



UK Government



Infrastructure  
and Projects  
Authority

# Annex 1

## Infrastructure Business Case: International Case Study

February 2022



Infrastructure  
and Projects  
Authority



HM Treasury

This second edition replaces the original July 2020 edition.

**OGL**

© Crown copyright 2022

Produced by the Infrastructure and Projects Authority

You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence, visit <http://www.nationalarchives.gov.uk/doc/open-government-licence/> or email: [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk)

Where we have identified any third party copyright material you will need to obtain permission from the copyright holders concerned.

Any enquiries regarding this publication may be sent to us by e mail at [IPA@ipa.gov.uk](mailto:IPA@ipa.gov.uk)

# Contents

<b>Foreword and Purpose</b>	<b>1</b>
<b>Background</b>	<b>2</b>
<b>01. Strategic Case</b>	<b>6</b>
1.1 Introduction	7
1.2 Project Rationale and Strategic Context	8
1.3 Determine Objectives, Existing Arrangements and Strategic Need	18
1.4 Define Potential scope	33
1.5 Describe Benefits, Risks, Constraints and Dependencies	38
<b>02. Economic Case</b>	<b>52</b>
2.1 Introduction	53
2.2 Define Critical success factors	54
2.3 Apply “options framework” to create a wide range of options and refine it to a short list of possible options	55
2.4 Conduct Cost Benefit Analysis and Establish Preferred Option	69
2.5 Determine Non-Monetised Risks and Benefits	85
2.6 Conduct Sensitivity Analysis	85
2.7 Review Environmental and Social Impact Assessments (ESIA)	86
2.8 Conclusion	87
2.9 Value for money of private finance	87
<b>03. Commercial Case</b>	<b>92</b>
3.1 Introduction	93
3.2 Determine the Commercial and Procurement Strategies	94
3.3 Outline the Base Specification, Potential Service Streams and Outputs	100
3.4 Allocate the Risks	104
3.5 Develop the Payment Mechanisms	108
3.6 Identify Key Contractual Issues	111
3.7 Working with the Multilateral Development Banks	114

<b>04. Financial Case</b>	<b>116</b>
4.1 Estimate Costings and Benchmarking	117
4.2 Estimate Revenues / Income	120
4.3 Identify Financing Sources	122
4.4 Build Financial Models	123
4.5 Assess Impact on the Council's Own Income and Expenditure Account	125
<b>05. Management Case</b>	<b>130</b>
5.1 Introduction	131
5.2 Prepare Project Management structure and Governance / Reporting arrangements	132
5.3 Describe Use of Advisers	135
5.4 Devise Project Plan	136
5.5 Devise Stakeholder and Change Management arrangements	139
5.6 Prepare Benefits Realisation Strategy and Plans	144
5.7 Prepare Risk Management Strategy and Plans	148
<b>06. Schedule 1 – Glossary</b>	<b>149</b>

## Figure References

<b>Figure 1</b> – Map of Nirvana	3
<b>Figure 2</b> – Map of Elisia and current transport position	34
<b>Figure 3</b> – Core coverage (minimum)	34
<b>Figure 4</b> – Desirable coverage (proposed)	35
<b>Figure 5</b> – Optional coverage (maximum)	35
<b>Figure 6</b> – Cover areas	36
<b>Figure 7</b> – Options Framework “filter”	56
<b>Figure 8</b> – NPV of PSC vs PPP	89
<b>Figure 9</b> – Project Management Team	134
<b>Figure 10</b> – Approvals and Assurance Stages	138

## Table References

<b>Table 1</b> – Socio-demographic statistics	10
<b>Table 2</b> – National Policy Drivers	13
<b>Table 3</b> – Regional Policy drivers	14
<b>Table 4</b> – Local Policy Drivers – City Transport Plan	15
<b>Table 5</b> – Project and the CTP	16
<b>Table 6</b> – Project Objective (Where you want to be) and SMART Outputs (Measures)	19
<b>Table 7</b> – Objectives	21
<b>Table 8</b> – Bus journey times – peak vs off-peak	24
<b>Table 9</b> – Bus ridership by time of day	25
<b>Table 10</b> – Bus network related assaults	26
<b>Table 11</b> – Business needs – Problems	27
<b>Table 12</b> – Business needs – Opportunities	31
<b>Table 13</b> – Route Scope	37
<b>Table 14</b> – Summary of Benefits	39
<b>Table 15</b> – Linking Benefits to Strategic Priorities	41
<b>Table 16</b> – High-level risks and their mitigation measures	42
<b>Table 17</b> – Developing options for each dimension	57
<b>Table 18</b> – Matrix used describing a wide range of options	66
<b>Table 19</b> – Short-list of options assessed against CSFs	68
<b>Table 20</b> – Capital Costs Summary	71
<b>Table 21</b> – 60 year operating costs	72
<b>Table 22</b> – Capital costs (real – total over 60 years) – preferred option	75
<b>Table 23</b> – Operating costs (real – total over 60 years) – preferred option	76

<b>Table 24</b> – Present Value Costs	77
<b>Table 25</b> – Values of Time	78
<b>Table 26</b> – Monetisation of accident savings	79
<b>Table 27</b> – Distributional Impacts of User Benefits	80
<b>Table 28</b> – Analysis of Monetised Costs and Benefits for the preferred option (option 4)	84
<b>Table 29</b> – Summary of Public Value and BCRs	85
<b>Table 30</b> – Sensitivities	86
<b>Table 31</b> – Risk allocation matrix	104
<b>Table 32</b> – Risk Transfer	113
<b>Table 33</b> – Capital costs (nominal – total over 25 years)	119
<b>Table 34</b> – Operating costs (nominal – total over 25 years)	119
<b>Table 35</b> – Estimated revenues/income (Years 4 – 10)	121
<b>Table 36</b> – Cumulative cash flows under PPP	126
<b>Table 37</b> – Cumulative cash flows under traditional procurement (base position)	127
<b>Table 38</b> – Cumulative cash flows under traditional procurement (sensitivities)	128
<b>Table 39</b> – List of lead advisers	135
<b>Table 40</b> – Key project milestones	136
<b>Table 41</b> – Project Roles & Descriptions	154



# Foreword and Purpose

The Infrastructure and Projects Authority (“IPA”) is pleased to present this model Case Study which illustrates how a business case for an infrastructure project, at Intermediate Business Case stage, could look.

It forms part of a suite of products including:

- IPA’s Infrastructure Business Case: International Guidance (the “Guidance”);
- Workshops – see Schedule 2 of the Guidance, and
- On-line training materials (see Annex 3 of the Guidance).

It is designed to be read alongside the Guidance – to illustrate the various actions needed to develop a business case using the 5 Case Model approach. References to Actions are to the 45 Actions set out in the Guidance.

## Warning

The subject of this Case Study is a fictitious light rail project in a fictitious country. It is not intended to cover every aspect of a real business case or to replicate the significant work that would go into preparing a large-scale project. Its purpose is to help the reader think critically and creatively about drafting his or her own business case.

Financial details are not intended to approximate actual costs and are not directly linked to the indicative costs given in the Economic Case. It is designed purely for illustrative purposes; “[xxx]” shows areas and data that would need to be included in a complete business case.

A fictional currency of **Nirvanian Lira** (NL\$) is used to represent the figures in both the Economic and Financial Cases.

Each country and each project will have its own particular requirements, and each will be different – but this Case Study should provide a useful learning guide for all.

Key learning points from this Case Study are signposted in text boxes in the Guidance.

Footnotes in this Case study refer you to corresponding text in the Guidance.

This Case Study uses the same terms as the Guidance (and these are defined in Schedule 1 of the Guidance).



# Background

## Nirvana

“Nirvana” is a stable country with Gross Domestic Product well above average, compared to its neighbours. It has a diverse industrial base and sustainable levels of debt. There are however significant disparities between the wealthy and industrialised North and the relatively deprived agricultural Southern part of the country.

## A National Infrastructure Strategy

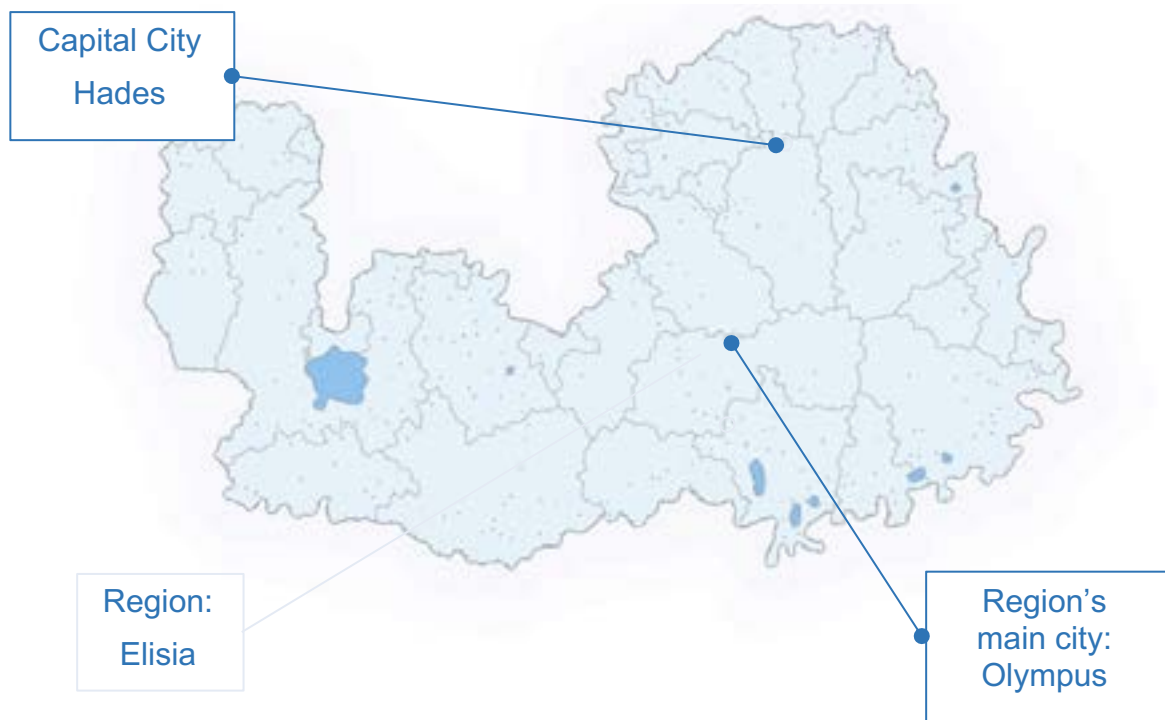
In 2016, in order to improve the competitiveness of the country and reduce regional disparities, the central government published “Investing in Infrastructure Strategy 2018-2023”, as its six-year National Infrastructure Strategy setting out its priorities across a number of sectors, including transport.

## The Role of Transport

At a high-level central government seeks to:

- reduce **transport congestion** and improve the **reliability of journey times** to ensure that congestion does not restrict economic activity;
- improve **transport connectivity** and **integration between regional and national networks** across the country to ensure more efficient travel;
- improve **access to employment and learning** to help people into work, boost employment and increase the number and range of learning opportunities;
- improve **accessibility to key services**, such as healthcare, to ensure that people have access to the services they need;
- reduce the impact on **the environment** and **greenhouse gas emissions** from the transport sector; and
- increase **levels of health and activity** by improving transport infrastructure for pedestrians and cyclists.

## Figure 1 – Map of Nirvana



### Elisia

The region of Elisia lies in the centre of Nirvana. It borders agricultural regions to the West, East and South, with the country's industrialised base lying to the North. It contains one major city, Olympus (which is the second largest city in Nirvana) and a number of smaller, but rapidly growing, towns and villages.

### Olympus

Olympus is seen as a success. Despite its location (in the South of the country), it has managed to overcome its historic disadvantages. Over the last two decades, its population has boomed, driven, most recently, by a series of successful government policies aimed at strengthening existing industries and attracting large foreign companies in order to establish new industry.

The success of these industries has provided employment opportunities and unemployment levels, although higher than desirable, have fallen. Labour has flowed in from smaller towns, mainly from neighbouring less developed regions, but also from neighbouring countries. Gross Domestic Product has increased at a higher rate than the national average, but still falls short of that of Hades, the capital, towards which vast amounts of resources and investment are directed.

### Local Constraints to Growth

Despite this success, Olympus is facing a number of problems not uncommon in rapidly urbanising areas. Housing shortages and affordability issues in the centre are forcing individuals to move further out of the city.

This makes the road network – used by private and commercial vehicles, buses and various non-mechanised forms of transport including bicycles – congested and unsafe. Road-related accidents and deaths have reached an all-time high while illnesses, caused by increasing pollution, are rising. Travel times have increased so much that it is no longer feasible for some parts of the population to reach jobs in the city centre, which is where the majority of employers are located. As a result, despite the increase in city’s wealth, unemployment in the region is still above target (with poverty still widespread). This gap in infrastructure is having a disproportionate effect on the poor and marginalised of society.

In addition to these transport issues, it suffers from:

- geographical segregation;
- differences in educational attainment;
- poor access to job opportunities;
- income inequalities between people of different ethnicities and religious affiliations; and
- low female work-force participation.

Public institutions have failed to keep up with the rapid economic growth, with allegations of corruption and overly bureaucratic processes. Small and medium-sized enterprises suffer especially.

## In Search of Local Solutions

The Olympus council, funded partly through local taxes and partly through grants from central government, is seeking to implement solutions aimed at alleviating these issues and stimulating growth. An independent economic review has been commissioned, which has made various recommendations for dealing with these issues. These include increasing housing provision, improving access to education, enhancing the skills of the workforce through vocational training, investing in crime prevention measures, improving air quality and reducing road congestion.

Subsequent to this review, the Olympus council commissioned a Local Development Plan building on the National Infrastructure Strategy. As regards transport, the plan makes the following recommendations:

- increase the scope and size of the **public transport provision**;
- ease **road congestion** by encouraging walking and cycling, both through educational programmes and specific road measures (such as cycling lanes and safe walking routes);
- work with neighbouring cities to improve **inter-city transport links**;
- increase the size of the **labour market** by increasing the number of people able to access jobs across the city;
- increase **access to work** for those in the lower income quartile;
- reduce the contribution to national greenhouse gas emissions from transport; and

- ❑ improve the **quality of life** for local inhabitants, particularly in relation to travel conditions (safety, ease and comfort) and pollution (air quality).

One specific recommendation relates to the provision of some form of mass rapid transportation for the city. Initial studies carried out by the Nirvana national transport policy body, as well as a political desire to bring the city on par with major cities on the continent, point to a light rail system as being one of the more appropriate solutions, subject to detailed feasibility studies to be carried out by Elisia. Accordingly, the Olympus council prepared an Early Business Case, which was approved by the central government three months ago. The Early Business Case had a well-developed strategic case that laid out the need for a public transport solution for the city and the region, and the process followed in order to short-list the various options available. Of these shortlisted options an Environmental and Social Impact Assessment (ESIA) was carried out for each of them, in order to identify and evaluate the environmental and social risks and impacts of the options. In addition, the Early Business Case contained a high-level economic and financial analysis giving an initial indication of the feasibility of the project. Central government gave its approval for Olympus to develop an Intermediate Business Case for the project, in order to:

- ❑ review the short list of options and subject them to cost benefit analysis, assessing potential value for money;
- ❑ review the ESIA studies that were carried out at Early Business Case stage;
- ❑ consider in detail the affordability and commercial viability of the project; and
- ❑ identify the expected resources and management arrangements and how the project would be procured.

This Intermediate Business Case is set out in the following chapters.



---

# 01

## Strategic Case

---

## 1.1 Introduction

The Strategic Case covers the rationale for the project<sup>1</sup>, its scope and objectives, and places it within an overall strategic and policy context.

This proposal has been identified as a key part of the City Centre Transport Programme (“CCTP”). It is also set in the context of existing local, regional and national infrastructure and development plans, and aims to contribute to the continued development of Olympus as an attractive place to live and work.

Olympus suffers from:

- ❑ congested roads which are leading to ever longer travel times for both car and bus users;
- ❑ poor public transport – exclusively served by buses which do not serve the needs of an expanding and modern economy, and is particularly impacting upon the poor and marginalised in the society;
- ❑ aging public and private vehicles – heavily polluting diesel bus fleet and no regulation on private car emissions;
- ❑ a badly connected public transport system with few inter-city transport links; and
- ❑ roads unsafe for cyclists and users of other non-motorised transport.

The proposed project involves developing a solution to:

- ❑ ease congestion, increase affordable public transport provision, and replace vehicles with low emission fleet;
- ❑ serve the transport needs of Olympus equally across the rapidly growing population, and improve accessibility and safety for women, disabled, poor, and other marginalised groups;
- ❑ increase connectivity across the city’s extended suburbs so as to enable a greater amount of the population to access places of work, education and retail opportunity; and
- ❑ contribute to the continued development of Olympus as an attractive place to live and work.

---

<sup>1</sup> As explained in Section 3: Business Case Development Process of the International Infrastructure Guidance, the 5-case model can be used for policies and strategies, for programmes (where a programme business case can outline the overall strategy and programme budget for inter-related projects), and for projects. The Guidance is principally focused on the requirements of the project business case.

The Early Business Case considered a wide range of transport options, including various forms of bus, guided bus, light rail, tram and underground. Four light rail options were shortlisted for further appraisal at this Intermediate Business Case stage. The Council commissioned technical, environmental, and traffic forecast reports that confirmed the feasibility of this approach. The process of short-listing these options is re-produced in this Economic Case. These include the design, construction, operation and maintenance of a light rail scheme to serve the transport needs of Olympus's rapidly growing population.

The creation of a modern light rail public transport system fit for the 21st Century is a key project within the CCTP and plays a key role in the local transport plan whilst supporting the wider regional and national strategies.

The Strategic Case should be:

- broadly developed at Early Business Case stage<sup>2</sup>;
- largely complete at Intermediate Business Case stage<sup>3</sup>; and
- revisited and updated as required at Final Business Case stage<sup>4</sup>.

## 1.2 Project Rationale and Strategic Context

### Concise Statement of what the Project is and what it aims to achieve

The proposed project involves the design, construction, operation and maintenance of a light rail scheme to serve the transport needs of Olympus's rapidly growing population. A concise description of what the project is and what it aims to achieve is summarised in the box below:

---

<sup>2</sup> See Actions 1-4 in the Guidance for more detail

<sup>3</sup> See Action 12 in the Guidance for more detail

<sup>4</sup> In the UK and the Better Business Case standard, these iterations are called: Strategic Outline Case, Outline Business Case, and Full Business Case, respectively. In New Zealand, which has also adopted the model, they are called: Indicative Business Case, Detailed Business Case, and Procurement Business Case, respectively. The precise names chosen for these versions are not important – the three-staged iterative approach however is.

What the Project is	What it aims to achieve (at a high level only)
<p>The proposed project involves the design, construction, operation and maintenance of an urban mass transit light rail transport system (the “Project”).</p>	<p>It aims to:</p> <ul style="list-style-type: none"> <li>❑ ease congestion and increase affordable public transport provision;</li> <li>❑ serve the transport needs of Olympus equally across a rapidly growing population and urbanised area, with provision for the needs of all user groups including women and persons with disabilities;</li> <li>❑ reduce the transport sector’s contribution to national greenhouse gas emissions by upgrading public vehicles;</li> <li>❑ increase connectivity across Olympus’ extended suburbs to enable more of the population to access places of work, education and retail opportunity; and</li> <li>❑ contribute to the continued development of Olympus as an attractive place to live and work<sup>5</sup></li> </ul>

This requirement has been brought about by the following problems with the current transport system:

- ❑ congested roads which are leading to increasingly longer travel times for both car and bus users;
- ❑ a poor public transport offering – exclusively served by buses which do not serve the need of an expanding and modern economy, and is particularly affecting women, the poor, and marginalised groups in the society;
- ❑ aging public and private vehicles – heavily polluting diesel bus fleet and no regulation on private car emissions;
- ❑ a badly connected public transport system with few inter-city transport links; and
- ❑ roads which are unsafe for cyclists and users of other non-motorised transport.

At Early Business Case stage, a wide range of transport options were considered including various forms of bus, guided bus, light rail, tram and underground – and four light rail options were shortlisted for further appraisal at this Intermediate Business Case stage. The Council commissioned technical and traffic forecast reports which confirmed the feasibility of this approach. Environmental and Social Impact Assessments were conducted for each of the shortlisted options; the review of these reports will be conducted in the Economic Case of this Intermediate Business Case.

The creation of a modern light rail public transport system fit for the 21st Century for Olympus will play a key role in the local transport plan and supports the wider regional and national strategies.

<sup>5</sup> See Action 1 of the Guidance.



## Strategic Context

The proposed Project is set in the context of existing national, regional and local infrastructure and development plans as explained below.

Nirvana is also committed to contribute towards international goals, and every public infrastructure project needs to align with those objectives; specifically the UN Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change.

### Socio-economic Overview

The region of Elisia contains the fourth largest developed urban area in the country, with an area of some 115 square kilometres, but the second largest in terms of population (the capital Hades' region being the largest).

The history of the region has made it one of the most important areas in Nirvana being at the core of the country's industrial development. The decline of local mining industries over decades however has led to an increase in social deprivation and unemployment.

Recent years have seen a revival in Elisia's fortunes, with the arrival of new industries and increased levels of tourism. There is therefore a desire, and an increasing need, to improve connectivity to drive this increased activity further, while also addressing the unemployment and deprivation problems.

**Table 1 – Socio-demographic statistics**

	Nirvana	Hades	Elisia	City A: Olympus	Town B	Town C	Town D
Population	65,000,000	8,700,000	2,800,000	530,000	225,000	210,000	190,000
Area (km <sup>2</sup> )	242,495	1,572	1,276	115	18	22	19
Pop. density (m/km <sup>2</sup> )	268	5,534	2,194	4,609	12,500	9,545	10,000
Population with no qualifications (%)	5%	4%	6%	5%	9%	12%	11%
Working age population	41,000,000	6,000,000	1,781,100	340,000	142,000	132,000	120,460
Average income (per head)	23,755	40,215	20,724	24,869	16,579	14,507	15,760
Unemployment rate (%)	4.20%	5.0%	5.5%	7%	8%	9%	8%

	Nirvana	Hades	Elisia	City A: Olympus	Town B	Town C	Town D
Employed in managerial/professional capacity (%)	42%	53%	32%	41%	17%	11%	14%

The population is predicted to grow at an annual rate of 3% over the next decade through inward immigration to fill new jobs.

At the time of the census, the areas in which the proposed transportation scheme would operate had unemployment levels significantly above the national average. The percentage of residents employed in a professional capacity is well below the national average in areas outside of the city centre, while it is equal to the average in the more affluent neighbourhoods (including the city centre). Overall, there is high level of employees in lower grade jobs – generally a reflection of poor educational attainment.

Town C has the highest percentage of population with no or low qualifications, higher than both the regional and national averages.

## Deprivation

The National Statistics Office publishes “Indices of Deprivation” which provide a set of relative measures of deprivation for areas across the country. This is based on seven aspects of deprivation which are combined to produce the overall “Index of Multiple Deprivation”, namely:

- Income Deprivation;
- Employment Deprivation;
- Education, Skills and Training Deprivation;
- Health Deprivation and Disability;
- Crime;
- Barriers to Housing and Services; and
- Living Environment Deprivation.

These statistics show that the region contains some of the most deprived areas in the country, many within the lowest 5%.

## Unemployment and Income

With a population of 2.8m, Elisia has an unemployment rate of 5.5% compared to the national unemployment rate of 4.2%. In some areas, the unemployment is as high as 9%.

Latest statistics indicate that the average annual income for Elisia is around NL\$ 20,700. This is almost 13% below the national average of NL\$ 23,750.

## Employment Locations

The main employment opportunities are located in the City centre, where a number of businesses, predominantly in the high value-added services sector, are located. These include Information Technology, Financial Services and Consultancy, as well as high-end retail.

The two major towns in the region, noted in Table 1 above, also serve some of the larger population centres, both having their own areas of specialisation. Town A attracts a significant amount of tourism due to the presence of wildlife and scenic locations. It is served by a rail link to Hades.

Town B is industrial, where the presence of copper mines, an important export, continues to provide employment and where new methods of extraction have recently improved production levels. It is served by rail freight links to the West and East of Nirvana.

Towns C & D are similar rural, agricultural towns that suffer from high levels of unemployment (trending well above the national average), along with high percentages of residents with no qualifications. Existing transportation links consist of the regional road network alone.

## Economic Growth

In addition to supporting a broad range of national and regional objectives, the proposed light rail scheme is a crucial catalyst in fostering economic growth. It should enable the area to achieve economic prosperity, attract businesses and increase opportunities for those on lower incomes, particularly certain ethnic and religious minorities as well as the female population who are under-represented in the work-place. The scheme will improve access to the employment opportunities across the wider region ensuring the deprived areas that surround the line can access the job opportunities in the expanding districts.

A range of key policy drivers are relevant to this investment at national and regional levels and are shown in the sections below.

## International Goals

The country of Nirvana has committed to reducing greenhouse gas emissions in line with the Paris Agreement on Climate Change, and has developed their Nationally Determined Contributions (NDCs) required for meeting these commitments. Each sector of the economy must actively work to decarbonise infrastructure assets and operations to contribute towards these objectives.

Nirvana has also endorsed the Sustainable Development Goals (SDGs), and is collecting data against SDG indicators to report progress at a national level. Projects and government departments should record and collate data annually to submit to the central authority responsible for reporting.

## National Policy Drivers

The National Policy drivers are set out below.

## Table 2 – National Policy Drivers

Policy Driver <sup>6</sup>	Main targets of policy
Employment strategy	<ul style="list-style-type: none"> <li><input type="checkbox"/> Reduce the rate of unemployment</li> <li><input type="checkbox"/> Reduce the dependence of employment on certain economic sectors</li> <li><input type="checkbox"/> Increase female participation rate</li> <li><input type="checkbox"/> Increase participation rates of persons with disabilities, minority, and under-represented groups</li> <li><input type="checkbox"/> Increase access to jobs for people living outside the core cities</li> </ul>
GDP action plan	<ul style="list-style-type: none"> <li><input type="checkbox"/> Increase overall growth rate of GDP</li> <li><input type="checkbox"/> Achieve a more geographically balanced growth in GDP</li> <li><input type="checkbox"/> Achieve a more sector-balanced growth in GDP</li> </ul>
Productivity policy	<ul style="list-style-type: none"> <li><input type="checkbox"/> Improve access to job opportunities</li> <li><input type="checkbox"/> Improve infrastructure to attract greater private investment</li> <li><input type="checkbox"/> Improve the regulatory environment</li> </ul>
Regeneration strategy	<ul style="list-style-type: none"> <li><input type="checkbox"/> Improve the living environment of cities</li> <li><input type="checkbox"/> Develop brownfield sites containing dilapidated buildings</li> <li><input type="checkbox"/> Improve transport access to areas in need of regeneration</li> <li><input type="checkbox"/> Develop infrastructure that is resilient to climate change</li> </ul>
Green Standards Review	<ul style="list-style-type: none"> <li><input type="checkbox"/> Reduce dependency on fossil fuels</li> <li><input type="checkbox"/> Reduce emissions in heavily populated areas</li> <li><input type="checkbox"/> Remediate areas of contamination, and restore and enhance natural habitat on public land</li> </ul>

### Regional Policy Drivers

The Regional Authority has developed a Regional Development Strategy, which is built around a vision for Elisia as an attractive place to live and work, with the Regional Authority playing a central role in addressing key challenges. From a transport perspective, the authority believes in delivering value to local taxpayers through excellent, but affordable, public services and serving communities across the whole region.

<sup>6</sup> Ideally, this list should summarise government reference documents.

The Regional Development Strategy sets out the region's main priorities and key objectives for the period 2017-2021, building on the previous strategy for the period 2012-2016.

The Regional Development Strategy has five key objectives as stated below.

**Table 3 – Regional Policy drivers**

Regional Policy Driver	Description
Connectivity and Accessibility	<input type="checkbox"/> Help people to travel across the Region more easily, and to be able to access employment opportunities and all the services they need. Tackle congestion on the Region's transport networks, particularly by increasing public transport provision
Employment and Education	<input type="checkbox"/> Increase the proportion of people in employment and increase the number and range of learning opportunities
Health and Wellbeing	<input type="checkbox"/> Improve the health and wellbeing of people in the region, particularly women and persons with disabilities
Safety	<input type="checkbox"/> Improve the safety of people and communities, and reduce the number of deaths and serious accidents on roads in the region
Environmental and Pollution	<input type="checkbox"/> Reduce CO2 emissions, and maintain and increase the attractiveness of local and district centres through improvements to the surrounding physical environment

### Local policy drivers

Olympus is one of the country's designated 'Core Cities', recognised by the national Government as important drivers of the economy outside Hades. It is an important centre for banking, professional services, education and retailing. In recent years, jobs have been created through relocation of businesses to the city and establishment of new businesses.

The Olympus Council is the promoter of the Project, with support from the Regional Authority and Central Government. The Olympus Council, Regional Authority and Central Government are the relevant transport authorities covering the proposed routes of the Project, with an interest in its outcomes.

The Olympus Council has developed the City Transport Plan ("CTP"), which identifies how improving the City's transport networks can support the Regional Development Strategy. The CTP has 12 key aims summarised in the table below:

## Table 4 – Local Policy Drivers – City Transport Plan

Regional Development Strategy	City Transport Plan
Connectivity and Accessibility and Employment and Education	<ul style="list-style-type: none"> <li><input type="checkbox"/> Tackle congestion and improve the reliability of journey times in and around the Olympus</li> <li><input type="checkbox"/> Accommodate increasing transport demand as a result of economic development and population growth</li> <li><input type="checkbox"/> Improve transport connectivity and integration in and between the Olympus transport systems and to regional, national and international networks</li> <li><input type="checkbox"/> Improve the efficiency, convenience, accessibility, and affordability of the public transport network in Olympus to make it more attractive for people to use, especially for persons with disabilities</li> <li><input type="checkbox"/> Improve access to employment and key services, particularly for those in deprived areas or who cannot access the existing public transport network (due to distance from nearest access point)</li> <li><input type="checkbox"/> Increase women’s empowerment: Improve access to employment and education for women by ensuring that transport services are safer</li> <li><input type="checkbox"/> Assist Small and Medium Sized Enterprises (“SMEs”): Expand access to labour force for SMEs by reducing their dependence on local labour</li> </ul>
Health and Environment	<ul style="list-style-type: none"> <li><input type="checkbox"/> Improve levels of health and activity by encouraging active travel rather than short car journeys</li> <li><input type="checkbox"/> Reduce the impact of transport on the environment, including on air quality, noise and the landscape</li> <li><input type="checkbox"/> Develop a low-carbon transport system to reduce greenhouse gas emissions</li> <li><input type="checkbox"/> Ensure that new and upgraded transport infrastructure is resilient to the effects of climate change</li> </ul>
Safety	<ul style="list-style-type: none"> <li><input type="checkbox"/> Address and improve personal safety (and the perceptions of safety) for people when travelling across the City</li> <li><input type="checkbox"/> Reduce the number of deaths and serious accidents on roads in Olympus</li> </ul>

## Existing programmes and projects

A range of national and regional transport programmes and associated projects are being delivered to address these strategic drivers. These include at a national level:

- Electrification of national rail services to improve inter-city connectivity and reliability; and
- National employer supported 'cycle to work' schemes to reduce car usage.

At the regional and local level, the City Centre Transport Programme ("CCTP") was established as the delivery vehicle for CTP, which includes the following projects:

- Congestion charging within the centre of Olympus to discourage car usage; and
- Park and ride services being rolled out across the region.

## Table 5 – Project and the CTP

CTP Objectives	Project's Contribution
Tackle congestion	<input type="checkbox"/> Provide alternative mode(s) of transport to car
Accommodate increasing transport demand	<input type="checkbox"/> Provide a mass public transport solution <input type="checkbox"/> Provide an extensive network <input type="checkbox"/> Provide a frequent service
Improve transport connectivity and integration	<input type="checkbox"/> Provide an extensive network <input type="checkbox"/> Link the network to other transport modes including buses and cars (through Park and Ride facilities where possible for example)
Improve the efficiency, convenience, accessibility, and affordability of public transport	<input type="checkbox"/> Ensure regular service through a simple timetable <input type="checkbox"/> Allocate a dedicated route / priority routes where possible <input type="checkbox"/> Provide concessionary fares to children / students / unemployed / elderly <input type="checkbox"/> Ensure infrastructure is resilient to the effects of climate change
Improve access to employment and key services	<input type="checkbox"/> Conduct analysis to ensure that stops are located close to key sites (employment, housing and services) <input type="checkbox"/> Ensure connections to other modes
Increase women's empowerment	<input type="checkbox"/> Provide a safe mode of transport <input type="checkbox"/> Increase rapid access to jobs to allow part-time jobs and flexible working patterns

CTP Objectives	Project's Contribution
Assist Small and Medium Sized Enterprises	<ul style="list-style-type: none"> <li><input type="checkbox"/> Increase connectivity between the supply chain by reducing congestion</li> <li><input type="checkbox"/> Increase access to labour by connecting places of work to a larger labour force</li> <li><input type="checkbox"/> Increase access to education, providing a better educated labour force</li> </ul>
Improve levels of health and activity	<ul style="list-style-type: none"> <li><input type="checkbox"/> Reduce car usage and therefore emissions and congestion, making the city safer for pedestrians and cyclists</li> </ul>
Address and improve personal safety	<ul style="list-style-type: none"> <li><input type="checkbox"/> Ensure all trams and tram stops are equipped with CCTV</li> <li><input type="checkbox"/> Ensure regular presence of transport police on trams and tram stops</li> </ul>
Reduce the number of deaths and serious accidents on roads	<ul style="list-style-type: none"> <li><input type="checkbox"/> Lower congestion expected to reduce road accidents</li> <li><input type="checkbox"/> Educate public on street-running trams and install appropriate traffic signals</li> </ul>
Reduce the impact on the environment and greenhouse gas emissions from the transport sector	<ul style="list-style-type: none"> <li><input type="checkbox"/> Incentivise transport users to transition from private car journeys to public transport</li> <li><input type="checkbox"/> Replace aging bus fleet with low emission alternative(s)</li> <li><input type="checkbox"/> Remediate and regenerate the public land associated with public transport</li> </ul>
Develop a low-carbon transport system	<ul style="list-style-type: none"> <li><input type="checkbox"/> Introduce fuel-efficient vehicles</li> <li><input type="checkbox"/> Utilise electric vehicles powered from renewable sources where possible</li> <li><input type="checkbox"/> Reduce reliance on inefficient and polluting private vehicles</li> </ul>

The opportunity to further improve public transport within the city has been identified as a constituent project within the CCTP and provides the most specific and direct strategic driver for this project.



## 1.3 Determine Objectives, Existing Arrangements and Strategic Need

Within the context of the strategic drivers for change described above, the case for change is made by clearly understanding ‘where you want to be’ (as articulated by the project Objectives), ‘where you are now’ (as articulated by the existing arrangements) and the ‘gap’ (as articulated by the development needs, sometimes called ‘business needs’). These sections are examined in turn below.

### Project Objectives

The Project Objectives form a key element of the “case for change”. They should describe the expected outcomes of the project and should be SMART.

The following framework was used to consider potential project objectives:

- improving economy** – reducing cost
- improving efficiency** – improving productivity
- improving effectiveness** – improving quality and also long-term resilience to environmental, climate change, and social and economic trends
- compliance** – statutory or lender requirements
- replacement** – of a service that has expired and is still required; and
- advancement** – mitigating environmental, climate, and social risks and/or producing environmental, decarbonisation, and social benefits, equal distribution of benefits, (including intergenerational equity) and promoting achievement of UN sustainability goals.<sup>7</sup>

A workshop was arranged with representatives from the key stakeholder groups to discuss and agree the project’s objectives, and to identify relevant SDGs.

Participants were:

- Regional Transport Director
- Council Roads Department
- Council Rail Department
- Transport worker representative
- Chair, Public Transport User Group
- Central Government Transport Policy Lead
- Independent workshop facilitator
- Environmental and Social advisors.

---

<sup>7</sup> More information regarding the UN’s Sustainable Development Goals with regard to gender equality and female empowerment can be found at: <https://sustainabledevelopment.un.org/content/documents/2322UN%20Women%20Analysis%20on%20Women%20and%20SDGs.pdf>.

Stakeholders considered the strategic drivers, including the City Transport Plan and broader Regional Development Strategy and agreed the following project objectives with corresponding baseline suggested measures:

The Project Objectives establish the framework against which the success of the scheme can be judged. They need to be defined to be Specific, Measurable, Achievable, Realistic and Time bound (“SMART”). Accordingly, the project objectives below<sup>8</sup> set out represent high-level key SMART Outputs – which will be further developed as part of the commercial case for use in the contract.<sup>9</sup>

**Table 6 – Project Objective (Where you want to be) and SMART Outputs (Measures)**

No.	Project Objective	SMART Outputs (Measures)
1	<b>To improve the availability of public transport within the Elysian region, reducing road congestion and addressing the transport gap.</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Reduce travel times at peak hours within 5 miles of the Olympus city centre from 35 minutes to 20 minutes, and travel times within 25 miles from the city centre from 80 minutes to 55 minutes within 4 years of the scheme being fully operational</li> <li><input type="checkbox"/> Increase peak time capacity of public transport from [xxx passenger miles] to [xxx passenger miles] within the area of the scheme, once the scheme is fully operational</li> </ul>
2a	<b>To improve the quality and reliability of public transport within the Elysian region</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Obtain a passenger satisfaction score in excess of 85% within 5 years of operation, to be at least maintained thereafter</li> </ul>
2b	<b>To improve accessibility and safety for women, children and persons with disabilities</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Ensure all passenger stops and public transport vehicles are accessible by wheelchair within 2 years of the scheme being operational</li> <li><input type="checkbox"/> Ensure adequate lighting and sanitation facilities at all public transport stops within 1 year of the scheme being operational</li> </ul>
2c	<b>To improve regional connectivity and transport integration between Olympus and towns B and C</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Improve journey times between the major cities/towns/villages within the region by 30% over the next 6 years</li> </ul>

<sup>8</sup> See Action 2 to the Guidance

<sup>9</sup> Note that some CTP objectives such as ‘increasing women’s empowerment’ and ‘assisting small and medium sized enterprises’, are benefits that will result from the scheme, and are discussed in the benefits section below and in the Economic case.

No.	Project Objective	SMART Outputs (Measures)
3	<b>To improve access to public transport and services for the population, particularly those with lower incomes</b>	<input type="checkbox"/> Ensure that at least 80% of the population with an income of below 40% of the regional average income has access to public transport within a 15-minute walk from their home within 5 years of the scheme being fully operational
4	<b>To promote regional health and physical activity</b>	<input type="checkbox"/> Increase walking and cycling journeys at a rate of 5% p.a. over the next 5 years
5a	<b>To reduce the incidents of crime on public transport</b>	<input type="checkbox"/> Reduce the incidents of crime on public transport or within 100m of a stop by 50% within the next 5 years, with a medium-term target of successfully prosecuting all crimes
5b	<b>To reduce transport related accidents/deaths in the region</b>	<input type="checkbox"/> Reduce road accident fatalities by 70% and serious injuries by 40% within 5 years
6	<b>To reduce the impact of transport on environment and develop a low-emission public transport system</b>	<input type="checkbox"/> Reduce the number of cars passing through the city centre by 40% over the next 5 years <input type="checkbox"/> Reduce CO2 emissions from [public] transport within the city by 20% within 10 years

The tables below summarise the national, regional, city and project objectives:

**Table 7 – Objectives**

National	Regional	City	Project
Reduce the rate of unemployment	<b>Employment and Education</b>	Assist Small and Medium Sized Enterprises	To improve access to public transport and services for the population, particularly those with lower incomes
Reduce the dependence of employment on certain economic sectors			
Increase overall growth rate of GDP			
Achieve a more sector-balanced growth in GDP			
Improve access to employment opportunities	<b>Connectivity and Accessibility</b>	Improve access to employment and key services	To improve the availability of public transport within the Elysian region, reducing road congestion and addressing the transport gap.
Increase access to employment opportunities for people living outside the core cities		Tackle congestion	To improve access to public transport and services for the population, particularly those with lower incomes
Achieve a more geographically balanced growth in GDP		Accommodate increasing transport demand	To improve the quality and reliability of public transport within the [x] region

National	Regional	City	Project
Improve transport access to areas in need of regeneration		Improve transport connectivity and integration	To improve regional connectivity and transport integration between Olympus and towns B, C & D
		Improve the efficiency, convenience, accessibility, and affordability	To improve access and safety for women, children and persons with disabilities
Increase female participation rate		Increase women's empowerment	
	<b>Health and Wellbeing</b>		To promote regional health and physical activity
Improve the living environment of cities	<b>Safety</b>	Improve levels of health and activity	
		Reduce the number of deaths and serious accidents on roads	To reduce transport related accidents/ deaths in the region
		Address and improve personal safety	To reduce the incidents of crime on public transport
Reduce dependency on fossil fuels	<b>Environmental and Pollution</b>	Reduce the impact of transport on the environment	To reduce the impact of transport on environment and develop a low emission public transport system
Reduce emissions in heavily populated areas		Develop a low-carbon transport system	
Develop brownfield sites containing dilapidated buildings			

National	Regional	City	Project
Remediate areas of contamination, and restore and enhance natural habitat on public land			
Develop infrastructure that is resilient to climate change		Ensure that new and upgraded transport infrastructure is resilient to the effects of climate change	
Improve infrastructure to attract greater private investment			
Improve the regulatory environment			

## Sustainable Development Goals (SDGs)

In addition to the Project Objectives, participants considered the SDGs, and identified the following three as the most relevant the to the project. Data will be collected annually as part of the project evaluation and benefits realisation activities, and reported to the Ministry of Transport.

- ❑ **SDG 3 – Health and wellbeing** (Target 3.6 Reduce death and injuries from road traffic accidents)
- ❑ **SDG 9 – Build resilient infrastructure, promote sustainable industrialisation and foster innovation** (Target 9.1 – Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all)
- ❑ **SDG 11- Sustainable Cities and Infrastructure** (Target 11.2 – By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons)

## Existing Arrangements (“where you are now”)

This section describes the existing position from the perspective of the existing public transport services and characteristics of the region, in particular describing:

- ❑ Existing public transport services;
- ❑ Existing public transport infrastructure;
- ❑ Existing public transport demand; and
- ❑ Safety on the existing network<sup>10</sup>.

## Existing Public Transport Services

The existing public transport system consists of a bus network and mainline rail services.

While buses provide reasonable coverage of the region, they rely on the road network which is increasingly congested. Average bus journey times between a selection of origins and destinations are presented in the table below, for both peak and off-peak periods.

**Table 8 – Bus journey times – peak vs off-peak**

Origin	Destination	Journey Times (minutes)		
		Peak	Off-Peak	% Difference
F	X	60	40	50%
F	Y	40	31	30%
G	P	25	20	25%
H	Z	90	75	20%

The table shows that journey times are up to 50% slower during the peak, illustrating the impact congestion is having on bus services.

Similarly, the rail network only provides inter-city services and does not service local towns.

## Existing Public Transport Infrastructure

The region’s roads are in a very poor condition due to insufficient funding for maintenance.

<sup>10</sup> See Action 2 to the Guidance.

Buses currently have no priority on the road network. Bus stops are generally within one of the road lanes, rather than on dedicated lay-bys or bays, causing delays to private vehicles. No dedicated bus lanes exist.

Buses are generally old, making breakdowns a relatively frequent occurrence. The fleet of buses consists mainly of aging diesel vehicles, with poor emissions performance. Facilities to ensure passenger comfort are very poor, and the lack of close circuit TV cameras (both on buses and at bus stops), and adequate lighting around bus stops has given rise to passenger and driver safety concerns. This lack of safety is significantly affecting the most vulnerable and marginalised in the society.

Only the central bus stand has a public toilet, and that is not accessible for wheelchair users. The facility is poorly maintained, and is frequently closed for repairs or cleaning, meaning passengers and staff have very limited options for sanitation needs.

### Existing public transport demand

The bus system has seen ridership increase by **28%** over the last 10 years, equivalent to an annual average rate of growth of **2.8%**. An analysis of demand by time of day illustrates how, due to limitations on the number of buses as well as increasing congestion, demand has mostly increased during earlier and later times of the day.

**Table 9 – Bus ridership by time of day**

	Bus Ridership		
	6am to 8am / 7pm to 9pm	Rest of day	Total
Year 1	1.1875m	0.625m	2.5m
Year 2			
Year 3			
Year 10	2.88m	0.32m	3.2m

### Safety

Safety on the existing bus system has increasingly become a cause for concern, particularly during hours of darkness, and has detracted users from the network. The table below illustrates the number of reported assaults which victims have reported as having occurred on their way to or from a bus stop, or while waiting at a bus stop.



## Table 10 – Bus network related assaults

	Number of reported assaults	% change
Year 1	15,000	0
Year 2		
Year 3		
Year 10	22,950	53

The number of reported incidents has increased by **53%** over a 10-year period, an average increase of **5.3%** p.a. It is thought that these figures are likely to underestimate the actual number of incidents, as many are known to go unreported, with the fastest growing category being sexual assaults, with a 63% increase in the last 10 years.

### Reference projects

As mentioned elsewhere in this business case, the proposed tram scheme is unique within the region for the scale of its ambition. It is also relatively novel for the country, where only one other such scheme exists (in Hades). We have assessed this scheme in detail, having spoken to government officials, advisors and other persons involved, to get their views on a number of aspects of project delivery.

As discussed later on in this case and in the management case, obtaining project data relating to the capital's tram scheme has been challenging, as procedures for making the case for change and record keeping were poor. The former is what many believe was the main reason for the well-publicised cost over-runs that occurred as well as the persistent delays to project delivery. A lack of record keeping means that data on the project is sparse, limiting the scope for drawing on it in a reliable manner. As individuals with the organisation have changed roles, or for various reasons have left their respective organisations, institutional/corporate knowledge on the project has depleted rapidly over time.

Due to limited experience in the country, as explained in the Management Case, we have relied heavily on the experience of our advisors, who have amassed a wealth of knowledge advising and delivering similar schemes across the world. These have included [xxx] scheme, the [xxx] project and the [xxx] project. A description of these projects and the lessons learnt from them is provided as an annex<sup>11</sup>.

<sup>11</sup> Illustrative purpose only - No annexes have been provided with this Case Study

## Identify the gap

The business needs are the changes and improvements required to close the gap between the existing arrangements and the project objectives, expressed as **problems** with the existing position and **opportunities** for change.

## Problems

The key problems with the existing position are summarised in the table below:

**Table 11 – Business needs – Problems**

Project Objectives	Business needs – Problems
<p><b>1. To ensure an improvement in the availability of public transport within the Elysian region, reducing road congestion and addressing the transport gap because demand for public transport is increasing.</b></p>	<ul style="list-style-type: none"> <li>□ High levels of congestion – transport networks in Olympus are operating at full capacity resulting in congestion on roads and public transport. This:               <ul style="list-style-type: none"> <li>– creates delays and unreliable journey time for road users</li> <li>– negatively impacts reliability and efficiency of the City’s bus network</li> <li>– results in high levels of road traffic accidents (resulting in deaths and injuries)</li> <li>– While there are limited opportunities for marginal increases in capacity and efficiency of the existing road and public transport networks, congestion will only get worse as the population grows and travel demand increases</li> </ul> </li> <li>□ A widening ‘transport gap’ – as the road network and existing public transport network are severely constrained, the gap between transport demand and supply forms – the ‘Transport Gap’ – which will continue to increase over time</li> <li>□ Cost to business – congestion causes additional cost for individuals and businesses. The annual economic cost of delays on the City’s road network has been estimated at [xxx million]</li> </ul>

Project Objectives	Business needs – Problems
<p><b>2a. To ensure improvements in the quality and reliability of public transport within the Elysian region because of excessively long journey times</b></p>	<ul style="list-style-type: none"> <li>□ Poor quality and unreliable public transport services mean that long and frequent delays make the use of public buses and private cars an inefficient way of travelling around, with no current alternative: <ul style="list-style-type: none"> <li>– bus schedules cannot be maintained due to delays,</li> <li>– it impossible to plan a journey, particularly during peak times,</li> <li>– so there is a real need for a more efficient, reliable and convenient, yet affordable alternative</li> </ul> </li> </ul>
<p><b>2b. To improve accessibility for women, children and persons with disabilities, making public transport more equitable</b></p>	<ul style="list-style-type: none"> <li>□ Lack of adequate lighting around bus stops means that vulnerable people do not feel secure using the buses during hours of darkness</li> <li>□ Poor surfaces and lack of ramps on the approach and surrounding bus stops means access for persons with disabilities is difficult</li> <li>□ The gap between the curb and the bus makes getting on and off buses difficult for elderly and persons with disabilities</li> <li>□ Lack of adequate and accessible toilets at bus stations means that some users are discouraged from using the services</li> </ul>
<p><b>2c. To ensure improvements in regional connectivity and transport integration between (Olympus and Towns, B, C) because rail services do not cover this sufficiently</b></p>	<ul style="list-style-type: none"> <li>□ Poor quality of and access to public transport services –although the region’s main station is located inside the City, making it well served for reaching other regions (including the country’s capital): <ul style="list-style-type: none"> <li>– transport connections within the region are minimal,</li> <li>– as are connections between other parts of the region and the rest of the country</li> </ul> </li> </ul>

Project Objectives	Business needs – Problems
<p><b>3. To improve access to public transport and services for the population, particularly those with lower incomes because buses have reached capacity</b></p>	<ul style="list-style-type: none"> <li>□ Restricted access to transport, employment and services – as the City becomes unaffordable for people on low wages, population growth is increasing in affordable housing developments further away from places of employment. In conjunction with long distances and increased congestion, this: <ul style="list-style-type: none"> <li>- makes it increasingly difficult for job seekers to find and sustain employment, as travel times increase</li> <li>- makes bus services less reliable and more infrequent as they get further away from Olympus particularly effecting the marginalised and vulnerable groups in society</li> </ul> </li> </ul>
<p><b>4. To ensure the promotion of regional health and physical activity because congestion is detracting from this</b></p>	<ul style="list-style-type: none"> <li>□ Low levels of physical activity – Lack of safety (see below) means that there is reluctance for people to use non-motorised means of transport, even for short-distance journeys, particularly during hours of darkness</li> <li>□ This means that people are carrying out less exercise than they otherwise could, as well as increasing road congestion</li> <li>□ Increased health problems: <ul style="list-style-type: none"> <li>- pollution from motorised traffic is also leading to an increase in health issues caused by vehicle emissions</li> </ul> </li> </ul>
<p><b>5a. To ensure a reduction in the incidents of crime on public transport because of safety issues on the bus network</b></p>	<ul style="list-style-type: none"> <li>□ High levels of crime – Recent years have seen an increase in sexual assaults and muggings on the street.</li> <li>□ This has led to significant drop in female bus riders</li> <li>□ A reduction in willingness of people to use walking and cycling as a means of transport</li> <li>□ Similarly, the use of bus at night has declined due to such incidents</li> </ul>
<p><b>5b. To ensure a reduction in transport related accidents and deaths in the region because of heavy congestion</b></p>	<ul style="list-style-type: none"> <li>□ Increase in road deaths and serious accidents. Road deaths and serious accidents have increased in the region due to: <ul style="list-style-type: none"> <li>- speeding on relatively clear roads as drivers try to make up for lost time during periods of congestion, and</li> <li>- to avoid the congested roads, the use of minor roads, which are usually heavily inhabited, has also increased. Driving on these roads also usually occurs at excessive speeds for inhabited areas</li> </ul> </li> </ul>

Project Objectives	Business needs – Problems
<b>6. To ensure a reduction in the impact of transport on the environment and develop a low emission public transport system because the current bus system is very polluting</b>	<ul style="list-style-type: none"><li data-bbox="576 282 1390 315">□ High carbon emissions:<ul style="list-style-type: none"><li data-bbox="628 349 1326 461">– the existing bus fleet is old and highly inefficient and therefore has a more harmful impact on the environment than modern equivalents</li><li data-bbox="628 479 1390 591">– With a huge reliance on cars, and the increasing congestion that this causes, motorised travel occurs at sub-optimal speed in terms of emissions</li><li data-bbox="628 609 1337 678">– existing buses run on diesel, which is particularly harmful to the environment</li></ul></li></ul>

## Opportunities

The opportunities of taking action to address the existing problems and achieve the outcomes described by the project Objectives are summarised in the table below:

### Table 12 – Business needs – Opportunities

Project Objectives	Business needs – Opportunities
<p><b>1. Improve the availability of public transport within the Elysian region, reducing road congestion and addressing the transport gap</b></p>	<ul style="list-style-type: none"> <li data-bbox="544 577 1390 1397"> <p>□ Ensure a fostering of economic growth, because this is suffering as transport demand increases against current supply constraints – investment in public transport infrastructure would act as a means of fostering economic growth by:</p> <ul style="list-style-type: none"> <li data-bbox="600 801 1382 1025">– enabling the region to achieve economic prosperity, further attract businesses and increase opportunities for those on relatively lower incomes (particularly certain ethnic and religious minority groups as well as the female population who are under-represented in the work-place).</li> <li data-bbox="600 1043 1350 1191">– improve access to employment opportunities in the wider region ensuring deprived areas that surround the line can access job opportunities in the growing employment districts</li> <li data-bbox="600 1209 1382 1397">– Seizing opportunities to collaboratively invest with other sectors to deliver economic infrastructure – such as high-speed internet access, by taking the opportunity to roll out a backhaul network alongside a light rail development, for example</li> </ul> </li> <li data-bbox="544 1429 1401 2018"> <p>□ Ensure the tackling of congestion and the ‘transport gap’, because public transport demand is increasing – ensuring the City’s future development is not constrained by congestion in the City’s transport networks by:</p> <ul style="list-style-type: none"> <li data-bbox="600 1617 1377 1841">– significantly increasing public transport capacity to accommodate future population growth and addressing the forecasted ‘Transport Gap’. Studies indicate that this will require tram services running from 6am to 11pm with services running at least every 10 minutes (and 5 minutes in the peak period)</li> <li data-bbox="600 1859 1345 1930">– providing a more efficient public transport network that improves journey time reliability and</li> <li data-bbox="600 1948 1385 2018">– avoiding leakage of economic activity to other regions and countries</li> </ul> </li> </ul>

Project Objectives	Business needs – Opportunities
<b>2a. Improve the quality and reliability of public transport within the Elysian region</b>	<ul style="list-style-type: none"> <li>□ Ensure an improvement to public transport reliability, efficiency, convenience and affordability, because of current excessively long bus journey times by:               <ul style="list-style-type: none"> <li>– reducing, in the medium-to long-term, the dependency on cars in the region</li> </ul> </li> </ul>
<b>2b. Improve regional connectivity and transport integration between [Olympus and towns B and C]</b>	<ul style="list-style-type: none"> <li>– Ensure a reversal in the poor quality of, and access to, public transport services because the rail network is limited in its reach– although the region’s main station is located inside the City, making it well served for reaching other regions (including the country’s capital):</li> <li>– transport connections within the region are minimal,</li> <li>– as are connections between other parts of the region and the rest of the country</li> </ul>
<b>2b. To improve access for women, children and persons with disabilities</b>	<ul style="list-style-type: none"> <li>□ Make access to public equitable for all users, increasing quality of life and participation in economic and social activities by:               <ul style="list-style-type: none"> <li>– Improving the infrastructure around bus stops to allow wheel chair access</li> <li>– Equipping vehicles with accessibility features allowing users of all abilities to get on and off safely</li> <li>– Providing and upgrading toilets at transport stations so all users have access to clean and safe facilities, encouraging use of the services</li> </ul> </li> </ul>
<b>3. Improve access to public transport and services for the population, particularly those with lower incomes</b>	<ul style="list-style-type: none"> <li>□ Ensure an improvement to transport connectivity and integration, because buses have reached capacity, by:               <ul style="list-style-type: none"> <li>– improving the City’s public transport system’s links to regional, national and international transport networks</li> <li>– improving inter-connectivity between different modes of transport within the city</li> <li>– increasing trade as well as travel opportunities for both work and leisure purposes</li> </ul> </li> </ul>
<b>4. Promote regional health and physical activity</b>	<ul style="list-style-type: none"> <li>□ Ensure an increase in activity and improvement in public health, because congestion is currently detracting from this, by               <ul style="list-style-type: none"> <li>– encouraging walking and cycling, through educational programmes, improving safety and reducing emissions</li> </ul> </li> </ul>

Project Objectives	Business needs – Opportunities
<b>5a. Reduce the incidents of crime on public transport</b>	<ul style="list-style-type: none"> <li>□ Ensure an improvement to personal safety, because of existing safety issues on the bus network, by:               <ul style="list-style-type: none"> <li>– providing a safer public transport system, which will help to improve the perception of public transport and deliver a cultural shift in its use</li> <li>– creating safer streets by encouraging more people to use non-motorised means of transport, for short-distance journeys</li> </ul> </li> </ul>
<b>5b. Reduce transport related accidents and deaths in the region</b>	<ul style="list-style-type: none"> <li>□ Ensure a reduction in road deaths and serious accidents, caused by heavy congestion, by:               <ul style="list-style-type: none"> <li>– reducing road traffic through the inappropriate use of heavily inhabited minor roads, and</li> <li>– reducing incidences of speeding on relatively clear roads as drivers try to make up for lost time during periods of congestion (both of which have led to an increase in road deaths and serious accidents)</li> </ul> </li> </ul>
<b>6. Reduce the impact of transport on the environment and develop a low emission public transport system</b>	<ul style="list-style-type: none"> <li>□ Ensure the development of a low emission transport system, because the bus system is highly polluting by:               <ul style="list-style-type: none"> <li>– reducing the long-term environmental impact of the City’s public transport networks and contributing to a reduction in pollution and CO2 emissions in support of regional and national targets. Also an opportunity to ‘start afresh’ with a more environmentally fleet of public transport vehicles</li> </ul> </li> </ul>

In addition to the opportunities summarised above, investment through this project to improve public transport in the region will have a positive impact in supporting delivery of the CTP.

## 1.4 Define Potential scope<sup>12</sup>

Route 1 will play a major role in the development of Hades and Elisia while contributing to national economic growth with potentially three further routes (2; 2+) serving towns A, B, C and D of Elisia.

The figures below illustrate the current transport position and potential enhancements showing core coverage (minimum), desirable coverage (proposed) and optional coverage (maximum).

<sup>12</sup> See Action 3 in the Guidance for further detail



Figure 2 – Map of Elisia and current transport position



Figure 3 – Core coverage (minimum)

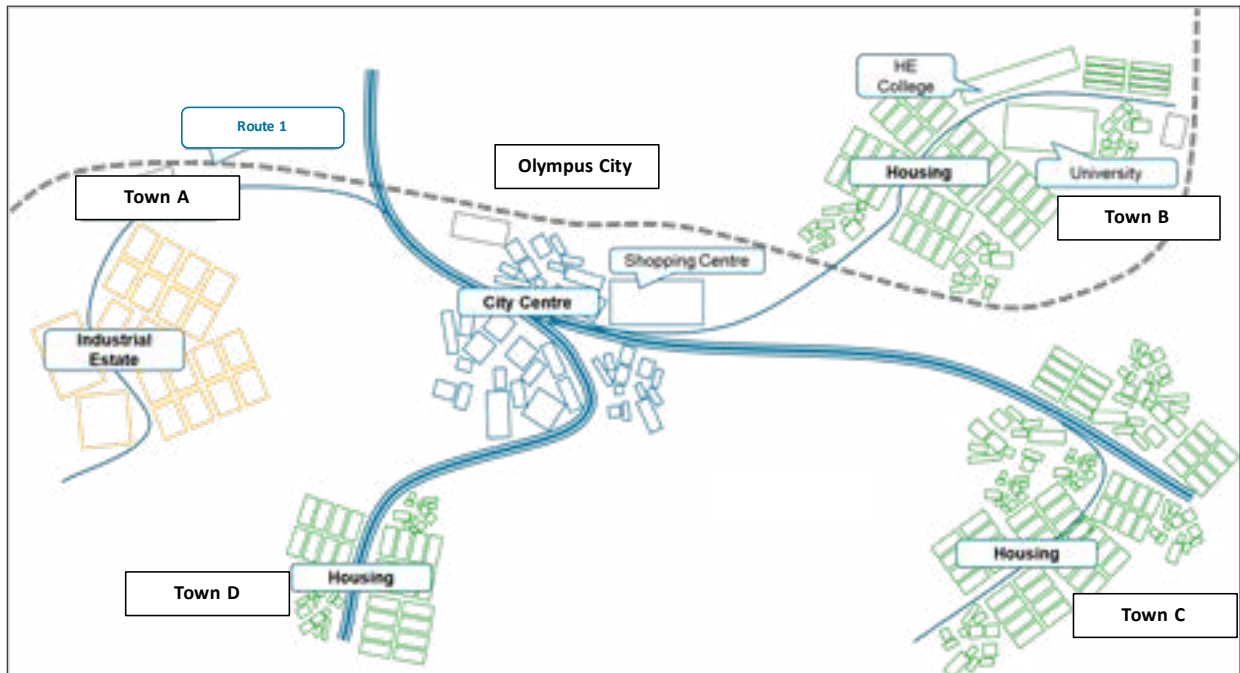


Figure 4 – Desirable coverage (proposed)

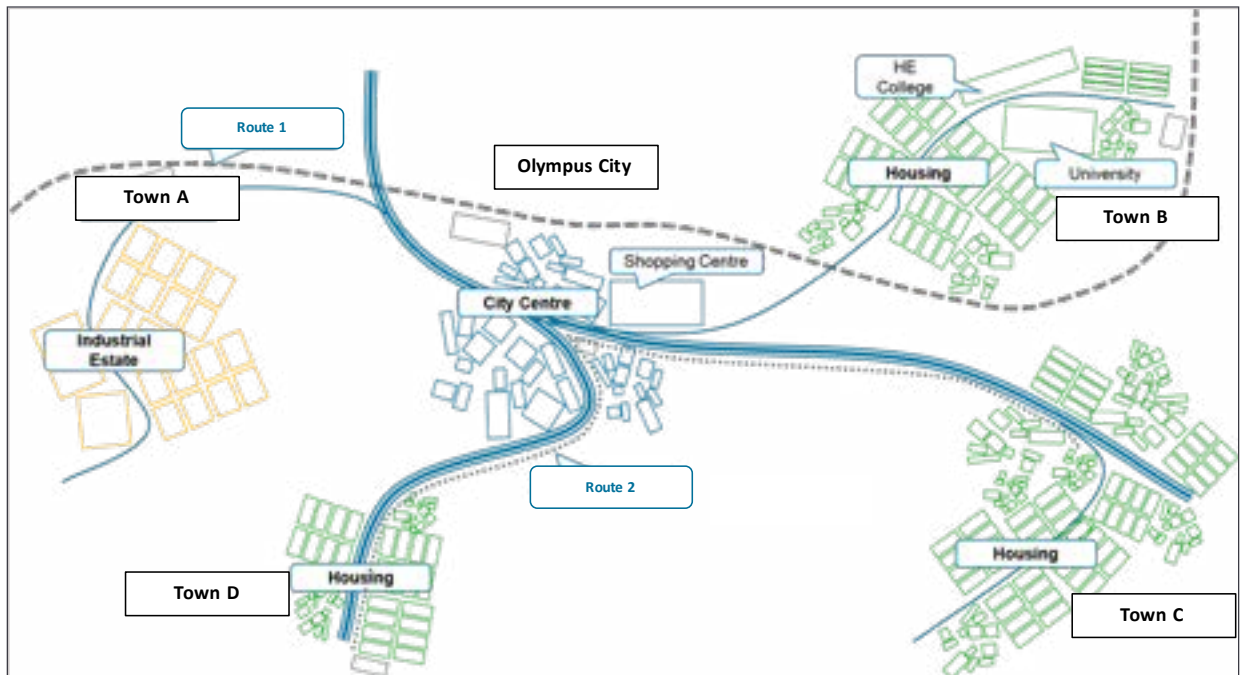
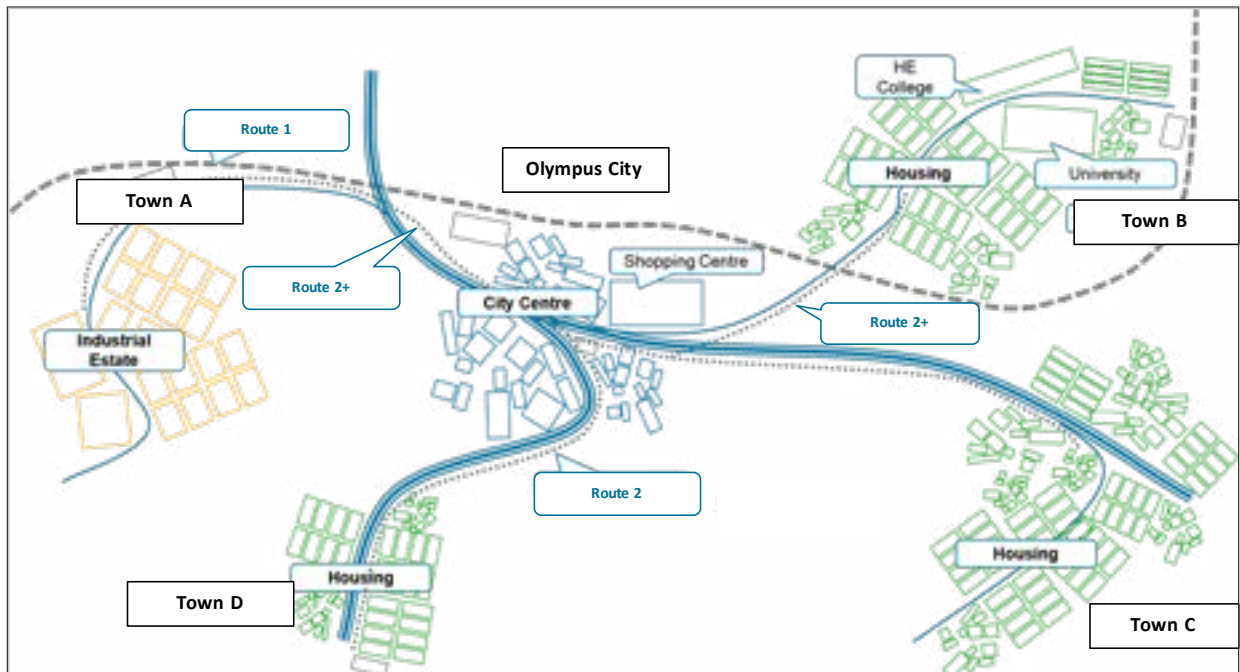
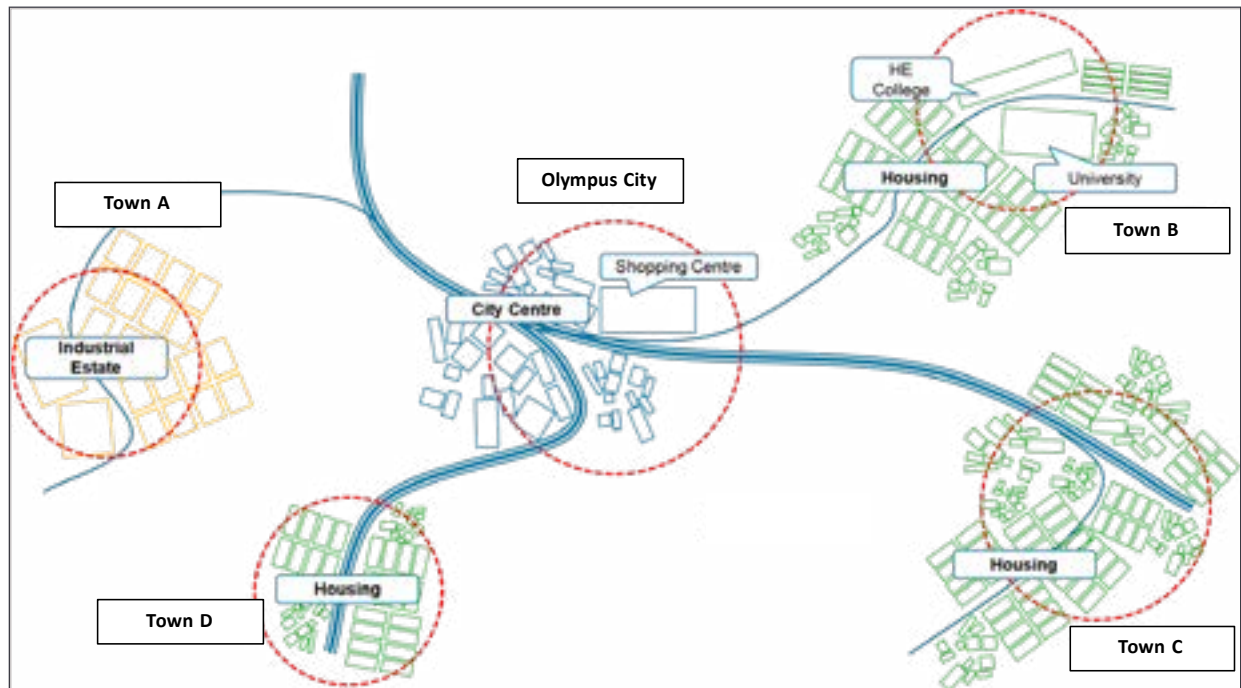


Figure 5 – Optional coverage (maximum)



## Figure 6 – Cover areas



The map above illustrates (in dotted circles) areas which the scheme will need to cover in order to be effective.

## Table 13 – Route Scope

Range	Core	Desirable	Optional
Potential route scope	Route 1 connecting Town A – Olympus City – Town B	Route 1 connecting Town A – Olympus City – Town B & Route 2 connecting Town D – Olympus City – Town C	Route 1 connecting Town A – Olympus City – Town B & Route 2 connecting Town D – Olympus City – Town C & Route 2+ connecting Town A – Olympus City – Town C – Town B Thereby connecting all Towns in the region
Key service/ asset requirements	Number of staff: [xxx] Number of stops: [xxx] Number of TVMs <sup>13</sup> [xxx]	Number of staff: [xxx] Number of stops: [xxx] Number of TVMs: [xxx]	Number of staff: [xxx] Number of stops: [xxx] Number of TVMs: [xxx]

Alongside each are the relevant key service and asset requirements going with them.

The scope suggests the following:

- **Core Scope** – The construction of a brand-new transport route (Route 1) linking Town A – Olympus City – Town B the length of the route will be [xxx] km. This includes major new structures connecting [xxx] stations, with provision of a new interchange stop with heavy rail services, forming a key part of the proposed [city] Station Hub development;
- **Desirable** – In addition to the construction of a new transport route (Route 1). A further transport link will be provided from Town D – Olympus City – Town C (Route 2) alongside the existing road network. This will potentially require [xxx] further stops and [xxx] further staff;
- **Optional** – In addition to both Routes 1 & 2, building a further link between Town A – Olympus City – Town C – Town B (Route 2+) that will run alongside the existing road network. This will potentially require [xxx] further stops and [xxx] further staff.

Routes 2 & 2+ lines provide significant lengths of segregated transport from other traffic – generally running either alongside existing highways or on segregated corridors remote from existing highways. Where the route is proposed to run on street with other traffic, flows along these streets are generally relatively low.

<sup>13</sup> Ticket Vending Machines – These are the automated machines from which passengers will be able to purchase their tickets

## 1.5 Describe Benefits, Risks, Constraints and Dependencies<sup>14</sup>

### Benefits

The main potential benefits for the inhabitants of the city and the region once the scheme is fully running have been summarised below:

- **Employment:** The provision of high quality, reliable public transport connection between the four towns and Olympus City will enable residents, including persons with disabilities, to access a broader range of employment opportunities throughout the region, with the result of reductions in unemployment and opportunities for advancement into more skilled professions that exist outside the immediate area. In addition, an analysis of areas with access to the tram shows that 80% of those with unemployment rates above the regional average will benefit from the tram scheme. Small and medium sized enterprises (“SMEs”), which form a significant part of the local economy, will get a huge boost from the project as they will now be less reliant on very local labour, thus having access to a broader range of skills.
- **Education:** There are a large number of universities and higher education establishments in the region that will become more accessible to residents in a number of areas as a result of the tram scheme, making higher education a more viable opportunity for potential students in the area. This will result in a more qualified population with a greater chance of employment in more skilled and lucrative careers.
- **Deprivation:** The areas within Elisia that have the largest proportion of communities that fall within the 25% most deprived areas within Nirvana are also the ones most impacted by the proposed scheme. An analysis has been carried out which compares the Index of Multiple Deprivation in areas which predominantly fall inside the 5 km buffer of the light rail scheme. Over 60% of the communities within this buffer are amongst the top 25% of the most deprived areas in the Nirvana. One of the main aims of the tram scheme is to improve the prosperity of the residents within the catchment of the route through improved connectivity to the wider region and beyond.
- **Investment:** The scheme will also encourage further investment into the area through regeneration and development of disused industrial areas for new housing, employment and retail facilities and through improved access to areas where development has been constrained for a number of years, partly due to poor public transport access and a very congested road network. This will improve the housing stock and opportunities for existing residents and will also encourage additional people to come into the area.
- **Income:** A breakdown of the average annual income for each city / town within the region shows that those areas which are likely to benefit most from the tram scheme, have an average annual income far lower than the national average, and are amongst the worst affected areas within the region.

<sup>14</sup> See Action 4 in the Guidance for more detail

- **Women’s Empowerment:** The project is expected to make significant strides into enabling women to access employment. The female participation rate is persistently low in Nirvana with part of the reason for this relating to the inability of women to access job opportunities close enough to home. In a society where women are primarily responsible for bringing up children and home duties, female access to part-time work with a reasonable commute to their employment location will be crucial. The scheme is expected to open up opportunities for this category of job seekers. Furthermore, enabling women to access meaningful employment opportunities will contribute significantly to advancing G&I principles as laid out in the UN’s Sustainable Development Goals.
- **Reduced Pollution:** The scheme will allow reduced car usage as a number of commuters switch to what is expected to be a faster mode of transport, having a dedicated and unobstructed priority route. It will also replace the aging fleet of diesel powered buses with efficient, low or zero emission vehicles. The reduced car and bus usage will lead to reduced pollution. This is of benefit to the local environment, will improve the health of pedestrians and cyclists, particularly in the city centre, and reduce the volume of carbon emitted from Nirvana.

The provision of a high quality, reliable public transport connection to major cities from these areas will also allow all residents to access a broader range of employment opportunities throughout the region. This should reduce unemployment whilst also providing equitable opportunities for advancement into the more skilled professions that exist outside the immediate area. This, along with the increased levels of education that will also result from the improved connectivity provided by the scheme, should result in increased average salaries and economic prosperity for the area.

**Table 14 – Summary of Benefits**

Benefit	Beneficiary	Class
1. Employment	Society	Quantitative and Qualitative (increased income potential, access to more and a wider variety of jobs)
	Public sector (higher tax revenues)	Quantitative
	Private sector (improved access to labour supply, particularly SMEs)	Qualitative and Quantitative

Benefit	Beneficiary	Class
2. Education	Society	Quantitative (better access to educational facilities) Quantitative (increased income potential)
	Public sector (higher tax revenues / lower expenditure on income support)	Quantitative
3. Deprivation	Society	Qualitative (scheme targets / comprises deprived areas)
	Public sector (higher tax revenues / lower expenditure on income support)	Quantitative
4. Investment	Society	Qualitative (improved public vicinity) Quantitative (increased economic activity) Qualitative and Quantitative (increased housing supply)
	Public sector (higher tax revenues)	Quantitative
5. Income	Society	Qualitative (scheme targets / comprises low-income areas)
	Public sector (higher tax take)	Quantitative
	Private sector (improved access to labour supply)	Qualitative
6. Women's Empowerment	Society (higher economic growth)	Quantitative
	Public sector (higher tax revenues)	Quantitative
	Private sector (improved access to labour supply)	Qualitative
7. Reduced Pollution	Society (better air quality / increased longevity)	Quantitative (e.g. [NL\$]/ tonne of CO <sub>2</sub> , Qualitative (increased life expectancy)
	Public Sector (reduced spend on public health)	Quantitative (e.g. lower hospital

We confirm that these benefits remain aligned with and feed back into our strategic priorities, so that each mutually supports the other, as follows:

**Table 15 – Linking Benefits to Strategic Priorities**

<b>Benefit</b>	<b>Key Service Requirement / Output</b>	<b>Project Objective</b>	<b>Strategic Priority</b>
Access to a broader range of employment opportunities	Transport access to more employment sites	Increase job opportunities	Increase productivity
Reduced unemployment	Transport links between residential and employment areas	Improve transport access	Reduce unemployment
Improved access to labour for SMEs	Accessible tram stops that link residential areas to employment areas	Assist SMEs	Increase GDP
More qualified population	Tram stops that link residents to educational facilities	Increase access to education	Reduce unemployment/ Increase productivity
Lower unemployment	% of people in deprived areas with easy access to tram	Reduce deprivation	Reduce unemployment
Increased housing, workplaces and retail	Development of disused sites	Increased investment in the city and surrounding areas	Increase GDP
Increased incomes	% of people in low-income areas with easy access to efficient public transport	Increase transport links for low earners	Increase GDP



Benefit	Key Service Requirement / Output	Project Objective	Strategic Priority
Increased female participation rate	Safe, secure, and accessible transport network (CCTV, lighting, sanitation facilities, and transport police)	Enhance female empowerment	Increase GDP
Reduced pollution	Reduced car usage / use of environmentally friendly Light Rail Vehicles (LRVs)	Reduced emissions	Improved living environment

## Risks, constraints and dependencies

The above results were then stress-tested against possible risks, constraints and dependencies in a series of workshops. The results are set out below, together with an explanation of how these have been or will be mitigated or avoided.

### Risks

Risk is the possibility of a negative event occurring that would adversely affect the Project. Risks are dealt with in detail in the Financial and Management Cases, and relevant appendices. A list of high-level risks considered and the mitigation factors are shown below:

**Table 16 – High-level risks and their mitigation measures**

Risk	Mitigation Measure
<b>Project Development</b>	
Design and cost changes / scope increase / incorrect assumptions made in shadow models, impacting upon strength of business case and affordability. May lead to delay in funding approval; may require rework of the business case; may lead to unaffordable bids.	Maintain ongoing budget review; develop detailed scheme cost model; utilise an advanced design scope definition

Risk	Mitigation Measure
<b>Tendering</b>	
Lack of market interest in the project. Potential to be negotiating with only one concessionaire / no bidder	Market Testing of preferred procurement strategy
Unrealistic risk balance from bidders. May lead to delays / promoter having to retain more risk / lack of market appetite leading to high bid prices	Market testing and continuous dialogue and market monitoring (which has not identified any new issues to date). Include risk balance in business case and draft contract / concessionaire agreements
Information supplied to bidders by promoters prove incorrect. May lead to increased costs and / or extended tender period.	Thoroughly check and qualify content of information provided.
<b>Construction</b>	
High noise impact during construction / accidents / impact on local traders. May lead to bad public relations; political impacts; potential compensation claims	Detailed public relations strategy which is being followed
Planning consents / land acquisition. May lead to construction delays and/or increased costs.	<p>Authority is responsible for providing planning consents. Process has already commenced to ensure that these will be in place by the time the construction contract is let out</p> <p>Authority has budgeted for, and is responsible for, acquiring any land required for the purpose of the project</p>
Scheme is perceived as being designed / built wrong e.g. system cannot be operated safely. May lead to a delay in securing an authority to operate; delay to start of operations; loss of benefits; liquidated damages for the concessionaire	Transfer risk through warranted advanced design / transfer through contract
Risk of sexual exploitation and abuse perpetrated by contractor staff	Sexual exploitation and abuse and sexual harassment (SEAH) prevention will be expected from all contractors and the contact between project staff and the community members will be minimised

Risk	Mitigation Measure
<b>Operation</b>	
Assumption made on operations and maintenance prove to be incorrect; e.g. Lifecycle maintenance – component requires replacement earlier than anticipated. May lead to Increased Opex Cost or increased maintenance costs	Ensure that Operations and Maintenance plan is up to date and is reflected in scheme costs
<b>Economic</b>	
Change in national and / or international economic environment may lead to an adverse interest rate movement; which would in turn lead to an increase in cost of bids	Interest rate needs to be monitored
Change in market prices for energy supply; Promoter unable to source energy supply at prices under its current energy supply contract; leads to increased costs	Transfer risk of energy consumption volume to concessionaire through the contract. Monitor prices; carry out market testing to identify best solution when existing energy supply contract expires

## Constraints

Constraints are the external conditions and agreed parameters within which the project must be delivered, and over which the project has little or no control. A number of potential constraints to the development of a public transport system have been identified and assessed through the development of the Business Case. The key constraints are summarised below:

- **Built environment:** While every effort was made to ensure that the tram route and stops would be as close as possible to residential, office or educational centres, a balance had to be kept with the need to respect those who may be impacted negatively by the project. Factors considered included the right to private property (and therefore the minimisation of land confiscation) as well as the noise that would have to be borne by residents living in the vicinity of the tram. This placed a constraint on the route that the tram would follow.
- **Geographical Terrain:** Another constraint on the route that the tram is to follow has been imposed by the physical landscape. Beyond a certain point, a number of hills scatter the city, making the choice of route and tram stop locations at times somewhat suboptimal. The option of drilling through these hills, or in some cases flattening them, while technically possible, was constrained by the financial limitations (see below).

- **Financial Limits:** While there has been no absolute limit imposed by central government on the grant that it would contribute to the project, there has been a percentage limit imposed, set at 50% of capital costs. As the balance of capital costs would have to be found locally, the constraint of local resources has in effect set an upper limit on the scale of the project.
- **Time limits:** Central government, through the National Infrastructure Plan, has set out a broad timeline within which it would like to see certain project being constructed and become operational. In order to keep within that timeline, it has been assumed that any project for which the construction phase may exceed 3 years will not be considered.
- **Data:** Our ability to obtain data from similar transport projects in the country has been restricted. This was both a result of the lack of similar projects as well as poor data collection and recording procedures in instances where the projects existed. While the availability of this data would have allowed us to have more relevant benchmarks against which to assess our cost estimates in particular, we have sought (through our consultants) to obtain reliable and robust data from alternative sources.
- **Unionisation of Public Transport Workers:** Public transport drivers in Nirvana are heavily unionised. This may affect the freedom the Olympus Council will have with respect to both the hiring of employees (particularly drivers) for the scheme as well as the setting of wages (particularly given the income disparities between regions). Discussions with unions started early in the process and are at an advanced stage. These have aimed to set a framework within which eventual negotiations will take place, tailored to the specific circumstances of the project.
- **Technical Difficulties:** The project will undoubtedly face a number of technical difficulties, particularly engineering ones (e.g. uneven land elevations, curvatures etc.). Through early consideration of design options, we, together with our advisors, have sought to find some initial solutions to these. Undoubtedly though, through the bidding process, we are bound to find more refined solutions being proposed. There will be other more 'practical' issues that we will have to face. Some are uncertain, such as the possibility of finding archaeological remains during construction (which may cause delays to planned operating dates and lead to extended periods of road disruption) and will have to be dealt with as and when they occur. Others are known and include the need to keep traffic running during construction. These will require joint solutions between the Olympus Council as the body responsible for traffic management, and the relevant private sector provider.

## Dependencies

Both the direction and success of the Project are dependent on a number of local, regional and national factors. The key ones have been summarised below:

- **Land acquisition:** A large part of the land on which the scheme will progress is already within the hands of the Olympus Council (following a memorandum of understanding signed between central and local government for this transfer to occur at no net cost to the City). Nonetheless, there are a number of plots of land, which reside within private ownership and are required for the scheme to follow the desired alignment. Negotiations for the purchase of this land have been concluded in most cases, with negotiations still ongoing in two cases. Should negotiations with the private landowners fail, there are plans for use of compulsory purchase powers. In order to go ahead with the project, this land would first need to be under the control of the City.
- **Access to Utilities:** The tram will be passing through parts of the city where there is currently no usage of electric power; utility connections are therefore poor or inexistent. Prior to commencing work on the project, the relevant utility providers will need to install the relevant connections in order to enable the work to go ahead as well as for the tram system to work.
- **Business Levy:** Given the potential size of the scheme, its importance for the local, regional and national economy and the fact that a centralised system of taxation means that local authority income is very restricted, the extent of funding that is made available to fund the project is a significant dependency. The project will only be possible if a business levy, which constitutes part of the local contribution, is enforced.
- **Funding:** While there will be a local contribution, through the existing local tax base, additional charges and revenue from the scheme, the extent of available central and multilateral institution funding will significantly influence the ambition of the project in terms of form, scope and reach. Each of these stakeholders has however indicated a level of in-principle support for the Project.
- **Continuing stakeholder support:** which will be essential to deliver the service changes and ensure they are fully utilised.
- **Government national rail strategy:** While the scheme will be effective in itself in terms of achieving the project objectives laid out above, the extent of its effectiveness (and hence its outcomes) will in part be impacted by government's plans for the national rail network. These plans were laid out in the National Infrastructure Strategy and include increased frequency, improvements in the quality of the rolling stock and the construction of new rail stations. Some of these plans will encourage greater use of public transport and enable a broader range of interchange possibilities between local, regional and national transport – thus enhancing the benefits of the project.
- **Car usage:** The lack of public transport options has led to a dependency on private modes of transport by some sections of the population. This dependency has to some extent become engrained in their habits. The extent to which individuals will be willing to give up the 'comfort' of their personal modes of travel will determine the effectiveness of public transport.

This completes the Strategic Case as summarised in the table below.

## Strategic Case Summary

Section	Summary
Project Rationale and strategic context	<ul style="list-style-type: none"> <li><input type="checkbox"/> Ease congestion and increase public transport provision</li> <li><input type="checkbox"/> Serve the transport needs of Olympus' rapidly growing population, with provision for the needs of all user groups including women and persons with disabilities</li> <li><input type="checkbox"/> Reduce the contribution to national greenhouse gas emissions from transport by upgrading public vehicles</li> <li><input type="checkbox"/> Increase connectivity across Olympus' extended suburbs in order to enable a greater amount of the population to access places of work, education and retail opportunity</li> <li><input type="checkbox"/> Contribute to the continued development of Olympus as an attractive place to live and work</li> </ul>
Project Objectives	<ul style="list-style-type: none"> <li><input type="checkbox"/> To reduce congestion / address 'transport gap'</li> <li><input type="checkbox"/> To improve quality / reliability and connectivity</li> <li><input type="checkbox"/> To improve accessibility</li> <li><input type="checkbox"/> To improve health and increase physical activity</li> <li><input type="checkbox"/> To increase personal safety and reduce accidents / deaths</li> <li><input type="checkbox"/> To reduce impact of transport on environment and develop a low emission public transport system</li> </ul>
Sustainable Development Goals	<ul style="list-style-type: none"> <li><input type="checkbox"/> SDG 3 – Health and wellbeing (Target 3.6 Reduce death and injuries from road traffic accidents)</li> <li><input type="checkbox"/> SDG 9 – Build resilient infrastructure, promote sustainable industrialisation and foster innovation (Target 9.1 – Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all)</li> <li><input type="checkbox"/> SDG 11- Sustainable Cities and Infrastructure (Target 11.2 – By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons)</li> </ul>

Section	Summary
Existing Arrangements	<ul style="list-style-type: none"> <li data-bbox="459 277 1396 389">❑ <b>Existing public transport services:</b> bus journey times are up to [xxx] % slower during the peak; rail network only provides inter-city services</li> <li data-bbox="459 405 1396 479">❑ <b>Existing public transport infrastructure:</b> buses have no priority on the road network; passenger facilities are poor</li> <li data-bbox="459 495 1396 607">❑ <b>Existing public transport demand:</b> ridership has increased by [xxx]% over the last 10 years; increases are concentrated at start and end of the day</li> <li data-bbox="459 622 1396 734">❑ <b>Safety on the existing network:</b> cause for concern; detracted a number of users from the network; increased constantly over the last 10 years</li> </ul>
Development Needs (Business Needs)	<ul style="list-style-type: none"> <li data-bbox="459 763 1353 801">❑ Ensure future development is not constrained by congestion</li> <li data-bbox="459 817 1225 891">❑ Avoid leakage of economic activity to other regions and countries</li> <li data-bbox="459 907 1187 945">❑ Improve the City's public transport system's links</li> <li data-bbox="459 960 1294 999">❑ Improve the inter-connectivity between different modes</li> <li data-bbox="459 1014 1137 1052">❑ Increase trade as well as travel opportunities</li> <li data-bbox="459 1068 1257 1142">❑ Make public transport more efficient, convenient, and accessible, while remaining affordable</li> <li data-bbox="459 1158 1278 1196">❑ Change the perception of public transport as unreliable</li> <li data-bbox="459 1211 1246 1249">❑ Improve public transport especially in deprived areas</li> <li data-bbox="459 1265 943 1303">❑ Encourage walking and cycling</li> <li data-bbox="459 1319 1222 1357">❑ Improve the safety of people using public transport</li> <li data-bbox="459 1373 1334 1447">❑ Improve accessibility for women, children and persons with disabilities, making public transport more equitable</li> <li data-bbox="459 1462 1318 1500">❑ Monitoring and penalties for offences leading to accidents</li> <li data-bbox="459 1516 1123 1554">❑ Encourage shift to safer modes of transport</li> <li data-bbox="459 1570 995 1608">❑ Increase education and awareness</li> <li data-bbox="459 1624 1147 1662">❑ Make the city a more attractive place to live in</li> <li data-bbox="459 1677 1350 1715">❑ Encourage shift to modes of transport that are less polluting</li> <li data-bbox="459 1731 1382 1769">❑ Introduce and/or legislate for less polluting means of transport</li> <li data-bbox="459 1785 1305 1823">❑ Reduce the long-term environmental impact of transport</li> <li data-bbox="459 1839 1310 1877">❑ More environmentally friendly fleet of low emission public transport vehicles</li> </ul>

Section	Summary
Scope	<p><b>Core</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Route: Increased connections in city centre only (city-centre coverage)</li> </ul> <p><b>Desirable</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Route: Increase connections between city centre and surrounding areas (local coverage)</li> </ul> <p><b>Optional</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Route: Connect all areas in the region (regional coverage)</li> </ul>
Key Service Requirements	<ul style="list-style-type: none"> <li><input type="checkbox"/> Number of staff: [xxx](C), [xxx](D), [xxx](O)</li> <li><input type="checkbox"/> Number of stops: [xxx](C), [xxx](D), [xxx](O)</li> <li><input type="checkbox"/> Number of TVMs: [xxx](C), [xxx](D), [xxx](O)</li> </ul>
Benefits	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Deprivation:</b> The areas that fall within the 10% most deprived areas are also the ones most impacted by the proposed scheme</li> <li><input type="checkbox"/> <b>Employment:</b> Enable residents to access a broader range of employment opportunities throughout the region, including persons with disabilities</li> <li><input type="checkbox"/> <b>Education:</b> A large number of universities and higher education establishments will become more accessible to residents</li> <li><input type="checkbox"/> <b>Investment:</b> Encourage further investment into the area through regeneration and development of disused land</li> <li><input type="checkbox"/> <b>Income:</b> Areas which are expected to benefit most from the tram scheme, have an average annual income far less than the national income</li> <li><input type="checkbox"/> <b>Women's Empowerment:</b> The project is expected to make significant strides into enabling women to access employment.</li> <li><input type="checkbox"/> <b>Reduced Pollution:</b> The scheme will allow for reduced car usage, and replace the aging fleet of diesel powered buses with efficient, low emission vehicles.</li> </ul>



Section	Summary
Risks	<p><b>Project Development</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Design and cost changes / scope increase / incorrect assumptions made in shadow models</li> </ul> <p><b>Tendering</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Lack of market interest in the project</li> <li><input type="checkbox"/> Information supplied to bidders by promoters proves incorrect</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> High noise impact during construction / accidents / impact on local traders</li> <li><input type="checkbox"/> Planning consents / land acquisition issues</li> <li><input type="checkbox"/> Scheme is perceived as being designed / built wrong</li> <li><input type="checkbox"/> Risk of sexual exploitation and abuse perpetrated by contractor staff</li> </ul> <p><b>Operation</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Assumption made on operations and maintenance prove to be incorrect</li> </ul> <p><b>Economic</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Change in national and/or international economic environment</li> <li><input type="checkbox"/> Change in market prices for energy supply</li> </ul>

Section	Summary
Constraints	<ul style="list-style-type: none"> <li data-bbox="459 280 1401 353">❑ <b>Data:</b> Our ability to obtain data from similar transport projects in the country has been restricted</li> <li data-bbox="459 369 1401 443">❑ <b>Geographical Terrain:</b> A constraint on the route, that the tram is to follow, has been imposed by the physical landscape</li> <li data-bbox="459 459 1401 533">❑ <b>Built Environment:</b> A balance had to be kept with the need to respect those who may be impacted negatively by the project.</li> <li data-bbox="459 548 1401 667">❑ <b>Financial Limits:</b> There has been a percentage limit imposed on the central government grant contributed to the project, set at 50% of capital costs</li> <li data-bbox="459 683 1401 801">❑ <b>Time limits:</b> Central government has set out a broad timeline within which it would like to see certain projects being constructed and become operational</li> <li data-bbox="459 817 1401 958">❑ <b>Unionisation of Public Transport Workers:</b> Public transport unionisation may impact the freedom the local authority will have with respect to both the hiring of employees as well as the setting of wages</li> <li data-bbox="459 974 1401 1048">❑ <b>Technical Difficulties:</b> The project will undoubtedly face a number of technical difficulties, particularly engineering ones</li> </ul>
Dependencies	<ul style="list-style-type: none"> <li data-bbox="459 1070 1401 1189">❑ <b>Land acquisition:</b> There are a number of plots of land, which reside within private ownership and are required for the scheme to follow the desired alignment</li> <li data-bbox="459 1205 1401 1346">❑ <b>Funding:</b> Given the potential size of the scheme, its importance for the local, regional and national economy and a centralised system of taxation, the extent of funding is a significant dependency</li> <li data-bbox="459 1361 1401 1480">❑ <b>Access to Utilities:</b> The relevant utility providers will need to install the relevant connections where these are poor or inexistent</li> <li data-bbox="459 1496 1401 1570">❑ <b>Business Tax:</b> The project will only be possible if a business tax, which constitutes part of the local contribution, is enforced</li> <li data-bbox="459 1585 1401 1659">❑ <b>Continuing stakeholder support:</b> which will be essential to deliver the service changes and ensure they are fully utilised</li> <li data-bbox="459 1675 1401 1794">❑ <b>Government national rail strategy:</b> The extent of the scheme's effectiveness will be impacted by government's plans for the national rail network</li> <li data-bbox="459 1809 1401 1910">❑ <b>Car usage:</b> The extent to which individuals will be willing to give up the 'comfort' of their personal modes of travel will determine the effectiveness of public transport</li> </ul>



---

# 02

## Economic Case

---

## 2.1 Introduction

This Economic Case demonstrates that a wide range of options has been considered and that a rigorous cost benefit analysis (“CBA”) has been conducted on a short list to determine the option that offers best value for money.

This economic case is structured as follows: first, the Critical Success Factors (“CSFs”) are established, next, a wide range of options is determined (through use of the options framework process) and a short list derived from that by reference to the CSFs.

The next section of this case deals with quantitative appraisal, explaining at a high level how the costs and benefits were estimated and monetised – from this comes the Benefit-Cost Ratio (“BCR”). The short-listed options are then subjected to qualitative evaluation (primarily a qualitative analysis of the social and environmental impacts), to reach a preferred option. The final section deals with Value for Money (“VfM”) in relation to the use of private finance through PPP (“Public-Private Partnership”).

At Early Business Case stage, the focus is on<sup>15</sup>:

- agreeing Critical Success Factors;
- developing the wide range of options; and
- identifying a short list for further review.

At Intermediate Business Case stage, the focus is on<sup>16</sup>:

- revisiting the wide range of options;
- economic appraisal of the short list;
- qualitative benefit and risk appraisal;
- sensitivity and distributional analysis; and
- identifying the preferred option which offers best value for money.

At Final Stage, the focus is on<sup>17</sup>:

- confirming the solution (and ultimately, the bid) that offers best value for money.

---

<sup>15</sup> See Actions 5-7 in the Guidance for more detail

<sup>16</sup> See Actions 18-12 in the Guidance for more detail

<sup>17</sup> See Actions 40-41 in the Guidance for more detail

## 2.2 Define Critical success factors<sup>18</sup>

Critical success factors (“CSFs”) are factors essential to the success of the Project. These were derived by reference to standard high-level factors – as informed by our own Project Objectives. These CSFs have been used firstly to establish a wide range of options, and then again, in a qualitative assessment of the options, to produce a short-list.

Following a detailed workshop<sup>19</sup> involving relevant experts, the following six CSFs were selected:

- **Strategic fit<sup>20</sup>** – how well does the option meet the Project Objectives and fit with wider strategy? In particular, in relation to:
  - *capacity* to move large numbers of people around the city and ease road congestion;
  - *connectivity* to as many areas as possible, both within the city and the broader region, and increase the number of people (including women, persons with disabilities, and those with lower incomes) able to access jobs, education, retail activities and other key services;
  - *quality, affordability, resilience, and reliability*; and
  - *broader social benefits of safety, comfort, air quality, crime reduction and improved health.*
- **Potential Value for Money** – is the option likely to deliver value for money in terms of cost, benefit and risk?
- **Supplier capacity or capability** – are there suppliers who can deliver the services?
- **Potential affordability** – how will the option be financed and funded, and is it affordable within existing budgets?
- **Potential achievability** – does the Authority have the skills and capacity to manage it?
- **Compliance** – how well does the option meet statutory and lender requirements? (including Gender & Inclusion principles, environmental, climate, social, and governance policies, standards and obligations) E.g. the criteria of the UN SDGs and the IFC Performance Standards?<sup>21</sup>

It was also considered important to test the options against the more specific Project Objectives as follows:

1. To improve the availability of public transport within the region, reducing road congestion and addressing the transport gap;

<sup>18</sup> See Action 5 in the Guidance for more detail

<sup>19</sup> See Annex 2 in the Guidance

<sup>20</sup> Within this business case we have presented our assessment of options against the ‘Strategic Fit’ as a single CSF. Through a workshop the ‘component parts’ of this CSF were considered, namely the project objectives not covered by the remaining CSFs. See footnote 1 above.

<sup>21</sup> [https://www.ifc.org/wps/wcm/connect/Topics\\_Ext\\_Content/IFC\\_External\\_Corporate\\_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards](https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards)

2. a) To improve the quality and reliability of public transport within the [x] region, and  
b) To improve regional connectivity and transport integration between Olympus and towns B and C;
3. To improve accessibility to public transport and services for the population, particularly those with lower incomes and persons with disabilities;
4. To promote regional health and physical activity;
5. a) To increase passenger safety and reduce the incidents of crime on public transport, and  
b) To reduce transport related accidents/deaths in the region; and
6. To reduce the impact of transport on environment, and develop a low emission public transport system.

These objectives were encompassed within the CSFs (primarily strategic fit) for ease of application.

## 2.3 Apply “options framework” to create a wide range of options and refine it to a short list of possible options<sup>22</sup>

### The wide range of options

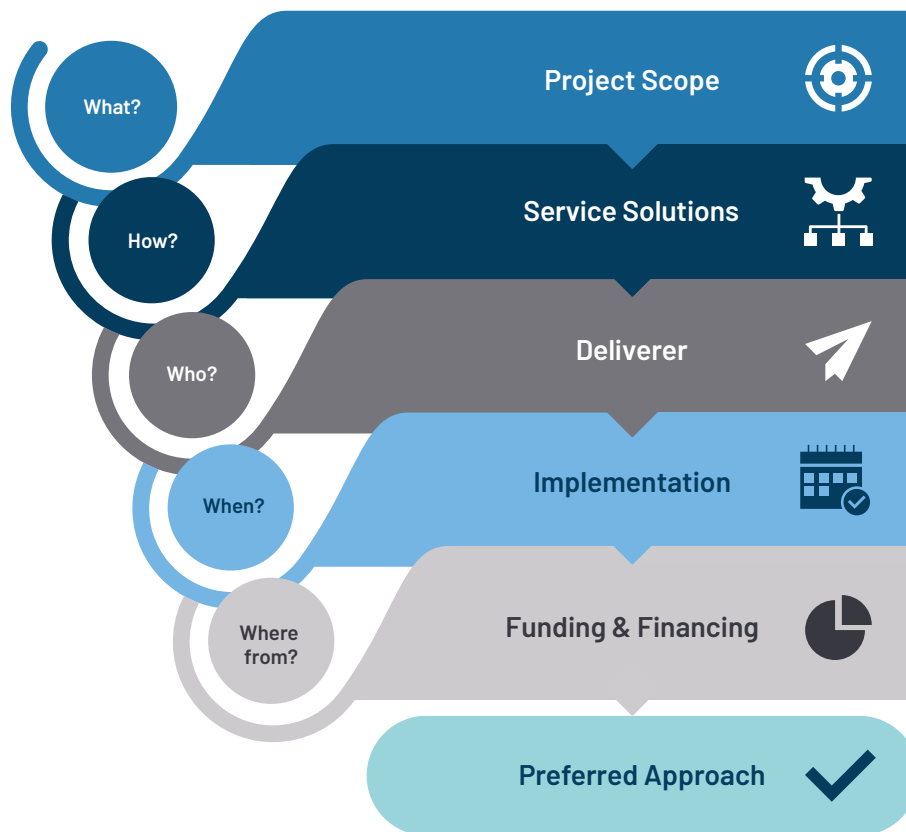
In developing the light rail proposal, the Authority considered various options and technologies and sifted through a wide possible range of options to a short list. This was done in a series of workshops using the five-dimensional options framework, described below:

Dimension	Description
Project Scope	<b>What:</b> What the potential coverage of the project is
Service Solution	<b>How:</b> How the preferred scope of the project can be delivered
Service Delivery	<b>Who:</b> Who can deliver the preferred scope and service solution for the project
Project	<b>When:</b> When the project can be delivered
Funding and Finance	<b>Where from?</b> Potential finance and funding solutions and requirements for delivering the preferred scope, solution, service delivery and implementing arrangements for the project

These are illustrated in the figure below.

<sup>22</sup> See Action 6 in the Guidance for more detail

Figure 7 – Options Framework “filter”



For each of these stages a number of category choices were considered against the CSFs. In line with guidance, these include a Business as Usual option (where the existing position is maintained with no change), a Do Minimum option (involving least change<sup>23</sup>) and at least one possible Preferred Approach, which would with greater or lesser degrees of ambition deal with the relevant issues and achieve the desired outcomes. For the purposes of this business case, three such options were considered.

The results are summarised in the matrix below.

At each level, the choices represent different “levels of ambition” for the project with the “Business as Usual” on the left being the least ambitious and the boxes to the right representing increasing levels of ambition.

<sup>23</sup> The ‘Do Minimum’ provides a benchmark to identify – where an option adds costs for little real gain

## Table 17 – Developing options for each dimension

	Business as Usual	Next level of least ambition			Level of most ambition
<b>1. Project Scope</b>	1.1 Existing arrangements	1.2 Increase connections in city centre only	1.3 Increase connections between city centre and surrounding areas (local coverage)	1.4 Connect all areas in the region (regional coverage)	1.5 Connect various regions (inter-regional coverage)
<b>2. Service Solution</b>	2.1 Existing arrangements	2.2 Enhanced Bus / Bus Rapid Transport (BRT)	2.3 Tram	2.4 Train	2.5 Metro
<b>3. Service Delivery</b>	3.1 Existing service model	3.2 DB+OM	3.3 DBOM	3.4 DBFM+O	3.5 DBFOM
<b>4. Project Implementation</b>	4.1 Four years	4.2 Three years	4.3 Two years	4.4 One year	4.5 Immediate
<b>5. Project Funding and Financing</b>	5.1 Existing funding	5.2 Publicly funded and financed	5.3 Publicly funded and Privately financed (Availability based PPP)	5.4 Partially Publicly funded and Privately financed (Capex paid on availability basis and Opex paid on demand basis)	5.5. Privately funded and financed (Concession based PPP)

The above matrix gives a large number of potential option combinations. A workshop was held to discount options that were not achievable or otherwise scored badly against the Critical Success Factors. The results are set out below, taking each of the five levels of the options framework in turn, accompanied by a narrative explaining the rationale for discounting / carrying forward the options within each category.

### Project Scope

Four broad options were considered:

- **Increase connections in city centre only (Do Minimum)** – This option is based on providing a public transport solution within the city centre only. While this has the advantage of relieving traffic in the city centre, which currently experiences the highest amount of congestion and levels of delay, it fails to deliver some of the key broader objectives such as increasing connectivity or generating economic growth. It is accordingly too limited.



- **Local coverage** – This option is based on increasing the number of connections between the city centre and surrounding areas. Its main advantages are that it provides optimal opportunities to enhance the productivity of the city centre while significantly increasing access to jobs and enabling new industries to develop outside the city centre. It is also a manageable scale for the Authority, and would avoid the greater risks of a larger project. Its main disadvantage is that it would still be of a considerable size, and hence spend. Following further assessment (described below and in the other cases), this was ultimately chosen as the preferred option as regards project scope.
- **Regional coverage** – This option is based on connecting all areas in the region. Its advantages are that by connecting all areas in Elisia to Olympus the scope for achieving many of the social and economic objectives of both the Olympus Council as well as those of the Elisia Authority would be maximised. Its disadvantages are that it would require an additional interface with the Elisia Authority, as well as a more complex funding structure that would draw on regional resources. This could lead to some delays and may raise affordability issues. This scenario was considered to be worth taking forward as a possible option.
- **Inter-regional coverage** – This option is based on connecting various regions together and is the most ambitious option in terms of coverage. Its advantages are that it would allow Elisia to be connected to a number of other regions in the country. This would significantly increase the opportunities for trade, giving firms access to a wide range of labour and product markets and lead to improved connection with the supply chain. Its disadvantages are that it was considered too large for the city to manage, particularly with its limited experience in large-scale infrastructure procurement, and would take much longer to implement. It was deemed that such a project could only be implemented as a national project with collaboration from the regions and main cities across the country, and with significant additional external sources of funding which have not been offered, and should therefore not be taken forward.

In conclusion, as regards scope, the local coverage option was taken forward as the preferred option (green), the regional coverage option was carried forward as a possible option (yellow), the inter-regional option was discarded (red) and the do minimum was taken forward for purposes of comparison only (in accordance with guidance) but considered not to be satisfactory.

	Status quo / Business as Usual	Next level of ambition			Level of most ambition
1.Project Scope	1.1 Existing arrangements	1.2 Increase connections in city centre only	1.3 Increase connections between city centre and surrounding areas (local coverage)	1.4 Connect all areas in the region (regional coverage)	1.5 Connect various regions (inter-regional coverage)
	<i>Carry Forward as Baseline</i>	<i>Carry Forward as DM</i>	<i>Preferred approach</i>	<i>Carry Forward as Possible</i>	<i>Discount</i>

## Service Solution

**Enhanced bus service** – This option is based on the city bus strategy, which identifies where additional bus priorities could be valuable in areas of congestion along the main road networks into Olympus. Its advantages are that it would be possible to implement some of the desired measures (particularly those that aim at improving safety and comfort) and at a relatively low cost. Its disadvantage is that the (modest) benefits will be very much less than those of the tram. In conclusion, the routes identified in the tram corridors remain some of the most challenging to implement but will deliver more substantial benefits compared to an enhanced bus service.

**High quality bus network** – This option is based on high-quality bus alternatives based on newer bus-based technologies, such as Bus Rapid Transit (“BRT”), which seeks to utilise the proposed tram alignments. Its advantages are that it would be possible to avoid some of the costs and other impacts of the tram proposal by routing the bus system onto the local road network in some difficult locations. In addition, the cost could potentially be much lower.

Its disadvantages are that generally, the locations in which it is difficult to have a BRT system are the parts of the proposals where significant journey time and reliability benefits can be realised. In addition, a new major bus-based transport system is unlikely to deliver the physical and wider accessibility benefits of the tram, with reduced connectivity, poorer reliability and reduced ability to guarantee level or step free access to services for all users. Finally, it would not be possible to run the same alignment as the tram in the city centre, nor would it be possible to operate the same level of signal priority along the two routes, as a much higher number of buses would need to operate to match the capacity of the tram.

In conclusion, it was considered that while its disadvantages were significant in the city centre, some of these drawbacks were less significant outside the city centre. It was therefore decided that further detailed analysis should be carried out.

**Rail** – This option is based on use of the rail network to contribute to improved public transport in city. Its advantages are that it would use a system already in place, minimising costs, risks and other difficulties associated with doing a totally new project. Its disadvantages are that only very limited opportunities exist to do so. Existing stations do not directly address the travel needs of the new communities spread across the city

and the surrounding areas. Similarly, the proposed immediate and long-term network enhancements presented in the National Infrastructure Strategy will not significantly change the role that rail can play in meeting travel demands within the region. The radical changes required mean that such option is likely to be unaffordable. In conclusion, it was decided that this option was not considered as being able to meet the primary objectives of the scheme, although rail could complement the eventual scheme.

**Metro** – This scheme is based on having a significant section of the tram within the city underground and is considered a more ambitious option. Its advantages are that it would be an ideal solution in terms of reducing the impact of the scheme on road congestion. Its disadvantages are that the cost (both financial and in terms of disruption caused by the significant and prolonged work period) as well as the significant risks involved are likely to far outweigh the benefits (at least at this stage). In conclusion, this option was therefore discarded.

Concluding, initial discussions led to the tram being the preferred service solution to take forward. The alternatives seemed unable to meet national, regional, or local objectives (strategic fit) as effectively as the tram scheme (value for money). All options are potentially affordable (except rail) (affordability). There are also wider practicality and development (achievability / supplier capacity) issues that question the deliverability of the core high-quality bus network / BRT alternative and the benefits that it could achieve relative to cost (value for money), thereby confirming the relative strengths of the tram proposal.

2. Service Solution	2. Business as usual	2.2 Enhanced Bus / Bus Rapid Transport (BRT)	2.3 Tram	2.4 Train	2.5 Metro
	<i>Carry Forward as Baseline</i>	<i>Carry Forward as DM</i>	<i>Preferred approach</i>	<i>Discount</i>	<i>Discount</i>

## Service Delivery

In this sub-section, we introduce potential methods of service delivery. However, these methods will be discussed and expanded on in greater detail in the Commercial Case.

- **Existing service model** – This option is based upon government procuring services to the private sector and/or executing services directly, depending on the capacity and capability of the government departments and local civil service, with government also providing funding and financing. The advantage of this is that government retains full control of all aspects of service delivery and therefore is able to specify and adapt these to its own requirements. The disadvantage is that the ability to transfer risk to the private sector is not possible in cases where there is no private sector involvement. In conclusion, given the scale of complexity of the project at hand, this model was seen as viable only if some degree of risk transfer was possible.

- **DB+OM** – This option is based upon a turnkey design and build contract and a separate operating and maintenance contract – awarded to two different entities. The advantages are that new infrastructure for any future system extensions can be procured directly by the public sector and the operating/maintenance contract to be extended to cover the entire system. Also, responsibility for operation and maintenance rests with the same entity (avoiding issues associated with DBFM+O for example, as described below). The main disadvantages include lack of optimal whole-life cost and integration risk between D&B and O&M elements remaining with the Authority. In conclusion, while this option covered some of the authority's requirements, it was considered sub-optimal, though still a potential option.
- **DBOM** – This option is based upon a single concessionaire being appointed as the sole point of accountability for all aspects of the project other than financing. Primarily these include design, build, operation and maintenance. The advantages include integration risk being fully transferred and the incentivisation of whole life costing. The main disadvantage is that it requires upfront public-sector capital funding. In conclusion, while this option covered a substantial amount of the authority's requirements, it was considered sub-optimal, though still a potential option.
- **DBFM+O** – This option is based upon a DBFM contractor being responsible for providing the infrastructure and vehicles under a long-term contract and being paid based on availability of infrastructure. A separate operating company is awarded a short-term operating concession. The main advantages include upfront public-sector capital funding not being required and whole-life costing benefits as the same entity is responsible for design, construction and maintenance (but not operations). The main disadvantages include interfaces with third parties and disputes at these interfaces likely to result in additional cost for the public sector and retention of long-term revenue risk by the authority due to the short operating contract. In conclusion, this model is attractive to the authority.
- **DBFOM** – This option is based upon a single concessionaire being appointed as the sole point of accountability for all aspects of the project, including design, build, financing, operation and maintenance. The advantages include integration risk being fully transferred, the largest incentive for whole life costing and the largest incentive to achieve passenger-focused outputs. The main disadvantage is that long-term revenue risk transfer may be unattractive to funders. **In conclusion, this was considered the most desirable option, subject to further investigation of revenue risk transfer.**

### Comparing the various options:

DBOM has some disadvantages when compared to DBFOM – in terms of not incentivising whole-life costing (affordability) and passenger-focused outputs through an incentive-based payment mechanism (value for money / strategic fit). The City has no available capital to pay for the works itself and has constraints on the amount it may borrow (affordability). It has therefore been dismissed.

DBFM+O has been dismissed because of the interface problems (achievability / supplier capacity) that would arise from the division of operations, on the one hand, and design, construction and maintenance, on the other.

DB+OM has been dismissed because this structure does not deliver optimal whole life costing or transfer significant long-term risk to the private sector. It also does not achieve a clear and full transfer of integration risk between the build contract and the operation and maintenance concession. Furthermore, because the operator would not receive ongoing unitary charge payments in respect of which performance deductions may be made, the operator will be less incentivised to achieve passenger-focused outputs.

### PPP and Design Quality

The stakeholders felt that PPP procurement could bring both benefits and challenges in achieving design quality. The long-term nature of the PPP Concession incentivised an easy to maintain and manage design, built using durable materials and techniques, offering value throughout the service life. PPP united disciplines through a single delivery organisation, offering efficiencies through better organisational and technological integration (compared to more traditional forms of procurement).

Conversely, they considered that the PPP procurement method could increase complexity during tendering, with complex design quality issues needing to be resolved in a short space of time. This would need to be mitigated by further advanced design solutions developed in complex areas, allowing bidders to concentrate efforts on adding value through innovation, technology, stimulating efficiency of the supply chain and elimination of waste. PPP could be seen as a less flexible solution however than public service provision with challenges (especially as regards possible changes to technology and service requirement over the long term) as regards VfM. VfM tests (both qualitative and quantitative) would be applied.

The Olympus Council wanted to ensure that design quality would not be diluted prior to financial close, and would be reflected in both the bidder's design proposals, and proposed organisational and procedural arrangements. All quality thresholds would need to be closely monitored during the implementation stage.

In conclusion, the service delivery model has to ensure that the project can be delivered on time, to budget and to the desired specification while the expected outputs and benefits need to be realised. The service delivery model therefore needs to be one where there are sufficient incentives for the delivering party / parties to achieve this result.

3 Service Delivery	3.1 Existing service model	3.2 DB+OM	3.3 DBOM	3.4 DBFM+O	3.5 DBFOM
	<i>Carry Forward as Baseline</i>	<i>Carry Forward as DM</i>	<i>Carry Forward as Possible</i>	<i>Carry Forward as Possible</i>	<i>Preferred approach</i>

The advantages and disadvantages of each of the options considered are dealt with in further detail in the Commercial Case.

## Project Implementation

The length of time it would take to implement the project would ultimately be a function of the service solution and the project scope; the wider the geographical coverage and the more ‘sophisticated’ the choice of mode, the longer the implementation time would be.

Once the choice of these two parameters is made there are likely to be limits on the extent to which the project implementation time can be accelerated. Nonetheless, there are some trade-offs to consider. Project implementation time can be reduced in a number of ways, for example: daily construction working hours can be increased, access to roads can be heavily restricted to allow works to progress faster, and/or construction can take place in more than one geographical location simultaneously.

Having an implementation period which is too short would affect the ability of the Authority to meet the project’s objectives (strategic fit), as the scope of services would have to be limited. The trade-off to achieving the desired scope with a short time-frame would be to place additional pressure on both Authority (achievability) and the eventual suppliers (supplier capacity), possibly resulting in a poor-quality product (value for money).

All of these options though would inevitably lead to increased costs (with affordability / value for money implications). Shift-labour would have to be used, leading to over-time and night-shift / weekend pay; more labour would be required which may push up labour costs if there is a shortage of the required skills; more machinery would have to be employed which would increase fixed overheads for the private sector provider (and hence the Authority) while costs to road users would increase as larger areas are closed-off for longer periods of time, leading to significant delays.

In conclusion, following internal discussions regarding these factors and trade-offs on increased costs versus accelerated benefits, it was decided that **the Authority should aim for an implementation period of three years**, though a faster implementation of two years would be considered if deemed feasible.

4. Project Implementation	4.1 Four years	4.2 Three years	4.3 Two years	4.4 One year	4.5 Immediate
	Discount	Preferred approach	Carry Forward as Possible	Carry Forward as DM	Carry Forward as Baseline

## Project Funding and Financing

Financing typically refers to the upfront amount raised (usually in the form of debt or equity) to build a project. Funding refers to the amounts that are used to pay for a project over time and would comprise, at a minimum, the repayment of such debt and equity as well as any returns.

In project finance, there are various possible combinations possible depending on whether the public or private sector is financing and funding the project, though the differences between them ultimately lie in the way in which the contractual obligations

of the parties are specified. For the purposes of this business case, the Authority has outlined the main high-level options available, and through workshops indicated its preferences amongst them.

**Publicly funded and financed** – This option is based upon the traditional way in which projects are funded and financed – directly out of the ‘public purse’. Typically, Central Government would use tax revenues or, if running a fiscal deficit, issue Government debt (or a combination of the two) in order to pay for the upfront and ongoing project costs. Any project income, such as user charges or other revenue streams from the project, would typically be classed as government revenue and effectively offset the costs.

Other potential sources of finance include loans or grants from multinational development banks (MDBs) for states that are eligible for official development assistance (ODA), and green or climate bonds for projects that have climate change mitigation or adaptation as a central objective.

The project would typically show up on government’s books and would be classed as “on-balance sheet”. Finance costs are usually cheapest under this option, as government benefits from borrowing against its own credit rating, which is normally the most secure lending in a particular country. Opportunities for risk transfer to the private sector would depend on the form of contracts agreed with any private sector providers, whether for the construction or ongoing operation and maintenance of the project.

In conclusion, this option was retained as the comparator against which any PPP option would be considered, but was also considered a possible option in its own right primarily due to the lower cost of finance.

**Publicly funded and Privately financed (Availability based PPP)** – This option is based upon government procuring the project and agreeing to fund the total project costs, but rather than use tax revenues and/ or Government Bonds, the public-sector procurer raises finance from the private sector, usually through a private sector service provider. Depending on the risks transferred to the private sector and the accounting rules in force, the project may be classed as on-balance sheet or off-balance sheet. Ultimately though, the project is paid for by the public sector and the private sector is paid for the project as long as it delivers on its obligation to make the asset available.

The main advantage of this option is that the risks for bringing the project to an operating phase are usually borne by the private sector, as is the need to ensure that the project is in operating form throughout the duration of the contract as well as operating the scheme. A disadvantage may be that the private sector provider though is not generally responsible for revenue risk. In addition, the cost of private as against public finance may be considerably higher. In conclusion, this option was also to be taken forward as possible solution, given the risk transfer potential.

**Partially Publicly funded and Privately financed (Capex paid on availability basis and Opex paid on demand basis)** – This option is based upon government paying for the capital costs of the project over time on an availability basis (though the up-front finance is raised by the private sector, just as in an availability based PPP, above), with the operating costs being covered by the private sector provider who will have access to the revenues generated by the project.

The advantage of this is that it can be applied where the private sector would not be willing to take on the project without any government support due to an inability of the project revenues to cover the capital costs. Also, under this option the majority of the risks are transferred to the private sector. The disadvantages are that the private sector charges a higher cost of borrowing (as financing is raised by the private sector rather than the government), and prices in the risks it faces when bidding for the project. In conclusion, this model is costly but also allows the delivery of a project where this may not have been otherwise feasible.

**Privately funded and financed (Concession based PPP)** – This option is based upon projects likely to be viable on a stand-alone basis, where the government may decide to let the private sector run the project ‘unassisted’, usually for a set period of time during which the private sector is expected to raise the finance necessary, design, build, operate and maintain the project, and be able to make a return on its investment.

The advantage of this option is that it gives the government flexibility in terms of its involvement, from setting a basic set of requirements (e.g. a tram line serving 4 towns) to a more detailed set of requirements that may include detailed routes, implementation targets, service requirements, time-tables and the like, while also regulating the project given the public nature of it. The main disadvantage, particularly given its application to a new scheme, is that the concessionaire would need to be comfortable with its ability to generate a profit if it is to bid for the project. Given the lack of an existing customer base and a tariff structure that is known to be acceptable, this may prove to be challenging. In conclusion, this option was tentatively considered the preferred approach, though this would ultimately be determined by the financial viability of the project as well as how comfortable bidders were with this structure. It was felt that the 50% capital contribution from Central Government (specified in section 3.2.1 of the Commercial case) and consequential reduced private sector finance requirement would help make this a commercially viable proposition.

In conclusion, the preferred approach would depend on achieving the right balance between affordability, risk transfer and value for money to achieve the desired strategic objectives in light of the higher financing costs of private involvement – but bearing in mind that restrictions imposed on the Authority (achievability) imply that some form of private finance will have to be utilised.

5. Project Funding and Financing	5.1 Existing funding	5.2 Publicly funded and financed	5.3 Publicly funded and Privately financed (Availability based PPP)	5.4 Partially Publicly funded and Privately financed (Capex paid on availability basis and Opex paid on demand basis)	5.5. Privately funded and financed (Concession based PPP)
	<i>Carry Forward as Baseline</i>	<i>Carry Forward as DM</i>	<i>Carry Forward as Possible</i>	<i>Carry Forward as Possible</i>	<i>Preferred Approach</i>

The conclusions for each of the five dimensions are summarised in the following table.



Table 18 – Matrix used describing a wide range of options

LONG LIST	Business as Usual	Next level of ambition			Level of most ambition
<b>1. Project Scope</b>	1.1 Existing arrangements	1.2 Increase connections in city centre only	1.3 Increase connections between city centre and surrounding areas (local coverage)	1.4 Connect all areas in the region (regional coverage)	1.5 Connect various regions (inter-regional coverage)
	<i>Carry Forward as Baseline</i>	<i>Carry Forward as DM</i>	<i>Preferred approach</i>	<i>Carry Forward as Possible</i>	<i>Discount</i>
<b>2. Service Solution</b>	2. Existing arrangements	2.2 Enhanced Bus / Bus Rapid Transport (BRT)	2.3 Tram	2.4 Train	2.5 Metro
	<i>Carry Forward as Baseline</i>	<i>Carry Forward as DM</i>	<i>Preferred approach</i>	<i>Discount</i>	<i>Discount</i>
<b>3 Service Delivery</b>	3.1 Existing service model	3.2 DB+OM	3.3 DBOM	3.4 DBFM+O	3.5 DBFOM
	<i>Carry Forward as Baseline</i>	<i>Carry Forward as DM</i>	<i>Carry Forward as Possible</i>	<i>Carry Forward as Possible</i>	<i>Preferred approach</i>
<b>4. Project Implementation</b>	4.1 Four years	4.2 Three years	4.3 Two years	4.4 One year	4.5 Immediate
	<i>Discount</i>	<i>Preferred approach</i>	<i>Carry Forward as Possible</i>	<i>Carry Forward as DM</i>	<i>Carry Forward as Baseline</i>
<b>5. Project Funding and Financing</b>	5.1 Existing funding	5.2 Publicly funded and financed	5.3 Publicly funded and Privately financed (Availability based PPP)	5.4 Partially Publicly funded and Privately financed (Capex paid on availability basis and Opex paid on demand basis)	5.5. Privately funded and financed (Concession based PPP)
	<i>Carry Forward as Baseline</i>	<i>Carry Forward as DM</i>	<i>Carry Forward as Possible</i>	<i>Carry Forward as Possible</i>	<i>Preferred approach</i>

The following were the key findings<sup>24</sup>:

- Increasing connections in the city centre only was ineffective, given the scale of the identified needs;
- Increasing connectivity between Elisia and surrounding regions, while desirable, was seen as more of a long-term goal and national project that would require significant input and support from the Ministry of Transport;
- A heavy rail (train) solution would involve interfaces with national (cross-regional) rail leading to significant risk to project delivery and limit flexibility to adapt the system to Olympus' and Elisia's needs;
- A metro solution, while ideal, would be too disruptive and likely to be prohibitively costly (in terms of increased funding, time and risk) and a tram solution emerged as the one best fitting the CSFs (see further below);
- Given the 'novelty' of the project to the city, it was agreed that the number of contractors should be limited to minimise interface risk. DB+OM option was therefore discounted at this stage;
- 3 years is the maximum length of time that would be acceptable to set up the service (at least for this first phase of the project); and
- All funding and financing options are considered potentially feasible, subject to further financial analysis.

---

<sup>24</sup> See further workshop at Schedule 2 of Guidance

## Creating the Short-List

Other than the Business as Usual and Do Minimum options, the short-list was derived by considering only options that had the potential to satisfy all the CSFs (though recognising that different options met the Strategic Objectives to different degrees). The short-list of options, assessed against the Critical Success Factors, is summarised below (with (P) for pass and (F) for fail):

**Table 19 – Short-list of options assessed against CSFs**

	Strategic Fit	VfM	Supplier Capacity / Capability	Affordability	Achievability	Compliance
<b>Option 1</b> Business as Usual	(F)	(F)	(P)	(P)	(P)	(F)
<b>Option 2</b> Bus – Publicly Funded and Financed Do Minimum	(F)	(F)	(P)	(P)	(P)	(F)
<b>Option 3</b> Tram – DBOM – Publicly Financed – Local Coverage	(P)	(P)	(P)	(P)	(P)	(P)
<b>Option 4 (a/b)</b> Tram – DBFOM – Local Coverage (Privately Financed / Privately Funded and Financed)	(P)	(P)	(P)	(P)	(P)	(P)
<b>Option 5 (a/b)</b> BRT – DBFOM – Local Coverage (Privately Financed / Privately Funded and Financed)	(P)	(P)	(P)	(P)	(P)	(P)

## Scoping Environmental and Social Impact Assessments (ESIA)<sup>25</sup>

At this stage, the project team deemed it necessary to conduct a thorough Environmental and Social Impact Assessment, to establish the risks and impacts for the short list of options. It was decided that the team lacked the necessary expertise to conduct the assessment, and the team chose to contract these services via competitive tender. They included a specific requirement for a gender expert, as the current bus service had a small proportion of female passengers and a recent rise in sexual assaults.

Once the externally contracted ESIA team was established, they were asked to evaluate each of the shortlisted options, determining the potential social and environmental risks and impacts, focusing on a variety of issues such as biodiversity, whole-life carbon cost, gender-based violence and child protection.

These impact assessments were submitted to the project team prior to the development of this Intermediate Business Case, and were used in establishing the Preferred Option<sup>26</sup>.

## 2.4 Conduct Cost Benefit Analysis and Establish Preferred Option<sup>27</sup>

The Olympus Authority subjected the short-listed options to a cost benefit analysis in order to establish a preferred option. This was carried out through a thorough recognition of as many of the scheme impacts – costs, benefits and risks – as possible. They have quantified the costs benefits and risks of each short-listed option where possible, keeping their estimations Prudent, Proportionate and Appropriate. This allowed the calculation of the Public Value for each of the options and a comparison with the benefit-cost ratio<sup>28</sup> (“BCR”). These valuations have used data that have been taken directly from prices paid in markets (or predictions of prices in future markets) or derived from research.

Some of the Risks and Benefits are too difficult to quantify. In such cases, an attempt was made to quantify these impacts. Where this was not possible, the impacts were described in a qualitative manner. This section describes the quantified costs and benefits for the business case and the next section describes the non-quantifiable or qualitative ones.

### Introduction

The tram scheme proposal (as the qualitatively preferred option) was quantitatively tested against the other short-listed alternatives. As explained earlier the full list of alternatives included:

---

<sup>25</sup> See Action 7 in the Guidance for more detail

<sup>26</sup> In a fully developed Intermediate Business Case, the ESIA for each of the short-listed options would be attached as a separate annex; however, this is considered beyond the scope of this Case Study

<sup>27</sup> See Actions 18-20 in the Guidance for more detail

<sup>28</sup> A benefit cost ratio (**BCR**) is simply the ratio of the discounted benefits to discounted costs. A ratio above 1 indicated benefits are greater than costs, a ratio of below 1 indicates that costs are greater than benefits, while a ratio of 1 indicates that the two are equal. It thus attempts to identify the relationship between the cost and benefits of a proposed project. Benefit cost ratios are most often used to summarise the relationship between possible benefits and costs, both quantitative and qualitative, of undertaking new projects or replacing old ones.

- enhanced bus priority measures and ‘light-touch’ improvements to existing bus services (Do Minimum Option);
- provision of a high-quality bus network based around a dedicated alignment that broadly follows the tram proposals (i.e. a bus rapid transit scheme);
- improvements to the local rail network; and
- a metro system.

The assessment of tram scheme and the high-quality bus alternatives included full appraisals of each option. Assessments were also made of the key practicality and acceptability issues constraining the delivery of the alternative options, all as part of the process of developing a wide range of options as described earlier. As mentioned earlier, the rail solution and the metro solution were discarded at an early stage and therefore detailed numerical appraisals on these options were not required, while the enhanced bus measure was retained as the Do Minimum option. This analysis was extensively scrutinised during detailed dialogue with the Ministry of Transport in advance of this Intermediate Business Case submission, and at the planning inquiry.

Some of the alternative approaches have been identified as providing a level of economic benefits broadly commensurate with their scheme cost, but at a much lower level than the tram scheme.

In granting Early Business Case approval, Ministry of Transport identified the tram scheme as the option with the best potential for optimising VfM when compared with other alternatives. Following detailed scrutiny of the economic and wider appraisals that have now been carried out – and given that there have been no changes to the local transport network, funding or other circumstances – this conclusion has been upheld at Intermediate Business Case.

An overview of the quantitative work carried out is presented below. A description of the costs and benefits for the Tram is given in this business case. A comparison of BCRs is also presented here, though details on costs and benefits for the alternative options can be found in an appendix.

## Capital Costs

Capital scheme costs have been estimated by our consultants, through their experience, drawing from applicable reference studies and through knowledge of the existing light rail market. Such costs are incurred over 3 years from 2021 and include construction, preparation, supervision and land costs. The cost associated with Light Rail Vehicles (LRVs) are not incurred until the year of opening of the scheme.

An uplift of [xxx]% has been applied to all scheme cost components to reflect risk. In line with the stage of scheme development optimism bias (“OB”)<sup>29</sup> at [xxx]% has been applied to all non-LRV scheme cost components, while a lower OB of [xxx]% has been applied to the LRV costs to reflect the greater certainty around these costs.

The scheme costs were discounted and presented in real (2021) market prices using [the standard GDP deflator based on September 2020 RPI figures], and the discount rate as set by the National Treasury.

Capital costs are summarised in Table 20 – Capital Costs Summary, presented in real terms, which have been used in the economic case.

## Table 20 – Capital Costs Summary

Capital costs (2021 – 2024)	Real (2021) prices
Cost Category	NL\$
Preparatory works	11.6
Land	50.0
Track	81.6
Construction	326.4
Other	40.8
Light Rail Vehicles	14.0
Total capital costs pre-risk and Optimism Bias	410.6
Risk	36.1
Optimism Bias	77.7
Total capital costs	524.4
Total after Discount Rate of 3.5% for years 1 – 30 & 3.0% for years 31 – 60	332.1

### Operating Costs

A bespoke operational cost model was developed by our consultants to calculate the expected operational cost of the extension scheme over a 60-year appraisal period. Unit operating costs from similar tram and metro lines in the country were utilised, adjusted for location specific factors as determined in conjunction with our consultants.

<sup>29</sup> Optimism bias (OB) refers to the tendency of people involved in a project to overstate benefits, and understate timings and costs, both capital and operational. To redress this tendency, it is good practice to increase the estimates of the costs, and, decrease and delay the receipt of estimated benefits.

Operating cost categories were allocated to the following four parameters:

- Daily operating duration (in vehicle-hours);
- Daily operating kilometres (in vehicle-kilometres);
- Number of stops in the system; and
- Length of the system (in kilometres).

Based on the projected line's assumed route frequencies and measured lengths, the route's return trip duration could be computed. This in turn allowed for the daily operating duration and distance to be estimated and hence the annual operating costs calculated.

An uplift of 10% has been applied to all scheme operating cost components to reflect risk, while an optimism bias of 8.4% was applied. As per the capital costs, operating costs have been converted into real 2021 values using the standard 2% GDP deflator and the discount rate of 3.5% for years 1-30 & 3.0% for years 31 – 60. The final 60-year operating cost of the proposed scheme is NL\$344 million.

A summary of the operating costs is presented below:

**Table 21 – 60 year operating costs**

Operating costs (2024 – 2083)	Real (2021) prices
	<b>NL\$</b>
Staff	343.1
Utilities	51.5
Maintenance	29.9
Other costs	34.3
Total operating costs pre-risk and Optimism Bias	458.8
Risk	45.8
Optimism Bias	38.7
Total operating costs post Risk and Optimism Bias	543.3
Total after Discount Rate of 3.5% for years 1 – 30 & 3.0% for years 31 – 60	344.0

## Environmental Costs

### Noise

The impact of the scheme on noise and air quality was assessed by specialist independent environmental consultants on our behalf with extensive experience of undertaking Environmental Impact Assessments (EIAs) for major transport infrastructure schemes.

These consultants assessed noise impacts against the most stringent noise impact threshold criteria, taking into account changes in ambient noise expected to result from the proposed scheme. Potentially significant noise impacts have been predicted in four areas affecting up to approximately [130] properties. Mitigation measures have been considered for each of these properties, in line with any statutory requirements.

### Biodiversity

The impact of the scheme on biodiversity has not been undertaken as the impacts are deemed insignificant.

### Water Environment

The impact of the scheme on the local water environment has not been undertaken as the impacts are deemed insignificant.

## Quantitative Risk Assessment and Optimism Bias

Transport projects are inherently risky and subject to uncertainties due to the long planning horizon and complex interfaces. Often the project scope or ambition level will change during project development and implementation due to uncertainty at the earlier project stages. Hence, a certain degree of budget uncertainty exists which will typically be reduced through the project cycle.

Risks associated with this project have declined since Early Business Case. The uncertainties around design have reduced substantially following revisions made to bring them in line with consultation responses and engineering analysis.

As mentioned at Early Business Case stage, the Olympus Council does not have a strong body of historical understanding and knowledge of tram projects, this being the first project of its kind for the city. However, as mentioned above, consultants with the right degree of subject matter expertise have been brought in to apply a variety of cost estimation methods that ensure a high degree of confidence in the costs utilised.

Risk is formally quantified in two main forms:

- a quantitative risk assessment (“QRA”); and
- optimism bias, which accounts for the “unknown unknowns”.



These are addressed in turn below.

### Quantitative Risk Assessment

A quantitative risk assessment was carried out following a series of workshops held with various individuals involved with the business case. These workshops enabled the compilation of a comprehensive risk register (together with associated mitigation plans described in the Management Case) that would form the basis of a 'bottom-up' QRA exercise. This exercise allowed for the quantification of risks, subsequently incorporated into the costs of the project.

### Optimism Bias

To address the tendency for appraisers to be overly optimistic about key parameters, guidance suggests that appraisers should make explicit, empirically based adjustments to the estimates of a project's costs, benefits, and duration. These adjustments are based upon the appraisal of the following contributory factors:

- ❑ **Procurement** – complexity of contract structure, involvement of contractor in design, contractor capabilities, government guidance, disputes and claims and information management;
- ❑ **Project specific** – design complexity, degree of innovation and environmental impact;
- ❑ **Client specific** – adequacy of business case, number of stakeholders, funding availability, project management team and project intelligence;
- ❑ **Environment** – public relations, site characteristics and permits/consents/ approvals; and
- ❑ **External influences** – political, economic, legislation/regulations and technology.

In accordance with recommended adjustments for optimism bias, applied on top of the identified quantified risk assessment, have been based upon the empirical data available and reflect the characteristics of the costs under consideration.

The level of optimism bias reduces as the development of a scheme progresses. Given the stage of development the project is in, the level of optimism bias applied is lower than that applied in the Early Business Case. Therefore, in this Intermediate Business Case a weighted average optimism bias value of 27.7% has been added to the capital costs and 18.4% applied to operating costs. These values are considered appropriate for a scheme that is well advanced, has obtained planning powers and is supported by a well-defined procurement route with keen market interest.

The Olympus Council will use its experience in delivering other transport and infrastructure projects to drive efficiencies in development and construction through innovation and smarter working.

The scheme costs, including quantitative risk assessment and optimism bias, are shown in Table 22 – Capital costs (real – total over 60 years) – preferred option and Table 23.

**Table 22 – Capital costs (real – total over 60 years) – preferred option**

	<b>Base Cost</b>	<b>Quantitative Risk Assessment</b>	<b>Optimism Bias</b>	<b>Total Cost</b>	<b>Quantitative Risk Assessment and Optimism Bias to Base Cost</b>
	<b>NL\$</b>	<b>NL\$</b>	<b>NL\$</b>	<b>NL\$</b>	<b>%</b>
<b>Preparatory works (Site decontamination, demolition, clearance)</b>	10.0	1.0	0.6	11.6	16%
<b>Land</b>	50.0	-	-	50.0	0.00%
<b>Track</b>	61.8	6.2	13.6	81.6	32.00%
<b>Design and Construction</b>	247.3	24.7	54.4	326.4	32.00%
<b>Other</b>	30.9	3.1	6.8	40.8	32.00%
<b>Light Rail Vehicles</b>	10.6	1.1	2.3	14.0	32.00%
<b>Total</b>	410.6	36.1	77.7	524.4	27.70%
<b>Total After Discount</b>				332.1	

**Table 23 – Operating costs (real – total over 60 years) – preferred option**

	Base Cost	Quantitative Risk Assessment	OB	Total Cost	Quantitative Risk Assessment and Optimism Bias to Base Cost
	NL\$	NL\$	NL\$	NL\$	%
Staff	343.1	34.3	18.9	396.3	15.5%
Utilities (Power)	51.5	5.2	5.7	62.3	21.0%
Maintenance and Lifecycle	29.8	3.0	6.6	39.4	32.0%
Other costs	34.3	3.4	7.5	45.2	32.0%
Total	458.8	45.8	38.7	543.3	18.4%
Total after Discount			344.0		

Details on the risk register and the benefits register can be found in the Commercial Case and Management Case and their respective appendices.

### Valuing the benefits

User-benefits measure the direct effects of transport investments, such as reductions in vehicle operating costs and journey time savings.

### Revenues

A demand forecasting model was built by our consultants, which forecasts the passenger usage of the tram based on a broad range of assumptions about a shift from car or bus to tram use and newly generated demand from the new scheme. Demand was segmented by passenger type and time of travel.

Pricing for tickets was set using a simple fare structure whereby fares do not vary by the distance travelled but do vary by the time period in which a journey commences (i.e. peak or off-peak). Further assumptions were also made about discounted fares for children, students, elderly and the unemployed as well as adjustment factors for fare evasion. Given the tram project is new, extreme caution was taken in the estimation of passenger and revenue forecasts using a number of conservative assumptions throughout the forecasting process.

Gross revenues were estimated to total **NL\$905.7m** in real terms over the 60-year appraisal period, equal to an NPV of **NL\$573.5m**. It is assumed in the appraisal that all the revenue generated by the scheme will be returned to the public sector and offset a proportion of the investment and operating costs of this scheme. Meaning the Present Value of Costs is **NL\$102.5**

**Table 24 – Present Value Costs**

<b>Costs &amp; Revenue</b>	<b>Value NL\$m</b>
<b>Capital Costs</b>	<b>-332.1</b>
<b>Operating Costs</b>	<b>-344.0</b>
<b>Offset Revenues</b>	<b>+573.5</b>
<b>Present Value of Costs</b>	<b>-102.6</b>

### Time-savings

The introduction of the tram will result in time savings for those changing their mode of transport from car or bus to tram. This time is of value to the individual switching mode (the transport user) and can therefore be captured in the CBA.

Consultants have carried out lengthy data collection and analysis, primarily through surveys, complemented by data held in the local and central transport databases and analysed using bespoke models built for the purposes of preparing this business case). This has allowed the Olympus Council to estimate the journey purpose of users likely to be switching mode, namely business users, commuters and other (generally leisure) users. They have also estimated the mode of transport that each of these users are currently using (i.e. car or bus), the origin and destination of their trips, and the time taken to carry out such trip. This data allowed us to estimate how many users are likely to switch to tram and the time savings made from doing so.

National guidance provides the value of time for each of these types of users, thereby allowing the total value of travel-time savings made as a result of switching to tram.

**Table 25 – Values of Time<sup>30</sup>**

Journey type	Value of Time (NL\$ per hour)
Working – business	19.27
Non-working – commuting	9.95
Non-working – other	4.54

The total value of time over the 60-year appraisal period is estimated to be NL\$250.8m.

### Greenhouse gas emissions

The switch from car to tram allows for a reduction in a number of pollutants. Data made available by the Ministry of Transport allows for a value to be placed on the reduction in CO<sub>2</sub> emissions that can be expected over time. Data is available on the amount of CO<sub>2</sub> emitted per litre of petrol and diesel burnt. The Vehicle Registration agency was able to provide the type of cars currently used in the city and surrounding areas, and therefore their fuel efficiency.

The difference between the amount of CO<sub>2</sub> emitted by a gradual decline in car usage and that emitted by the fuel consumed by the electric tram provides the amount (in tonnes) of CO<sub>2</sub> savings. In terms of regional and global air quality, the reduction in CO<sub>2</sub> emissions from the vehicle fleet travelling within the study area is predicted to be in the region of [xxx] tonnes. The annual emissions of CO<sub>2</sub> generated to power the trams are predicted to be in the region of [xxx] tonnes.

Whole-life carbon estimates were developed for each of the shortlisted options, based on reference projects and using industry standard modelling for the components: capital (construction), and operation.

Low, central and high estimates of (non-traded) carbon prices per tonne of CO<sub>2</sub> allows for a monetised range of the value of such savings, estimated to be [NL\$12.6m] (central estimate) over the 60-year appraisal period.

### Air Quality

The scheme is predicted to beneficially impact the local air quality in the surrounding areas. While most of the changes in traffic-flows as a result of traffic management and redistribution are expected to be minimal, with only two roads experiencing increases greater than 10%, overall traffic is expected to decline, and travel speeds are expected to be environmentally beneficial. Sensitive receptors<sup>31</sup> along these two routes are predicted

<sup>30</sup> These values (in market prices) have been sourced from the UK's Department for Transport 'Transport Appraisal Guidance' (TAG) data book published in July 2017 (Table A1.3.1). The latest version of the document can be found here and contains further and more detailed data:

<sup>31</sup> Sensitive receptors are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants. Extra care must be taken when dealing with contaminants and pollutants in close proximity to areas recognised as sensitive receptors. They include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities.

to experience negligible increases in pollutant concentrations. It is predicted that there will be a decrease in pollutant concentrations at two schools (also identified as potentially sensitive receptors) along another route.

## Accidents

Lower car usage is expected to lead to a reduction in accidents. A number of cities worldwide which introduced a tram or metro scheme in heavily congested areas were researched, and data on road accidents as well as light rail accidents were collected. While it is difficult to predict the fall in accident rates, the Olympus Council took conservative assumptions that will allow for their inclusion in the estimation of the BCR.

Ministry of Transport guidance states that the impact on accidents needs to be analysed as part of an economic appraisal for a road scheme, which guidance also provides a spreadsheet-based programme for the purposes of undertaking such accident analysis. The model requires data on Business as Usual and road specific information (such as flows, speeds and distances) which are combined with pre-defined accident rates, costs and growth rates to assess the safety benefits.

The Ministry of Transport holds data of fatal, serious and slight injuries in the area that will be impacted by the scheme. It has also published the cost of each of these types of injuries, made up of three components; lost output, human cost and the medical costs. This has allowed for a monetisation of the accident savings, as per the following table, using year 10 as an example.

**Table 26 – Monetisation of accident savings<sup>32</sup>**

	Number of incidents (annual)		Cost per accident	Value of accidents avoided
	Current (car)	After 10 years (car and tram)		
<b>Fatal</b>	20	10	1,556,244	15,562,440
<b>Serious</b>	50	30	174,878	3,497,560
<b>Slight</b>	200	75	13,481	1,685,125
<b>Total</b>				20,745,125

This model predicts that over the 60-year appraisal period, the scheme will result in an overall accident benefit of NL\$20.7m.

<sup>32</sup> The 'cost per accident' values have been sourced from the UK's Department for Transport 'Transport Appraisal Guidance' (TAG) data book published in July 2017 (Table A4.1.1). The latest version of the document can be found here and contains further and more detailed data: <https://www.gov.uk/guidance/transport-analysis-guidance-webtag#webtag-data-book>. Other values in the table are fictitious / illustrative.

## Reliability

Congestion is a major issue affecting both car and bus journey times. The unreliability of road journey times currently acts as a barrier to employment for many residents. The scheme is expected to provide a more reliable, higher quality mode of transport. The scheme will therefore have a beneficial impact on reliability for passengers switching mode from bus and car to tram. In addition, a journey time comparison between the tram route and existing bus routes servicing the City Centre shows that with the scheme in place, public transport journey times will reduce by around [20%].

## Commuting and Other Users

Benefits to commuting and other users are included in the benefits section at 2.4.6 above. In line with Ministry of Transport guidelines a distributional impact appraisal of non-business journeys has been carried out to demonstrate the distribution of user benefits. User benefits for commuting and other purposes have thus been mapped against Indices of Deprivation data to illustrate the potential distribution of user benefits amongst different income groups. This analysis is presented in an appendix.

The table below shows the user benefits according to income quintile. The tram scheme has a positive impact on all income distribution quintiles. The largest benefit is associated with areas which fall within the most deprived segment (0% < 20%). The scheme also provides benefits to deprived areas currently served by buses but not directly served by the tram due connectivity between tram and bus.

**Table 27 – Distributional Impacts of User Benefits**

Income quintile	0%<20%	20%<40%	40%<60%	60%<80%	80%<100%	Total
<b>Total benefits (NL\$m)</b>	196.1	45.2	30.1	15.0	15.0	301.6
<b>Share of user benefits</b>	65%	15%	10%	5%	5%	100%
<b>Share of population in the impact area</b>	55%	25%	15%	10%	5%	100%

## Journey Quality

The scheme will have a beneficial impact on journey quality for passengers switching mode from bus to tram, as the latter mode of transport is expected to be more comfortable and have more passenger facilities compared to a bus. Most importantly, the tram will not noticeably be impacted by road congestion.

## Landscape/Townscape/Historic Environment

The scheme is partly to be constructed on a disused freight railway line. As a result, the landscape, townscape and historic environment impacts of the scheme will be minimal along these sections. However, the street running sections will result in a significant improvement in the townscape as measures are to be implemented to improve the street environment. Each of the new stations proposed as part of the tram scheme will be accompanied by significant improvements to the surrounding urban vicinity.

Although current guidance does not allow for it, the consideration of wider benefits brought by urban vicinity improvements in transport appraisal is used in other countries. Urban vicinity assessment allows the monetisation of benefits associated with improved journey ambience experienced by pedestrians moving through the area. This economic benefit can be quantified using a toolkit<sup>33</sup> developed by a transport organisation in a major world capital.

A modified version of this toolkit (to accommodate the socio-economic differences between the study area and those for the area in which the original study was conducted) has been used to estimate the benefits for pedestrians in terms of journey quality from improvements to urban vicinity that will accompany the tram scheme. These benefits have not been included in the core benefits assessment for this scheme and are outside the BCR.

## Social, Distributional and Geographical Impact Assessment

Distributional impacts analysis considers how transport impacts vary across different social groups. It considers both beneficial and adverse distributional impacts of transport along with the identification of the social groups likely to be affected.

### Geographical distribution

One of the priorities of the Olympus Council is to rebalance the distribution of wealth from within the city centre to the areas outside it. This is important not just for its own sake; the extent to which the city centre can grow without further negative impacts on the quality of life of those working and living in the area is likely to be limited. Nonetheless, there are benefits to be had from activity being concentrated in one particular area, as businesses benefit from being close to each other. Striking the right balance is important.

What the tram scheme aims to achieve is to make housing developments outside the centre become viable as they become better linked to the areas of work in the city centre, thus enabling workers to move between one area and the other with ease. It will also enable businesses that want to locate outside of the centre, due to land availability constraints (both physical and cost), to do so but still have more feasible access to the centre through the tram.

---

<sup>33</sup> In order to capture the intrinsic value of how users assess enhanced urban vicinity, the toolkit requires the conduct of stated preference research to estimate respondents' willingness to pay for improvements to spaces they use, and a monetary value applied to the score results of this study. By conducting the study before and after a scheme is implemented, and using the values proposed by the study, it is possible to estimate the benefits derived from urban vicinity improvements. This allows an assessment in change in quality of a range of different factors that contribute to the perception of urban vicinity.



## Locations

In line with Ministry of Transport guidelines a distributional impact appraisal of accessibility has been undertaken. Accessibility assessments have been carried out using the same guidance with a strategic accessibility assessment carried out at for two strategic locations along the tram scheme: city centre and shopping centre. Both of these have been chosen due to their regional importance as they are key areas of employment, education, recreation and retail.

Survey data on current journey times from a number of areas leading to these strategic locations has been compared to expected journey times following the introduction of the tram. It can be seen that for a number of residential areas across the city and its surroundings accessibility is significantly enhanced as a result of the tram scheme. The results of this analysis are presented in an appendix.

## Demographic groups

An analysis of data on car ownership and wages shows the prevalence of low (or no) wages and low (or no) car ownership is very pronounced for women. This naturally also makes it difficult for women to access jobs, particularly given their preference for part-time jobs that would allow them to care for children and carry out household duties. This limits the possibility of car-sharing.

Another group which suffers particularly from low wages and access to a car are people with physical disabilities. Public transport facilities that allow such people to access jobs are very weak, making them reliant on assistance from family and friends to do so. For many though this is not a feasible option, resulting in people with disabilities being discriminated against when looking for work, or leading them to not seek work from the outset.

The tram system will aim to address both these groups. In the case of women, the existence of the tram will give them increased public transport options (particularly through the security measures described above). Facilities that will allow people with disabilities to access trams with ease will also be put in place, through ramps and low flooring, as well as assistants at a number of stops. The Authority will also provide an "on-demand" service that would allow those with mobility needs to access to / from tram stops from / to their origin / final destination.

## Accessibility

The tram scheme is a crucial element in enhancing connectivity and accessibility. In an area characterised by large segments of the population with low wages and relatively low car ownership, a reliable and affordable public transport system which increases movement and connects people to areas of workplaces is crucial in promoting economic growth and increasing living standards.

## Physical Activity

The scheme is expected to have some impact on the levels of physical activity, however a detailed assessment of this element has not been undertaken. The main impact is expected to be from reduced congestion on the roads that is expected to encourage more cyclists to use the road.

## Security

This refers to the fact that certain categories of users may suffer from greater anxiety when using public transport leading to a potential reduction of travel. The tram scheme is expected to enhance the level of security afforded to users who switch from bus to tram and this is expected to increase the number of women using the system.

Surveys have shown that one of the main reasons for women not using public transport is the lack of safety (real or perceived) of the system. Some women have reported being harassed when using buses, while other feel that they are perceived as being more vulnerable to pick-pockets. Of greater concern is the fear of violent robberies and sexual assault, particularly at night. It has also been reported that these concerns occur as people travel to or from the bus stop, while waiting for the bus as well as while they are on the bus.

Clearly these are complex problems that require interventions that go beyond transport. However, the Authority is committed to make the system secure by introducing measures that cover as much as possible of the end to end journey. This comprises the use of high-quality CCTV both on the trams as well as at the tram stops, the presence of security and other tram staff around the stops and improved lighting at the tram stops and within 100m of a tram stop.

## Severance<sup>34</sup>

The scheme is expected to have no additional negative impact on severance as the line will mainly utilise an existing disused railway alignment and will not create any significant barriers which pedestrians will be impeded from crossing. The proposed alignment of the tram follows an existing, disused, heavy freight rail line for a large part of its route. There are existing footbridges in place over the current heavy rail line and in some instances the quality of these footbridges is likely to improve as part of the design for the tram stations. The scheme creates some new footbridges at stops along the route, thereby providing a small benefit which has not been quantified.

---

<sup>34</sup> The concept of severance is used when transport infrastructure or motorised traffic acts as a physical or psychological barrier to the movement of pedestrians. The most extreme cases of community severance are caused, for example, by multi-lane roads with physical barriers preventing pedestrians from crossing.

## Option Values

The scheme is expected to enhance the local public transport network and in doing so improve the options for those requiring access to current and future residential, commercial, and leisure sites in the area. Although difficult to quantify, studies show that passengers value this improvement in choice.

### Compare the costs and the quantifiable benefits

The table below summarises the high-level outputs resulting from the costs and benefits described above, for the preferred option (i.e. option 4).

**Table 28 – Analysis of Monetised Costs and Benefits for the preferred option (option 4)<sup>35</sup>**

Impact type (monetised)	Value (NL\$)	Notes
<b>Greenhouse Gases</b>	12.6	1
<b>Accidents</b>	20.7	2
<b>Economic Efficiency (Value of Time) Benefits</b>	250.8	3
<b>Wider Public Finances (Indirect Taxation Revenues)</b>	17.5	4
<b>Present Value of Benefits (PVB)</b>	301.6	Sum of 1 to 4 = 5
<b>Present Value Capital Costs</b>	332	6
<b>Present Value Operating Costs</b>	344	7
<b>Present Value Revenue</b>	573.5	8
<b>Present Value of Costs (PVC)</b>	102.5	(6+7)-8 = 9
<b>Public Value</b>	199.1	5-9 = 10
<b>Benefit to Cost Ratio (BCR)</b>	2.94	5/9 = 11

<sup>35</sup> For the purposes of this case study all figures are illustrative and are not derived from a model

## Table 29 – Summary of Public Value and BCRs

	Option [1]	Option [2]	Option [3]	Option [4]	Option [5]
<b>Public Value</b>	[xxx]	[xxx]	[xxx]	199.1	[xxx]
<b>BCR</b>	[xxx]	[xxx]	[xxx]	2.94	[xxx]

## 2.5 Determine Non-Monetised Risks and Benefits

Non-monetised risks have been covered in:

- the management case, and a risk register has been prepared and is presented as an appendix. All non-monetised risks have been allocated a mitigation measure. Non-monetised risks are presented in an annex<sup>36</sup>. The Olympus Council is satisfied that none of these risks would cause a change to the preferred option. This is either because they are risks common to all projects of this type, sufficient mitigation processes have been put in place or the severity of the risks is low.

Non-monetised benefits are covered in:

the *Conduct cost benefit analysis* section above. Such benefits strengthen the case for the preferred option.

## 2.6 Conduct Sensitivity Analysis

### Sensitivity on Model Inputs

A high-level sensitivity analysis was conducted on the economic model inputs, so as to test in broad terms the impact of a given percentage changes in such inputs on the BCR. This test was carried out on capital costs, operating costs, all (monetised) benefits and a joint-sensitivity on a combination of all three (though at lower levels of change).

---

<sup>36</sup> Note that this analysis, while it should be done for the purposes of a standard business case, falls outside the scope of this model case study.

Table 30 – Sensitivities

	Preferred Option		% change (sensitivity)	Sensitivity (Preferred Option)		Next-Best Option	
	BCR	Public Value		BCR	Public Value	BCR	Public Value
<b>Capital Costs</b>	2.94	199.1	+10%	2.22	165.9	[xxx]	[xxx]
<b>Operating Costs</b>	2.94	199.1	+10%	2.20	164.7	[xxx]	[xxx]
<b>Monetised Benefits</b>	2.94	199.1	-20%	2.35	138.8	[xxx]	[xxx]
<b>Combined</b>	2.94	199.1	+5% Total Costs; -10% Total Benefits	2.52	163.8	[xxx]	[xxx]

A lower change of 10% was tested on costs as, at this stage of development, these are known with a fair degree of certainty given the use of cost consultants and engineers who have many years of experience on similar projects. The benefits, on the other hand, are a combination of specialist predictions (which, given the absence of an existing tram system in Olympus, has generated forecasts which may, potentially, be less robust than otherwise). Similarly, monetised social and economic benefits are based on studies and other evidence that may be prone to error. For this reason, monetised benefits have been 'sensitised' by 20%. A combined sensitivity of changes at half of the individual ones was also created.

The results show that, under all the sensitivities conducted, the preferred option holds, even when the costs and benefits of the next best option are unchanged. In addition, even though the BCRs of the two options are now closer to each other, the NPV of the preferred option is significantly higher than that of the next-best option.

## 2.7 Review Environmental and Social Impact Assessments (ESIA)<sup>37</sup>

A review of the detailed Environmental and Social Impact Assessments was conducted. It was determined that Option 4 (Tram – DBFMO+O – Local Coverage (Privately Finance / Privately Funded and Financed)) should be considered the Preferred Option from an environmental and social perspective. As it scored highest amongst the considered options on the Gender & Inclusion Framework<sup>38</sup> and is seen to be building assets, capabilities and opportunities for women, persons with disabilities, and marginalised groups.

<sup>37</sup> See Action 21 in the Guidance for more detail

<sup>38</sup> Refer to Schedule 4 of the Guidance

## 2.8 Conclusion

The quantitative CBA confirmed Option 4 (Tram – DBFM+O – Local Coverage (Privately Financed / Privately Funded and Financed) as the preferred option. The ratio of benefits (comprising user benefits, non-user benefits as well as indirect taxation benefits) to costs (being the sum of construction costs and net operating costs) emerged at 2.94. This ratio is considered to provide good value for money to the tax payer.

Having tested this option for non-financial benefits and risks this option remains the preferred option. We have examined Option 4 against a range of different possible scenarios through our sensitivity testing in the Economic Case and the Financial Case. This tested for changes in the primary line items including capital costs, operating costs, revenues and monetised benefits. These tests suggest that Option 4 remains a robust preferred option and accordingly we confirm it as our preferred option.

## 2.9 Value for money of private finance

### VfM in private finance

In accordance with guidance, we have applied both a quantitative and qualitative value for money test of private finance.

The quantitative test for VfM is determined through a comparison of the PPP as against the Public Sector Comparator (PSC)<sup>39</sup>, using a model provided by Ministry of Transport<sup>40</sup>. This VfM study has therefore been undertaken using the standard Ministry of Transport VfM model and has used information from the tram scheme Financial Model. The period in the Financial Model from construction start to the end of operating is 25 years. The construction period is 3 years with operations assumed to start in year 4.

### Indexation

Under the PPP model, the real capital expenditure (Capex) and operating expenditure (Opex) figures have been used and are escalated at an annual inflation rate of 2.5 % per annum (as per the Financial Model) to obtain a VFM model base year of 2015. An annual Capex cost escalator of 2.5% per annum is then assumed, consistent with the Financial Model. The non-indexed unitary charge<sup>41</sup> used in the Financial Model has also been reflected in the VfM Model.

---

<sup>39</sup> The Public Sector Comparator (PSC) is the best viable alternative option for direct public provision comparable to a PPP option. The PSC is sometimes referred to as the Reference Project.

<sup>40</sup> It may be noted that in the UK such detailed modeling of options is now recommended as against a number of different options – not just one public sector comparator and one privately financed. See also <http://pubdocs.worldbank.org/en/274711479159288956/Guidance-on-VfM-FINAL.pdf>

<sup>41</sup> Under a PPP contract, the unitary charge is the amount received by the private sector operator for the services provided. It incorporates compensation for both the capital spend and the ongoing operating and maintenance costs.

## Costs

In relation to PPP funding, as per the Financial Model, the gearing ratio<sup>42</sup> is 81% and the swap rate is 4.75%. The assumed bank margins<sup>43</sup> are also consistent with the funding terms included in the Financial Model. Finally, the transaction costs were also obtained from the Financial Model and were subject to consistent indexation.

Under the PSC model, pre-Optimism Bias (“OB”) Capex, lifecycle and Opex costs in the VfM model are assumed to equal the respective PPP costs. The transaction costs are 3% of the initial PSC Capex costs as per the Ministry of Transport guidelines.

Both capital and operating costs, at pre-Full Business Case stage, are assumed to have the same OB. The PSC option though is assumed to have a further 10% OB in the post-Full Business Case period. The difference in OB is reflective of the value of risk transfer achieved under PPP (as represented by the blue box in Figure 8 below). These assumptions are considered reasonable when comparing actual outturn costs experienced on publicly procured projects, especially given the complexities of constructing, operating and maintaining a modern light rail system.

## Income

**Third-party income**<sup>44</sup> for the model has been projected to be equal under the PPP and the PSC option. This is a conservative assumption, as there is likely to be a lower level of revenue protection and generation from the PSC option based on a comparative study of schemes procured by the private sector against those procured by the public sector.

Moreover, the fact that the PPP option would transfer the risk of third-party income to the contractor makes the PPP option favourable to the scheme promoter. These factors have not been quantified but should be taken into account alongside the final result of the VfM Model.

## Tax adjustment<sup>45</sup>

The Ministry of Transport guidance has been used to calculate the adjustment factor of 8% for tax under the PPP model as against the PSC model.

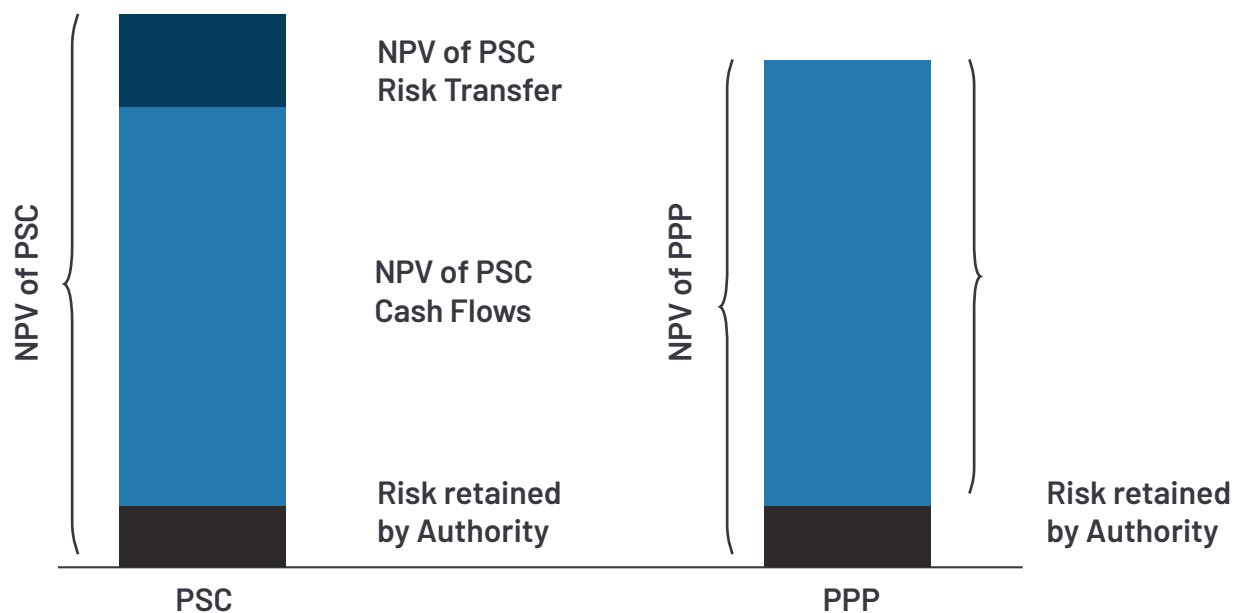
<sup>42</sup> The gearing ratio measures the proportion of a project’s (or company’s) borrowed funds (debt) to its owner’s own capital (equity). A high gearing ratio represents a high proportion of debt to equity, and a low gearing ratio represents a low proportion of debt to equity.

<sup>43</sup> Under a PPP contract, the bank margin is the difference between the bank’s own cost of funds and the interest rate that the lender charges the project. It aims to cover costs (such as operating costs and profits) as well as risk of the project defaulting.

<sup>44</sup> For the purposes of this case study, third party income refers to farebox revenue.

<sup>45</sup> Due to the use of private finance, PPP will lead to additional tax being received by central government. Such corporation tax should be deducted from the costs of the PFI option (or added to the PSC, which has a similar effect).

**Figure 8 – NPV of PSC vs PPP**



## VfM

The VfM Model shows the extent to which, based on the chosen Pre-Tax Target Internal Rate of Return (IRR)<sup>46</sup>, the net present value of the PPP option is better (if the figure is positive) or worse (if the figure is negative) than the net present value of the PSC Option. Based on the above assumptions and an assumed Pre-Tax Target IRR of 15%, the PPP VfM figure is 10.44%, meaning that the Council might conclude that the PPP Option is more likely to provide VfM than conventional procurement. This result should be further considered alongside the favourable effects of transferring the risk of third-party income to the contractor under the PPP options.

## Sensitivity on PPP VfM

To test the robustness of our VfM analysis, a sensitivity analysis has been carried out on the break-even point of the VfM figure as follows:

- Capex – Break even is at -14% (of the PSC)
- Opex – Break even is at -17% (of the PSC)
- Transaction costs – Break even is at -476% (of the PSC)
- Unitary Charge – Break even is at +12% (of the PPP).

<sup>46</sup> The IRR is the discount rate at which the net present value of a stream of payments is equal to zero. It is effectively the annualised compounded rate of return; therefore, in general the higher the IRR the better the project is.



A sensitivity analysis has been carried out on the VfM figure as follows:

- ❑ Capex +10% (of the PSC) results in a VfM figure of 16.86%
- ❑ Lifecycle +10% (of the PSC) results in a VfM figure of 10.73%
- ❑ Opex +10% (of the PSC) results in a VfM figure of 15.54%
- ❑ Transaction costs +10% (of the PSC) results in a VfM figure of 10.63%.

Set out below is an evaluation of the project against the qualitative criteria for PPPs, which confirmed the likely suitability of the approach.

Criteria		High	Medium	Low
1.	Output/service-delivery driven	x		
2.	Substantial operating content within the project	x		
3.	Significant scope for additional/alternative uses of the asset			x
4.	Scope for innovation in design and delivery	x		
5.	Scope for long term "whole life" solution	x		
6.	Long term predictable need		x	
7.	Committed and capable public-sector management		x	
8.	Political sensitivities are manageable		x	
9.	Risks primarily commercial in nature	x		
10.	Substantial size	x		
11.	Complete or stand-alone operations to allow maximum synergies		x	
12.	Competitive bidding market		x	
13.	Capable of "fixed price" bid		x	





---

# 03

## Commercial Case

---

## 3.1 Introduction

The Commercial case demonstrates that the project is commercially viable, that the supplier market has been tested, and that the contract is well developed with an appropriate risk allocation.

The development of the commercial case is set out below.

This case deals first with the commercial strategy<sup>47</sup>, outlining the rationale for the selected form of contract, and then the procurement strategy and route to market in accordance with procurement rules. It describes the market sounding exercises carried out which provided evidence of contractor, lender and investor market interest and helped shape the proposed terms of the project.

Next, it deals with the development of the design specification and service streams, and the allocation of risk between the parties. Next, it develops the payment mechanism illustrating how the Concessionaire is contractually bound and incentivised to deliver the outputs desired for the benefit of the stakeholders.

Finally, it looks at key contractual elements namely: third party interfaces, utilities diversion, third-party claims for noise nuisance and injury, and network extensions and refers to Olympus Council's engagement with the multilateral development banks.

At Early Business Case Stage, the commercial case was only in rudimentary form, reflecting procurement intentions and best practice, since it was not possible to develop a definitive commercial proposition until a preferred option was selected following options appraisal<sup>48</sup>.

At this Intermediate Business Case Stage, prior to going to market, there is a developed procurement strategy, a clear commercial proposition and a good basis for contract<sup>49</sup>. The Full Business Case Stage will document the actual procurement process and replace the assumed commercial position with the negotiated deal<sup>50</sup>.

---

<sup>47</sup> Best practice suggests that all organisations should have a business strategy of which the commercial strategy is a part, alongside a number of other strategies such as a Human Resource (HR) Strategy, and an Information Management and Technology (IM&T) Strategy. Where resources allow, these should be prepared.

<sup>48</sup> See Actions 8-9 in the Guidance for more detail.

<sup>49</sup> See Actions 22-25 in the Guidance for more detail

<sup>50</sup> See Action 42 in the Guidance for more detail

## 3.2 Determine the Commercial and Procurement Strategies<sup>51</sup>

### Commercial Strategy

Implementing a light rail transport service relies on the successful delivery of the following services:

- ❑ **Design** of the infrastructure and service
- ❑ **Physical build** of the required infrastructure
- ❑ **Financing** of the infrastructure
- ❑ **Operation** of the light rail service
- ❑ **Maintenance** of the infrastructure.

The procurement of these services lends itself to different possible commercial arrangements. These were introduced and tested as part of the Economic Case Options analysis. The most relevant of these are now assessed in more detail below:

**Option 1: Design, Build, Operate and Maintain (DBOM)** – Under this structure one single contractor would have accountability for the design, build, operation and maintenance services.

This is the same structure as DBFOM (below), but without any external private sector project finance.

#### Advantages

- ❑ Integration risk is fully transferred. This is a key objective of the Council in terms of inter-operability of infrastructure and vehicles.
- ❑ This structure incentivises whole life costing, as the concessionaire is responsible for all aspects of the project from design through to operation, for the duration of the contract period (but not so much as Option 2).
- ❑ A market consultation exercise conducted by the Council has shown that the operator and construction market would be receptive to this structure.
- ❑ This structure can easily accommodate future system extensions.
- ❑ Potential to achieve off balance sheet treatment.<sup>52</sup>
- ❑ Since the Council would pay for the capital cost, the overall construction finance costs would be lower than Option 2, which is privately financed (but with less risk transfer).

---

<sup>51</sup> A commercial strategy should address a wider range of issues, including sourcing; collaborative procurements and economies of scale; marketing; competitive advantage; pricing; and market share. For the purposes of this case study only, the content is limited to service delivery.

<sup>52</sup> Note – balance sheet treatment will be a matter for applicable national accounting standards and may depend on the allocation and degree of risk – these may vary around the world.

## Disadvantages

- ❑ Requires up-front public-sector capital funding. The Council does not have sufficient available funds for a project of this size and has constraints on the amount it can borrow – which renders this option impractical.
- ❑ This structure does not deliver significant construction risk transfer or the same degree of whole life cost risk to the private sector as Option 2 – despite contractual provisions, significant latent defect risk and life cycle risk effectively sits with the public sector because the public sector pays for construction.
- ❑ No requirement for substantial bank due diligence which would otherwise help identify and manage risk and ensure the delivery of the final project.
- ❑ Since the concessionaire does not receive ongoing unitary charge payments in respect of which performance deductions may be made, this structure does not incentivise the achievement of passenger-focused outputs to the same extent as Option 2.
- ❑ As for Option 2, full transfer of farebox risk may not be accepted in the market.

This option was adjudged not to be as efficient as Option 2.

**Option 2 – Design, Build, Finance, Operate and Maintain (DBFOM)** – As for option 1, but in addition, the contractor would be responsible for financing the construction of the project.

Under this option, a single concessionaire would be appointed as the sole point of accountability for all aspects of the project, including design, build, financing, operation and maintenance. The concessionaire would be paid by reference to service-based outputs, such as timetable and ride quality, with an additional “availability” based element referenced to construction costs – though the Council will make a capital contribution equal to 50% of capital cost – thus reducing the amount needing to be financed by the Concessionaire. There is a single point of accountability for all services and substantial risk transfer is achieved.

## Advantages

- ❑ Integration risk is fully transferred. This is a key objective of the Council – achieving inter-operability of infrastructure and vehicles.
- ❑ This structure incentivises whole life costing more than any other, as the concessionaire is responsible for all aspects of the project from design, construction, finance through to operation, for the duration of the contract period. Banks would undertake due diligence.
- ❑ A market consultation exercise conducted by the Olympus Council has shown that the operator and construction market would be receptive to this structure. In addition, funders consulted by the Olympus Council in a recent soft market test were positive towards the use of a DBFOM structure.
- ❑ The payment mechanism provides greater incentive than under any other procurement option to achieve passenger-focused outputs (e.g. service frequency and ride quality).

- This structure does not require up-front Council capital funding beyond the 50% available from Central Government.
- Potential to achieve off balance sheet treatment.<sup>53</sup>

### Disadvantages

- Experience from elsewhere has shown that long-term farebox risk transfer may be unattractive to funders. However, this can be mitigated using a revenue share mechanism (if required) or appropriate ratios between debt service, unitary charge and farebox revenue<sup>54</sup>. Whilst funders consulted in the soft market test were cautious about revenue risk, they believed that with the right ratio of revenue risk to unitary charge payments, a significant degree of revenue risk could be transferred without adversely affecting value for money.
- Cost of private sector debt (however, some concessional funding may be available from the regional multilateral development bank to mitigate the overall cost); furthermore, the Council does not have alternative available funding sources of its own to cover the capital costs of a project of this magnitude beyond the 50% contribution from Central Government.

This was felt to be a strong option.

**Option 3 – Design, Build, Finance and Maintain plus Operate (DBFM+O)** – Under this structure the DBFM contractor is responsible for providing and maintaining the infrastructure based on PPP availability payments and a separate operating concession to operate the transport is awarded.

Under DBFM+O a DBFM contractor is responsible for providing the infrastructure and vehicles under a long-term contract and is paid on the basis of availability of infrastructure rather than on the basis of service-based outputs. A separate operating company is awarded a short-term operating concession.

### Advantages

- This structure facilitates the procurement of future unforeseen extensions because there can be more than one infrastructure provider, meaning that the existing DBFM arrangements do not need to be terminated. The relatively short duration of the operating contract allows for regular re-letting of the operating contract in respect of the entire system. Regular re-letting of the operating contract in a competitive environment will force the short-term concessionaire to seek greater levels of operational efficiency. However, as noted above, this can also be achieved under the DBFO structure.
- This structure does not require upfront public sector capital funding.
- Whole life costing benefits in that the same entity is responsible for design, construction and maintenance (though not operation).

<sup>53</sup> But see Section 3.6.6 following.

<sup>54</sup> The revenue collected through passengers using the service

## Disadvantages

- While this model is proving successful in an “off-street environment”, in the case of this project, there are clear interfaces with a separately procured operator and disputes at these interfaces are likely to result in additional cost for the public sector.
- The level of complexity associated with this structure in order to deal with the interfaces between the operator and the DBFM contractor is not proportionate and the Council does not have the resources available to manage this interface risk.
- May not achieve off balance sheet treatment.
- Retention of long-term revenue risk due to short operating contract.
- Less effective transfer of risk to operator because no financing is at stake under the operating concession.
- A payment mechanism based on availability of infrastructure rather than matters such as reliability, punctuality and ride quality does not incentivise customer-focused outputs.

**DBFM+O** has been dismissed because of the co-ordination problems that would arise from the division of operations, on the one hand, and design, construction and maintenance, on the other.

**Option 4 – Design and Build plus Operate and Maintain (DB+OM)** a design and build contract would be awarded followed by a separate operating and maintenance concession.

## Advantages

- This structure allows new infrastructure for system extensions to be procured directly by the public sector and the operating/maintenance contract to be extended to cover the entire system. However, as detailed above, the Council does not have available funds for the construction cost and same effect could be achieved through a DBFO structure.
- As with DBFO, responsibility for operation and maintenance rests with the same entity, avoiding some of the problems associated with the DBFM+O structure.

## Disadvantages

- This structure does not deliver optimal whole-life cost or transfer significant long-term risk to the private sector. For example, despite contractual transfer of risks, much of latent defect risk and life cycle risk effectively sits with the public sector because there is no bank funding at stake.
- Unlike Option 2 (DBFOM), because the concessionaire does not receive ongoing unitary charge payments. Thus, performance-based deductions cannot be made which does not incentivise the achievement of passenger-focused outputs.
- Will not achieve off-balance sheet treatment.
- Integration risk between D&B and O&M elements is not transferred and remains with the Council.



- No requirement for substantial bank due diligence which would otherwise help identify and manage risk and ensure the delivery of the final project.

**DB+OM** has been dismissed because this structure does not deliver optimal whole life costing or transfer significant long-term risk to the private sector. It also does not achieve a clear and full transfer of integration risk between the build contract and the operation and maintenance concession. Furthermore, because the operator would not receive ongoing unitary charge payments, performance-based deductions cannot be made which does not incentivise the achievement of passenger-focused outputs.

Accordingly, our preferred procurement route is Option 2 **DBFOM**, for the following key reasons:

- **Full transfer of system integration risk** – the concessionaire will be required to deal with any system integration problems (e.g. inability of the operating sub-contractor to meet timetable requirements due to design failure), for which the Council will be entitled to reduce the unitary charge. The experience of construction and commissioning of similar projects was that there were significant system integration issues e.g. the rail/wheel interface, which had to be resolved before operations could commence. Under a PPP DBFOM structure, the Council is held harmless from the effects of this risk. The Council does not have and does not seek the capacity to absorb the interface risks inherent in other procurement methods.
- **Whole-life costing optimisation** – the concessionaire will be incentivised to ensure that the system is designed to optimise whole-life cost over the life of the project and to satisfy handback requirements.
- **Incentivises achievement of passenger focused outputs** – the performance regime and payment mechanism will provide greater incentive than under any other procurement option to achieve passenger focused outputs (e.g. service frequency and ride quality) because failure to achieve performance standards will result in the concessionaire suffering payment deductions.
- **Market appetite** – positive market feedback on the use of a DBFOM structure.
- **Street running** – grouping of operations and maintenance in a street-running environment (i.e. where trams are run on-street, sharing this with motorised vehicles, non-motorised vehicles and pedestrians, rather than having a dedicated section of road or being run underground) reflects the preferred approach of the market.
- **Revenue risk** – the concessionaire will have overall control in respect of design, construction, maintenance, life cycle replacement and operations, allowing the concessionaire to have greater influence on passenger revenue (i.e. tram ticket sales) and take the risk on such revenues (see further section 3.4.1).
- **Value for money** – the Council has undertaken both qualitative and quantitative Value For Money assessments in accordance with Central Government guidance (see section 2.9 above) testing the value for money of private sector finance. Alternative public sector funds for construction (beyond the 50% being made available from Central Government) are not available to the Council at this level. In summary, the outcome of this assessment is that the chosen PPP option continues to offer best value.

## Procurement Strategy

As a DBFOM scheme, under which significant revenue risk will be borne by the concessionaire, the proposed contract is most properly classified as a PPP. National Procurement Policy Guidance recommends the use of a negotiated form of procurement for PPPs. In view of this and the complexity of the project and consequential areas where some dialogue with bidders is necessary, a fixed contract procedure is considered inappropriate and the Authority decided to follow the negotiated procurement procedure<sup>55</sup>. This will involve the following stages:

- Regional Official Journal advertisement;
- Bidders pre-qualification;
- Invitation to Negotiate;
- Shortlist bidders;
- Best and Final Offer; and
- Selection of Preferred Bidder and Financial Close.

This is in line with bidder expectations. An opinion from the legal advisor confirms the above analysis.

## Result of testing the Market for Commercial Interest: “Market Sounding”<sup>56</sup>

Development of our preferred approach has been informed by a series of soft market testing (market sounding) exercises<sup>57</sup>. The first<sup>58</sup> was a market testing for the delivery elements, there was then a separate exercise for the funding elements, with a third and final exercise held last year.

The first exercise was an “open day” undertaken following publication of a Project Information Notice (PIN). Ten organisations participated. This exercise demonstrated:

- considerable support and interest in the project from infrastructure contractors;
- widespread market support for the use of the DBFOM commercial model;
- availability of significant industry experience and expertise to deliver the requirements;
- potential risk allocation/appetite as explored with the market;
- preference for negotiated procedure;
- the views of potential bidders on the form of the payment mechanism;
- major risk issues and potential mitigation measures; and

---

<sup>55</sup> This is a flexible procurement procedure under which a contracting authority consults contractors or suppliers of its choice and, within parameters, negotiates the terms of the contract with them.

<sup>56</sup> See Action 24 in the Guidance for more detail

<sup>57</sup> Market sounding (or soft market testing) is an exercise conducted to test the market’s ability to meet a set of requirements in relation to the supply of a product or service, such that there are enough interested suppliers to ensure a competitive market. Following market sounding the purchaser’s requirements may be amended based on the feedback received during the exercise before the supplier finally goes out to tender.

<sup>58</sup> Prior to these market sounding exercises, the Authority undertook market research at the strategic assessment stage to inform feasibility studies and the initial business case.

- views from potential suppliers on their likely timescales for delivering various aspects of the project, to reduce risk (and associated cost) of delivery delays.

Following submission of the Early Business Case to Central Government, the Council conducted a soft market testing exercise amongst a range of funders active in the PPP and light rail markets in the region. This exercise sought their initial views on matters such as revenue risk sharing. A positive response was received from this market testing exercise.

To ensure that the preferred approach continues to reflect current market sentiment, a further market testing exercise was conducted, following publication of a Project Initiation Notice last year. Nineteen organisations responded to the questionnaire and detailed discussions with the respondents are ongoing. The responses continue to indicate a good level of market interest in the project and general support for DBFOM.

A summary of the responses to the market testing exercises is set out in the appendices<sup>59</sup>.

### 3.3 Outline the Base Specification, Potential Service Streams and Outputs<sup>60</sup>

#### Base Specification

The Concession Specification<sup>61</sup> has been developed, with the assistance of our advisors, informed by the soft market testing exercise, previous experience and reference studies. It uses an output-led approach providing a clear definition of the objectives and the outputs needed. As part of this process, a set of high-level outputs has been identified covering the main attributes that the project needs to satisfy to deliver the scheme objectives.

The Council is committed to driving forward an agenda for improvement in construction through the procurement and specification of the system. Our proposed PPP procurement approach and the Concession Specification help support the key drivers for change identified by the Ministry of Transport. These are:

- **Sustainable development**, in line with Ministry of Transport recommendations, throughout the design, construction, operation and maintenance phases of the Project, in particular by:
  - focusing on the outputs required rather than the means of delivery, to promote technical innovation, cost and resource savings, and improve service quality;
  - being sufficiently broad to allow value to be added by the Concessionaire;

<sup>59</sup> For illustrative purposes only – in a completed business case this would be attached as an appendix

<sup>60</sup> See Action 23 in the Guidance for more detail

<sup>61</sup> This is a document which sets out the requirements of the promoter from the service provider in relation to the project. It is presented at the Invitation to Negotiate stage and used by the bidders to prepare and price their bids in line with the specification desired by the scheme promoter.

- building in flexibility to reflect developments and change of use over the life of the contract – avoiding wastage of time, money and resources in the long term;
- taking account of the aims, objectives, relevant targets and legal requirements to safeguard the environment – the scheme objectives and specification requirements in themselves aim to contribute to a sustainable local transport network;
- designing resilience into all system components in anticipation of climate change and associated environmental conditions that will occur within the lifetime of the assets
- including specific clauses on gender, disability, and social inclusion, setting requirements on areas such equal wage rates, data management, community participation plans, measurements and payment schedules;
- requiring a mechanism for complaints/grievances for both workers and affected communities;
- taking account of feedback from the market testing; and
- **Disability Discrimination legislation** in line with the scheme’s objective to improve accessibility and reduce social exclusion.

□ The Design Guide, endorsed by the Ministry of Transport and the local planning authorities, to set the scope and minimum threshold of design required, focusing on the system infrastructure and adjacent public vicinity. The framework for this was set during the planning process and has been developed further during the design development prior to procurement.

The draft Concession Specification can be found in the appendices<sup>62</sup>.

## Design Development

A reference design, or ‘illustrative solution’, which is compliant with the Concession Specification has been developed to enable financial analysis and costings to be established and to provide guidance for bidders to minimise the scope and programme risk. Areas of scope uncertainty have been targeted and the design advanced to a level where cost, programme and quality are well defined.

An operational plan<sup>63</sup> has been developed and verified as robust against the Performance and Payment Regime. In some areas, such as where long lead times for work possessions are necessary or in areas where complex third-party approvals are required, the reference design<sup>64</sup> has been developed further, in some cases to a detailed design level<sup>65</sup>. This further design will be made available to the Concessionaire together with a collateral warranty from our design consultant. The Concessionaire will be free to utilise this design

---

<sup>62</sup> For illustrative purposes only – in a completed business case this would be attached as an appendix

<sup>63</sup> A plan that describes how the project will work from an operations perspective. It aims to show how the strategy defined for the project will be operationalised. Such a plan will need to be feasible in that a competent service provider would not be facing excessive levels of risk of incurring punitive penalties under the payment and performance regime in delivering such plan.

<sup>64</sup> ‘Reference design’ is an engineering term that describes an initial (and illustrative) design of a project, compliant with a given specification (in this case the concessions specification). This gives a rough, high-level idea of how the project could be designed. It is given to the bidders who will then enhance the design (by amending it and furnishing further detail) to produce a ‘detailed design’.

<sup>65</sup> See previous footnote.

information or develop alternative designs that meet the Concession Specification. This approach maintains the opportunity for the Concessionaire to bring innovation and efficiency to the project, whilst minimising uncertainty during tendering, hence encouraging a value for money approach to be achieved.

## Design Quality

The Authority is committed to embedding design quality into delivery of the project. Our output-led approach ensures that such quality is reflected in the scheme objectives, the Concession Specification and the illustrative solution.

The Concession Specification defines the required minimum **functionality of the system**. Key functional considerations include ease of use, convenience, interchange and accessibility and provision of service information and customer care. The scheme has been developed and specified to create a positive effect on the local community and the environment. The Concessionaire should create a coherent style and brand for the network that is widely accepted and recognised by users.

Design quality is reflected in the **build quality and performance** of the scheme. A key driver for this is the performance and payment regime, which will provide a full-life incentive to focus on design and build quality, and ease of maintenance. The Concessionaire should gather feedback from existing and potential users to inform ongoing improvements.

## Building Information Modelling<sup>66</sup>

In order to ensure that the project is built efficiently to a modern, fit-for-purpose design minimises cost and draws on best practice the Council will utilise Building Information Modelling (BIM) – a digital transformation process that provides the structure and tools for the easy sharing of data between the different contributors during a project's construction and subsequent operation. In addition, the use of 3D computer models simulates the finished asset, allowing for a realistic vision of what is being aimed for.

BIM will help facilitate early engagement between the Council and the contractor while enabling more efficient operation, maintenance and monitoring of the project throughout the whole life of the project's assets.

---

<sup>66</sup> For further information, see Schedule 6 of the International Guidance for Business Case Development for Infrastructure Projects. The BIM approach is standard in the UK and a growing number of other countries; countries may wish to consider the use of this approach in their own projects. Utilisation of BIM has shown to lead to time and material savings, reduced risks and improvements to Health and Safety, asset utilisation and asset quality for the end user.

## Operational Specification

The Concessionaire will be obliged to operate and maintain the project in accordance with the Concession Agreement (presented as an annex)<sup>67</sup>. This will ensure that the performance standards requirements are met. The concessionaire is required to consider the preferences of the Council in operating and maintaining the tram, do its utmost to return to normal services in the event of any disruption and to repair/replace as soon as possible any part of the scheme in the case of any damages sustained.

To ensure smooth and orderly running of the trams, procedures to be followed by personnel when undertaking their operational duties are to be described in an operational plan, which the concessionaire is to develop, maintain and review at least every 6 months. This will detail staff training and competence assessments, disaster recovery and major incident management procedures, procedures for managing disruption to services, and arrangements for cleaning and vandalism prevention.

Details of passenger services need to be prepared and published, including detailed timetables. The concession specification lays out various aspects that will need to be adhered to including:

- first and last tram departure times;
- minimum capacity on various sections of the routes;
- minimum frequencies; and
- maximum journey times.

In addition, there are details around passenger information (including minimum specifications for the website, printed information that should be provided at tram stops and passenger address systems), security (CCTV requirements, lighting and help points), sanitation facilities (toilets and first aid facilities at stations), ticketing (fare collection systems, ticketing systems, fare schemes and fare structures) and ride quality.

Finally, detailed maintenance requirements are specified, comprising both operational maintenance (cleaning, graffiti removal and minor repairs to both trams and tram stops) and heavy maintenance (in relation to all assets – tram, track, signalling and stops – comprising all the required inspections, regular maintenance, safety inspections and procedures).

Ultimately, all of these operational aspects are incentivised through the Performance Regime element of the Payment Mechanism (described below).

Further details can be found in the Concessions Specification, attached as an annex<sup>68</sup>.

---

<sup>67</sup> For illustrative purposes only – in a completed business case this would be attached as an annex

<sup>68</sup> For illustrative purposes only – in a completed business case this would be attached as an annex

### 3.4 Allocate the Risks

Following a series of workshops with the project team, with support of our technical advisers (who drew on reference projects), and through the information obtained through the soft market testing exercise, the Council prepared a contract risk register to enable an assessment and allocation of risks between the parties. Such allocation has been done in a way that allocates risks to the party best placed to manage them. The allocation has also considered the cost of transferring the risk to that party (primarily, the price that the public sector would have to pay in order to transfer that risk to the private sector).

An initial risk matrix has been developed allocating potential risks between the Concessionaire and the Council and indicating where the risk could be shared. At this intermediate stage of development (pre-procurement), this allocation is indicative and subject to change following contract negotiation. The risk matrix divides the risks examined into five broad categories, design and planning, construction & commissioning, operation & performance, termination and integration. The guiding principle is to allocate risk to the party best able to manage it.

**Table 31 – Risk allocation matrix<sup>69</sup>**

Risk	Allocation		
	Concessionaire	Authority	Shared
<b>Design and Planning</b>			
Project layout design	X		
Design failure	X		
Information	X		
Programme risk	X		
Authority variation		X	
Concessionaire variations	X		
Overhead Line Equipment (“OHLE”)			X
Technological obsolescence	X		
Consents (e.g. planning, statutory, licensing)	X		
Compliance with third party undertakings	X		
Change in Law			X

<sup>69</sup> For more information on Risk Allocation, see the Global Infrastructure Hub’s report “Allocating Risks in Public-Private Partnership Contracts”: <https://ppp-risk.gihub.org/>

Risk	Allocation		
	Concessionaire	Authority	Shared
<b>Construction and Commissioning</b>			
Compulsory Purchase of Land and property		X	
Additional land and property	X		
Site condition	X		
Statutory undertakers	X		
Latent defects	X		
Programme estimation	X		
Construction and development costs estimation	X		
Traffic management / highway interface			X
Site access	X		
Fire, explosion etc.			X
National strikes of construction industry			X
Other strikes	X		
Utilities failure			X
Accidental loss or damage			X
Responsibility for site supervision and safety	X		
Responsibility for site security	X		
An event of Force Majeure			X
Legislative change			X
Changes in taxation	X		
Exchange rates	X		
Protestor action			X
Concessionaire variations	X		
Fossils, Antiquities and Human Remains		X	
Commissioning	X		
Safety Regulations	X		



Risk	Allocation		
	Concessionaire	Authority	Shared
Risk of third-party claims	X		
<b>Operation and Performance</b>			
Infrastructure condition and technological obsolescence	X		
Noise and vibration issues	X		
Injurious affection	X		
Consents (e.g. planning, statutory, licensing)	X		
Concession Specification	X		
Operating costs	X		
Risk of third-party claims	X		
System/Site condition (including contamination)	X		
Latent defects	X		
Revenue risk	X		
Fare setting	X		
Traffic management / highway interface			X
Urban Traffic Control System priority change		X	
On-route highway layout changes		X	
On-route traffic management changes		X	
Competition	X		
Site access	X		
Lifecycle maintenance	X		
Fire, flood, etc.			X
National strikes of public transport industry			X
Other strikes	X		
Utilities failure			X

Risk	Allocation		
	Concessionaire	Authority	Shared
Accidental loss or damage			X
Responsibility for security	X		
An event of Force Majeure			X
Change in Law			X
Exchange rates	X		
Concessionaire variations	X		
<b>Termination</b>			
Residual value of Assets		X	
System condition	X		
<b>Integration</b>			
Liaison between the proposed [ Tram ] scheme and other public transport systems	X		
Integration of various elements of the System	X		

One may note that the majority of risks are passed on to the Concessionaire under this PPP structure thus relieving the Council from significant potential risk/costs that it would bear under the public sector comparator option.

Nonetheless, some risks have been retained by the Council as contracting Authority. Any variation desired by the Council is a risk which would naturally fall within this category, as is the risk of finding historical remains during construction, which would be too costly to pass on to the Concessionaire due to the inability of such party to prevent the risk from materialising. Highway-related risks, which the Concessionaire has no control of have also been retained by the Council.

Risks relating to the residual value of assets have been retained by the Council, as this is in part determined by market conditions which the Concessionaire has no control over (though risks relating to the condition of those assets will reside fully with the Concessionaire, which is obliged to maintain such assets at a given level). Finally, it is the Council's responsibility to ensure that all land required for the construction of the project is made available, including the compulsory purchase of land where necessary.

A number of risks have been shared, primarily where the Concessionaire is able to – at least in part – prevent the risk from materialising or where, should the risk materialise, the Concessionaire is to some extent in a position to mitigate the impact of such event.

## Revenue risk

It is proposed that farebox revenue risk will be transferred to the Concessionaire either wholly or substantially. The Council has a strong preference to do this as there is no budget flexibility to allow it to retain substantial revenue risk. A number of factors indicate that the transfer of revenue risk could be acceptable to the market without adversely affecting value for money, in particular:

- In year one, the ratio of availability payment to farebox revenue is approximately [2:1];
- Unitary payment is estimated to be approximately [20%] higher than the senior debt service requirement;

Responses to the market testing exercise indicated the market is open to taking farebox risk, depending on the ratio of availability payment to farebox revenue, however, it is recognised that this may be an area of concern for funders who may require some protection. With regard to farebox revenue, the Council notes that:

- the Council will not impose any controls on fares except to require participation in local joint ticketing and concessionary fares schemes; and
- the Council's patronage projections for the project are considered conservative, though the risk of patronage levels will be retained by the bidder, who will also set the ticket price.

Accordingly, it is proposed that the payment mechanism is structured to transfer farebox risk to the concessionaire but that some flexibility to consider this point further as part of the negotiated contract procurement procedure be allowed. In the event that this should become a sticking point in contract negotiations the Authority should be prepared to allow a degree of downside protection – in return for some equivalent upside sharing (see also Section 3.6.6 for accounting treatment).

A more detailed description of each risk and the obligations on the Council and/or Concessionaire in relation to each of those risks is set out in the appendices<sup>70</sup>.

## 3.5 Develop the Payment Mechanisms

The public sector's funding contribution will be made based on the operational performance of the system. The proposed performance and payment regime, which forms part of the Concession Specification is based on payment regimes used by tram systems internationally where it has been proven to operate successfully.

A monthly unitary payment will be made by the Council to the Concessionaire – adjusted for performance based on a number of measures relating to operating the timetabled service, infrastructure cleaning and maintenance, availability of passenger facilities and customer service and noise. More specifically these measures are:

---

<sup>70</sup> For illustrative purposes only – in a completed business case this would be attached as an appendix

Daily Passenger Service Availability	Real Time Information Availability	Other Infrastructure Planned Maintenance
Monthly Passenger Service Availability	Timetable Availability	Other Infrastructure Graffiti Removal
Passenger Service Punctuality – Early Departures	Tram Cleaning	Other Infrastructure Repair
Daily Passenger Service Punctuality – Late Departures	Tram graffiti removal	Other Non-PMS Infrastructure repair
Monthly Passenger Service Punctuality – Late Departures	Tram general damage repair	Tramstop Passenger Alarm Availability
Passenger Service Punctuality – First/Last Trips	Tramstop Cleaning	Tramstop CCTV Availability
Satisfaction Survey	Tramstop Graffiti removal Facilities Cleaning	Tram Passenger Alarm Availability Facilities Availability
Customer Comments	Tramstop general damage repair Facilities Cleaning	Tram CCTV Availability Facilities Availability
Tram Internal Noise	Tram Internal Noise	Maintenance and statutory safety inspections

Proposed payments to the concessionaire will be structured as follows:

- an availability payment: also known as the unitary charge, this monthly payment is expected to cover the capital costs of the project as well as associated financing charges. This payment is necessary as, according to the Authority's patronage forecasts, as prepared by our consultants, it is expected that the farebox revenues will be sufficient to cover operating costs, but be insufficient to cover capital costs;
- an incentive payment: the availability payment above will be adjusted depending on how the concessionaire performs in relation to the measures above;
- farebox revenue: the concessionaire will set prices in order to cover the operating costs of the scheme and earn the required rate of return (to be negotiated with the concessionaire during formal procurement). The concessionaire will be responsible for collecting fares and will retain the full amount of such fares; the concessionaire is therefore taking both price and volume risk (see however section 3.6.6, Accounting Treatment below as regards farebox risk); and
- compensation for subsidised fares: the concessionaire will receive from the Council the difference between the price of a full-paying adult ticket and the price of a concession ticket (which price is set by the Council).

The proposed performance and payment regime can be found in the appendices<sup>71</sup>. It contains the precise formulae to be utilised in order to calculate the monthly payments, as well as a description of each performance measure, its weight, how it will be monitored, the assessment period, the target performance level required, and the proof required for payment.

85% of the unitary payment would be based on measures relating to service reliability and punctuality. For each of the performance measures, the Concessionaire would be required to meet a target performance; if this target were not met, the Council would be permitted to reduce the amount of the unitary payment for that measure.

Under the performance and payment regime, the Concessionaire would produce a monthly report (provided by the operating subcontractor) justifying the performance claim. In order to verify the claim, the Council would receive supporting records and where necessary have access to more detailed operation and maintenance records and data for providing further substantiation when requested.

A detailed performance mechanism report is presented as an annex.

---

<sup>71</sup> For illustrative purposes only – in a completed business case this would be attached as an appendix

## 3.6 Identify Key Contractual Issues

A number of key contractual issues were identified. These are addressed below.

### Third-Party Interfaces

A detailed review of all the agreements entered into and undertakings given during the planning process is ongoing, with a view to identifying all obligations of the Council under them. The Council's team will then decide whether it is appropriate and cost-effective to transfer responsibility for performance of these obligations to the concessionaire or whether they should be retained by the Council.

Where these obligations are to be retained by the Council, necessary actions and mitigation measures will be specified and a risk owner given responsibility for ensuring the proper performance of the obligation and mitigation of associated risks.

### Utilities Diversion

The Council has considered the advantages and disadvantages of undertaking advance diversionary works, including the risk of such advance works proving to be more extensive than is necessary and the potential for dilution of risk transfer to the concessionaire if diversionary works undertaken prove to have been inadequate.

The Council has concluded that the best approach is to work with the relevant utilities bodies as far as possible prior to financial close in a way that will give as much certainty to the concessionaire as possible in respect of location, nature and condition of utilities and hence reduce risk pricing whilst leaving discretion as to the precise scope of diversionary/protective works required to the Concessionaire so as not to dilute risk transfer.

### Noise Nuisance and Other Negative Impacts on Third Parties

Causing noise and other disturbances may lead to resistance to the project as well as increasing the risk of protests during construction, which may cause delays. This is costly and it is in the interest of both the concessionaire and the promoter to avoid such possibilities. The following approach is proposed:

- the Council will bear the risk in respect of land acquisition costs; and
- the Concessionaire is responsible for reducing noise and other disturbances, including by restricting work to normal working hours.

## Network Extensions

The potential for future extensions will be included within the scope of the procurement, using an approach that draws on the principles applied in reference projects and developed with our legal advisors. This should enable future extensions to be implemented without terminating the concession for the existing procurement. The mechanism will work as follows:

- the procurement and tender documentation will encompass potential network extensions; and
- the concession agreement will include a procedure whereby, based on the updated financial model developed by the concessionaire for its lenders, the terms for the construction, financing, operation and maintenance of the extended system will be settled.

In the event that the Council is not satisfied with the terms settled for the extension under the above mechanism, the Council will retain the right to implement a termination mechanism for network extensions.

## Staff transfers

Staff transfers may be quite cumbersome to handle, due to different working conditions that exist between organisations within scope (the local authority and the concessionaire in particular), particularly in relation to transfers between the private and public sector. The Council did consider the possibility of transferring the project's public sector staff involved in the project to date to the concessionaire, as they could provide insight to the private sector provider on what public sector arrangements would like delivered in terms of various aspects of the project specification. It was ultimately decided though that short-term secondments or regular 'site' visits to the concessionaire, was considered to be a simpler means of achieving this. This would have the added advantage of helping the Council gain a better insight into the running operation of the concession, which in turn will assist with both the monitoring and evaluation and acting as a reference for the concession. Furthermore, this will provide insight to the Council with regard to the letting out of future concessions.

## Accounting and Balance Sheet Treatment

This section summarises the accounting treatment of the project. The proposed risks to be transferred are summarised in the table below. It is the extent of transfer of such risks from the public sector to the private sector that determines the accounting (balance sheet) treatment of the scheme on the government's books.

The key variables relating to the scheme that will influence balance sheet treatment are:

- ❑ the level of third-party revenue risk (farebox);
- ❑ the allocation of such third-party revenue risk;
- ❑ the variability of patronage;
- ❑ the level of design risk; and
- ❑ the variability of the value of the assets handed back at the end of the concession.

## Table 32 – Risk Transfer

Area	Risks Transferred to Concessionaire
Design	Design risk is transferred to the concessionaire.
Construction, supply, interface and commissioning	The concessionaire has responsibility for construction, supply, interface and commissioning, including obtaining all necessary consents (i.e. planning, highway, safety and environmental), to the extent not already obtained by the Council, and programme risk
Patronage and fares	The concessionaire has patronage responsibility and risk and is able to set fares and retains all incomes (subject however to any risk sharing arrangements that may be settled in contract negotiation – the balance sheet implications of which would need to be considered) The Council is responsible for reimbursing the concessionaire for concessionary fares (i.e. discounted fares for children, students, the unemployed and the elderly) in respect of the Council’s concessionary scheme
Operation and maintenance of line	The concessionaire is responsible for delivering a service that meets the specifications laid out in the contract, along with appropriate maintenance of the network, for the life of the concession Unitary payments by the Council are based on performance measures (reliability, punctuality, cleanliness, etc.) and are independent of patronage
Network extensions	The agreement contains a mechanism whereby the concessionaire and Council will work together to ascertain and (subject to approval) potentially develop future extensions to the network
Handback standard	The concessionaire is obliged to ensure that the network is handed back to the Council on expiry or termination in accordance with the specified standards specified in the contract



The Council has sought specialist accounting advice, which has indicated that the scheme is likely to be adjudged off balance sheet, according to the prevailing accounting standards<sup>72</sup>. The promoters will continue to monitor these variables with their advisers throughout the development phase.

### 3.7 Working with the Multilateral Development Banks

At Early Business Case stage, discussions with Central Government indicated successful collaborations with the Regional Development Bank (“RDB”) on a number of national infrastructure projects.

The Council has held several meetings with the RDB and shared various financial and non-financial information. The Bank was particularly interested in how the project would achieve certain social and environmental objectives in line with the Bank’s own objectives for lending.

The RDB was satisfied with the way in which the project was conceived and how it would deliver on the stated objectives, and was going through its approval procedures with a view to providing a tranche of senior debt to the winning bidder at [xxx]% p.a., subject to final credit committee approval and due diligence.

---

<sup>72</sup> All standards applied in this case study are illustrative. The appropriate national accounting standards relevant to the project should be applied and are likely to take into account the balance of risk in the contract and a project such as the one illustrated may be adjudged either off or on-balance sheet accordingly.





---

# 04

## Financial Case

---

This Financial Case aims to demonstrate the affordability of the project, taking account of public funding allocated to the project and allowing for contingencies for unexpected occurrences. It explains what amounts are funded by the local transport authorities, what amounts are sought by way of central funding and what amounts are payable from users of the facility, and demonstrates that these are sufficient to cover the expected costs.

The development of the Financial case is set out below.

At Early Business Case stage, indicative costs were provided<sup>73</sup>. At this Intermediate Business Case stage, best estimates are provided for the preferred option as against the public sector comparator (traditionally procured) option. At Final Business Case stage, the negotiated and finally agreed costs from the winning bid should be inserted.

It is to be noted that while the preferred option is for a PPP, this case contains information for both PPP and traditional procurement. While, at Intermediate Business Case stage, information is normally provided for the preferred option only in the financial case, the Council has included analysis for the public sector comparator for illustration purposes<sup>74</sup> and for ease of demonstrating financial VfM as against the public sector comparator<sup>75</sup>.

## 4.1 Estimate Costings and Benchmarking

### Base Costs

In preparing this business case, the Council has assessed the costs for delivering the project in a way that provides a comprehensive, robust and reliable “should cost” or base case model, as a basis for testing affordability.

This costing exercise has considered all the major elements of the project, including track work and associated infrastructure, utilities diversions, land acquisition and tram purchase.

Capital cost estimates have been developed, refined and updated following approval of the Early Business Case (which contained very high-level indications from reference studies). These estimates have been informed by additional design work and scoping, reviews of cost rates, capital inflation and other key assumptions, an updated quantified

---

<sup>73</sup> See Action 10 in the Guidance for more detail

<sup>74</sup> As this will have been relevant at earlier stages of development of the Business Case

<sup>75</sup> See Actions 26-28 in the Guidance for more detail

risk assessment and the planning powers process. The cost estimates are based on 'pre-mitigation' values<sup>76</sup> and represent a prudent, but realistic, basis for estimates (but one that may be capable of improvement through implementation of mitigation actions).

## Adviser and other Costs

Given the importance of the Project at both a city and national level, it was agreed with central government that adviser costs would be split between the city and central government. At the start of each financial year a (capped) financial contribution of half the estimated costs for the forthcoming year are given as a grant to Olympus from the Ministry of Transport. Such costs have remained within the limits set out in the annual budgets.

Costs relating to the communication plan are expected to amount to [NL\$0.5m] and will be fully absorbed by the Council.

## Benchmarking

Costs were derived from a combination of primary data, where available, and 'bottom-up' estimates and modelling, using experts from the rail and engineering sectors. These costs were then benchmarked against reference projects and a cost library containing cost data from other similar schemes. The benchmarking process was also informed by the cost of tram projects in comparable countries with recent experience in light rail market procurement.

## Contingency

A level of contingency has been applied to both capital and operating costs. The contingency applied was in line with the percentage of Quantitative Risk Assessments and OB determined through the process described in the economic case.

The scheme costs, including contingency, are shown in Table 33 – Capital costs (nominal – total over 25 years) and Table 34.

---

<sup>76</sup> A cost estimate that includes an estimate of the risk's probability and impact. A post-mitigation value would include the value of the risk based on an agreed mitigation.

**Table 33 – Capital costs (nominal – total over 25 years)**

	Base Cost	Quantitative Risk Assessment	OB	Contingency (Quantitative Risk Assessment + OB)	Total Cost	Contingency to Base Cost
	NL\$	NL\$	NL\$	NL\$	NL\$	%
Preparatory works (Site decontamination, demolition, clearance)	8.5	0.85	0.5	1.35	9.85	16%
Land	50.0	-	-	-	50.0	0.0%
Track	52.5	5.3	11.6	16.9	69.4	32.0%
Design and Construction	210.2	21	46.2	67.2	277.4	32.0%
Other	30.9	3.1	6.8	9.9	40.8	32.0%
Light Rail Vehicles	9.0	0.95	2.0	2.95	11.95	32.5%
<b>Total</b>	<b>361.1</b>	<b>31.2</b>	<b>67.1</b>	<b>98.3</b>	<b>459.4</b>	<b>27.2%</b>

**Table 34 – Operating costs (nominal – total over 25 years)**

	Base Cost	Quantitative Risk Assessment	OB	Contingency (Quantitative Risk Assessment + OB)	Total Cost	Contingency to Base Cost
	NL\$	NL\$	NL\$	NL\$	NL\$	%
Staff	392.5	49.2	27.1	76.3	468.8	19.4%
Utilities (Power)	73.9	7.4	8.2	15.6	89.5	21.0%
Maintenance and Lifecycle	42.8	4.25	9.4	13.65	56.45	32.0%
Other costs	49.2	4.9	10.8	15.7	64.9	32.0%
<b>Total</b>	<b>558.4</b>	<b>65.75</b>	<b>55.5</b>	<b>121.25</b>	<b>679.65</b>	<b>21.7%</b>

## 4.2 Estimate Revenues / Income

Although it was initially expected that the scheme would be fully funded and financed privately, after detailed analysis of the scheme, it was concluded that the project would have to be funded through a combination of fare revenues/income supplemented by unitary payments from the Olympus Council. These latter payments are required because tram revenues/income would be insufficient to cover all the relevant costs (notwithstanding a 50% capital contribution from the Central Government).

### Central government grant

Following various discussions and negotiations, Central government has committed to fund a proportion of the project. This amount will be provided as a grant to the Olympus Council. Under both a traditional procurement approach and a PPP approach, the amount will be given in the form of an upfront capital grant (disbursed over the construction period, pro rata with the private sector capital payments<sup>77</sup>) so as to offset capital expenditure, and will equate to NL\$201m in nominal terms – or 50% of capital costs. A capital contribution from central government gives any concessionaire comfort that there is public support for the project and assists affordability by reducing the amount needed to be raised by way of private sector finance.

### Tram Revenues/Income

The revenue/income forecasts used in the financial and economic model have also been refined and updated following Early Business Case approval by the Ministry of Transport, reflecting the current expected service timetable and feedback from scrutiny and consultation related to the planning process. The forecast line revenues/income are based on demand modelling carried out by external consultants. The flexibility offered by the procurement route allowing the concession (in the case of PPP) or the Olympus Council (in the case of a traditional procurement) to manage revenues/income improves the robustness of the assessment of potential future system revenues/income.

Details of how revenue/income estimates were derived are provided in the economic case and summarised here below.

It is assumed that annual patronage would start at 27m in the first year of operations (year 4), increase to 30m by year 5 and increase at 3% p.a. until year 9. From year 10 onwards, patronage is expected to increase at 1% p.a. The average fare is assumed to be [NL\$]1.20 in year 4 and rise at 2% p.a. Revenues/income (as summarised in the table below) are expected to total [NL\$]32.6m in year 4 and rise gradually over the 22-year period of operations, during which they will total NL\$1.17bn in nominal terms.

---

<sup>77</sup> It is recognised that front-end loading of the capital contribution would reduce the overall costs (by reducing the amount needing to be privately financed) however this would represent an unacceptable level of construction risk being effectively assumed by the Council; accordingly, a pro rata draw down profile has been provided for.

## Table 35 – Estimated revenues/income (Years 4 – 10)

[NL\$]	Total (25 years)	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Number of passengers		27.1	30.0	30.9	31.8	32.8	33.8	34.1
Average Fare		1.2	1.2	1.2	1.3	1.3	1.3	1.4
Tram revenues/income	1,166.1	32.5	36.0	37.1	41.3	42.6	43.9	47.7

### Business Levy

Passenger revenues/income and the central government grant are expected to be insufficient to cover the relevant costs of the project. In order to incentivise good governance, the Ministry of Transport has required that the balance of costs be met out of local budgets.

Under a PPP option, the preferred option is for the concessionaire to finance the balance of the capital costs (after the application of government grant). This would be funded by a unitary payment from the Council during the operational period, and the Council, in turn, would plan to fund such payments through a local levy from businesses. Such levy would only be imposed on businesses once the tram is operational (i.e. year 4).

Under the public sector option, local government itself would need to borrow the balance of the capital costs and would plan to meet the funding requirement related to such borrowing (after the application of tram revenues/income) through a local levy on businesses – but this would challenge its borrowing limits.

### Local Council Contribution

The Council will be contributing an upfront amount, equivalent to NL\$29.8m, from its financial reserves towards the project. This will ensure that sufficient funds are available at the start of the project, when various outflows are incurred but other sources of revenue / income (such as farebox and business tax) are still not forthcoming.

### Sensitivities

A number of sensitivities have been carried out to assess the impact of changes to some of the key project cash flow assumptions. These are:

1. **Cost increases** – an uplift in capital expenditure of 10% and an uplift in operating expenditure of 5%;
2. **Cost decreases** – the removal of risk allowances (OB and Quantitative Risk Assessment) on capital and operating expenditure;
3. **Uplift in passenger growth** – passenger growth increases at 50% more than is assumed in the base;



4. **Reduction in passenger growth** – passenger growth increases at half the rate of growth assumed in the base;
5. **Increase in borrowing costs** – increase in interest rate of 100bps; and
6. **Decrease in borrowing costs** – decrease in interest rate of 100bps.

The financial models are able to accommodate a wider range of sensitivities, which can be specified by the model user. The impact of these sensitivities on the headline financial outputs are detailed in the *Impact on the Council's own income and expenditure account* section below.

### 4.3 Identify Financing Sources<sup>78</sup>

This section explains the sources of finance to be used under the preferred PPP option and the public sector option.

- **Government Bonds:** Central government is providing a grant to the Council for the purpose of covering a portion of the capital costs. As Nirvana currently runs a deficit, central government will have to borrow on the open markets in order to provide such grant. Current 30-year government bonds have an annual interest of [xx]%. Central government will be issuing bonds in order to raise funds for the grant equivalent to 50% of the capital cost of the scheme (and this would apply to the public sector comparator as well).
- **Investment Banks:** Under a PPP, the contractor will borrow from the market, typically from private investment banks. Under traditional procurement, local government could also use this borrowing route, though the rates of interest would not be as advantageous as the central government facility described above. The extent to which rates vary from the national government bond rate will depend on the purpose of the loan, including the type of project and the certainty of revenue/income streams. Borrowing rates for the tram scheme under the PPP options are shown in the *Financial Model* section below.
- **Multilateral bank:** One final source of financing is a multilateral bank. Because such banks tend to have a large pool of lenders / donors as well as borrowers, they are able to offer advantageous lending terms in the form of lower interest rates and/ or better borrowing conditions. For the purposes of the tram scheme, the Regional Development Bank (RDB) may be able to lend the Concessionaire 50% of the capital cost, of the scheme in the case of the PPP (or advance such loan to the Council in the case of the public sector comparator) however such funding has not yet received credit committee approval. In the absence of the availability of this facility, one of the above alternative two facilities will be used by the Council.

---

<sup>78</sup> See Action 26 in the Guidance for more detail

## 4.4 Build Financial Models<sup>79</sup>

A financial model brings together all the financial flows related to the project. Two financial models have been built: one to assess the affordability of the scheme under a traditional procurement and the other to assess the affordability under a concession.

These financial models include capital (Capex) costs, operating and maintenance (Opex) costs, revenue/income forecasts, inflation and the financing structure. The financial models have been used as the baseline for measuring the affordability of the scheme.

The model methodology as well as the inputs, outputs and assumptions used have been recorded and checked for accuracy by our consultants, using their quality assurance processes. The outputs derived from the models have been reviewed by sector experts, sense-checked and independently peer reviewed.

### Public-Private Partnership (PPP): Preferred Option

The PPP model is made up of three parts:

- a shadow bid model, which simulates how a private sector bidder could finance the project and forecasts the impact of different revenue/income risk assumptions on the unitary charge as well as allowing the flexing of funding terms and underlying costs. The key output from this model is the unitary charge;
- a PPP grant calculator, which calculates the grant required from central government in order to make the project viable; and
- a public sector affordability model showing the various funds available for the project, and a consolidated cash flow for the promoters (i.e. the public sector comparator).

The shadow bid model has been updated since the Early Business Case to include revised costs and revenues/income and ensure funding terms reflect recent market conditions.

As at Early Business Case stage, it should be noted that as the operating costs are covered by farebox revenues/income and the business levy, no indexation of the unitary payment has been included.

### Model Assumptions

In broad terms, the PPP will be taking the following form:

- central government will be paying for 50% of the capital costs as a capital grant in line with capital expenditure;
- the Council will make a contribution to capital costs in the form of land;
- the Council will pay for the procurement costs;

---

<sup>79</sup> See Action 27 in the Guidance for more detail

- ❑ the Council will pay the concessionaire the unitary charge as an 'availability payment'. This is expected to cover at least 50% of capital costs not funded by the central government grant, and will be funded from share of farebox revenues and the business levy;
- ❑ the concessionaire will set fares to cover the remainder of the costs (primarily operating and life-cycle costs, the remaining debt interest charges and equity returns); and
- ❑ the concessionaire will collect fares revenue/income and 'adjust' for any differences between the actual and expected fare revenues/income collected, where these fares exceed 30% of the projected revenues/income. This surplus of fare revenue/income will be returned to the Council.

The Council has made the following assumptions for the purposes of the financial modelling, based on reference projects:

- ❑ Debt/Equity ratio of 70/30;
- ❑ Annual Debt service cover ratio of 1.3;
- ❑ fixed rate of interest for the period of the concession incorporating a debt margin of [xx]% per annum;
- ❑ return on equity of 12% per annum; and
- ❑ inflation and indexation parameters as set out in the cost and revenue/income sections above and in the economic case.

A summary of the model outputs is presented in the section below – *Assess impact on the council's own income and expenditure account*.

### Public Sector Comparator (traditional procurement) Option

Under the public sector comparator (traditional procurement) option, the Council would borrow directly from central government at rates below the private sector lending rates applicable to a PPP. The local authority would directly enter into contracts with construction and service providers and limit risks taken on by the Council through appropriate contract clauses and life cycle costing.

The financial model estimates the annual net capital funding gap, the difference between the capital cost of the project and the capital grants from government. This difference is the amount that needs to be borrowed by the Council. The financing section of the model estimates the repayment cost profile of this borrowing requirement.

The sum of debt and interest repayments and the ongoing operating / life-cycle costs of running the tram gives the annual cash outflows over the modelling period. The main output of the financial model is the annual surplus or deficit to the Council arrived at by deducting the ongoing cash outflows from the two cash inflows, forecast tram revenues/ income and business levy.

## Model Assumptions for Public Sector Comparator

The Council has made the following assumptions for the purposes of the financial modelling, which assumptions are primarily based on relevant similar projects:

- ❑ borrowing will be repaid over [xxx] years;
- ❑ cost of debt will rise from [xxx%] in year 1 to [xxx%] in year 3, but remains fixed once the debt is borrowed;
- ❑ Indexation rates for various cost items have been based on industry forecasts, as set out in the cost and revenue/income sections above and in the economic case; and
- ❑ tram revenues/income are assumed to rise at [xxx] percentage point above the Retail Price Index (a measure of general inflation).

A summary of the model outputs is presented in the section below *Assess impact on the Council's own income and expenditure account*.

## 4.5 Assess Impact on the Council's Own Income and Expenditure Account

This section summarises the financial model outputs under the two procurement methods.

### PPP (Preferred Option)

Based on the assumptions presented earlier, the financial model estimates that the unitary charge payable by the authority will be [NL\$xxx]m per annum from the date of availability over the 25-year operational period.

The financial model outputs also indicate that, under the base financial model, the unitary charge will cover the Capex (Design and Construction costs, Land costs, Development costs, Operating and Lifecycle costs) and will be funded by Central Government and local authority contributions. Central Government will fund 50% of the capital cost estimate, with the remaining 50% and any additional cost increases to be financed by the Concessionaire, funded by the Council through the unitary charge.

The financial model also indicates that the Tram revenues/income and the business levy will be enough to cover the Opex (Operating and Life cycle costs), interest charges and equity returns.

Table 36 – Cumulative cash flows under PPP below presents the main outputs of the financial model:

## Table 36 – Cumulative cash flows under PPP

	Total over 25 years
<b>Cash outflows</b>	
Capital costs (Design, Construction, Land and Development Costs)	332.1
Operating / lifecycle costs	143.3
Interest costs	134.7
Loan repayments	187.7
Equity returns	0.0
<b>Total cash outflows</b>	<b>797.8</b>
<b>Cash inflows</b>	
Central Government grant	201.6
Business levy	937.5
Passenger revenues/income	991.2
Other revenues/income	25.3
Borrowings	187.7
Equity	0.0
Land Contribution	50.0
<b>Total Cash Inflows</b>	<b>2393.3</b>
<b>Net cash position</b>	<b>1595.5</b>

The financial model<sup>80</sup>, containing a profile of all cash flows, can be found in an annex to this business case.

The cash flow modelling work done demonstrates that the income and expenditure profiles (as revised since Initial Business Case) can be managed within the resources already approved, based upon current forecast income to be generated by the business levy. This means that the project is affordable. Please note that figures are estimations and have been rounded, therefore, this table is provided to be purely indicative.

<sup>80</sup> For the purposes of this case study, this is a simplified and illustrative financial model.

## Traditional procurement

The table below illustrates the cumulative net financial position to the Authority over a period of 25 years, while the subsequent table illustrates the cumulative net financial position for each of the sensitivities described above.

**Table 37 – Cumulative cash flows under traditional procurement (base position)**

	Total over 25 years
<b>Cash outflows</b>	
Capital costs (Design, Construction, Land and Development Costs)	332.1
Operating / lifecycle costs	143.3
Interest costs	149.4
Loan repayments	141.1
Equity returns	883.7
Total cash outflows	<b>1649.6</b>
<b>Cash inflows</b>	
Central Government grant	201.6
Business levy	937.5
Passenger revenues/income	991.2
Other revenues/income	25.3
Borrowings	141.1
Equity	60.5
Land Contribution	50.0
Total Cash Inflows	<b>2407.2</b>
<b>Net cash position</b>	<b>757.6</b>

The cash flow modelling work demonstrates that the income and expenditure profiles (as revised since the Initial Business Case) can be managed within the resources already approved, based upon current forecast income to be generated by the business levy. This means that the project is affordable.

The financial model, containing a profile of all cash flows, can be found in an annex to this business case<sup>81</sup>.

**Table 38 – Cumulative cash flows under traditional procurement (sensitivities)**

Sensitivities	Total over 25 years					
	1	2	3	4	5	6
Capital costs and revenues/ income						
Capital costs	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]
Capital grant from central government	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]
<b>Net capital costs (borrowing requirement)</b>	<b>[xxx]</b>	<b>[xxx]</b>	<b>[xxx]</b>	<b>[xxx]</b>	<b>[xxx]</b>	<b>[xxx]</b>
Ongoing costs and revenues/ income						
Operating / life-cycle costs	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]
Financing costs	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]
Business levy	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]
Passenger revenues/income	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]	[xxx]
<b>Net financial position</b>	<b>[xxx]</b>	<b>[xxx]</b>	<b>[xxx]</b>	<b>[xxx]</b>	<b>[xxx]</b>	<b>[xxx]</b>

Sensitivity studies were then conducted as set out in Annex [XXX]<sup>82</sup>.

<sup>81</sup> In a completed business case this would be provided as an Annex, however, this is beyond the scope of this case study.

<sup>82</sup> In a completed business case this would be provided as an Annex, however, this is beyond the scope of this case study







---

# 05

## Management Case

---

## 5.1 Introduction

The Management Case demonstrates that the necessary arrangements are in place to ensure the successful delivery of the project, namely, that the Project is properly staffed and resourced, with appropriate governance arrangements, advisers and programme, so that it can be procured on time and on budget and can be successfully operated thereafter.

The development of the Management Case is set out below.

The Management Case sets out:

- the project management structure and governance and reporting arrangements;
- the appointment and use of advisors to ensure that the project benefits from the right level of expertise;
- the project plan<sup>83</sup> detailing key activities and milestones;
- the Assurance and Approvals Plan<sup>84</sup>;
- stakeholder management arrangements including stakeholder engagement and communications strategies;
- change management arrangements and provision for contract changes as a result of service change requirements;
- the benefits realisation strategy and plans, and
- the risk management strategy and plans.

At Early Business Case stage, the focus is on outlining these arrangements<sup>85</sup>.

At Intermediate Business Case stage, detailed plans should be in place<sup>86</sup>. At Full Business Case stage, the agreed arrangements are implemented<sup>87</sup>.

---

<sup>83</sup> Note that as part of the business case a number of plans may be prepared, including a stakeholder management plan, a change management plan, a benefits realisation plan and a risk management plan. These should be co-ordinated through the project plan, which effectively acts as a master plan.

<sup>84</sup> See Annex 1 to the Guidance Template 1 – Assurance and Approval Plan.

<sup>85</sup> See Actions 11-15 in the Guidance for more detail

<sup>86</sup> See Actions 29-36 in the Guidance for more detail

<sup>87</sup> See Action 44 in the Guidance for more detail

## 5.2 Prepare Project Management structure and Governance / Reporting arrangements<sup>88</sup>

The governance of a project sets out its decision-making structure, accountabilities and delegations of authority. It provides a framework within which the project is controlled, managed, reviewed and communicated.

### Leadership

Project leadership responsibilities are as follows:

- High-level leadership is provided by the **Executive Board**, which is responsible for approving the project, providing strategic direction and allocating the required funding. The Executive Board is chaired by the Chief Executive of the Council,<sup>89</sup> who also has a formal duty to ensure it delivers value for money. The Executive Board holds the Project Board to account for successful delivery of the Project.
- Beneath the **Executive Board**, the **Project Board** is formally responsible for developing the business case, delivering the project and reporting to the Executive Board. It is chaired by the **Project Director**.<sup>90</sup>
- The **Project Director** maintains overall responsibility for the project and its business case, to ensure it meets its objectives and delivers its benefits.
- The **Project Manager**, reports to the Project Director, and ensures the efficient delivery of day-to-day project management services and co-ordination of the Project Management Team
- The **Project Management Team** – is led by the Project Manager and provides technical support to the Project Manager including technical/engineering, commercial/legal, environmental/permits, and services/performance functions.

The functions of these bodies are described further below.

### The Executive Board

The City's Executive Board oversees strategy, budgets and broader policy frameworks. Its membership consists of:

- Chief Executive;
- Director of Finance;
- Director of Operations;
- Commercial Director;
- Director of Strategy, and
- Director of Transport.

---

<sup>88</sup> See Action 29 in the Guidance for more detail

<sup>89</sup> In the United Kingdom he would also be the "Accounting Officer" for the project.

<sup>90</sup> In the United Kingdom he would also be the "Senior Responsible Officer" for the project.

## The Project Board

The Project Board provides a pivotal role in directing the project team and aligning stakeholder expectations. It consists of:

- one elected member of the City authority;
- five senior officers from the City authority (Chief Executive, Corporate Director of Resources, Corporate Director of Environment and Regeneration, Director of Programmes, Services Director of Planning and Sustainability), and
- the Project Director (Chair).

Its function is to:

- ensure consistency with the Regional Transport Plan;
- oversee all delivery issues in relation to the Project, including matters associated with powers, design, procurement and operations, all within delegated limits;
- facilitate decision-making at a project level and makes recommendations to the authorised officers and Executive Board;
- provide a lead in promoting and supporting the project both within the City authority and externally, including representation to Central Government and key stakeholders;
- ensure compatibility and integration with the City authority's key strategies and policies and provides a linkage to corporate governance arrangements within the authority; and
- liaise with the Stakeholder Group (see section 5.5 below).

## The Project Management Team

The Project Management Team reports to the Project Board through the Project Manager. Team members are co-located within the project office located at the City authority's offices, to facilitate informal communication.

The Project Management Team meets fortnightly and provides project management co-ordination and oversight across the various workstreams. It:

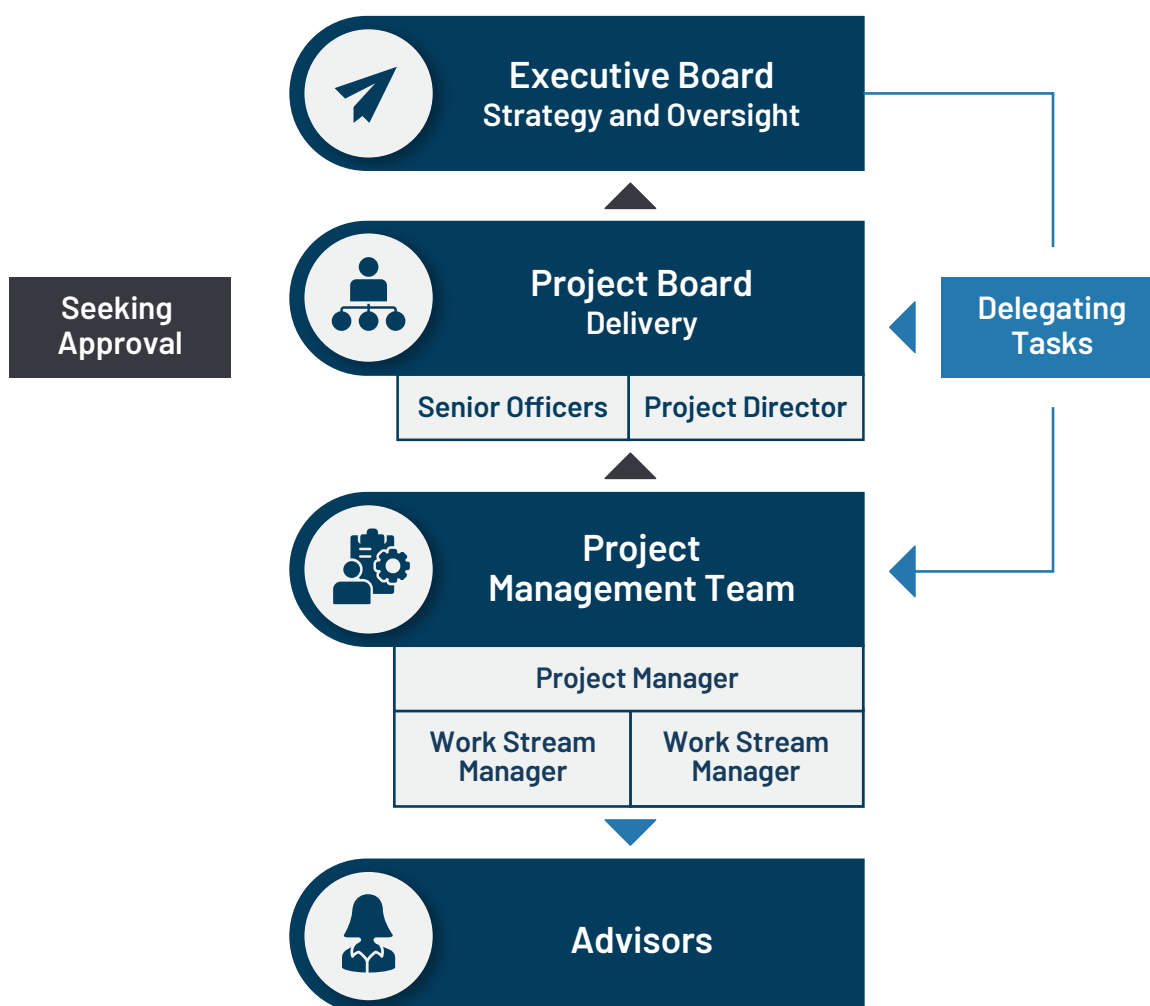
- is chaired by the Project Manager who subsequently provides a monthly progress brief to the **Project Board**;
- monitors progress of the workstreams against the programme of work;
- involves workstream managers and key advisers providing an opportunity for key issues and/or project dependencies to be discussed and appropriate action plans developed; and
- **supports sub-workstream progress meetings and working groups**, chaired by the relevant workstream manager, to co-ordinate specific activities and co-ordinate the work of consultants and advisers.

Further details of the team (and its experience) are set out in Annex [xxx] where it can be seen that [xxx] staff work on this project full time (expected to ramp up to [xxx] over the next [xxx] months and a further [xxx] part time (ramping up to [xxx] over the next [xxx] months). Where deficiencies have been identified, additional resources have been identified and budgeted to come from the project advisers. Overall, as viewed against the programme plan it is considered that this staff plan offers sufficient resource to manage the project through to successful completion.

An Operating Committee has been established to monitor the successful construction and operation of the Project following contract signature and report to the Project Board.

These governance structures are summarised in the diagram, below:

**Figure 9 – Project Management Team**



## 5.3 Describe Use of Advisers<sup>91</sup>

The Project Board has recruited a team of technical advisers with comprehensive experience of PPP and light rail. The Ministry of Transport is also providing specialist input and supporting collaboration and knowledge transfer between local and central government bodies. Strategic advice is also being provided by the regional multilateral bank and a close working relationship has been developed in order to ensure compliance with the multilateral bank's requirements and standards.<sup>92</sup>

**Table 39 – List of lead advisers**

Area	Adviser
Financial	Company A
Technical / cost advisory	Company B
Procurement and Legal	Company C
BIM (building information modelling)	Company D
Transport economics	Company E
Environmental	Company F
Project management	Company G

A profile of each of the entities above, together with the Curriculum Vitae of the main advisers and their relevant experience, is presented in an annex.<sup>93</sup>

The Olympus Council has made provision for adviser costs in an amount of NL\$[xxx] rising to [xxx] (see further [schedule xxx] for detailed costings) which is considered adequate for the purpose. Provision has been made for the funding of these with a contribution from Central Government (see Financial Case).

<sup>91</sup> See Action 30 in the Guidance for more detail

<sup>92</sup> The following reports provide further guidance on the procurement and management of advisers: Chapter 7 "Role of Advisers" in "How to engage with the private sector in public-private partnerships in emerging markets", available at: <http://documents.worldbank.org/curated/en/995241468337913618/pdf/594610PUB01D1710Box358282B01PUBLIC1.pdf> EPEC guidance on the appointment and management of advisers, available at <http://www.eib.org/epec/g2g/ii-detailed-preparation/21/212/index.htm>

<sup>93</sup> Note – For large projects, it is sometimes beneficial to appoint a lead adviser who will set up a project management office and help appoint and manage the other advisers.

## 5.4 Devise Project Plan<sup>94</sup>

The key milestones for the project are as follows:

**Table 40 – Key project milestones**

Activity	Date
Planning orders approved	May 2018
Submission of Intermediate Business Case to Ministry of Transport	December 2018
Obtain approval to proceed from Ministry of Transport	January 2019
Advise the market of upcoming tender issue	March 2019
Issue 'Invitation to Tender' documents	May 2019
Deadline for tender returns	August 2019
Deadline for 'Best and Final Offers'	December 2019
Submission of Final Business Case to Ministry of Transport	May 2020
Obtain FBC approval	June 2020
Financial Close	July 2020

The detailed 'Gantt' chart contains further detail, including governance arrangements and formal scrutiny / approval points<sup>95</sup>, and can be found in an annex.

The project has been broken-down into key workstreams, each overseen and co-ordinated by a workstream lead, in order to provide focus on delivery. Many of the project team staff will work within a number of the workstreams. This flexible arrangement permits efficient management of the project's resources to meet the needs of the project as it may change over time.

The main responsibilities of each workstream are summarised as follows:

- Powers, Approvals and Stakeholders:
  - Applying for and obtaining outline planning permissions and related consents for the Project;
  - Land and property Management;

<sup>94</sup> See Action 31 in the Guidance for more detail

<sup>95</sup> The UK uses 'Gateway Reviews' to examine programmes and projects at key decision points in their lifecycle. It looks ahead to provide assurance that they can progress successfully to the next stage. Acknowledgement that the relevant local review process has been adhered to should be mentioned as part of the business case. See Figure 5.2 below and page 21 of the Guidance.

- Facilitating the approvals and consents process during the advanced design and implementation phase;
  - Stakeholder Management, including interfaces with the Stakeholder Committee and Communications team; and
  - Co-ordinating executive project approvals.
- Benefits and Performance:
- Benefits management including benefit identification, benchmarking, monitoring and evaluation;
  - Change management, handover and commissioning; and
  - Performance monitoring of the operational network.
- Legal and Commercial:
- Business Case Management;
  - Commercial and Procurement Strategy and management;
  - Funding planning;
  - Tender evaluation; and
  - Contract development, negotiation and administration.
- Technical Development
- Development of a compliant design specification with a view to reducing uncertainty in scope, cost, and implementation.
- Scheme Assurance
- Providing the framework for development of the scheme by the Design Service Consultant and, subsequently, the Concessionaire.
  - Assuring scheme compliance, scheme changes, scheme cost, scheme risks and opportunities, consents, environmental planning, system safety, and system acceptance procedures.

A post-Financial Close implementation programme will be developed by the Operating Committee. The implementation programme will include handover and commissioning and will be used to coordinate the construction of the tram scheme with interfacing projects, such as road works.

### **Formal business case scrutiny and approval**

At Early Business Case Stage an Assurance and Approval Plan was agreed with the National Authorities (since the Project will in part rely on funding from the Ministry of Transport). This is set out below and took into account a number of key governance points, which must be successfully passed.

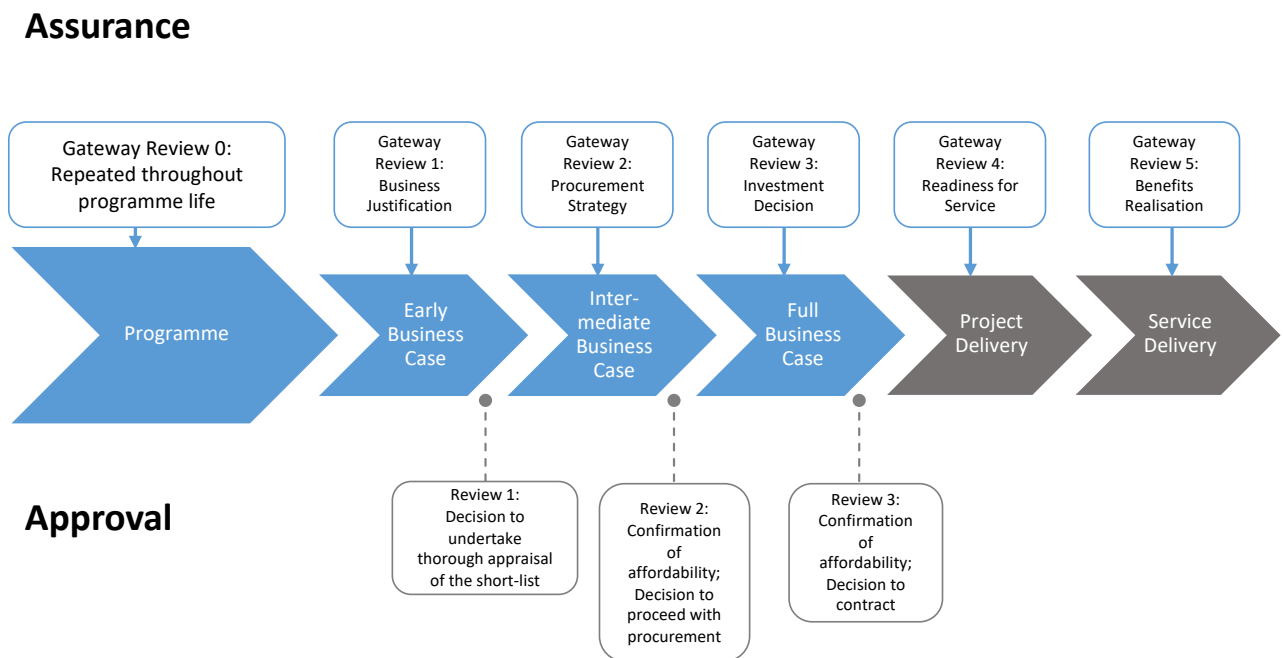


In general, these occur towards the end of each project phase, and consist of formal approvals to proceed as follows:

- Olympus Council Approvals;
- Elisia Executive Board Approvals; and
- Ministry of Transport Approvals.

Alongside these formal approval points a series of assurance reviews have been implemented – designed to provide impartial assurance to the Project Team that the project has reached sufficient stage of maturity to proceed to the next stage. Key project stages are set out below. A detailed project programme is set out in appendix [xxx].<sup>96</sup>

**Figure 10 – Approvals and Assurance Stages**



The Project received a “green” rating for its last Assurance review indicating that it was at a sufficient stage of development to proceed to Intermediate Business Case approval.

<sup>96</sup> See Template 1 in the Annexes to the Guidance.

## 5.5 Devise Stakeholder and Change Management arrangements<sup>97</sup>

### Overall Approach

A Strategy has been developed by the Project Board to direct the successful delivery of the project, with a clear focus on effective stakeholder engagement and change management. The strategy sets out the following high-level approach:

- Identify and classify key stakeholders in terms of influence/importance;
- Develop communications plan – identifying the key messages relevant to specific stakeholder groups at different stages of project development and putting in place a practical plan to engage and communicate with these groups, and
- Regularly review the strategy and stakeholder engagement outcomes to maintain oversight of delivery risks and any required project modifications.

### Identify and classify key stakeholders

Project stakeholders have been classified in five main groups:

- **General Public:** primarily the tram users but also anyone who might be impacted by, or benefit from, the tram project.
- **Internal:** groups or individuals within or working for the Olympus Council, including the Council's executives (since the council has a range of statutory or regulatory duties as the local highway authority, planning authority, traffic authority and environmental health) and also other departments, employees and consultants.
- **Core:** key stakeholders with a central role in enabling delivery of the project, including local authorities (particularly those with local planning powers), government/statutory bodies' affected land owners along the route, transport interest groups, environmental bodies and utility providers. They also include private sector providers, such as construction companies, national and international consultants who either have an interest in the project and/or have experience of working on similar projects as well as finance providers.
- **Influential Groups:** including emergency services, owners of residential and business properties where no land is taken (such as residential and businesses properties in close proximity to the route) and local pressure/action groups, including trade unions.
- **Marginalised and/or vulnerable groups:** including those individuals who may be impacted disproportionately by the project due to their age, gender, disability, race and other characteristics.

### Develop Communications Plan

The communication channel used depended on the type of stakeholder. Five types of channel were employed, namely:

---

<sup>97</sup> See Actions 33 and 34 in the Guidance for more detail

- **Consent protocol:** Establishing formalised arrangements for engaging and progressing ‘formal’ consents and approvals with individual stakeholders.
- **Individual discussions/negotiations:** These aimed to remove or minimise objections to the project, and comprises meetings, workshops, formal correspondence with individual stakeholders and the requirement for formal agreements, where necessary.
- **Group discussions/ negotiations:** This was appropriate where one communication covered a number of similar stakeholders (such as a letter to all residents on a particular street, or a meeting with residents of a retirement complex). General group meetings with residents were generally not deemed to be appropriate as these can be taken over by the vociferous minority and may not lead to constructive dialogue.
- **Newsletters/Press Releases/Media:** This was done to disseminate specific information that may have been relevant only to one or more stakeholder groups, as well as for general information for all audiences (including the general public). This form of communication was done in paper form and electronic form, including website updates.
- **Road Shows/Displays/Exhibitions:** These are useful in providing a continuing ‘presence’ in the community and to raise awareness of the project’s aims and objectives.

A detailed communications plan is presented in annex [XXX].<sup>98</sup>

In addition to these communication channels, a stakeholder committee was set up at the start of the project. This consisted of a permanent group of 12 individuals from a broad range of interest groups. The purpose of the committee is to:

- allow stakeholders from different backgrounds and with different interests to understand one another’s aspirations and concerns for the project, thereby appreciating the need for compromise solutions that benefit everyone; and
- enable stakeholders to be involved in, and influence the design of, the project from the start, thereby minimising the risk of later objections.

The group meets at regular intervals, usually every six weeks, and whenever else required. It has helped the project team on various issues and assisted in carrying forward to members of the public a positive message on the objectives and benefits of the project. It allows the project team to share information in a targeted manner, gather feedback (before going public with certain decisions to enable a more public-friendly approach and stance to be taken where necessary), generate options and inform decision-making.

---

<sup>98</sup> This would be included in a fully developed Business Case; but is considered beyond the scope of this Case Study.

## Public perception and support have also been gauged through:

- comments from stakeholders, including letters and formal representations both for and against the scheme; and
- an independent market research which reported last year, based on a demographically balanced sample of [xxx] people along the route of each line. Of those asked:
  - Three-quarters believe public transport needs to be improved;
  - Three people to every one approved of the first [xxx] route; and
  - Two people to every one approved of the second [xxx] route.

Members of the Business Community have identified transport as the second highest priority needing to be tackled to improve business. 75% of respondents stated the project was one of three top priorities for action. The Council received approximately [xxx] letters of support for the project during the planning process, a large proportion of which were from the business community, including developers, education and training sector, health sector and local businesses.

There is therefore a positive perception and support for the project from both the public and business community.

## Develop Change Management Strategy

The Change Management Strategy and Plan is owned by the Project Board and is reviewed at every Project Board meeting.

A change management strategy has been developed to assess and manage necessary change, thus ensuring that informed decisions can be made. It also ensures that the outcome of the change is appropriately communicated and implemented.<sup>99</sup>

### Change Control

As part of the strategy a change control process has been developed that ensures that all changes made to a scheme's baseline scope, time, cost and quality objectives or agreed scheme benefits are firstly clearly identified and then evaluated. The person with appropriate authority can then either approve, reject or defer such change.

The change could be to any one or more aspects of the project delivery or parts of the scheme configuration.

Examples of changes to project delivery include changes to what is to be supplied to the Council or the terms of reference for any sub-contract or Concession, change to the any aspect of budgeting, or changes to the programmed timetable.

---

<sup>99</sup> See Action 34

Changes to the scheme could be externally imposed (such as legislative or regulatory changes or changes to stakeholder expectations) or they may be internal (such as governance, organisation or management arrangements). They could also include changes that may result from the business case process itself, particularly at the initial and consultation stages, whereby changes may occur to the scheme objectives or benefits, the funding or procurement strategy to be used, changes to the scope / capability / performance of the scheme; or changes to the costs or risk profile.

The process for change control involves eight stages:

1. identification of the change;
2. processing the change request;
3. making an initial evaluation of the change;
4. following up with a detailed evaluation if warranted;
5. putting forward a recommendation for the change to be accepted, rejected or deferred;
6. a decision is taken on the change;
7. if accepted any relevant plans and other documentation are to be updated; and
8. finally, the change is implemented.

Clear provision has also been made in the project contract to deal with any necessary service changes and to ensure, through the appropriate use of benchmark pricing and competition, that value for money is maintained on any consequential repricing.

### **Planned Change Management**

It will also be important to manage customer change for the travelling public. Given the novelty of the scheme within the city, one of the main areas of focus in the change management plan relates to managing both users of the tram as well as road users, including private vehicle users, cyclists and pedestrians. The success of the scheme will depend on the travelling public being aware of, and valuing, the benefits of using the tram in place of private motorised modes of transport.

The change management plan details an 'educational exercise', which is planned for when Final Business Case approval is achieved. It will explain to people in detail what the plans for the project are and how current travel patterns can be made more efficient through use of the tram. They include the dissemination of leaflets to households, a 'project hotline' for the public as well as various information events to be held over two years.

These and similar changes that will have to be dealt with, and the relevant actions to ensure their success, are dealt with in detail in the management strategy and plan. The detailed change management strategy and plan is presented in annex [XXX].

## Implementation Management Plan

One of the most challenging changes that will occur is the implementation of the Project; the point at which Financial Close is achieved, all agreements are signed and the concessionaire has to start implementing what the Council has specified. To ensure that this phase goes as smoothly as possible and in line with expectations, an Implementation Management Plan will be drawn up. Such a plan will explain:

- how we will hand over the delivery of the scheme to the Concessionaire;
- how and when to transfer any existing infrastructure that is required for the scheme to the Concessionaire;
- how we will manage the land acquisition process and any other retained risks or obligations;
- how we will facilitate stakeholder and approval interfaces where this is appropriate;
- how we will control the hand-back of highway related infrastructure and temporary land after implementation;
- how we will manage changes to the Concession;
- how we will handle land compensation events; and
- how we will work to close out any outstanding implementation issues.

## Concession Hand-Back

Another major change that will occur in relation to the project is the point at which the concession ends and the project will have to be handed back to a successor organisation (i.e. the new concessionaire).

12 months prior to the end of the concession, the Concessionaire will be required to provide the Council with a Hand-back Plan which sets out the process and the trigger points for the hand-back. The plan shall contain sufficient detail to allow the successor organisation to receive the operational and infrastructure assets and maintain operations without disrupting the services.

The Concessionaire will be required to return the assets in a condition consistent with the implementation of the Maintenance Plans and standards normally applicable to the operation and maintenance of the network during the Concession.

In order to ensure continued maintenance after the concession ends, the Concessionaire will be obliged to make available for a period of up to 12 weeks after the end date any senior staff necessary to provide specific knowledge, advice and expertise to the successor organisations staff. They will be expected to include the Operations Manager; Maintenance Manager; Lead Vehicle Maintenance Engineer; Lead Operations Engineer; Lead Maintenance Engineer and Safety Manager. They will be expected to provide full co-operation to the successor organisations staff and provide training in system specific aspects, familiarity with maintenance logs, reporting systems, operational records and any other aspects of day-to-day operations. They will also be expected to hand over any documentation relevant to the maintenance of the system.

## Contract Management

Contract monitoring arrangements for construction, followed by service delivery over the life of the project have been tasked to the Operations Committee to develop to include:

- monthly reporting (against service standards, and so as to determine monthly payments) during the service period;
- regular meetings and reviews to consider how well the contractor is providing the service and what improvements could be made; and
- an element of continuous improvement.

## Service Change

Provision has been made in the Project Contract to ensure that any required service changes, which may inevitably be necessary over the life of the project, can be dealt with and priced on a basis that will ensure value for money for the Council – relevant pricing benchmarks and market-testing mechanisms have been provided for.

## 5.6 Prepare Benefits Realisation Strategy and Plans<sup>100</sup>

The benefits strategy categorises and prioritises the potential benefits of the project. Not all benefits can be controlled; in particular, many of the significant indirect social benefits can be monitored but not effectively managed. The strategy ensures however that the Project Team's efforts are focused on those benefits that can be effectively managed, as well as monitoring those where management is more difficult.

The strategy illustrates the relationships between the expected benefits of the scheme, the organisations that will deliver those benefits, timescales and the review process required throughout the design, construction and early operational phase of the scheme. A Benefits register has been developed for the scheme by the relevant advisers working in conjunction with the Project Team.

It defines:

- when benefits will be realised;
- how benefits will be measured;
- how benefits should be managed actively; and
- who will be responsible for delivering those benefits.

The plan has been structured around the project objectives and related outcomes and benefits described in the Strategic Case.

---

<sup>100</sup> See Action 35 of the Guidance for more detail

For each expected benefit, the plan provides the following:

- **Stakeholders** – the individual or organisation impacted by, or able to influence, the realisation of the benefit;
- **Benefit Manager** – the individual or organisation primarily responsible for monitoring the extent to which the benefit is being realised, evaluating reasons for any deviations and how to bring that benefit back in line with expectations, where possible;
- **Measure of Success** – the specific measure linking the project to the benefit being targeted;
- **Supporting Measures** – measures that need to be taken (in addition to implementation of the project) in order to maximise the benefit;
- **Linked Performance Indicators** – a broad indicator to be used to measure the extent to which the benefit is being realised;
- **Timescale** – period or phase over which the benefit is expected to be realised;
- **Review Process** – points at which the progress of benefit realisation is to be reviewed; and
- **Risks** – currently identifiable obstacles to the realisation of the benefits.

Finally, the plan contains an indicative timetable for the tracking, monitoring and reporting of the key benefits and impacts of the project.

The resulting Benefits Strategy and associated Benefits Register can be found as an appendix to the business case.

## Evaluation

A locally funded monitoring programme has been established and includes a number of performance indicators that will be published periodically. The scheme will support the general direction of local and national transport policy.<sup>101</sup>

The range of performance indicators are focused on outputs and benefits linked to the aims of the scheme as set out in this business case. While the indicators are wide ranging, they have an emphasis on the core deliverables of the scheme (including transport network capacity, targeting congestion, efficiency, accessibility and usage) together with key impacts arising from the delivery of scheme (including social and distributional impacts and economic development issues).

Indicators include both quantitative measures, such as system usage, modal shift and congestion estimates, together with qualitative indicators, including for example, individual attitudes to service provision and commercial views on the influence of the scheme on business location decisions.

---

<sup>101</sup> See Action 35 of the Guidance.



There will be a focus on key supply and demand issues, examining system usage and wider transport network considerations. Regular monitoring will also consider system reliability and customer satisfaction. Bespoke monitoring covering specific issues will include reviews of both development and residential property impacts, showing differential impacts between those on the tram line corridor and the rest of the area, and transport benefits enjoyed by mobility impaired, ethnic / religious minority users and low-income groups, indicating real impacts on quality of life for a range of users of the scheme.

The monitoring programme will provide a wealth of information to demonstrate the performance of the scheme, including data used to understand and then drive further improvements in transport provision. Monitoring and feedback during the construction phase, including programme, budget, planning and regulatory compliance issues, will also be covered.

Additional bespoke monitoring exercises may be required to consider specific outputs and benefits of the scheme. This monitoring may require primary quantitative and qualitative research and could address issues such as the extent of cross-city travel, potential benefits associated with urban vicinity changes in the centres and the contribution of the scheme to reducing transport and wider social barriers to residents of the outer areas.

## Management of Evaluation Process<sup>102</sup>

As the Project progresses the potential scope and management of the scheme evaluation will need to be managed and adapted. A document will outline reporting and communications issues in the evaluation process, performance indicators, key success criteria and information requirements for both process evaluations (i.e. how the programme is being implemented) and impact evaluations (i.e. how the scheme affects outcomes). The evaluation will be linked to a Benefits Plan (see above) prepared to identify the 'ownership' of benefits and responsibilities for benefit delivery and monitoring.

The evaluation process and the reporting of its findings will include local and national government, industry bodies and other scheme promoters, local populations and representative groups. Appropriate dissemination routes will be used to maximise the value of the evaluation by ensuring best practice is made available to others and any pitfalls in development or implementation can be understood and mitigated in the future.

## Information Storage, Transparency and Sharing of Information

The project team recognises the need to control the collection, storage, retrieval, dissemination, archiving and appropriate disposal of project information, including documents, data and correspondence. In addition, it is important to control the use of project information in an appropriate format for the purposes of reporting, including formal reporting within the project organisation and governance structure and to project stakeholders.

---

<sup>102</sup> See Action 36 of the Guidance for more detail

The Project generates, utilises and absorbs significant quantities of information. Appropriate processes are required to manage and communicate the information. Equally important, appropriate, timely and accurate information is required to facilitate informed decisions. To manage this information and reporting, robust arrangements are required covering collection and storage, dissemination, retrieval, reporting, archiving and disposal.

Other considerations that must be taken into account include the need for commercial confidentiality, and how this is controlled with respect to storage and dissemination, data protection in respect to the collection, storage and use of personal data, and disclosure access to information and environmental information where this is required by law.

The importance however of financial and contractual transparency is recognised as part of the tender procurement conditions which specify that that contract documentation will be published at the end of the procurement, subject only to commercially sensitive information (which is expected to be minimal and time limited and predetermined in the bid phase) being withheld.

High levels of pricing transparency and open book accounting will be required throughout the life of the project and the Project Team has adopted a range of measures designed around what is considered best practice in this area. These measures include:

- the provision by the concessionaire of maintenance of operating manuals, alongside regular service performance reports and reviews;
- maintenance by the concessionaire of books of account recording costs, overheads, and other payments, including details of life-cycle funds on an open book basis;
- provision, on a semi-annual basis, of accrued and prospective Internal Rates of Return of the concessionaire;
- provision by the concessionaire of ownership details including the price of any shares sold;
- provision of regular accounts in agreed form throughout the concession period; and
- publication of the contract documentation, save only for any areas agreed during the bid process to be confidential.

## 5.7 Prepare Risk Management Strategy and Plans<sup>103</sup>

A comprehensive risk management procedure is in place to prevent or mitigate risks to the project and to maximise opportunities for project improvement. The process also covers the evaluation and monitoring of risks that have materialised. The management process ensures project risks are effectively identified and prioritised, thus allowing informed decisions about key project threats and opportunities, and ensuring continuous efficiencies in programme and project delivery.

Through facilitated risk workshops, a comprehensive risk register has been developed (also presented in an appendix) which is updated continuously. All risks identified on the register are classified as being at 'strategic-level', 'project-level' or 'workstream-level' according to the level of management ownership /intervention required. Each risk is assessed in terms of impact and likelihood. A response plan, which includes relevant contingencies, is prepared which takes account of the proximity of the risk event occurring and recognises that the responsibility for the mitigation may change over the course of the project. This allows clear demonstration of those risks which, as a result of the contracting arrangements to be entered into, the promoters intend to transfer to the concessionaire and those which are likely to be retained.

The promoters have delegated to the design consultants the responsibility for identifying and managing engineering, operational and maintenance risks that affect the scope of the scheme, scheme cost or time to implement the scheme. These risks are used to inform the ongoing technical development of the scheme.

Risks are reviewed fortnightly, using the risk register, at the Project Management Team meetings, with key risks also reviewed at monthly Project Delivery Group meetings. The two-monthly reports to the Project Board include a summary of the key risks and reports on the progress of mitigating actions being taken in respect of them.

More detail can be found in the Risk Management Strategy and register, presented as an appendix.

Overall it is considered that the arrangements presented in this Management case represent a robust structure for managing the development of the project to a successful conclusion, in a way that ensures value for money is being achieved through the implementation of a project that addresses the business needs identified. Good management of the project guarantees the robustness of this business case and lays the ground for the project's successful implementation across its construction and operations phase, including the management of risks and realisation of benefits.

---

<sup>103</sup> See Action 35 of the Guidance.

# Schedule 1 – Glossary<sup>104</sup>

**Approval Process** is a process by which an approvals body considers whether a project represents an appropriate use of public money and determines whether the project should proceed.

**Appraisal** as regards:

- options, is a process of comparing different options, and
- projects, is a process of considering the overall state of a project (considering objectives, options, costs, benefits, risks and uncertainty)

before reaching a decision.

**Assurance** is a review process designed to produce:

- an assessment for its sponsor and approver that shows the assurance team's confidence in the project's ability to meet its aims and objectives, and
- advice as to whether it has reached a sufficient stage of maturity to proceed to the next stage.

**Assurance and Approvals Plan** is a plan setting out the planning, coordination and provision of assurance activities and approval points throughout its life.

**Authority** is a local or central public sector body, which may commission a project.

**Benefit** is an advantage or positive outcome.

**Building Information Modelling (BIM)** (sometimes also referred to as digital construction) is a digital transformation process that allows for easy sharing of data between different contributors during a project's construction and subsequent operation.

**Business as Usual** is the project option that provides for a continuation of the current arrangements. This provides a benchmark against which to compare other options. Sometimes this is referred to as the "Do Nothing" option.

**Business Case** is (a) a proposition that explains why a project is needed, and also (b) a management tool for scoping, planning and evaluating that proposition.

**Case Study** – the model Business Case (at Intermediate stage) set out in Annex 1.

---

<sup>104</sup> These definitions are project-specific definitions and an edited version of the glossary included in the Infrastructure Business Case: International Guidance.

**Cash Releasing Benefits** – these benefits reduce the cost of organisations in such a way that the resources can be reallocated elsewhere; this typically means that an entire resource is no longer needed for the task for which it was previously used e.g. staff, cash or other assets.

**Category Choices** – the choices that should be considered at the different stages of the Options Framework, from Scope – Solution – Deliverer – Implementation – Finance & Funding.

**Change Management** means the different plans/approaches needed to help manage organisational change. This should be supported by an overall *Strategy* that explains the goals and aims and a *Plan* that explains how these will be achieved.

**Commercial Case** is the section of the Business Case that describes the commercial viability of the project and should include proposals for contractual structure, risk allocation and procurement strategy.

**Contingency** is an allowance of cash or resource to cover the cost of risks that may arise.

**Cost Benefit Analysis** is a type of socio-economic analysis used to compare different project options and their effect on social welfare, quantifying as many of the costs and the benefits as feasible, including costs/benefits for which there is no satisfactory measure of economic value.

**Critical Success Factors** are the high priority objectives for a project, against which the success of the project may be judged.

**Discounting** is a method used to convert future costs and benefits to present values using a discount rate.

**Do-minimum option** is the option where the Authority takes the minimum amount of action necessary.

**Early Business Case** is the first stage in developing a project's Business Case. It focuses primarily on the Strategic and Economic Cases, establishing the "strategic need" for the project, and a short list of options. High-level costs, benefits and risks are also developed.

**Economic analysis** is a means of assessing the costs and benefits of options to society as a whole using Cost Benefit Analysis and an assessment of qualitative benefits and risks.

**Economic Case** is the economic section of the Business Case that demonstrates that a wide range of options have been considered, and then refined to a short-list and eventually a "preferred option" using cost benefit analysis.

**Effectiveness** is a measure of the extent to which a proposed action achieves its objectives.

**Efficiency** is a measure of the extent to which a project's associated throughputs are increased.

**Environmental and Social Impact Assessment** is an assessment of the potential environmental and social impacts of a proposed project prior to the decision to move forward with the project.

**Environmental and Social Impact Risks** are risks of potential negative consequences that result from impacts (or perceived impacts) on the natural environment or communities of people.

**Financing**, for a project, is the up-front borrowing and/or investment used to pay for capital costs.

**Five case model** is a framework for the development and presentation of a business case, comprising the strategic, economic, commercial, financial and management (five) dimensions of the case. It is the methodology described in this Guidance.

**Full Business Case** is the third stage in developing a project business case. It focuses primarily on the procurement process, and updates the Economic, Commercial, Financial and Management Cases to reflect the negotiated deal.

**Funding** is the source of income used to repay the up-front finance for a project over its life.

**Gateway Approach** involves a project passing through “gates” or assurance review points before it is put forward for relevant central government approval. Each gateway requires the assurance team to develop an assessment report of the project and its business case. This is a formal process in the UK, linked to HM Treasury’s Approvals Process.

**Gender and Inclusion** – Gender refers to gender equality and women’s economic empowerment. Inclusion refers to the reduction of poverty and delivery of inclusive growth among excluded groups, such as rural women, youth and people with disabilities. Greater inclusion can be achieved through empowerment (through building assets, capabilities and opportunities) and transformation (addressing systemic barriers to economic empowerment).

**Product (or GDP)** measures the value of economic activity within a country, being the sum of the market values, or prices, of all final goods and services produced in an economy during a period of time.

**Intermediate Business Case** is the second, and most substantial, stage in developing a project business case. It focuses on the Economic, Commercial, Financial and Management Cases, assessing the short-list of options through cost benefit analysis to determine a “preferred option”, considering the affordability and commercial viability of the “preferred option”, and identifying the expected resources and management arrangements for the project.

**Life-cycle costs** are the costs of an asset over its useful life, including dismantling costs (sometimes known as Whole Life Costs).

**MDB** is a Multilateral Development Bank.

**Net Present Social Value** is the discounted value of a stream of future costs and benefits to produce a present value. It provides a measure of the overall impact of an option.

**Non-Cash Releasing Benefits** – these often involve reducing the time that a particular resource takes to do, but not sufficiently to re-allocate that resource to a different area of work.

**Non-quantifiable or qualitative benefits** – these are qualitative benefits that are of value but cannot be quantified.

**Objectives** are the “targeted” outcomes for a project, which reflect its overall rationale and which must be made SMART for the purposes of evaluation – sometimes also referred to as Project Objectives, Investment Objectives or Spending Objectives.

**Optimism bias** is the demonstrated tendency for the writers of business cases to be over-optimistic about costs, benefits and time taken to complete a proposal.

**Option appraisal** is the process of examining options and weighing up the costs, benefits, risks and uncertainties of those options before a decision is made.

**Options Framework filter** is a systematic framework for the generation of a wide range of possible options and the filtering of a few possible options (the “short list”) for cost benefit analysis and identification of the Preferred Option.<sup>105</sup>

**Outcomes** refers to the consequences to society as a whole of a project.

**Output** refers to the change in the level or quality of a service delivered.

**Payment Mechanism** is the mechanism in the project contract that sets out the payment arrangements.

**Public Private Partnerships (PPP)** is a form of contract between public and private sector whereby, characteristically, the private sector design, build, finance, and operate a publicly provided service against payment by the Authority (for an Availability based PPP) or by users (for a Concession based PPP). There are many different possible definitions.

**Pre-Feasibility Study** is an assessment of the basic parameters of a project used to decide whether to go forward with more detailed studies, such as feasibility studies and transaction development.

**Preferred Approach** is the best ranking solution emerging from the options analysis at Early Business Case stage. It is not the Preferred Option, which only emerges after full economic appraisal in the Intermediate Business Case stage.

**Preferred Bidder** is the bidder identified at the end of the bid process as being the Authority’s preferred partner for the contract.

---

<sup>105</sup> HM Treasury, Green Book, <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

**Preferred Option** is the option selected, as offering best value, after a detailed analysis of the short-list of options in the Economic Case at Intermediate Business Case stage.

**Programme** is a series of coordinated activities designed to pursue a long-term goal. In the infrastructure area it is normally seen as an overarching structure under which a number of related individual projects can be coordinated and delivered. A Programme business case can also be produced using the 5 Case Model.

**Project Development Routemap** (or **Routemap**) is a tool that can be used in the early stage of a project to take project teams through the key considerations for launching the project. It assesses delivery complexity, “deliverer” capability, and identifies any capability gaps. It has a set of seven modules that provide best practice and advice to remedy problems identified.

**Public Value** is the net measure of social welfare resulting from an option or project looking at the “whole of society”, or more particularly, it is the sum of total benefits and total costs, including private and social costs and benefits. It is sometimes referred to as Net Present Social Value.

**Public Sector Comparator** is a cost model showing how much the project should cost over its whole life (including its operational phase, and including maintenance and service costs) if done as a traditionally funded public sector project. This serves as a comparator against which other project options can be measured. It is sometimes also referred to as the Reference Project.

**Qualitative Risk/Benefits** are Risks/Benefits that are not easily measurable in financial terms.

**Quantifiable benefit** – these benefits can be quantified. The extent to which they are measured will depend on their significance, however, as a rule every effort should be made to quantify benefits monetarily wherever possible.

**Quantitative Risk/Benefit are** Risks/Benefits that are easily measurable in financial terms.

**Reference Project** – see Public Sector Comparator.

**Risk** is the possibility of a negative event arising that could adversely affect the Project.

**Risk register** is a tool used to record project risks, their likelihood and value and the person responsible for their management.

**Sensitivity Analysis** is an analysis tool used in the cost benefit analysis of the Economic Case; it is a process of changing key variables and modelling their impact on the preferred options.

**SEAH** means “sexual exploitation, abuse and harassment”

**Sexual exploitation** is an actual or attempted abuse of someone’s position of vulnerability, differential power or trust, to obtain sexual favours, including but not only, by offering money or other social, economic or political advantages.



**Sexual abuse** is the actual or threatened physical intrusion of a sexual nature, whether by force, or under unequal or coercive conditions.

**Sexual harassment** is any unwelcome sexual advance, request for sexual favour, verbal or physical conduct or gesture of a sexual nature, or any other behaviour of a sexual nature that might reasonably be expected or be perceived to cause offence or humiliation to another.

**Short-list** refers to the short list of project options to be taken forward to detailed economic analysis in order to find a single Preferred Option.

**SMART Objectives** are objectives that are **S**pecific, **M**easurable, **A**chievable, **R**ealistic and **T**ime-bound.

**Strategic Case** is the strategic section of the Business Case.

**Sustainable Development** is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

**The UN Sustainable Development Goals** are a collection of 17 global goals set by the United Nations General Assembly in 2015 for the year 2030. They address global challenges, including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice.

**Value for Money** is the optimum combination of whole-of-life costs and quality or fitness for purpose of a good or service that meets the user's requirements (though there are many different possible definitions).

## Project Roles and Descriptions

We refer to the following roles and responsibilities in the Detailed Guidance. It is recognised that not every different country will have direct equivalents to each of these positions.

**Table 41 – Project Roles & Descriptions**

Title	Description
Senior Responsible Owner (SRO)	<ul style="list-style-type: none"><li>□ The visible owner of the project, accountable for successful delivery and recognised throughout the Authority as the key leadership figure in driving the project forward</li><li>□ Further guidance on the requirements and expectations for SROs of major government projects is available via the footnote below<sup>106</sup></li></ul>

<sup>106</sup> Please see guidance available at <https://www.gov.uk/government/publications/the-role-of-the-senior-responsible-owner>

Title	Description
Project Director	<ul style="list-style-type: none"> <li><input type="checkbox"/> The senior executive who represents the project and business case to the Project Board</li> <li><input type="checkbox"/> Has ownership of the business case and Routemap (if undertaken)</li> <li><input type="checkbox"/> Leads the business case through assurance and approval processes</li> <li><input type="checkbox"/> The seniority of the individual should reflect the complexity of the project</li> </ul>
Project Manager	<ul style="list-style-type: none"> <li><input type="checkbox"/> Supports the Project Director</li> <li><input type="checkbox"/> Has day-to-day responsibility for leading and managing the development, procurement and delivery of the project</li> <li><input type="checkbox"/> Leads on drafting the business case and coordinating inputs</li> <li><input type="checkbox"/> Organises and runs/facilitates workshops</li> <li><input type="checkbox"/> Engages with representatives of the Authority and/or stakeholder groups as required</li> <li><input type="checkbox"/> May lead on undertaking the Routemap / coordinating resources as necessary</li> </ul>
Project Team	<ul style="list-style-type: none"> <li><input type="checkbox"/> Led by the Project Manager and Project Director</li> <li><input type="checkbox"/> Possesses the range of skills and experience relevant to the project</li> <li><input type="checkbox"/> Inputs into the business case as required</li> <li><input type="checkbox"/> For major projects the team may become a Project/ Programme Management Office</li> </ul>
Project Board	<ul style="list-style-type: none"> <li><input type="checkbox"/> The board with overall responsibility for delivering the project and writing the business case</li> <li><input type="checkbox"/> It should report to a higher-level Executive Board, or, if the project is part of a larger portfolio of work, a Programme Board</li> </ul>
Executive Board / Programme Board	<ul style="list-style-type: none"> <li><input type="checkbox"/> The senior management board of the Authority / a board made up of senior management with responsibility for delivering an over-arching programme of projects</li> </ul>
Economic Adviser	<ul style="list-style-type: none"> <li><input type="checkbox"/> A specialist individual or organisation with the necessary skills to evaluate and analyse potential project options from an economic perspective</li> <li><input type="checkbox"/> Will input into the Economic Case (and other cases as required)</li> </ul>

Title	Description
Commercial Director	<ul style="list-style-type: none"> <li data-bbox="480 280 1394 353">❑ The executive responsible for commercial decisions on the Project Board</li> <li data-bbox="480 365 1394 439">❑ Possesses the necessary skills to evaluate and determine the best means of procurement for the project</li> <li data-bbox="480 450 1394 524">❑ Will input into the Commercial Case (and other Cases as required) and lead the procurement process</li> </ul>
Director of Finance	<ul style="list-style-type: none"> <li data-bbox="480 562 1394 636">❑ The executive responsible for confirming the affordability of the project on the Project Board</li> <li data-bbox="480 647 1394 685">❑ Will input into the Financial Case (and other cases as required)</li> </ul>
Communications Team	<ul style="list-style-type: none"> <li data-bbox="480 719 1394 757">❑ Likely to be drawn from the Authority's communications team</li> <li data-bbox="480 768 1394 875">❑ Will need to have the capacity to support stakeholder engagement for the project and to draft and implement a communications plan</li> <li data-bbox="480 887 1394 960">❑ Will input into the Management Case (and other cases as required)</li> </ul>
Change Management Adviser	<ul style="list-style-type: none"> <li data-bbox="480 999 1394 1099">❑ A specialist individual or organisation with the necessary skills to help to develop a Change Management strategy and action plan</li> </ul>
Environmental and Social Advisers	<ul style="list-style-type: none"> <li data-bbox="480 1133 1394 1234">❑ A multidisciplinary team that specialises in the commissioning/undertaking of Environmental, Social and Health Impact Assessments</li> </ul>
Risk Adviser	<ul style="list-style-type: none"> <li data-bbox="480 1279 1394 1379">❑ A specialist individual or organisation with the necessary skills to analyse potential risks and advise on how to best manage them</li> </ul>
Legal Adviser	<ul style="list-style-type: none"> <li data-bbox="480 1424 1394 1480">❑ A legal professional able to advise on the Commercial Case and other areas require legal input</li> </ul>

