56		311

Lasswade Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	461	694	582	696	2433
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	461	451	320	348	1580
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	461	555	378	383	1777

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.72	17.45	-0.28	21	
Roadside NO_2	32.38	31.45	-0.93		311

Lauriston Farm Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	74	96	103	106	379
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	74	62	57	53	246
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	74	77	67	58	276

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.64	17.73	0.09	21	
Roadside NO_2	28.97	29.39	0.42		311

Lauriston Gardens

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	379	495	554	574	2002
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	379	322	305	287	1292
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	379	396	360	316	1451

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.50	17.46	-0.04	21	
Roadside NO_2	32.19	31.46	-0.73		311

Lauriston Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1283	897	1617	1897	5594
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1283	583	834	949	3649
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1283	716	986	1043	4030

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.71	18.66	-0.05	21	
Roadside NO_2	42.21	41.28	-0.93		311

Leith Walk

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1755	1792	1797	1656	7000
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1755	1165	988	828	4736
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1755	1434	1168	911	5267

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.21	19.13	-0.08	21	
Roadside NO_2	49.56	49.19	-0.36		311

Liberton Brae

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	179	162	154	158	653
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	179	105	85	79	448
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	179	130	100	87	496

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.39	18.35	-0.04	21	
Roadside NO_2	36.31	36.15	-0.16		311

Liberton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	64	78	125	97	364
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	64	51	69	49	232
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	64	62	81	53	261

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.16	18.08	-0.08	[redacted]	
Roadside NO_2	36.47	36.31	-0.16		[redacted]

Lindsay Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	752	660	681	546	2639
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	752	442	375	273	1842
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	752	544	443	300	2039

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.57	18.41	-0.15	[redacted]	
Roadside NO_2	39.30	39.30	0.00		[redacted]

Lochside Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	14	20	18	20	72
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	14	13	10	10	47
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	14	16	12	11	53

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.51	18.60	0.09	[redacted]	
Roadside NO_2	36.69	36.68	-0.01		[redacted]

London Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1132	1291	1418	1426	5267
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1132	839	780	713	3464
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1132	1033	922	784	3871

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.59	18.49	-0.10	[redacted]	
Roadside NO_2	43.73	42.76	-0.97		[redacted]

Longstone Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	276	333	328	290	1227
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	276	216	179	146	818
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	276	266	212	161	915

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.22	19.23	0.02	[redacted]	
Roadside NO_2	45.49	45.45	-0.04		[redacted]

Lothian Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	389	272	439	588	1688
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	389	177	241	294	1101
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	389	218	285	323	1215

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.92	19.97	0.05	[redacted]	
Roadside NO_2	46.94	46.74	-0.20		[redacted]

Lower Granton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	402	89	222	310	1023
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	402	58	122	155	737
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	402	71	144	171	788

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.85	17.78	-0.07	[redacted]	
Roadside NO_2	34.87	34.88	0.01		[redacted]

Manor Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	281	352	460	528	1621
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	281	229	253	264	1027
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	281	282	299	290	1152
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Target	NO_2 AQS Target
Roadside PM_{10}	18.82	18.43	-0.40	Yes	
Roadside NO_2	43.53	41.65	-1.88		Yes

McDonald Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	471	429	372	741	2013
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	471	279	205	371	1325
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	471	343	242	408	1464
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Target	NO_2 AQS Target
Roadside PM_{10}	17.62	17.40	-0.22	Yes	
Roadside NO_2	32.01	31.00	-1.01		Yes

Milton Road/Milton Road West

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	242	467	438	538	1685
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	242	285	274	268	1049
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	242	326	324	296	1187
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Target	NO_2 AQS Target
Roadside PM_{10}	18.57	18.55	-0.02	Yes	
Roadside NO_2	37.44	37.44	0.00		Yes

Morrison Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	661	348	568	868	2545
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	661	226	367	434	1688
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	661	278	434	477	1851
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Target	NO_2 AQS Target
Roadside PM_{10}	19.10	18.78	-0.32	Yes	
Roadside NO_2	42.14	39.26	-2.88		Yes

Mount Vernon Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	287	319	276	299	1174
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	287	207	153	150	791
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	287	248	181	164	880
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Target	NO_2 AQS Target
Roadside PM_{10}	17.88	18.07	0.19	Yes	
Roadside NO_2	31.46	33.76	2.30		Yes

Mountcastle Drive North & South

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	356	448	467	402	1674
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	356	292	257	201	1106
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	356	359	304	221	1240
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Target	NO_2 AQS Target
Roadside PM_{10}	17.16	17.14	-0.02	Yes	
Roadside NO_2	26.50	26.35	-0.15		Yes

Muirhouse Parkway

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	303	617	476	297	1893
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	303	401	262	148	1314
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	303	494	309	163	1269
	Do-Nothing	Do-Something	Difference	PM_{10} AQS Target	NO_2 AQS Target
Roadside PM_{10}	17.71	17.71	0.00	Yes	
Roadside NO_2	29.64	29.58	-0.06		Yes

Newcraighall Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	82	108	117	121	426
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	82	69	64	61	276
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	82	85	76	67	308
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.76	17.70	-0.06	[illegible]	
Roadside NO_2	34.90	34.53	-0.37		[illegible]

Niddrie Mains Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	494	782	635	717	2628
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	494	508	349	359	1710
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	494	626	413	394	1927
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.55	18.53	-0.02	[illegible]	
Roadside NO_2	43.63	43.66	0.02		[illegible]

Northfield Broadway

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	307	365	441	552	1665
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	307	237	243	276	1063
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	307	292	287	304	1189
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.07	17.09	0.02	[illegible]	
Roadside NO_2	25.32	25.29	-0.03		[illegible]

Northumberland Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	490	549	467	613	2119
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	490	357	257	307	1410
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	490	439	304	337	1570
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.24	18.18	-0.05	[illegible]	
Roadside NO_2	39.07	38.82	-0.25		[illegible]

Old Dalkeith Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	299	386	419	446	1521
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	299	238	226	223	985
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	299	293	267	245	1104
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.39	17.37	-0.03	[illegible]	
Roadside NO_2	30.19	30.17	-0.02		[illegible]

Oxgangs Farm Drive

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	169	191	211	329	900
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	169	124	116	165	574
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	169	153	137	181	640
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.97	17.93	-0.04	[illegible]	
Roadside NO_2	29.30	28.87	-0.43		[illegible]

Oxgangs Road North

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	191	385	532	588	1696
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	191	250	293	294	1028
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	191	308	346	323	1168
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.42	17.39	-0.03	[illegible]	
Roadside NO_2	30.14	30.07	-0.07		[illegible]

Organgs Road North 2

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	212	269	374	390	1245
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	212	175	206	195	788
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	212	215	243	215	885

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	17.57	17.59	0.02	[illegible]	
Roadside NO_2	30.66	30.56	-0.10		[illegible]

Palmerston Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	340	474	466	378	1658
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	340	308	256	189	1093
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	340	379	303	208	1230

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.34	18.16	-0.18	[illegible]	
Roadside NO_2	41.19	40.82	-0.37		[illegible]

Parkhead Drive

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	285	355	519	667	1826
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	285	231	285	334	1135
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	285	284	337	367	1273

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	17.27	17.32	0.05	[illegible]	
Roadside NO_2	27.69	27.71	0.02		[illegible]

Pennywell Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	339	483	460	439	1721
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	339	314	253	220	1125
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	339	386	299	241	1266

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	17.83	17.81	-0.02	[illegible]	
Roadside NO_2	31.45	31.39	-0.06		[illegible]

Ponton Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	342	468	787	539	2136
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	342	304	433	270	1349
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	342	374	512	296	1524

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	17.98	18.01	0.03	[illegible]	
Roadside NO_2	38.23	38.56	0.34		[illegible]

Portobello Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	943	779	781	483	2986
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	943	506	430	242	2120
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	943	623	508	266	2340

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.27	18.25	-0.02	[illegible]	
Roadside NO_2	37.69	37.66	-0.03		[illegible]

Princess Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	370	605	439	214	1528
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	370	328	241	107	1047
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	370	484	285	118	1177

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.45	18.45	0.00	[illegible]	
Roadside NO_2	41.06	40.96	-0.11		[illegible]

Queensferry Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1047	781	988	782	3598
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1047	508	543	391	2489
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1047	625	642	430	2744
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.09	19.08	-0.01	[illegible]	
Roadside NO_2	38.42	39.28	0.86		[illegible]

Queensferry Road 2

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	95	220	345	403	1063
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	95	143	190	202	629
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	95	176	224	222	717
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	21.15	21.27	0.12	[illegible]	
Roadside NO_2	53.24	53.50	0.26		[illegible]

Raeburn Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1074	1118	1112	1053	4358
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1074	727	612	527	2938
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1074	895	723	579	3271
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.67	18.62	-0.06	[illegible]	
Roadside NO_2	35.66	35.46	-0.20		[illegible]

Ravelston Dykes

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	191	376	391	417	1375
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	191	244	215	209	859
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	191	301	254	229	975
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.65	18.61	-0.04	[illegible]	
Roadside NO_2	36.45	35.95	-0.50		[illegible]

Redford Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	322	439	323	342	1426
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	322	285	178	171	956
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	322	351	210	188	1071
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	16.96	16.97	0.01	[illegible]	
Roadside NO_2	24.53	24.53	0.00		[illegible]

Regent Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	440	401	664	738	2243
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	440	274	365	359	1438
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	440	337	432	396	1603
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.86	17.83	-0.03	[illegible]	
Roadside NO_2	34.11	34.78	0.66		[illegible]

Salamander Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	556	413	491	437	1897
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	556	268	270	219	1313
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	556	330	319	240	1446
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.45	18.51	0.06	[illegible]	
Roadside NO_2	39.05	38.80	-0.05		[illegible]

Saughton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	306	517	526	597	1948
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	306	336	289	298	1231
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	306	414	343	328	1391
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.80	18.90	0.10	[illegible]	
Roadside NO_2	41.01	43.15	2.15		[illegible]

Seafield Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	120	101	219	288	728
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	120	66	120	144	450
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	120	81	142	158	502
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.62	18.66	0.04	[illegible]	
Roadside NO_2	39.99	39.73	-0.26		[illegible]

Shandwick Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	456	536	599	421	2012
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	456	348	329	211	1344
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	456	429	389	232	1506
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.67	19.20	-0.47	[illegible]	
Roadside NO_2	54.03	50.66	-3.37		[illegible]

Sir Harry Lauder Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	45	71	166	186	468
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	45	46	91	93	275
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	45	57	108	102	312
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.60	18.56	-0.04	[illegible]	
Roadside NO_2	33.88	33.86	-0.02		[illegible]

Slateford Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1216	988	1199	1317	4720
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1216	642	659	659	3176
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1216	790	779	724	3510
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.56	19.73	0.17	[illegible]	
Roadside NO_2	48.01	48.24	0.22		[illegible]

South Gyle Broadway

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	166	218	253	211	848
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	166	137	139	106	547
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	166	168	164	116	615
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.68	18.33	-0.35	[illegible]	
Roadside NO_2	37.91	36.22	-1.69		[illegible]

Spittal Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	287	350	376	406	1419
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	287	228	207	203	924
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	287	280	244	223	1035
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.02	17.97	-0.04	[illegible]	
Roadside NO_2	36.02	36.04	0.02		[illegible]

St Leonards Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1056	1121	1116	957	4250
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1056	729	614	479	2877
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1056	897	725	526	3205
	Do-Nothing	Do-Something	Difference	EU Limit for PM_{10} Assessment	EU Limit for NO_2 Assessment
Roadside PM_{10}	17.95	17.97	0.02	50	
Roadside NO_2	33.71	34.04	0.33		105

Strachan Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	94	103	132	120	449
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	94	67	73	60	294
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	94	82	86	66	328
	Do-Nothing	Do-Something	Difference	EU Limit for PM_{10} Assessment	EU Limit for NO_2 Assessment
Roadside PM_{10}	17.59	17.65	0.07	50	
Roadside NO_2	38.62	38.55	-0.08		105

Telford Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	318	412	371	279	1380
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	318	268	204	140	929
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	318	330	241	153	1042
	Do-Nothing	Do-Something	Difference	EU Limit for PM_{10} Assessment	EU Limit for NO_2 Assessment
Roadside PM_{10}	19.05	19.02	-0.03	50	
Roadside NO_2	42.84	42.81	-0.03		105

The A1

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	17	33	81	155	286
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	17	21	45	78	161
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	17	26	53	85	181
	Do-Nothing	Do-Something	Difference	EU Limit for PM_{10} Assessment	EU Limit for NO_2 Assessment
Roadside PM_{10}	18.38	18.34	-0.04	50	
Roadside NO_2	31.30	31.30	0.00		105

The A7 & A701

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	2112	1938	1675	1971	7696
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	2112	1260	921	986	5278
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	2112	1550	1089	1084	5835
	Do-Nothing	Do-Something	Difference	EU Limit for PM_{10} Assessment	EU Limit for NO_2 Assessment
Roadside PM_{10}	18.85	18.75	-0.10	50	
Roadside NO_2	45.86	46.06	0.21		105

The Grassmarket

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1487	764	719	933	3923
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1487	510	395	467	2859
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1487	627	467	513	3095
	Do-Nothing	Do-Something	Difference	EU Limit for PM_{10} Assessment	EU Limit for NO_2 Assessment
Roadside PM_{10}	18.47	18.40	-0.07	50	
Roadside NO_2	40.55	40.76	0.21		105

The West Approach Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	973	1206	1397	1858	5434
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	973	784	768	929	3454
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	973	965	908	1022	3868
	Do-Nothing	Do-Something	Difference	EU Limit for PM_{10} Assessment	EU Limit for NO_2 Assessment
Roadside PM_{10}	19.50	19.57	0.07	50	
Roadside NO_2	38.67	38.63	-0.04		105

The Wisp?

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	66	122	131	175	494
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	66	79	72	88	305
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	66	98	85	96	345

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.80	17.81	0.01	[redacted]	
Roadside NO_2	35.21	35.24	0.03		[redacted]

Union Canal?

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1115	1587	1650	1399	5751
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1115	1032	908	700	3754
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1115	1270	1073	769	4227

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.50	18.52	0.02	[redacted]	
Roadside NO_2	42.12	42.61	0.49		[redacted]

West Granton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	427	522	588	731	2265
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	427	339	323	366	1455
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	427	418	382	402	1629

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.57	18.56	-0.02	[redacted]	
Roadside NO_2	37.25	37.25	0.00		[redacted]

West Mains Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	251	337	247	220	1055
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	251	219	136	110	716
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	251	270	161	121	802

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.95	17.93	-0.01	[redacted]	
Roadside NO_2	36.03	36.27	0.25		[redacted]

Wester Hailes Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	328	456	587	506	1797
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	328	296	279	253	1156
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	328	365	330	278	1301

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.59	19.69	0.10	[redacted]	
Roadside NO_2	45.94	45.97	0.03		[redacted]

Whitehouse Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	117	123	96	176	510
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	117	79	53	88	336
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	117	97	62	97	373

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.33	18.15	-0.19	[redacted]	
Roadside NO_2	33.43	31.68	-1.75		[redacted]

Willowbrae Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	415	596	692	681	2384
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	415	387	381	341	1524
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	415	477	450	375	1716

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.95	17.99	0.04	[redacted]	
Roadside NO_2	34.76	34.90	0.14		[redacted]

Overall Impact of Scheme: 2026

Road Section	Assessments	
	PM_{10}	NO_2
Balgreen Road	-28	118
Bankhead Avenue	-167	-63
Belford Road	25	2429
Broomhouse Road	-206	-114
Broomhouse Terrace	-816	94
Broughton Road	-219	-1708
Broughton Street	617	-66
Brunswick Road	-122	-904
Bruntsfield Place	-698	1212
Calder Road	-22	484
Causewayside	-314	-70
Claremount Park	-133	-730
Clermiston Road	-74	-287
Cluny Gardens	567	247
Coburg Street	-30	40
Colinton Road 2	-13	78
Colinton Road	-196	312
Comiston Road	-26	14
Commercial Street	190	867
Constitution Street	-173	-239
Corbiehill Road	-28	-49
Corstorphine High Street	-36	13
Corstorphine Road	-280	-631
Craigcrook Road	-115	-295
Craigentinny Avenue	-14	17
Craighall Road	17	-43
Craigleith Crescent	13	20
Crewe Road North	-54	68
Crewe Road South	-61	69
Dalkeith Road	-191	536
Dalry Road	-508	-1869
Dean Street	-96	-42
Douglas Crescent	41	-210
Drum Brae	-69	-26
Drummond Place	-172	-137
Dublin Street	-27	-102
Duddingston Park South	-2	153
Duke Street	-36	-655
Dundas Street	-154	137
East Claremont Street	-565	-1927
East Fettes Avenue	-1636	-668
East Preston Street	-36	124
Easter Road	-577	-6174
Ferry Road	-176	3018
Fountain Bridge	-360	1660
Frogston Road	-20	64
Gamekeepers Road	-52	-13
George Street	-29	-139
Gillespie Road	-7	167
Gilmerton Dykes Road	-17	-313
Gilmerton Road	-166	0
Glasgow Road	-65	84
Gorgie Road	-696	-1442
Granton Road	-60	-24
Gray's Loan	-4	31
Great King Street	-238	-1261
Greenbank Crescent	-52	-111
Groathill Road North	-386	-61
Gravsner Crescent	-166	-1260
Haymarket Terrace	-2206	-9393
Henderson Row	-336	-2812
Heriot Row	-74	-259
Hillhouse Road	-52	295
Howe Street	-261	-427
Inverleith Row	-271	-442
Junction Street	233	936
Lady Road	2	-25
Lanark Road	-21	-10
Lasswade Road	-61	90
Lauriston Farm Road	61	-5
Lauriston Gardens	-123	58
Lauriston Place	-486	-1202
Leith Walk	-226	-1234
Liberton Brae	-13	-24
Liberton Road	-3	127
Lindsay Road	57	822
Lochside Crescent	-1	-7
London Road	-321	-1359
Longstone Road	-94	90
Lothian Road	-124	327
Lower Granton Road	-11	61
Manor Place	-439	-2444
McDonald Road	-177	-274
Milton Road/Milton Road West	-37	-696
Morrison Street	-408	-5157
Mount Vernon Road	-18	0
Mountcastle Drive North & South	-22	-41
Muirhouse Parkway	-11	-563
Newcraighall Road	-3	0
Niddrie Mains Road	-30	414
Northfield Broadway	-1324	-36
Northumberland Street	-93	-97

Old Dalkeith Road	-22	-76
Oxgangs Farm Drive	-31	-87
Oxgangs Road North	-30	0
Oxgangs Road North 2	-23	-112
Palmerston Place	-226	435
Parkhead Drive	-116	-225
Pennywell Road	-62	70
Ponton Street	-160	-319
Portobello Road	-149	-721
Princess Street	-117	-532
Queensferry Road	-25	47
Queensferry Road 2	-96	0
Raeburn Place	-172	-475
Ravelston Dykes	-35	-365
Redford Road	-58	-39
Regent Road	-81	-897
Salamander Street	176	2495
Saughton Road	-12	709
Seafield Road	19	453
Shandwick Place	-864	-5103
Sir Harry Lauder Road	-10	18
Slateford Road	-164	-81
South Gyle Broadway	-12	-64
Spittal Street	-333	85
St Leonards Street	-204	-1668
Strachan Road	-9	-58
Telford Road	-34	223
The A1	-7	17
The A7 & A701	-275	938
The Grassmarket	-234	-2020
The West Approach Road	-59	434
The Wisp?	-6	4
Union Canal?	1670	1461
West Granton Road	-138	-187
West Mains Road	-2	-51
Wester Hailes Road	-54	122
Whitehouse Road	-3	-20
Willowbrae Road	-90	-700
Total	-17780	-39193

Balgreen Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	256	426	395	422	1499
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	256	277	217	211	961
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	256	341	257	232	1086

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.05	19.03	-0.03	-28	
Roadside NO_2	37.60	37.71	0.11		-111

Bankhead Avenue

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	11	57	141	213	422
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	11	37	78	107	232
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	11	46	92	117	265

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.20	18.48	-0.72	-167	
Roadside NO_2	35.80	35.56	-0.24		-63

Belford Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	403	433	488	497	1821
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	403	281	268	248	1201
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	403	346	317	273	1340

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.69	19.71	0.02	23	
Roadside NO_2	44.43	46.24	1.81		1478

Broomhouse Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	434	599	676	570	2279
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	434	389	372	285	1480
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	434	479	439	314	1666

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.97	18.83	-0.14	-214	
Roadside NO_2	34.32	34.25	-0.07		-514

Broomhouse Terrace

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	253	387	246	241	1046
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	253	269	135	121	708
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	253	246	159	133	790

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.20	18.05	-1.15	[illegible]	-
Roadside NO_2	32.69	32.81	0.12	-	[illegible]

Broughton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1404	747	927	1165	4243
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1404	486	510	583	2982
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1404	598	603	641	3245

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.82	19.75	-0.07	[illegible]	-
Roadside NO_2	48.56	48.53	-0.53	-	[illegible]

Broughton Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	829	828	809	833	3099
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	829	408	445	417	2099
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	829	502	526	458	2315

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.88	19.17	0.29	[illegible]	-
Roadside NO_2	44.18	44.14	-0.04	-	[illegible]

Brunswick Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	977	764	1092	1185	4018
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	977	497	601	593	2667
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	977	611	710	652	2950

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.06	18.02	-0.05	[illegible]	-
Roadside NO_2	32.37	32.06	-0.31	-	[illegible]

Brunsfield Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	2106	1608	1440	1171	6326
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	2106	1046	792	586	4529
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	2106	1287	936	644	4973

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.39	19.23	-0.15	[illegible]	-
Roadside NO_2	44.14	44.39	0.24	-	[illegible]

Calder Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	400	565	675	742	2383
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	400	368	371	371	1510
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	400	453	439	408	1700

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.91	18.89	-0.01	[illegible]	-
Roadside NO_2	39.78	40.06	0.28	-	[illegible]

Causewayside

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	486	576	521	464	2047
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	486	374	287	232	1379
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	486	461	339	255	1541

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.83	18.60	-0.23	[illegible]	-
Roadside NO_2	35.68	35.63	-0.05	-	[illegible]

Claremount Park

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	266	391	538	438	1629
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	266	254	294	219	1033
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	266	313	347	241	1167
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.10	17.97	-0.13	[illegible]	
Roadside NO_2	30.40	29.77	-0.63		[illegible]

Clermiston Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	264	329	309	413	1335
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	264	214	181	207	865
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	264	263	214	227	968
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.01	17.92	-0.09	[illegible]	
Roadside NO_2	30.02	29.72	-0.30		[illegible]

Cluny Gardens

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	358	312	392	307	1369
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	358	203	216	154	930
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	358	250	255	169	1031
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.04	18.65	0.61	[illegible]	
Roadside NO_2	36.57	36.78	0.21		[illegible]

Coburg Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	144	446	445	489	1524
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	144	290	245	245	923
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	144	357	289	269	1059
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.01	17.98	-0.03	[illegible]	
Roadside NO_2	33.61	33.65	0.04		[illegible]

Colinton Road 2

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	234	141	116	120	611
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	234	92	64	60	449
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	234	113	75	66	488
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.71	17.67	-0.04	[illegible]	
Roadside NO_2	29.34	29.50	0.16		[illegible]

Colinton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	420	657	616	538	2231
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	420	427	339	269	1455
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	420	526	400	296	1642
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.89	18.75	-0.13	[illegible]	
Roadside NO_2	37.14	37.33	0.19		[illegible]

Comiston Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	517	287	211	238	1253
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	517	187	116	119	939
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	517	230	137	131	1015
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.15	18.13	-0.02	[illegible]	
Roadside NO_2	32.31	32.33	0.01		[illegible]

Commercial Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	484	613	608	577	2282
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	484	398	334	289	1485
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	484	490	395	317	1687
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.78	18.90	0.13	[illegible]	
Roadside NO_2	41.18	41.67	0.52		[illegible]

Constitution Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	585	716	682	990	2973
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	585	465	375	495	1921
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	585	573	443	545	2146
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.85	17.76	-0.09	[illegible]	
Roadside NO_2	31.25	31.14	-0.11		[illegible]

Corbiehill Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	139	144	197	195	675
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	139	94	108	98	439
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	139	115	128	107	490
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.16	19.09	-0.07	[illegible]	
Roadside NO_2	37.86	37.77	-0.09		[illegible]

Corstorphine High Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	287	303	344	298	1232
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	287	197	189	149	822
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	287	242	224	164	917
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.37	18.33	-0.04	[illegible]	
Roadside NO_2	35.35	35.36	0.01		[illegible]

Corstorphine Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	764	863	864	811	3302
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	764	561	475	406	2206
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	764	690	562	446	2462
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	20.39	20.26	-0.13	[illegible]	
Roadside NO_2	46.83	46.57	-0.26		[illegible]

Craigcrook Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	332	290	289	209	1120
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	332	189	159	105	784
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	332	232	188	115	867
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.18	18.03	-0.15	[illegible]	
Roadside NO_2	36.37	36.03	-0.34		[illegible]

Craigentinny Avenue

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	172	160	232	235	799
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	172	104	128	118	521
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	172	128	151	129	580
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.54	17.51	-0.03	[illegible]	
Roadside NO_2	27.18	27.21	0.03		[illegible]

Craighall Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	350	327	329	289	1295
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	350	213	181	145	888
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	350	262	214	159	984

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.73	17.75	0.02	[illegible]	[illegible]
Roadside NO_2	28.19	28.15	-0.04	[illegible]	[illegible]

Craigleith Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	78	236	177	148	619
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	78	140	97	74	390
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	78	173	115	81	447

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.68	17.72	0.03	[illegible]	[illegible]
Roadside NO_2	29.19	29.24	0.05	[illegible]	[illegible]

Crewe Road North

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	318	377	354	187	1236
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	318	245	195	94	851
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	318	302	230	103	953

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.58	17.50	-0.08	[illegible]	[illegible]
Roadside NO_2	28.61	28.70	0.09	[illegible]	[illegible]

Crewe Road South

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	152	444	492	393	1389
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	152	289	271	196	857
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	152	355	261	215	984

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.08	18.00	-0.07	[illegible]	[illegible]
Roadside NO_2	30.06	30.13	0.07	[illegible]	[illegible]

Dalkeith Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	562	526	516	461	2065
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	562	342	284	231	1818
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	562	421	335	254	1572

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.30	18.23	-0.07	[illegible]	[illegible]
Roadside NO_2	36.33	35.67	0.34	[illegible]	[illegible]

Dalray Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1060	993	1283	1202	4448
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1060	587	706	601	2954
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1060	722	834	661	3277

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.59	19.42	-0.17	[illegible]	[illegible]
Roadside NO_2	46.05	45.46	-0.58	[illegible]	[illegible]

Dean Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	461	755	722	718	2656
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	461	491	397	359	1708
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	461	604	469	395	1929

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.14	18.08	-0.06	[illegible]	[illegible]
Roadside NO_2	33.68	33.65	-0.02	[illegible]	[illegible]

Douglas Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	225	317	286	319	1148
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	226	206	157	160	749
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	226	254	186	175	841
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.63	18.59	-0.05	[illegible]	
Roadside NO_2	38.85	38.60	-0.25		[illegible]

Drum Brae

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	293	462	485	532	1772
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	293	300	267	266	1126
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	293	370	315	293	1270
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.22	18.16	-0.06	[illegible]	
Roadside NO_2	31.40	31.38	-0.02		[illegible]

Drummond Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	292	389	718	668	2067
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	292	253	395	334	1274
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	292	311	467	367	1437
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.25	18.11	-0.14	[illegible]	
Roadside NO_2	36.61	36.51	-0.10		[illegible]

Dublin Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	210	172	348	422	1148
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	210	112	189	211	722
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	210	138	224	232	803
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.69	17.65	-0.04	[illegible]	
Roadside NO_2	31.53	31.40	-0.13		[illegible]

Duddington Park South

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	338	456	348	404	1556
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	338	303	191	202	1034
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	338	373	226	222	1159
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.48	18.48	0.00	[illegible]	
Roadside NO_2	41.49	41.62	0.13		[illegible]

Duke Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	346	294	618	466	1724
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	346	191	340	233	1110
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	346	235	402	256	1239
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.46	18.43	-0.03	[illegible]	
Roadside NO_2	35.25	34.73	-0.53		[illegible]

Dundas Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	713	584	705	711	2713
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	713	380	388	356	1836
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	713	467	458	391	2030
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.42	18.34	-0.08	[illegible]	
Roadside NO_2	34.18	34.24	0.06		[illegible]

East Claremont Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	402	550	563	664	2179
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	402	358	310	332	1401
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	402	440	366	365	1573

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	28.92	28.52	-0.40	-56	
Roadside NO_2	54.47	53.24	-1.22		-3027

East Fettes Avenue

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	526	633	646	667	2472
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	526	411	355	334	1626
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	526	506	420	367	1819

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.88	17.86	-1.01	-3161	
Roadside NO_2	28.21	28.85	-0.37		-668

East Preston Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	264	350	542	556	1712
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	264	228	298	278	1068
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	264	280	352	306	1202

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.51	18.46	-0.05	-53	
Roadside NO_2	35.18	35.28	0.10		116

Easter Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1885	1779	1272	1325	6261
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1885	1156	700	663	4403
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1885	1423	827	729	4864

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.54	18.41	-0.13	-577	
Roadside NO_2	37.34	36.07	-1.27		-3174

Ferry Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1729	1623	1504	1802	6758
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1729	1055	882	901	4567
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1729	1298	1043	991	5061

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	28.19	28.15	-0.04	-306	
Roadside NO_2	46.48	47.07	0.60		3124

Fountain Bridge

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	918	995	1153	1821	4887
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	918	647	634	911	3109
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	918	795	749	1002	3465

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	19.96	19.84	-0.12	-380	
Roadside NO_2	50.48	50.96	0.48		1680

Frogston Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	99	190	219	229	727
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	99	124	116	114	452
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	99	152	137	125	513

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	17.95	17.91	-0.05	-21	
Roadside NO_2	28.89	29.01	0.12		42

Gamekeepers Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	210	193	240	297	940
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	210	125	132	149	616
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	210	154	156	183	684

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.73	18.65	-0.08	[illegible]	
Roadside NO_2	34.08	34.06	-0.02		[illegible]

George Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	151	333	289	171	944
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	151	216	159	86	612
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	151	266	188	94	699

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.65	18.60	-0.05	[illegible]	
Roadside NO_2	36.76	36.57	-0.20		[illegible]

Gillespie Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	28	73	110	153	364
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	28	47	61	77	212
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	28	58	72	84	242

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.71	18.67	-0.03	[illegible]	
Roadside NO_2	33.30	33.99	0.69		[illegible]

Gilmerton Dykes Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	432	534	618	634	2218
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	432	347	340	317	1436
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	432	427	402	348	1610

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.76	18.75	-0.01	[illegible]	
Roadside NO_2	37.82	37.62	-0.19		[illegible]

Gilmerton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	593	717	749	749	2808
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	593	466	412	375	1846
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	593	574	487	412	2065

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.56	18.47	-0.09	[illegible]	
Roadside NO_2	32.45	32.45	0.00		[illegible]

Glasgow Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	224	218	214	367	1023
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	224	142	118	184	667
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	224	174	139	202	738

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	21.26	21.16	-0.10	[illegible]	
Roadside NO_2	46.18	46.30	0.13		[illegible]

Gorgie Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1737	1343	1391	1140	5611
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1737	873	765	570	3945
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1737	1074	904	627	4343

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	28.30	28.12	-0.18	[illegible]	
Roadside NO_2	48.34	48.01	-0.33		[illegible]

Granton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	469	324	311	316	1420
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	469	211	171	158	1009
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	469	259	202	174	1104
	Do-Nothing	Do-Something	Difference	PM10 Attainment	NO2 Attainment
Roadside PM_{10}	18.89	18.83	-0.06	Y	
Roadside NO_2	32.65	32.63	-0.02		Y

Gray's Loan

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	67	108	128	137	492
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	67	68	70	69	301
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	67	80	83	108	339
	Do-Nothing	Do-Something	Difference	PM10 Attainment	NO2 Attainment
Roadside PM_{10}	19.09	19.07	-0.01	Y	
Roadside NO_2	40.31	40.40	0.09		N

Great King Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	327	563	698	834	2422
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	327	366	384	417	1494
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	327	450	454	459	1690
	Do-Nothing	Do-Something	Difference	PM10 Attainment	NO2 Attainment
Roadside PM_{10}	18.41	18.25	-0.16	Y	
Roadside NO_2	35.75	35.01	-0.75		>200

Greenbank Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	480	340	548	571	1939
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	480	221	301	286	1288
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	480	272	356	314	1422
	Do-Nothing	Do-Something	Difference	PM10 Attainment	NO2 Attainment
Roadside PM_{10}	17.61	17.57	-0.04	Y	
Roadside NO_2	26.53	26.46	-0.08		Y

Groathill Road North

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	197	188	193	189	767
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	197	122	106	95	519
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	197	150	125	104	567
	Do-Nothing	Do-Something	Difference	PM10 Attainment	NO2 Attainment
Roadside PM_{10}	18.21	17.45	-0.76	Y	
Roadside NO_2	26.78	26.67	-0.11		N

Grovsner Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	223	275	359	617	1474
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	223	179	197	309	908
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	223	220	233	339	1015
	Do-Nothing	Do-Something	Difference	PM10 Attainment	NO2 Attainment
Roadside PM_{10}	18.55	18.36	-0.18	Y	
Roadside NO_2	36.62	35.38	-1.24		>200

Haymarket Terrace

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	533	542	626	743	2444
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	533	352	344	372	1601
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	533	434	407	409	1782
	Do-Nothing	Do-Something	Difference	PM10 Attainment	NO2 Attainment
Roadside PM_{10}	21.93	20.56	-1.38	Y	
Roadside NO_2	64.14	58.87	-5.27		>200

Henderson Row

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	970	931	1114	998	4013
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	970	605	613	499	2687
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	970	745	724	549	2988
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.47	18.34	-0.12	Pass	
Roadside NO_2	35.60	34.66	-0.94		Pass

Heriot Row

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	518	660	751	861	2782
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	518	429	413	431	1783
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	518	528	488	474	2008
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.27	18.23	-0.04	Pass	
Roadside NO_2	33.27	33.15	-0.13		Pass

Hilthouse Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	332	305	300	322	1259
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	332	198	165	161	856
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	332	244	195	177	948
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	20.42	20.35	-0.07	Pass	
Roadside NO_2	44.89	45.20	0.31		Fail

Howe Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	941	836	868	895	3540
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	941	543	477	448	2409
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	941	669	564	492	2666
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.46	18.35	-0.11	Pass	
Roadside NO_2	33.76	33.60	-0.16		Pass

Inverleith Row

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	773	581	438	446	2238
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	773	378	241	223	1615
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	773	465	285	245	1768
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.70	18.53	-0.17	Pass	
Roadside NO_2	33.72	33.47	-0.25		Pass

Junction Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1211	823	795	905	3734
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1211	535	494	483	2633
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1211	658	478	531	2878
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.76	18.85	0.09	Pass	
Roadside NO_2	38.74	39.06	0.33		Fail

Lady Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	41	71	128	102	342
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	41	46	70	51	209
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	41	57	83	56	237
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.13	18.14	0.01	Pass	
Roadside NO_2	33.84	33.73	-0.11		Pass

Lanark Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	217	158	144	228	747
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	217	103	79	114	513
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	217	126	94	125	562

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	16.63	16.59	-0.04	[redacted]	
Roadside NO_2	31.32	31.25	-0.07		[redacted]

Lasswade Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	461	694	582	696	2433
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	461	451	320	348	1580
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	461	555	378	383	1777

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.55	18.51	-0.04	[redacted]	
Roadside NO_2	34.00	34.05	0.05		[redacted]

Lauriston Farm Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	74	98	103	106	379
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	74	62	57	53	246
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	74	77	67	58	276

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.66	17.91	0.25	[redacted]	
Roadside NO_2	29.43	29.41	-0.02		[redacted]

Lauriston Gardens

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	379	495	554	574	2002
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	379	322	305	287	1292
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	379	396	360	316	1451

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.84	17.74	-0.10	[redacted]	
Roadside NO_2	32.04	32.07	0.03		[redacted]

Lauriston Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1283	897	1517	1897	5594
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1283	583	834	948	3649
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1283	718	986	1043	4030

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.10	18.97	-0.13	[redacted]	
Roadside NO_2	41.36	41.06	-0.30		[redacted]

Leith Walk

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1755	1792	1797	1656	7000
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1755	1165	988	828	4736
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1755	1434	1168	911	5267

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.35	19.30	-0.05	[redacted]	
Roadside NO_2	47.96	47.72	-0.23		[redacted]

Liberton Brae

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	179	162	154	158	653
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	179	105	85	79	448
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	179	130	100	87	496

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.53	18.50	-0.03	[redacted]	
Roadside NO_2	34.51	34.56	0.05		[redacted]

Liberton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	64	78	125	97	364
PM_{10} Weights	1.00	0.85	0.55	0.50	
PM_{10} Weighted Properties	64	51	69	49	232
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	64	62	81	53	261
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.54	18.52	-0.01	✓	
Roadside NO_2	35.47	35.95	0.49		✓

Lindsay Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	752	680	681	546	2659
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	752	442	375	273	1842
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	752	544	443	300	2039
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.22	19.25	0.03	✓	
Roadside NO_2	41.10	41.50	0.40		✓

Lochside Crescent

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	14	20	18	20	72
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	14	13	10	10	47
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	14	16	12	11	53
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.76	18.74	-0.02	✓	
Roadside NO_2	36.06	36.92	0.14		✓

London Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1132	1291	1418	1426	5267
PM_{10} Weights	1.00	0.85	0.55	0.50	
PM_{10} Weighted Properties	1132	839	780	713	3464
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1132	1033	922	784	3871
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.33	19.24	-0.09	✓	
Roadside NO_2	47.66	47.31	-0.35		✓

Longstone Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	276	333	326	292	1227
PM_{10} Weights	1.00	0.85	0.55	0.50	
PM_{10} Weighted Properties	276	216	179	146	818
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	276	266	212	161	915
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.67	19.56	-0.11	✓	
Roadside NO_2	44.20	44.30	0.10		✓

Lothian Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	389	272	439	588	1688
PM_{10} Weights	1.00	0.85	0.55	0.50	
PM_{10} Weighted Properties	389	177	241	294	1101
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	389	218	285	323	1215
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	20.50	20.39	-0.11	✓	
Roadside NO_2	46.32	46.59	0.27		✓

Lower Granton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	402	69	222	310	1023
PM_{10} Weights	1.00	0.85	0.55	0.50	
PM_{10} Weighted Properties	402	58	122	155	737
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	402	71	144	171	788
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.08	18.07	-0.02	✓	
Roadside NO_2	34.05	34.13	0.08		✓

Manor Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	281	352	460	528	1621
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	281	229	253	264	1027
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	281	282	299	290	1152

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.29	18.87	-0.43	[illegible]	
Roadside NO_2	43.24	41.12	-2.12		[illegible]

McDonald Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	471	429	372	741	2013
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	471	279	205	371	1325
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	471	343	242	408	1464

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.15	18.02	-0.13	[illegible]	
Roadside NO_2	32.87	32.68	-0.19		[illegible]

Milton Road/Milton Road West

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	242	407	498	538	1685
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	242	265	274	269	1049
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	242	326	324	296	1197

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.76	18.72	-0.03	[illegible]	
Roadside NO_2	36.11	35.53	-0.59		[illegible]

Morrison Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	661	348	668	868	2545
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	661	226	367	434	1689
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	661	278	434	477	1851

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.42	19.18	-0.24	[illegible]	
Roadside NO_2	41.76	38.96	-2.80		[illegible]

Mount Vernon Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	287	310	278	299	1174
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	287	202	153	150	791
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	287	248	181	164	880

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.08	18.06	-0.02	[illegible]	
Roadside NO_2	29.89	29.89	0.00		[illegible]

Mountcastle Drive North & South

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	356	449	467	402	1674
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	356	292	257	201	1106
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	356	359	304	221	1240

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.87	17.85	-0.02	[illegible]	
Roadside NO_2	28.60	28.57	-0.03		[illegible]

Muirhouse Parkway

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	303	617	476	297	1693
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	303	401	262	149	1114
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	303	494	309	163	1269

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.99	17.98	-0.01	[illegible]	
Roadside NO_2	30.18	29.74	-0.44		[illegible]

Newcraighall Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	82	106	117	121	426
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	82	69	64	61	276
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	82	85	76	67	309
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.12	18.11	-0.01	[illegible]	
Roadside NO_2	34.59	34.59	0.00		[illegible]

Niddrie Mains Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	494	782	535	717	2628
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	494	508	348	359	1710
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	494	626	413	394	1927
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.76	18.75	-0.02	[illegible]	
Roadside NO_2	42.92	43.13	0.21		[illegible]

Northfield Broadway

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	307	365	441	552	1665
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	307	237	243	276	1063
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	307	292	287	304	1189
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.62	17.38	-1.25	[illegible]	
Roadside NO_2	24.92	24.89	-0.03		[illegible]

Northumberland Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	490	549	467	613	2119
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	490	357	257	307	1410
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	490	439	304	337	1570
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.50	18.44	-0.07	[illegible]	
Roadside NO_2	38.22	38.16	-0.06		[illegible]

Old Dalkeith Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	299	366	410	446	1521
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	299	238	226	223	965
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	299	293	267	245	1104
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.62	17.60	-0.02	[illegible]	
Roadside NO_2	28.95	28.88	-0.07		[illegible]

Oxgangs Farm Drive

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	169	191	211	329	900
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	169	124	116	165	574
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	169	153	137	181	640
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.11	18.06	-0.05	[illegible]	
Roadside NO_2	27.92	27.78	-0.14		[illegible]

Oxgangs Road North

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	191	385	532	588	1696
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	191	250	293	294	1028
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	191	305	346	323	1169
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.25	18.22	-0.03	[illegible]	
Roadside NO_2	31.79	31.79	0.00		[illegible]

Oxgangs Road North 2

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	212	269	374	390	1245
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	212	175	206	195	788
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	212	215	243	215	885
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.00	17.97	-0.03	[illegible]	
Roadside NO_2	30.18	30.05	-0.13		[illegible]

Palmerston Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	340	474	466	378	1658
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	340	308	256	189	1093
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	340	379	303	208	1230
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.71	18.51	-0.21	[illegible]	
Roadside NO_2	39.57	39.92	0.36		[illegible]

Parkhead Drive

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	285	355	519	667	1826
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	285	231	285	334	1135
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	285	284	337	367	1273
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	17.74	17.65	-0.10	[illegible]	
Roadside NO_2	27.45	27.28	-0.18		[illegible]

Pennywell Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	339	483	480	439	1721
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	339	314	263	220	1125
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	339	386	299	241	1266
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.33	18.28	-0.05	[illegible]	
Roadside NO_2	31.28	31.34	0.05		[illegible]

Ponton Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	342	468	787	539	2136
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	342	304	433	270	1349
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	342	374	512	296	1524
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.63	18.51	-0.12	[illegible]	
Roadside NO_2	40.28	40.07	-0.21		[illegible]

Portobello Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	943	779	781	483	2986
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	943	506	430	242	2120
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	943	623	508	268	2340
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.42	18.35	-0.07	[illegible]	
Roadside NO_2	35.58	35.27	-0.31		[illegible]

Princess Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	378	505	439	214	1528
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	378	328	241	107	1047
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	378	404	285	118	1177
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.74	18.63	-0.11	[illegible]	
Roadside NO_2	40.61	40.16	-0.45		[illegible]

Queensferry Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1047	781	988	782	3598
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1047	508	543	391	2489
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1047	625	642	430	2748

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	19.33	19.32	-0.01	[illegible]	
Roadside NO_2	37.40	37.42	0.02		[illegible]

Queensferry Road 2

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	95	220	345	403	1063
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	95	143	190	202	629
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	95	176	224	222	717

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	21.80	21.65	-0.15	[illegible]	
Roadside NO_2	54.42	54.42	0.00		[illegible]

Raeburn Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1074	1116	1112	1053	4356
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1074	727	612	527	2939
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1074	895	723	579	3271

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	19.00	18.94	-0.06	[illegible]	
Roadside NO_2	34.86	34.74	-0.15		[illegible]

Ravelston Dykes

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	191	376	391	417	1375
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	191	244	215	209	859
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	191	301	254	229	975

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	19.18	19.14	-0.04	[illegible]	
Roadside NO_2	36.88	36.50	-0.37		[illegible]

Redford Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	322	439	323	342	1426
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	322	285	178	171	956
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	322	351	210	188	1071

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	17.66	17.60	-0.06	[illegible]	
Roadside NO_2	25.82	25.78	-0.04		[illegible]

Regent Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	440	427	664	718	2243
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	440	274	365	359	1438
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	440	337	432	395	1603

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.13	18.07	-0.06	[illegible]	
Roadside NO_2	32.91	32.35	-0.56		[illegible]

Salamander Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	556	413	491	437	1897
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	556	268	270	219	1313
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	556	330	319	240	1446

	Do-Nothing	Do-Something	Difference	PM10 Assessment	NO2 Assessment
Roadside PM_{10}	18.68	18.81	0.13	[illegible]	
Roadside NO_2	37.83	39.56	1.73		[illegible]

Saughton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	306	517	528	597	1948
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	306	336	290	299	1231
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	306	414	343	328	1391

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.27	19.26	-0.01	[illegible]	
Roadside NO_2	43.77	42.28	-0.50		[illegible]

Seafield Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	120	191	219	288	728
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	120	66	120	144	450
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	120	81	142	158	502

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.86	19.78	-0.04	[illegible]	
Roadside NO_2	40.96	41.86	0.90		[illegible]

Shandwick Place

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	456	536	599	421	2012
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	456	348	329	211	1344
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	456	429	389	232	1506

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	20.31	19.67	-0.64	[illegible]	
Roadside NO_2	54.35	50.96	-3.39		[illegible]

Sir Harry Lauder Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	45	71	186	186	488
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	45	46	91	93	275
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	45	57	108	102	312

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.34	19.31	-0.04	[illegible]	
Roadside NO_2	33.80	33.86	0.06		[illegible]

Slateford Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1216	988	1199	1317	4720
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1216	642	659	659	3176
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1216	790	779	724	3510

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	20.35	20.30	-0.05	[illegible]	
Roadside NO_2	47.45	47.42	-0.02		[illegible]

South Gyle Broadway

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	166	210	253	211	840
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	166	137	139	106	547
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	166	168	164	116	615

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.38	18.36	-0.02	[illegible]	
Roadside NO_2	33.40	33.30	-0.10		[illegible]

Spittal Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	287	350	376	406	1419
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	287	228	207	203	924
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	287	280	244	223	1035

	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.97	18.61	-0.36	[illegible]	
Roadside NO_2	38.23	38.32	0.08		[illegible]

St Leonards Street

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1056	1121	1116	957	4250
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1056	729	614	479	2877
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1056	897	725	526	3205
	Do-Nothing	Do-Something	Difference	PM Assessment	NO_2 Assessment
Roadside PM_{10}	18.23	18.18	-0.07	[illegible]	
Roadside NO_2	34.12	33.60	-0.52		[illegible]

Strachan Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	94	103	132	120	449
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	94	67	73	60	294
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	94	82	86	66	328
	Do-Nothing	Do-Something	Difference	PM Assessment	NO_2 Assessment
Roadside PM_{10}	18.03	18.00	-0.03	[illegible]	
Roadside NO_2	30.47	30.32	-0.15		[illegible]

Telford Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	318	412	321	279	1330
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	318	268	204	140	929
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	318	330	241	153	1042
	Do-Nothing	Do-Something	Difference	PM Assessment	NO_2 Assessment
Roadside PM_{10}	19.43	19.39	-0.04	[illegible]	
Roadside NO_2	42.96	43.18	0.21		[illegible]

The A1

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	17	33	81	155	286
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	17	21	45	78	161
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	17	26	53	85	181
	Do-Nothing	Do-Something	Difference	PM Assessment	NO_2 Assessment
Roadside PM_{10}	19.06	19.02	-0.05	[illegible]	
Roadside NO_2	30.32	30.41	0.09		[illegible]

The A7 & A701

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	2112	1938	1675	1971	7696
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	2112	1260	921	986	5278
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	2112	1550	1089	1084	5835
	Do-Nothing	Do-Something	Difference	PM Assessment	NO_2 Assessment
Roadside PM_{10}	19.12	19.06	-0.05	[illegible]	
Roadside NO_2	44.38	44.55	0.16		[illegible]

The Grassmarket

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1487	784	719	933	3923
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1487	510	395	467	2859
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1487	627	467	513	3095
	Do-Nothing	Do-Something	Difference	PM Assessment	NO_2 Assessment
Roadside PM_{10}	18.91	18.83	-0.08	[illegible]	
Roadside NO_2	40.52	39.86	-0.65		[illegible]

The West Approach Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	973	1206	1397	1858	5434
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	973	784	768	929	3454
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	973	965	908	1022	3868
	Do-Nothing	Do-Something	Difference	PM Assessment	NO_2 Assessment
Roadside PM_{10}	19.99	19.97	-0.02	[illegible]	
Roadside NO_2	38.85	38.96	0.11		[illegible]

The Wisp?

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	66	122	131	175	494
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	66	79	72	88	305
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	66	98	85	96	345
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.31	18.29	-0.02	-	-
Roadside NO_2	36.92	36.93	0.01	-	-

Union Canal?

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	1115	1587	1650	1399	5751
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	1115	1032	908	700	3754
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	1115	1270	1073	769	4227
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.47	18.92	0.44	[illegible]	
Roadside NO_2	41.56	41.91	0.35	-	[illegible]

West Granton Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	427	522	588	731	2268
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	427	339	323	366	1455
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	427	418	382	402	1629
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	19.46	19.36	-0.09	-	-
Roadside NO_2	39.15	39.05	-0.10	-	[illegible]

West Mains Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	251	337	247	220	1055
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	251	219	136	110	716
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	251	270	161	121	802
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.03	18.03	0.00	-	-
Roadside NO_2	34.48	34.42	-0.06	-	[illegible]

Wester Hailes Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	328	456	507	506	1797
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	328	296	279	253	1156
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	328	365	330	278	1301
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	20.32	20.27	-0.05	-	-
Roadside NO_2	46.68	46.68	0.00	-	[illegible]

Whitehouse Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	117	121	98	178	510
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	117	79	53	88	336
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	117	97	62	97	373
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.71	18.70	-0.01	-	-
Roadside NO_2	33.58	33.53	-0.05	-	[illegible]

Willowbrae Road

Road Banding (m)	0-50	50-100	100-150	150-200	0-200
Properties	415	596	692	681	2384
PM_{10} Weights	1.00	0.65	0.55	0.50	
PM_{10} Weighted Properties	415	387	381	341	1524
NO_2 Weights	1.00	0.80	0.65	0.55	
NO_2 Weighted Properties	415	477	450	375	1716
	Do-Nothing	Do-Something	Difference	PM_{10} Assessment	NO_2 Assessment
Roadside PM_{10}	18.17	18.12	-0.06	-	-
Roadside NO_2	33.63	33.22	-0.41	-	[illegible]

Appendix D – Preferred Route Scheme Drawings

Please see accompanying drawing folio.

Appendix E – Consultation and Route Development Scheme Drawings

Please see accompanying drawing folio.

Appendix F – Scheme Cost Report

TRAM LINE TWO - WEST EDINBURGH

Transport Initiatives Edinburgh

Project Cost Report - FINAL

November 2003

TRANSPORT INITIATIVES EDINBURGH

TRAM LINE TWO - WEST EDINBURGH

PROJECT COST REPORT – FINAL

Prepared by: ..... Richard Mansfield, Deputy Project Manager

Approved by: ..... Gavin Murray, Project Manager

Rev No	Comments	Approved / Reviewed (FMTP only)	Date
1	Draft Issue		22/10/03
2	Interim Issue		13/11/03
3	Final Report		14/11/03

Job No: 38094MMH
Reference:
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FABER MAUNSELL

Executive Summary

The West Edinburgh Tram Line (Tram Line 2) is the second of a currently proposed network of three lines to serve North Edinburgh, West Edinburgh and the Airport, and South East Edinburgh. The commission to provide technical, operational and environmental advice is being undertaken by the team comprising FaberMaunsell, Semaly, LandAspects, Ash and Roger Tym and Partners.

For the purpose of preparing the cost estimates, the principal route has been split into two main sections, the "common" section (where Tram Lines 1 and 2 share the route between St Andrew Square and Roseburn) and the remaining route between Roseburn and the Airport. The Newbridge Shuttle has been priced independently, in order that the costs of this service can be easily extracted and assessed separately.

Cost estimates have been prepared to cover four main categories – Capital Costs (Capex), Operating Costs (Opex), Revenue and Lifecycle Costs, using a combination of benchmarking, previous experience and engineering judgement to define the elements that will comprise ETL2, and obtain and refine costs for its implementation. Where practicable, the assumptions used to derive the costs have been agreed between Line One and Line Two, as driven by tie and Grant Thornton.

CAPITAL COSTS

The Capital Cost estimates for Line Two have been estimated by FaberMaunsell net of any contingencies. tie has determined an Optimism Bias factor of 31 per cent, to cover all project risks normally accounted for within a contingency calculation. The estimates, including Optimism Bias, can be summarised as follows:

Combination	Route Description	Capital Cost for Line Two (£)
Line One + Line Two Built	Roseburn to Airport	225.9M
Line One + Line Two + Newbridge Built	Roseburn to Airport; Ingliston to Newbridge	279.4M
Line Two Only Built	St Andrew Square to Airport	282.8M
Line Two Only + Newbridge Built	St Andrew Square to Airport; Ingliston to Newbridge	336.3M

OPERATING COSTS

The Operating Costs have been calculated by estimating annual staff costs, materials and power demands, insurance, policing and other overheads. Finally, a business rate has been applied at 5%. All the assumptions associated with the operating cost estimate are consistent with those of Line 1 Consultants. The total estimated operating cost is £5.71 million for the whole of Line Two, and £4.7 million excluding Newbridge.

REVENUE FORECASTS

Revenue has been calculated using several models to generate patronage forecasts. These models are:

- LUTI
- Highway Detailed Assignment Model (Highway DAM)
- Public Transport Detailed Assignment Model (PT DAM)

The revenue forecasts take account of losses due to ticket types (season tickets and discounted fares) and fare evasion, plus they allow for the following ramp-up:

Year 1	Year 2	Year 3	Year 4
75%	85%	95%	100%

The Base Case revenue for Line 2, at 2003 prices, is as follows:

	2011 (excluding ramp up)	2026
Revenue (full adult fare)	**£7.98M**	**£9.90M**
Revenue loss due to ticket type	£0.94M	£1.15M
Revenue loss due to fare evasion	£0.35M	£0.44M
Residual Revenue	**£6.69M**	**£8.31M**

A number of sensitivity tests have been carried out to assess the impact of certain factors on revenue. These are:

- Airport Heavy Rail Link
- Congestion Charging
- Bus Operator Response
- Tram Frequency
- Tram Fare
- Removal of Newbridge Spur
- Removal of Park and Ride at Newbridge

LIFECYCLE COSTS

The lifecycle costs for Tram Line Two encompass all costs associated with operating and maintaining the tramway that are outwith the standard operating costs. These include the replacement of civil, electrical and stop installations, tram vehicle refurbishment and other non-routine maintenance activities.

The build-up of lifecycle costs has been based around a standard list of lifecycle cost headings agreed between tie and the Consultants for Lines One and Two, and have been determined by specifying maintenance intervals for "minor" or "major" refurbishment of each item, and by applying a cost as a percentage of the original value. The lifecycle costs are summarised as follows:

Line 1 / Line 2 Common Section:	£6.76 million
Roseburn to Airport:	£34.264 million
Newbridge Shuttle:	£10.648 million
TOTALS:-	
St Andrew Square to Airport:	£41.024 million
St Andrew Sq to Airport + Newbridge:	£51.672 million

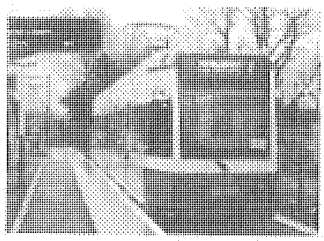
ANALYSIS

It is clear that the overall profitability (revenue:cost ratio) would be improved by not including the Newbridge Shuttle in the overall scheme. With Newbridge included, Tram Line 2 is unable to return even a 5 per cent profit per annum, whereas it can return in excess of 10 per cent profit without Newbridge Shuttle, using the base case scenario. However, the revenue performance can be significantly improved by full integration of tram and bus services thereby ensuring complementary bus services. Increases in tram frequency also increase patronage and revenue, however an increased frequency would require additional vehicles, so the revenue benefits would be countered by the increased costs.

TABLE OF CONTENTS

1 INTRODUCTION





1 Introduction

The West Edinburgh Tram Line (Tram Line 2) is the second of a currently proposed network of three lines to serve North Edinburgh, West Edinburgh and the Airport, and South East Edinburgh. The commission to provide technical, operational and environmental advice is being undertaken by the team comprising FaberMaunsell, Semaly, LandAspects, Ash and Roger Tym and Partners.

Tram Line 2 will comprise a route that runs from St Andrew Square to the Airport, serving Haymarket, Murrayfield, Edinburgh Park, The Gyle, Royal Bank of Scotland's new headquarters at Gogarburn and a Park & Ride at Ingliston. A separate shuttle service is proposed that will run between Newbridge and Ingliston Park & Ride, serving the Royal Highland Showground and Ratho Station.

For the purpose of preparing the cost and revenue estimates, the principal route has been split into two main sections, the "shared" section (where Tram Lines 1 and 2 share the route between St Andrew Square and Roseburn) and the remaining route between Roseburn and the Airport. Capital and lifecycle cost estimates for the Shared Section have been prepared by Line One Team, whereas revenue and operating cost estimates have been prepared by Line Two Team. The reason for this split has been that Line One has been responsible for the design of the common section, so they are best placed to prepare cost estimates for capital and lifecycle costs for the common section. However, when it comes to estimating revenue and operating costs, it is not possible to split a route as the figures have to be based on end-to-end operations.

The Newbridge Shuttle has been priced independently, in order that the costs of this service can be easily extracted and assessed separately.

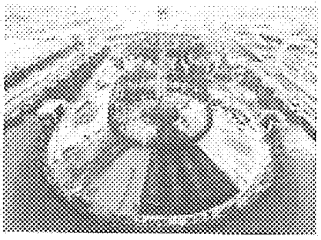
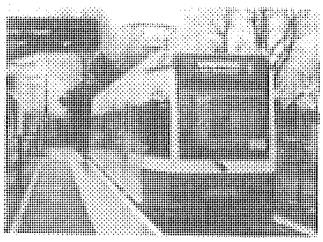
Cost estimates have been prepared to cover four main categories – Capital Costs (Capex), Operating Costs (Opex), Revenue and Lifecycle Costs. These categories can be defined as follows:

Capital Costs: Costs of scheme implementation from submission of Parliamentary Bill to scheme opening
Operating Costs: Annual costs for tram operations and routine maintenance (e.g. tram washing, vehicle checks)
Revenue: Income, principally patronage, generated by the tram
Lifecycle Costs: All non-routine maintenance costs (e.g. track replacement, vehicle and stop refurbishment)

Where practicable, the assumptions used to derive the costs have been agreed between Line One and Line Two, as instructed by tie and driven by Grant Thornton (GT). For example, rates used for vehicle costs, contractors' preliminaries, design costs and contingencies are consistent for both lines, as is the approach to operating and lifecycle costing. For the majority of other factors, the rates and/or quantities used are expected to vary from line to line, as the individual characteristics of the particular route are taken into consideration. Line Two team continues to work closely with tie and GT, however, to help ensure an overall consistency between estimates provided by Line One and Line Two teams.

The Line Two team's approach to preparing cost estimates has been to use a combination of benchmarking, previous experience and engineering judgement to define the elements that will comprise ETL2, and obtain and refine costs for its implementation. The team has extensive experience in the development and implementation of tram schemes in the UK and Europe, and thus is cognisant of the likely factors that will impact upon the outturn costs.

2 BACKGROUND

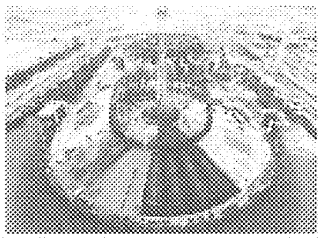
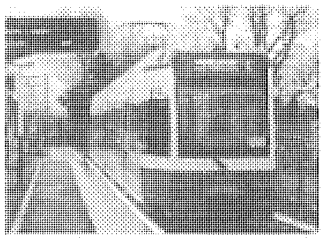
2 Background

The initial development of costs for Tram Line 2 was carried out by Ove Arup and Partners as part of the two phase Edinburgh LRT Masterplan Feasibility Study. Phase 1 of the Study reported in September 2002 and, based on a route between Haymarket and Newbridge, these figures fed into the Preliminary Business Case (PBC). Phase 2 of the Study subjected the scheme to a more detailed assessment, and considered Tram Line 2 as a stand-alone route between St Andrew Square and Newbridge. Phase 2 of the study was completed and the results reported in the "Edinburgh LRT Masterplan Feasibility Study Final Report" (the "Masterplan") in January 2003.

Babtie Group, on behalf of Transport Initiatives Edinburgh (tie), was tasked with providing details of a reconciliation of capital and operating costs and revenue between the PBC and Masterplan findings. The results of this exercise were recorded in the "NTI Business Case Edinburgh Tram Lines 2 and 3 Reconciliation of Costs" Report ("Reconciliation Report"), published in September 2003.

FaberMaunsell has carried out a series of estimates of capital, operational and lifecycle costs and revenue for Tram Line 2 in parallel with the development of a preferred route, and the details provided in this report represent the final iteration of this estimation process.

3 CAPITAL COSTS

3 Capital Costs

3.1 ESTIMATING PROCESS

The work in developing cost estimates can be split into two distinct phases, the first being a qualitative assessment of costs following completion of Work Package 1. The qualitative assessment defined a series of scheme parameters and assumptions that would form the basis of the estimation process in Work Package 2, and defined the elements that would comprise Tram Line 2. These assumptions have been refined to reflect developments to the proposals for Tram Line 2, and through liaison with Line 1 Team to ensure a general consistency of approach between the two teams.

The second phase of the cost estimation process has been the development of quantitative cost estimates throughout Work Package 2. These estimates have been through several iterations, being updated on completion of each phase of the design development – initial, consultation and final - to reflect changes to the route or to the design assumptions.

The Line Two team's approach to preparing capital cost estimates has been to use a combination of benchmarking, previous experience and engineering judgement. The rates used for the various capital cost elements have been developed and refined by FaberMaunsell's QS department, and reflect the company's experience in a wide variety of LRT and highways projects throughout the UK and Europe. All rates quoted are based on 2Q 2003 prices.

The rationale behind the estimation process for capital costs has been to ensure that the accuracy of the estimates is appropriate to the level of detail available at each design stage. Thus, the initial estimate relied on broad brush per metre rates, for which conservative assumptions and larger contingencies were used to reflect the level of confidence in the estimates at that stage. As the scheme has developed towards a single preferred route, and individual elements have been identified and quantified, it has been possible to estimate the costs for individual items, which has allowed contingencies to be reduced and estimates to be tightened. Inevitably, the development of the scheme proposals has resulted in inconsistent bases for each iteration of the capex estimate, so each iteration has been reconciled to previous estimates in order to carry out a like-for-like comparison. The reconciliation of the final capital costs is provided in Section 3.5 of this report.

3.2 ASSUMPTIONS

The following table summarises the assumptions used in deriving capital cost estimates for Tram Line 2.

Table 3.2(i) Capex Assumptions

Category	Sub-category	Assumption
Civil	Structures	Each structure has been assessed individually and in detail to determine cost and size requirements.
	Bulk Earthworks	Includes rates for excavation and disposal of material, an allowance for contaminated land, and placing / compacting of capping
	Landscaping	Costs of £150k per kilometre (assuming 10m wide corridor), plus £15k per tram stop included.
	Drainage / Ducting	Included within track costs for track drainage, and highway costs for new highway works.
Utilities		Combined Services Drawings issued to utilities companies, awaiting cost estimates. Internal estimate carried out based on CERT estimates, and validated using experience of previous schemes, however low confidence level in figures.
Electrical	Sub-stations	6 No. substations required city – airport (including 2 for section shared with line 1 – agreed with MM) 2 No. substations required for Newbridge Shuttle. Building Size 16m x 8m assumed.
	Communications	SCADA included throughout
Network Rail	Immunisation, Possessions, Compensation	All-in costs of £6.5M currently assumed, based on Arup Masterplan rate.

Preliminaries		20 % preliminaries, 7 % Design, 3.35 % coordination and consents agreed between Line 1 and Line 2
Stops	All	4 no. stops for Line 1 / Line 2 shared section in city centre; 10 no. stops for Line 2 only between Roseburn and the Airport. All stops now assumed to have 2 no. side platforms (except Airport and Ingliston P&R with one island platform), 2 no. ticket machines, 2 no. CCTV cameras, 2 no. emergency help points, PA system. Airport stop assumed to have 5 no. ticket barriers (4 x standard, 1 x wide) for revenue protection.
Depot		Costs allow for the provision of a Main Depot. Location of depot requires significant earthworks and retaining structures, so costs increased.
Track	Ballasted	Ballasted track used where practicable. Assumed to be unfeasible along WEBs section and through Edinburgh Park.
	Slab Track	Assumed on structures (to minimise construction depth), WEBs section, and where horizontal radii are less than 100m
	Paved (Embedded) Slab Track	Used where road vehicles are permitted to share road space with trams, at level crossings and in areas of "dedicated" running.
	Layovers	1 no. assumed at Murrayfield
	Crossovers	9 no. assumed
	Turnbacks	1 no. assumed at Ingliston
	Turnouts	2 no. assumed on city – airport route 8 no. required for Newbridge Shuttle to be added.
Land		Costs provided by Colliers CRE
Vehicles		13 No. LRVs assumed (11 + 2 spare). 8 no. required for airport service, 3 no. required for Newbridge. Value of £1.55M each (agreed between Lines 1 and 2).
Contingency		FM's estimate of contingency removed at tie's instruction, and an "Optimism Bias" of 31% (calculated by tie) applied.
Project Costs		A rate of 10% assumed, to cover promoters costs, insurances and pre-operational costs.

In addition, a number of vehicle and alignment characteristics were agreed between Line 1 and Line 2 teams, some of which impact upon capital costs. These are included below:

Table 3.2(ii) Vehicle and Alignment Assumptions

Parameter	Value	Comment
Vehicle Length	40m	Maximum
Platform Length	40m	
Vehicle Width	2.65m	Maximum
Vehicle Height	3.365m	Excluding pantograph
Floor Height	350mm	Maximum
Track Gauge	1435mm	Standard
Doorway Width	1200 – 1300mm	
Seating Capacity	65 – 80	
Standing Capacity	100 – 230 200 – 320	Normal Load 4/m^2 Max. Service Load 6/m^2
Line Voltage	750V D.C.	
Maximum Operating Speed	80 km/h	
Maximum Design Speed	85 km/h	
Minimum Horizontal Radius	25m 30m	Absolute Desirable
Minimum Vertical Radius	500m 1000m	Absolute Desirable

Expandable Vehicle	Yes	
Multiple Unit Operation	Yes	Only in event of breakdown / emergency
Bi-Directional	Yes	
Maximum Gradient	6.5 % 6 %	Absolute Desirable
Maximum Acceleration Rate	1.0 – 1.3 m/s^2	
Maximum Braking Rate	1.1 – 1.3 m/s^2 3.0 m/s^2	Service Emergency
Operational Acceleration / Braking	0.9 m/s^2	
Design Life	30 years	

3.3 UNIT RATES FOR CAPITAL COSTS

The rates developed for generating capital costs have been largely developed and refined by FaberMaunsell's (FM) QS department and reflect the breadth of experience attained through the company's involvement in many LRT and highways projects in the UK and Europe over several years. Semaly (SY) has provided additional information based on their experience in French and other European markets, which has served to either verify the existing rates or enhance them in areas where previous data was light.

Various meetings have been held between tie, GT, Tram Line 1 and Tram Line 2 teams, in order to ensure consistency of approach between the two teams. Capital cost assumptions and unit rates for both lines have been compared, and in the majority of cases there was parity between the approaches of both teams. Where discrepancies were identified, Line 1 and Line 2 teams worked together to reconcile the differences, either through adjustment to rates or through explanations of the fundamental differences between the two schemes leading to the discrepancy.

Table 3.3 summarises the main capital cost headings, and the issues with each.

Table 3.3 Unit Rates

Item	Comment
Clearance Work	No issue (rates compatible)
Bulk Earthworks	Rates adjusted on Line 2 and compatible
Structures	Fundamental difference between both lines, many new structures on Line 2 (not comparable with Line 1)
Highway Works	Fundamental difference between both lines, minimal highway works on Line 2 (not comparable with Line 1)
Power Supply	Similar rates supplied by both Lines
OHLE	Slight increase to rates for Line 1 – city centre location (enhancement issues in World Heritage Site) – no issue
Signalling	Line 2 estimate lower than Line 1, due to fewer traffic interfaces – OK
Communications	Rates adjusted and compatible
Stops	Line One (Urban) and Line Two (suburban / rural) fundamentally different in stop requirements – not compatible
Ticket Machines	Unit Rate agreed between both Lines
Trackwork	Rates compatible for embedded and ballasted track
Depot	Compatible rates for various depot components
Contractors Prelims, Design and Coordination	Rates (as percentage) agreed between Line 1 and Line 2. Rates not applied to vehicle, land, network rail, utilities and automatic ticket gates costs.
Land & Property	Costs prepared by Colliers CRE
Contingencies	31 per cent Optimism Bias consistent for both lines.
Utilities	Fundamentally different as very little of Line 2 route is on-street.
Vehicles	Rate per vehicle agreed between Line 1 and Line 2

3.4 DETAILED COST ESTIMATE

3.4.1 Description

For the purpose of this report, the detailed cost estimate has been split into three main constituents:

Combined Line 1 / Line 2 Section
Rosebum to Airport
Newbridge Shuttle

The estimate for the combined section has been provided by Line 1 Team which has been adopted by Line 2 on tie's instruction. When added to the estimate for the Roseburn to Airport section, this forms the total cost estimate for the principal route of Line 2 (St Andrew Square to Airport). The combined section estimate from the Line 1 Team excludes costs for depot facilities and tram vehicles. It also excludes land and property costs, which have been provided by Colliers CRE.

The Roseburn to Airport section covers all capital costs for the route between the Line 1 junction and the airport, but also includes for a depot for Line 2 and spare tram vehicles for Line 2. It excludes capital costs for the junction with Line 1 (Network Effects issue) and for the junction with the Newbridge Shuttle at Ingliston. Land and property costs have been provided by Colliers CRE.

The Newbridge Shuttle estimate covers the capital costs from Ingliston Park and Ride to Newbridge North, and includes the costs of turnback facilities at Ingliston and the provision of a junction where this and the airport route diverge. It excludes capital costs for depot facilities and spare tram vehicles. Land and property costs have been provided by Colliers CRE.

3.4.2 Cost Estimates

Line 1 / Line 2 Common Section
The capital cost estimate for the section of Tram Line 2 common with Line 1, provided by Line 1 team is **£38.8 million**, excluding contingencies. This cost excludes land and property, vehicle, depot and project costs. The vehicle and depot costs are included within the estimate for the Roseburn to Airport section. Land and property costs have been supplied by Colliers CRE, which for the combined section are estimated to total **£4.64 million**. This gives a combined total of **£43.44 million**. With the addition of Optimism Bias at a rate of 31 per cent, this figure rises to **£56.91 million**. The detailed breakdown is provided in Table 3.4.2(i).

Roseburn to Airport
Table 3.4.2(ii) indicates the detailed breakdown of capital costs estimated for implementing the section of route between Roseburn and the Airport (the principal service). The total cost for this section of the route is estimated at **£172.4 million**, excluding contingencies. With the addition of Optimism Bias at 31 per cent, this gives a grand total of **£225.9 million**.

Newbridge Shuttle
Table 3.4.2(iii) indicates the detailed breakdown of capital costs estimated for implementing the Newbridge Shuttle section of the route, between Ingliston Park & Ride and Newbridge North. The total cost for this section of the route is estimated at **£40.9 million**, which includes land and property and vehicle costs, but excludes depot and spare vehicle costs and excludes contingencies. With the addition of Optimism Bias at 31 per cent, this figure rises to **£53.5 million**.

Combined Totals
The combined breakdown of costs for Tram Line 2 is provided in Table 3.4.2 (iv)

The combined total cost of Tram Line 2 between St Andrew Square and the Airport is **£215.8 million**, excluding contingencies, and **£282.8 million** including Optimism Bias at 31 per cent.

The total combined capital cost for St Andrew Square to the Airport plus the Newbridge Shuttle is **£256.7 million**, excluding contingencies, and **£336.3 million** including Optimism Bias at 31 per cent.

Table 3.4.2(i) St Andrew Square to Roseburn Common Section

Heading	Sub-heading	Cost (£)
Civil	Structures	994,000
	Bulk Earthworks	258,000
	Contaminated Land	400,000
	Highway Work	6,707,000
	Accommodation Work	200,000
	Landscaping	Included
Utilities	Combined	7,500,000
Electrical	Sub-stations	988,000
	OHLE	1,483,000
	Stray Current Control	148,000
	Other Power Supply	1,545,000
	Signalling	638,000
	Communications	1,138,000
Network Rail	Combined	Included
Stops	Standard	1,353,000
	Park & Ride	0
	Interchange	0
	Automatic Ticket Gates	0
	Ticket Machines	1,000,000
	Stop Equipment (CCTV etc)	Included
Depot	Facilities	Not Applicable
	Enabling Works	Not Applicable
Track	Ballasted (verge segregated)	2,531,000
	Slab (structure-borne)	143,000
	Grooved On-Street	4,634,000
	Layover Facilities	0
	Crossover Facilities	82,000
	Turnout Facilities	176,000
Land	Route	4,643,000
Vehicles		Included in Table 3.4.2(ii)
	Sub-Total	**36,561,000**
Project Costs		Included in Table 3.4.2(ii)
Preliminaries	20 per cent	4,884,000
Design	7 per cent	1,709,000
Coordination / Consents	3.35 per cent	291,000
	TOTAL	**43,445,000**
Optimism Bias	31 per cent	13,468,000
	GRAND TOTAL	**56,913,000**

Table 3.4.2(ii) Roseburn – Airport Detailed Capital Cost Breakdown

Heading	Sub-heading	Cost (£)
Civil	Structures	19,849,261.10
	Bulk Earthworks	473,602.50
	Contaminated Land	0.00
	Highway Work	971,017.50
	Accommodation Work	0.00
	Landscaping	1,816,350.00
Utilities	Combined	16,367,093.23
Electrical	Sub-stations	2,526,300.00
	OHLE	3,028,091.22
	Stray Current Control	400,000.00
	Other Power Supply	700,000.00
	Signalling	1,250,000.00
	Communications	3,024,135.80
Network Rail	Combined	6,500,000.00
Stops	Standard	1,032,000.00
	Park & Ride	138,000.00
	Interchange	482,000.00
	Automatic Ticket Gates	200,000.00
	Ticket Machines	1,000,000.00
	Stop Equipment (CCTV etc)	600,000.00
Depot	Facilities	10,199,000.00
	Enabling Works	8,236,692.00
Track	Ballasted	6,906,399.84
	Slab	9,466,025.76
	Grooved On-Street	5,777,732.04
	Layover Facilities	199,424.70
	Crossover Facilities	602,000.00
	Turnout Facilities	126,000.00
Land	Route	23,120,000.00
Vehicles		15,500,000.00
	Sub-Total	**140,581,125.69**
Project Costs		7,889,403.25
Preliminaries	20 per cent	15,778,806.49
Design	7 per cent	5,522,582.27
Coordination / Consents	3.35 per cent	2,642,950.09
	TOTAL	172,414,867.79
Optimism Bias	31 per cent	53,448,609
	GRAND TOTAL	225,863,477

Table 3.4.2(iii) Newbridge Shuttle Detailed Capital Cost Breakdown

Heading	Sub-heading	Cost (£)
Civil	Structures	286,384.50
	Bulk Earthworks	146,475.00
	Highway Work	1,686,431.00
	Accommodation Work	284,760.00
	Landscaping	682,500.00
	Drainage / Ducting	
Utilities	Combined	6,229,256.77
Electrical	Sub-stations	1,263,150.00
	OHLE	1,131,207.00
	Stray Current Control	100,000.00
	Other Power Supply	
	Signalling	1,343,000.00
	Communications	606,730.00
Network Rail	Combined	0
Stops	Standard	344,000.00
	Park and Ride	172,000.00
	Interchange	172,000.00
	Automatic Ticket Gates	Not Applicable
	Ticketing Machines	350,000.00
	Stop Equipment (CCTV etc)	240,000.00
Depot	Facilities	Not Applicable
	Enabling Works	Not Applicable
Track	Ballasted	1,923,714.00
	Verge	Not Applicable
	Grooved On-Street	7,807,746.00
	Layover Facilities	444,590.10
	Crossover Facilities	476,000.00
	Turnout Facilities	126,000.00
Land	Total	2,500,000.00
Vehicles		4,650,000.00
	Sub-Total	**32,965,944.37**
Project Costs		1,958,668.76
Preliminaries	20 per cent	3,917,337.52
Design	7 per cent	1,371,068.13
Coordination / Consents	3.35 per cent	656,154.03
	TOTAL	**40,869,172.82**
Optimism Bias	31 per cent	12,669,443
	GRAND TOTAL	**53,538,616**

Table 3.4.2(iv) Combined Breakdown of Costs

Heading	Sub-heading	St Andrew Square to Airport (£)	St Andrew Sq. to Airport + Newbridge
Civil	Structures	20,843,000	21,130,000
	Bulk Earthworks	732,000	878,000
	Contaminated Land	400,000	400,000
	Highway Work	7,678,000	9,364,000
	Accommodation Work	200,000	485,000
	Landscaping	1,816,000	2,499,000
Utilities	Combined	23,867,093	30,096,350
Electrical	Sub-stations	3,514,000	4,777,000
	OHLE	4,511,000	5,642,000
	Stray Current Control	548,000	648,000
	Other Power Supply	2,245,000	2,245,000
	Signalling	1,888,000	3,231,000
	Communications	4,162,000	4,769,000
Network Rail	Combined	6,500,000	6,500,000
Stops	Standard	2,385,000	2,729,000
	Park & Ride	138,000	310,000
	Interchange	482,000	654,000
	Automatic Ticket Gates	200,000	200,000
	Ticket Machines	2,000,000	2,350,000
	Stop Equipment (CCTV etc)	600,000	840,000
Depot	Facilities	10,199,000	10,199,000
	Enabling Works	8,237,000	8,237,000
Track	Ballasted (verge segregated)	9,527,000	11,451,000
	Slab (structure-borne)	9,609,000	9,609,000
	Grooved On-Street	10,412,000	18,219,000
	Layover Facilities	199,000	644,000
	Crossover Facilities	684,000	1,160,000
	Turnout Facilities	302,000	428,000
Land	Route	27,763,000	30,263,000
Vehicles		15,500,000	20,150,000
	Sub-Total	**177,141,093**	**210,107,350**
Project Costs		7,889,403	9,848,072
Preliminaries	20 per cent	20,662,806	24,580,144
Design	7 per cent	7,231,582	8,602,650
Coordination / Consents	3.35 per cent	2,933,950	3,590,104
	TOTAL	**215,858,834**	**256,728,320**
Optimism Bias	31 per cent	66,916,239	79,585,779
	GRAND TOTAL	**282,775,073**	**336,314,099**

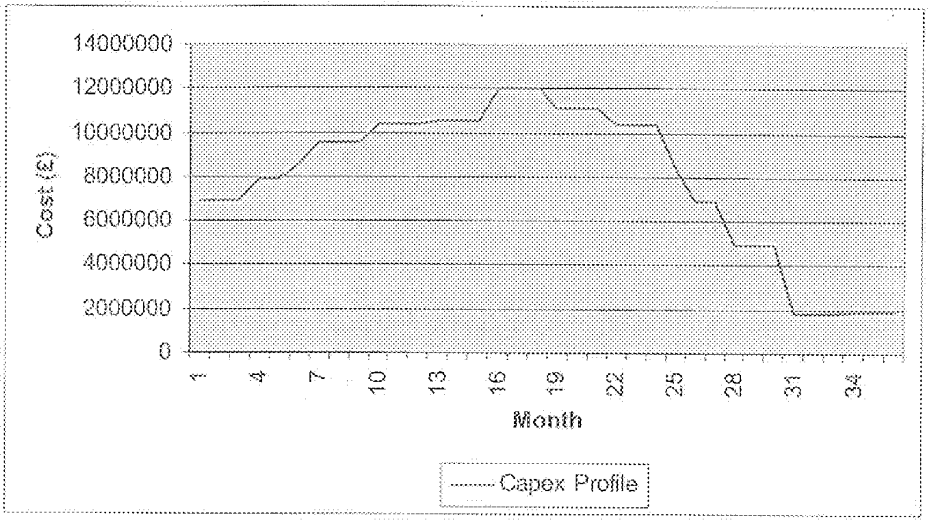
Table 3.4.2 (v) Summary of Capital Costs for Line 2

Combination	Route Description	Capital Cost (£)
Line One + Line Two Built	Roseburn to Airport	225,863,477
Line One + Line Two + Newbridge Built	Roseburn to Airport; Ingliston to Newbridge	279,402,093
Line Two Only Built	St Andrew Square to Airport	282,775,073
Line Two Only + Newbridge Built	St Andrew Square to Airport; Ingliston to Newbridge	336,314,099

3.5 CAPITAL COST PROFILE

The capital costs for constructing Tram Line 2 have been spread over the 36 month construction period, as indicated in Figure 3.5 below. These costs reflect the work programme provided in Appendix A of this report. Capital costs build up from approximately £7 million per month in the early stages to a relatively constant spend rate of £10 – 11 million per month between months 7 and 24, representing the bulk of the construction works. The costs slowly tail off during the final year of construction, to a constant level of approximately £2 million per month for the final six months during final fitout, testing and commissioning.

Figure 3.5 Capex Profile



3.6 RECONCILIATION OF COSTS

The initial development of costs for Tram Line 2 was carried out by Ove Arup and Partners as part of the two phase Edinburgh LRT Masterplan Feasibility Study. The PBC was published in September 2002, and reported a capital cost estimate of £165 million based on a route between Haymarket and Newbridge. The Masterplan was published in January 2003, and recorded a capital cost estimate of £187.2 million based on a route between St Andrew Square and Newbridge. Babtie's Reconciliation Report published in September 2003 reconciled the PBC figure to the Masterplan figure and developed a revised PBC figure of £197.56 million, which compares closely with the Masterplan figure (5.5% variance).

This section of the report provides a reconciliation of the FM/SY final capital cost estimate to the PBC and Masterplan figures. It is important to note that all FM/SY rates are based on 2Q 2003 as a cost base, whereas it is not clear which cost base was used for the Masterplan or the PBC.

3.6.1 Overview

REVIEW STAGE	Capital Cost TOTAL (£000)	Assumed Route Length (km)	Cost per kilometre (£000/km)
PBC (09/02)	165,000	13.9	11,871
Masterplan (01/03)	187,180	16.36	11,441
FM/SY Final (10/03)	336,314	18.025	18,658

An overview of costs comparing previous estimates to the FM/SY final estimate offers little justification for the increase in capital costs recorded. There is a substantial increase in the per kilometre rate overall as a result of applying Optimism Bias at 31 per cent, however the differences can only be explained through comparing each of the main cost headings.

3.6.2 Civil

REVIEW STAGE	Capital Cost (£)	Cost Per km (£000/km)
PBC	6.0M	432
Masterplan	16.0M	978
FM/SY Final	34.76M	1,928

The principal difference between the Masterplan estimate and the FM/SY estimate relates to structures. The Masterplan has a rate of £5.78 million for structures, whereas the FM/SY estimate is £19.85 million. Each structure has been priced individually for the FM/SY estimate, three of which are £2 million or more each. The highway works in the FM/SY estimate are also much greater than the Masterplan estimate (almost double). The majority of the highways costs are associated with the common section in the city centre, and to a lesser extent the Newbridge Shuttle. The costs for the common section have been provided by Line 1 Consultants.

3.6.3 Utilities

REVIEW STAGE	Capital Cost (£)	Cost Per km (£000/km)
PBC	-	
Masterplan	5.28M	323
FM/SY Final	30.1M	1,669

FM/SY has carried out an internal assessment of capital costs for public utilities diversions, as the utilities companies are yet to respond with cost estimates for diversions. Costs for the common section have been provided by Line 1 Consultants, and these relate to estimates provided by the utilities companies. Previous experience indicates that a rate of £1 million per kilometre per track (i.e. £2 million per kilometre of twin track tramway) is a not uncommon for an urban environment, and in fact anything up to £2 million per kilometre (£4 million per kilometre of twin track) has been encountered. So for Line 2 which is partly urban, partly suburban and partly rural, the average rate per kilometre estimated by FM/SY would seem reasonable, and the Masterplan value very light.

3.6.4 Electrical

REVIEW STAGE	Capital Cost (£)	Cost Per km (£000/km)
PBC	-	
Masterplan	10.02M	612
FM/SY Final	21.312M	1,182

The electrical items can be split into two main categories: power supply and signalling and telecommunications. The power supply rates for the Masterplan (7.92M at 484k per km) and the FM/SY estimate (13.312M at 739k per km) are not significantly different, much of the increase is as a result of visual enhancements required through the World Heritage Site. It is the signalling and telecommunications costs where the main differences arise, however. The Masterplan estimate of £2.1 million seems light when compared to the FM/SY estimate of £8.0M, as the FM estimate for communications alone exceeds this figure and is broadly comparable with Line One's average rates.

3.6.5 Network Rail

The Masterplan figure of £6.5 million has been carried forward to the FM/SY cost estimate. Efforts have been made to liaise with Network Rail to develop more robust figures, however no further information has been obtained. The Masterplan estimate does not seem unreasonable, as it represents approximately £1 million per kilometre of paralleling, thus it has been retained. However, as these costs have not been evaluated to the same level of detail as the other costs within this estimate, Network Rail costs will thus be added to the overall Project Risk Register.

3.6.6 Stops

REVIEW STAGE	Capital Cost (£)	Cost Per Stop (£)
PBC	-	
Masterplan	6.25M	?
FM/SY Final	7.083M	393,500

It would appear that, due to the longer route length considered in the Masterplan, the FM/SY rates per stop are higher, although it is not clear how many stops are included in the Masterplan estimate. It is not possible to reconcile these costs any further, as key assumptions such as numbers of ticket machines and general stops equipment are not stated in the Masterplan, so a true comparison cannot be performed.

3.6.7 Depot

REVIEW STAGE	Capital Cost (£)	Cost Per Tram (£)
PBC	4M	
Masterplan	8M	533,333
FM/SY Final	18.4M (10.2M)	1,418,130 (784,538)

The depot costs for the FM/SY estimate include £8.2 million enabling works (earthworks, retaining walls, utilities diversions) that are specific to the site selected at Gogar Roundabout. The £10.2 million (in brackets) is the costs for the depot facilities only, and this estimate is derived from costing each of the main elements of a depot separately based on an outline layout (see *"Depot Report"*). The depot cost from the Masterplan however would appear to be based on a typical average for a tram depot facility, and it is not clear which elements have been included in this price.

3.6.8 Track

REVIEW STAGE	Capital Cost (£)	Cost Per km (£)
PBC	-	
Masterplan	39.64M	2,422,983
FM/SY Final	41.61M	2,302,968

The FM/SY estimate is based on the use of ballasted track wherever practicable (the cheapest), and slab track for all other off-street sections. Embedded track (the most expensive) is only used for on-street sections, of which there are very few on Line 2. It is not clear from the Masterplan which track types are used and to what extent, so it is not possible to fully reconcile the FM/SY costs to the Masterplan. The unit rates for each track type used by FM/SY are broadly similar to the average rates used by Line One, and the overall average rate is comparable between the Masterplan and the FM/SY estimate.

3.6.9 Land and Property

REVIEW STAGE	Capital Cost (£)
PBC	-
Masterplan	21,320,000
FM/SY Final	30,263,000

The land and property costs for the FM/SY estimate have been evaluated by Colliers CRE (on behalf of tie), and are slightly higher than the Masterplan estimate. A separate report has been produced by Colliers CRE describing the basis for the land cost estimates.

3.6.10 Vehicles

REVIEW STAGE	Capital Cost (£)	Cost Per Vehicle (£)
PBC	19.2M	1.6M
Masterplan	24.0M	1.6M
FM/SY Final	20.15M	1.55M

The FM/SY unit rate per vehicle is an agreed value between Line One, Line Two and tie. Although slightly lower than the PBC / Masterplan assumed rate, Optimism Bias of 31 per cent allows an increase in vehicle cost to £2 million per vehicle.

3.6.11 Project Costs

REVIEW STAGE	Capital Cost (£)
PBC	-
Masterplan	12.27M
FM/SY Final	9.848M

The Masterplan estimate for Project Costs was taken as 10 per cent of the net capital costs, plus £2 million for pre-operational costs (commissioning). Previous experience on transportation projects would indicate a range of between 7 and 11 per cent in total, so the FM estimate takes a value of 10 per cent which is consistent with the Masterplan. Commissioning is accounted for elsewhere, within the percentage allowed for coordination and consents (see 3.6.12 below).

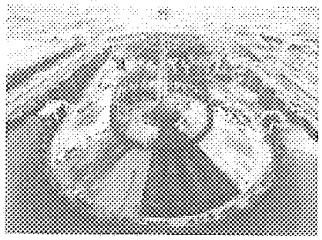
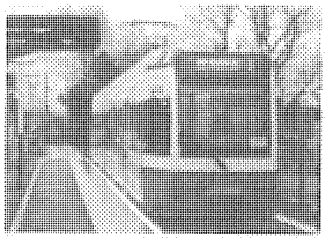
3.6.12 Preliminaries, Design and Coordination / Consents

REVIEW STAGE	Percentage
PBC	-
Masterplan	15.00%
FM/SY Final	30.35%

The Masterplan allows a figure of 15% of net capital costs for "Design and Site Supervision" (= £16.063 million). Babtie's reconciliation report quotes £15.41 million, which doesn't appear to equate to any value within the Masterplan. The Masterplan also includes an item for "Other Items" to the value of £10.69 million, giving a total of 26.75 million.

The FM/SY estimate of 30.35 % is a rate agreed between Line One, Line Two and tie for Preliminaries (20%), Design (7%) and coordination / consents (3.35%). This gives a total value of £27.48 million for Roseburn to Airport, and £34.78 million including the Newbridge Shuttle.

4 OPERATING COSTS

4 Operating Costs

4.1 ESTIMATING PROCESS

Operating cost is a major component of the business case. However, this element is often difficult to assess as it varies a lot from network to network. Moreover, engineering consultants have very little access to the accounts of public transport operators. Therefore, to obtain a precise estimation of the cost, it will be necessary at a later stage of the project to consult existing transport operators.

The Masterplan proposes a first estimation. As the definition of the tram system in the Masterplan is basic, the approach chosen to estimate operating costs is to use a cost rate per service kilometre. This approach requires only two parameters to be defined: length of the route and service patterns.

Since the beginning of FM/SY study on Tram Line 2, estimations of the operating costs have been realised based on an iterative process to take into account the different updates and the level of definition of the project. In August 2003 the methodology and the unit rates for the calculation were discussed with Line 1 consultants to ensure consistency in the calculations.

This estimation of the operating expenditure is based on the alignment described in the *"Route Development Report"* and the run times presented in the *"System Report"*.

4.2 ASSUMPTIONS

The five main operating parameters used for the calculation are as follows:

- Infrastructure length,
- Number of stops,
- Annual service kilometres and total kilometres,
- Annual operated hours,
- Fleet size.

The Airport service between St Andrew Square and the Airport has been considered as the main service and therefore most of the administrative costs have been attached to this service. The Newbridge service is presented separately.

There are no profit margins allowed for within the operating costs. It is assumed that the difference between revenue generated and operating and lifecycle costs expended would be available as profit to the operator.

Table 4.2 Operating Assumptions

Operating Assumptions	Airport Service	Newbridge Shuttle	TOTAL
Route kilometres	13.64	4.18	17.82
Stops	15	4	19
Fleet Size	10	3	13
Running Times	28'14"	9'07"	
Service Patterns			
Peak Frequency	6 tph	6 tph	
Off-Peak Frequency	6 tph	3 tph	
Weekday Trips	200	146	
Weekend Trips	202	106	
Operating Hours			
Weekday	0430-2430	0530-2430	
Weekend	0430-0100	0630-0100	
Annual Calendar			
Weekdays			253
Weekend			112
Operated Hours	43,200	12,200	55,400
Service Kilometres	980,000	190,000	1,170,000
Total Kilometres	999,600	193,800	1,193,000

4.2.1 Staff costs

Drivers
Drivers cost calculation is based on average annual service driving hours of 1411 hours. This value is based on 8-hour shifts, (including sign on, sign off, breaks and empty stock running) and an average 217 productive days per year per driver.

Conductors
One conductor will be present in each tram for commercial services.

Other operating staff
This includes an operating manager, inspectors, operations controller and revenue controllers.

Maintenance and engineering staff
This includes staff for the maintenance of vehicles, overhead line, tracks, signals and stops as well as cleaning staff. Calculation of this cost is mainly based on fleet size, service kilometres and track length.

Management and administration staff
This part of the workforce is considered as fixed. It includes the operating director, a finance department (finance, payroll), a human resources department (personnel management, training), and a marketing department (marketing and customer service).

4.2.2 Power

Power cost is mainly linked to the service kilometres. As line 2 vehicles are 40 metres long, consumption is around 8 kWh per kilometre.

4.2.3 Maintenance materials

Vehicles, tracks, OHLE and stops need to be maintained. This calculation is based on the number of stops, service kilometres and route kilometres.

4.2.4 Insurance

This represents a small percentage of the total operating cost. The calculation is based on service kilometres.

4.2.5 Policing

This represents a small percentage of the total operating cost. The calculation is based on service kilometres.

4.2.6 Other overheads

These include public relations, office stationery, supplies and other general items related to staff welfare.

4.2.7 Business rates

Business rates are based on route kilometres.

4.2.8 Automatic Ticket Gates

These have been included for the purpose of revenue protection at the Airport, and require annual maintenance.

4.3 UNIT RATES FOR OPERATING COSTS

Table 4.3.1 Staff Rates

Title	Salary (£)	Overhead (%)	Cost (£)
Management, Finance and Administration Staff			
Managing Director	80,000	12	89,600
Finance & Administration Director	60,000	12	67,200
Finance Assistant	25,000	12	28,000
Accountant	35,000	12	39,200
Training Manager	25,000	12	28,000
Training Assistant	15,000	12	16,800
Personnel Manager	30,000	12	33,600
Marketing Manager	35,000	12	39,200
Marketing Assistant	20,000	12	22,400
Admin. Assistant	20,000	12	22,400
Secretarial / Clerical	20,000	12	22,400
Operations Staff			
Drivers	18,000	12	20,160
Senior Conductors	18,000	12	20,160
Conductors	13,000	12	14,560
Operations Director	55,000	12	61,600
Operations Manager	40,000	12	44,800
Assistant Operations Manager	30,000	12	33,600
Clerical	16,000	12	17,920
Controllers	20,000	12	22,400
Supervision	20,000	12	22,400
Instruction	25,000	12	28,000
Revenue Control Inspectors	15,000	12	16,800
Maintenance Staff			
Maintenance (Engineering) Director	55,000	12	61,600
Senior Engineers	40,000	12	44,800
Vehicle Supervisors	25,000	12	28,000
Vehicle Technicians	20,000	12	22,400
Signal & Telecomms Inspectors	25,000	12	28,000
Signal & Telecomms Technicians	20,000	12	22,400
Cleaning Staff	10,000	12	11,200
Track Staff	15,000	12	16,800
E&M Inspectors	25,000	12	28,000
E&M Technicians	25,000	12	28,000
Civils Inspectors	20,000	12	22,400
Civils Tradesmen	15,000	12	16,800
Revenue System	15,000	12	16,800

Table 4.3.2 Materials Rates

Item	Quantity	Unit
Power		
Electric Traction Power	8.4	kWh per service km
Depot Power Consumption	178,500	kWh per year per depot
Cost of Power	£0.025	per kWh
Maintenance Materials		
Vehicles	£0.168	per service km
Power Supply	£1,000	per route km
Signals	£10,000	per route km
Track	£0.084	per service km
Stops	£2,500	per stop
Insurance	£0.23	per service km
Policing	£0.17	per service km
Overheads	5%	added to total costs
Rates	£12,000	per route km

4.4 DETAILED COST ESTIMATE

Table 4.4 Operating Cost Breakdown

Item	Airport Service	Newbridge Shuttle	Total
Staff Cost	£3.07M	£0.64M	£3.71M
a. Drivers	*£0.70M*	*£0.17M*	*£0.87M*
b. Conductors	*£0.54M*	*£0.14M*	*£0.68M*
c. Other Operating Staff	*£0.52M*	*£0.06M*	*£0.58M*
d. Management and Admin Staff	*£0.36M*	*£0*	*£0.36M*
e. Maintenance and Engineering Staff	*£0.95M*	*£0.27M*	*£1.22M*
Power	£0.22M	£0.04M	£0.26M
Maintenance Materials	£0.61M	£0.14M	£0.75M
Insurance	£0.23M	£0.05M	£0.28M
Policing	£0.17M	£0.03M	£0.20M
Other Overheads	£0.21M	£0.05M	£0.26M
Business Rate 5%	£0.16M	£0.05M	£0.21M
Automatic Ticket Gates	£0.03M	£0	£0.03M
TOTAL	£4.70M	£1.01M	£5.71M

4.5 RECONCILIATION

The Masterplan simply used a per tram kilometre rate from Manchester Metrolink to derive its operating cost estimate, rather than the detailed breakdown of operating costs provided by FM/SY in section 4.4. To compare both figures it is necessary to recalculate a rate per vehicle kilometre for the FM/SY estimates, summarised in Table 4.5:

Table 4.5

Review Stage	Section	Rate per vehicle kilometre (£)
Masterplan	All	3.15
FM/SY Cost Estimate	Airport Service	4.59
	Newbridge Shuttle	4.84
	TOTAL	4.63

Table 4.5 shows a significant increase in the operating cost per car kilometre. The Manchester Metrolink figure used by the Masterplan relates to a much bigger network than Edinburgh Tram Line 2, thus the administrative and management costs are much more efficiently spread resulting in the lower rate.

The high cost of the Newbridge Shuttle is linked to the short route of this service. As the running time is only 10 minutes the turnaround time at termini represents one third of the operated hours. Therefore, driver and conductor costs are much higher per vehicle kilometre.

4.6 SENSITIVITY

The "*Final Patronage and Revenue Report*" presents the expected load of trams at peak and off-peak time (tables 5.1 to 5.6). These tables suggest that service patterns should be adapted by increasing the frequency on the Airport service and reducing the frequency on the Newbridge shuttle.

A sensitivity test on operating expenditure has been completed using the following operating assumptions:

Table 4.6(i) Airport Service and Newbridge Shuttle Service Frequencies

	Peak	Off-Peak
Airport Service	8 tph	6 tph
Newbridge Shuttle	4 tph	2 tph

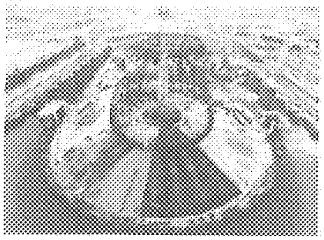
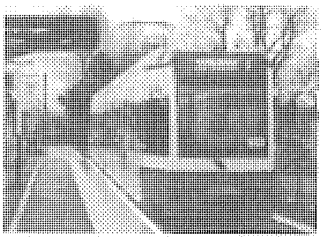
A re-calculation of the operating costs to reflect these service pattern changes is shown in Table 4.6(ii).

Table 4.6(ii) Alternative Operating Pattern Cost Estimate

Item	Airport Service	Newbridge Shuttle	Total
Staff Cost	£3.20M	£0.52M	£3.72M
a. Drivers	*£0.74M*	*£0.12M*	*£0.86M*
b. Conductors	*£0.58M*	*£0.09M*	*£0.67M*
c. Other Operating Staff	*£0.52M*	*£0.06M*	*£0.58M*
d. Management and Admin Staff	*£0.36M*	*£0*	*£0.36M*
e. Maintenance and Engineering Staff	*£1.00M*	*£0.25M*	*£1.25M*
Power	£0.24M	£0.03M	£0.27M
Maintenance Materials	£0.63M	£0.13M	£0.75M
Insurance	£0.25M	£0.03M	£0.28M
Policing	£0.18M	£0.02M	£0.21M
Other Overheads	£0.22M	£0.04M	£0.26M
Business Rates 5%	£0.16M	£0.05M	£0.21M
Automatic Ticket Gates	£0.03M	£0	£0.03M
TOTAL	£4.91M	£0.82M	£5.73M

The total cost for this revised operating pattern is very similar to the base case cost, though the cost per vehicle kilometre is reduced to £4.58 per vehicle kilometre.

5 REVENUE

5 Revenue

5.1 ESTIMATING PROCESS

The modelling work required to generate patronage forecasts and revenue estimates for Tram Line 2 has been carried out under the guidance of the Modelling & Appraisal Working Group (M&AWG). Demand modelling and car/public transport mode choice modelling has been carried out using the Land Use and Transport Interaction (LUTI) model developed and run by MVA.

Several models have been used to generate patronage forecasts:

- LUTI
- Highway Detailed Assignment Model (Highway DAM)
- Public Transport Detailed Assignment Model (PT DAM)

Detailed descriptions of the models are provided in the "Final Patronage and Revenue Forecast Report".

The models provide estimates of patronage and the adult fare chargeable for each movement. Annual revenue is calculated from this using the following:

Prices – The models use 2001 fares, which are factored up to 2003 levels using an annual growth rate of 1.5%

Annualisation – Period patronage factors used to determine annual patronage levels, to include the proportion of trips made outside the modelled periods.

Ticket Types – Passengers will likely use a variety of ticket types including full fare, saver tickets, and weekly, monthly or annual season tickets

Fare Evasion – Some element of fare evasion is inevitable

5.2 ASSUMPTIONS

The assumptions used in the model are reported in M&AWG Note 5, however some key assumptions are:

- Urban bus fares: 2001 Lothian Regional Transport bus fares (50p up to 800m ride, 80p up to 7km ride, 90p up to 15km ride)
- Tram fares: 1.33 x urban bus fare, except:
  - Newbridge tram fare = 1.33 x inter-urban bus fare
  - Airport fare = half Airport Shuttle Bus return fare
- Walk time weight: 1.6
- Wait time weight: 1.8
- Bus ride time weight: 1.1
- Rail ride time weight: 1.0
- Interchange Penalty: 10 mins
- Annualisation Factors: See Table 5.2 below
- Ticket Types: Lothian Buses ticket data suggests (values applied to revenue calculation):
  - Average AM peak revenue is 92% of full adult fare
  - After 0930, average revenue is 87% of peak adult fare
- Fare Evasion: 5% loss assumed.
- Revenue Profile: Based on operations commencing in 2009, a 30-year revenue profile has been calculated. The following revenue ramp-up is assumed:
  - Year 1 – 75%
  - Year 2 – 85%
  - Year 3 – 95%
  - Year 4 – 100%

Table 5.2: Annualisation Factors

	AM Peak	Off Peak	PM Peak
PT	557	2425	563
Highway	585	2288	656

5.3 DETAILED ESTIMATE

There are two model years, 2011 and 2026 for which the results are shown in Table 5.3(i). The model uses full adult single fare to compare the relative attractiveness of the different modes, however an adjustment is made for the fact that not everyone pays full fare (as discussed in section 5.1). These figures represent the Base Case, and thus do not take into account the ramp up stated in section 5.2.

Table 5.3(i) Base Case Line 2 Revenue (2003 Prices)

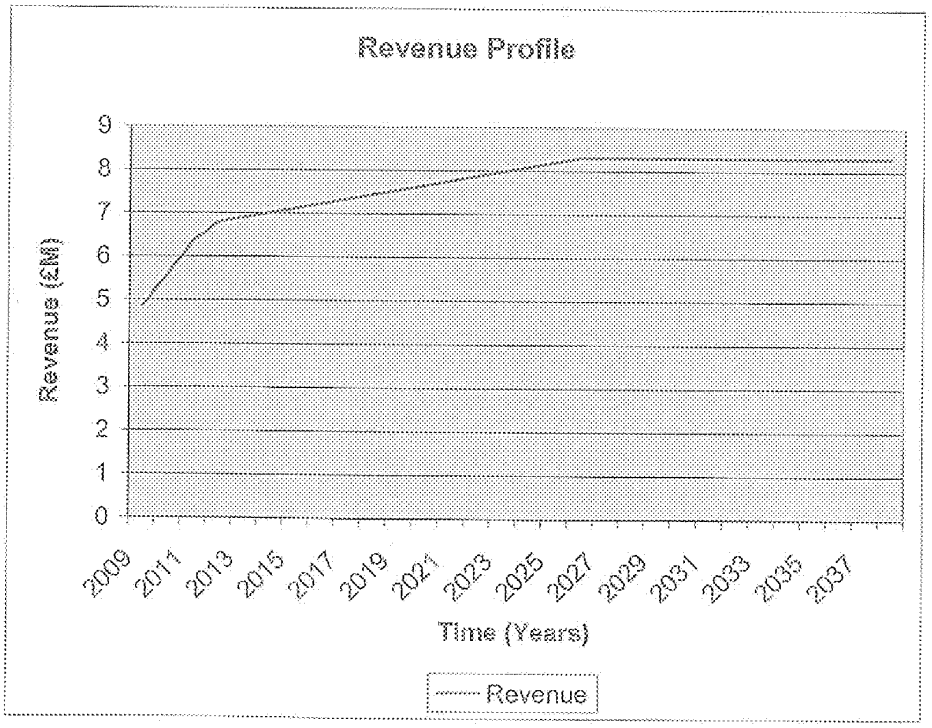
	2011 (excluding ramp up)	2026
Revenue (full adult fare)	£7.98M	£9.90M
Revenue loss due to ticket type	£0.94M	£1.15M
Revenue loss due to fare evasion	£0.35M	£0.44M
Residual Revenue	£6.69M	£8.31M

Using the assumptions stated in section 5.2, a 30 year revenue profile from first year of operation has been produced and is shown in Table 5.3(ii) and represented in Figure 5.3.

Table 5.3(ii) 30 Year Revenue Predictions

Year	Revenue	Year	Revenue	Year	Revenue
2009	£4.85M	2019	£7.56M	2029	£8.31M
2010	£5.60M	2020	£7.66M	2030	£8.31M
2011	£6.36M	2021	£7.77M	2031	£8.31M
2012	£6.80M	2022	£7.88M	2032	£8.31M
2013	£6.91M	2023	£7.99M	2033	£8.31M
2014	£7.02M	2024	£8.09M	2034	£8.31M
2015	£7.12M	2025	£8.20M	2035	£8.31M
2016	£7.23M	2026	£8.31M	2036	£8.31M
2017	£7.34M	2027	£8.31M	2037	£8.31M
2018	£7.45M	2028	£8.31M	2038	£8.31M

Figure 5.3 Revenue Profile



5.4 RECONCILIATION

The Masterplan estimate of revenue made two fundamentally different assumptions to the FM/SY estimate:

- All passengers would pay full fare (i.e. no fare evasion or loss due to ticket type)
- Tram fares would be the same as bus fares

Further investigation found that, although these assumptions were broadly followed, some of the Masterplan revenue calculation used fare values that were approximately 50 per cent higher than actual bus fares.

The FM/SY estimate of revenue used tram fares 33 per cent higher than bus fares. In addition, a premium fare has been attached to airport patronage. This latter factor has the most significant effect on revenue for Tram Line 2, hence the latest forecasts are higher than in the Masterplan.

5.5 SENSITIVITIES

A number of sensitivity tests have been carried out, to assess the impact on patronage and revenue of a number of factors not accommodated within the base model. The principal tests affecting revenues are:

- Airport Heavy Rail Link
- Congestion Charging
- Bus Operator Response
- Tram Frequency
- Tram Fare
- Removal of Newbridge Spur
- Removal of Park and Ride at Newbridge

Table 5.5 below summarises the impacts of these factors on revenue. Figures in brackets indicate negative impacts.

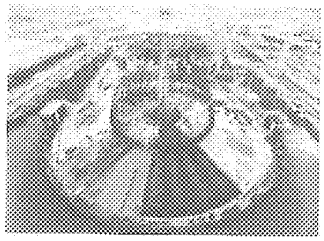
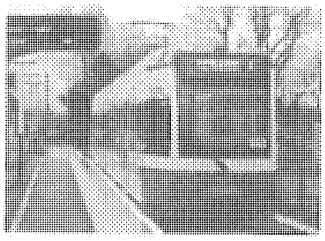
Test	Impact on Revenue 2011	Impact on Revenue 2026
Airport Heavy Rail Link	(15.3%)	(7.7%)
Congestion Charging	(8.3%)	1.8%
Competitive Bus Response	(18.3%)	(11.5%)
Complementary Bus Response	13.4%	12.5%
Increase to 7 trams per hour	3.1%	8.2%
Increase to 8 trams per hour	8.2%	16.0%
Tram Fare reduction by 10% (excluding airport)	(5.1%)	(3.1%)
Tram fare increase by 10% (excluding airport)	(5.3%)	2.7%
No Newbridge Shuttle, 700 Newbridge P&R Spaces	(5.0%)	(9.0%)
No Newbridge Shuttle, No Newbridge P&R	(7%) *	(9%)*
700 Newbridge P&R Spaces	7.7%	5.4%
No Newbridge P&R	(6.0%)	(4.2%)

*results have not been modelled.

Of these results, the most significant benefit would be to ensure a full integration between tram and bus services, so that the services are complementary to each other rather than in competition. Increases in tram frequencies, though beneficial to revenue, would have negative impacts on capital, operational and lifecycle costs, as extra tram vehicles, drivers and maintenance activities would be required.

Full details of the tests carried out, together with explanations of the findings are contained within the "Final Patronage and Revenue Forecast Report".

6 LIFECYCLE COSTS

6 Lifecycle Costs

6.1 ESTIMATING PROCESS

The Line Two team's approach to preparing lifecycle cost estimates has been similar to the process for developing capital costs, namely using a combination of benchmarking, previous experience and engineering judgement. In addition, detailed discussions with Line 1 Consultants have taken place to ensure consistency of approach. The rates used for the various components are those derived for the capital cost elements, and thus reflect the company's experience in a wide variety of LRT and highways projects throughout the UK and Europe.

The lifecycle costs for Tram Line Two encompass all costs associated with operating and maintaining the tramway that are outwith the standard operating costs. These include the replacement of civil, electrical and stop installations, tram vehicle refurbishment and other non-routine maintenance activities.

The build-up of lifecycle costs has been based around a standard list of lifecycle cost headings agreed between tie and the Consultants for Lines One and Two (see Table 6.3). Lifecycle costs have been determined by specifying maintenance intervals for "minor" or "major" refurbishment of each item, and by applying a cost as a percentage of the original value.

Lifecycle costs have been "smoothed" through the 30-year design life of the system, by using a profile agreed between tie and the Consultants for Lines 1 and 2 (see Section 6.4).

6.2 ASSUMPTIONS

The project lifecycle is assumed to be 30 years. Any items with a design life of 30 years or greater are assumed not to require replacement during the life of this project.

Items with a design life of 15, 20 or 25 years are assumed to require replacement (full or partial) once during the life of the project. Similarly items with a design life of 10 years are assumed to require full or partial replacement twice during the life of the project.

The life cycle cost items have been defined by Line 1 and agreed by Line 2. Also a consistent methodology to the life cycle costing between Line 1 and Line 2 teams.

The life cycle costs have been spread as evenly as practicable over a 30 year operating period to reflect the likely spend profile, eg. major refurbishment of vehicles at year 15 has been spread over years 13 to 17.

Traffic signals for managing tram and road vehicle movements are assumed to be maintained by the local UTC.

Landscaping is assumed to be maintained by the local authority..

6.3 DETAILED ESTIMATE

Tables 6.3(i), 6.3(ii) and 6.3 (iii) provide the breakdown of items contributing to the lifecycle estimate. The overall costs can be summarised as follows:

Line 1 / Line 2 Common Section:	£6.76 million
Roseburn to Airport:	£34.264 million
Newbridge Shuttle:	£10.648 million
TOTALS:-	
St Andrew Square to Airport:	£41.024 million
St Andrew Sq to Airport + Newbridge:	£51.672 million

Table 6.3(i) St Andrew Square to Roseburn Common Section Lifecycle Cost Estimate

Item	Lifecycle Percentage				COST
	Minor	Major	Minor	Major	Common Section
Motorised Points Renewal	-	25	-	100	
Highway Resurfacing	10	20	10	50	
Non-Motorised Points Renewals					234,500
Rail Replacements - On-Street	10	25	10	20	949,500
Rail Replacements - Off-Street	10	25	10	20	867,500
Fences / Barriers					
Customer Help Points	7	14	20	100	352,000
Passenger Comms & Assistance	5	15	10	100	176,000
Passenger Information Displays	7	14	20	100	63,360
Stops Replacement - General	10	25	5	20	36,800
Stops Replacement - Shelters	8	16	5	20	399,500
Points Heaters		10		50	54,000
Power Installations - Underground Cables	N/A	N/A	-	-	
Sub-Station Maintenance	10	25	10	30	811,800
Traction Power Cables - Overhead Lines	10	20	10	50	227,500
Interlockings	10	20	20	100	100,000
Crossings / Junction Prioritisation	N/A	N/A	-	-	
Telecomms Cabling		15		40	100,000
AVL Central Controllers		15		100	140,000
CCTV Monitors and Cameras	5	10	20	100	145,000
Control Centre Equipment	5	15	20	100	400,000
Radio System Interfacing to vehicles	5	10	10	100	124,000
ATM Replacement	6	12	25	100	800,000
Ticket Validators	N/A	N/A	-	-	
Vehicle Refurbishment - minor	N/A	N/A	-	-	
Vehicle Refurbishment - major		15		50	
Public Address System		10		100	
Vehicle Carried Sensors	included				
Depot Machinery and Equipment	8	16	15	50	
Building Fabric Replacement	10	20	5	10	
Overhead Cranes	included				
Welfare Facilities	included				
Vehicle Jacks	included				
Vehicle Wash Overhaul	5	15	5	50	
Control & Admin Building	5	15	80k	400k	
Maintenance Equipment	included				
Roads / Hardstanding / Car Parking	10	20	10	20	
Security - fences / CCTV / lighting	10	20	20	75	
SUB-TOTAL					5,981,460
Preliminaries @ 10 per cent					778,540
TOTAL					6,760,000

Table 6.3(ii) Roseburn to Airport Lifecycle Cost Estimate

Item	Lifecycle Percentage				COST
	Minor	Major	Minor	Major	Roseburn to Airport
Motorised Points Renewal	-	25	-	100	1,827,000
Highway Resurfacing	10	20	10	50	285,002
Non-Motorised Points Renewals					
Rail Replacements - On-Street	10	25	10	20	1,329,206
Rail Replacements - Off-Street	10	25	10	20	3,480,528
Fences / Barriers					500,000
Customer Help Points	7	14	20	100	480,000
Passenger Comms & Assistance	5	15	10	100	280,000
Passenger Information Displays	7	14	20	100	600,000
Stops Replacement - General	10	25	5	20	556,600
Stops Replacement - Shelters	8	16	5	20	60,000
Points Heaters		10		50	290,000
Power Installations - Underground Cables	N/A	N/A	-	-	
Sub-Station Maintenance	10	25	10	30	1,578,950
Traction Power Cables - Overhead Lines	10	20	10	50	1,045,980
Interlockings	10	20	20	100	482,750
Crossings / Junction Prioritisation	N/A	N/A	-	-	
Telecomms Cabling		15		40	784,217
AVL Central Controllers		15		100	1,000,000
CCTV Monitors and Cameras	5	10	20	100	650,000
Control Centre Equipment	5	15	20	100	1,980,000
Radio System Interfacing to vehicles	5	10	10	100	460,000
ATM Replacement	6	12	25	100	2,500,000
Ticket Validators	N/A	N/A	-	-	
Vehicle Refurbishment - minor	N/A	N/A	-	-	
Vehicle Refurbishment - major		15		50	7,750,000
Public Address System		10		100	200,000
Vehicle Carried Sensors	included				
Depot Machinery and Equipment	8	16	15	50	1,045,000
Building Fabric Replacement	10	20	5	10	315,000
Overhead Cranes	included				
Welfare Facilities	included				
Vehicle Jacks	included				
Vehicle Wash Overhaul	5	15	5	50	700,000
Control & Admin Building	5	15	80k	400k	720,000
Maintenance Equipment	included				
Roads / Hardstanding / Car Parking	10	20	10	20	60,000
Security - fences / CCTV / lighting	10	20	20	75	190,000
SUB-TOTAL					31,149,243
Preliminaries @ 10 per cent					3,114,924
TOTAL					34,264,167

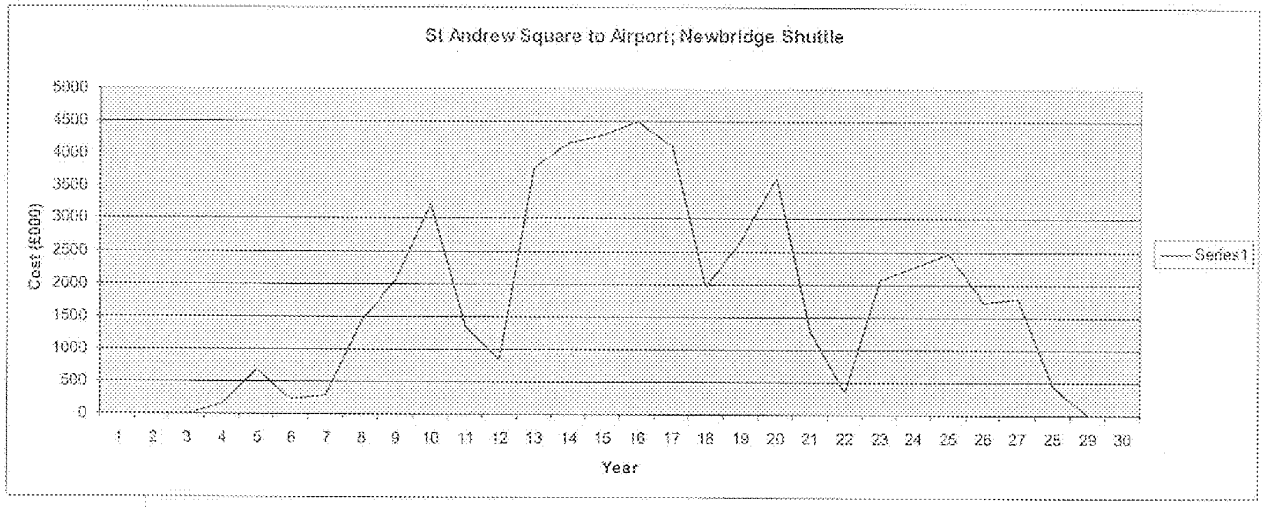
Table 6.3(iii) Newbridge Shuttle Lifecycle Cost Estimate

Item	Lifecycle Percentage				COST
	Minor	Major	Minor	Major	Newbridge
Motorised Points Renewal	-	25	-	100	682,000
Highway Resurfacing	10	20	10	50	645,160
Non-Motorised Points Renewals					
Rail Replacements - On-Street	10	25	10	20	1,813,421
Rail Replacements - Off-Street	10	25	10	20	399,672
Fences / Barriers					
Customer Help Points	7	14	20	100	192,000
Passenger Comms & Assistance	5	15	10	100	112,000
Passenger Information Displays	7	14	20	100	240,000
Stops Replacement - General	10	25	5	20	206,400
Stops Replacement - Shelters	8	16	5	20	24,000
Points Heaters		10		50	140,000
Power Installations - Underground Cables	N/A	N/A	-	-	
Sub-Station Maintenance	10	25	10	30	631,575
Traction Power Cables - Overhead Lines	10	20	10	50	323,700
Interlockings	10	20	20	100	149,400
Crossings / Junction Prioritisation	N/A	N/A	-	-	
Telecomms Cabling		15		40	242,692
AVL Central Controllers		15		100	
CCTV Monitors and Cameras	5	10	20	100	260,000
Control Centre Equipment	5	15	20	100	
Radio System Interfacing to vehicles	5	10	10	100	138,000
ATM Replacement	8	12	25	100	875,000
Ticket Validators	N/A	N/A	-	-	
Vehicle Refurbishment - minor	N/A	N/A	-	-	
Vehicle Refurbishment - major		15		50	2,325,000
Public Address System		10		100	80,000
Vehicle Carried Sensors	included				
Depot Machinery and Equipment	8	16	15	50	
Building Fabric Replacement	10	20	5	10	
Overhead Cranes	included				
Welfare Facilities	included				
Vehicle Jacks	included				
Vehicle Wash Overhaul	5	15	5	50	
Control & Admin Building	5	15	80k	400k	
Maintenance Equipment	included				
Roads / Hardstanding / Car Parking	10	20	10	20	
Security - fences / CCTV / lighting	10	20	20	75	
SUB-TOTAL					9,680,020
Preliminaries @ 10 per cent					968,002
TOTAL					10,648,022

6.4 LIFECYCLE PROFILE

Lifecycle costs will occur throughout the 30 year life of the scheme, and the costs have been spread as far as practicable to "smooth" out the peaks and troughs of expenditure. Figure 6.4 shows the profile of lifecycle spend for the whole of Line 2 throughout the 30 year design life of the system.

Figure 6.4



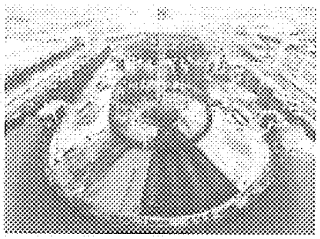
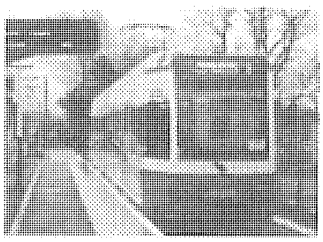
6.5 RECONCILIATION

The Babtie Reconciliation Report indicates a £12 million estimate of lifecycle cost for Line 2 in the PBC , at £0.8 million per annum, which covered the cost of vehicle refurbishment only. There was no estimate contained within the Masterplan.

The FM/SY estimate is considerably more detailed than the PBC estimate, therefore a relevant reconciliation of all the costs is not possible. However, the lifecycle estimate in the PBC for vehicles translates to a cost of 50 per cent of the vehicle's original value, which is the same assumption as used in the FM/SY estimate.

The basis for lifecycle costing has been agreed between tie and the consultants for Line 1 and Line 2, so in broad terms the estimates for both lines are similar.

7 ANALYSIS

7 Analysis

7.1 BASE CASE

In order to assess the overall cost of the system, it is important to compare the combined operating and lifecycle costs each year to the predicted revenue. While it is highly likely that salaries (and hence operating costs) will increase at a rate higher than inflation, for the purpose of this comparison it is assumed that fares (and hence revenue) would increase at a similar rate. Thus, all figures used are based on 2Q 2003 prices.

Figure 7.1(i) indicates cumulative revenue and opex+lifecycle for the whole of Line 2 (including Newbridge), and Figure 7.1(ii) indicates the same but with Newbridge removed.

Figure 7.1(i) St Andrew Square to Airport plus Newbridge

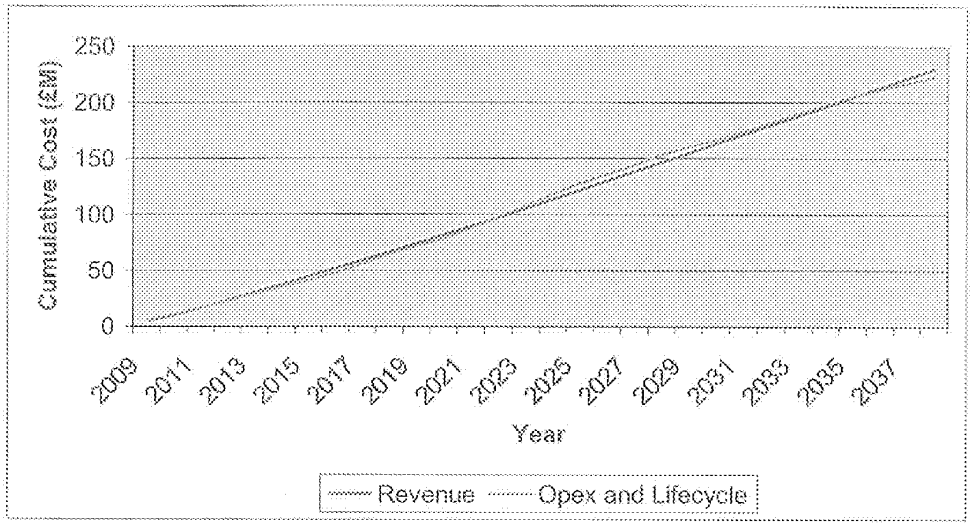
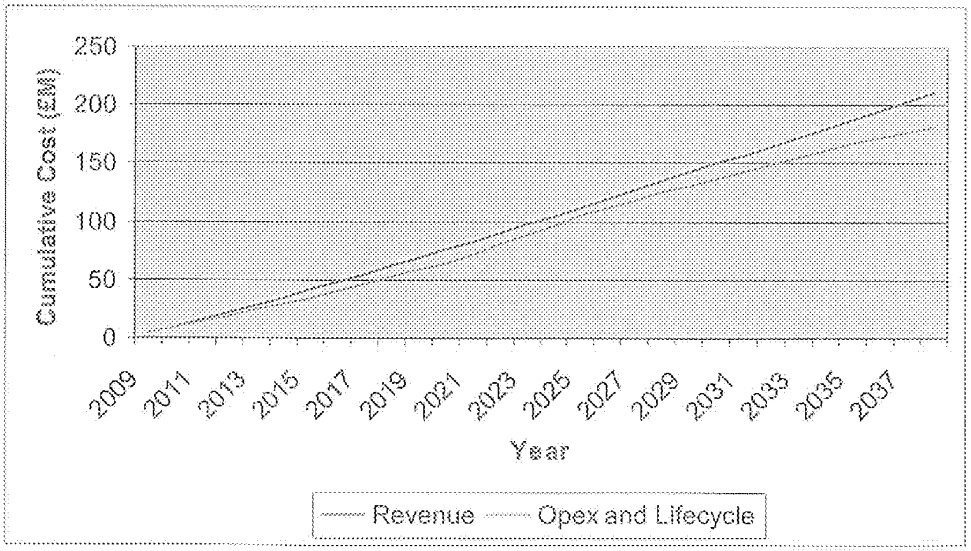


Figure 7.1(ii) St Andrew Square to Airport



From the above figures, it is clear that in both cases the revenue exceeds the combined operating and lifecycle costs, however the margin is much greater when Newbridge is removed.

7.2 OPERATORS PROFIT

Figures 7.1(i) and (ii) indicate the cumulative cost and revenue net of any profit margin to the operator. Figures 7.2(i) and 7.2(ii) indicate the impact of applying a 5% and a 10% profit to the annual operating costs. As can be seen, the full route of Line 2 including Newbridge does not generate sufficient revenue for the operator to take even a 5% profit. However, without the Newbridge Shuttle the scheme is sufficiently profitable for the operator to draw at least a 10 per cent profit.

Figure 7.2(i) Cost + Profit Analysis for Line 2 Including Newbridge Shuttle

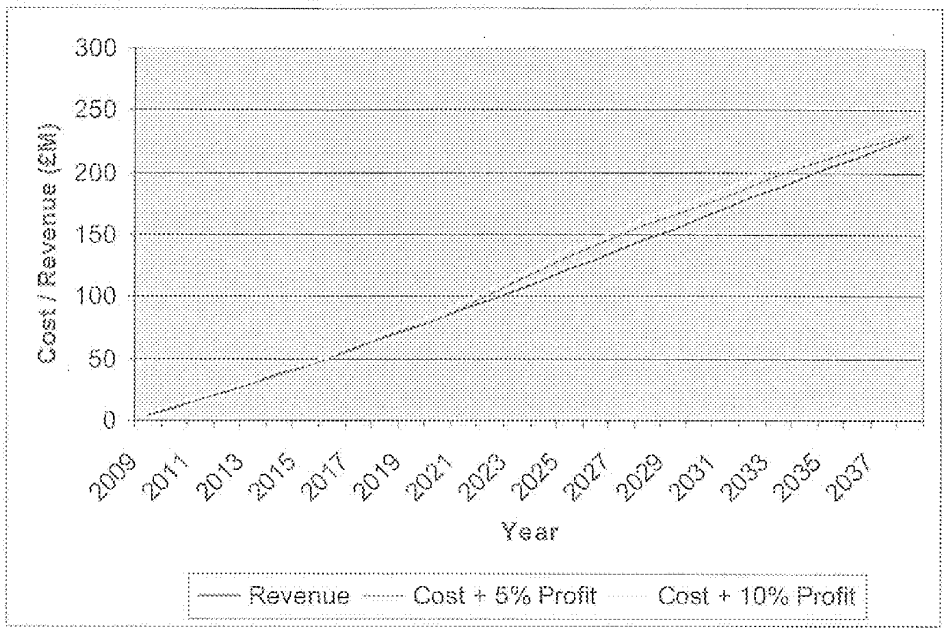
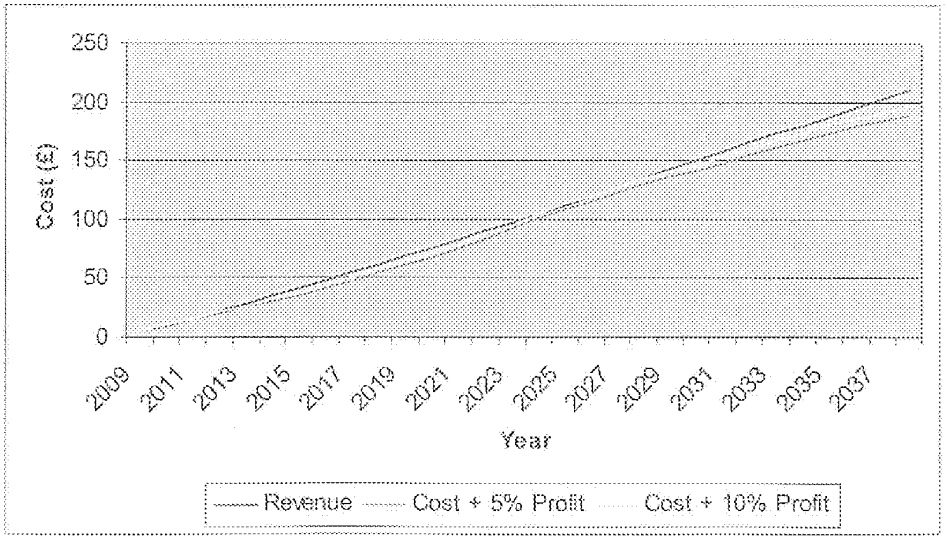


Figure 7.2(ii) Cost + Profit Analysis for St Andrew Square to Airport



7.3 SENSITIVITIES

Each of the revenue sensitivities mentioned in Section 5.5 will clearly either further benefit or damage the cost:revenue ratio indicated in figures 7.1 and 7.2. Of the tests described, the removal of Newbridge Shuttle has already been covered. Of the other issues, table 7.3(i) indicates the predicted impact on other factors related to Tram Line 2:

Table 7.3(i)

Test	Capex	Opex	Lifecycle	Revenue	
				2011	2026
Airport Heavy Rail Link	*None*	*None*	*None*	Negative	Negative
Congestion Charging	*None*	*None*	*None*	Negative	**Positive**
Competitive Bus Response	*None*	*None*	*None*	Negative	Negative
Complementary Bus Response	*None*	*None*	*None*	**Positive**	**Positive**
Increase Tram Frequency	Increase	Increase	Increase	**Positive**	**Positive**
Reduce Tram Fare	*None*	*None*	*None*	Negative	Negative
Increase Tram Fare	*None*	*None*	*None*	Negative	**Positive**

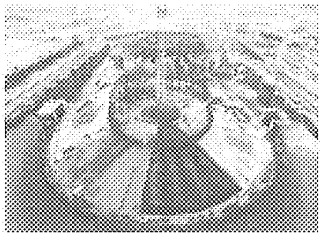
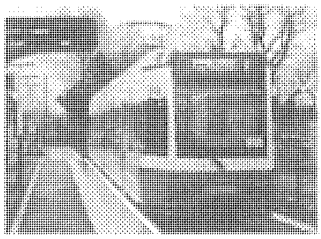
The effect of increasing tram frequency on the capital, operating and lifecycle costs would counter revenue increases. An increase to 7 trams per hour would require an extra one or two vehicles in operation, and an increase to 8 trams per hour would require an additional three vehicles. An additional vehicle will increase operating costs by approximately £0.4 million, and lifecycle costs by £0.775 million. Table 7.3(ii) summarises the impact per annum.

Table 7.3(ii)

No. Of Trams	Capex	Opex	Lifecycle	Revenue	
				2011	2026
7 tph (+1 veh.)	£1.55 million	£0.4M	£25,833	£0.20M	£0.68M
7 tph (+2 veh.)	£3.1 million	£0.8M	£51,667	£0.20M	£0.68M
8 tph	£4.65 million	£1.2M	£77,500	£0.52M	£1.34M

It is clear from the above table that there would be little or no net benefit resulting from increasing the tram frequency as shown. In all cases, the initial increase in cost would exceed the initial increase in revenue, and for an extra two tram vehicles to operate at 7 trams per hour the revenue would never exceed the cost. Thus, it would appear that the base case proposal of 6 trams per hour is the optimum service in terms of profitability.

8 CONCLUSIONS

8 Conclusions

The estimates for capital, operational and lifecycle costs and revenue contained within this report have been developed to reflect as accurately as practicable the "Design Freeze" for Edinburgh Tram Line 2, required to produce the Parliamentary Bill. These figures represent FM/SY's best estimate of outturn costs and revenue.

In terms of capital costs, the scheme value has increased since the PBC and Masterplan estimates were prepared. The principal factors that have resulted in the increased capital cost are:

- Increased estimate for structures, arising from more detailed analysis of number, type and method of construction required for each proposed structure
- Increased utilities diversions costs. Rates of up to £4 million per kilometre of twin track tramway have been experienced in urban areas, so Masterplan figure believed to be too light.
- Depot costs are significantly higher, due mostly to the required civil works (£8.2 million) to prepare the proposed site at Gogar roundabout
- Preliminaries, Design and Coordination / Consents rates are higher than in the Masterplan. These rates have been agreed between Line 1, Line 2 and tie.

In terms of operating costs, the increase in the FM/SY estimate over the Masterplan figure is due to the more detailed approach to estimating operating costs. The Masterplan simply applied a per vehicle kilometre rate taken from Manchester Metrolink to Edinburgh Tram Line 2, however issues such as route length, service frequency and operating hours result in large variances to this figure between different schemes. The FM/SY estimate used assumptions agreed between Line 1, Line 2 and tie, and accounted for the following key parameters:

- Infrastructure length,
- Number of stops,
- Annual service kilometres and total kilometres,
- Annual operated hours,
- Fleet size.

The FM/SY revenue calculations varied from the Masterplan calculations by taking into consideration the following issues:

- Revenue loss due to fare evasion and ticket types
- Revenue gain due to factoring up standard bus fares (x1.33) and through applying a premium charge to airport passengers (equivalent to airport shuttle bus rates).

The lifecycle cost calculations cannot easily be compared to previous estimates, as it was not calculated in the Masterplan, and the PBC lifecycle estimate was based purely on the cost of vehicle refurbishment. However, FM/SY's approach to estimating lifecycle costs has been similar to the approach to estimating capital and operational costs, using a combination of benchmarking, previous experience and engineering judgement. The basic assumptions used are consistent with those used by Line 1 Consultants.

When analysing the results, it is clear that the profitability of the system is better without the Newbridge Shuttle than with it included, and of course capital, operational and lifecycle costs would also be reduced. The sensitivity tests indicate that overall profitability would be most significantly enhanced by ensuring maximum integration between tram and bus, and most significantly reduced if the bus operators choose to compete with the tram. The introduction of the Airport Heavy Rail Link would also have a significant negative impact on revenue. The introduction of congestion charging and raising tram fares by 10% would initially have a negative impact on tram revenue, however ultimately the revenue would increase.

None of the sensitivity tests described above have any impact on capital, operating and lifecycle costs. An increase in tram frequency would have a negative impact on capital, operational and lifecycle costs, as extra vehicles would need to be purchased, operated and maintained. This would counter the increase in revenue resulting from increased tram frequency.

APPENDIX A
OUTLINE CONSTRUCTION PROGRAMME

EDINBURGH TRAM LINE 2 - OUTLINE CONSTRUCTION PROGRAMME

SCP0000011_0331

Appendix G – Risk Matrix

Transport Initiatives Edinburgh
Line 1 and 2 Tram Schemes
Project Risk Register

Updated By: Mark Bourke, TIE
Date: 1 September 2003

Transport Initiatives Edinburgh
Line 1 and 2 Tram Schemes
Project Risk Register

Updated By: Mark Bourke, TIE
Date: 1 September 2003

No.	Description of Risk	Owner	Phase	CDDC	PROJ. SPONS.	CLIENT SPONS.	EWI	EXT. INFL.	RISK MITIGATION	IMPACT TO MITIGATION	INITIATED	Cost Impact (£)	Time Impact (Days)	Mitigation	Mitigation Cost (£)	Mitigation Time (Days)	Risk Score	Risk Status	Risk Owner
18	Lack of integration between road and tram design leads to poor overall design	Promoter	Design									£0	0	Design Integration Meetings between Tram and Roads Project Teams. Monitor progress against programme. Ensure that Roads Project Team are aware of Tram requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
19	Poor Scheme Acceptance by the public leading to objections to the Planning Application and Traffic Regulation Orders, which causes delay to the scheme	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
20	Failure to agree Utilities Diversion Programme with Utilities leads to delay to the Tram Programme	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
21	Poor Environmental Impact leads to objections to the Planning Application	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
22	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
23	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
24	Poor Environmental Impact leads to objections to the Planning Application	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
25	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
26	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
27	Poor Environmental Impact leads to objections to the Planning Application	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
28	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
29	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
30	Poor Environmental Impact leads to objections to the Planning Application	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
31	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
32	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
33	Poor Environmental Impact leads to objections to the Planning Application	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
34	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
35	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
36	Poor Environmental Impact leads to objections to the Planning Application	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
37	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
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39	Poor Environmental Impact leads to objections to the Planning Application	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
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42	Poor Environmental Impact leads to objections to the Planning Application	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
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48	Poor Environmental Impact leads to objections to the Planning Application	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
49	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision
50	Inadequate Traffic Management leads to objections to the Traffic Regulation Orders	Promoter	Design									£0	0	Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements. Ensure that Tram Project Team are aware of Roads Project requirements.	£0	0	Active	Decision

SCP0000011_0334

Transport Initiatives Edinburgh
Line 1 and 2 Tram Schemes
Project Risk Register

Updated By: Mark Bourke, TIE
Date: 1 September 2003

Ref	Description of Risk	Owner	Impact	PROJECT RISK: Capacity of Systems	Low Confidence Re. Design	Non Conformance Specification	Environmental Liability	Project & Client Interface	Technical Performance	Other Risk Impacts	RISK IMPACT: Description of the Business Case	Safety Reputation and Liability	Political Sensitivity	Project Management Plans	Poor Project Definition	Other Client Specific Risks	RISK IMPACT: Public Relations	Poor Communication	Possible Commercial Exposure	Other Environmental Issues	RISK IMPACT: Schedule	Cost	Quality	Safety	Other External Influence	RISK IMPACT: Safety	Reputation	Quality	Cost	Schedule	PRIOR TO MITIGATION: Likelihood 1 to 5	Impact As Defined in Risk Matrix 1 to 25	Significance 1 to 25	MITIGATED: Likelihood 1 to 5	Impact With Mitigation 1 to 5	Significance 1 to 25	Action Responsibility for Mitigation	Action Owner Responsible for Mitigation	Mitigation Actions	Completion Date	Status	Date Risk Considered
1	Risk 1 - Delays resulting from Parliamentary Approval Not Granted	Tie Limited	Tram 1																												3	5	15	3	5	15						
2a	Lack of Consistent Funding Commitment Across Project Lifecycle	Funding	Tram 1 & 2																												3	5	15	3	4	12						
2b	Line 1 - Cost Augmentation Risk	Tie Limited / Partners	Tram 1																												3	5	15	3	5	15						
2c	Line 2 - Cost Augmentation Risk	Tie Limited / Partners	Tram 2																												3	5	15	3	5	15						
3	Risk of Consent Issues Associated with Bus Accommodation Proposals not Leading to Acceptable Arrangements	Tie Limited	Tram 1 & 2																												3	5	15	3	4	12						
4	Risk that Utility Diversionary Works Programme Cannot be Delivered Within Timescales Assumed in Tie Programme	Tie Limited	Tram 1 & 2																												3	5	15	3	5	15						
5	Risk of Delay in Obtaining Planning and Construction Approval for Alterations to Scotrail Facilities	Tie Limited	Tram 1 & 2																												3	5	15	3	4	12						
6	Risk that Utility Diversionary Works Programme Cannot be Delivered Within Timescales Assumed in Tie Programme	Tie Limited	Tram 1 & 2																												3	5	15	3	5	15						
7	Risk that Utility Diversionary Works Programme Cannot be Delivered Within Timescales Assumed in Tie Programme	Tie Limited	Tram 1 & 2																												3	5	15	3	5	15						
8	Risk that Utility Diversionary Works Programme Cannot be Delivered Within Timescales Assumed in Tie Programme	Tie Limited	Tram 1 & 2																												3	5	15	3	5	15						
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Transport Initiatives Edinburgh
Line 1 and 2 Tram Schemes
Project Risk Register

Updated By: Mark Bourke, TIE
Date: 1 September 2003

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Appendix H - Demand Modelling

Introduction

The highway and public transport modelling was undertaken using the Land Use and Transport Interactions (LUTI) model, the Highway Detailed Assignment Model (Highway DAM) and the Public Transport Detailed Assignment Model (PT DAM). The modelling procedure is described in the Final Patronage and Forecast Model Report.

The base model results use the model as available in August 2003. Since that the forecast of interpeak (IP) trips has been improved, predicting an additional 3% highway interpeak trips in all years, 4% more interpeak PT trips in 2011 and growing to 17% additional PT trips by 2026. Therefore the model used by this study is more conservative than the later version.

All base case forecasts of patronage in this report assumes that there will be a 200 space Park and Ride site at Newbridge. However, it is no longer envisaged that a Park and Ride site will be provided at Newbridge, as priority will be given to new office development. While the removal of the Park and Ride site will have a large impact on the Newbridge Shuttle, many of these potential P&R trips transfer to Eastfield P&R site where they can directly access the Airport-City Line. Sensitivity testing has shown that the impact of removal of the Park and Ride site on patronage is less than 5% in 2011 and reduces patronage by only 1.5% in 2026.

The modelled network assumed two stops along Princes St, at Castle Street and The Mound. The latter is no longer included in plans for Edinburgh Tram Line Two.

The base case assumed that there would be no heavy rail link to the Airport and that congestion charging would not be in operation. Both of these have the potential to reduce tram patronage and revenue. A heavy rail Airport service can directly compete with tram for links to the city centre and congestion charging helps urban buses compete with tram on ride times.

A number of sensitivity tests were done to address the issue of variability in the model and different scenarios with factors not necessarily within the control of the tram operator. This is reported in Section 9.6 of the main report.

City of Edinburgh Traffic Management (CETM) was not directly modelled as the details were not established in time to be included in the modelling. It is assumed that CETM will have a largely neutral effect, though by combining CETM plans with tram proposals creates the opportunity optimise both plans.

The following summarises the key findings of the travel demand work for the base case.

Travel Demand

Table 1 sets out a summary of the demand totals within the model.

Table 1 - Hourly Travel Demand

		2011			2026		
		AM	IP	PM	AM	IP	PM
Without tram	PT (persons)	41000	24000	38000	44000	22000	42000
	Cars & LGVs (vehicles)	120000	81000	134000	152000	99000	168000
With Line 2	PT (persons)	42000	25000	39000	45000	25000	43000
	Cars & LGVs (vehicles)	119000	81000	134000	151000	100000	168000
Impact of Line 2	PT (persons)	0.8%	3.9%	0.9%	2.8%	12.7%	2.2%
	Cars & LGVs (vehicles)	-0.3%	0.2%	-0.2%	-0.6%	0.8%	-0.2%

The LUTI model shows that tram attracts personal trips from car, increasing PT demand and reducing car demand. The LUTI model also predicts a significant number of new trips will be generated in the off peak, due to improved PT supply, but also new PT and car trips in response to the increased economic activity resulting from a major transport scheme.

Edinburgh Tram Line Two Demand and Benefits

Detailed demand forecasts for Edinburgh Tram Line Two have been produced using the Detailed Assignment Models (DAM). Table 2 shows the summary statistics of Edinburgh Tram Line Two and the impact on other PT modes.

Table 2 - Hourly Boardings by PT Mode (no. of passengers)

		2011			2026		
		AM	IP	PM	AM	IP	PM
Without tram	Bus	37000	22000	33000	38000	20000	36000
	Rail	10000	4000	10000	15000	5000	14000
	Line 2	No service					
	Total	**47000**	**26000**	**43000**	**53000**	**25000**	**50000**
With Line 2	Bus	35000	22000	32000	36000	22000	33000
	Rail	10000	4000	8000	15000	5000	13000
	Line 2	3000	1000	3000	4000	1000	4000
	Total	**48000**	**27000**	**44000**	**55000**	**28000**	**51000**
Impact of Line 2	Bus	-5.9%	-0.3%	-2.7%	-4.8%	9.8%	-8.2%
	Rail	0.5%	-0.1%	-17.7%	-3.0%	1.4%	-1.2%
	Line 2	New mode					
	Total	**1.5%**	**4.1%**	**0.6%**	**3.3%**	**13.7%**	**2.4%**

Table 3 - Hourly Passenger Kilometres by PT Mode

		2011			2026		
		AM	IP	PM	AM	IP	PM
Without tram	Bus	252000	124000	201000	237000	117000	217000
	Rail	276000	111000	273000	438000	144000	417000
	Line 2	No service					
	Total	**528000**	**234000**	**474000**	**675000**	**261000**	**634000**
With Line 2	Bus	229000	119000	206000	217000	122000	193000
	Rail	276000	111000	255000	435000	147000	417000
	Line 2	22000	9000	22000	28000	11000	30000
	Total	**529000**	**240000**	**483000**	**680000**	**280000**	**639000**
Impact of Line 2	Bus	-9.0%	-3.4%	2.4%	-8.6%	4.1%	-11.1%
	Rail	0.8%	0.5%	-6.7%	-0.8%	1.9%	0.0%
	Line 2	New mode					
	Total	**0.2%**	**2.5%**	**1.8%**	**0.6%**	**6.9%**	**0.9%**

The introduction of tram has reduces bus boardings, but some PT journeys depend on buses as feeder services. Bus passenger kilometres have greater reduction because number of boardings and bus ride distance have been reduced. The impact on rail is mixed. While tram does compete with rail between Edinburgh Park-Haymarket-Waverley Station, the interchange between tram and rail at Edinburgh Park and Haymarket provides attractive connections between the two services.

The interpeak hour demand for tram is about half that of each of the peak hours, however, the length of the inter peak period with demand as well in the evenings and the weekends means that the off peak contributes about half the patronage.

Table 4 sets out Edinburgh Tram Line Two demand by direction.

Table 4 Hourly Demand By Direction (No. of Passengers)

	2011			2026		
	AM	IP	PM	AM	IP	PM
Eastbound	1580	480	850	2150	550	1160
Westbound	890	560	1800	1290	640	2630
Total	2470	1030	2650	3440	1190	3790

There is a strong tidal flow into the city centre in the AM peak and out again in the PM peak, but it is less tidal than many commuter services, as the Edinburgh Park/Gyle developments is a large attractor of trips to the western end of the line. Similarly some trips are attracted towards developments on the A8 outside the City Bypass. Trips go to and from the Airport throughout most of the day.

The Edinburgh Tram Line Two profiles are shown in Figures 1 to 2.

Figure 1 2011 Edinburgh Tram Line Two Profile – AM Peak Eastbound

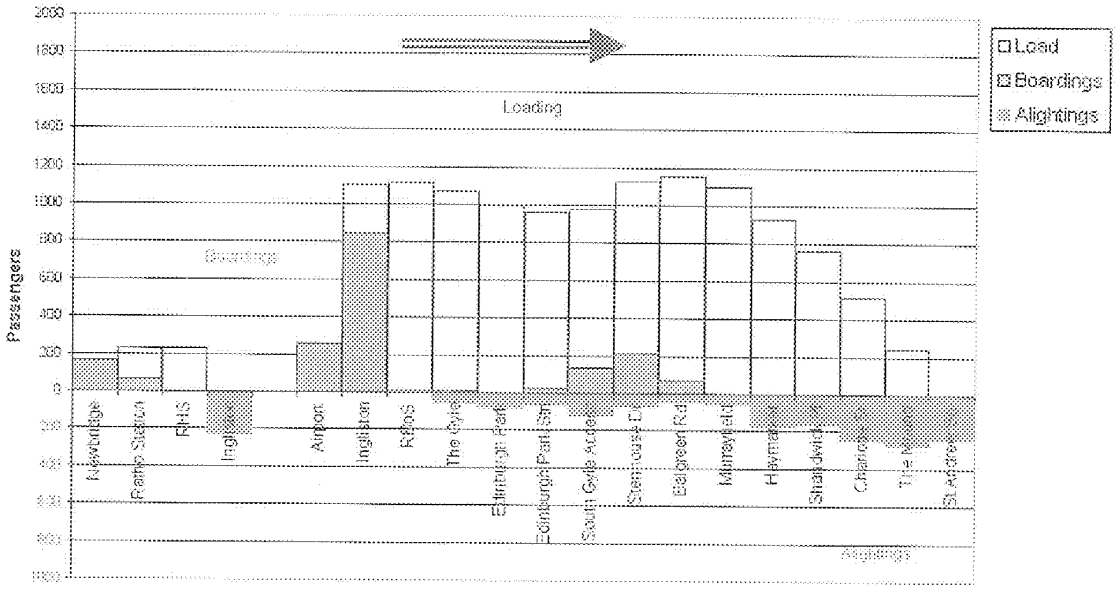


Figure 2 2011 Edinburgh Tram Line Two Profile – AM Peak Westbound

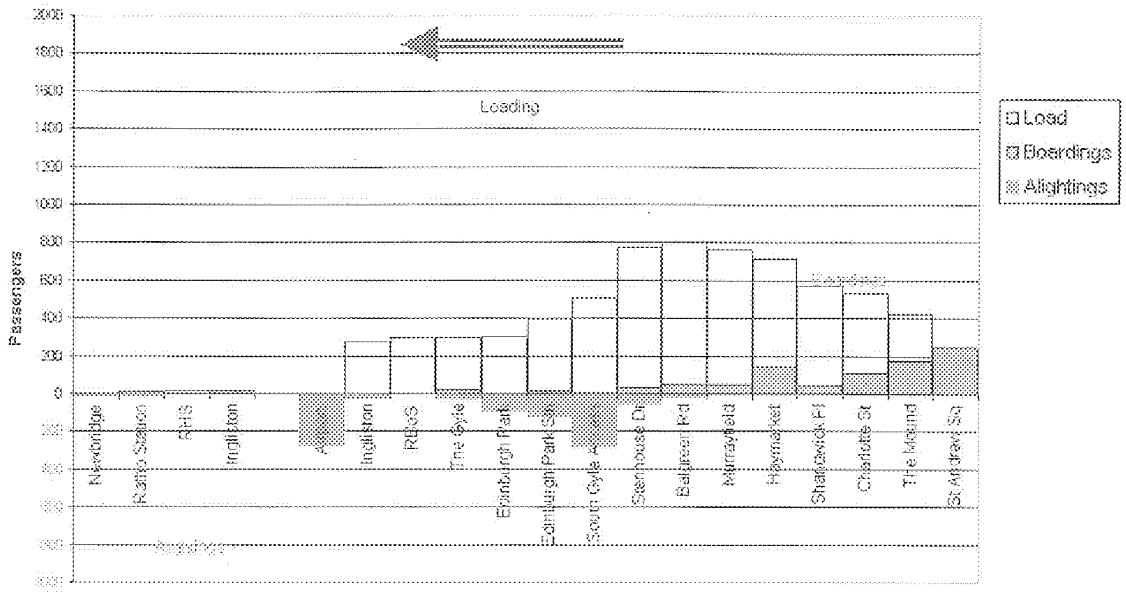


Figure 3 2011 Edinburgh Tram Line Two Profile – Off Peak Eastbound

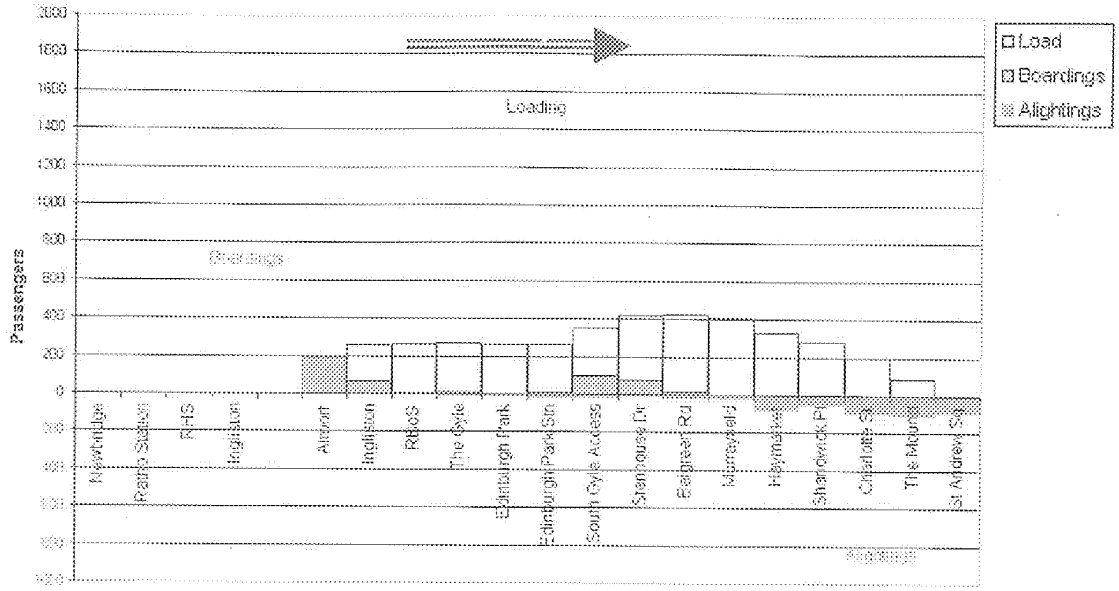


Figure 4 2011 Edinburgh Tram Line Two Profile – Off peak Westbound

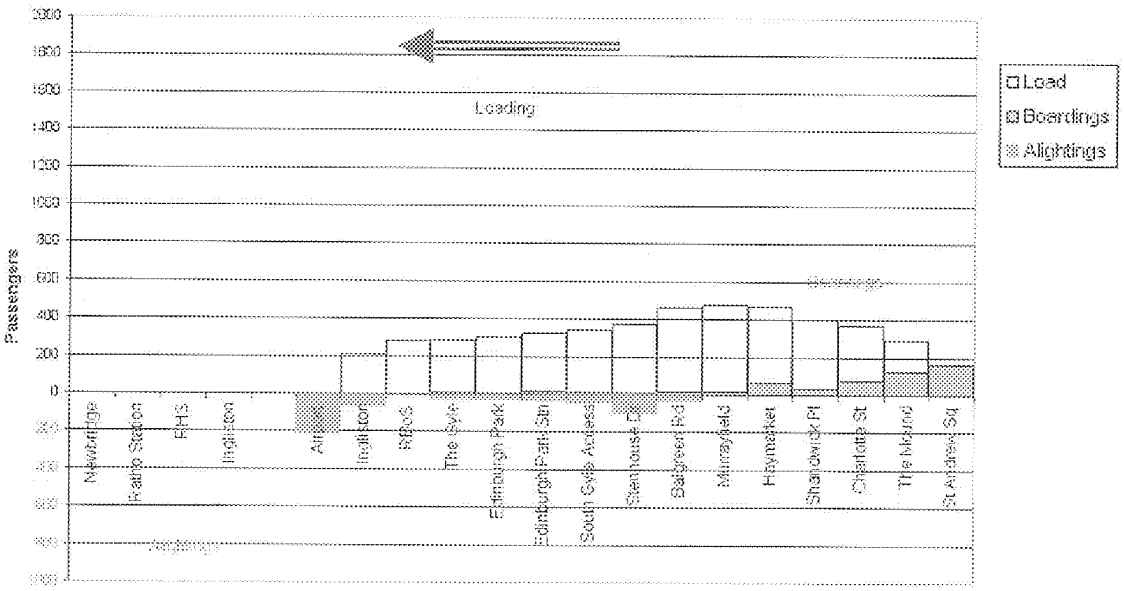


Figure 5 2011 Edinburgh Tram Line Two Profile – PM Peak Eastbound

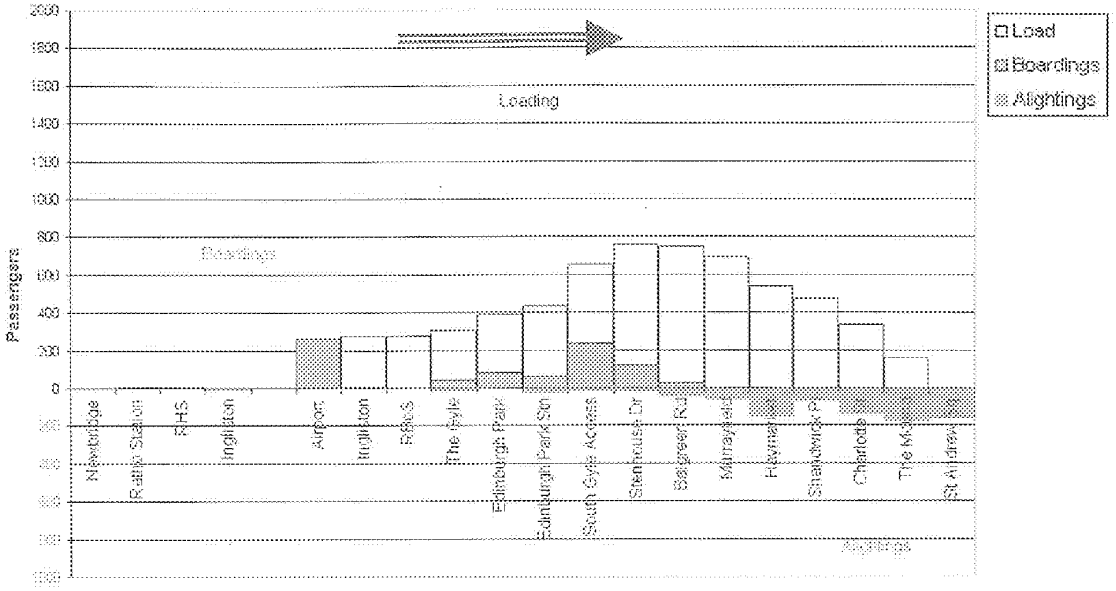


Figure 6 2011 Edinburgh Tram Line Two Profile – PM Peak Westbound

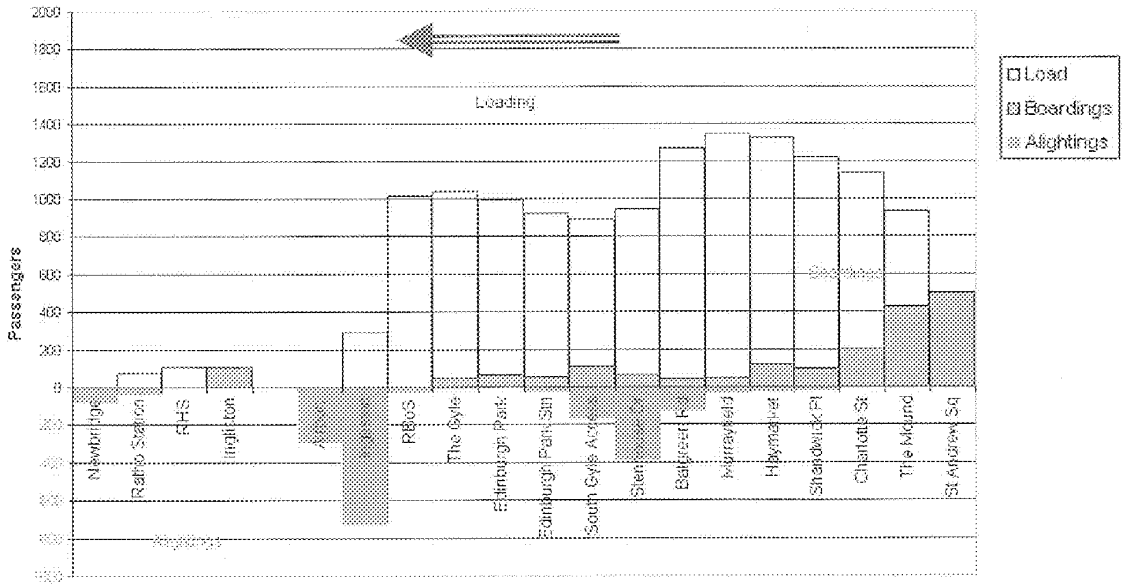


Figure 7 2026 Edinburgh Tram Line Two Profile – AM Peak Eastbound

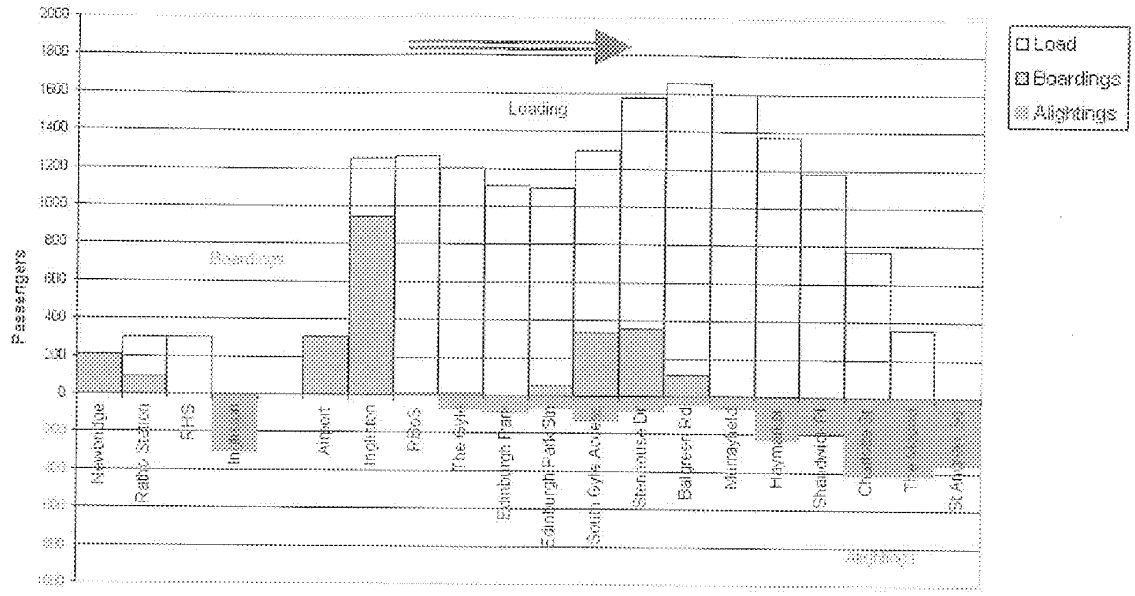


Figure 8 2026 Edinburgh Tram Line Two Profile – AM Peak Westbound

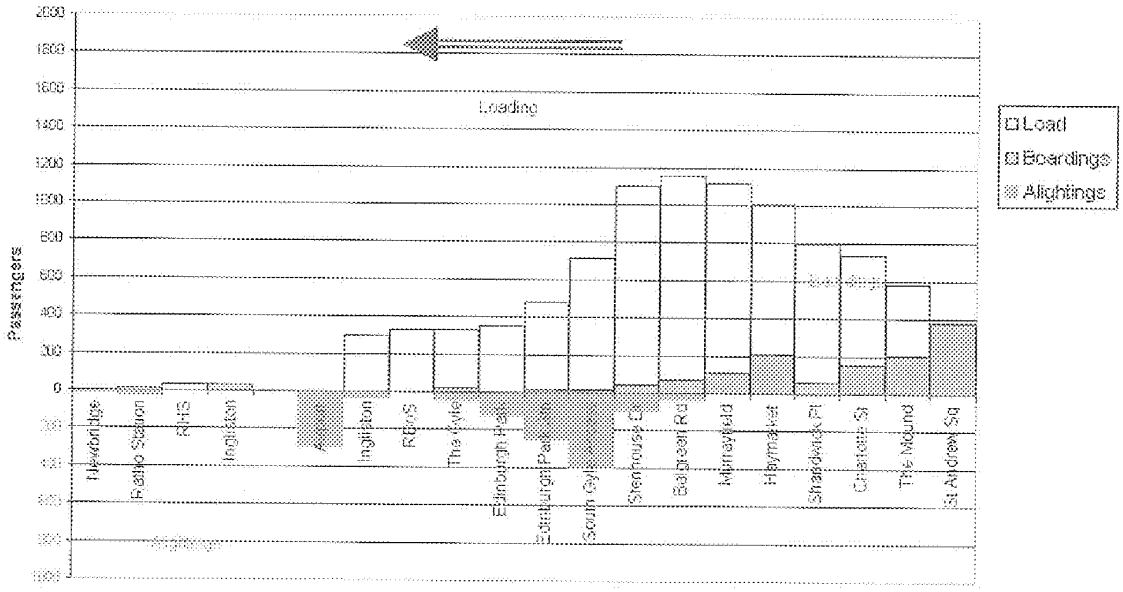


Figure 9 2026 Edinburgh Tram Line Two Profile – Off Peak Eastbound

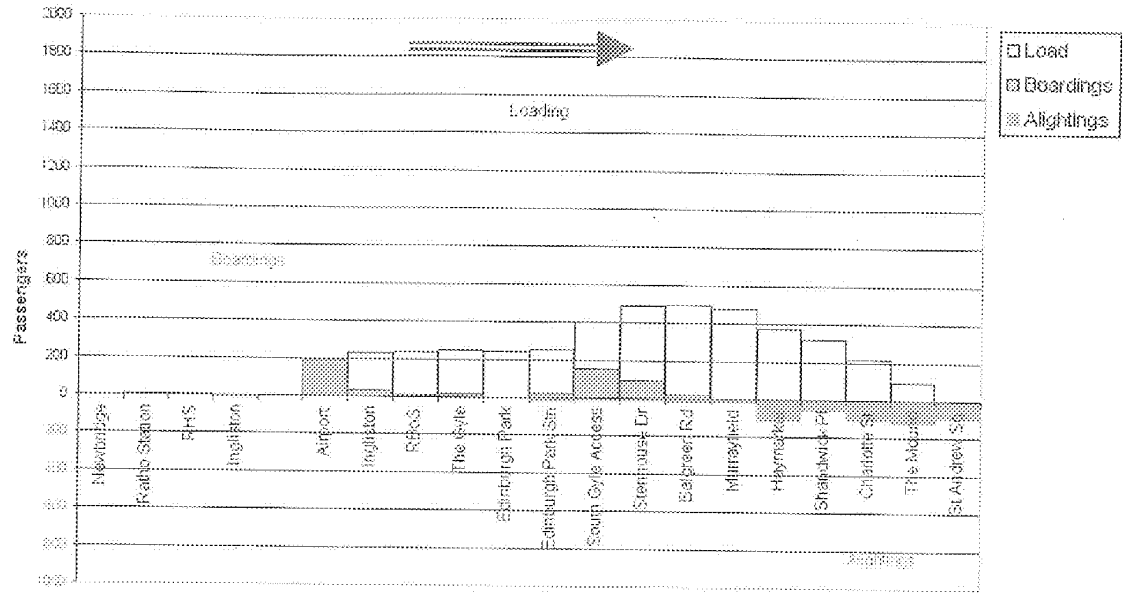


Figure 10 2026 Edinburgh Tram Line Two Profile – Off peak Westbound

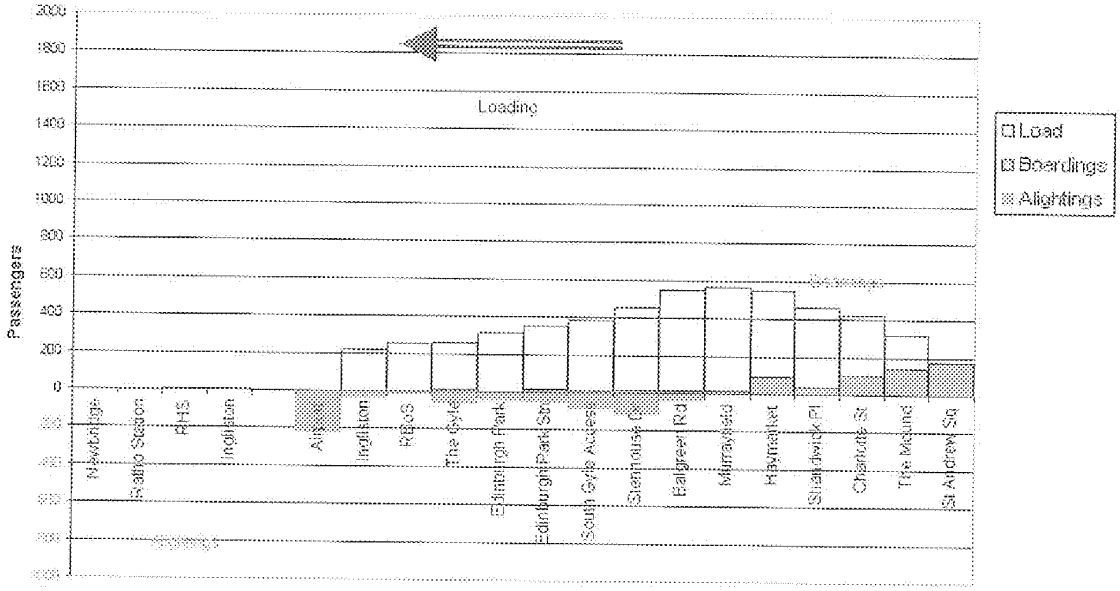


Figure 11 2026 Edinburgh Tram Line Two Profile – PM Peak Eastbound

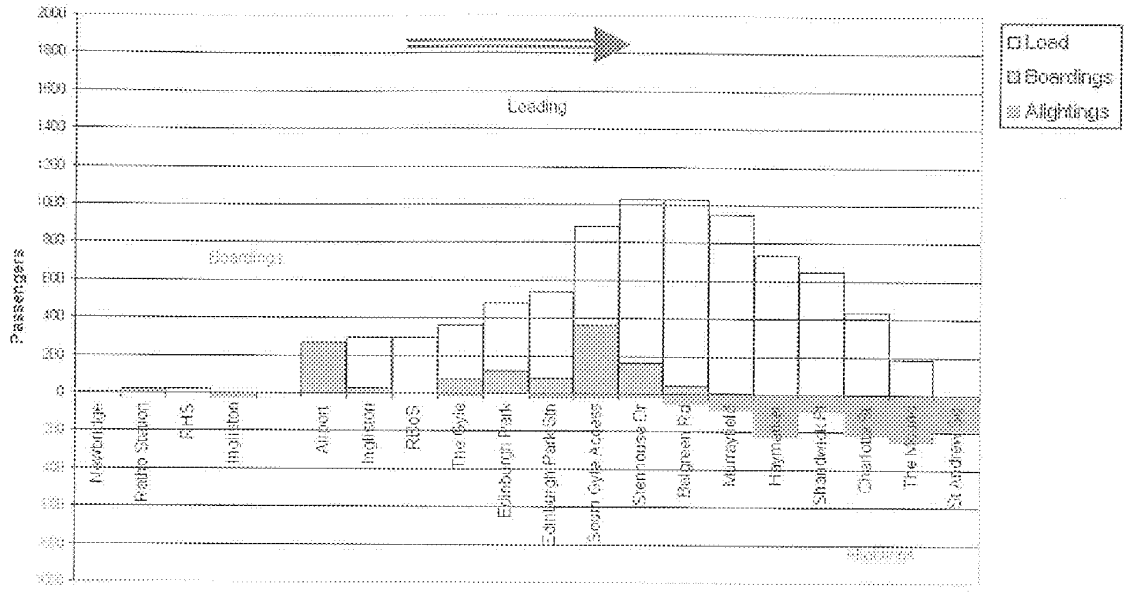
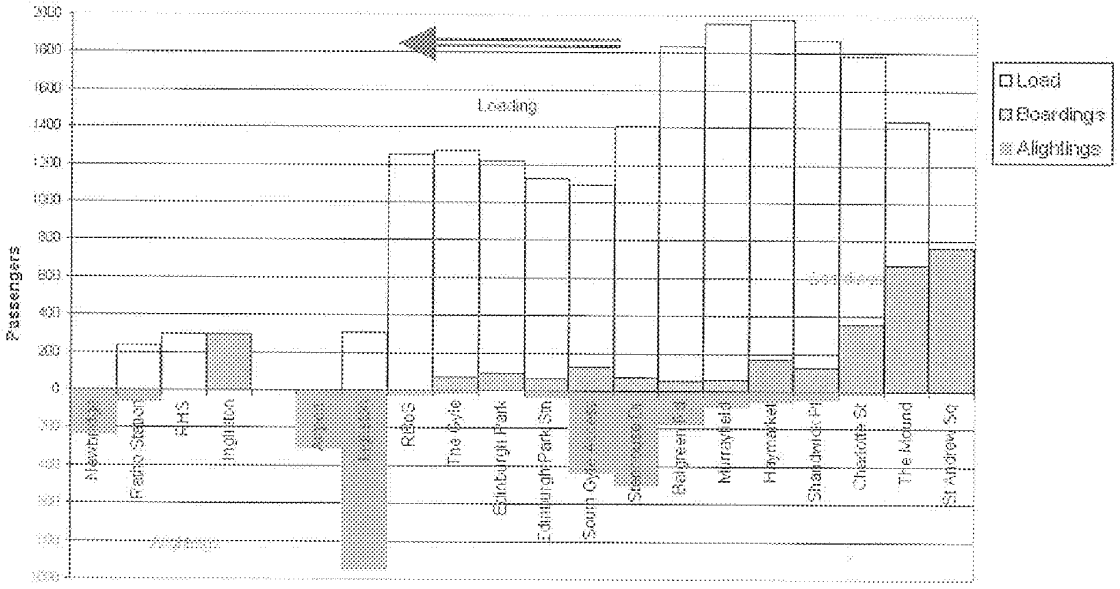


Figure 12 2026 Edinburgh Tram Line Two Profile – PM Peak Westbound



Appendix I – Glossary of Terms

AGLV	Area of Great Landscape Value
AOLV	Area of Outstanding Landscape Value
AQMA	Air quality Management Area
AST	Appraisal Summary Table
BAA	British Airports Authority
BGS	British Geological Survey
BT	British Telecom
CEC	City of Edinburgh Council
CECAS	The City of Edinburgh Council Archaeology Service
CEL:LfN	Cost Effective Landscapes: Learning from Nature
CERT	City of Edinburgh Rapid Transit
CETM	City of Edinburgh Traffic Management
CO_2	Carbon Dioxide
CoRN	Calculation of Railway Noise
CPO	Compulsory Purchase Order
CSTM	Central Scotland Transport Model
DAM	Detailed Assignment Model
DBOM	Design, Build, Operate and Maintain
DDA	Disability Discrimination Act
DETR	Department for Environment, Transport and the Regions
DfT	Department for Transport
DJ	Drivers Jonas
DMRB	Design Manual for Roads and Bridges
DPOF	Development Partnering and Operating Franchise
DSC	David Simmonds Consultancy
DTLR	Department for Transport, Local Government and the Regions
EATM	Edinburgh Area Traffic Model
EALI	Economic Activity and Locational Impacts
EMC	Electromagnetic compatibility
ES	Environmental Statement
ETL2	Edinburgh Tram Line Two
FM	FaberMaunsell
GC	Golf Course
GDP	Gross Domestic Product
GLT	Guided Light Transit
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GMC	Gyle Management Centre
GOMMMS	Guidance on Methods for Multi-modal Studies
HMRI	Her Majesty's Railway Inspectorate
HQ	Headquarters
IEEM	Institute of Ecology and Environmental Management
IEMA	Institute of Environmental Management and Assessment
IP	Interpeak
ITF	Integrated Transport Fund
ITI	Integrated Transport Initiative
KPI	Key Performance Indicator
LLAU	Limits of Land to be Acquired or Used
LOD	Limit of Deviation
LRT	Light Rapid Transit
LRV	Light Rail Vehicles
LTS	Local Transport Strategy
LUTI model	Land Use and Transport Interactions Model
LVASG	Landscape and Visual Assessment Supplementary Guidance
MAGLEV	Magnetic Levitation
MP	Member of Parliament
MSP	Member of the Scottish Parliament
NAQS	National Air Quality Standards
NEAR	North Edinburgh Renewal Area
NNA	Neighbourhood Nature Area
NMRS	National Monuments Record of Scotland
NO_2	Nitrogen Dioxide
NPPG	National Planning Policy Guidance
NPV	Net Present Value
NR	Network Rail
OHLE	Overhead Line Equipment
P & R	Park and Ride
PA System	Public Address System
PAN	Planning Advice Note
PBC	Preliminary Business Case
PM_{10}	Particulate Matter
PPP	Public Private Partnership
PT	Public Transport
PTF	Public Transport Fund

RBoS	Royal Bank of Scotland
RCAHMS	The Royal Commission on the Ancient and Historical Monuments of Scotland
RFACfS	Royal Fine Arts Commission for Scotland
RHASS	Royal Highland and Agricultural Society of Scotland
RHS	Royal Highland Showground
RIG	Regional Importance for Geology
RPG	Regional Planning Guidance
RTS	Regional Transport Strategy
RUC	Road User Charging
SAM	Scheduled Ancient Monument
SEL	Sound Exposure Level
SEPA	Scottish Environmental Protection Agency
SER	Stop Equipment Room
SESTRAN	South East Scotland Transport Partnership
SIMD	Scottish Index of Multiple Deprivation
SINC	Site of Interest for Nature Conservation
SNH	Scottish National Heritage
SRU	Scottish Rugby Union
SSSI	Site of Special Scientific Interest
STAG	Scottish Transport Appraisal Guidance
TEE	Transport Economic Efficiency
TEN	Transport Economic Note
tie	Transport Initiatives Edinburgh
TIMS	Ticketing Information Management System
TRRL	Transport and Road Research Laboratory
TT	Turner and Townsend
UWS	Urban wildlife site
WAR	Western Approach Road
WEBS	West Edinburgh Busway
WEL	Waterfront Edinburgh Ltd
WEPF	West Edinburgh Planning Framework

Appendix J – Bibliography

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Appendix K – Preferred Route Corridor Report and Addendum

Please see separately bound report.

Appendix L – Route Development Report Part A - Design Pause

Please see separately bound report.

Appendix M – Route Development Report Part B – Route Finalisation

Please see separately bound report.

Appendix N – Literature Review

Doc	Authors	Date	Title	Context	Issue	Resolution
1	Steer Davies Gleave	18/10/2002	Interface between junction modelling, network modelling, operations and appraisal	To outline the Interface between junction modelling, network modelling, operations and appraisal. Sets out the relationship between the 4 factors, and their relevance to design or appraisal.		
2	Steer Davies Gleave	01/11/2002	Testing Programme	To specify an initial pair of tests, and to set out an indicative testing programme for the development and assessment of Line 1	Assumptions contained: for transfer penalties treat LRT as per rail; implement a penalty of bus over LRT of 15min in AM peak and 10min in interpeak (unclear about boarding penalties); LRT fare is 33% above bus.	
3	Steer Davies Gleave	25/10/2002	Design Objectives and Principles	Technical note outlining different type of tram operations, requirements for passing places, turn-around facilities, depot location etc	none	
4	Steer Davies Gleave	20/01/2003	STAG 2 Appraisal Requirements	Sets out the requirements and process to complete STAG2 for Line 1		
5	Steer Davies Gleave	08/11/2002	Consultation	Sets out the consultees which SDG will lead with, and others that SDG would participate in. Also undertakes to conduct business surveys		
6	Steer Davies Gleave	20/01/2003	Modelling and Appraisal - Draft v2	Sets out a proposed approach to issues of modelling and appraisal. Topics covered are: De-Min specification; Networks; Model Parameters; Fares and Bus Networks; and Land Use Forecasts	Description about what will/won't be included in networks for testing. 2 issues raised under Model Parameters. 1) is lack of mode constraints under CSTM3 and 2) Parameter values for TRAM are different to Network values	1) use values from the OBC, namely 15min in AM peak and 10min interpeak - a review can then be carried out to establish an agreed value 2) as a default assumption, use DAM network model values for in-vehicle time and interchange penalties
7	Steer Davies Gleave	11/11/2002	Modelling Enhancements	Following Client Progress Meeting, TIE indicated a preference for a City wide model upgrading which would be suitable for appraising the three lines identified. This paper sets out the costs and timescales associated with such model enhancements	none	
8	Steer Davies Gleave	02/12/2002	Scheme Development, Consultation and STAG	Notes that the Public Consultation has been deferred to June 03, impacting on proposed completion of STAG2 by 18 June. Discusses how options and sub-options can continue to be sifted so that a prompt turn-around can be achieved after Consultation.	none	
9	Steer Davies Gleave	18/12/2002	Stop Locations	Provides comments on Stop Locations identified in drawings issued on 19/11/02	None relating to modelling issues	
10	Steer Davies Gleave	04/02/2003	Modelling and Appraisal Working Group - Surveys	Sets out a scope and methodology for undertaking travel demand surveys to enable updating of the LUTI model. It considers 3 main areas - public transport, highway and mode choice parameters	None relating to modelling issues	

11	Steer Davies Gleave	29/01/2003	STAG Planning Objectives v2	A consideration of CEC planning objectives which need to be considered in STAG appraisal, and relates them to LTP.	None relating to modelling issues	
12	Steer Davies Gleave	14/03/2003	Planning Assumptions	Sets out current planning assumptions, the forecast take up of space, and how these fit with the development plans of Waterfront Edinburgh and Forth Ports	Assumes Leith Docks = TRAM Zone 40+41, Granton =TRAM 42+44 Take up of development space is variable, can 'force' model to uptake of space. Also, can model reflect 'quality' of development?. JIFGRO uses CEC supplied data through CSTM3A, DELTA uses more recent data from Lothian Structure Plan. Differences between predicted populations, households and employment data between Base and 2016	If possible, revise JIFFGRO to reflect changes forecast by DELTA, possibly selectively introduced to areas of major change. Might entail revision to waterfront areas only. As minimum, update JIFGRO data to reflect new Structure Plan and be consistent with DELTA inputs.
13	Steer Davies Gleave	07/04/2003	TUBA Economic Evaluation - DRAFT	Details the approach and parameters used for TEE appraisal for STAG2. TEE uses TUBA software, based on outputs from PT and highway DAM models, with higher level of functionality provided by TRAM/DELTA, with growth applied via JIFGRO	Assignment parameters set out, also economic inputs for TUBA, using defaults or recommending where more detailed, local data should be substituted. Initial year = 2009	
14	Steer Davies Gleave	14/05/2003	Initial Model Results	Initial modelling results indicate substantially reduced tram patronage in MVA AM peak compared to that reported in WP1 and the OBC - off peak is comparable Note sets out current and previous forecasts, and explores reasons for the decline.	OBC and WP1 forecasts were broadly consistent, but current modelling shows peak period demand about half previously stated, overall impact is 25% reduction in annual patronage. Although models used in OBC and WP1, and the LUTI model share same origins (CSTM3) the application differs in respect of background growth and planning assumptions, and mode constant	OBC and WP1 modelling assumes full masterplan development at Leith and Granton, LUTI shows substantially lower growth. LUTI also shows decline in background PT demand. Also, fewer trips are assigned to tram due to decision at MAWG to reflect modal preference through In-Vehicle Time at 1.1 for bus and 0.9 for tram. Use of DELTA is likely to continue to produce more conservative outturn land use patterns than aspirational Masterplan assumptions. MAWG to address Mode Preference issue
15	Steer Davies Gleave	27/05/2003	Fare Tests (Version 1) Draft for Comment	Baseline assumption that Line 1 fares would be 33% above bus. Using PT demand matrices from MVA with this assumption, and with tram=bus, two intermediate matrices produced, with tram=bus+10% and +20%	DAM PT model was run for these tests (with no other differences) to test patronage level, showing inverse relationship between fares and patronage (higher fares = lower patronage) Annual revenue also considered	Sensitivity testing only, no issues or resolutions
16	Steer Davies Gleave	09/06/2003	Revenue and Operating Cost Risks	Identifies a register of principal tasks associated with operating costs and revenue for Line 1. Only the areas of risk have been identified, significance, timescale, responsibility and mitigation will be identified as scheme progresses	none	none
17	Steer Davies Gleave	09/06/2003	Operating Cost Reconciliation	Compares the operating costs prepared for STAG Appraisal and the previous figures used in OBC, and explains reasons for differences	Differences include - conductors on board vehicles, relatively pessimistic journey times, slight differences in operating frequencies and slightly different 'spare vehicle' assumptions. Also OBC used flat rate of £3.00 per vehicle kilometre, new figures have more refined cost structures	Three quarters of difference in cost is due to inclusion of on-board conductors and pessimistic running times; other differences in assumptions have minor effect. Concludes that new estimate is compatible with OBC within the accuracy of the forecasts.
18	Steer Davies Gleave	13/06/2003	Model Updates	Sets out the revisions proposed for the assignment process to enable appraisal and analysis to be undertaken		

19	Steer Davies Gleave	17/06/2003	Design Freeze Assumptions	To set out the design freeze assumptions required to enable a final LUTI model run to feed into STAG2. In 2 stages, Stage 1 (TRAM/DELTA) to model at strategic level, Stage 2 (DAM) using Stage 1 matrices to provide detailed information on loadings, journey times etc	Areas of potential improvement are: decline in developed office space at Waterfront (review being undertaken, but material improvement not anticipated); Change in modelling approach to tram preference (substantial discussion at MAWG, values now fixed for STAG2) and increase in running time due to junction delay (revised journey time by Babties producing loop time of 40.5 minutes, excluding layover).	Assumptions made for Stage 1 are: Princes Street and railway corridor (not Telford Road), stop locations as per consultation leaflet, fare = bus+33%, 8tph rather than 10tph. LUTI set at 1.1 and 1.0 for bus and rail, tram set at 0.9. planning data to be discussed with CEC officials, revisions to bus network set out in a table, and Babtie junction delay times (set out in Table) included in the run time model.
20	Steer Davies Gleave	18/06/2003	Issue to be resolved: Operational Issues Relating to Closures on Princes Street	Identifies 4 areas of concern relating to closures of Princes Street due to Special Events	1) Operation of tram with marches in adjacent streets, 2) Operation when Princes Street is completely closed, 3) Special risks from revellers while street is closed, and 4) Other/general risks	1) Police crowd control, with operational marshals along the route, 2) Turn-arounds proposed at St Andrew's Square and Haymarket, 3) anti-vandalism measures, potential to isolate power supply, height of banners etc, 4) open top bus services need behaviour restraint, possibility of slip hazard when pedestrian levels very congested
21	Steer Davies Gleave	30/06/2003	Waterfront Planning Data Review v2	Sets out the expectations for development by 3 developers,	Lattice site (all within TRAM zone 44 and DAM zone 134), Forth Ports (TRAM 40, 41 and 42, DAM 45,47,50 and 51), and Waterfront Edinburgh Ltd (TRAM 42, DAM 299 and 45 {to be confirmed}) Data prepared for LUTI model	Concludes that while overall development levels are comparable with previous work, office space has declined by 21%, residential increased by 31% and retail space has nearly doubled
22	Steer Davies Gleave	09/07/2003	Modelling Results and Issues	Sets out the results of sensitivity testing undertaken to support the development of Line 1, to be read in conjunction with the 'design freeze' above. Current business case has operating costs of £6.1m, with revenues of £6.7m in 2010 and £9.6m in 2026	Tram fares show greatest degree of sensitivity	Tabular presentation of revenue and demand under different testing scenarios
23	Steer Davies Gleave	09/07/2003	Run Times: Changes to Babtie Input Assumptions	Run time model testing	3/7/03 run uses latest Babtie junction delays, which reduce total time from 46.4min to 43.0min. SDG make assumptions on where more tram priority is reasonably feasible, and achieve further reduction, from 43.1min to 40.5min	Summing the delay times shows just under 2 min of the 2.6min saving is due simply to reduced standing time, the remainder being due to reduced acceleration/deceleration delays
24	Steer Davies Gleave	15/07/2003	Modifications to Bus Network	Considers the effect on bus provision in the corridors served by tram, and to a lesser extent, in parallel corridors. Sets out a revised network of bus services and calculated the saving in vehicle miles and costs	How will bus operators react to tram?	Lothian Buses considered unlikely to launch head-on attack. First could introduce competition, but thought unlikely as it might re-ignite the bus-war. Tram likely to be operated by one of the local majors (Lothian, First, Stagecoach or Arriva), so outcome is difficult to predict. Overall likely to see structured reduction of Lothian's services to reflect the abstraction of passengers to tram, and reduction of bus priority on Leith Walk

25	Steer Davies Gleave	15/07/2003	Mode Preference	This note reviews the use of tram IVT of 0.9 (see SDG 19)	Mode constant using 0.9 gives range between 2.1 and 4.6 minutes. Using 0.8 gives 2.9 to 6.6 minutes. The values derived are , sometimes, substantially less than values derived from SP surveys and employed elsewhere. SP results are not readily transferable. In addition there are mitigating reasons for being conservative. However Edinburgh's higher than average income may confer a higher preference for tram	IVT of 0.8 for Edinburgh tram is a reasonable assumption, given lack of local SP data. This should be collected as part of the general data refreshing of the LUTI model planned for Autumn 2003
26	Steer Davies Gleave	15/07/2003	Testing of 'Horseshoe Line One'	To consider sensitivity testing of a horseshoe Line One, with no service between Newhaven Road and Lower Granton Road. This was done using the Design Freeze preferred case for 2011, P22, but journey time for the 'missing' section coded as 10 hours to make it unattractive	In summary, this option would reduce annual revenue by £1m, reduce annual patronage by 1.2m, reduce initial construction costs by £25m and reduce annual operating costs by £60,000 pa	The decrease in revenue of £1m pa suggests the scheme would not cover its operating costs until well beyond 2011, making it unprofitable to any potential operator
27	Steer Davies Gleave	23/07/2003	Princes Street	To consider the desire for segregated running on Princes Street or for mixed running, given the demands for space	Observed bus journey times are around 2 minutes higher than modelled for Line 1. If mixed running, tram times will be longer, therefore 2 tests were undertaken to add 3 and 6 minutes respectively to tram running time. Adding 3 minutes reduces demand and revenue by 8%, adding 6 minutes reduces revenue and demand by 13%, operating costs increase, and an additional 2 vehicles are required	Goes on to discuss operational interaction between bus and tram operations, but does not resolve the issue of segregated or mixed running on Princes Street
28	Steer Davies Gleave	31/07/2003	Operations Update	Sets out various updates to the input to operational assumptions, run times and operating costs to date, as a result of design and development work	Run Times - OBC 37.4min, Max Priority Assumption 33.6min, Full signal delays with no priority from Babtie 15/5/03 46.4min, Modified signal delays as supplied by Babtie 15/5/03 43.0min, as modified by SDG to reflect expected priority 40.5min	40.5min is basis of current evaluation
					Fare Collection Method - onboard conductors were not assumed in the OBC, but are included in all subsequent tests - as a measure of sensitivity of operating costs to the provision of conductors, tests have been carried out for at-stop machines	On-board conductors assumed
					Service Frequencies - OBC and initial tests used 10tph in each direction, more recent tests use 8tph as the peak frequency. It has been generally assumed that this frequency will operate in the Monday-Friday peak and interpeak, and during Saturday shopping hours	For operating cost estimation, time periods have been standardised, and Table 1 defines the time periods and the frequency assumed for each

					Short Sections of Single or Interlaced Track - discusses the possibility of using sections of single track, with associated delays entering and leaving same, due to crossing turnouts. A test using the run time model has been carried out for 2 possible cases on an 80km/h section, where the effect would be greatest	Testing shows delays of 10 and 17 seconds respectively. Unlikely to have a significant effect on resources, but several occurrences could result in an extra tram being required in each direction. RevSigDel8 is particularly sensitive to small increases in run time, due to 'squeezing' of layover time.
					Operating Cost Model -	Loop route is now modelled as 2 separate services, clockwise and anticlockwise
					Operating Cost Model - differentiates between conductor operation and ATMs in terms of several variables	New version compared with old, and results are within 2.5%, well within the accuracy of the forecasts
					Operating Cost Results - details a series of Scenarios which have been tested, and the resulting operating costs and fleet size. Reconciliation with OBC Operating Costs - explains differences between RevSigDel8 and OBC, and tabulates incremental effects of changes since OBC	Current central case is RevSigDel8, with operating cost of £5.91m. Comparisons made between this and other scenarios Current run time = 40.5min, was 37.4min; peak frequency = 8tph, not 10tph; now assumed conductors on board, rather than ATMs. Additionally current case uses more detailed model, whereas OBC used flat rate of £3.00 per vehicle kilometre.
29	Steer Davies Gleave	28/06/2003	Revenue Calculations	Summarises the methodology, assumptions and parameters used in the estimation of revenue totals for Line 1	Considers Annualisation, Generated Demand, Ramp-up Period, Fare Evasion and Ticket Type	Annualisation factors AM=557, OP=2335, PM=563. Generated demand = 15% of off-peak revenues. Ramp-up period lasts 3 years with opening year (2009) experiencing 75% of steady state demand and revenue, 85% in year 2 and 95% in year 3; Fare evasion - assumed 5% of revenues lost through fare evasion; Ticket type allowance - the difference between adult single fare (modelled) and average yield (travel cards, season tickets etc). Awaiting data from Lothian Buses, currently using 80%; Adjust price base - conversion of May 2001 to April 2003, using 1.5% per annum increase (as per Bus & Coach Stats 2001-02)
30	Steer Davies Gleave	30/07/2003	Review of DELTA Planning Forecasts	Reviews revision to planning assumptions and DELTA parameters, and aspirations of Waterfront developers (as set out in Note 21). Data received from MVA setting out DELTA floorspace forecasts - Reference Case and Development Case (only for Office other sectors have single set of assumptions) Both scenarios show much increased rate of office development - Waterfront zones having additional 136,782sqm and 308,743sqm of office in 2011 and 2026 under Reference Case, compared to 26,259sqm and 43,224sqm previously. In Development Case, growth is substantially higher at 217,057sqm and 454,782sqm. Development Case broadly matches aspirations of Waterfront developers, although skewed towards zone 40, to the detriment of the remainder.	Questions why zone 42 differs so much in take-up between the 2 scenarios, when both have exogenous input, and why zone 44 does not have any exogenous input under the Reference Case scenario (a 10,000sqm office is currently under construction Also notes residential permissions are fully utilised by 2006, however the total level of permissions by 2026 is 35% lower than previously. States key issues as being 1) distribution of permissions, hence take-up, is sometimes materially different from the Waterfront data 2) some omissions of both exogenous and permissions inputs, 3) differences in the office space take-up in Zone 42 under the two scenarios, and 4) fundamentally, which of the two scenarios should be the central case for scheme development	issues raised, not resolved in this paper. Addressed by MVA in another paper.

31	Steer Davies Gleave	13/08/2003	Public Transport Trip Rates	New PT Demand matrices received from MVA on 30th July. Reviewed to understand changes since last set of matrices were issued in April. Of particular interest is the demand from the Waterfront areas where LUTI model is forecasting materially increased office space but only marginal changes to PT demand matrices. Trip rates were produced at TRAM zone level for origins and destinations in the AM peak for 4 scenarios (new 2001, old 2011 (R1O), new scenario 1 2011 (R1C) and new scenario 2 2011 (R1D))	Typically trip rates are in the region of 0.5, and overall seem sensible. Significant variation in trip rates between zones, with up to 6.5 origin trip rates in city centre. Biggest change appears as large increase in Origin PT trip rates in city centre, despite the fact that new matrices are based on lower resident populations. Significant variation in origin trips from Waterfront zones	Waterfront variations explained by a change of character of area due to regeneration, and old data. Generally new matrices show large increase in city centre as a trip generator, population forecasts for Waterfront area have been revised and are now significantly lower than before, and Granton destination trip rates are lower in 2011, with minimal changes from 2001 demand, considering the level of development taking place
				Using same procedure, trip rates for 2026 AM peak for Scenarios 1 and 2 were generated	Total trip rate for Edinburgh is again around 0.5, and PT shares are around 25%, as in 2011. Overall population increases by 11% yet number of PT originating trips falls, PT share falls in both scenarios by up to 3% and trip rates and PT share both fall in the inner city zones while increasing slightly further out. Scenario 2 sees Zone 42 experience a doubling of jobs, but only producing 22 additional PT trips	Overall the modelled origin trip rates seem reasonable, destination trips are underestimated
32	Steer Davies Gleave	13/08/2003	Forth Ports Alternative Route - Draft for Comment	Considers the merits in revising Preferred Alignment to serve Forth Ports development of Western Harbour area	Proposal increases route length by 250m, adds one new stop. Additional run time = 42 seconds, with 10 sec dwell time at stop. This is taken as a reduction in layover time, therefore no change in operating costs, but operating plan is weakened in robustness. Additional capital cost = £2.5m No explicit model run undertaken to evaluate Reduced through demand of 0.06m in 2011 (=£0.06m in revenue)	None - Draft for Comment
33	Steer Davies Gleave	22/08/2003	Yield Calculations v2	So far, a factor of 0.8 has been used to estimate the average yield (use of season tickets etc).	Lothian Buses has produced data on ticket range by time of day and ticket type	Line 1 will use yield factor of 0.92 for AM modelled period and 0.87 for OP and PM modelled periods. (post dates Faber Maunsell Note 14)
34	Steer Davies Gleave	20/08/2003	Updated Operating Costs	Sets out the impacts on operating costs of adopting a consistent set of assumptions between Lines 1 and 2.	Comparisons between SDG original position, and Semaly proposal for 1)Management, Finance and Admin staff, 2)Operations Staff, 3) Maintenance and Engineering Staff, and 4) Insurance and Policing	SDG to adopt Semaly approach for Insurance and Policing as a service-km run based on annual vehicle kilometres. Compromise position set out for other categories, but no agreement at this stage
35	Steer Davies Gleave	03/09/2003	Operating Costs and Revenue Forecasts	Provides latest operating cost and revenue estimates for the Business Case as required by Grant Thornton. Supercedes all previous estimates	Operating Costs - best estimate on current information. Revenue - Is not final estimates, based on latest demand data but using earlier modelling information	Operating costs - Assumptions and parameter values have been generally agreed with Semaly/Faber Maunsell, but assumes marginally higher levels of staffing, therefore slight inconsistency with Line 2. Revenue - still need to run the latest demand data (which was provided 29th Aug) through the latest network modelling information.

36	Steer Davies Gleave	01/09/2003	Revenue Calculations	Note 29 set out the Line 1 revenue estimation process. Following discussions with MAWG and Faber Maunsel this note sets out an agreed approach for the consistent estimation of tram revenue	**Annualisation** factors AM=557, IP=2425, PM=563. **Ticket Type Allowance** AM=0.92, IP and PM = 0.87. **Fare Evasion** = 5% of revenues lost due to fare evasion. **Opening Year and Appraisal Period** 2009 for 30 years to 2038. Revenue Growth - to produce a 30 year profile, necessary to apply average annual growth between 2011 and 2026, the modelled years, assumed to remain constant after 2026, and backward extrapolation to 2009-2011. **Ramp-up period** 2009=75%, 2010=85% and 2011=95% steady state demand and revenue for Business Case, **fare price base** converted from May 2001 to April 2003 using 1.5% per annum. Line 1 previously applied 15% uplift to IP demand and revenue to reflect **generated demand**, this is no longer applied due to LUTI model outputs.
37	Steer Davies Gleave	12/09/2003	Sensitivity Testing	Sets out the proposed model sensitivity tests for Line 1. Purpose is to assess the sensitivity of the Central Case results at three levels: 1) forecasting assumptions, 2) Robustness of overall case and 3) Regeneration.	Key issue is the appropriate level for the tests, given the hierarchic nature of LUTI model, with the TRAM/DELTA strategic tool providing mode split, distribution and other functionality and deriving matrices for the DAM model	Where a test is unlikely to have material impacts at the strategic level (notably mode split) the use of DAM assignment model will be employed. Table shows proposed level of testing, with 5 LUTI runs proposed, and two DAM only runs

Doc	Authors	Date	Title	Context	Issue	Resolution
1	Faber Maunsell	22/01/2003	Edinburgh Tram Modelling v1.2	To assist MAWG to develop a consistent approach to deriving tram demand for Line 1 and Line 2 (for discussion, not prescriptive)	Model Enhancements - size of CSTM Zones, age of public transport service definitions and age of demand data	Recommended - Disaggregation of tram catchment area zones to enumeration districts with catchment area network enhancements. Full survey programme proposed, although not in time for STAG appraisal
					Mode Choice methodology - SDG raised issue of a mode choice model to operate between LUTI and the detailed model. FM consider inappropriate to carry out mode choice by assignment	Recommended - No mode constants in TRAM, future year LUTI output aggregated to single total travel market matrix, mode choice model developed between LUTI and detailed models
					Modelling fare regimes - difficult to model. 3 types Distance based, Zonal, and Fare Stages	Recommended - if bus service definitions are not updated, distance based should be used, updated to current fares - if updated, should introduce Stage-based regime to provide a proxy for Zonal regime for tram lines
					Overall modelling methodology - notes previous discussion about consistent approach between the 2 Lines	Recommended - 9 point bulleted list of additional steps to be taken
					Bus Operator Competition - agrees with SDG interpretation of 3 potential responses—Competition, Complementary, and Neutral	Recommended - Not appropriate to update the modelled public transport service definitions in either the do-minimum or do-something models. Standard practice to maintain current bus routes unchanged and run sensitivity tests to assess the effect of competitive reaction.
2	Faber Maunsell	03/02/2003	Tram Fares	A review of single cash fare and weekly pass single fare equivalent from other tram systems in UK	Notes difficulties in making comparisons due to wide range of ticket types etc	Broad pattern of around 25-40% for premium fares. Accepts SDG assumption of 33% premium on Line 1 fares, to be reviewed later during sensitivity testing.
3	Faber Maunsell	12/03/2003	Demand and Revenue Forecasting	A paper to set out the modelling requirements, and to identify the appropriate level of detail required at each stage of the process, namely Development of Policies and Strategies, Scheme Design and Appraisal, and Procurement of Funding	The more detailed the model, the more rigorous the level of detail and data is required, and an appropriate balance between market segmentation and spatial disaggregation is found. Notes LUTI has high market segmentation but low spatial disaggregation	Recommended - Mode Choice (at both main and sub levels) should be dealt with using mode choice models, and not by LUTI (main mode) or by assignment in the PT network model (sub)
4	Faber Maunsell	10/04/2003	Airport Demand	Considers how data from heavy rail studies to Edinburgh (and Glasgow) Airport can best be used to inform the Edinburgh Line 2 Study. SKM data regarding airport employment and demand data, both historical and forecast (believed better than that used in DELTA and CSTM, and patronage forecasts for heavy and light rail	How to best use the SKM data in the LUTI and CSTM models (a long term objective), and considers 5 more pragmatic approaches to incorporate SKM data into PT Detailed Assignment Model (PT DAM)	Recommends using SKM forecasts, including heavy rail, to replace airport trips in the PT DAM model. All three matrices are combined and PT DAM used to assign between bus, tram and train.
5	Faber Maunsell	06/05/2003	Interim Patronage and Revenue Forecasts	Report, detailing all work undertaken to date, and is still 'work in progress'. Introduces the Line 2 Route, sets out Modelling Assumptions, identifies Changes to the Model, reports Model Runs and Model Results (annual patronage and annual revenue), considers Newbridge Spur and Airport Heavy Rail, undertakes Sensitivity Tests and Comparisons with other UK LRT schemes	This is a full report	Assignment parameters used. Tram fare = 1.33x urban Bus fare, walk time weight = 1.6, Wait time weight = 1.8, Bus ride time weight = 1.1, Rail ride time = 1.0, Interchange penalty = 10min. Urban Bus Fares 2001 Lothian Buses (50p up to 800m ride, 80p up to 7km ride and 90p up to 15km ride

6	Faber Maunsell	07/05/2003 Model Changes	Memo to summarise changes made to the models for use with the Line 2 Study	No changes made to LUTI model	Recommends - LUTI model should represent the particular scenario under test. Recommends - TRAM should be coded to provide the equivalent to the TRIPS scenario coding
				Changes incorporated into the Faber Maunsell and SDG DAM models	Recommends - Changes presented in tabular form, with assessment of scale of impact
				Changes incorporated into the Faber Maunsell PT DAM model	Recommends - Changes presented in tabular form, with assessment of scale of impact
				Changes yet to be incorporated into the DAM models	Recommends - Changes presented in tabular form, with assessment of scale of impact
				Changes to be considered for incorporation into the DAM models	Recommends - Changes presented in tabular form, with reason for consideration
				Proposed changes to the production of demand for the DAM models	Recommends - Changes presented in tabular form, with assessment of scale of impact
7	Faber Maunsell	15/05/2003 Employment and Trip Growth	To consider known developments along Line 2 corridor, and compare them with current LUTI model values	LUTI zones are large, and some contain several developments. Those examined are LUTI 46, 52 and 53. Then considers the LUTI growth to produce growth for PT DAM model, which has smaller zones. Growth in highway and PT trips to some areas are very low, and trips to one zone appear to be at the expense of its neighbour	LUTI has problem in predicting these developments because they are not the result of organic growth, and require adding as exogenous growth
8	Faber Maunsell	15/05/2003 Model Changes - Update	An update of doc 6 (above)	None of doc 6 changes have been implemented as yet, some more changes have been added to the list as a result of problems found on the Line 2 and Network Effects work. Additionally one change to LUTI model has been noted	As per doc 6, all changes presented in tabular form, with assessment of scale of impact or reason for consideration
9	Faber Maunsell	30/05/2003 Line 2 Matrix of Runtimes (minutes)	A matrix showing run times between stops on Line 2		
10	Faber Maunsell	04/06/2003 Line 2 Sensitivity Tests	A request to MVA to produce models and demand for a series of sensitivity tests, with necessary coding instructions	Asks if Congestion charging has been tested in LUTI and DAM, and if there is some accepted coding for that. Requests adjustment of wait time on Competitive Bus by specific formula	
11	Faber Maunsell	18/06/2003 Airport Growth	This note compares demand matrices used by SKM for the 'Rail Links to Glasgow and Edinburgh Airport Rail Study' and the Detailed Assignment Model (DAM) matrices produced by MVA	SKM data was coded in CSTM zones, with no easy way to convert to DAM zones	Time consuming derivation and where necessary, aggregation undertaken
				Direct comparisons between DAM matrices and SKM matrices is not simple. SKM are daily or annual, while DAM are hourly periods	Attempts at factoring and interpolating show there is not much similarity between the matrices
				DAM model shows inclusion of Line 2 to Airport reduces the number of trips to/from the Airport, while PT mode share remains constant	May be a LUTI model effect or the result of disaggregation of LUTI zones to DAM zones.
				SKM survey matrix is over 5 times larger than 2001 DAM matrix. Do-minimum SKM forecasts has almost 9 times more PT trips than the 2011 DAM	DAM matrices use Scottish Household Survey Travel Diary annualisation factors, which may not be representative of trips to/from an airport
				According to SKM, adding a rail and a tram link leads to 70% increase in PT trips, adding Line 2 to DAM produces little or no effect	MVA to examine

12	Faber Maunsell	24/06/2003	Comparison of Model with Bus Surveys	Babtie conducted bus occupancy surveys for all 3 lines in May 2003. These have been compared to the latest version of the model provided by MVA	Line 1 (summary examination) number of buses passing through screenline is of the right order, flows of passengers are low, except for AM peak, which is high Line 2 Dalry Screenline has significantly more buses inbound than observed, outbound of the right order Line 2 Ring Road screenline all bus flows are low except Calder Road outbound in the peaks Line 3 data tabulated but no commentary	Overall, some large discrepancies found which need further investigation. Noted that it is difficult to constantly update changes to bus network. There appears to be scope to improve calibration. Suggests matrix estimation could be applied
13	Faber Maunsell	03/07/2003	Tram Framework Report Forecasts	Line 2 forecasts under development note that patronage forecasts are low when compared to Final Tram Framework Report (FTF) (16/1/03). The difference between revenue forecasts is even greater	FTF concludes that average tram fare is 42% higher than maximum bus fare (£1) yet also reports that tram fares are assumed to be the same as bus fares. Bus fares quoted in FTF are similar to 2003 Lothian Buses fares. Error arises in Modelling of Fares, with assumption of 50p+10p/km, meaning modelled fare is generally higher than actual fare. Serious errors arise when this fares function is used to calculate revenue	FTF fare representation is less inaccurate for shorter ride lengths, so Lines 1 and 3 are less affected, however only Line 1 covers its own operating costs. Neither FTF or current work has considered the issue of return fares, fare evasion or travel passes, so reference values are an overestimate.
14	Faber Maunsell	14/08/2003	Patronage and Revenue Assumptions.	To compare issues resulting from separate notes from Line 1 and Line 2	Annualisation factors Off Peak generated revenue Cap the off peak fare to half the Day Saver fare in revenue calculations Revenue loss factor due to passes, savers and concessions Revenue loss due to fare evasion Initial year of Operation Ramp up Revenue beyond 2026	M&AWG agreed on compromise between 1 and 2, and all work to use same values AM=557, OP=2450, PM=563 (Line 1 had used OP=2335) M&AWG didn't discuss. Line 1 used 15% added to off-peak for 'generated trips' Appears Line 1 patronage is not adjusted. Line 2 wonders if Line 1 is double counting the impacts in LUTI. Notes the need for such a factor has not been established, or the appropriate value M&AWG didn't discuss. Line 1 Not done - very few trips would be affected. Line 2 recommends this procedure is adopted for Line 2 and Network Effects. Impact on Line 2 off-peak revenue is only about 1% M&AWG - Line 1 using 0.8, Line 2 suggesting 0.74 including fare evasion (approx 0.8 excluding fare evasion). Line 2 comments that a higher value may be appropriate M&AWG notes Line 2 suggesting between 3% and 15%. Line 1 using 5%, Line 2 suggesting 7% but will adopt Line 1 figure of 5% Line 1 using 2009, Line 2 will adopt this for consistency Line 1 base demand extrapolated to 2009 using linear 2011-2026 trend. 2009=75%, 2010=85%, 2011=95%, 2011+=100% Line 2 to adopt this for consistency, despite minor differences Line 1 base demand extrapolated to 2026 using linear 2011-2026 trend. Line 2 suggest more conservative approach, but will adopt for consistency unless MVA or DSC recommend otherwise
15	Faber Maunsel	19/08/2003	Revenue Loss	Tables from Lothian Buses relating to patronage, ticket type and time of day (commercially confidential)	Paper notes that the tables replicate values giving the assumption of 93% revenue loss for a total day	none

16	Faber Maunsell	18/08/2003	Intermediate Patronage and Revenue Forecast Report	Report, detailing all work undertaken to date, and is still 'work in progress'. Introduces the Line 2 Route, sets out Modelling Assumptions, identifies Changes to the Model, reports Model Runs and Base Forecasts (annual patronage and annual revenue), considers Newbridge Shuttle and Airport Heavy Rail, undertakes Sensitivity Tests and Benchmarking against other UK systems	This is a full report updates doc 5 more detail regarding Model Runs and Forecasts	Details models used - LUTI, Highway DAM, and PT DAM Assignment parameters used: Tram fare = 1.33x urban Bus fare (except Newbridge tram fare=1.33xinter-urban bus fare, Airport fare=half Airlink bus return fare, walk time weight = 1.6 Wait time weight = 1.8, Bus ride time weight = 1.1, Rail ride time = 1.0, Interchange penalty = 10min. Urban Bus Fares 2001 Lothian Buses (50p up to 800m ride, 80p up to 7km ride and 90p up to 15km ride. Ramp-up continues as 75%/85% 95% over initial 3 years

Doc	Authors	Date	Title	Context	Issue	Resolution
1	MVA	16/01/2003	LRT Testing - Main Steps, Timescales and Other Issues v2	Sets out the background of LUTI, TRAM and DELTA models and their operation/interface/timescales for running.	Current Reference Case includes: extension to CPZ, West Edinburgh Busway, Straiton-Leith QBC, Newcraighall station and Edinburgh Park station - NO post 2001 highway schemes included. City Centre Traffic Management measures are NOT included. Need to agree a list of 'Reference Case' measures at strategic and detailed assignment levels, to include junction changes etc. Planning forecasts for TRAM do not extend beyond 2016.	Vehicle operating costs and values of time are taken directly from, or derived from TEN. Bus fares based on May 2001. Bus services based on March 2001 Edinburgh Travel Map. Rail based on Winter 2000/01 timetable. Parking charges are 2001 actual charges. £2 congestion charge assumed to remain the same in real terms. Urban Bus Fares (50p up to 800m ride, 80p up to 7km ride and 90p up to 15km ride and increase linearly above 15km). Interchange penalty = 10min, In vehicle time default 1.1 for bus and 1.0 for rail BUT 1.2 used for bus and 1.0 for rail/LRT in the first Line 1 runs. Waiting time default is 1.8, but 1.7 used in initial Line 1 runs. Boarding penalty can be applied, default is zero, Line 1 work so far uses 15minutes.
					Notes other issues - Reductions in road capacity from on-street LRT running; Effects of LRT on junction capacities/operation; Bus Speeds; Approach to modelling Greenways; and Selective vehicle detection	Capacity being reduced by 50% where on-street running; junction capacities have not been revised; CSTM3 models bus speed as 75% of car, LRT speeds reflect SDG timetable coding; effect of Greenways is currently modelled; SVD can be modelled by factoring down junction delays.
2	MVA	05/02/2003	Use of CEC/tie LUTI Model - Aspects of PT Modelling	Note deals with three major areas within the framework of the LUTI model, namely representation of fares, use of common assignment parameters, and possible enhancements to the model of relevance to the LRT modelling work	PT DAM model uses Lothian Buses 2001 fares and CSTM default rail fares. TRAM model updated to allow 'rover' type ticketing. No facility for modelling season tickets, or 'additional' journeys made by holders in either model. Through ticketing is not currently assumed in either model. Improved interchange facilities cannot be reflected in PT DAM interchange penalty. Real time information provision - cannot accurately model this	Propose to use REDFxx function for PT DAM to model 'rover' tickets. TRAM model can be modified for through ticketing, more difficult in PT DAM. Use of mode constraints and/or IVT contributions (Bus 1.0 LRT 0.9).
					PT Assignment Parameters for PT DAM - discussion of weighting factors	Good evidence to support current weighting for walk and wait times - 1.6 and 1.8 respectively (TRAM to be revised). CSTM IVT values to be applied to TRAM - 1.1 bus and 1.0 Rail, and IVT for LRT should be 1.0. Interchange penalty should remain at 10minutes (TRAM to be revised). Changes in real value of time from Transport Economic Note will be used. If these parameters are used, LRT fare of bus x 33% would seem excessive
3	MVA	05/02/2003	Assignment Models - Ensuring Consistency	Discusses issues associated with use of LUTI DAM models, both highway (DAM-H) and public transport (DAM-PT) to establish consistent approach for each Line	Considers how model updates and validation will be undertaken, and the relationship between TRAM/DELTA and DAM-PT and DAM-H	Agree model assignments. Agree base year network coding (additional junctions and other base year changes) and agree base year zoning. Outlines which consultancies can undertake or co-ordinate update work
4	MVA	18/02/2003	Planning Assumptions	Lays out Planning Assumptions used as forecast inputs in the DELTA element of the LUTI model. Inputs are required for each forecast year regarding the amount of 'developable' floorspace for Residential, Retail, Office, and Industrial land use. Model takes as input this 'permissible development' and internal mechanisms within DELTA determine how much of, and where this developable land is 'taken up'	Lothian Structure Plan to 2016 used as data source, in some cases land use categories broken down to district level. Constant annual release of land assumed. Beyond 2016 the model assumes the same annual pattern of land release.	Take-up rates vary, residential currently around 90%, Retail is 85% and Industrial at 40%. Office take-up at around 25% is not unreasonable. Exogenous development can be manually added to DELTA

5	MVA	19/02/2003 Public Transport Modelling - Final Parameters v1	Summarised the final parameters selected for PT modelling at both the strategic level (TRAM) and the TRIPS based Detailed Assignment Model (DAM)		Final Specification: Walk time weighting = 1.6, Wait time weighting = 1.8, IVT Bus = 1.1, IVT Rail = 1.0, and IVT LRT = 0.9. Modal constants are not used. Interchange penalty = 10 minutes (5min for LRT/LRT) No boarding penalty. Forecast changes in real values of time specified in Transport Economic Note will be used. LRT fare will be bus + 33% until advised otherwise
5	MVA	24/06/2003 Public Transport Modelling - Final Parameters v2	Summarised the final parameters selected for PT modelling at both the strategic level (TRAM) and the TRIPS based Detailed Assignment Model (DAM)		As above, but tabulates Key Parameters and identifies Running Batch Files changed
6	MVA	17/03/2003 Edinburgh Trams - Model Application Report	A record of the application of the LUTI family of models in the context of the development work for Edinburgh LRT Lines 1, 2 and 3	A descriptive report, detailing the purpose and relationship between the various modelling packages used. LUTI family comprises strategic multi-modal transport model (TRAM) and a land use model (DELTA) which together form LUTI. Forecast growth from LUTI is disaggregated and applied to separate TRIPS based Detailed Assignment Models (DAM) for highway (DAM-H) and public transport (DAM-PT)	MVA continues to run TRAM/DELTA models, but Line teams will run DAM models in their own offices, but feeding back changes to MVA for incorporation into 'master' networks
7	MVA	12/05/2003 Upgrade of JIFGRO	Describes changes to the JIFGRO process to incorporate a 'public transport elasticity' factor. JIFGRO is an interface used to disaggregate TRAM/DELTA matrix forecasts to the DAM matrix level	Elasticity factor 'directs' growth in public transport trips within a strategic zone to the zones which have seen the greatest improvement in PT supply. The key to the process is that overall growth or decline for the origin-destination movements at the DAM level is always controlled by the strategic model output.	Elasticity value of -0.5 is proposed for this work. New CSTM3 forecast for 2001 is being produced using CSTM3A planning data to provide more sensible 2001 DAM matrices. DELTA is being updated to incorporate 2001 CSTM3A planning data. JIFGRO has been re-jigged to work in terms of adding trips bases on TRAM/DELTA growth to the DAM 2001 matrices rather than using growth factors
8	MVA	16/06/2003 DAM Batch Files	Details changes made by MVA to DAM model batch files in response to requests from the tram line teams		
9	MVA	01/09/2003 Annualisation Factors	Details the assumptions made in the development of annualisation factors		Car: AM to annual 585 IP to annual 2,286, PM to annual 556 PT: AM to annual 557 IP average to annual 2,425, PM to average 563 (IP to Annual Line 1 2,335, IP to annual Line 2 2,515)
10	MVA	07/08/2003 Model Update - Summary, New Data Collection and Analysis	Summarises the current position regarding the LUTI models in respect of age of underlying base demand data, benefits of updating the model, main elements of the survey programme, proposed survey timetables, and incorporation of 2001 Census data	Underlying OD data comes from late 1980s. 2001 census contains relevant travel to work/education data. An upgraded model would benefit TIE, CEC and others in the coming years	Proposes a package of measures to gather new data and construct new DAM-H and DAM-PT matrices, and incorporate into revised TRAM matrices. Validate new '2003' DAM-H and DAM-PT, re-validate TRAM and then update DELTA base year database and Reference Case

11	MVA	27/08/2003	Modelling Issues - August 2003	Information note prepared to describe modelling issues which could be seen as being of concern, in terms of the successful provision of model results to TIE and their study teams	Age of base data Model Convergence Future growth in Commute Trips Parking in Non-City Centre Zones Limitations of Modelling Pay-Once Tolls Resources Park and Ride General Model Updates	New highway and PT OD data to be collected Autumn 2003 2001 census data to be incorporated into DELTA Level of convergence is monitored for each test, so any suspect convergence is identified before release and investigated More detailed application of fresh data sources proposed May be possible to experiment with additional links to relevant zone centroids coded with specific speed-flow relationships to stimulate parking restraint to some extent Can be well modelled in TRAM. Simplified post-assignment adjustments are necessary, based on SHS Travel Diary data. 'pay-once' tolls cannot currently be modelled in DAM-H TRAM being fine tuned to reduce iteration rates and new PC being used May be necessary/desirable to adjust P&R element of Line 2 forecasts to obtain more conservative estimate of patronage Number of enhancements made to TRAM and DELTA recently in response to MAWG inputs. Also coding changes to DAM networks via various study teams
12	MVA	08/10/2003	Bus Counts/Modelled Flow Comparisons	This note updates Faber Maunsell note of 24th June	2001 matrices have been updated and recoded to incorporate March 2003 Lothian and First 'city' bus services. This now gives much greater correlation between bus and passenger numbers observed and in the model	There is no programme at present to improve the base year model validation from the current situation
13	MVA	16/01/2003	LRT Testing - Main Steps, Timescales and Other Issues **Information Note 11, v1**	To set up the steps required to run the various elements of the LUTI model, and the implied timescales for undertaking different types of runs		Parameter assumptions are those set out in MAWG Note - LRT Testing - Main Steps, Timescales and Other Issues - since superceded
14	MVA	14/07/2003	LUTI Model - Background to Data Sources **Information Note 12, v1**	Explains the history of the underlying data used in the development of the LUTI Model. Considers how CSTM model provides data for different levels within LUTI model, and how/when the raw data was gathered.	Highlights OD information from late 1980s is still in core CSTM.	Fresh OD data is required, 2001 census data to replace 2001 forecasts, PT network has been updated to March 2003
15	MVA	31/07/2003	LUTI Model 2003 Update **Information Note 13, v2**	Describes the benefits of an upgrade with new up-to-date data, proposes a detailed data collation programme for Autumn 2003, the main steps in upgrading the model, and proposes possible model enhancements	The objective of an update would be to re-calibrate and re-validate bith the TRAM/DELTA model and the DAM-H and DAM-PT assignment models based on new transport survey, 2001 Census and planning data	Costed proposal identifying 5 tasks, from data collection to model validation
16	MVA	25/08/2003	Development and Use of the CEC LUTI Model **Information Note 14, v2**	This note summarises the development, enhancement and use of the CEC LUTI Model	Provided Background, Construction and Calibration Information, details of Subsequent Changes and Enhancements Made to the Model, and identifies the Uses of the Model to date	

Doc	Authors	Date	Title	Context	Issue	Resolution
1	DSC		not made available			
2	DSC		not made available			
3	DSC		not made available			
4	DSC		not made available			
5	DSC	16/10/2001	Proposals for involvement of Property and Development Specialists	Discusses the way in which additional property and development researchers could provide additional input to the study process	Considers an interview based approach against a paper questionnaire approach, and identifies fine-tuning inputs to DELTA as being the most likely output	
6	DSC	19/10/2001	Proposals for Local Economic Model Acceptance Tests	Proposals for strategy tests to demonstrate that the Local Economic Impact model (LEI) is performing reasonably	Proposes a series of tests to validate the LEI model, both at LUTI alone and LUTI/LEI levels	States which scenarios should be used for testing
7	DSC	25/10/2001	Inputs to Define Land-use/Economic Scenarios	Sets out the range of inputs to the LUTI/LEI models which are needed in order to define the scenarios within which alternative strategies are being tested	Discusses the various inputs required, under Demographic Scenario and Economic Scenario, and local variations	Does not prescribe any particular variables, recommends discussion to agree.
8	DSC	26/10/2001	Structure Plan Interpretation	Identifies key conclusions with regard to information contained within the structure plan relating to residential, employment and retail	Housing	Households to increase by 61,500 between 2000 and 2015, total of 72,300 dwellings to be built, equivalent to 4,800 per annum. Sites will come from Housing Land Audit, Local Plan sites not yet included in Housing Land Audit, Windfall sites and New allocations
					Economic Development	Number of jobs to rise by 43,000 between 2000&2015, to expected total of 448,000 by 2015. Land supply identified in audit is 1200ha, but only 900ha is marketable
					Retail development	Should be located in town centres first and foremost, with development only occurring outside if "caters for a need that cannot be satisfied by development in the town centres'
9	DSC	10/01/2002	Use of Housing Needs Assessment Survey (revised)	Explains how this survey questionnaire was drawn on to provide certain inputs to DELTA, and test some of the hypotheses in the model	Discusses Use of the Survey, Reasons for Moving, Length of Time in Present Dwelling and Housing Expenditure and Value	Allows the rates of response in the model to be based on Edinburgh data rather than from British Household Panel Survey
10		03/12/2001	Use of Observed Data on 1991-2001 Land Use Changes (revised)	TRAM base year will be 2001, and LUTI/LEI modelling will progress in 1-year steps from there, but historic data is required to model time-lags which refer to changes over the past 10 years	The note describes - the different data available, the different approaches which could be taken, the approach chosen and its implementation, some related points on the use of transport model outputs and of the non-household population, and the DELTA software features to be used	Identifies how data should be used
11	DSC	06/12/2001	Generalised Cost Files from TRAM and CSTM3 (revised)	Deals with the production of the combined TRAM/CSTM3 generalised cost file needed by DELTA	Merging TRAM and CSTM generalised costs	Combine TRAM and CSTM3 data into one consistent set of matrices at the 93-zone level before passing to DELTA, for DELTA to do the aggregation from zone to area level
					Trip or Tour numbers	Critical that figures be produced on a production-attraction basis, not origin-destination basis. Only need to deal with trip or tour numbers from TRAM model
					Output File and Format	Specifies how the coding should be presented
12	DSC	03/12/2001	Proposals for Treatment of Environmental and Other 'Soft' Factors (revised)	Responds to view that more attention needs to be paid to environmental and other 'soft' factors as influences on the decisions of households and firms, and considers Segal Quince Wicksteed report on environmental improvements in the Royal Mile	Considers the 'default' treatment of environmental and 'soft' factors in the model design, and considers potential improvements given the findings of the SQW report	Presents a table of proposed changes to the modelling process, for discussion, relating to Shopping, Tourism, Household Migration, Household Location, Business Location (within area) and Business Location (investment by area)
13	DSC	03/12/2001	Proposals for Calculation of Generalised Costs Outputs from TRAM (first draft)	Specifies the generalised costs to be output from the TRAM program, following the decision that it is impractical to output them from EVAL		Presents calculations to derive generalised costs
14	DSC	11/01/2002	Proposals for DELTA-to-TRAM Interface	Note sets out the suggested details for the DELTA-to-TRAM interface	Identifies ways in which the interface can be refined, considering three categories of data: Changes in travel-to-work patterns; Changes in goods vehicle movement patterns; and other planning data from which the EFM calculates growth factors	Highlights key points which need agreement, and factors which need further consideration
15			not made available			

16	DSC	23/01/2002	Implementing the Treatment of Environmental and Soft Factors (revised)	Follows discussion of points made in Project Note 12. Summarises the agreed treatment of environmental and soft factors, and identifies the inputs needed from the transport model, the additional changes needed in the land-use/economic model, and the additional coefficients to be defined in the land-use/economic model		Identifies required modifications in the treatment of environmental and soft factors, and identifies a series of additional coefficients required for incorporation
17	DSC	30/01/2002	Additional Processing of Environmental Inputs from TRAM (revised)	This note defines some software changes and additions needed to process the environmental inputs expected from TRAM (more precisely, from ENEVAL)	Need to convert Zonal Totals to Ratios, and to Tabulate Environmental Variables	Technical coding issues
18	DSC	30/01/2002	Additional Processing of Accessibility Outputs from DELTA	This note defines some software changes and additions needed to process the accessibility outputs for presentation	Need to output accessibility variables to CSF files for tabulation and mapping	Technical coding issues
19	DSC	07/02/2002	Progress and Results for Discussion at Academic Panel Meeting, 12th Feb	Summarises the progress of the Edinburgh Land-Use/Transport Interaction and Local Economic Models to date	Outlines the progress to date - DELTA largely operational, TRAM only just becoming available, and interfaces between TRAM and DELTA are prepared, but largely unused. Outlines testing of the model under Reference Case and 5 Strategies	Paper for discussion
20	DSC	13/03/2002	Implementing the Economic Scenario	Records what has been done and remains to be done to implement the economic scenario for LUTI/LEI modelling	Inputs to define scenarios taken from Cambridge Econometrics forecasts supplied by Scottish Executive used to identify growth rate forecasts for 2001 onwards, and adjust DELTA to reproduce those growth rates for 'value added' and for 'employment@	
21	DSC	14/03/2002	Implementing the New Treatment of Travel Costs	Note specifies/records the implementation of the new functions for treatment of travel costs as proposed in PN15	Accessibility Calculations	Unaffected, but AC12 money cost outputs to be checked for reasonableness
					Accessibility and Cost Calculations	Need to set up the IA12.INP file, and decide whether to interpolate values of time for years between TRAM runs, or keep values consistent with the particular TRAM run
					Locational Sub-Model Coefficients	Need to adjust the alpha coefficients
					Base year and earlier data	Modifying UCSA to calculate new utility of location, after subtracting the travel costs, and to output the SAZN file with this extra variable
					Regional Economic Model	Having removed household's transport expenditure out of the urban model it must return to the regional economic model. Discusses how to do this under different Strategies
22	DSC	02/04/2002	Creating the Non-Household Population Database	Describes the process used to create the 2001 non-household population database (residents who are not members of households)	This group is ignored within DELTA itself, but are included in the interface between DELTA and TRAM, and is added to the population data passed to the EFM	Figures derived for 1991 and 1997 from 1991 Census, 1991 Census/NOMIS database and CEC publications. Seeking advice on factoring to 2001, and how this might change over time
23	DSC	16/04/2002	LEIM-Only and LUTIM-Only Options	One of the requirements for the LUTI-LEI model system has always been that it should be possible to run LEIM in a 'stand-alone' mode. It is also desirable fro testing purposes to be able to run the LUTI model alone. This note specifies what these options should do	Describes the requirements, design and implementation of each model in a 'stand-alone' role	Recommends a change in the chaining option to facilitate simpler stand-alone operation
24	DSC	09/04/2002	Contents of the LUTI and LEI Model Databases	Provides an outline of the data available from the DELTA database set up in connection with LUTI and LEI models	Base year is 2001. Since 2001 Census data not available, 1991 data has been used, and rolled forward to 2001 using DELTA software itself	Document then lists all the zonal estimate sub-categories within the headings of Households and Population, Employment and Economy, and Housing and Floorspace

25	DSC	04/10/2002	Response to Academic Panel Comments	6 topics considered and discussed as a result of comments from the Academic Panel	Implications of treating all households (and businesses as renters rather than owner-occupiers Lack of a distance-decay effect in modelling local moves Importance of distinguishing between part-time and full-time workers Desirability of measuring scope for development as seen by developers rather than as controlled by the planning system Significance of new housing for longer-distance migrants Why do population and household impacts often diminish over time	No changes proposed 2 potential solutions considered, no definitive resolution. DSC are not clear how, or what to model (notes 'part-time' is not easy to define) Developers decisions are not solely influenced by the current stock of permissions. No definitive resolution No definitive resolution Situations change, people react, then settle down again. No change proposed
26			not made available			
27	DSC	04/07/2002	Transport:Trade Ratios for LEIM	Documents the revised version of the values defining the volume of travel and transport per unit of trade in LEI model	2 key ratios - the value density (average money value of one unit of the sector's output in £/tonne) and average payload (tonnes per output per goods vehicle. Ratio for the delivery trip = 10^6/(value density*average payload) also refers to Service Trips and Business Travel, and Shopping Trips	Sets out a series of complex resolutions (not detailed here)
28	DSC	13/08/2002	Impact of Environmental Improvements	Note documents the implementation of the impacts of environmental improvements, through pedestrianisation and other schemes, in the Do-Something case. It was agreed that these should be defined by the model user, and not made automatic in the model.	Notes that pedestrianisation and other enhancements attract more shoppers, and therefore retail employment rises. However changes of traffic congestion may affect other zones Impact on visitors and tourists by additional exogenous expenditure in the Edinburgh area, with some reduction elsewhere in Scotland	Quality factor increase calculated as (fraction of zone pedestrianises)*0.25+(fraction of zone with other improvements)*0.1 The modified model inputs are "an additional £51m of visitor expenditure in the Edinburgh area" and "reduction of £9m in visitor expenditure in the rest of Scotland" the effects occur gradually over time, meaning changes to model inputs are phased over 5 years
29	DSC	10/09/2003	Comments on Results (revised)	Comments on the land-use/economic results of recent test runs. All of the tests were carried out using the combined LUTI/LEI model, therefore have the potential to vary the size and composition of the Lothian economy as well as to vary the location of activities within Lothian	The tests under consideration differ in terms of: charging on the city centre cordon - applied in all cases except the Reference Case; charging on the outer cordon - differences in whether it is applied, and is so, for what parts of the day; and the public transport investment and improvement package - a "single" or "double" level of improvements	
30			not made available			
31			not made available			
32			not made available			
33	DSC	18/11/2002	Structure Plan Scenario: Proposals	Sets out proposals for implementing a Structure Plan Scenario in LUTI/LEI	1) Adjust Scottish demographic results to produce appropriate results in terms of population by age band and of household sizes;2) Check Scottish economic assumptions and adjust Scottish economic scenario if appropriate information available; 3) Adjust REM model inputs to match BSL economic (employment) scenario for Lothian and 4) Check household/population results for Lothian - if results are similar to or rather higher than SPSD Chap 2 then stop - if lower or much higher then adjust migration model inputs so as to encourage /discourage migration into Lothian	Note that: a) SPSD only provides figures up to 2016; we propose to extrapolate results to 2016 (for running TRAM) and not (for the moment) to try to develop the "Structure Plan Scenario" beyond that year b) all adjustments to match SPSD at Lothian level will be done so LUTI/LEI will continue to produce (slightly) different results when run with Do-Something strategies and c) all figures in SPSD are broken down to district level; however we (in contrast to the Lothian level) currently have no practical way to reproduce these without using constraints which would prevent LUTI model from producing different results for Do-Something strategies. We therefore propose to leave the LUTI/LEI model producing its own forecasts at district (and zonal) level)
34	DSC	19/12/2002	Sensitivity Tests for Reliability Effects: Proposals	Outlines proposals for implementing sensitivity tests related to reliability effects in LUTI/LEI models	To test the premise that "generalised costs by car/goods vehicle and public transport are reduced by x% for all journeys or parts of journeys inside the outer cordon" Will be tested with x being 5% and 10%	"Pure" sensitivity tests, not attempting to relate these improvements back to changes in network conditions
35			not made available			

36	DSC	28/05/2003	Planning Policy Inputs for Tram Scheme Modelling (revised)	To clarify what is done, and what can be done, with the planning policy inputs to the DELTA model. 7 topics raised at MAWG, plus one further needs to be considered	Planning Policy Inputs	Measured as "quantity of permissible development", and any not used is carried forward. To ensure a development will definitely occur, must be specified as 'exogenous development'
					Lumpiness of Proposed Developments	Inputs are generally total quantities from Structure Plan, divided by 15 to obtain annual 'flow' of permissions. This need not be the case
					Planning inputs for the longer term	Transport plans typically have much longer time horizons than land-use plans. Should model inputs attempt to 'forecast' beyond the time horizon of present plans, or should model inputs represent a 'null plan' of equal pro rata additions in all zones
					Take-up of permissible development	For major development areas (like The Waterfront) initial round of development should be treated as exogenous
					Take-up of completed floorspace	Model outputs to be monitored and discussed
					Treatment of Floorspace quality	DSC are (externally) developing a new model feature which allows the character of each floorspace type to be defined more precisely (eg: at Waterfront, could distinguish between existing Granton floorspace and new Waterfront floorspace).
					Already completed development	Many land uses use 1991 data, and there is merit in updating these with more up-to-date values where possible
					Major non-floorspace developments	Particularly education, health and recreational services are not treated in the modelling inputs. Can be introduced by using constraint mechanisms to control particular types of employment in particular zones
37	DSC	02/05/2003	Proposed Enhancements to the Land-Use and Economic Models	Following discussions with TIE and MVA, a number of enhancements to existing LUTI/LEI model are proposed, to be implemented later this year, and make the model more robust against possible criticism at Public Inquiry in spring/summer 2004	Minor changes - 6 identified in first category, 3 in second and 3 in third category	Some which do not require changes to software. Some are being put into effect in the current re-run of the Reference case. A second category require new software features which DSC is already developing as part of general DELTA development. Third group of (relatively) minor changes would use software enhancements being developed for other projects
					Major Model Changes - 4 listed	These involve more substantial changes to both the software and the initial database, relating to issues identified as of particular importance. They have the effect of further strengthening the model's treatment of the effect of transport changes in terms of changes in household location and expenditure, and the workings of the labour market.
					Updating the Database	Involving updating from 1991 to 2001 Census data, supplemented by Scottish Household Expenditure Survey of 2001 and most recent Scottish Input-Output tables. Scottish Household Survey may also be relevant
					Other Possibilities	Identifies some other enhancements, but the issues are not seen as priorities for further work in the Edinburgh context
38	DSC	02/05/2003	Clarification of LUTI/LEI Model in Relation to "Key Sectors of Edinburgh's Economy"	Prepared to assist Academic Panel compare City of Edinburgh Council's "Report into the key sectors of Edinburgh's Economy" report with the Economic Impact Report based on the LUTI/LEI modelling	The information contained about the LUTI/LEI model provided in this note should nearly all be contained in the model documentation previously supplied, but it would not be easy for someone outside the model development team to identify exactly how the model represents (or does not represent) the matters discussed by CEC	Point by point commentary on CEC issues

39	DSC	12/05/2003	Response to Questions from Vickerman Review (revised)	Prepared in response to a submission by Prof Vickerman	Issue by issue commentary, cross referencing and addressing points made by Vickerman	
40	DSC	18/06/2003	Comments on Latest Preferred Option Results	Comments on comparison between model run JO, Latest Set of Preferred Options against JD - Reference Case	Comments are made on results, not modelling parameters	
41	DSC	19/06/2003	Planning Policy Inputs and Planning Data Outputs in the Tram Corridors	To inform TIE and MAWG of progress in refining the treatment of planning inputs to the North and West Edinburgh corridors	Highlights some 'oddities' (high densities) in relation to ratios of employment to floorspace which need to be reduced or eliminated in the Reference Case, and identifies exogenous development to be included in West Edinburgh corridor	
42	DSC	08/07/2003	Exogenous Development in the Tram Corridors v3	For discussion with CEC and MAWG to establish appropriate levels of exogenous development used along the tram corridors	The note covers a series of test runs to try and establish a suitable level of exogenous development used along the tram corridors in North and West Edinburgh; results of test runs, and consideration of Structure Plan estimates and developers proposals	Recognition that rate of endogenous development within the model is probably still too low; this will be adjusted in parallel with the move to a CSTM3A derived database
43	DSC	16/07/2003	Case for Updating and Enhancing the LUTI/LEI Models v1 (Draft)	Prepared at request of TIE to set out the case for updating and enhancing the LUTI and LEI models	Table of 16 proposed changes presented	Table identifying minor changes being done, or already done, several more significant changes though not necessarily requiring major changes to the model database, and finally, some fairly major changes to model design and the associated database
44	DSC	25/07/2003	Revised Model Tests in the Tram Corridors v2	2 main tests, KF and KG (see above). Sections describe how each of the changes has been implemented, then descriptions of the model results.	KF sees population, household and employment trends reflect steady growth. Annual rate of office development has improved, and future growth in all floorspace types is realistic illustrating sensible trends. KG sees Employment make considerable gains in North and West Edinburgh, Office floorspace in Waterfront and West Edinburgh zones increase rapidly in first few years, then gain at a sensible rate, Office rents in these areas rise steadily over time, and increases in office rents in those zones leads to higher rate of endogenous development	
45	DSC	14/08/2003	Additional Development Outputs from the Revised Model Tests v2	2 main tests 1) New Reference Case, (KF) with CSTM3A based data, more realistic total level of office development, revised figures for development already completed or under construction, and revised Structure Plan inputs. 2) Development Case (KG) assuming a significant phase of development will be completed in the Waterfront zones and Zone 52, and these developments will successfully attract tenants at rents similar to Edinburgh Park	Both tests run in DELTA-only form, and Paper concentrates on Reference Case scenario only	90% of residential permissions between 2002 and 2016 are built, 80% of retail permissions in same time period, office permissions are not taken up as extensively, but are realistic. Little industrial development between 2002 and 2016, but what little there is sees 85% take-up
46			not made available			
47			not made available			
48	DSC	02/09/2003	Summary of Economic and Activity Location Impact Analysis v2	Presents a summary of results from the EALI 1) outlines LUTI/LEI Model 2) Development and results of Reference Case 3) describes the Preferred Option and presents results and 4) reviews the performance and results of the modelling system in light of other work	Reference Case key forecasts 2001 to 2026 - 11% increase in total trip making, 38% increase in trips by car, 2% increase in PT trips, 35% decrease in walk/cycle trips and a trebling of congestion (resulting in 4% reduction in economic growth in Lothian. Taking the Preferred Option, growth in car trips is 30%, PT trips increase by 51% and time lost due to congestion in 2026 is reduced by over one-third	Preferred Option interventions are forecast to have a marginally positive impact on the Lothian economy in the medium and long term, stabilising at about +1.5% by 2021. The review suggests that rather more positive results than those produced by the model may be achieved

Doc	Authors	Date	Title
1	DSC		not made available
2	DSC		not made available
3	DSC		not made available
4	DSC		not made available
5	DSC	16/10/2001	Proposals for involvement of Property and Development Specialists
6	DSC	19/10/2001	Proposals for Local Economic Model Acceptance Tests
7	DSC	25/10/2001	Inputs to Define Land-use/Economic Scenarios
8	DSC	26/10/2001	Structure Plan Interpretation
9	DSC	10/01/2002	Use of Housing Needs Assessment Survey (revised)
10		03/12/2001	Use of Observed Data on 1991-2001 Land Use Changes (revised)
11	DSC	06/12/2001	Generalised Cost Files from TRAM and CSTM3 (revised)
12	DSC	03/12/2001	Proposals for Treatment of Environmental and Other 'Soft' Factors (revised)
13	DSC	03/12/2001	Proposals for Calculation of Generalised Costs Outputs from TRAM (first draft)
14	DSC	11/01/2002	Proposals for DELTA-to-TRAM Interface
15			not made available
16	DSC	23/01/2002	Implementing the Treatment of Environmental and Soft Factors (revised)
17	DSC	30/01/2002	Additional Processing of Environmental Inputs from TRAM (revised)
18	DSC	30/01/2002	Additional Processing of Accessibility Outputs from DELTA
19	DSC	07/02/2002	Progress and Results for Discussion at Academic Panel Meeting, 12th Feb
20	DSC	13/03/2002	Implementing the Economic Scenario
21	DSC	14/03/2002	Implementing the New Treatment of Travel Costs
22	DSC	02/04/2002	Creating the Non-Household Population Database
23	DSC	16/04/2002	LEIM-Only and LUTIM-Only Options
24	DSC	09/04/2002	Contents of the LUTI and LEI Model Databases
25	DSC	04/10/2002	Response to Academic Panel Comments
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29	DSC	10/09/2003	Comments on Results (revised)
30			not made available
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33	DSC	18/11/2002	Structure Plan Scenario: Proposals
34	DSC	19/12/2002	Sensitivity Tests for Reliability Effects: Proposals
35			not made available
36	DSC	28/05/2003	Planning Policy Inputs for Tram Scheme Modelling (revised)
37	DSC	02/05/2003	Proposed Enhancements to the Land-Use and Economic Models
38	DSC	02/05/2003	Clarification of LUTI/LEI Model in Relation to "Key Sectors of Edinburgh's Economy"
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43	DSC	16/07/2003	Case for Updating and Enhancing the LUIT/LEI Models v1 (Draft)
44	DSC	25/07/2003	Revised Model Tests in the Tram Corridors v2
45	DSC	14/08/2003	Additional Development Outputs from the Revised Model Tests v2
46			not made available
47			not made available
48	DSC	02/09/2003	Summary of Economic and Activity Location Impact Analysis v2