



## Swansea Bay and West Wales Metro WelTAG Stage 2 Executive Summary

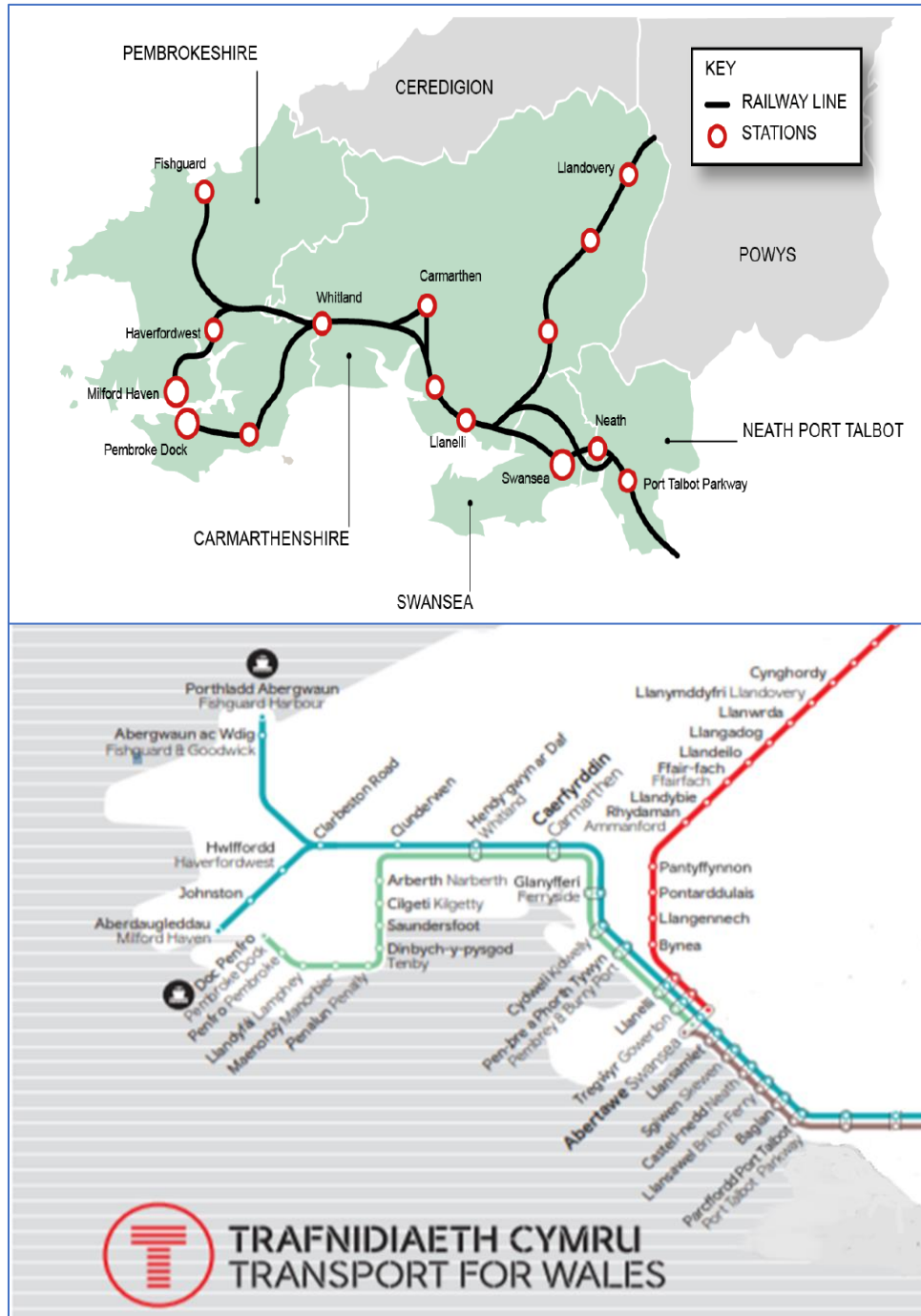
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# 1. Executive Summary

## 1.1 Introduction

The study area is the South West Wales region including the counties of Pembrokeshire, Carmarthenshire, Swansea and Neath Port Talbot as illustrated in Figure 1.1.

Figure 1-1 Study Area



The WeITAG Stage 1 work was initially considered under five areas of intervention:

- Strategic services to West Wales & Swansea (Options 1, 2, 3, 4, 5, 6, 27)
- Swansea – West Wales frequency/connectivity (Options 7A, 7B, 8, 9A, 9B, 10, 11, 28).
- Swansea Bay Metro Services (Options 12, 13, 14, 15, 16, 17, 18, 19, 20, 26)
- New Stations (21, 22, 23, 24A, 24B, 24C, 24D1, 24D2); and
- Station improvements (Options 25A, 25B, 25C, 25D).

The proposed interventions at the end of WeITAG stage 1 were regrouped into 3 areas:

1. Strategic South Wales Mainline (SWML) Measures
2. Local Measures on existing rail network
3. New Urban Area Metro

Due to the interrelationship between the South Wales Mainline Services in South West Wales and the rest of South Wales the interventions in area 1 are now being looked at under a separate study. The options which fall into areas 2 and 3 are the subject of this WeITAG Stage 2 report.

## 1.2 Strategic Case

### 1.2.1 Policy Context

Three new national policies have been released since the original Stage 1 work (Llwybr Newydd: A New Wales Transport Strategy (2021), New Development Plan 2040 - Future Wales – the National Plan 2040, Planning Policy Wales, Edition 11, February 2021). These have been reviewed to confirm that options under consideration contribute to their strategic aims.

### 1.2.2 Objectives of the Study

The Swansea Bay Metro Region objectives from the stage 1 assessment will be carried forward to this stage 2 assessment and are as follows:

1. Reduce journey times between key population centres including Swansea, Neath, Port Talbot, Llanelli, Carmarthen, Pembroke and Milford Haven.
2. Increase service frequencies
  - a. For local stations on the main line between Carmarthen and Port Talbot, especially during peak periods
  - b. On the Heart of Wales Line to serve commuters into Swansea and beyond
  - c. Across South West Wales to improve suitably for daily commuting
3. Improve regional transport accessibility, including connectivity to Enterprise Zones, through widening the spatial reach of the rail network and services.
4. Improve Park and Ride provision for access to the Swansea Bay region.
5. Provide a viable public transport alternative to the congested M4/A48 corridor
6. Contribute to developing a Swansea Bay Urban Area Metro including improvements to multi-modal interchanges.
7. Maximise the potential for stations to accelerate urban regeneration and major development site delivery
8. Increase the number of trips made by public transport, focusing particularly on commuter trips.
9. Reduce the environmental impact of transport, especially carbon emission and air quality
10. Improve rail network efficient to allow a lower future subsidy requirement per passenger.

### 1.2.3 Option Development

Options 1 to 6 inclusive and Option 27 from the WeITAG stage 1 report will be considered as part of a separate workstream looking at the entire South Wales Main Line due to the interdependencies with other proposals on this section of the rail network. These options will therefore not be considered further in this report. These include study objectives such as improving access to enterprise zones located on the western side of the region.

At stage 1 Options 10 and 20 were identified to not progress to stage 2 assessment due to timetabling difficulties or infrastructure constraints and will not be considered further at present. St Clears station (Option 21) has now received New Station Funding and can therefore be considered as a committed scheme and is also not assessed further in this report.

At stage 1 the new stations were considered independently, however for this assessment they have been grouped with the appropriate service option as they are co-dependant. Most of the new stations are not on the existing passenger rail network so would require the new services to operate and provide connections. Option 25E and 25F (Neath and Milford Haven Station Improvements) are being progressed separately by third parties. To avoid duplication of the assessment process they are therefore not considered further in this report.

#### **Option 7a and 7b**

Services currently operate from Manchester hourly with the terminus alternating between Milford Haven and Carmarthen. The Option 7 proposal will add a 2-hourly infill service when the Manchester service terminates at Carmarthen to provide hourly service to Milford Haven starting from either Swansea (Option 7a) or Carmarthen (Option 7b). This option is an alternative to the Manchester service extension (Option 8). It should be noted that the timetabling analysis carried out for this study indicates that every 4 hours the train extent may need to be limited to Haverfordwest due to Milford Haven freight paths and Branch Line capacity. This option does not introduce any new stations (it is assumed that St Clears is a committed scheme) and there is no infrastructure required.

#### **Option 8**

This option involves extending the existing Manchester services that terminate at Carmarthen every 2-hours to Milford Haven to provide hourly service. This is an alternative option to Options 7a/7b, and the services will have a similar issue with capacity at Milford Haven, meaning every 4 hours, one service may have to terminate at Haverfordwest instead of continuing to Milford Haven. Again, no infrastructure is required and no new stations.

#### **Option 9a and 9b**

There is currently a two-hourly service between Swansea and Pembroke Dock. These options involve increasing service frequencies on the Pembroke Dock Branch Line, by operating an additional train every 2 hours, starting from either Swansea or Carmarthen. This additional train was assessed as a limited stop service on the Branch (Serving Pembroke Dock, Pembroke, Tenby and Whitland) in order to meet timetabling requirements. In combination with existing services this provides an hourly service to the stations with the most demand.

#### **Option 11**

Option 11 will provide additional services on the Fishguard Harbour Branch Line, to provide a 2-hourly interval service from Carmarthen, increasing from a 7 trains per day (tpd) service in

2019. This will require two additional return services per day. An option from Swansea was also assessed but was not operationally viable due to turnaround time at Swansea

### **Option 12**

This proposal is for a new metro service, which will operate a 2 trains per hour (tph) service between Pontarddulais and Swansea via Neath, using the Swansea District Line (SDL). Much of the route uses existing rail infrastructure. The route will require a new chord at Cwrt Sart, to connect the SDL to the current South Wales Mainline (SWML) south of Neath. Technical reviews (engineering and signalling) conclude that it is feasible to deliver this new infrastructure.

New signalling (turn back facility) will also be required at Pontarddulais, as the station will be the terminus station for the service. The proposal will serve new stations at Landore, Winch Wen, Llandarcy, Morryston, Felindre and Pontlliw. (based on a higher demand forecast and technical planning/engineering factors Pontlliw was considered a more viable location than Penllergaer). Initial feasibility design options have been produced for stations at Landore and Llandarcy plus feasibility design work for Cwrt Sart chord and feasibility studies of signalling capacity and turnback requirements.

### **Option 13**

This option will provide a new Metro service between Pembrey and Burry Port and Swansea, providing 2 trains per hour (tph) at 5 stations: Pembrey and Burry Port, Llanelli, Gowerton, Cockett and Swansea. Cockett station will be a new station and a preferred location has been identified following an engineering review, however feasibility design will need to be undertaken.

Timetabling assessment concluded that the service was achievable, but would need to be reviewed in combination with additional service proposals to Carmarthen to ensure services were not duplicated. Extending the option west of Pembrey & Burry Port would be difficult to justify given the smaller population and higher operating costs. A new turnback facility will be required at Pembrey and Burry Port. Engineering studies for the turnback facility have not been undertaken at this stage.

### **Option 14**

This option involves building a new North West to South East chord connecting the SWML to the Heart of Wales line at Llandeilo Junction. This will mean that Heart of Wales line services will not need to reverse at Llanelli, reducing journey times. This will result in Heart of Wales services no longer calling at Llanelli. For this option the new junction has been considered in the context of the existing Heart of Wales line services only, however it could be provided in conjunction with Option 28 or Option 15.

### **Option 15**

Option 15 proposes a new Metro service between Pantyffynnon/ Ammanford and Gwaun Cae Gurwen. The route will use an existing freight route from the Heart of Wales line at Pantyffynnon, to a coal loading point at Gwaun Cae Gurwen.

To make the route suitable for passenger operations extensive route works would be necessary including to track, signalling, telecommunications and level crossing upgrades. The assessed option considered a 30-minute frequency requiring a passing loop and 3 new stations located at Ammanford (Town), Glanamman and Gwaun Cae Gurwen.

**Option 16**

Option 16 is a Metro service between Neath and Onllwyn, which would use an existing freight route which travels to an open cast colliery in Onllwyn. The option would involve new stations being built at Neath Riverside, Aberdulais, Cryant, Seven Sisters and Onllwyn.

To make the route suitable for passenger operations track upgrade works would be needed, including a passing loop and associated signalling and level crossings to accommodate a proposed 30-minute service. As the existing freight only route does not connect to the SWML at Neath, this option has potential to form an extension of the plans detailed in Option 18.

**Option 17**

Option 17 also involves a service from a new Neath Riverside station, and like Option 16, this new Metro route has potential to be an extension of the proposals detailed in Option 18. The route will connect Neath Riverside to Cwmgwrach using the existing freight line which serves a coal loading point at Cwmgwrach. The options will provide new stations at Neath Riverside, Aberdulais & Tonna, Resolven and Cwmgwrach. To make the route suitable for passenger operations track upgrade works would be needed, including a passing loop and associated signalling to accommodate a proposed 30-minute service.

**Option 18**

This option involves a new service between Neath Riverside and Swansea City Centre via Swansea Docks, at a proposed 30-minute frequency. The proposal will involve tram train operation, and a section of the route will involve street running. The route will make partial use of existing freight routes to Swansea Docks and will require a significant new on street alignment into the city centre. Double track, electrification, tram control system/signalling, level crossings will be needed as part of the infrastructure works.

Although similar alternative alignments may be possible at this stage a route has been identified with potential stations at Swansea High Street, College Street, Strand, Port Tennant, Langdon, University (Bay campus), Bay Studios Jersey Marine, Llandarcy, Neath Abbey, and Neath Riverside. These are closer together than the other routes, in line with light rail characteristics with quicker acceleration and deceleration and the route travelling through areas of dense land use.

**Option 19**

Like Option 18, Option 19 is a new Metro service which will use tram train running for a Clydach to Swansea City Centre route, also via Swansea Docks. The route will serve stations at Swansea High Street, College Street, Strand, Port Tennant, Langdon, University (Bay campus), Bay Studios Jersey Marine, Llandarcy and Clydach. It will share the same route as Option 18 between Swansea City Centre and Jersey Marine, before branching off via Llandarcy to Clydach and has a proposed frequency of 30 minutes.

As with Option 18 the route will be mostly new alignment from the city centre but will share section of docks freight route, Swansea District line and a restored railway to Clydach. Double track, electrification, tram control system/signalling, level crossings will be needed as part of the infrastructure upgrades.

**Option 25**

There are 6 (A-F) sub options associated with Option 25, but the option involves making interchange improvements to current stations at Carmarthen (A), Pembrey and Burry Port (B), Whitland (C), Llanelli (D), Neath (E) and Milford Haven (F). Proposals include various combinations of car parking, crossing upgrade, inter-platform access, drop-off /interchange (buses, taxis, cars).

**Option 26**

Option 26 involves electrifying the routes from Swansea to Pembrey and Burry Port and Pontarddulais. This option would be difficult to implement until the SWML electrification has been completed between Cardiff and Swansea as this would introduce a new grid feeder near Port Talbot. This will allow new electric train or tram-train stock to use the routes, reducing carbon emissions and improving performance.

**Option 28**

Option 28 will look to provide an additional Swansea to Llandoverly train to increase the total trains per day along this section of the Heart of Wales Line to 7. This comprises the existing 4 trains a day which travel beyond Llandoverly towards Shrewsbury, the planned 5<sup>th</sup> through service and the existing return Swansea to Llandoverly return service. Timetabling work has been carried out and identified an opportunity to provide this service.

**1.2.4 Summary of Strategic Case**

The option summary tables favour the proactive options, with the 'Do Minimum' approach ranking poorly in comparison to the other options. All the proactive options score favourably against the new Welsh Transport Strategy's ambitions and priorities.

The West Wales frequency Options (7, 9a, 9b, 11) which involve new or reconfigured services score slightly better than those which extend existing services (8) as they have fewer timetabling interdependencies. However, Option 8 does score well in terms of employment access and connecting Wales and England through the extended Manchester service.

The Metro options (12-19) are slightly more complicated to deliver as they generally involve infrastructure works with a longer timeframe and use alignments which are currently disused or lightly trafficked, currently used by infrequent freight services which means service intensification may be less publicly acceptable. However, the Metro options do provide more social and cultural benefits. There are also more risks associated with developing the Metro options, with large infrastructure requirements. Options 14-19 are at an early stage of development. All Metro options will require further design to refine scheme costs and risks to complete Stage 2 if taken forward.

The station improvement options can generally be delivered in a short to medium timeframe and are likely to be acceptable to the public and relatively little risk which scores positively for deliverability. Risks to these include issues over third-party land ownership, which affects Options 25c and 25d. Station improvement options will also provide townscape and landscape improvements to the towns they are situated in.

Whilst electrification of Swansea Bay Metro (26) would have a positive impact on air pollution levels, carbon emissions and journey times, this option has a relatively negative overall deliverability score, due to its dependency on prior SWML electrification between Cardiff and

Swansea. This is to secure network continuity and the National Grid power requirements, making it a longer-term prospect.

Additional services on the Southern section of the Heart of Wales Line (28) have been subject to further timetabling assessment to confirm their technical viability, they have also been judged to have good public acceptability.

The Strategic Case was originally developed and presented at WelTAG Stage One. A review of the Strategic Case at WelTAG Stage Two has confirmed that the policy context, case for change, identified problems and study objectives remain current. The WelTAG Stage Two Strategic Case includes details of option development work and additional consultation activities that have been undertaken as part of WelTAG Stage Two to inform the appraisal process. The Strategic Case has considered the adverse impacts, dependencies, constraints and risks of each option.

The Strategic Case has appraised the short-listed options against national, regional and local policy objectives to assess their suitability and strategic fit as potential solutions. Each option has also been assessed against the study objectives and its ability to address the identified problems. This appraisal provides an update to the previous appraisal undertaken at WelTAG Stage One and reflects the additional option development work that has been undertaken.

Table 1-1 provides a summary of the results of the appraisal. Costs to Broad Transport Budget have been calculated through capital and revenue costs at 2010 prices and values, which is the accepted benchmark value.

Table 1.1: Appraisal Summary Table

Criteria	Qualitative Assessment (Options)																				
	7a	7b	8	9a	9b	11	12	13	14	15	16	17	18	19	25A	25B	25C	25D	26	28	29
<b>Economic</b>	Frequency Improvements - New service Swansea - Milford Haven	Frequency Improvements - New service Carmarthen - Milford Haven	Frequency Improvements - Extend Manchester (Carmarthen) - Milford Haven hourly	Frequency Improvements - New service Swansea - Pembroke Dock	Frequency Improvements - New service Carmarthen - Pembroke Dock	Frequency Improvements - Swansea - Fishguard (2 hourly)	Swansea Bay Metro (Services): Swansea to Pontarddulais via Neath & SDL including: Option 22 - New Stations: Llandarcy, Option 23 - New Stations: Landore, Option 24A - New Metro station - Winch Wen, Option 24B - New Metro Station - Morriston, Option 24C - New Metro Station - Felindre, Option 24D1 - New Metro Station - Penlegae, Option 24D2 - New Metro Station - Pontlliw	Swansea Bay Metro (Services): Swansea - Pembrey & Burry Port 21ph including: Option 24E - New Metro Station: Cockett	Additional cord to connect SWML to Swansea District line at Llandello junction (more direct link between Swansea and HoW line).	Swansea Bay Metro: Pantyffynnon (Ammanford) to Gwaun Cae Gurwen	Swansea Bay Metro: Neath to Onllwyn	Swansea Bay Metro: Neath to Cwmgwrach	Swansea Bay Metro: Neath - Llandarcy - Swansea City Centre via Swansea Docks (as Tram-Train Operation as a section off current rail alignment) including Option 22 - New Stations: Llandarcy	Swansea Bay Metro: Link from Swansea District Line to Clydach	Station Improvements: Carmarthen	Station Improvements: Bury Port	Station Improvements: Whitland	Station Improvements: Llanelli	Electrification of Swansea Bay Metro to allow Tram-Train operation	Frequency Improvements - Heart of Wales (southern section) additional tpd (7)	Do Minimum
Business Users & Reliability Impact	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
Regeneration	0	0	0	0	0	0	+	+	0	0	0	0	+	0	++	+	+	++	+	+	0
Wider Impacts	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0
<b>Environment</b>																					
Noise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Quality	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	++	+	-
Greenhouse Gases	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+++	+	-
Landscape	0	0	0	0	0	0	+	+	-	0	0	0	+	-	+	0	0	+	0	-	0
Townscape	0	0	0	0	0	0	++	++	0	0	+	+	++	0	++	++	++	++	0	0	0
Historic Landscape	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cultural Heritage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0
Biodiversity	0	0	0	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	+	0	0
Water Environment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Social and Cultural</b>																					
Commuting and Other Users	++	++	++	++	++	++	+	+	++	++	++	++	++	+	++	++	++	++	++	+	-
Reliability Impact on Commuting and Other Users	++	++	++	++	++	++	0	0	++	++	++	++	++	+	++	++	++	++	++	+	-
Physical Activity	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	+	-
Journey Quality	++	+	+	+	+	+	++	++	++	++	++	++	++	++	++	++	++	++	++	++	--
Accidents	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	0	0	0	0	0	0
Security	0	0	0	0	0	0	+	+	0	0	0	0	+	0	+	+	+	+	0	0	0
Access to Services	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	+	--
Welsh Language	0	0	0	0	0	0	0	0	0	0	0	0	+	0	+	+	+	+	0	0	0
Tourism	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0	0
Affordability	+	+	+	+	+	+	0	0	-	-	-	-	0	-	-	0	-	0	--	-	++
Severance	+	+	+	+	+	+	++	++	++	++	++	++	++	++	++	++	++	++	0	++	0
Option Values	+	+	+	+	+	+	++	++	++	++	++	++	++	++	+	+	+	+	++	++	-
<b>Public Accounts</b>																					
Cost to Broad Transport Budget	£127,986,678	£79,616,155	£53,173,780	£101,669,563	£80,451,538	£11,069,357	£255,060,090	£170,086,129	£23,093,525	£117,890,376	£146,362,053	£129,291,294	£432,043,881	£364,244,545	£4,879,354	£2,144,280	£2,967,885	£1,275,764	£161,400,119	£5,122,759	NYA
Indirect Tax Revenues	-	-	-	-	-	-	--	-	0	-	-	-	--	--	-	-	-	-	-	-	-

**Key**

Large positive (+++)
Moderate positive (++)
Slight positive (+)
Neutral (0)
Slight negative (-)
Moderate negative (-)
Large Negative (---)
Not Yet Assessed (NYA)

## 1.3 Transport Case

### 1.3.1 *Capital Costs*

The WeITAG Stage Two process has involved the development of preliminary capital cost estimates for each of the options under consideration. Values used for the BCR calculation include Risk and Optimism Bias in line with Transport Appraisal Guidance.

### 1.3.2 *Operational Costs*

Operational costs have been calculated based on the mileage of the service and includes train crew, track access charges, rolling stock lease costs, maintenance cost allowances.

### 1.3.3 *Monetised Benefits*

The benefits of each scheme include:

- Revenue (based on Demand Forecasts)
- Journey Time Savings and User Cost Savings
- Marginal External Costs
- Physical Activity Benefits

### 1.3.4 *Non - Monetised Benefits – Assessment of Impacts*

This qualitative appraisal has been reviewed and updated for WeITAG Stage Two, to reflect the additional option development work, the environmental and ecological reviews and economic assessment that has been undertaken.

Table 1.2 - Summary of Appraisal Worksheets

Option Ref	Option	Wales Transport Strategy Outcomes		WBOFGA Goals & Local Well-being Objectives	Welsh Government Well-being Objectives				Local Transport Plan Objectives	Swansea Bay City Region Objectives	Scheme Objectives										Tackling Problems	Appraisal Summary Table				Delivery
		Ambitions	Priorities		Prosperous and Secure	Healthy and Active	Ambitious and Learning	United and Connected			Swansea Bay Objectives					Combined						Econ.	Env.	Soc. & Cul	Pub. Acc.	
											1	2	3	4	5	6	7	8	9	10						
7a	Frequency Improvements - New service Swansea - Milford Haven	+	++	+	++	0	0	+	+	0	++	+++	++	0	0	0	+	+	+	+	++	+	+	++	NYA	-
7b	Frequency Improvements - New service Carmarthen - Milford Haven	+	++	++	++	0	0	+	+	0	++	+++	++	0	0	0	+	+	+	+	++	+	+	++	NYA	-
8	Frequency Improvements - Extend Manchester (Carmarthen) - Milford Haven hourly	+	++	++	++	0	0	+	+	0	++	++	++	0	0	0	+	+	+	+	++	+	+	++	NYA	-
9a	Frequency Improvements - New service Swansea - Pembroke Dock	+	+	+	++	0	0	+	+	0	++	+++	++	0	0	0	+	+	+	+	++	+	+	++	NYA	-
9b	Frequency Improvements - New service Carmarthen - Pembroke Dock	+	+	+	++	0	0	+	+	0	++	+++	++	0	0	0	+	+	+	+	++	+	+	++	NYA	-
11	Frequency Improvements - Swansea - Fishguard (2 hourly)	+	+	+	++	0	0	+	+	0	++	+++	++	0	0	0	+	+	+	+	++	+	+	++	NYA	-
12	Swansea Bay Metro (Services): Swansea to Pontarddulais via Neath & SDL including: Option 22 - New Stations: Llandarcy, Option 23 - New Stations: Landore, Option 24A - New Metro station - Winch Wen, Option 24B - New Metro Station - Morriston, Option 24C - New Metro Station - Felindre, Option 24D1 - New Metro Station - Penlleger, Option 24D2 - New Metro Station - Pontlliv	+	+	+	+	0	0	+	++	0	++	++	++	0	0	+	++	+	+	+	+	+	+	++	NYA	-
13	Swansea Bay Metro (Services): Swansea - Pembrey & Burry Port 2tph including: Option 24E - New Metro Station: Cockett	+	+	+	+	0	0	+	++	0	++	++	++	0	0	+	++	+	+	+	+	+	+	++	NYA	-
14	Additional cord to connect SWML to Swansea District line at Llandeilo junction (more direct link between Swansea and HoW line).	+	+	++	+	0	0	+	++	0	++	+++	++	0	0	+	+	+	+	+	+	+	+	++	NYA	--
15	Swansea Bay Metro: Pantyffynnon (Ammanford) to Gwaun Cae Gurwen	+	+	++	+	0	0	+	++	0	+	+	++	0	0	0	+	+	+	+	+	+	+	++	NYA	--
16	Swansea Bay Metro: Neath to Onllwyn	+	+	+	+	0	0	+	++	0	+	+	++	0	0	0	+	+	+	+	+	+	+	++	NYA	--
17	Swansea Bay Metro: Neath to Cwmgwrach	+	+	+	+	0	0	+	++	0	+	+	++	0	0	0	+	+	+	+	+	+	+	++	NYA	--
18	Swansea Bay Metro: Neath - Llandarcy - Swansea City Centre via Swansea Docks (as Tram-Train Operation as a section off current rail alignment) including Option 22 - New Stations: Llandarcy	+	+	+	+	0	0	+	++	0	++	+	++	0	0	0	+	+	+	+	+	+	+	++	NYA	--
19	Swansea Bay Metro: Link from Swansea District Line to Clydach	+	+	+	+	0	0	+	++	0	+	+	+	0	0	0	+	+	+	+	+	+	+	++	NYA	--
25A	Station Improvements: Carmarthen	+	+	+	+	0	0	++	+	0	+	0	++	0	0	0	++	+	+	+	++	+	+	++	NYA	-
25B	Station Improvements: Bury Port	+	+	+	+	0	0	++	+	0	+	0	++	0	0	0	++	+	+	+	++	+	+	++	NYA	-
25C	Station Improvements: Whitland	+	+	+	+	0	0	++	+	0	+	0	++	0	0	0	++	+	+	+	++	+	+	++	NYA	-
25D	Station Improvements: Llanelli	+	+	+	+	0	0	++	+	0	+	0	++	0	0	0	++	+	+	+	++	+	+	++	NYA	-
26	Electrification of Swansea Bay Metro to allow Tram-Train operation	+	++	++	++	+	0	+	++	0	+	+	+	0	0	+	+	++	+	++	+	+	++	NYA	-	
28	Frequency Improvements - Heart of Wales (southern section) additional tpd (7)	+	+	++	++	0	0	+	+	0	++	+++	++	0	0	0	+	+	+	+	+	+	+	++	NYA	-
29	Do Minimum	-	0	0	-	0	0	--	0	0	-	-	-	0	0	0	-	-	-	-	0	0	0	0	NYA	--

**Key**

Large positive (+++)
Moderate positive (++)
Slight positive (+)
Neutral (0)
Slight negative (-)
Moderate negative (--)
Large negative (---)
Not Yet Assessed (NYA)

- Key:**  
Scheme Objectives
- Reduce journey times between key population centres including Swansea, Neath, Port Talbot, Llanelli, Carmarthen, Pembroke and Milford Haven.
  - Increase service frequencies: for local stations on the main line between Carmarthen and Port Talbot, especially during peak periods, on the Heart of Wales line to serve commuters into Swansea and beyond, across South West Wales to improve suitability for daily commuting
  - Improve regional transport accessibility through widening the spatial reach of the rail network and services.
  - Improve Park and Ride provision for access to the Swansea Bay region.
  - Provide a viable public transport alternative to the congested M4/A48 corridor.
  - Contribute to developing a Swansea Bay Urban Area Metro including improvements to multi-modal interchanges.
  - Maximise the potential for stations to accelerate urban regeneration and major development site delivery.
  - Increase the number of trips made by public transport, focusing particularly on commuter trips.
  - Reduce the environmental impact of transport, especially carbon emissions and air quality.
  - Improve rail network efficiency to allow a lower future subsidy requirement per passenger.

### 1.3.5 *Transport Case Summary*

The Transport Case has considered the social, cultural, environmental and economic impacts of each of the shortlisted options. This has included a quantitative economic assessment of the costs and benefits of each option and a qualitative appraisal that has considered wider social, cultural and environmental impacts.

Based on the BCR values the options which delivery best value for money (high or medium VfM classifications) are Option 12, Option 13, Option 25B, 25C, 25D, Option 18, and Option 19. Options which still have a positive business case but low value for money classification are Option 7a, Option 9a, Option 15, Option 25A and Option 28. The remaining options (7b, 8, 9b, 11, 14, 16, 17, 26) have a poor value for money classification, however if they have a significant non-monetised impact some may still be worth pursuing to meet strategic aims as part of a comprehensive transport offer or form part of a longer term strategy.

In relation to the qualitative Transport Case appraisal, all options scored positively overall against the economic, environmental, social and cultural criteria indicating that they have benefits beyond those which are readily quantifiable. The West Wales frequency options and some of the Metro lines score slightly higher (moderate beneficial + +) as they increase accessibility in areas which currently have restricted public transport options.

A summary of the transport case is included as Table 1-3.

It should be noted that all cost estimates on which the economic assessment is based are preliminary in nature, which reflects the current stage of development of each of the options. Any changes to cost estimates should options be further developed will impact on the economic assessment, which will need to be revisited and refined to reflect any further development work.

It should also be noted that this current assessment is based on usage data from before the Covid-19 pandemic which has had a significant impact on transport demand and capacity. Some assumptions about transport recovery have been made (i.e. that public transport demand returns to 2019 levels by 2025) however to what extent and how quickly transport usage returns to this level will have to be monitored.

**Table 1-3** Summary of the Transport Case

Option	Net Present value	Initial BCR	Qualitative assessment	Key risks and uncertainties	VfM category
Option 7a - New service Swansea to Milford Haven	£ 29,698,469	1.2	++	Duplicates existing Manchester service between Swansea and Carmarthen. Would need to be reviewed if progressed with other options increasing frequency between Carmarthen and Swansea to ensure timetable capacity with other services	low
Option 7b - New service Carmarthen to Milford Haven	-£30,931,519	0.6	++		poor
Option 8 - Extend Manchester (Carmarthen) - Milford Haven hourly	-£3,667,647	0.9	++	Reliant on long distance services and wider timetabling constraints, however this means a good fit with current operations to Milford Haven.	poor
Option 9a - New service Swansea – Pembroke Dock	£54,883,798	1.5	++	Would need to be reviewed if progressed with other options increasing frequency between Carmarthen and Swansea to ensure timetable capacity with other services	low
Option 9b - New service Carmarthen - Pembroke Dock	-£25,655,929	0.7	++		poor
Option 11 - Carmarthen - Fishguard (2 hourly)	-£2,641,365	0.8	++	Recast timetable would need to be considered with ferry times to ensure service still provides connections	poor
Option 12 - Swansea to Pontarddulais via Neath & SDL	£496,232,701	2.9	++		high
Option 13 - Swansea to Burry Port Metro Service	£113,886,194	1.7	++		medium
Option 14 - Additional chord to connect SWML to Swansea District Line at Llandeilo junction	-£22,498,837	0.03	++		poor
Option 15 - Swansea Bay Metro: Pantyffynnon (Ammanford) to Gwaun Cae Gurwen	£2,352,054	1.0	+	Most demand from Ammanford	low

Option	Net Present value	Initial BCR	Qualitative assessment	Key risks and uncertainties	VfM category
Option 16 - Swansea Bay Metro: Neath to Onllwyn	-£80,413,874	0.5	+		poor
Option 17 - Swansea Bay Metro: Neath to Cwmgwrach	-£64,318,846	0.5	+		poor
Option 18 - Swansea Bay Metro: Neath - Llandarcy - Swansea City Centre via Swansea Docks	£401,231,271	1.9	+		medium
Option 19 - Swansea Bay Metro: Link from Swansea District Line to Clydach	£326,499,167	1.9	+		medium
Option 25A - Station Improvements: Carmarthen	£9,267,913	2.9	+		high
Option 25B - Station Improvements: Pembrey & Burry Port	£557,180	1.26	+		low
Option 25C - Station Improvements: Whitland	£3,111,941	2.05	+		high
Option 25D - Station Improvements: Llanelli	£19,989,098	2.35	+	NR depot would require relocating to provide parking all in one location to meet demand. Some potential road safety issues to address.	high
Option 26 - Electrification of Swansea Bay Metro to allow Tram -Train	-£62,812,304	0.6	++	Likely to need mainline electrification to precede Metro electrification to be cost effective.	poor
Option 28 - Heart of Wales (southern section) additional train per day	£671,667	1.1	++		low
<i>Option 29 - Do Minimum</i>	N/A	N/A	--	No transport improvements, Air quality and greenhouse gas emissions will not be reduced. Net Zero targets unlikely to be met.	N/A

## 1.4 Financial Case

The Financial Case has identified the capital costs and ongoing revenue costs anticipated for each option assessed. The Financial Case has considered factors affecting the lifetime costs of each option, potential sources of funding and accounting implications to public sector organisations.

The options assessed vary in the scale of the capital investment required at the start of the project but also in the ongoing costs of each option.

The frequency enhancements between Swansea or Carmarthen and Milford Haven, Pembroke Dock or Fishguard Harbour have no capital cost requirements only operational costs as they can be provided without the need for additional infrastructure. The services are likely to require subsidy support as revenues do not exceed operational costs.

The station enhancements require an initial capital investment but have only a small increase in operational costs. Provided a source of funding for the relatively modest capital investment can be secured the ongoing financial requirements are minimal.

The Metro options require the most substantial capital cost investment and have significant operational costs which will be a recurring financial commitment. Most of these services will require a subsidy to part fund their operating costs.

The package of options taken forwards will require a substantial capital investment from Welsh Government but has the potential to offer a step-change in the provision of public transport in Swansea Bay and West Wales. There will also be ongoing operational costs which will also require funding. The proposed public transport options also make a wider contribution towards reducing carbon emissions and achieving the legally binding targets that have been set by government.

In all cases, further development and design work is needed to establish more robust cost estimates. The preliminary cost estimates, both capital and revenue, will be further developed and refined as any recommended options are progressed in greater detail during WelTAG Stage Three (Full Business Case).

## 1.5 Commercial Case

Each option under consideration (other than the do minimum) will require the procurement of capital works to deliver new infrastructure and/or procurement of a new service. At this stage of option development, the infrastructure procurement method and associated matters such as contract length, payment mechanism and pricing framework, have not been determined for the options. The service procurement are likely to be an extension of the existing arrangements with Transport for Wales Rail Services which has now been brought into Government ownership.

The WelTAG Stage Two Commercial Case has highlighted a range of issues that will need consideration when determining the most appropriate method of procurement. Issues identified include determining the lead body in the procurement process and whether an option is delivered as a single contract or would need to be procured as discreet elements,

this may be influenced by delivery timescales and funding availability especially where there are significant capital requirements.

Issues relating to the level of private and public sector involvement and on-going viability have also been identified for each option. Further information on all elements within the Commercial Case will be contained in the Full Business Case (WeITAG Stage Three).

## 1.6 Management Case

### 1.6.1 Summary of Management Case

The WeITAG Stage Two Management Case has provided an overview of the key development stages required for each option and the statutory procedures that may need to be undertaken. This has considered the development of each option in relation to:

- Additional evidence that may need to be obtained to assist scheme development;
- Feasibility and design work required;
- Environmental and ecological requirements;
- Statutory procedures/ legal requirements; and
- Land matters.

It is evident from the Management Case that each option under consideration requires further development work prior to scheme delivery.

The Management Case has also included an assessment of risks and deliverability issues affecting each option, which will need to be further developed and quantified as any recommended options are progressed to WeITAG Stage Three. Other aspects considered by the management case are the governance structure, project management processes and the role of the WeITAG Review Group.

### 1.6.2 Deliverability and Risk

The key risks and deliverability of the options are summarised in table 1-4.

**Table 1-4** Deliverability and risk

Option No.	Option	Feasibility (Technical)	Acceptability	Timescale	Risks
7a/b	Frequency/Connectivity: new services from Swansea/Carmarthen to fill frequency gaps for Milford Haven	0	+	2-3 yrs	0
8	Frequency/Connectivity: extension of Manchester - Carmarthen, hourly service to Milford Haven	-	+	2-3 yrs	-
9a/b	Frequency/Connectivity: new services from Swansea/Carmarthen to fill frequency gaps for Pembroke Dock	0	+	2-3 yrs	0
11	Frequency/Connectivity: reconfigure TfW Fishguard Harbour services to provide 2 hourly timetable	0	+	2-3 yrs	0

Option No.	Option	Feasibility (Technical)	Acceptability	Timescale	Risks
12	Swansea Bay Metro (Services): Swansea to Pontarddulais via Neath and Swansea District Line 2tph Infrastructure: Cwrt Sart Junction, Pontarddulais Turnback signalling & 6 new stations	-	0	5-7 yrs	-
13	Swansea Bay Metro (Services): Swansea to Pembrey & Burry Port 2tph Infrastructure: Signalling, Pembrey turnback and Cockett station	-	0	5-7 yrs	-
14	Additional cord to connect SWML to Swansea District Line at Llandeilo junction (more direct link between Swansea and HoW Line).	---	--	7-10 yrs	--
15	Swansea Bay Metro: Ammanford to Gwaun Cae Gurwen	--	0	7-10 yrs	--
16	Swansea Bay Metro: Neath to Onllwyn	--	0	7-10 yrs	--
17	Swansea Bay Metro: Neath to Cwmgwrach	--	0	7-10 yrs	--
18	Swansea Bay Metro: Neath - Llandarcy - Swansea City Centre via Swansea Docks	--	-	7-10 yrs	--
19	Swansea Bay Metro: Link from Swansea District Line to Clydach	--	-	7-10 yrs	--
25A	Station Improvements: Carmarthen	-	+	3-5 yrs	-
25B	Station Improvements: Pembrey & Burry Port	0	+	3-5 yrs	0
25C	Station Improvements: Whitland	-	+	3-5 yrs	-
25D	Station Improvements: Llanelli	-	+	3-5 yrs	--
26	Electrification/Decarbonisation: Possible electrification of Swansea Bay Metro/wider services	--	0	7-10 yrs	--
28	Additional Services on southern section of HoW Line.	0	+	2-3 yrs	0
29	Do Minimum	0	0	0	0

## 1.7 Conclusion and Recommendations

At the end of WelTAG 2 only a single option should be taken forward to Stage 3 where more than one option exists. The proposals have different delivery timescales and will also need to advance at their own pace. Additionally, in terms of moving towards funding and delivery, focus is required on a limited number of schemes to take forward to full business case and secure funding alongside further development work for longer term prospects.

Options have been assessed individually to date, therefore when moving to a final package of measures consideration has been given to their strategic fit, and the potential implications of removing duplication in costs or benefits at Final Business Case.

### 1.7.1 West Wales Services

It is recommended that Option 8 (extending the Manchester service to Milford Haven) becomes the preferred option for this route, due to the fit with existing services and avoids duplication between Swansea and Carmarthen. However, this will need to be reviewed in the context of long-distance proposals being considered by the parallel work on the South Wales Main Line. Should this not be proceedable then Option 7b would remain viable.

Option 9a (Swansea to Pembroke Dock) is the recommended option to service Pembroke Dock Branch and would enable improvements to frequency to Pembroke Dock and between Swansea and Carmarthen.

Assuming it can be resourced from the existing fleet then Option 28 (additional service on the southern part of Heart of Wales Line) is also recommended.

Option 11 Carmarthen – Fishguard has good non-monetised benefits and fulfils a strategic role for this Branch but has a poor value for money, a more detailed rolling stock review (in conjunction with the operator) should be carried out to assess if this can be delivered with less rolling stock and therefore reduce the additional operating cost to improve the business case.

Table 1-5 summarises the options and recommendations for West Wales.

**Table 1-5** Summary of options and recommendations (West Wales)

Route (additional frequency)	Capex (Opex)	Additional Demand	BCR	Delivery timescale	Recommendation
7a. Swansea – Milford Haven (2-hourly)	(3.5m)	224k	1.2	2-3 years	Not recommended. 7b or 8 preferred. Part duplicates existing services.
7b. Carmarthen – Milford Haven (2-hourly)	(2.2m)	58k	0.6	2-3 years	Not recommended. 8 preferred. Alt to 8, runs in same path. Saving of 0.5 unit + 9b
8. Carmarthen – M. Haven (MCR service, 2-hourly)	(1.5m)	58k	0.9	2-3 years	Preferred option, subject to strategic proposals
9a. Swansea – Pembroke Dock (2 hourly, limited stop)	(2.8m)	246k	1.5	2-3 years	Preferred option, subject to strategic proposals

9b. Carmarthen – Pembroke Dock (2 hourly, limited stop)	(2.2m)	81k	0.7	2-3 years	Not recommended. Saving of 0.5 unit + 7b. Alternate to 9a
11. Carmarthen – Fishguard 2-hourly	(306k)	8.6k	0.8	2-3 years	Rolling stock requirement needs detailed review.
28. 1 add tpd. Swansea – Llandovery return	(141k)	9.4k	1.1	2-3 years	Assumes resourced from current fleet

## 1.7.2 Station Improvements

The station improvements all have a reasonable business case and require a modest level of investment therefore are recommended for progression to further design development and stage 3 assessment TFW Rail are currently reviewing fifteen locations within south wales for improved parking provision and these proposals should be cross referenced against their scope to avoid duplication of design work. The option at Llanelli requires further investigation in regard to relocating the depot to accommodate a strategic level of parking provision in one location.

**Table 1-6** Summary of options and recommendations (West Wales Station Improvements). The options listed in brackets are the localised options drawn up for each station, and the costs of these options are taken forward for the Capex and BCRs.

Route	Capex (Opex)	Additional Demand	BCR	Delivery timescale	Recommendation
Option 25A Carmarthen (Option 2)	£1.8m	55k	2.9	3-5 years	Progress subject to TFW rail services proposals
Option 25B Pembrey & Burry Port (Option 1)	£1.8m	5.7k	1.26	3-5 years	
Option 25C Whitland (Option 1 and 5 (With Bridge))	£2m	13k	2.05	3-5 years	Progress subject to TFW rail services proposals
Option 25D Llanelli (Option 2, 6 and 9)	£1.6m	156k	2.35	3-5 years	Strategic option requires depot relocation

### 1.7.3 Swansea Bay Metro

The Metro options recommended for initial progression to further design development and WelTAG 3 and full business case assessment are Option 12 (Swansea to Pontarddulais) and, subject to review with West Wales service options and line capacity, Option 13 (Swansea to Pembrey and Burry Port). In both cases these will require work to confirm cost and risks to complete all engineering deliverables in TfW Plan of works stage A & B before progressing design to Stage C and Full Business Case.

Options 18 and 19 are also recommended to progress but are subject to a longer timeframe for delivery and have some prerequisites to delivery. Due to the overlap of part of the route they should be considered as a package. A development package to undertake feasibility design work to allow protection of a preferred route alignment from development would be beneficial.

The chord at Llandeilo (Option 14) is not viable without further, more frequent Metro services to benefit from the time saving. The loss of serving Llanelli on the Heart of Wales services has a detrimental impact on the option.

Despite a BCR of 1.0 for Option 15 Pantyffynnon - Gwaun Cae Gurwen the non-monetised benefits are more limited due to the catchment size of the valley with the majority of demand at Ammanford. Without significant development, to generate more demand, the cost of providing the link all the way to Gwaun Cae Gurwen is unlikely to be justified. A more fundamental issue is the need for more frequent services beyond Ammanford which is not considered in the costing. There would be potential to extend Option 12 Pontarddulais Metro services to Ammanford which would serve a significant proportion of the demand of Option 15 and could act a hub to serve the rest of the valley via a bus-based option. This should be investigated as part of the design work for Option 12 but may have capacity considerations between Pontarddulais and Ammanford. A longer-term option may be a more direct route to Swansea in combination with Option 14.

Option 16 and 17 (Onllwyn and Cwmgwrach) experience a similar issue with low population levels and therefore demand. They are not recommended to be progressed at present as a rail-based Metro route. It is recommended that the development of Option 18 looks at extending to Aberdulais /Tonna as this would serve a large proportion of the demand from Options 16 and 17 without the full cost. There would then be potential for a hub and alternative provision for the northern part of the routes.

**Table 1-7** Summary of options and recommendations (Swansea Bay)

Route	Capex (Opex)	Additional Demand	BCR	Deliverability	Recommendation
12. Swansea – Pontarddulais 2tph	£131m (4.5m pa)	1,730k	2.9	5 – 7 years	Progress as 1st Phase. Consider extension to Ammanford.
13. Swansea - Pembrey & Burry Port 2tph	£34m (4m pa)	630k	1.7	5 – 7 years	Needs review with WW service options.

14. Llandeilo Chord	£35.2m (-71k pa)	-	0.03	7-10 years	Not recommended unless part of Metro route
15. Pantyffynnon – Gwaun Cae Gurwen 2tph	£58m** (2.1m pa)	282k	1.0	7-10 years	Most demand from Ammanford.
16. Neath Riverside - Onllwyn 2tph	97.9m (2.1m pa)	159k	0.5	7-10 years	V. Low demand north of Aberdulais.
17. Neath Riverside – Cwmgwrach 2tph	81.3m (2m pa)	162k	0.5	7-10 years	Low demand north of Aberdulais
18. Swansea – Docks – Neath Riverside 2tph	£507m ( 2.2m)	2,225k	1.9	7-10 years	Potentially extend to Aberdulais /Tonna.
19. Swansea – Llandarcy- Clydach 2tph	£400m (2.4m)	1,893k	1.9	7-10 years	18/19 as a package.

Tph = Trains per hour

#### 1.7.4 Summary of recommended options

Schemes need to be packaged into deliverable components which will then move forward at their own pace. Some development will also be required for longer term proposals so that they are ready for delivery in the future and to protect opportunities in terms of development (and also align development and planning policy to them).

Based on current assessment this initial package (See also figures 1-2 to 1-4) could comprise:

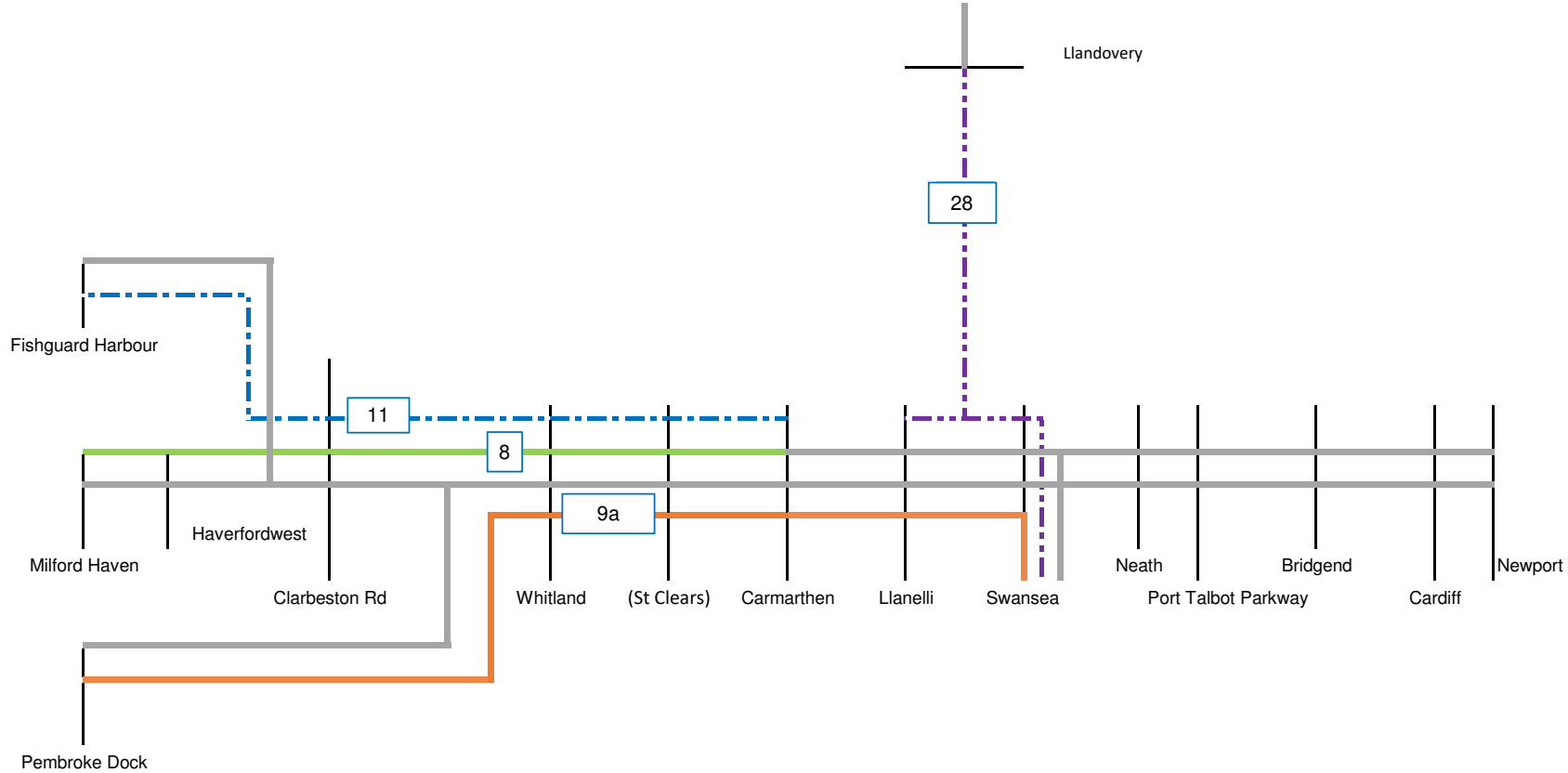
- Interchanges (Option 25)
- West Wales frequency
  - Option 8 Milford Haven (subject to outcome of strategic service SWML work).
  - Option 9a (Swansea - Pembroke Dock frequency),
  - Option 11 Carmarthen – Fishguard, subject to operator review)
  - Option 28 (7th Train for southern section of Heart of Wales Line).
- Swansea Bay Metro
  - Option 12 (Swansea – Pontarddulais, consider extension to Ammanford)
  - Option 13 (Swansea - Pembrey & Bury Port)

- Development package to confirm (and secure) route alignment
  - Option 18 Swansea – Neath (and extension to Aberdulais /Tonna)
  - Option 19 Swansea – Clydach

The total capital investment cost for the preferred package is £1.1billion (2021 costs). However the combined public transport improvements generate significant benefits with a resultant BCR value of 3.6.

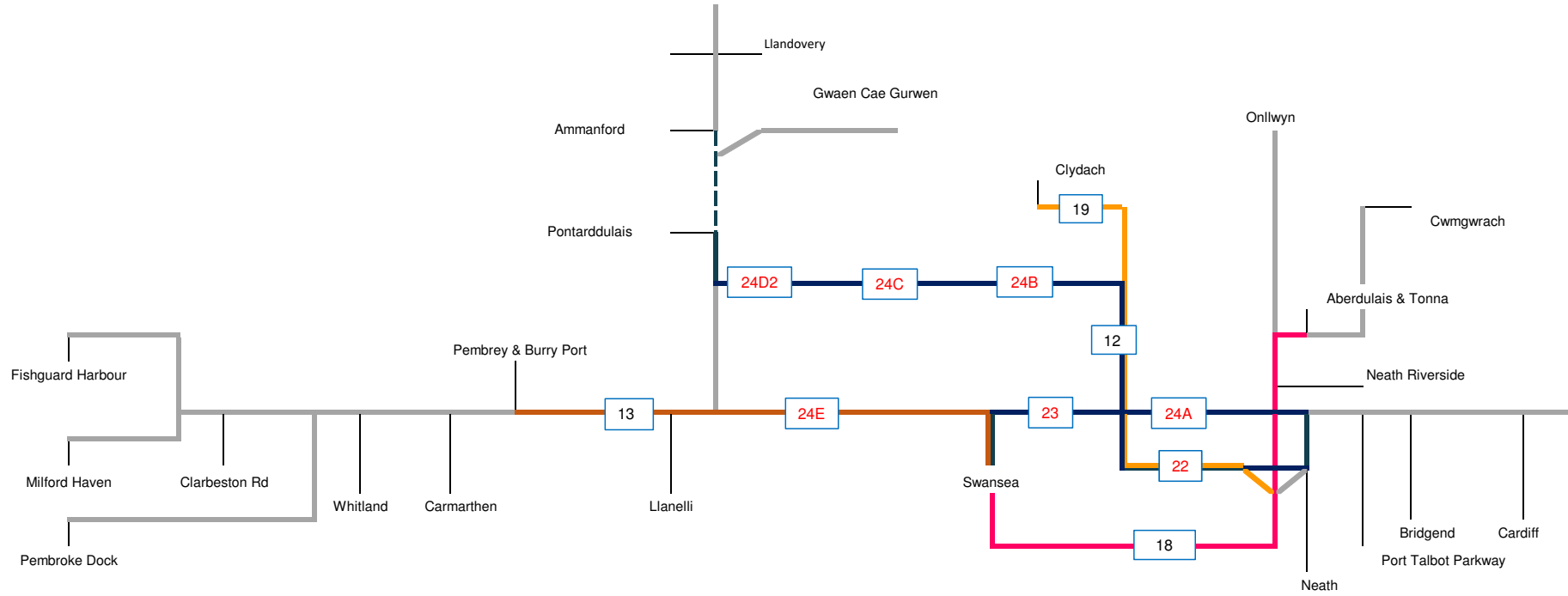
Some mainline stations may be capable of standalone delivery, for example under New Station Funding (NSF), this should be investigated further. There should also be a review of extending Pontarddulais services (Option 12) to Ammanford, there will be an interface with Heart of Wales Line services and track capacity considerations but an Ammanford – Swansea service may be an option in the longer term. Option 11 (Fishguard services) should be reviewed with the operator to identify if a more efficient use of rolling stock could improve the business case. Electrification for Metro Phase 1 (Option 26) should be reviewed further to scheme development of Cardiff – Swansea mainline electrification.

**Figure 1-2**  
**Recommended West Wales service options**



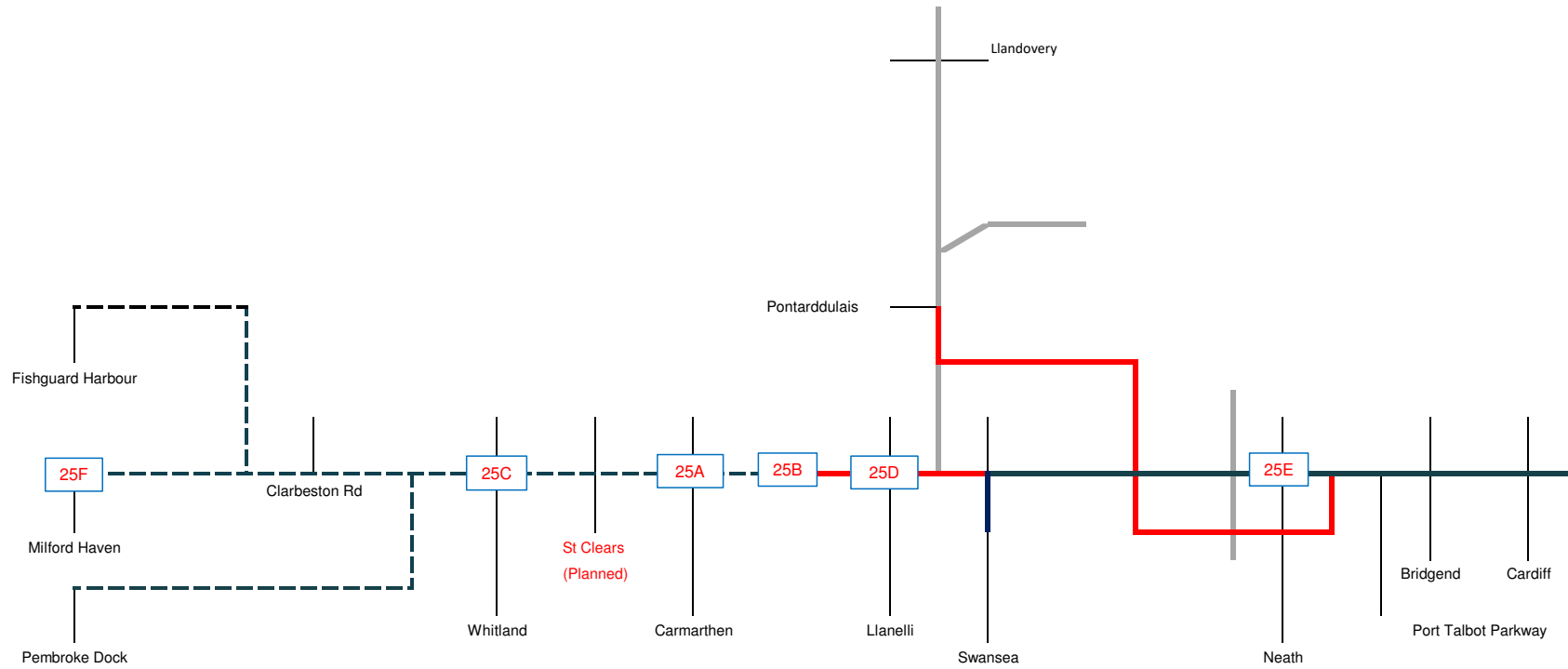
- |   |   |  |                 |
|---|---|--|-----------------|
| <b>Recommended Option</b>                   |   | <b>Total frequency</b>                   |                 |
| <span style="color: green;">—</span>        | 8. Manchester/Swansea - Carmarthen - Milford Haven every 2 hours (total hourly) | <span style="color: black;">- - -</span> | 0.5 tph or less |
| <span style="color: orange;">—</span>       | 9. Swansea - Pembroke Dock every 2 hours, (total hourly)                        | <span style="color: black;">—</span>     | 1tph            |
| <span style="color: blue;">- - -</span>     | 11. Swansea - Fishguard 2 hourly service  |  |                 |
| <span style="color: purple;">- . - .</span> | 28. Swansea - Llandoverly additional service (total 7 tpd to Llandoverly)       |  |                 |
| <span style="color: grey;">—</span>         | Other routes  |  |                 |

**Figure 1-3  
Recommended Metro Interventions**



- |   |  |  |                   |
|---|--|--|-------------------|
| <b>Recommended route options</b>  |  | <b>New stations (options 12/13)</b>    |                   |
| <span style="color: darkblue;">—</span>                                     | 12. Swansea - Neath - Pontarddulais                        | <span style="color: pink;">22</span>   | Llandarcy Station |
| <span style="color: darkblue; border-bottom: 1px dashed darkblue;">—</span> | 12. Potential extension to Ammanford                       | <span style="color: pink;">23</span>   | Landore Station   |
| <span style="color: orange;">—</span>                                       | 13. Swansea - Llanelli - Pembrey & Bury Port               | <span style="color: pink;">24A</span>  | Winch Wen Station |
| <b>Development package</b>  |  | <span style="color: pink;">24B</span>  | Morrison Station  |
| <span style="color: pink;">—</span>   | 18. Swansea - Jersey Marine - Neath Riverside - Aberdulais | <span style="color: pink;">24C</span>  | Felindre Station  |
| <span style="color: yellow;">—</span>                                       | 19. Swansea - Jersey Marine - Clydach                      | <span style="color: pink;">24D2</span> | Pontillw Station  |
| <span style="color: grey;">—</span>   | Existing lines   | <span style="color: pink;">24E</span>  | Cockett Station   |

**Figure 1-4**  
**Recommended Station Interchange & Infrastructure Interventions**



**Recommended options**

- 25A Carmarthen Station improvements
- 25B Pembrey & Burry Port Station improvements
- 25C Whitland Station improvements
- 25D Llanelli Station improvements
- 25E Neath Station improvements
- 25F Milford Haven Station improvements
- Cardiff - Swansea mainline electrification (Prerequisite)
- 26. Phase 1 Metro Electrification (To review )
- - - Later Phase 1 Electrification