4 Financial Dimension

4.1 Introduction

4.1.1. The Financial Dimension considers the costs and affordability, in terms of funding arrangements, of the Mass Transit programme. The costs of the programme have been considered in terms of the capital expenditure associated with delivery, the operating costs and the maintenance and renewal requirements. These whole-life costs are considered against the potential farebox revenue that could be generated by the system.

4.1.2. The costs and revenues associated with each corridor option, and where possible technology type, have been considered in turn. The overall costs and revenues associated with the network options have then also been estimated.

4.2 Introduction to Affordability

4.2.1. At this stage of programme development, affordability has been considered at a high-level. As part of the development of the SOC a *Funding and Financing Strategy* has been prepared. This provides a high-level strategic starting point for the funding and financing approach, and includes:

- Identification of various types and sources of funding and finance
- Examples of the different sources
- Highlights some of the relevant legal considerations in terms of structuring the delivery of the scheme
- Highlights the key legal risks associated with funding and financing options

4.2.2. The strategy also includes a number of case studies focused on major transport projects that have been delivered in the UK.

4.2.3. Given the scale and complexity of the Mass Transit programme it faces significant affordability challenges, notably for potential tunnelled sections, and it is most likely to be affordable by being delivered as individual elements; it is unlikely to be funded and financed through a single pot of money. The *Phasing Strategy* considers different ways in which the programme could potentially be phased and delivered.

4.2.4. As the programme, and these strategies, develop, the consideration of affordability will continue.

4.3 Scheme Costs

Capital Costs

4.3.1. The capital costs for each option have been estimated by Quantity Surveyors within WSP. The approach undertaken is reflective of the early stage of scheme development and balances the level of uncertainty inherent at SOC, with the need for proportionate analysis.

Where possible, costs have been benchmarked against projects of a similar scale in order to reflect real-world experience.

4.3.2. Within the *Feasibility Design Summary Report*, construction typologies have been applied to sections of the corridor route options depending on their requirements. These typologies are itemised within the feasibility design drawings for each option and dictate the level of intervention required. For each typology, the distance of the route to which it applies has been measured to identify the lengths, areas, and volumes of the different elements of work required. This has then been used for a high-level bill of quantities.

4.3.3. The rates applied to the bill of quantities have been built up using a variety of sources, starting with SPONS 2022, an industry standard rate book used to develop cost estimates. To reflect the recent and ongoing increase in costs across the economy, and uncertainty going forwards, an uplift of 10% has been applied to these rates. This uplift is applied in addition to inflation, the assumptions for which are discussed in paragraphs 4.3.25 and 4.3.26. For those items not covered by SPONS (e.g. alterations to junctions, amendments to underbridges and overbridges), cost estimates have been benchmarked against other projects of a similar nature. This includes mass transit projects for Transport for the South East and Hertfordshire County Council, as well as the Transforming Cities Fund projects in Yorkshire.

4.3.4. For options involving underground sections and therefore tunnelling, the associated costs have been built up from cost data obtained from a number of tunnelling projects, with inflation figures applied to bring them to current prices. The tunnelling costs account for mobilisation and demobilisation, geotechnical and site investigation, access shaft, tunnel, system works and the underground stations that are needed along each route.

4.3.5. As set out in the Economic Dimension, there are a number of mass transit technology options being considered. In terms of capital costs, these technology types have been grouped into rubber-wheeled and steel-wheeled, whereby rubber-wheeled accounts for BRT / TLT, and steel-wheeled accounts for VLR / LRT.

4.3.6. Initially options have been costed as rubber-wheeled solutions in line with the approach described above. A percentage uplift has then been applied to appropriate cost line items to reflect the additional costs associated with steel-wheeled solutions. This uplift, assumed to be 18%, is based on benchmarks from projects of a similar nature that have considered both rubber and steel-wheeled solutions. The vehicle costs have been estimated for each technology type individually, as set out in more detail below.

4.3.7. Appendix M shows the detailed build-up of the capital costs for each option.

Structures

Stations

4.3.8. The ISP identified potential locations for stops / stations for each corridor route option. At this stage of scheme development, the size and fit-out of stations has not yet been detailed. As such, benchmarking has been applied to allow for a bus hub with a waiting area, amenity

facilities and a small office area for overground stations. It is expected that while some of the stations will be larger than this, the scheme will also require a number of smaller stations / stops. As such a standard rate has been applied for all overground stations. For underground stations a standard cost has been based on a previous example for Canary Wharf station. The cost of this station has been adjusted for the likely size of an underground station as part of the West of England Mass Transit network. Similarly to the overground stations, there is not currently detail of the specifics of the scale and fit-out of any underground stations, therefore an assumed cost for each station is used.

Overbridges / underbridges

4.3.9. At this stage a nominal figure has been allowed to cover any potential works that may be required. As additional detail is identified as part of the OBC stage, a cost for each overbridge and underbridge intervention will be applied.

Maintenance depot

4.3.10. It is expected that maintenance depot(s) will need to be constructed, however the scale, number and location is unknown as it will be highly dependent on the number of operational corridors and the form of the network.

4.3.11. At this stage, an indicative figure has been established using HS2 as a benchmark, with a direct construction cost of circa £50m, plus the relevant indirect costs. It is assumed that the space consists of office and workshop areas, the operational area and all relevant external works required to complete the extents. A single £50m figure has been included within the scheme costs at this stage. Given the early stage of development, the location(s) of depot(s) has not been identified, therefore the associated land costs have been excluded from the scheme costs at this stage.

Vehicle costs

4.3.12. For the purposes of the SOC it has been assumed that all vehicles will be purchased as opposed to leased. The total vehicle cost for each option has been estimated based on the peak vehicle requirements from the ISP and the assumed purchase cost is based on experience and industry benchmarks.

Indirect costs

4.3.13. In order to account for indirect costs, a number of uplifts have been made to the direct costs based on benchmarks from other projects and industry standard allowances. The following uplifts have been applied to the direct construction costs in order to estimate the indirect cost:

- Utilities: 30%
- Traffic management: 15%
- Preliminaries: 30%
- Project / design team fees: 10%
- Project management fees: 10%

- Client costs including project teams and internal management: 5%
- Biodiversity Net Gain (BNG): 3%
- Overheads and profit: 15%

4.3.14. For options in which a substantial portion of the route runs underground, applying a flat 30% allowance for utilities is skewed by the scale of the direct construction costs. For these options, a separate line item has been included within the cost estimate with a reduced percentage that reflects the expected scale of intervention. This percentage reflects the risk that significant utility diversions may be required.

4.3.15. Similarly, a separate cost line has been included to account for the traffic management on options requiring tunnelling. Due to the nature of the Tunnel Boring Machine (TBM) process it is expected that traffic management requirements for underground sections will be significant at the site entrance and installation / transport of the TBM machine to site.

4.3.16. A cost allowance has been included for BNG as it is expected that this will become part of detailed design as the project progresses to OBC. This allows for landscaping and provision of betterment, as distinct from environmental mitigation.

4.3.17. In addition to the indirect costs above, a line item for surveys has been included in the estimates. The cost of surveys has been included as a lump sum within each of the options based upon the direct construction costs and benchmarked against projects of a similar nature and value to provide reassurance on indicative value. Such surveys are expected to include, but not be limited to ground investigation, pavement, drainage, utilities, ecology/environmental, arboricultural, and topographical.

Exclusions and limitations

4.3.18. At this stage of the process, both land costs and building demolition costs have been excluded from the cost estimate; this includes all associated legal fees. Due to the potential extent of land requirement, CPO, and other related factors, it would not be proportionate to provide a guide figure. As part of the OBC, the land and building demolition costs will be considered in more detail.

4.3.19. Items related to any public realm improvements and active travel requirements have been excluded from the cost estimates at this stage. Further detail of the scope around first mile / last mile solutions will be considered at OBC.

4.3.20. The purchase of the TBM has been excluded at this stage as the overall requirements are not yet known; it may be that no, or multiple, TBM units would be needed to complete the operation. This will also be dependent on the number of TBMs that are available at the time of construction and the demand of other projects of a similar nature at that time, including HS2. This will be a significant factor affecting the project depending on which options are taken further.

4.3.21. The timeframes until the assumed start of construction will provide a limitation to the costs in line with the current conditions of the construction market. Volatility in material costs, labour and plant availability has meant that the current costs will likely alter within shorter

timescales than normal. This may have a significant impact on the anticipated costs of the project.

4.3.22. It is also important to consider how the legal landscape may alter over the years that the design will be undertaken leading up to construction. Any new regulations or expectations will need late-stage changes to be introduced to the project. This may include Net Zero, post-departure adjustments to the regulatory framework as a result of the UK's departure from the European Union, or any wider geopolitical changes which influence the UK's regulatory and economic landscape. Further varying factors could have an impact on the expected costs of the project, in particular if new technology or transport types are introduced that are different to the current expectations.

Risk

4.3.23. At this stage of the scheme development, a Quantified Risk Assessment (QRA) has not been carried out. Therefore, to reflect the uncertainty of the scheme costs a risk allowance of 40% has been included in the cost estimate. This allowance is to mitigate against risks commonly encountered on a project of this scale. This includes, but is not limited to, additional inflationary pressure over and above that currently seen in the market, and generic construction phase risks (e.g. ground conditions while piling, encountering adverse materials). This risk allowance does not account for changes in the scope of the scheme as it develops.

4.3.24. As the scheme develops and undergoes detailed design work, a QRA will be undertaken.

Inflation

4.3.25. The direct and indirect costs have been estimated in 2022 prices. In order to reflect that the design and construction period is not until 2023 to 2036, inflation has been applied to these costs to reflect the year in which they are incurred.

4.3.26. Due to the ever-changing market conditions, it is becoming increasingly difficult to forecast inflation for the construction period. At this stage, inflation has been based upon taking a holistic view of forecasts by the Bank of England, which include 10% inflation in 2023, and 2% each year thereafter.

4.3.27. Table 4-3 and Table 4-4 show the capital cost profile for each option and network.

4.3.28. Table 4-1 and Table 4-2 show the capital cost estimates for each of the corridor and Bristol City Centre route options based on the above methodology for a rubber-wheeled and steel-wheeled solution respectively. These costs reflect the assumptions described previously and do not include land or legal costs. The costs have been split into the following categories:

- Construction:
  - Build costs including stations, overbridges / underbridges, maintenance depot(s)
  - Utilities
  - Traffic management
  - Preliminaries
  - Overheads and profits
- Preparation and admin:
  - Project / design team fees
  - Client costs including project teams and internal management
  - Biodiversity Net Gain
  - Surveys
- Inflation
- Risk
- Vehicle costs

4.3.29. In order to calculate the capital costs of the three networks, the costs of the constituent corridor options have been summed together and combined with the appropriate city centre option. The costs of any overlapping sections have then been removed from the overall estimate, hence do not necessarily equal the sum of the constituent options.

4.3.30. The cost estimates demonstrate the affordability challenges associated primarily with options which require an element of tunnelling. The funding required to deliver these options is significant.

Table 4-1 – Cost estimates (rubber-wheeled) - £m, nominal

Option	Construction costs (£m)	Prep and admin (£m)	Base cost (£m)	Inflation (£m)	Risk (£m)	Vehicle Cost (BRT) (£m)	Total (£m)
North Corridor							
NC04	2,065	406	**2,470**	1,383	988	4	**4,846**
NC08	240	39	**279**	156	112	6	**553**
NC08b	238	39	**276**	155	111	6	**548**
East Corridor							
EC01	2,031	403	**2,434**	1,363	974	3	**4,774**
EC04	2,563	508	**3,070**	1,719	1,228	3	**6,021**
EC08	92	15	**107**	60	43	6	**215**
Bristol – Bath Corridor							
BBC-C + BBC06 + A5	151	25	**176**	99	70	7	**352**
South-West Corridor							
SWC03	1,846	362	**2,208**	1,236	883	4	**4,332**
SWC05	157	26	**182**	102	73	6	**363**
SWC11	189	31	**220**	123	88	6	**438**
Bristol City Centre							
BBC-OPB	35	5	**40**	22	16	-	**78**
BBC-OPD	42	7	**49**	27	19	-	**95**
BBC-OPE	17	3	**20**	11	8	-	**39**
Networks							
Overground network 1	686	112	**798**	447	319	11	**1,589**
Overground network 2	668	110	**778**	436	311	25	**1,550**
Underground network 1	6,629	1,301	**7,930**	4,440	3,172	18	**15,561**

Table 4-2 - Cost estimates (steel-wheeled) - £m, nominal

Option	Construction costs (£m)	Prep and admin (£m)	Base cost (£m)	Inflation (£m)	Risk (£m)	Vehicle Cost (LRT) (£m)	Total (£m)
North Corridor							
NC04	2,426	477	**2,903**	1,626	1,161	23	**5,713**
NC08	255	41	**296**	166	119	35	**616**
NC08b	253	41	**294**	164	117	35	**610**
East Corridor							
EC01	2,397	475	**2,872**	1,608	1,149	16	**5,644**
EC04	3,024	599	**3,623**	2,029	1,449	16	**7,117**
EC08	96	16	**112**	63	45	31	**251**
Bristol – Bath Corridor							
BBC-C + BBC06 + A5	160	26	**186.4**	104	75	39	**404**
South-West Corridor							
SWC03	2,175	418	**2,593**	1,452	1,037	23	**5,106**
SWC05	166	27	**193**	108	77	31	**409**
SWC11	200	32	**232**	130	93	35	**491**
Bristol City Centre							
BCC-OPB	36	6	**42**	24	17	-	**83**
BCC-OPD	44	7	**51**	29	20	-	**100**
BCC-OPE	18	3	**21**	12	8	-	**41**
Networks							
Overground network 1	725	118	**843**	472	337	140	**1,793**
Overground network 2	707	115	**822**	460	329	140	**1,751**
Underground network 1	7,785	1,520	**9,305**	5,221	3,722	101	**18,340**

Cost profile

4.3.31. At this stage a high-level view of the potential design and construction period has been made based on the assumed opening year of 2036. In reality the delivery timescales are likely to be different for overground and underground / hybrid options. However for the purposes of this SOC it has been assumed that all options / corridors would be delivered to the same timescales. The opening year of 2036 is driven by the available forecast year in the current modelling framework.

4.3.32. Table 4-3 and Table 4-4 show the cost profile for each corridor option for rubber and steel-wheeled solutions.

4.3.33. As demonstrated by the cost profiles, the affordability challenges will be significant in the latter years, primarily associated with options that require an element of tunnelling.

Table 4-3 – Capital cost profile (rubber-wheeled) - £m, nominal

Option	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	Total
North Corridor															
NC04	3	6	6	7	10	34	35	36	37	817.3	881	986	993	993	**4,846**
NC08	3	3	3	3	3	3	3	5	5	98	100	102	106	115	**553**
NC08b	3	3	3	3	3	3	3	5	5	97	99	103	105	113	**548**
East Corridor															
EC01	3	6	6	7	10	34	35	36	36	815	878	962	971	975	**4,774**
EC04	4	8	8	8	13	43	44	45	46	1,020	1,087	1,210	1,234	1,249	**6,021**
EC08	1	1	1	1	1	1	1	2	2	38	39	39	40	46	**215**
Bristol – Bath Corridor															
BBC-C + BBC06 + A5	2	2	2	2	2	2	2	3	3	63	64	65	65	74	**352**
South-West															
SWC03	3	6	6	6	9	31	31	32	33	723	813	866	882	892	**4,332**
SWC05	2	2	2	2	2	2	2	3	3	65	66	67	69	74	**363**
SWC11	2	2	2	3	3	3	3	4	4	78	80	81	82	90	**438**
Networks															
Overground network 1	9	9	9	9	9	10	10	15	15	282	288	295	299	331	**1,589**
Overground network 2	8	9	9	9	9	9	9	15	18	275	282	288	292	323	**1,550**
Underground network 1	12	22	22	23	34	111	113	116	119	2,624	2,848	3,130	3,177	3,210	**15,561**

Table 4-4 - Capital cost profile (steel-wheeled) - £m, nominal

Option	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	Total
North Corridor															
NC04	4	7	8	8	12	41	41	42	43	962	1,030	1,142	1,164	1,210	**5,713**
NC08	3	3	3	3	3	4	4	5	6	105	107	109	111	149	**616**
NC08b	3	3	3	3	3	3	4	5	6	104	106	108	110	148	**610**
East Corridor															
EC01	4	7	8	8	12	40	41	42	43	956	1,019	1,130	1,152	1,182	**5,644**
EC04	5	9	10	10	15	51	52	53	54	1,198	1,283	1,427	1,455	1,495	**7,117**
EC08	1	1	1	1	1	1	1	2	2	40	41	41	42	74	**251**
Bristol – Bath Corridor															
BBC-C + BBC06 + A5	2	2	2	2	2	2	2	4	4	66	68	69	69	109	**404**
South-West															
SWC03	3	7	7	7	10	36	36	37	38	859	952	1,013	1,030	1,072	**5,106**
SWC05	2	2	2	2	2	2	2	4	4	69	70	69	73	105	**409**
SWC11	3	3	3	3	3	3	3	4	4	82	84	86	87	124	**491**
Networks															
Overground network 1	9	9	9	10	10	10	10	16	16	299	306	311	316	462	**1,793**
Overground network 2	9	9	9	9	10	10	10	15	16	291	298	304	308	453	**1,751**
Underground network 1	14	26	26	27	40	129	132	136	138	3,085	3,333	3,651	3,718	3,886	**18,340**

Operating, Maintenance and Renewal Costs

4.3.34. OMR costs have been estimated over the appraisal period. The following cost line items have been included in the estimate:

- Vehicle maintenance and renewal costs
- Electricity cost
- Station operating cost
- Infrastructure maintenance cost
- Staff costs (onboard, station and office based)

4.3.35. The OMR costs have been estimated on an incremental rate basis, largely driven by changes in vehicle milage or operating time. The unit rates applied to these changes are based on benchmarks from similar public transport projects.

Vehicle maintenance and renewal costs

4.3.36. The vehicle maintenance costs have been calculated on a rate per vehicle mile and the operated distance. These costs are assumed for each year of the appraisal.

4.3.37. The renewal costs are based on an assumed lifespan for each vehicle type and the cost to purchase new vehicles. These costs are incurred within the year which the vehicles reach life expiry.

Electricity cost

4.3.38. It is assumed that all technology types will be electrically powered. The electricity cost is calculated based on an assumed consumption rate and electricity price multiplied by the vehicle mileage. The electricity price is sourced from the May 2022 *TAG Data Book* (Table A1.3.7).

Station operating cost

4.3.39. The station operating cost includes the cost of lighting, electricity and general running of each station. The total station operating cost for each option is calculated based on the number of stations identified in the ISP and an assumed annual cost per station. Similarly, to the capital costs for stations, at this stage it has been assumed that each stop is a station.

4.3.40. The station operating cost is assumed to be higher for VLR and LRT based on benchmarks from similar schemes. The station operating cost is also assumed to be 50% higher for underground options compared to overground. This is to reflect the additional costs associated with the operation of escalators, lifts and a greater area to operate.

Infrastructure maintenance cost

4.3.41. Four types of infrastructure maintenance costs have been accounted for:

- Track maintenance (applicable for steel-wheeled only)
- Electricity maintenance for wires / facilities for electric vehicles to access electricity during operation (applicable for steel-wheeled only)

- Surface maintenance including the costs to maintain the infrastructure for vehicles to use, including:
  - Carriageway maintenance every 20 years
  - Surface cleaning, inspection and maintenance every year of operation
- Tunnel maintenance cost for all hybrid or fully underground options

4.3.42. The tunnel maintenance cost is the most significant infrastructure maintenance cost. Based on benchmarks from similar projects a maintenance cost of £1,250 per metre (2020/21 prices) has been assumed in each year for hybrid and underground options.

Staff costs

4.3.43. The staff costs comprise of:

- Onboard staff
- Station staff
- Office staff

4.3.44. The number of on-board staff is calculated by dividing the total annual operating hours by the assumed annual working hours of one Full Time Equivalent (FTE). It is assumed that rubber-wheeled solutions will have one member of on-board staff (the driver), whilst for steel-wheeled it is assumed there is also a revenue protection / customer facing member of staff on-board.

4.3.45. For all stations it has been assumed that there are cleaning and revenue protection staff, and for steel-wheeled options technical inspection staff. It is assumed that an FTE could cover a number of stations for these purposes, with one FTE could covering five stations for rubber-wheeled solutions and between one and two stations for steel-wheeled solutions. In addition, for underground stations it is assumed that there are five FTEs per station for security regulations. This is based on the assumption that there is at least one member of security staff present at each station at all times, and therefore a requirement for five FTEs.

4.3.46. Office staff costs relate to management and admin, legal or additional office management personnel. It has been assumed that these costs are 5% of the total on-board staff cost for rubber-wheeled solutions and 25% of on-board staff costs for steel-wheeled solutions. This is based on experience of similar projects.

Inflation

4.3.47. In order to reflect the years in which the costs would be incurred, inflation has been applied to each of the cost line items. In general, costs have been assumed to grow in line with RPI, with the following exceptions:

- Electricity cost: indexed with electricity price forecasts from the *TAG Data Book*
- Staff cost: indexed with average earnings index forecasts from the *TAG Data Book*
- Infrastructure maintenance costs: indexed with CPI

4.3.48. Table 4-5 below shows the total OMR costs for each corridor option and network over the 60-year appraisal period. For the purposes of the SOC, BRT is used as an indicator for a rubber-wheeled solution, whilst LRT is used as an indicator for a steel-wheeled solution. Appendix N shows the build-up of these total OMR costs in terms of operation, maintenance and renewals.

4.3.49. For the network options the OMR costs of each of the constituent options have been combined. Although there may be some efficiencies to operating the four corridors as a network, the impact on overall operating costs is not likely to be substantial, in particular given the level of detail reflected in the cost estimates at this stage. For this reason, the two overground networks have the same OMR costs.

Table 4-5 – OMR costs (£m, nominal over 60-year appraisal period)

Option	Rubber-wheeled (BRT)	Steel-wheeled (LRT)
North Corridor		
NC04	3,604	4,936
NC08	817	2,825
NC08b	817	2,825
East Corridor		
EC01	4,490	5,306
EC04	5,433	6,225
EC08	591	2,023
Bristol – Bath Corridor		
BBC-C + BBC06 + A5	855	2,992
South-West Corridor		
SWC03	3,351	4,615
SWC05	675	2,297
SWC11	820	2,884
Networks		
Overground network 1	3,083	10,671
Overground network 2	3,083	10,671
Underground network 1	13,243	18,715

4.4 Operator Revenue

4.4.1. The farebox revenue generated by Mass Transit has been estimated using the spreadsheet catchment model described in the Economic Dimension and the EAR. The approach assumes the existing public transport fare structure applies to Mass Transit trips. It has been assumed that fares will grow in line with general inflation. As the demand is assumed to be the same across all technology types, it follows that the revenue is also unchanged by mode.

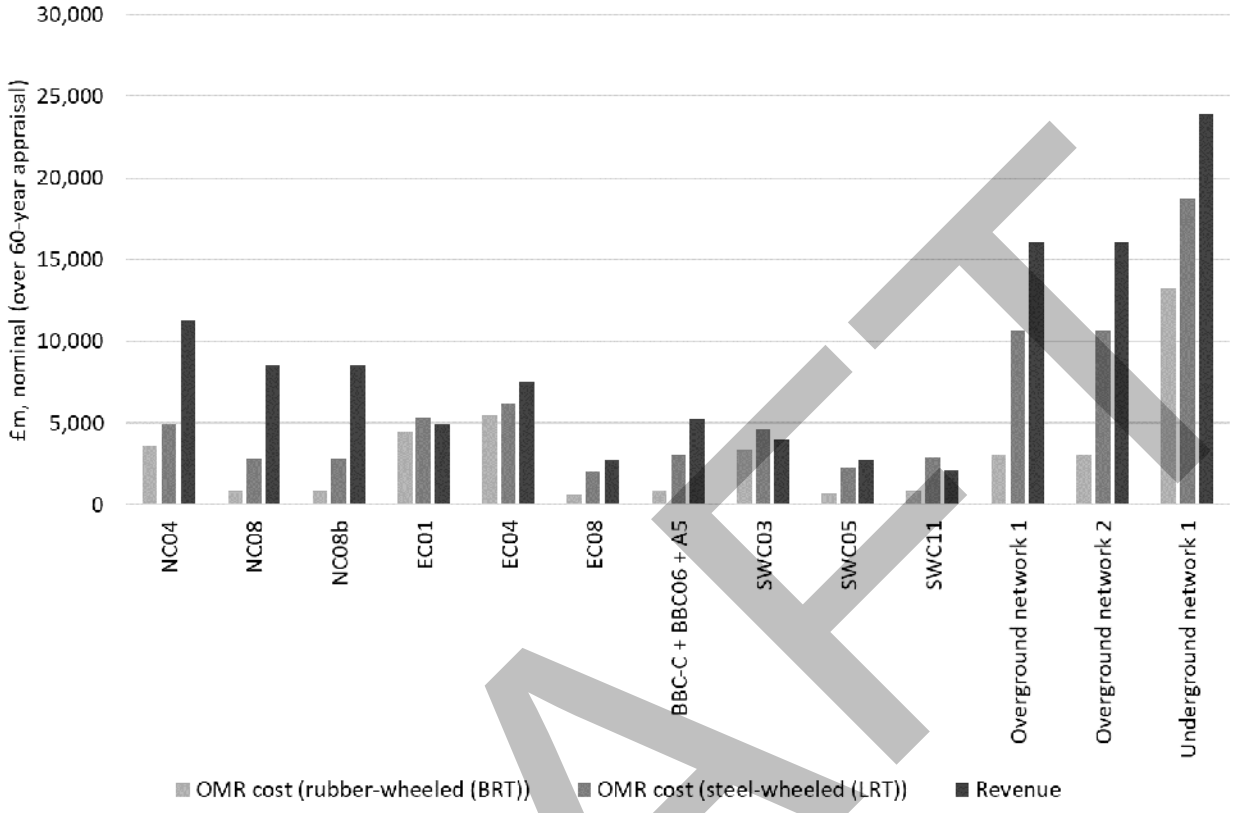
4.4.2. Table 4-6 shows the total farebox revenue generated by Mass Transit over the 60-year appraisal period.

Table 4-6 – Revenue (£m, nominal over 60-year appraisal period)

Option	Revenue over 60-year appraisal period (£m, nominal)
North Corridor	
NC04	11,307
NC08	8,568
NC08b	8,568
East Corridor	
EC01	4,926
EC04	7,553
EC08	2,761
Bristol – Bath Corridor	
BBC-C + BBC06 + A5	5,233
South-West Corridor	
SWC03	3,994
SWC05	2,713
SWC11	2,142
Networks	
Overground network 1	16,050
Overground network 2	16,045
Underground network 1	23,875

4.4.3. Comparing the operating costs and revenues provides an indication of the potential financial sustainability of the project once operational. Figure 4-1 shows a comparison of the OMR costs and revenue for each option. It should be noted that at this stage of scheme development these have both been estimated proportionately. Although suitable for indicative purposes for the SOC, they are not based on detailed financial modelling and are subject to the simplifications and assumptions noted in this chapter and the Economic Dimension. Figure 4-1 shows that for options on the North and Bristol – Bath corridors and the network options the revenue generated could exceed the operating costs for both rubber and steel-wheeled solutions. For the East and South-West corridors the revenue generated exceeds the operating costs for some but not all options.

Figure 4-1 - Revenue and OMR cost comparison



4.5 Budgets and Funding Cover

4.5.1. At this early stage of scheme development there is not a clear position of how the Mass Transit system would be paid for and / or operated. The *Funding and Financing Strategy* states that it is likely that many of the funding and financing avenues that have been identified may be used for discrete elements of the programme but are unlikely to be able to deliver it in its entirety as there is no single pot of money and delivery solution that can deliver such a large, diverse, and technically complex programme.

4.5.2. This is particularly true for options involving significant tunnelled sections where the capital costs are considerably higher than the overground options. It will be necessary to consider all options, including grants from central Government, farebox revenue, s.106 / CIL contributions etc., and also considering the proposed development of local land and whether this will deliver housing or business parks etc., as well as local views on demand management measures that may inform different solutions, together with the potential for private sector investment / financing.

4.5.3. The approach to funding and financing will depend on a number of interlinked elements including, but not limited to:

- Phasing of the Mass Transit programme
- Modal solution identified
- Procurement route

- Availability of public finance
- Risk management
- Stakeholder and political environment
- Relationship with other infrastructure in the region

4.5.4. Table 4-7 below shows the funding and financing options that have been considered within the *Funding and Financing Strategy*; the strategy document should be referred to for more detail of the legal considerations and examples.

Table 4-7 – Funding and financing options appraisal

Funding or financing	Category	Description	Examples
Finance and funding	Grant	Variety of central Government funds that may be available to finance the delivery of the programme	Funding may be available from: ▪ DfT ▪ Department for Levelling Up, Homes and Communities ▪ National Highways
Finance	Public finance	Public sector loans are available from a number of sources with the key distinction from grants being that these are repayable	▪ UK Infrastructure Bank ▪ Public Works Loan Board ▪ Tax increment finance
Funding	Public sector funding streams	This category identifies potential routes to generate funding to meet the ongoing needs of the project	▪ Planning contributions (s106, CIL) ▪ Highways contributions (s38, s278) ▪ Workplace parking levy and other demand management solutions ▪ Use of existing assets ▪ Business rate supplement and retention ▪ Business improvement district, enterprise zones or similar approaches to rate utilisation ▪ Road user charging and shadow tolling
Finance	Private finance	A variety of private sector investment options are relevant to be considered based on the overall financial model. This is particularly relevant where investors are	▪ Corporate finance ▪ Private borrowing ▪ Project finance (including demand / farebox revenue risk) ▪ Joint delivery with the private sector

Funding or financing	Category	Description	Examples
		keen to explore green investment which this scheme will support.	▪ Next generation Public Finance Initiative ▪ Regulated asset base model ▪ Land value capture
Alternative	Partnership, alliancing and collaboration	There are other more collaborative models of delivery that may be available with stakeholders or other investors. These can be shaped to fit a project or any part of it depending on the interests of each party and their appetite for investment and risk.	Not applicable

4.6 Summary

4.6.1. There are significant costs associated with constructing and operating such a complex and extensive mass transit network, in particular for the capital costs for options requiring tunnelled sections. At this stage of scheme development there is not a clear position of how the Mass Transit system would be paid for and / or operated. The Funding and Financing Strategy identifies that it is likely that many of the funding and financing avenues may be required for discrete elements of the programme but are unlikely to be able to deliver it in its entirety as there is no single pot of money and delivery solution that can deliver such a large programme at one time. The Phasing Strategy, which is being developed to support the SOC, considers different ways in which the programme could be phased and delivered.

4.6.2. A comparison of high-level operating, maintenance and renewal costs and farebox revenue shows that for some corridors and networks the revenue generated could sustain the ongoing operation of the system. However, it is noted that these estimates are based on indicative operating cost estimates using benchmarks from similar schemes and revenue estimates from the catchment-based spreadsheet which is subject to the limitations discussed in the Economic Dimension.

4.6.3. As the programme develops, affordability and strategies for funding and financing will be considered in more detail as approaches to phasing are better understood, there is more detail of the options in terms of costs and revenues and the economic landscape becomes clearer in terms of potential inflation in the short to medium term.