Cabinet Prifddinas Ranbarth Caerdydd | Cardiff Capital Region Cabinet

18 FEBRUARY 2019 MEETING

STRATEGIC OUTLINE PROGRAMME FOR METRO PLUS – PHASE 1 – PROGRAMME OF LOCAL 'FUTURE MOBILITY' SCHEMES

REPORT OF COUNCILLOR HUW DAVID, CHAIR OF THE REGIONAL TRANSPORT AUTHORITY

AGENDA ITEM: 10

Reason for this Report

1. To establish the principle of a programme of activity complementing and enhancing proposed Metro and Metro Central investments - called Metro Plus - developed and supported by the Regional Transport Authority.

2. To provide the Strategic Outline Programme to catalyse the initial development of Metro Plus, highlighting core elements and features of the first proposed project which includes a fit for future plan for establishing comprehensive Electric Vehicle (EV) Infrastructure.

3. To secure investment to progress the development of Phase 1, comprising ten proposed local transport schemes, through a 'Common Assessment Framework' (underpinned by the principles of the WelTAG and five-stage business case model); and, commission further critical work to inform the wider approach to Metro Plus and innovative-transport planning in the region, through a Low Emission Vehicle Strategy, Infrastructure Income Modelling and a plan to provide charging facilities for taxis.

4. To set out the details of a bid submitted to the Welsh Government Local Transport Fund, on 18 January 2019, to provide a co-investment mechanism for meeting the eventual costs of the Phase 1 proposal.

Background – what is Metro Plus & why is it needed?

5. The South Wales Metro is a major infrastructure project and signals an ambitious 'modal shift' in connecting people and places and enhancing the functional economic geography of the region. It represents forward thinking on

the future of mobility and its mission it to provide contemporary public transport that will promote behavioural change. With commitments to renewable energy provision and sustaining pace of new technological developments, Metro has the potential to make a significant contribution to inclusive growth and will provide a core means of enabling sustainable business growth and facilitating shared prosperity. At a very practical level, the emphasis is on regular, reliable, and resilient infrastructure. In terms of its wider 'enabling' impact, it is set to encourage inclusion and connections – enabling people to both move around and come together.

6. Metro however, is a long-term ambition. The early phases of its roll-out will impact and benefit some areas ahead of others. The opportunity therefore exists to begin adding value much sooner and to set a standard and expectation around what 'really good' complementary infrastructure development could look like – linked to the Metro vision. Commentators and experts have long advocated the rapid implementation of a series of more localised measures, named 'Metro Plus', that could:

- begin to address some of the issues around sequence, gaps and timing in order for all administrative areas across the region to see early benefit;
- enhance, extend and add value to core Metro plans and make sense of the Metro Central development in providing a central hub in the capital city that is capable of supporting the wider region;
- lay the foundations for enabling further private sector investment and public-private joint venture infrastructure developments in line with the Metro Plus ethos;
- provide a focus on maximising contribution to the Seven Wellbeing Goals, through a fit for future EV Infrastructure plan – capable of being embedded in this - and potential future Metro Plus schemes;
- be predicated on a co-investment arrangement with Welsh Government and City Deal contributing an estimated £15m each, with additional leverage coming from local developer contributions, private sector investment and other contributions such as Council capital funds;
- place a focus on Return-on-Investment (ROI) through the income generation opportunities around infrastructure revenues; and,
- to set the course and the expected 'standard' for the longer-term roll out of integrated local transport schemes – whether by the public or private sectors – or both - and focus in on the investment opportunities within the UK-wide Industrial Strategy, particularly around the Future of Mobility.

What is the core proposal and how will we do it?

7. City Deal in collaboration with Welsh Government and Transport for Wales, has identified a proposed integrated programme of local future transport schemes that fit within a wider Metro Plus programme. A summary of each of the ten

proposed schemes that constitute phase1 and a map showing linkages to Metro are set out at Appendix 3 & 4 These proposed schemes have been drawn from the priorities surfaced by individual Councils and mirror the 'Metro spine' – creating both short and longer-term opportunities for place-shaping. They bring together a diverse range of projects, spanning regeneration, town centres, housing and economic growth, with transport as the central component or 'enabler' in allowing growth, expansion and opportunity to be unlocked. The strategic context for the schemes is established by the Industrial and Economic Growth Plan for the region, the development of which has led by the Regional Economic Growth Partnership. This reflects the priority around good infrastructure development, which supports and enables growth and sees Metro as establishing the physical development footprint for the region.

8. The proposed package of Phase 1 schemes total some £50m. Initial work on the programme to date, demonstrates that a £15m contribution from City Deal (proposed Infrastructure Fund), should lever in a potential £15m co-investment from Welsh Government's Local Transport Fund (bid submitted by Merthyr CBC on 18 January 2019 with an expectation of c£5m p/a over three years). The expectation of a full £15m 'match' from WG is strong and positive discussions are ongoing with the acceptance that this represents a strong offer to WG and a means of accelerating a wide range of projects. To date, against this requirement for £15m, £4.1m has been bid to the Local Transport Fund with further bids to follow. Through the course of business case testing and development, it is anticipated that the remaining £20m will be sourced through local developer contributions; third party and private sector funding, other potential government programmes and capital contributions from Councils. One demonstration of wider leverage potential is the work the Valleys Taskforce has commissioned on integrated transport hubs. These programmes must be joined-up in order to maximise leverage, alignment and co-ordination opportunities. In addition, there are several opportunities through bodies such as Welsh Government 'Transactional Capital' and Energy Savings Trust around investment opportunities in low carbon pathways.

9. The proposed £15m contribution therefore from City Deal is poised to leverage £35m (leverage ratio of 1: 3.3). In addition, and as part of the ongoing development of the Business Case, further work has been commissioned through environmental infrastructure experts to undertake Infrastructure Income Modelling. This will inform the position on income generation and ROI around park and ride, ticketing, renewable energy, energy storage and smart charging.

10. All of the early ingredients are in place and it is clear that significant potential now exists to convert these high-levels concepts into a business case. To date, an initial appraisal to inform the Strategic Programme has been undertaken by Redstart (Appendix 1). In addition, a CCR Infrastructure Review has been undertaken by Cenex – an independent not-for-profit low emission vehicle and energy advisory service for transport experts (Appendix 2).

11. Converting ten proposed local transport schemes, all at various stages of development and under the banner of one co-ordinated programme is a big ask. Drawing on the Five Stage Business Case Model and the WelTAG process, it is proposed that a Common Assessment Process is devised to co-ordinate and accelerate business case development in an appropriate and proportionate way. This will enable the more detailed business case to be developed in a comprehensive but streamlined way – testing for strategic fit against the Phase 1 programme and then progressing through a series of gateways, which, seek to demonstrate the core economic, deliverability and affordability aspects of each proposed local project. The Common Assessment Process will allow every project to be considered on its merits and means that those in a strong state of readiness are able to proceed quickly. Each project will still be subject to an individual business case, which will require approval, albeit, the context provided and the additional benefits will see the overall scheme develop as one coherent regional proposal.

12. The business case development will be undertaken in accordance with the new Investment and Intervention Framework (subject to its agreement by Regional Cabinet). The purpose of this framework is to ensure investment proposals are grounded in the strategic priorities of City Deal, are capable of contributing to high levels jobs, growth and leverage targets and fulfil criteria relating to other required outcomes. This Investment and Intervention Framework will essentially 'test' the integrity of the proposition and ensure investments are aligned and supportable.

13. Metro Plus is not a one-off. Whilst this document in the main focuses on a specific proposal for a programme of ten local future transport schemes – it is the first phase of what is anticipated to be a wider programme. Metro Plus provides the potential to develop a whole programme of activity that contributes to, complements and enhances Metro and mobility delivery in the region. Providing this foundation is key to be able to think more strategically and long-term about resources such as the Local Transport Fund, other WG Capital Funds (such as Transactional Capital) and how to develop a more considered and joined-up approach to investment planning for transport. Given the UK Government emphasis on the 'Future of Mobility' and the billions of pounds to be injected into this grand challenge theme, it is important to set a path for future aspiration and investment that City Deal should mobilise.

What's the high level detail and potential for added value?

14. The Phase 1 programme of schemes include Transit Orientated Developments – such as future interchanges based around a range of uses beyond just transport; enhanced Park and Ride facilities that promote interchange and integration for all modes, and new and extended Metro networks that will open up and enable improved access to new and existing activities for work, training,

education, culture, retail, leisure and community. In addition, the opportunities provided to places to enhance resilience of town centres, viability of high streets and access to employment, are potentially significant. In this way, synergies with the Wellbeing Goals of prosperity, resilience, equality of access and community cohesion – are clear to see.

15. Beyond this, there is real scope for enhanced value through incorporation of a package of measures identified and costed through the initial review of opportunities around renewables, energy storage and smart charging. This provides potential to future-proof this and potential future proposals and to set a standard for the region. The recommendations of the review report provide information and data on forecast uptakes in 'plug-in' vehicles, including cars, buses and taxis and details of relevant local and national policies and investment opportunities including future consideration of local renewable energy development. This has the potential to convert into delivery of:

    - Latest technological advances in vehicle charging, including energy generation and storage wherever possible
    - Potential for a car-club sharing and plug-in scheme
    - Potential for on-site renewables
    - Opportunities to improve air quality and support clean growth
    - A flexible system which responds to demand for up until 2025, with provision made for easy upgrades until 2030 in order for further demand to be seamlessly supported

16. In addition to this, scheme proposals set out further opportunity for impact around:

    - Promotion of active travel and developing the proposals in line with a standard to encourage and support walking and cycling. In particular, to explore an opportunity to roll-out 'Next Bike' provision at scale
    - Skills development and training with the potential for a Targeted Recruitment and Training programme – delivered as a core component of all works contracts
    - Direct and indirect
    - Income generation and ROI that is capable of being recycled through the Infrastructure Fund and reinvested into scaling and supporting future Metro Plus schemes
    - Synergies with prospective plans for digital infrastructure development and potential open data challenges that support development of apps and digital tools that help consumers make best use of new provision
    - Synergies with plans for future energy supply and demand needs and understanding the potential for innovative joined-up practice
    - Connections with wider regional working to take forward the EV Bus initiative work to align with wider EV Strategy. Recognising that EV is an

important part of the solution – but alongside the other options and opportunities set out in this report

17. The Reports setting out the work to date are attached at Appendix 1 (Redstart) and Appendix 2 (Cenex). A summary of each of the ten proposed schemes and a map showing linkages to Metro are set out at Appendix 3 & 4. The benefits of co-ordination as a regional package will contribute to making the connections, building alignment and having a more balanced programme of activity across the region. The Redstart report in particular, evidences that the collective benefits of the programme, are far greater, than if implemented individually.

What will the impact be if successful?

18. Critical success factors for the first phase under the Metro Plus programme, include:

- A connected programme of regional delivery that delivers targeted local impact, across ten local authority areas
- Corresponds and connect with the Metro footprint and enables communities, businesses and residents to see and benefit from early evidence of investment in enhancements that will be fit for the future
- Public sector lays foundations to attract new investment by the private sector and/ or, accelerate and bring forward planned longer-term activity
- Unlocking wider plans and potential relating to viability and sustainability of place – access to development sites, town centres, high streets, retail and culture and arts
- Contributing to core City Deal targets around direct and indirect jobs growth and strong leverage and income generation model through Park and Ride, Ticketing and EV Charging Infrastructure Income
- Future focussed model (low emissions, renewable energy, storage and smart charging) that keeps region sustainably going and growing
- Strong resonance with Wellbeing Goals – and particularly to maximise contributions around prosperity, health, resilience and social cohesion
- Sets new working and progressive standard for sustainable transport development in region
- Provides a platform for future complementary proposals and contributes evidence, expertise and insight to help make the case for those areas feeling outside of current Metro plans
- Growth and developmental potential, particularly in regard to Stations of the Future #2 and other challenge calls under the Future of Mobility (Industrial Strategy Challenge Fund)

How will the Programme be organised to deliver and in what timeframe?

19. Project development support and co-ordination will be provided through the central (and soon to be enhanced) City Deal team, in conjunction with lead officer

support from the Regional Transport Authority. This will ensure a mix of technical expertise and leadership alongside dedicated strategic project support and co-ordination. This principally involves:

- The commissioning of expert independent support to establish the next stage of business case development, in line with a proposed Common Assessment Framework and in tandem with;
- The commissioning of expert independent advice on a low emission vehicle strategy; EV Infrastructure Income Modelling and a plan for regional roll-out of taxi-charging points.

20. The proposed timescales for delivery require that the business case is developed through the Common Assessment Framework; evaluated through the proposed Investment and Intervention framework, ahead of final decision making by Regional Cabinet in Q3 of 2019/20. Programme delivery is anticipated to commence in 2019 and straddle the period 2019-2022.

How will we measure progress?

21. The Regional Transport Authority provides enhanced capability around project support, technical support and robust assurance processes. This key step forward in governance terms will help ensure there is a co-ordinated mechanism through which to monitor and evaluate progress; holding key officers to account and managing risk and contingency. The insight, intelligence and progress fed through the RTA, will enable timely interventions to ensure project delivery is on track and in-line with stated outcomes. It is anticipated that monitoring and reporting will take place across four key areas:

- Programme delivery plan – quarterly updates will be sought and reported, to align with the quarterly performance reports, which are a key feature of the overall City Deal monitoring process. This will include development and oversight of a Project Risk Log;
- The development of a Common Assessment Framework (benchmarking, common outcome metrics), which will subscribe to the WelTAG and five stage business case process
- Application of the proposed Investment and Intervention Framework and associated toolkit; and,
- Financial monitoring and support to ensure goals around efficiency, effectiveness and targeted budget positions are maintained.

What will it cost?

22. The estimated costs of project delivery - £50m - and the breakdown of investment to support this – and the ‘ask’ and ‘offer’ of and to City Deal is set out above. In order to develop the scheme through the processes and frameworks described, there will be a need for developmental resources and support. This will

necessitate an element of external independent expert support. The costs associated with this, estimated in the region of £75k, are broken down as follows:

- Cost of commissioning Low Vehicle Emissions Report; Infrastructure Income Modelling and Taxi Charging Infrastructure - £40k (with £20k matched through Local Transport Fund).The experts proposed will be procured in accordance with Rhondda Cynon Taf County Borough Council's procurement processes and legal requirements.
- Cost of commissioning expert support for bringing business case together, due diligence and associated legal advice and support, including development of the Common Assessment Framework with key stakeholders - £55k
- A bid for £4.1m has been submitted by Merthyr CBC, on behalf of the Region, to WG for 2019/20. This will enable the progression of each scheme in the financial year 2019/20. The deliverables of each project can be seen in the LTF bid (Appendix 6). It is anticipated that the WG will fund up to £4.1m in 2019/20, with further allocations being made available in financial years 2020/21 and 2021/22

Financial Implications

23. The attached report seeks approval to allocate £75,000 to develop the strategy and business case (including associated due diligence work) for Phase 1 of the Metro Plus Programme. This sum can be met from within the Programme Development & Support budget, proposed for financial year 2019/20, subject to its approval.

24. In addition, the report outlines that the projected capital cost of Phase 1, could be in the region of £50 million. An application has been made to the Welsh Government's Local Transport Fund for £4.1 million of funding for 2019/20, with indicative allocations over the following 2 years to make up the £15m WG contribution (Appendix 6). Around £20 million of the cost envelope is expected to be secured locally, from various sources, as outlined within the body of this report. The report therefore seeks an 'In-Principle' commitment of £15 million from the City Deal Wider Investment Fund (WIF) to meet the balance of funding for the proposed programme of projects over the 3 year timescale.

25. The JWA 5 Year Business Plan contains capital funding allocations in respect of the WIF over the period to 2020/21. There are sufficient uncommitted resources available to meet the in-principle commitment being requested at this time. If approved, the WIF Funding Strategy will need to be updated to capture this commitment, along with updates from other approved projects, in order to re-profile the funding requirements over this period.

26. In respect of business case development, the report suggests the development of a 'Common Assessment Process', which will enable business cases to be

developed in a comprehensive, but streamlined way, initially testing for 'strategic fit' and then progressing through a series of gateways which seek to demonstrate the core 'economic', 'deliverability' and 'affordability' aspects of each proposed project. Such an approach will facilitate individual proposals coming forward for assessment and approval, as soon as they are in a position do so, and not be constrained by the 'pace of the slowest'. All schemes will be required to comply with the WelTAG Process to secure public sector funding.

27. In this regard it is important that the provisions of the WIF Assurance Framework are followed, as this is a key requirement of the City Deal Funding Terms & Conditions. This sets out that business cases will be developed in line with HM Treasury Green Book (5 Case Model), although, clauses 3.5 (Appraisal Framework) and 3.7 (Business Case Development), make an important reference to the concept of 'proportionality'.

28. Work is being done with external advisors (Local Partnerships) to better understand how the issue of proportionality can be addressed through the development of a variety of approaches linked to project value, complexity and timeliness. These approaches will need to be predicated on the principles (and robustness) delivered through the 5 Case Model, with proposals undergoing the necessary consultation with key stakeholders. This latter point is important to demonstrate good governance, whilst ensuring the risk of non-compliance with Funding Terms & Conditions is minimised.

29. In addition, the terms and conditions attached to the Welsh Government's Local Transport Fund contribution will also need to be complied with. It is understood that central this will be the need to comply with the WelTAG process, which is common to transports schemes seeking Welsh Government approval and funding.

30. A further report will be brought back to Regional Cabinet to provide an update on the outcome of the Welsh Government funding application. That report will also need to provide an update on the development of a Common Assessment Framework, project business cases and the cumulative value of funding secured locally.

Legal Implications

31. The report seeks authority for further work to be carried out to develop proposals for Metro Plus. When developing proposals for individual projects, the provisions of the Joint Working Agreement in relation to the delivery of the Cardiff Capital Region City Deal ('the JWA'), (in particular the provisions of the Assurance framework), and the terms attaching to the funding provided by HMT to the CCRCD must be complied with. As set out in the body of the report, to ensure compliance with the JWA, business cases will be developed for each scheme and the approach taken will be consistent with the HM Treasury Green

Book and business case appraisal process , applied in a manner that is proportionate to the scheme in question. The JWA and funding conditions further provide that the 'purposes' for which CCRCD monies are used must accord with those set out in the JWA Business Plan (the CCR City Deal 5 year Strategic Business Plan Wider Investment Fund) . The JWA Business Plan provides that 'to maximise the potential benefits of the Metro to the region the Regional Cabinet are exploring a programme of complimentary transport investment, Metro plus'. This report details the proposed complimentary transport investment.

32. It is noted from the body of the report that third party funding is required for the phase 1 schemes to be implemented and pointing out the obvious decisions to implement the proposed schemes should not be sought until the required funding is secured . There is risk that expenditure on developing the metro plus proposals could provide abortive if, amongst other matters, the third party funding were not secured and the schemes do not progress. That said funding could not be secured without the business cases being developed so the risk of abortive costs incurred in developing a business case is not unique to the metro plus scheme. Consideration should be given to any conditions attached to such third party funding to ensure that CCRCD is able to comply with the same.

33. In developing the business cases, detailed legal advice should be obtained for each proposed scheme, including consideration to any consents/ permission required to facilitate the scheme.

Wellbeing of Future Generations (Wales) Act 2015

34. The Well-Being of Future Generations (Wales) Act 2015 ('the Act') is about improving the social, economic, environmental and cultural well-being of Wales. The Act places a 'well-being duty' on public bodies aimed at achieving 7 national well-being goals for Wales - a Wales that is prosperous, resilient, healthier, more equal, has cohesive communities, a vibrant culture and thriving Welsh language and is globally responsible. In discharging their respective duties under the Act, each public body listed in the Act (which includes the Councils comprising the CCRCD) must set and published well-being objectives. These objectives will show how each public body will work to achieve the vision for Wales set out in the national well-being goals. When exercising its functions, the Regional Cabinet should consider how the proposed decision will contribute towards meeting the well-being objectives set by each Council and in so doing assist to achieve the national well-being goals.

35. The well-being duty also requires the Councils to act in accordance with a 'sustainable development principle'. This principle requires the Councils to act in a way which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. Put simply, this means that Regional Cabinet must take account of the impact of their

decisions on people living their lives in Wales in the future. In doing so, Regional Cabinet must:

- Look to the long term
- Focus on prevention by understanding the root causes of problems
- Deliver an integrated approach to achieving the 7 national well-being goals
- Work in collaboration with others to find shared sustainable solutions
- Involve people from all sections of the community in the decisions which affect them.

36. Regional Cabinet must be satisfied that the proposed decision accords with the principles above. To assist Regional Cabinet to consider the duties under the Act in respect of the decision sought, an assessment has been undertaken which is attached at Appendix 5.

General advice

37. In considering this matter and in developing the proposals regard should be had, amongst other matters, to:

(a) the Welsh Language (Wales) Measure 2011 and the Welsh Language Standards,

(b) Public sector duties under the Equalities Act 2010 (including specific Welsh public sector duties). Pursuant to these legal duties Councils must in making decisions have due regard to the need to (1) eliminate unlawful discrimination, (2) advance equality of opportunity and (3) foster good relations on the basis of protected characteristics. Protected characteristics are : a. Age; b. Gender reassignment; c. Sex; d. Race – including ethnic or national origin, colour or nationality; e. Disability; f. Pregnancy and maternity; g. Marriage and civil partnership; h. Sexual orientation; i. Religion or belief .

RECOMMENDATIONS

The Cardiff Capital Region Cabinet is recommended to:

a. Agree in principle to Metro Plus, a programme of activity as set out in this report, which is designed to complement and enhance the Metro and proposed Metro Central schemes, to be further developed and supported by the Regional Transport Authority;
b. Agree to further develop the proposals for the ten schemes comprising Phase 1 of the Metro Plus Programme (Programme of Local Future Mobility Schemes, set out in appendix 3) (including a fit for future plan for establishing comprehensive Electric Vehicle infrastructure) through the development and application of a Common Assessment Framework;
c. To approve up to £75,000 from the Wider Investment Fund (Project Support budget) to develop the business case and further the work on the Low Emission Vehicle Strategy; Infrastructure Income Modelling and charging infrastructure for taxis;

d. Endorse the action taken in submitting the Local Transport Fund Bid to Welsh Government on 18 January (Appendix 6); and

e. To note that should it not prove possible to secure the full required co-investment from WG, of £15m – a further report will be brought back to Regional Cabinet, to set out options through which to progress the scheme.

Kellie Beirne
Cardiff Capital Region Director
18 February 2019

The following Appendices are attached:-

APPENDIX 1 – REDSTART REPORT – APPRAISAL OF RTA METRO PLUS PROGRAMME

APPENDIX 2 – CENEX REPORT - METRO INFRASTRUCTURE REVIEW (EV)

APPENDIX 3 – LOCAL SCHEME SUMMARY

APPENDIX 4 – MAP OF PROPOSED SCHEMES

APPENDIX 5 – WELLBEING OF FUTURE GENERATIONS ASSESSMENT

APPENDIX 6 – CCR SUBMISSION TO LOCAL TRANSPORT FUND WG

APPENDIX 1

REDSTART

CARDIFF CAPITAL REGION CITY DEAL: APPRAISAL OF METRO PLUS RTA PROGRAMME, FINAL REPORT

JANUARY 2019

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Cardiff Capital Region City Deal:
Appriasal of Metro plus RTA Programme, Final Report

	NAME	SIGNATURE	DATE
AUTHOR	Michelle North-Jones		23/01/2019
CHECKER	Martin Dolan		23/01/2019
APPROVER	Dave James		23/01/2019

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Capita understands and acknowledges the Authority's legal obligations and responsibilities under the Freedom of Information Act 2000 (the "Act") and fully appreciates that the Authority may be required under the terms of the Act to disclose any information which it holds. Capita maintains that the report contains commercially sensitive information that could be prejudicial to the commercial interests of the parties. On this basis Capita believes that the report should attract exemption from disclosure, at least in the first instance, under Sections 41 and/or 43 of the Act. Capita accepts that the damage which it would suffer in the event of disclosure of certain of the confidential information would, to some extent, reduce with the passage of time and therefore proposes that any disclosure (pursuant to the Act) of the confidential information contained in the report should be restricted until after the expiry of 24 months from the date of the report.

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Appendices

1. Introduction

1.1 Background

A £30 million programme of schemes has been developed (Metro Plus Regional Transport Authority (RTA) Programme), which if undertaken will support the implementation of the South Wales Metro.

The South Wales Metro is an ambitious project linking people and jobs across South East Wales in a fast, efficient and environmentally positive way. It will provide a platform to deliver sustainable economic development, by connecting people, communities and business to employment, services, facilities and markets through reliable, resilient infrastructure[1]. Current rail commitments for the Metro in South Wales are detailed in Appendix A.

The Metro Plus RTA Programme would see each Local Authority within South East Wales receive a £3million share to implement a scheme. Funding is being sought from Welsh Government (£15million) and from the Cardiff Capital Region City Deal (CCRCD) (£15million) to implement this programme.

Table 1.1 outlines the schemes that make up the proposed Metro Plus RTA Programme.

[1] https://tfw.gov.wales/projects/south-wales-metro - date accessed - 12th November 2018

Table 1.1 – Metro Plus RTA Programme

Option Name	Local Authority	Option Description	Estimated Cost
Interchanges			
EVR/ Abertillery Spur & Interchange	Blaenau Gwent CBC	The current Ebbw Valley Railway service is 1tph, The Transport Minister announced 2nd train service per hour to be introduced by 2021 to Newport. This Abertillery Spur option is seeking to create a 3-4 mile link from Abertillery to Ebbw Valley at Aberbeeg. Previous work has been undertaken on Heavy Rail to Abertillery, however, currently work ongoing to review and revisit previous proposals through identifying transport issues from Abertillery with a range of options to be considered e.g. light rail or guided bus. Electric charging points to be included within future proposal implemented.	£12m plus
Caerphilly Rail and Bus Station	Caerphilly CBC	Developing a brief and seeking funding to develop seamless interchange between rail and bus (currently not seamless). High quality passenger facilities to be provided including electronic information etc, increase capacity from existing 280 park and ride spaces, Electric Vehicles charging for bus and private car. Will include wider goals such as tying into, business development, green hub for technology etc.	£4-5 million
Porth Interchange	Rhondda Cynon Taf CBC	Transport interchange between bus and rail services within Porth is poor. The current on street set up, with its three main bus stops being 450 metres apart and removed from the railway station, prevents a seamless transition for those who use the buses and trains for onward journeys. There is no rail link to many of the surrounding communities, such as the Rhondda Fach, Trebanog, Tonyrefail and Gilfach Goch, and interchange at Porth is vital to allow commutable journeys, particularly to Pontypridd and Cardiff in the south, to be made by public transport. The vision is to transform Porth into a prosperous and attractive town, which offers a wide range of opportunities for visitors, residents and businesses, with improved connectivity to and from the surrounding areas being anchored by a Transport Hub and a regenerated “Station Quarter”. A site has been identified that has the potential for this Transport Hub, which will house a seven bay bus interchange, taxi rank and cycle racks, and have direct, adjacent, access to the station platforms and the Park and Ride.	£4-5 million
Barry Docks	Vale of Glamorgan Council	The VoG has a bus interchange identified in its LDP for Barry Docks to include rail, Park and Ride, active travel, bus and taxi. The rail, Park and Ride and some active travel have already been provided and the bus and taxi need to be addressed to ensure a seamless interchange. The regeneration section of the VoG have also identified the area between the Docks Office and the Gladstone Bridge to be in desperate need of regeneration. The Transport Minister also announced at the Cardiff Airport Master plan launch that Barry	£3-4 million

		is in need of bus interchange to feed into the airport and that TfW would be seeking to provide this. There are various options, and discussions have been ongoing with the predominant bus operator and the VoG to identify a suitable location. Feasibility is required on the specific land adjacent to the railway and Park and Ride site at Barry Docks to consider the land suitability and feasibility funding from the regional LTF pot is being allocated to carry out this work in 2018/19. It is anticipated that the bus interchange would include 4-5 bus bays, have provision for taxis and possibly extend the existing Park and Ride site which is at / overcapacity. The new rail franchise includes additional rail capacity on the line and currently all Park and Ride sites are at or over capacity within Barry. There is a regeneration intention to include a mixed use provision between the two locations identified along the rail corridor and a Targeted Regeneration Investment (TRI) bid has been submitted for this provision. A North – South Barry bus provision to link with the railway could reduce the congestion both on the Port Road / Culverhouse Cross corridor and the Dinas Powys corridor.	
Merthyr Bus Station and Pentrebach Station Park and Ride	Merthyr Tydfil CBC	**Merthyr Bus Station**: Fully developed project to deliver a new bus interchange and link between bus station and rail station (150 YARDS) within Merthyr Tydfil. New interchange to include 14 Bus stands and EV charging points. **Pentrebach Station Park and Ride**: The focus at Pentrebach is the regeneration of a significant brownfield site in Merthyr Tydfil that has been largely vacant for nearly 10 years. The South Wales Metro, with high frequency light rail connections, will be the catalyst for the development of a sustainable, mixed use, neighbourhood. Redevelopment of the area has the potential to maximise opportunities provided from planned transport infrastructure investment (increases in service capacity, Pentrebach station and park and ride improvements and a potential future new metro station) and to support 440 homes and employment land. Development at the 'Hoover Strategic Regeneration Area' will be informed by the development of a master plan. The Council has worked with Welsh Government and Transport for Wales to prepare a draft Framework Masterplan (June 2018) for the area. This has been informed by a providing a layout that indicates densities of between 30 to 45 dwellings per hectare. It has also identified 6.5 hectares of vacant and underused land for new employment use at the Willows/Abercanaid Industrial Estate. The Framework Master plan also seeks to reflect sustainable placemaking principles and reflect the legacy of the Hoover Factory site.	£500,000 Methyr Bus Station, £2.5 million Pentrebach Station Park and Ride
Park and Ride			

Pyle Park and Ride	Bridgend CBC	Implementation of a Park and Ride facility as part of the development of an integrated transport hub that serves the local community of Pyle and the nearby settlements of Porthcawl, Kenfig Hill, Cefn Cribwr and Cornelly. Due to the station's proximity to the town of Porthcawl, it is ideally placed to provide access to the South East Wales Metro network for the existing residents, and those that will be attracted due to the planned regeneration proposals within the town. The existing 23-space car park at Pyle, including 2 disabled bays, are located on the westbound side of the railway with an informal parking area available on the eastbound side which serves Pyle RFC. An initial business case assessment was undertaken in 2013 which suggested that the formal car park was operating over capacity, and that a minimum of 75 additional spaces be considered as part of the development of any future proposals. The most recent figures for Pyle station usage from 2016/17 show that 118,910 journeys were made from the station, an increase of 35% from the levels recorded in 2011/12. The scheme will therefore include the design and delivery of an additional Park and Ride facility that can cater for current demand and future growth based on an updated business case. The proposal will also include appropriate Active Travel connections to maximise accessibility of the station for local residents, and will improve links to the nearby Village Farm Industrial Estate which is located 500m east of the station. The enhanced Park and Ride facilities will also give full consideration to the inclusion of EV charging points, and the provision of additional cycle parking facilities where deemed appropriate.	£3 million
Severn Tunnel Junction	Monmouthshire County Council	The scheme proposes to provide an additional 150-200 space car park on the south side of Severn Tunnel Junction station. There is currently a substantial shortfall of spaces, which creates problems within the existing car park and nearby streets. The scheme will enable reconfiguration of the existing (north-side) station car park including more than 40 additional bike & ride spaces, safer walking & cycling access, a revamped bus-rail interchange, EV charging spaces and potentially an improved station building (with ticket office, café, shop, WC).	£3-4 million
Pontypool and New Inn Station	Torfaen CBC	Opportunity to provide at least 200 spaces including EV charging. The aim of the scheme is to break the current cycle of poor facilities/services by providing an interchange provision so that the station acts as a key hub for regional travel for the area. The proposed enhancements	£3-4 million

		at Pontypool and New Inn Rail Station includes a new Park and Ride which will be accessed from the A4042 trunk road, DDA compliant platform access and improved station facilities including cycling facilities. The station is a potential interchange point with passengers from the 'Eastern Valley' including Blaenavon, Abersychan, Pontypool, New Inn, and also for Usk and the West of Monmouthshire. This station will support the nearby proposed Mamhilad development with a current allocation of 1,800 dwellings. The station has to date benefited from WG investment for both physical improvements and design and development works for the creation of a strategic park and ride served off the A4042(T) with associated accessibility improvements. The former has consisted of the improvement of parking, pedestrian and cycling facilities and included the provision of a bus stop and turning area to accommodate any future interchange facilities. Allied to this work, Active Travel improvements have been undertaken to better connect the station to the surrounding area and facilities.	
Bus Priority			
Newport to Cardiff	Newport City Council	The Newport to Cardiff Bus Corridor links a number of significant trip attractors in the Cardiff Capital Region, including: • Cardiff City Centre • Newport Road Retail Park • St Mellons Business park • Cleppa Park/IQE Semi-conductor plant • Office of National Statistics / Patent Office • Royal Gwent Hospital • Newport City Centre • Wales International Conference Centre Services on this corridor suffer from extended journey times (current schedules indicating a time of circa 1 hour to undertake the 15-mile journey), with operators confirming services are subject to considerable	£3-4 million

		journey time variability. There is also a lack of consistency in roadside infrastructure, which does not present a coherent offer to potential users. It is proposed that an improvement package is developed to address these issues to provide a high-quality public transport link that showcases bus travel in the region. This will include: • Consistent, high-quality roadside infrastructure to promote and facilitate increased bus use. • Improved journey time and consistency resulting in reduced generalised journey times for users and operational efficiencies The scheme will also provide the foundation to introduce a Park and Ride facility to the East of Newport and could be operated by vehicles using more environmentally sustainable forms of propulsion, including opportunity charging for Electric Vehicles.	
East Cardiff	Cardiff City Council	The City Centre East project will incorporate a series of sustainable and active travel packages that will enable improved bus connections in Cardiff City Centre, improved active travel infrastructure and pedestrian safety improvements. The infrastructure improvements will benefit local and regional transport through providing improved sustainable connections to key transport hubs, employment zones and visitor destinations. Improvements include: • New bus priority measures to connect local and regional buses through the east and south of the city to: o The Enterprise Zone; o Queen Street Station; o Retail Quarter (St David's Shopping Centre); o Central Square; o The Transport Interchange; o Central Quay; o Cardiff Bay. • Bus priority measures that will allow buses to service the Transport Interchange on major event days	£5-6 million

		• Installation of Central Cycle Superhighway Section that will connect and link all 4 superhighways to the city centre. • Pedestrian Crossing and Public Realm Improvements on/to: o Dumfries Place; o Station Terrace; o Queen St Station; o Stuttgart Strasse. • 20mph Zone and traffic calming measures • Air Quality Improvements (outside of Queen Street Station) • Cycle Parking and Next Bike • Charging Points (TBC)	

The collective benefits of this Metro Plus RTA Programme are greater than if implemented as individual schemes.

This report is not intended to provide evidence as to the selection process of how schemes have been chosen for the Metro Plus RTA programme. This work has already been undertaken and documented. This report provides an outline of the potential collective benefits of the programme as a whole, in supporting implementation of the South Wales Metro by outlining some of the potential outputs, outcomes and opportunities.

Evidence presented within this report will support the application for Cardiff Capital Region City Deal funding.

1.2 Wider Context

The Metro Plus RTA Programme does not operate in isolation and will impact upon and be influenced by a range of wider contextual aspects. In many cases these impacts will be positive, with The Metro Plus RTA Programme providing wide ranging benefits.

Below is a summary of some of the current wider contextual issues and how the Metro Plus RTA Programme may influence these.

Carbon Reduction, Improving Air Quality and Health Benefits; - A new report (2018) led by King's College London and published by the government's Committee on the Medical Effects of Air Pollutants (COMEAP) estimates that between 28,000 and 36,000 people die as a result of air pollution every year in the UK[2]. The Environmental (Wales) Act places a duty on Welsh Ministers to ensure that in 2050 net C02 emissions are at least 80% lower than baseline set in legislation. Local authorities also have a requirement to manage air quality issues and hit targets set in plans for Air Quality Management Areas. The Metro plus programme provides a positive contribution to reducing carbon through the reduction of single occupancy car trips through facilitation of modal shift to sustainable public transport options. A reduction in car trips will also help to address improvements in Air quality leading to widespread health benefits.

Electric Vehicle Charging Opportunities –There is a separate study currently being undertaken by Cenex looking at the opportunities for how the Metro RTA Plus programme can adopt electric charging technology at all sites in the programme and how this can be integrated in to the programme for cars, and bus network, as well as defining what types of charging provision should be implemented and the operating models available. There are benefits not only in terms of sustainability and carbon reduction from the adoption of electric vehicle charging, but also to potential revenue generation and the potential to foster new innovative industries from the adoption of new technology on a wide scale across the programme (the Metro Plus RTA Programme could provide the critical mass for project start-ups in this area). This could provide employment opportunities in new innovative industries.

Issuing of White Paper on Improving Public Transport from Welsh Government[3] - In December 2018 the Welsh Government issued a white paper on proposals to legislate for

[2] https://www.kcl.ac.uk/news/news-article.aspx?id=41ef9e91-5796-4344-948b-8d7c0045bdfc – date accessed 9th Jan 2019

[3] Welsh Government, Consultation Document, Improving public transport, A Welsh Government White Paper on proposals to legislate for reforming the planning and delivery of local bus services and licensing of taxis and private hire vehicles, 10 December 2018

reforming the planning and delivery of local bus services and licensing of taxis and private hire vehicles. Local bus services are very important to the transport network in south wales as buses continue to account for about 100 million passenger journeys each year. This white paper highlights that improvements in the quality of bus journeys is needed across the welsh network. The Metro Plus RTA Programme includes improvements to the key Cardiff to Newport bus corridor which would see improvements in provision of facilities and journey quality, as will the East Cardiff proposals.

Industrial and Economic Plan - The Industrial and Economic Plan takes the principles and themes within the JWA Five Year Business Plan, the Welsh Government Economic Action Plan, and the UK government Industrial Strategy, and articulates an industrial and economic plan for the Cardiff Capital City region. This will guide and influence future funding recommendations made by the Regional Economic Growth Partnership to Regional Cabinet.

The Industrial and Economic Plan that is under development will set out an ambitious and long-term plan to boost productivity, accelerate economic and inclusive growth in the region. The Plan aims deliver sustainable and inclusive growth, whilst supporting the objectives of boosting competitiveness and tackling inequalities. The Metro Plus Programme will help to achieve the Plans aims through providing a sustainable transport network which will improve access and thus assist in accelerating economic growth in the region. The programme schemes will be open to all (public transport schemes) helping to tackle inequalities.

1.3 Report Structure

This report is structured as follows:

- Chapter 2 – presents an appraisal of the programme and its schemes against the CCRCD Strategic Objectives and Wellbeing objectives;
- Chapter 3 – provides an outline of the potential collective benefits of the programme;
- Chapter 4 – provides a conclusion to the report.

2. Strategic Objectives

2.1 Introduction

To ensure strategic fit of the Metro Plus RTA Programme, an assessment has been undertaken as to the potential impact of the programme (and its individual schemes) in achieving the CCRCD objectives and themes and its impact on the Wellbeing of Future Generations Act (Wales) 2015.

2.2 CCRCD Objectives

Any programme seeking CCRCD funding streams need to demonstrate that it will positively impact in achieving the strategic objectives, help address the key strategic themes and aid in achieving the CCRCD measures of success such as job creation, private sector leverage, employment and skill levels, productivity levels and GVA.

CCRCD strategic objectives are split into three main themes:

- **Propensity and Opportunity** - Building the capacity of individuals, households, public sector and businesses to meet challenges and grasp opportunity creating a more productive economy;
- **Inclusion & Equality and Culture** - A vibrant and sustainable economy which contributes to the well-being and quality of life of the people and communities in the region now and in the future;
- **Community & Sustainability** - Forging a clear identity and strong reputation as a City-Region for trade, innovation, and quality of life.

The CCRCD strategic themes are:

- **Skills & Employment** - Developing a Skilled Workforce and Tackling Unemployment
- **Connecting the Region** - Improving Connectivity Globally, Regionally and Locally
- **Innovation** - Creating an Innovation District and Increasing Entrepreneurial Activity and Innovation
- **Regeneration & Infrastructure** - Providing the right physical place and environment to support growth

Methodology of Assessment

A qualitative appraisal has been undertaken of the impact of the Metro Plus RTA Programme (and of its individual schemes) against the CCRCD objectives. Appraisal has been based on existing known data and no new primary data has been collected.

Impact has been scored using a seven point 'Likert' scale:

Large positive (+ + +)
Moderate positive (+ +)
Slight positive (+)
Neutral (0)
Slight negative (-)
Moderate negative (- -)
Large Negative (- - -)

No weighting has been applied to any of the assessment criteria.

A qualitative appraisal has also been provided of how the programme will address the key themes of CCRCD.

Results

CCRCD Strategic Objectives

Table 2.1 outlines the results of the appraisal of the Metro Plus RTA Programme (and its individual schemes) against the CCRCD strategic objectives.

Table 2.1 - Appraisal of Schemes and Package Against Cardiff Capital Region Strategic Objectives

Option Ref.	Option	Cardiff Capital Region Strategic Objectives																				
		Prosperity & Opportunity								Inclusion & Equality						Culture, Community & Sustainability						
		Building the capacity of individuals, households, public sector & businesses to meet the challenges & grasp opportunity creating a more productive economy	Providing the right infrastructure including connectivity by means of good transport links and high-speed broadband	Encouraging a culture of innovation and entrepreneurship by providing the right skills, opportunities and support to engender a confidence to be creative	Ensuring that the city-regions labour market is equipped with the skills that businesses need	improving public sector efficiency and effectiveness by new ways of working	Supporting all businesses to become more productive, from small retail to large advanced manufacturers	Enhancing the business climate for emerging sectors, enterprises and innovation	Encourage and promote research and development and entrepreneurial enterprise	A vibrant and sustainable economy which contributes to the well-being and quality of life of people and communities now and in the future	Access to employment and economic opportunities	Participation in the labour market for all members of society	Access to a range of housing, including affordable	Access to education and training to develop skills	Access to social and recreational opportunities	Forging a clear identity and strong reputation as a City-Region for trade, innovation, and quality of life	Ensure our urban centres are vibrant and vital with unique identities which all of the regions residents can use and be proud of	Respect, protect and support our rural and natural environment and use it to promote economic and social outcomes	Develop and promote our world-class cultural and recreational opportunities utilising the regions natural beauty and historic areas	Provide a quality environment across the whole region including existing and new development that attracts businesses and talented people	Demonstrate our commitment to a sustainable future and acknowledge our global responsibility	Work with political and commercial partners, at a national, regional and local level to coordinate the promotion of the region
	Interchanges																					
1	EVR / Abertillery Spur & Interchange	+	+++	0	+	0	0	++	0	++	++	+	0	+	+	+	+	+	+	+	++	+
2	Caerphilly Interchange	+	++	0	+	0	0	+	0	++	++	+	0	+	+	+	++	0	+	+	++	+
3	Porth Interchange	+	+++	0	+	0	0	++	0	++	++	+	0	+	+	+	++	0	+	+	++	+
4	Barry Docks Interchange	+	+++	0	+	0	0	++	0	++	++	+	0	+	+	+	++	0	+	+	++	+
5	Merthyr Bus Station / Pentrebach Park and Ride	+	++	0	+	0	0	++	0	++	++	+	0	+	+	+	++	0	+	+	++	+
	Park and Ride																					
6	Pyle Park and Ride	+	++	0	+	0	0	+	0	++	++	+	0	+	+	+	+	0	+	+	++	+
7	Severn Tunnel Junction Park and Ride	+	++	0	+	0	0	+	0	++	++	+	0	+	+	+	+	+	+	+	++	+
8	Pontypool and New Inn Park and Ride	+	++	0	+	0	0	+	0	++	++	+	0	+	+	+	+	+	+	+	++	+
	Bus Priority																					
9	Newport to Cardiff	+	+++	0	+	0	0	++	0	++	++	+	0	+	+	+	+	0	+	+	++	+
10	East Cardiff	+	+++	0	+	0	0	++	0	++	++	+	0	+	+	+	+	0	+	+	++	+
	Metro Plus RTA Programme	+	+++	0	+	0	0	++	0	++	++	+	0	+	+	+	+	+	+	+	++	+

KEY

Large positive (+ + +)
Moderate positive (+ +)
Slight positive (+)
Neutral (0)
Slight negative (-)
Moderate negative (- -)
Large Negative (- - -)

Table 2.1 shows that the programme will have a positive impact on the majority of strategic objectives. It therefore has a strong strategic fit with objectives of the CCRCD. The impact of the programme on each of the strategic objective themes is discussed below.

Prosperity and Opportunity

Overall the Metro Plus RTA Programme will have a slight to large positive impact on the strategic objectives contained within the Prosperity and Opportunity theme.

In particular the programme will greatly assist in providing the right infrastructure to improve connectivity by means of good transport links. Those schemes where new links or improvements in corridors are to be implemented are likely to have the largest benefit for example, Ebbw Valley Rail / Abertillery Spur.

As a whole, connectivity across the region will improve through implementation of the programme. All of the combined improvements in interchanges, Park and Ride and bus priority will assist in creating a seamless network allowing ease of transfer between modes. This will facilitate ease of access for communities across south east Wales, for those with and without access to a private car thereby improving connectivity to a range of services.

The Metro Plus RTA Programme will also improve connectivity to the South Wales Metro, permitting regional connectivity throughout south east Wales and further beyond.

The programme will also support a more productive economy through an increase in access to the South Wales transport network. This will allow for individuals, households, public sector and businesses to grasp new opportunities, from the enhanced access provided by new and improved transport options.

All of the transport improvements contained within the programme will improve access throughout the south east Wales region. This will help increase the skills base of the labour market, through providing means of access to new educational, employment, healthcare and training opportunities.

Inclusion and Equality

The Metro Plus RTA Programme will have a moderate beneficial impact on creating a vibrant and sustainable economy which contributes to the well-being and quality of life for people and communities now and in the future.

All of the transport interventions included within the programme will support, promote and enhance sustainable travel, thus contributing to the development of a sustainable economy. Sustainable travel also promotes long term well-being and the quality of life of people and communities.

The programme will facilitate improved access to employment and therefore new economic opportunities. All of the transport interventions within the programme are public transport based, thus will provide enhanced and new employment access opportunities, particularly for those sectors of society without a private car (helping address deprivation where caused by a lack of access to transport). Improving access for those sectors of society without a private car,

demonstrates the programmes ability to contribute towards permitting participation in the labour market for all members of society.

New and enhanced public transport provision will also improve access to education and training, healthcare and social and recreational opportunities, all of which will promote inclusion and equality across south east Wales.

Culture, Community and Sustainability

The Metro Plus RTA Programme will provide new and enhanced public transport facilities, which will feed into the wider network of South Wales Metro improvements. This will collectively contribute to forging a clear identity and strong reputation as a City-Region that has a good quality of life, with an interconnected high quality transport network.

All of the schemes within the Metro Plus RTA Programme will help to ensure that urban centres are vibrant and vital with unique identities which all of the regions residents can use and be proud of. In particular Caerphilly Interchange, Porth Interchange, Barry Docks Interchange and Merthyr Bus Station will link to wider town centre regeneration schemes, to create a sense of place and identity. These key interchanges (along with the other transport improvements within the programme) will deliver people into key urban centres making them vibrant places, with transport facilities often providing the hub around which the urban centre operates and develops.

Many interventions within the programme will help to 'respect, project and support the rural and natural environment' to promote economic and social outcomes through provision of improved sustainable transport facilities and improved transport access into and out of rural communities. For example, Severn Tunnel Junction improvements will improve access for communities within rural Monmouthshire.

In relation to this, the Metro Plus RTA Programme will have a beneficial impact on developing and promoting world- class cultural and recreational opportunities through opening up access to areas of natural beauty and historic importance, thus promoting tourism within the South Wales region. By implementing a programme of transport measures which connect into the wider Metro network, the region as a whole becomes easier to travel around thus promoting the South Wales area as a whole offering.

As the Metro Plus RTA Programme includes investment across the whole of south east Wales it will improve the quality of the region as a whole. This is likely to encourage new inward investment as businesses have access to a wide pool of potential resources, who can easily travel around the region to access new job and training opportunities.

The programme clearly demonstrates a commitment to a sustainable future, as all of the transport interventions include focus on facilitating and promoting sustainable transport access. Through a programme of measures that support the Metro, south east Wales will become a region that is easy to navigate by seamless passenger transport.

Through implementation of a programme of measures that are supported by ten local authorities, co-ordinated working between political and commercial partners will be promoted at a regional level.

The Metro Plus RTA Programme is likely to have the greatest positive overall impact on the objectives included within Culture, Community and Sustainability and Inclusion and equality.

CCRCD Strategic Themes

Skills & Employment

The Metro Plus RTA Programme of schemes will assist in tackling unemployment and growing a skilled workforce. During construction of the schemes, direct and indirect employment opportunities will be created in the form of apprenticeships within the construction sector and direct permanent employment opportunities within the programme itself. For example, a link between Abertillery and the Ebbw Valley Railway whether a heavy, light rail or guided bus option would require operators and service staff in addition to providing indirect employment opportunities throughout the construction supply chain.

Connecting the Region

The Metro Plus RTA Programme of schemes directly supports and promotes access to and usage of the Metro. Key aims to the Metro include providing a 'truly turn up and go service'. Interchange improvements along with park and ride included within the programme will permit this. Furthermore the key aim of Metro is to connect people, communities and business to employment, services, facilities and markets through reliable and resilient infrastructure. The programme (new park and ride facilities, improved interchanges and seamless interchange between modes, new and improved bus services and facilities) directly provides this reliable and resilient infrastructure to permit connected travel throughout the south east Wales region.

The Metro Plus RTA Programme will facilitate not only local connectivity but also regional and global connectivity by directly supporting access to the Metro which ties into national services at key hubs such as Newport and Cardiff, as well as internationally via Cardiff airport.

Innovation

Having a well-connected regional area which enables access to a wide range of skills, services and resources will assist in promoting entrepreneurial activity and fostering innovation. Enabling new start-up businesses access to a skills market and resources via an integrated and forward thinking transport network, attract new innovation districts to form.

The development of new transport schemes which can utilise new technologies such as electronic charging points and electronic vehicles etc within is operation and design will also allow formation of new industries to supply these services.

Regeneration and Infrastructure

Transport is key to promoting and supporting growth and providing the right physical place. Many of the elements of the Metro Plus RTA Programme will include schemes that will provide an improvement to physical place by providing a new hub to a town centre. Radiating from these hubs is wider improvements that will aid in promoting town centre growth and economic development.

The programme will supplement the Metro providing a sustainable and integrated future transport network for South Wales.

2.3 Well-being of Future Generations Act (Wales), 2015

The Well-being of Future Generations (Wales) Act is about improving the social, economic, environmental and cultural well-being of Wales. The Act puts in place seven well-being goals:

(1) A globally responsible Wales;
(2) A Wales of vibrant culture and thriving Welsh Language;
(3) A Wales of cohesive Communities;
(4) A more equal Wales;
(5) A healthier Wales;
(6) A resilient Wales; and
(7) A prosperous Wales.

Table 2.2 shows the impact of the individual options and the Metro Plus RTA Programme as a whole against the goals of the Well-Being of Future Generations (Wales) Act 2015 (using the 7 point 'likert' scale detailed in section 2.2). Table 2.2 also includes a review of the impact of the individual schemes and the Metro Plus RTA Programme against the well-being objectives of each of the ten local authorities within which the programme will be implemented.

It can be seen that overall the Metro Plus RTA Programme will have a positive impact on the Well-being of Future Generations Act (Wales), 2015 goals. Being a programme that is focused on the provision and improvement of sustainable transport, it helps in particular to achieve the goals of a 'globally responsible Wales', 'A Wales of cohesive communities', 'a healthier Wales' and 'a prosperous Wales'.

In terms of the programme impact on local authority well-being goals, again a positive impact can be seen. In particular the Metro Plus RTA Programme will help to achieve goals that aim to tackle poverty and deprivation, improve access to skills, improve employment opportunities and also provide improved infrastructure and healthier communities.

The Well-being of Future Generations (Wales) Act 2015 also details five ways of working to enable the act. These have been considered in developing the programme:

- **Long Term** – In developing the programme long terms trends have been analysed. For example, the need to provide for electric powered vehicles at all sites with the programme has been investigated. A separate report produced by Cenex has considered how electric vehicle charging can be provided, what type of provision is required and the operating model for implementation. The Metro Plus RTA programme also looks to address future trends such as population increases and decreases, providing increased public transport capacity and helping to prevent out-migration from some communities through improved access.
- **Prevention** – The Metro Plus RTA Programme is designed to prevent further environmental damage from transport through the promotion and development of a sustainable transport network.
- **Integration** – The Metro Plus RTA Programme has been developed with consideration to a wide range of contextual factors. Strategic fit of the programme has been considered along with a number of other wider issues such as carbon reduction.

- **Collaboration** – The Metro Plus RTA Programme has been formed through collaborative working by ten local authorities (Caerphilly CBC, Cardiff CC, Bridgend CBC, Newport CC, Vale of Glamorgan Council, Rhondda Cynon Taf CBC, Merthyr Tydfil CBC, Monmouthshire CC, Torfaen CBC, Blaenau Gwent CBC). The Well-being objectives of each of the local authorities have been considered when developing the programme.
- **Involvement** – The final Metro Plus RTA Programme has been formed through a process of appraisal, with stakeholder input. A long list of options has been sifted to the final list of schemes included within the programme. The recommended final Metro Plus RTA Programme has been agreed with all ten south east Wales local authorities and will be subject to further approval with CCRCD board members and Welsh Government representatives.

Table 2.2 - Appraisal of Schemes and Package Against Well-being Objectives

Well-being of Future Generations (Wales) Act 2015 Goals / Monmouthshire CC Wellbeing Objectives / Rhondda Cynon Taf CBC Wellbeing Objectives

Option Ref.	Option	A globally responsible Wales	A Wales of vibrant culture and thriving Welsh language	A Wales of cohesive communities	A more equal Wales	A healthier Wales	A resilient Wales	A prosperous Wales	Provide children and young people with the best possible start in life	Respond to the challenges associated with demographic change	Protect and enhance the resilience of our natural environment whilst mitigating and adapting to the impact of climate change	Develop opportunities for communities and businesses to be part of an economically thriving and well-connected county	Economy – building a stronger community;	People – promoting independence and positive lives for everyone;	Place – creating neighbourhoods where people are proud to live and work.
	Interchanges														
1	EVR / Abertillery Spur & Interchange	+	0	++	++	+	0	++	0	+	++	+	++	+	++
2	Caerphilly Interchange	+	0	+	+	+	0	+	0	+	++	+	++	+	++
3	Porth Interchange	+	0	+	+	+	0	+	0	+	++	+	++	+	++
4	Barry Docks Interchange	+	0	+	+	+	0	+	0	+	++	+	++	+	++
5	Merthyr Bus Station / Pentrebach Park and Ride	+	0	+	+	+	0	+	0	+	++	+	++	+	++
	Park and Ride														
6	Pyle Park and Ride	+	0	+	+	+	0	+	0	+	++	+	++	+	+
7	Severn Tunnel Junction Park and Ride	+	0	+	+	+	0	+	0	+	++	+	++	+	+
8	Pontypool and New Inn Park and Ride	+	0	+	+	+	0	+	0	+	++	+	++	+	+
	Bus Priority														
9	Newport to Cardiff	+	0	+	+	++	0	+	0	+	++	+	++	+	+
10	East Cardiff	+	0	+	+	++	0	+	0	+	++	+	++	+	+
	Metro Plus RTA Programme	+	0	+	+	+	0	+	0	+	++	+	++	+	++

Bridgend CBC Wellbeing Objectives / Blaenau Gwent CBC Wellbeing Objectives

Option Ref.	Option	Wellbeing Objective: Best start in life	Wellbeing Objective: Support communities in Bridgend County to be safe and cohesive	Wellbeing Objective: Reduce social and economic inequalities	Wellbeing Objective: Healthy choices in a healthy environment	1. Create a better, enhanced environment and infrastructure that will benefit our communities, businesses and visitors.	2. Continue to improve learner outcomes and well-being so that all children and young people thrive and realise their full potential	3. We will be a modern, smart Authority, providing leadership to enable people and communities to thrive	4. Take a preventative and early intervention approach to support the most vulnerable ensuring, where appropriate, they are protected and supported to achieve personal outcomes and well-	5. Maximise the employability of local people through skills development at a local and regional level	6. Enabling older people to feel valued and empowered to maximise their independence and lead healthy and engaged lives	7. Support citizens to take an active and empowered role in their communities to provide resilience
	Interchanges											
1	EVR / Abertillery Spur & Interchange	0	0	+	+	+++	0	0	0	+	+	0
2	Caerphilly Interchange	0	0	+	+	+++	0	0	0	+	+	0
3	Porth Interchange	0	0	+	+	+++	0	0	0	+	+	0
4	Barry Docks Interchange	0	0	+	+	+++	0	0	0	+	+	0
5	Merthyr Bus Station / Pentrebach Park and Ride	0	0	+	+	+++	0	0	0	+	+	0
	Park and Ride											
6	Pyle Park and Ride	0	+	+	+	+++	0	0	0	+	+	0
7	Severn Tunnel Junction Park and Ride	0	0	+	+	+++	0	0	0	+	+	0
8	Pontypool and New Inn Park and Ride	0	0	+	+	+++	0	0	0	+	+	0
	Bus Priority											
9	Newport to Cardiff	0	0	+	+	+++	0	0	0	+	+	0
10	East Cardiff	0	0	+	+	+++	0	0	0	+	+	0
	Metro Plus RTA Programme	0	0	+	+	+++	0	0	0	+	+	0

Caerphilly CBC Wellbeing Objectives / Cardiff CC Wellbeing Objectives

Option Ref.	Option	1. Tackling Poverty: Maximising Income	2. Improve Outcomes for all learners, particularly those vulnerable to under-achievement	3. Close the gap in life expectancy for residents between the most and least deprived areas in the borough	4. Carbon management: Reduce our carbon footprint	5. Investment in Council homes to transform lives and communities	1. Strengthen Cardiff's role as the economic and cultural capital city of Wales, supporting the development of the Capital Region and ensuring that the City Deal and the Cardiff Metro deliver for the people of Cardiff and Wales.	2. Seek to make sure that Cardiff has the funding and fiscal powers it needs to lead the Welsh economy and deliver capital city infrastructure and services on behalf of the people of Wales.	3. Understand the impact of Brexit on Cardiff's economy, public services and communities and develop the city's response, including the shape of any successor programmes for European funding	4. Continue to deliver major events in the city, building on the success of the Champions League Final, in partnership with Welsh Government and the private sector.	5. Aim to double the number of Welsh speakers in Cardiff by 2050 through supporting the delivery of the Bilingual Cardiff Strategy
	Interchanges										
1	EVR / Abertillery Spur & Interchange	++	0	+	+++	0	+++	0	0	+	0
2	Caerphilly Interchange	++	0	+	+++	0	+++	0	0	+	0
3	Porth Interchange	++	0	+	+++	0	+++	0	0	+	0
4	Barry Docks Interchange	++	0	+	+++	0	+++	0	0	+	0
5	Merthyr Bus Station / Pentrebach Park and Ride	++	0	+	+++	0	+++	0	0	+	0
	Park and Ride										
6	Pyle Park and Ride	++	0	+	+++	0	+++	0	0	+	0
7	Severn Tunnel Junction Park and Ride	++	0	+	+++	0	+++	0	0	+	0
8	Pontypool and New Inn Park and Ride	++	0	+	+++	0	+++	0	0	+	0
	Bus Priority										
9	Newport to Cardiff	++	0	+	+++	0	+++	0	0	+	0
10	East Cardiff	++	0	+	+++	0	+++	0	0	+	0
	Metro Plus RTA Programme	++	0	+	+++	0	+++	0	0	+	0

Merthyr Tydfil CBC Wellbeing Objectives / Newport CC Wellbeing Objectives

Option Ref.	Option	BS 1: Children get the best start to life	BS 2: Children and young people are equipped with the skills they need to be successful learners and confident individuals	WL 1: Making skills work for Merthyr Tydfil: Developing the workforce of the future	WL 2: Developing the environment and infrastructure for business to flourish	EW 1: Communities protect, enhance and promote our natural environment and countryside	EW 2: Communities protect, develop and promote our heritage and cultural assets	LW 1: Developing safer communities	LW 2: People have good physical and mental health	LW 3: People live independently	1. People feel good about living, working, visiting and investing in Newport.	2. People have skills and opportunities to find suitable work and generate sustainable economic growth	3. People and communities are friendly, confident and empowered to improve their wellbeing	4. Newport has healthy, safe and resilient communities
	Interchanges													
1	EVR / Abertillery Spur & Interchange	0	0	+	+++	0	0	0	+	+	+	+++	0	+
2	Caerphilly Interchange	0	0	+	+++	+	0	0	+	+	+	+++	0	+
3	Porth Interchange	0	0	+	+++	+	0	0	+	+	+	+++	0	+
4	Barry Docks Interchange	0	0	+	+++	+	0	0	+	+	+	+++	0	+
5	Merthyr Bus Station / Pentrebach Park and Ride	0	0	+	+++	+	0	0	+	+	+	+++	0	+
	Park and Ride													
6	Pyle Park and Ride	0	0	+	+++	+	0	0	+	+	+	+++	0	+
7	Severn Tunnel Junction Park and Ride	0	0	+	+++	+	0	0	+	+	+	+++	0	+
8	Pontypool and New Inn Park and Ride	0	0	+	+++	+	0	0	+	+	+	+++	0	+
	Bus Priority													
9	Newport to Cardiff	0	0	+	+++	+	0	0	+	+	+	+++	0	+
10	East Cardiff	0	0	+	+++	+	0	0	+	+	+	+++	0	+
	Metro Plus RTA Programme	0	0	+	+++	+	0	0	+	+	+	+++	0	+

Torfaen CBC Wellbeing Objectives / Vale of Glamorgan Wellbeing Objectives

Option Ref.	Option	1. Develop a functional, connected network of natural areas that support the current and future well-being needs of local	2. Develop adaption and mitigation responses to the impacts of climate change	3. Provide children and young people with the best possible start in life	4. Prevent or limit the impact of chronic health conditions through supporting healthy lifestyles and enabling people to age well	5. Tackle the inter-generational patterns of poverty and develop economic resilience	6. Improve local skills through work-force planning, training, apprenticeships, and volunteering opportunities	7. Create safe, confident communities and promote community cohesion	Wellbeing outcome 1: Citizens of the Vale of Glamorgan have a good quality of life and feel part of their local community 1) Reduce poverty and social exclusion 2) Providing decent homes and safe communities	Wellbeing outcome 2: The Vale of Glamorgan has a strong and sustainable economy and the local environment is safeguarded for present and future generations 3) Promoting regeneration, economic growth and employment 4) Promoting sustainable development and protecting our environment	Wellbeing outcome 3: All Vale of Glamorgan citizens have opportunities to achieve their full potential 5) Raising overall standards of achievement 6) Valuing culture and diversity	Wellbeing outcome 4: Residents of the Vale of Glamorgan lead healthy lives and vulnerable people are protected and supported 7) Encouraging and promoting active and healthy lifestyles 8) Safeguarding those who are vulnerable and promoting independent living
	Interchanges											
1	EVR / Abertillery Spur & Interchange	+	++	0	+	++	++	0	+	++	0	+
2	Caerphilly Interchange	+	++	0	+	++	++	0	+	++	0	+
3	Porth Interchange	+	++	0	+	++	++	0	+	++	0	+
4	Barry Docks Interchange	+	++	0	+	++	++	0	+	++	0	+
5	Merthyr Bus Station / Pentrebach Park and Ride	+	++	0	+	++	++	0	+	++	0	+
	Park and Ride											
6	Pyle Park and Ride	+	++	0	+	++	++	0	+	++	0	+
7	Severn Tunnel Junction Park and Ride	+	++	0	+	++	++	0	+	++	0	+
8	Pontypool and New Inn Park and Ride	+	++	0	+	++	++	0	+	++	0	+
	Bus Priority											
9	Newport to Cardiff	+	++	0	+	++	++	0	+	++	0	+
10	East Cardiff	+	++	0	+	++	++	0	+	++	0	+
	Metro Plus RTA Programme	+	++	0	+	++	++	0	+	++	0	+

KEY

Large positive (+ + +)
Moderate positive (+ +)
Slight positive (+)
Neutral (0)
Slight negative (-)
Moderate negative (- -)
Large Negative (- - -)

3. Evidence of Collective Benefits

3.1 Introduction

Implementation of the Metro Plus RTA Programme of scheme will bring collective benefits. Just as the Metro is greater than the sum of its parts, so too will the proposed programme be in supporting the Metro and providing an integrated sustainable transport network across south east Wales.

This chapter presents evidence of the collective benefits of the programme helping to demonstrate the:

- Outputs;
- Outcomes; and
- Opportunities.

3.2 Outputs

Primary Outputs

The primary outputs of the programme are detailed in Table 3.1. These outputs would be achieved on completion of the programme.

Table 3.1 – Primary Outputs of the Programme

	Output
Number of interchanges improved	9
Approximate KM's of passenger transport network improved or provided	32 km (Newport to Cardiff 26km [4] and Abertillery Spur 6km [5])
Number of new park and ride spaces provided	453[6]

Targeted Regeneration Investment (TRI)

The Metro Plus RTA Programme also aligns with the Targeted Regeneration Investment (TRI) bids, which are for schemes to be delivered between 2018 and 2021 and beyond. Improved access provision, transport network development and transport options will help to support the regeneration of an area by attracting inward investment and enabling access to labour markets.

The outputs of the following TRI bids which would be supported by the Metro Plus RTA Programme are shown in Table 3.2.

In summary the Metro Plus RTA Programme will support via the TRI bids:

[4] Based on journey from Newport Bus Station to Customhouse Street Cardiff using AA Route Planner for distance

[5] Based on approx. 4 mile spur implemented

[6] Excludes Ebbw Valley / Abertillery Spur as P&R spaces unknown at present, Caerphilly P& R where increase in numbers unknown, Pentrebach where increase in numbers unknown, Barry Docks unknown as at early stage. Estimated 156 extra at Pontypool and New Inn, 75 additional at Pyle, 150 STJ and 72 Porth.

- 393 gross jobs to be created;
- 260 construction sector jobs to be created; and
- 47 traineeships;

Table 3.2 – TRI Bids and Outputs Supported by Metro Plus RTA Programme

TRI Scheme Promoted by Metro Plus RTA Programme	Outputs
CAERPHILLY / YSTRAD MYNACH CORRIDOR: Year 1 TRI Project activity will be targeted within the identified strategic hub of the Caerphilly/Ystrad Mynach Corridor as set out in the TRI Regional Regeneration Plan, specifically the "Southern Caerphilly Investment" area within Caerphilly Basin. TRI investment will focus initially within the retail core of Caerphilly Town Centre, with project activity branching out in a phased manner to surrounding areas. Priority Project for Year 1 are: (**a) Park Lane Hotel Development** – Purchase of 25 Caerphilly Rd (former SpecSavers Building) for the redevelopment of this prime site for leisure/recreational use in close proximity of the historic Caerphilly Castle and within the main retail core of the town. The project is a key element of the wider tourism regeneration strategy for Caerphilly which has the Castle as its focus. The project will bolster the tourism offer by creating a more diverse town centre that includes quality accommodation, increases dwell time and produces a strong day and night time economy. **(b) Caerphilly Transport and Investment Hub** - redevelopment of the existing station and surrounds to create a Metro "Hub" supported by mixed use development of adjacent sites and premises within Southern Caerphilly, improving connectivity to the Station and revitalising this area of the Town Centre **(c) Caerphilly Ness Tar Site** - redevelopment of a brownfield site in a prime location at the edge of the Town Centre for mixed use development, residential and B1 Class Use (**d) Lansbury Park Estate Regeneration Stage 1:** an ambitious regeneration enhancement plan for the reconfiguration of the Estate, the most deprived LSOA in Wales, including a comprehensive series of environmental and landscaping schemes, public realm improvements and improved connectivity to the Town Centre, with the aim of helping the economically and socially marginalised community reconnect with employment opportunities. Delivered in parallel to the above projects will be the TRI Thematic of the Urban Centre Property Enhancement Fund Stage 1 which will target underutilised or redundant buildings within Caerphilly Town Centre in close vicinity to the Caerphilly Caste to re-invigorate the Commercial Core and maximise the potential of key buildings creating an attractive and vibrant envelope for the Castle, specifically the proposed Pentrebane Street development.	Park Lane • Gross Jobs Created (40) • No. of Jobs Accommodated (20) • No. of Jobs Construction Sector (30) • Total Traineeships (10) • Traineeship Leavers progressing (4) • Investment Induced (£8M+) • Enterprises Accommodated (1) • Land Developed (0.2) • Non-residential Premises created (3000 M2) • Non-residential Premises Created (1 no.) • Number of SMEs securing contracts (10) • Value of contracts awarded to SMEs (£10M) **Caerphilly Transport and Investment Hub** • Gross Jobs Created (70+) • No. of Jobs Accommodated (20+) • No. Jobs Construction Sector (60+) • Total no. Traineeships on Project (18) • Enterprises Accommodated (15) • Land developed (1.3) • Non-residential premises created or refurbished (7500 SQM) • Non-residential premised created refurbished (3 no.) • No additional housing units (10) • No of additional social housing (4) • No. of non-residential units back into use (10) • Estimated reduction in CO2 (20%) • No. of SMEs securing contracts (10) • Value of contracts awarded to SME (£10M+) • Ness Tar Gross Jobs Created (20) • No. of Jobs Accommodated (240) • No. jobs created in construction sector (220) • / Enterprises accommodated (120) • land developed (10) • Non-residential Premises created (3000 SQM) • Non-residential premises created (124 no) • No. additional housing units (150)

	• No. additional social housing units (50) **<u>Lansbury Park</u>** • Gross Jobs Created (10) • No. Of Jobs Construction Sector (10) • Total Traineeships (4) • Traineeship leavers progressing (25) • Enterprises Accommodated (4) • Land Developed (2) • Non Residential Premises created/Refurbished (1) • Additional Social Housing Units (30+) • No. of households energy performance improvement (750) • No. Completing employment related courses (25) • No. of SMEs securing contracts (4)
CARDIFF SOUTHERN ARC: City Centre Youth Hub - Refurbishment to extend advice & support services for young people, including into-work, training and job preparation.	• Number of additional social housing units delivered (40) • Non-residential premises created or refurbished (sqm) (2800m2) • Non-residential premises created or refurbished (number) (20)
MERTHYR TYDFIL TOWN CENTRE: Bus Station: The project will support the creation of a new Bus Station as part of the integrated transport network for the region.	• Gross jobs created (3) • Number of jobs accommodated (enabled through regeneration investment) (3) • Number of jobs created in the construction sector as a result of Welsh Government Regeneration Investment (30) • Total number of traineeships on the project (2) • Number of traineeship leavers progressing to further learning (at a higher level) or employment (incl. employment with the contractor) (2) • Enterprises accommodated (5) • Hectares of Land developed (00.97HA) • Non-residential premises created or refurbished (sqm) (9700 sqm)
Magor and Undy Community Hub - Vision to create a Community Hub that the residents of Magor and Undy can be proud of. A place where the local communities can come together to socialise, take part in leisure, sporting and cultural activities and to be a place for meetings, events and support networks. The Hub will provide a range of indoor facilities and will complement both existing and new outdoor facilities in the immediate vicinity. The Hub will also support the delivery and establishment of the Magor and Undy walkway train station proposed to be located adjacent to the site as part of the CCR City Deal Metro developments.	• Non-residential premises created or refurbished (500sqm) • Number completing employment related courses or gaining employment related qualification (3no) • Number of SME's based in Wales successful in securing contracts / sub contracts (£1.5m)

Newport CITY CENTRE PRIORITY AREA Digital Ecosystem - Market Arcade - refurbishment of Newport's grade II Listed Market Arcade, the 2nd oldest in Wales. HLF funding secured for Stage II 'Delivery'. Intention to expand project further by carrying out internal improvements to provide additional start-up and incubation space within the 'pods' formed by each unit.	• Gross Jobs Created (TBC between 50-200); • Construction Jobs (TBC between 50-70); • Traineeships (TBC 5); • Commercial premises Brought Back into Use/Created (TBC up to 10,000 m2) ; • SMEs Securing Contracts (TBC estimate 20); • Value of Contracts to Welsh SMEs (TBC but in region of £10m)
Newport CITY CENTRE PRIORITY AREA Grade A Office - maximising potential for development of Grade A office accommodation.	• Potential job creation (200 jobs); • Construction jobs (between 70-100); • Traineeships (5); • SMEs securing contracts (25); • Potential value of contracts to Welsh SMEs (£9m);
South Torfaen Settlement Area - Commercial Street: As part of the Valleys Taskforce Strategic hub, this project will involve the acquisition and conversion of a landmark town centre property as a shared space community hub for Pontypool. The proposal will bring together community and training spaces to improve access to advice, employability support, business support and community services for some of Wales' most deprived communities, helping people into training, job-readiness and employment. In addition, the project will result in some additional, attractive sites being made available for potential housing development	• Gross Jobs (20) • Jobs accommodated (3) • Construction jobs (10) • Traineeships (3) • Trainee leavers progressing to further learning / employment (2) • Enterprises accommodated (1) • Non-res premises created or refurb (2414 sqm) • Number completing employment courses/gaining employment qualification (20) • Welsh SME's gaining contracts (1)

Direct and Indirect Employment Outputs

The Metro Plus RTA Programme will have a direct benefit on creating new employment. Both during the construction phase and through operation of the schemes, new jobs will be created. For example, the Abertillery Spur link will require construction staff to build and operating staff to implement the new service.

At present direct employment numbers for the Metro Plus RTA Programme are unknown, however, early estimations are that 4 to 8 jobs could be created by the Abertillery Spur (driver / conductors)[7].

Indirect employment benefits will also occur, both in terms of new employment created within related industries (multiplier effect) and in new investment attracted to South Wales through improved access to the labour market created by better transport links.

The multiplier benefits within the engineering and construction industry can be very large. For example the RICS estimates the size of the construction sector's multiplier at £2.84 – which is one of the highest multiplier effects in any sector of the economy. This means that for every £1 spent on construction output, an additional £2.84 of total economic activity is generated. [8]

For every £1 in GVA generated in engineering sectors, a further £1.45 is generated elsewhere within the UK economy[9].

This could mean that the multiplier effect of the £30 million Metro Plus RTA Programme could be in the range **of £43,500,000 and £85,200,000**.

3.3 Outcomes

Improvements in Accessibility

Improvements in accessibly can lead to a number of benefits. Improved accessibility to services, employment opportunities and cultural and social activities can have a beneficial impact on all members of community. Improvements in accessibility benefits the economic development of an area through for example improving access to jobs or higher paid employment opportunities and attracting inward investment into an area.

Accessibility is directly improved through better transport provision, particularly a network of improvements that are accessible to all. The Metro Plus RTA Programme will provide a network of sustainable transport improvements, directly improving access for communities across south east Wales.

[7] Based on TfW aspiration for all lines to operate 4 train per hour (heavy rail option) with service requiring driver and a guard.

[8] watts bulletin 123, July 2010) http://www.watts.co.uk/bulletins/rics-highlights-full-value-of-construction-to-economy, date accessed 19th Nov 2018

[9] https://www.engineeringuk.com/media/1323/jan-2015-cebr-the-contribution-of-engineering-to-the-uk-economy-the-multiplier-impacts.pdf, date accessed 19th Nov 2019

The Statistical Bulletin on the regional economic and labour market profile issued by the Welsh Government in January 2018 shows the employment rate, economic inactivity rate and benefit claims and ILO unemployment rates for 16+ across Wales. Table 3.3 provides this data for south east Wales and Wales as a whole.

It can be seen that the International Labour Organisation (ILO) unemployment rate for south east Wales is higher than for Wales as a whole (5.6 compared to 4.7 for wales as a whole). A breakdown of the data shows that the highest rate of ILP unemployment for 16+ is within Merthyr Tydfil (7.6) and second is Rhondda Cynon Taf (6.3). Both these local authority areas are within south east Wales and will directly benefit (as will all communities across south east Wales) from the improved transport provision that the Metro Plus RTA Programme would deliver.

Table 3.3 - Regional Economic and Labour Market Profile Data

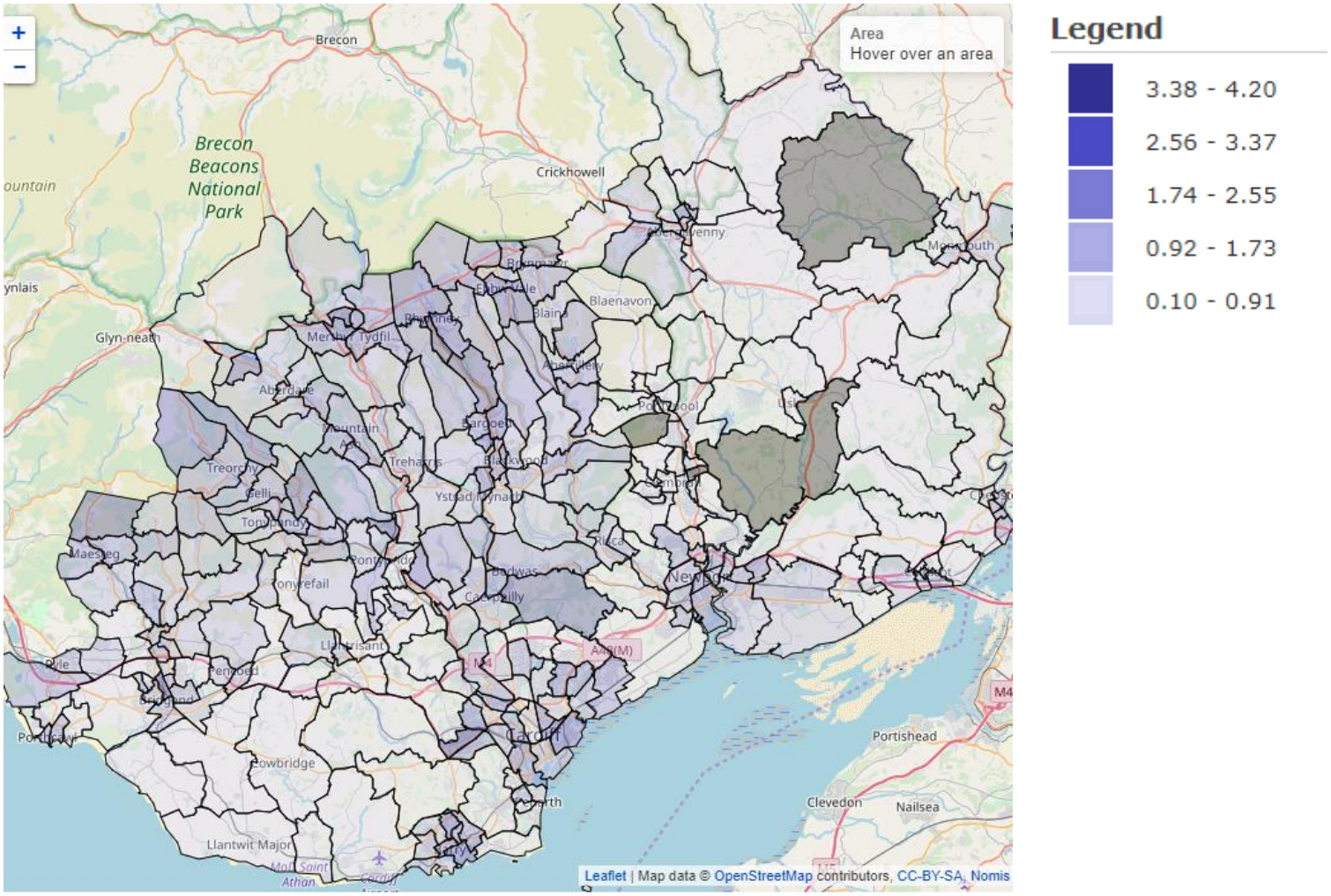
Area	ILO unemployment rate 16+ (%)	Benefit claimants rate (exc. Job Seeker's Allowance) (Nov 2016) (%)	Employment rate 16-64 (%)	Economic Inactivity rate exc. students 16-64 (%)
South East Wales	5.6	10.4	71.5	20.3
Wales	4.7	9.9	71.9	20.1

Source: Regional Economic & Labour Market Profile, Welsh Government, January 2018

The Metro Plus RTA Programme will improve access to services and key employment hubs to enhance job seeking opportunities. Figure 3.1 shows the proportion of resident population aged 16 to 64 claiming job seekers allowance by ward area within South East Wales. The darker areas show the higher rates of claimants (with the exception of the dark grey areas which indicate that no data is available for that ward).

The Metro Plus RTA Programme will deliver direct transport improvements into these areas, allowing access to sustainable public transport for those seeking employment, increasing their chance of gaining employment through access to wider employment markets. This will increase their personal prosperity and the economic prosperity of the area within which they live as they spend their income on local goods and services.

Figure 3.1 - The Proportion of Resident Population aged 16 to 64 claiming Job Seekers Allowance by Ward Area within South East Wales



Improvements for Areas of Deprivation

Figure 3.2 shows the schemes included within the Metro Plus RTA Programme plotted against the areas of multiple deprivation by lower super output areas in South East Wales. The darker areas show the highest ranked areas in terms of deprivation.

It can clearly be seen that majority of the schemes included within the Metro Plus RTA Programme are located within the most deprived areas. Those that are corridor based can be seen to be passing through a number of those areas classified as the most deprived.

Improvements in access to sustainable public transport provided through the Metro Plus RTA Programme will help to improve levels of deprivation in these areas, where caused by a lack of transport options.

The Metro Plus RTA Programme will provide an efficient network penetrating the most deprived areas providing a means to travel to major cities such as Cardiff and Newport and a range of areas across south east Wales. Tying into the wider Metro Network this will permit access to a vast range and higher number of employment opportunities for all community members located within the most deprived areas of south east Wales.

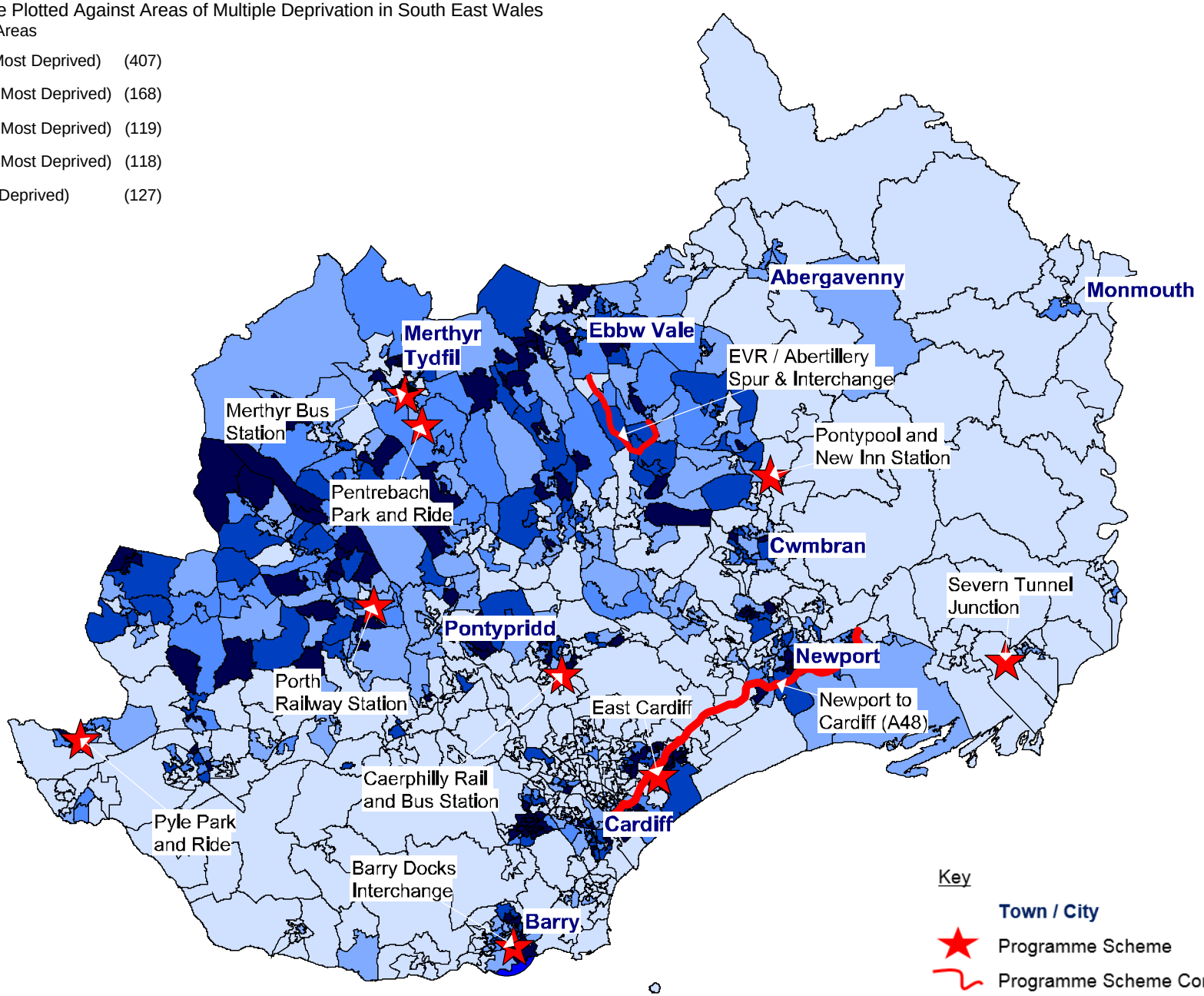
It will not only be improvements in access provided by the Metro Plus RTA Programme that will provide benefits for those most deprived areas in South East Wales. Many of the schemes included within the programme will generate direct and indirect employment benefits during construction, providing potential means for employment for local community members. As already stated the multiplier effects from construction can be large, meaning construction of schemes within the Metro Plus RTA Programme will benefit local business and suppliers located within the most deprived communities, assisting in regenerating and spreading economic prosperity.

Figure 3.2 - Metro Plus RTA Programme against Areas of Multiple Deprivation by Lower Super Output Areas in South East Wales

Metro Plus RTA Programme Plotted Against Areas of Multiple Deprivation in South East Wales

By Lower Level Super Output Areas

- 956 to 1,909 (50 % Most Deprived) (407)
- 574 to 955 (30-50 % Most Deprived) (168)
- 383 to 573 (20-30 % Most Deprived) (119)
- 192 to 382 (10-20 % Most Deprived) (118)
- 1 to 191 (10 % Most Deprived) (127)

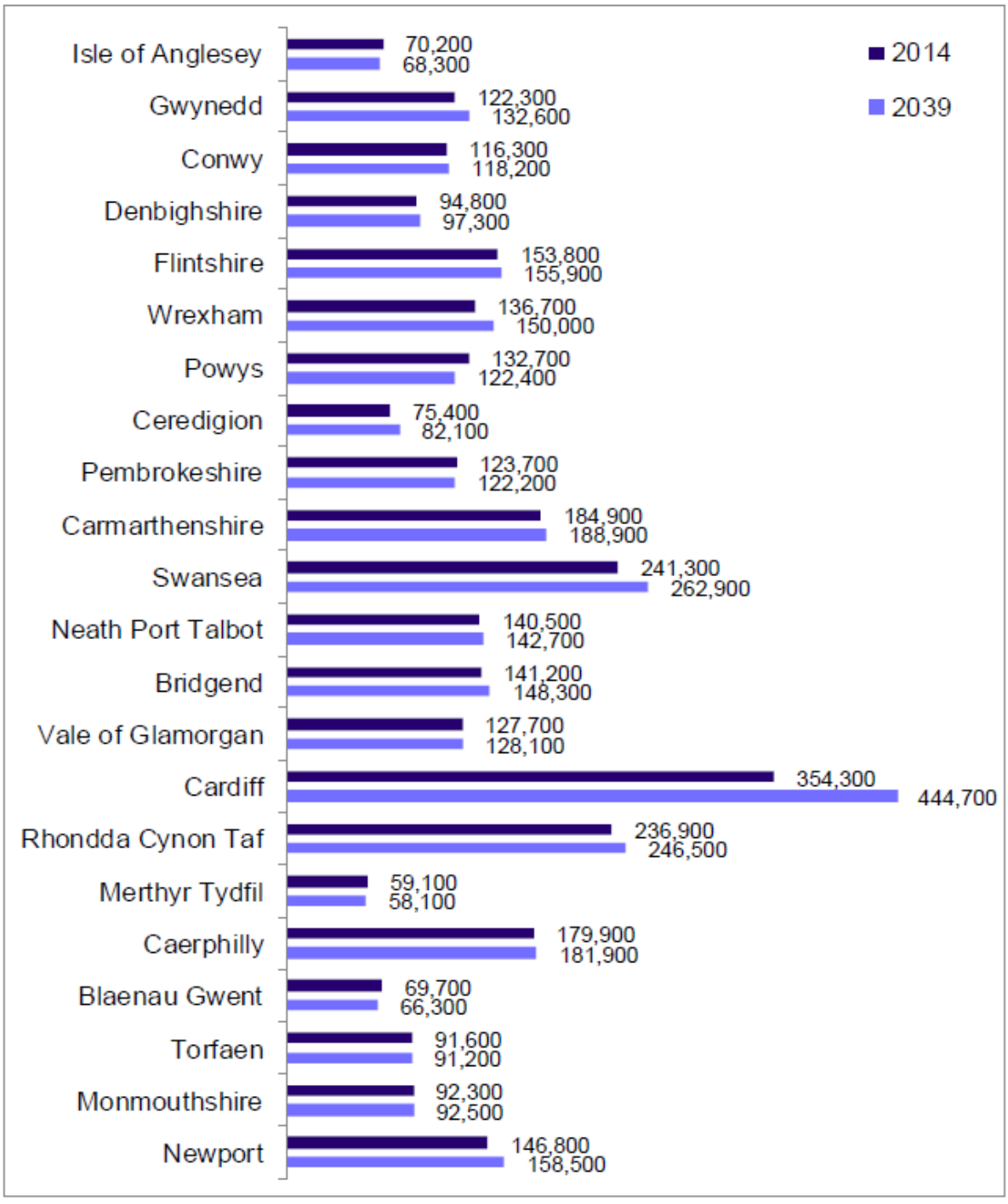


Accommodation of future Population Change

Population within some areas of South East Wales are projected to increase (see Figure 3.3). Newport, Bridgend, Cardiff, Caerphilly and Rhondda Cynon Taf are all projected to have larger populations by 2039. Providing a future focused transport network to meet the rising population will be required. The Metro Plus RTA Programme will provide increase network capacity, providing new and improved transport facilities, increasing capacity at interchanges across the rail network along with providing new capacity along transport corridors such as between Newport and Cardiff and the Abertillery to Ebbw Valley Railway line.

Population in some communities is projected to decline (such as some valleys communities, where younger members of the community leave to seek job opportunities in larger towns and cities). Figure 3.3 shows a projected declining population by 2039 for Merthyr Tydfil and Blaenau Gwent. The Metro Plus RTA Programme linking into the wider Metro network will provide an effective transport system, connecting major towns and cities across Wales for those communities where population is declining. This may permit people to stay within the community within which they have grown up, commuting to and from employment as an efficient transport network is available, rather than needing to relocate to seek employment.

Figure 3.3 – Population by Local Authority in 2014 and Project Population in 2039



***Source**: Local Authority Population Projections for Wales 2014 base: Principal Projections, Statistical First Release, Welsh Government*

Supporting Thriving Towns and Communities

Many towns within the Valley communities of South East Wales were once thriving areas of industry. However, due to a decline in the manufacturing and heavy industries that were located within these areas, many communities have suffered from high levels of unemployment.

Research undertaken into the regeneration of Post Industrial town shows that many of these towns begin to thrive again when they have transport investment and transport hubs are created. Not only does this provide improved access to new and wider employment opportunities, but research found transport investment can create a sense of pride and place back into the town centre.

A report 'About Towns: How Transport Can Help Towns Thrive' undertaken by the Urban Transport Group[10] found that, '*in a post industrial age, transport has a key role to play in putting these towns back on the map. After all, it is transport that can plug towns into larger city regions and national economies, and in doing so widen labour markets; meet housing demand; draw in investment; and open up access to opportunity*.'

The report also emphasises that a package or programme of transport measures is important for making towns successful, it states that '*one-off investments in capital projects on transport are unlikely to be enough in themselves for towns to thrive. These need to be part of wider and coordinated packages of transport measures which in turn are integrated with crosssector initiatives in areas like education, housing and economic development'*. This supports the collective benefits of implementing the Metro Plus RTA as a programme, providing support to the wider Metro network investment, thus helping to ensure maximum benefit.

The study highlights that *'new high quality interchanges in towns can provide destinations in their own right. These can instil a renewed sense of civic pride, provide an engine for wider regeneration, become a welcoming gateway for visitors and investors, as well as celebrate the history and heritage towns have to offer*.' The Metro Plus RTA Programme includes investment in new state of the art interchanges at Caerphilly, Porth, Merthyr, Barry Docks and Abertillery, all of which have the potential to provide wide ranging regeneration benefits to these towns.

The report states that transport improvements must be part of a bigger plan to stimulate activity, optimism and investment in towns, whilst giving their communities greater access to the possibilities that arise from being part of a well-connected, sustainable and forward thinking city region or sub-region. This is exactly what the Metro Plus RTA Programme provides – transport investment which links to wider Cardiff Capital Region City Deal investment projects such as the TRI bids and the wider South Wales Metro.

Improvements for all Modes of Transport

Investment in a sustainable public transport network has benefits for all other forms of transport. For example, the Metro Plus RTA Programme will provide a better integrated public

[10] About Towns: How Transport Can Help Towns Thrive, Urban Transport Group, Jake Thrush, Rebecca Fuller and Jonathan Bray November 2018

transport network across south wales supporting the wider Metro network. New infrastructure and enhancement of provision will open up journey alternatives for commuters, business users and leisure users. Instead of automatically undertaking a journey by car, the Metro Plus RTA Programme will promote and provide an alternative thereby encouraging modal shift to public transport for a range of journey types.

This could help to reduce the number of car journeys undertaken, helping to reduce congestion and improve other environmental factors such as an improvement in air quality. Currently most travel-to-work trips into Cardiff are made by car (58%), while the proportion of sustainable travel-to work trips diminishes with the distance of commuting[11]. The Metro Plus RTA Programme provides an alternative for access into areas such as Cardiff from all areas of south east Wales helping to facilitate modal shift. This could lead to journey time savings on the road network across south east Wales helping businesses and promoting economic development. Journey time savings could also be achieved for users of the public transport network, as the Metro Plus RTA Programme promotes the co-locating of modes via seamless interchanges.

The Metro Impacts Report states that on the basis of 100,000 commuters gaining an average 5 minutes reduction of journey and/or waiting times (resulting from improved frequency and/ or reliability) across the entire commuter network for Cardiff and Newport (both for public transport, rail and road users), the potential benefits could be nearly £30 million per year, in current prices[12]

A potential reduction in car trips may make the roads safer, thus opening them up for more Active Travel journey opportunities. There is also likely to be growth in active travel journeys undertaken to interchanges to access the Metro Plus RTA Programme of schemes.

This potential increase in active travel journeys could have associated health benefits leading to cost savings across a range of health service provisions (a 2012 meta-analysis estimated physical inactivity to be responsible for 5.3 million (of 57 million) deaths worldwide, similar to the burden of tobacco smoking and obesity[13]). There can also be economic benefits for the region from increasing active travel. It has been quoted in a recent report by the 'Transport Fit for Future generations Report' that '*expanding the investment programme in Active Travel out to the whole Cardiff Capital Region would cost approx. £290 million but would result in economic benefits of £2.5bn over 20 years, delivering a 19% and 82% increase in walking and cycling trips respectively*'[14].

There is also potential within the Metro Plus RTA Programme to implement electric car clubs at interchanges, to permit the last few miles of a journey to be undertaken by an electric vehicle.

[11] A Cardiff Capital Region Metro: Impact Study', October 2013

[12] Assuming return trips 232 days of year and DfT value of time for commuting, taken from A Cardiff Capital Region Metro: Impact Study', October 2013

[13] Lee et al (2012): Impact of Physical Inactivity on the World's Major Non-Communicable Diseases, available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3645500/, quoted in, TAG Unit 4.1, Social Impact Appraisal, Dec 2017, Department for Transport

[14] Transport Fit for Future Generations Report, Future Generations Commissioner for Wales, Sep 2018

3.4 Opportunities

Maximising the Benefits of the South Wales Metro

In 2013 'A Cardiff Capital Region Metro: Impact Study'[15] detailed some of the key outputs that the South Wales Metro would deliver. The Metro Plus RTA Programme provides the opportunity to maximise the delivery of the these key outputs. Key outputs quoted are:

- 'Delivering the Cardiff Capital Region Metro by 2030 will:
  - Support the creation of 7,000 jobs.
  - Over 30 years contribute an additional £4bn to the regional economy.
  - Deliver a one-off construction impact from Metro and contingent developments of £4bn
- Environmental and Sustainability Benefits - through modal shift and reduced car journeys, road congestion and CO2 emissions; by 2030 the Metro could support over 80,000 daily passengers vs 40,000 today, contributing to greater use of public transport.
- The Metro will increase by 60% the number of people who can easily access the regional public transport network; this will benefit both commuters by increasing their employment choices and employers by increasing their catchment area, reducing churn in recruitment and improving staff retention.
- Commuting benefits from generalised journey time savings of approx. £30m/yr

Support Implementation Outcomes of Out Valleys, Our Future Delivery Plan, Nov 2017 (Welsh Government)

There is an opportunity through delivery of the Metro Plus RTA Programme to support the implementation of the Our Valleys, Our Future Delivery Plan. This Plan sets out three priorities:

- Priority 1 - Good-quality jobs and the skills to do them;
- Priority 2 - Better public services;
- Priority 3 - My local community.

The aim of priority 1 is to, '*close the employment gap between the South Wales Valleys and the rest of Wales. This means helping an extra **7,000** people into fair work and that thousands of new, fair, secure and sustainable jobs will be created in the Valleys. People living in the Valleys will have access to the right skills to gain work. Businesses will be fully supported to grow and thrive in the South Wales Valleys*.'

Table 3.4 outlines some of the actions and outcomes that will help to achieve this priority along with how the Metro Plus RTA Programme provides the opportunity to support delivery of these outcomes.

[15] A Cardiff Capital Region Metro: Impact Study', October 2013,

Table 3.4 - Our Valleys, Our Future Delivery Plan, Priority 1 Action and Outcomes Supported by the Metro Plus RTA Programme

Priority 1 Action	Priority 1 Outcome	How Supported by Metro Plus RTA Programme
JS1: Seven strategic hubs will be created across the South Wales Valleys to focus public money and provide opportunities for the private sector to invest and create new jobs	The strategic hubs will act as a focus for job creation by attracting private sector investment, allowing existing businesses to grow and promoting business start-ups. This will include realising economic regeneration opportunities through housing delivery and public service provision, while increasing connectivity through the South Wales Metro.	The Metro Plus RTA Programme will provide the opportunity to directly support this outcome through, maximising the benefits of the South Wales Metro and delivering increased connectivity realising economic regeneration. A number of the Metro Plus RTA Programme schemes are located within valley communities providing a network of improvements for this area (schemes include, Caerphilly Bus and Rail station, EVR / Abertillery Spur, Porth Interchange and Merthyr Bus Station).
JS2: Relocate more public sector jobs into the Valleys, including at the seven strategic hub locations, where appropriate. For example, Transport for Wales is committed to establishing its new headquarters in Pontypridd.	Public sector bodies and departments will relocate to parts of the South Wales Valleys, helping to support the local economy and provide a basis to develop job opportunities locally.	Metro Plus RTA Programme will provide an enhanced sustainable transport network providing access to the new public sector jobs for communities across the South Wales Valleys
JS7: Exploit the job creation potential from major infrastructure investment, including the South Wales Metro, the M4 and the ongoing work to dual A465 and new affordable housing.	New supply chains will be developed and funding from infrastructure projects in the Valleys will be retained to create local jobs.	Metro Plus RTA Programme will provide direct and indirect employment opportunities within the South Wales valleys, with a strong multiplier effect into the local supply chain network.
JS21: Target investment to support apprenticeship delivery in regional growth and shortage sectors.	Apprenticeship opportunities will be created in regional priority sectors.	Metro Plus RTA Programme will provide opportunities for the creation of apprenticeships within the construction and engineering sector within the South Wales Valleys.

Three of the schemes included within the Metro Plus RTA Programme are located within the Severn Strategic Hubs which are being promoted in the delivery plan. Table 3.5 outlines the proposal for these three strategic hubs and how the Metro Plus RTA Programme will help to achieve these.

Table 3.5 – Strategic Hubs

Strategic Hub	Proposals	How Metro Plus RTA Programme Will Support
Caerphilly/ Ystrad Mynach	1. Strategic employment and residential site 2. Employment hubs linked to strategic transport infrastructure improvements 3. Town centre redevelopment 4. Tourism and cultural development 5. Residential development	Provision of strategic transport infrastructure improvements through the delivery of the Caerphilly Bus and Rail Interchange.
Ebbw Vale	1. Technology Park, as announced on October 1, 2017 2. Employment sites 3. Digital infrastructure 4. Residential developments 5. Energy project	Provision of a new integrated transport link from Abertillery to EVR, thus providing better connections for communities within this area to Ebbw Vale to access strategic hub opportunities. New transport link will encourage inward investment into Ebbw Vale Strategic hub.
Merthyr Tydfil	1. Transport infrastructure improvements 2. Strategic residential and employment sites 3. Tourism development 4. Wellbeing centre 5. Town centre regeneration	Provision of transport infrastructure improvements with the delivery of the Merthyr Bus Station with increased integration with Merthyr Railway Station. This will increase access to the strategic hub and also aid in town centre regeneration.

The aim of Priority 2 is that by 2021 '*Public services will be working with the third sector and local communities to respond to people's needs. Support will be available to help people lead healthier lifestyles, improving their physical and mental wellbeing and addressing health inequalities. Public transport will be joined-up, affordable and help people get to work, school or training and to leisure facilities. We will improve education outcomes for all children and close the attainment gap*.'

Table 3.6 outlines some of the actions and outcomes that will help to achieve this priority along with how the Metro Plus RTA Programme provides the opportunity to support delivery of these desired outcomes.

Table 3.6 - Our Valleys, Our Future Delivery Plan, Priority 2 Action and Outcomes Supported by the Metro Plus RTA Programme

Priority 2 Action	Priority 2 Outcome	How Supported by Metro Plus RTA Programme
PS12 : As part of a Clean Air Plan for Wales, actions will be taken to tackle the serious risks to the health of people in Valleys communities from poor air quality caused by emissions from industry, traffic and domestic houses.	People in local communities are fully aware of the dangers of air pollution and of the measures they can take to prevent and/or avoid it. Improved levels of health over time and a reduction in cardiovascular and respiratory problems attributable to or exacerbated by air pollution	Metro Plus RTA Programme will provide an enhanced sustainable transport network across south east Wales enabling a real alternative to private car for a range of journey types. This could lead to a reduction in traffic and thus an improvement in air quality.
PS14: Use the opportunities provided by the South Wales Metro to reinvigorate housing in the Valleys through cross government working to support housing provision around transport networks.	Brownfield sites will be regenerated. Housing provision, which addresses specific housing needs in local areas, close to services such as transport networks, will be increased.	Metro Plus RTA Programme will tie into South Wales Metro providing transport access to key housing development sites.
PS18: Ensure the proposed South Wales Metro hubs act as key community points, providing a focus for housing, health, education and other public service investments.	Better capacity and quality of travel and improved frequency of travel. Integrated transport hubs will be placed in the top 20 busiest stations in the Metro area (including Bridgend, Treforest,Pontypridd, Caerphilly, Merthyr Tydfil, Aberdare, Treherbert, Pengam andCwmbran).	Metro Plus RTA Programme directly support this priority action by providing new integrated transport hubs in Caerphilly and Merthyr Tydfil.
PS19: Work with rail and bus providers to ensure public transport throughout the Valleys is more frequent and affordable and that it links to active travel – cycling and walking – as part of the development of the South Wales Metro.	More frequent and affordable rail and bus routes will be provided across the Valleys through partnership working between operators and public authorities to reflect the current legislation	Metro Plus RTA Programme provides the opportunity to access more rail and bus services enhancing the benefit of any improvements in frequency. Metro Plus RTA Programme support the South Wales Metro implementation.

PS20: Improve public transport services to better reflect the needs of local communities and businesses, including people who work irregular and part-time hours.	Public transport will reflect and serve the needs of each community.	Metro Plus RTA Programme will increase access to the South Wales Metro for local communities through provision of enhanced interchange facilities.

The aim of Priority 3 is that by 2021, '*Valleys Landscape Park will have been set up to help local communities celebrate and maximise the use of the natural resources and heritage. Valleys town centres will be vibrant places, with attractive green spaces, which support local economies. The Valleys will be a recognised tourist destination, attracting visitors from across the UK and beyond*.'

As already highlighted research has shown that provision of new transport hubs and interchanges can help in promote town centre vibrancy. The Metro Plus RTA Programme will assist in delivering town centre vibrancy through the creation of new and improved town centre transport hubs such as Caerphilly train and bus interchange, Porth Interchange, Merthyr Bus Station and Abertillery Interchange and Spur.

Improve Skills of Workforce

Promoting and supporting the development of apprenticeships is a major aim for Welsh Government. The document '*Aligning the Apprenticeship model to the needs of the Welsh Economy'* February 2017, outlines how Welsh Government will promote and develop the apprenticeship model in the future.

There are a range of benefits of Apprenticeships. The '*Aligning the Apprenticeship model to the needs of the Welsh Economy'* documents states that '*Skills that are developed through Apprenticeships contribute to higher value-added economic activity. They are good for growth and social mobility. There is evidence that during the course of a lifetime, apprentices receive higher earnings and the economy benefits significantly through increased Gross Domestic Product (GDP). A National Audit Office (NAO)2 study has calculated that Apprenticeships provide an average return of £18 per £1 spent on them by Government'.*

Implementation of the Metro Plus RTA Programme will provide opportunity for provision of Apprenticeships during construction of schemes both directly within those companies employed as contractors and within the local supply chain industry. This will help to grow the skills of the workforce within the local community of each of the interventions included within the programme.

Implementation of the Metro Plus RTA interventions as a whole programme will further opportunity for growth in skills, as economies of scale may permit opportunities for contractors to work together during construction of the programme to cross train employees in a range of skill areas.

In addition the Metro Plus RTA programme could promote apprenticeships in the STEM industries through creating opportunity in those organisations involved in the planning and design of the programme interventions e.g. Civil Engineering and Architecture. Promoting more higher skilled apprenticeships in STEM industries is an aim of the Welsh Government, with the '*Aligning the Apprenticeship model to the needs of the Welsh Economy'* documents stating that '*Action will be taken to increase Apprenticeships in Science Technology Engineering and Mathematics (STEM) occupations'*.

Network Benefits

Provision of a programme of schemes implemented as a network of improvements gives the opportunity to reduce the impact of cross demand. For example, when just one interchange on a network is improved, this can in some cases take demand from another existing interchange.

Provision of a co-ordinated programme of network improvements such as the Metro Plus RTA Programme, which supports and directly connects to the South Wale Metro improvements will reduce the effect of cross demand and maximise the opportunity for new demand, as users see the benefits of a network of improvements, not just one off isolated improvements.

Creating a network of improvements via a programme of investment could also attract more inward investment by creating an identity for the region. This gives business the confidence of access to a wide labour market and movement for goods, services and employees.

Technology Advancement and Supporting New Industries

As part of the Metro Plus RTA Programme, it is hoped that maximum benefit can be made of adopting new technology. This may include for example how the latest electric vehicle technology can be incorporated across the Metro Plus RTA Programme.

Adoption of a new technology on a mass scale such as inclusion within all schemes in the Metro Plus RTA Programme, may also help provide traction to developing new technology industries within south east Wales, by providing the critical mass required to launch into a new area. This will not only promote sustainability and wellbeing for future generations, but also provide employment opportunities for South East Wales in new technology areas.

4. Conclusion

4.1 Summary

A £30 million programme of schemes has been developed (Metro Plus RTA Programme), which if undertaken will support the implementation of the South Wales Metro.

This report has demonstrated how the Metro Plus RTA Programme fits with the key strategic objectives of the Cardiff Capital Region City Deal (Propensity and Opportunity, Inclusion & Equality and Culture, Community & Sustainability). The Programme also has good strategic fit with the key themes of Skills & Employment, Connecting the Region, Innovation and Regeneration & Infrastructure and well-being objectives (see chapter 2).

The Metro Plus RTA Programme has a range of collective benefits, with the outputs, outcomes and opportunities of the Programme presented within Chapter 3 of this report.

The report outlines the following key outputs of the Metro Plus RTA Programme:

	Output
Number of interchanges improved	9
Approximate KM's of passenger transport network improved or provided	32 km (Newport to Cardiff 26km [16] and Abertillery Spur 6km [17])
Number of new park and ride spaces provided	453[18]

- Supporting outputs of the TRI bids, including:
  - 393 gross jobs created;
  - 260 construction sector jobs created; and
  - 47 traineeships;
- Direct and Indirect Employment Outputs including the potential multiplier effect of the £30 million Metro Plus RTA Programme in the range of £43,500,000 and £85,200,000

Key outcomes of the Metro Plus RTA Programme include:

- Improvements in Accessibility;
- Improvements for areas of Deprivation;
- Accommodation of future Population Change;
- Supporting thriving towns and communities;
- Improvements for all Modes of Transport.

[16] Based on journey from Newport Bus Station to Customhouse Street Cardiff using AA Route Planner for distance
[17] Based on approx. 4 mile spur implemented
[18] Excludes Ebbw Valley / Abertillery Spur as P&R spaces unknown at present, Caerphilly P& R where increase in numbers unknown, Barry Docks unknown as at early stage and Pentrebach. Estimated 156 extra at Pontypool and New Inn, 75 additional at Pyle, 150 STJ and 72 Porth.

Key opportunities that the Metro Plus RTA programme presents include:

- Maximising the Benefits of the South Wales Metro;
- Support Implementation Outcomes of Out Valleys, Our Future Delivery Plan (Welsh Government);
- Improving the Skills of the Workforce;
- Network co-ordination Benefits; and
- Permitting Technological Advancement and Supporting new Industries.

Appendix A
South East Wales Metro Commitments[19]:

- Remove Pacer trains by December 2019.
- Introduce a Central Metro that improves journey times and increases frequency to at least four rains per hour from the head of each using new trains.
- Introduce new Metro Vehicles with level boarding by December 2022, which will provide a modern metro-style service to the Treherbert, Aberdare and Merthyr valleys.
- Retain the link from Penarth, Barry and Bridgend to destinations north of Cardiff Central using new tri-mode trains (overhead electric, battery and diesel) from December 2023.
- Invest in Cardiff Central station from April 2025, Abergavenny station from April 2023, Chepstow from April 2025 and Merthyr Tydfil from April 2020.
- Build new stations at Crwys Road, Loudoun Square and Cardiff Bay by December 2023, and Gabalfa by 2028. We will relocate Treforest Estate station by December 2025 to improve safety and convenience.
- Simplify the Cardiff Valley fare structure from January 2020, reducing Anytime Return fares by 12.5% and Weekly Season tickets by 14% for 33 of the outer stations.
- Develop a fleet maintenance depot at Taff's Well and a dedicated Infrastructure Management depot in the Valleys. Both will use local training and development facilities such as Coleg y Cymoedd.
- Introduce three new Community Rail Partnerships, recruiting a Community and Stakeholder Manager and nine Community and Customer Ambassadors by 2021.
- Eliminate diesel use on the Central Metro lines by 2024.
- Provide ticket machines at all South Wales Metro stations by April 2019.
- Introduce pay-as-you-go for users of smartcards by April 2020.

Train service improvements include:

- A new 1 train per hour (tph) Ebbw Vale to Newport service by May 2021
- 2tph between Cardiff and Bridgend via Vale of Glamorgan from December 2023.
- 4tph throughout the Rhymney route from December 2023.
- 4tph to Treherbert from December 2022.
- 6tph to Cardiff Bay from December 2022.
- 4tph between Merthyr Tydfil, Aberdare and Cardiff from December 2022.
- 1tph between Cardiff and Cheltenham from December 2022.
- 4tph between Cardiff and Bridgend (direct, Monday to Saturday) from December 2019.

[19] https://tfw.gov.wales/whats-happening-south-east-wales, accessed 7th Nov 2018

REDSTART

St David's House
Pascal Close
St Mellons
Cardiff
CF3 0LW

www.redstartwales.com

APPENDIX 2

Independent, not-for-profit, low emission vehicle and energy for transport experts

PROJECT

REPORT

Cardiff Metro Infrastructure Review

Programme Support Phase 1

January 2019

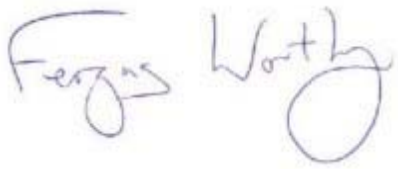
Prepared for:

Clare Cameron
Cardiff Council

Clare.Cameron@cardiff.gov.uk

03000 040414 ext. 19009

Prepared by:



Fergus Worthy
Senior Transport Consultant

Approved by:

Steve Carroll
Head of Transport

Company Details

Cenex
Holywell Building
Holywell Park
Ashby Road
Loughborough
Leicestershire
LE11 3UZ

Registered in England No. 5371158
VAT Registered No: 933596983

Tel: 01509 642 500
Email: info@cenex.co.uk

Twitter: @CenexLCFC
Website: www.cenex.co.uk

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Document Revisions

No.	Details	Date
1	Initial draft for customer review	16/12/2018
2	Final draft for review	22/01/2019

Contents

Table of abbreviations

PiVs	Plug-in Vehicles
CO_2	Carbon Dioxide
DNO	Distribution Network Operator
DfT	Department for Transport
EV	Electric Vehicle
V2G	Vehicle-to-grid
OLEV	Office for Low Emission Vehicles
ULEB	Ultra-low emission buses
WPD	Western Power Distribution

1 Executive summary

Cardiff Capital Region commissioned Cenex to assess the potential impact of zero emission capable vehicles on the recharging infrastructure and energy requirements at 11 metro sites located across South East Wales.

This report presents:

- Forecast uptake of plug-in vehicles, including cars, buses and taxis.
- Estimated charging infrastructure requirements to support these vehicles.
- Preliminary assessment of potential for a plug-in car club scheme.
- Infrastructure considerations, including onsite renewables, energy storage, capital costs, operating models, and policy and planning requirements.
- Details of relevant local and national policies, developments and funding opportunities including consideration to local renewable energy developments.

Cardiff Capital Region specified 11 locations to be in the scope of this project: East Cardiff Bus Corridor, the Newport to Cardiff bus corridor, Barry Docks Interchange, Caerphilly Transport Hub, Ebbw Vale Abertillery Spur, Merthyr Tydfil Bus Station, Pentrebach Station and Park & Ride, Pontypool and New Inn Park & Ride, Porth Interchange, Pyle Park & Ride and the Severn Tunnel Junction Park & Ride.

1.1 Infrastructure and plug-in vehicle forecasts

Cenex estimated the base number of metro car parking spaces requiring charging infrastructure for customers by establishing a ratio of plug-in vehicles (PiVs) to conventional vehicles and then calculating the peak power requirements and associated installation costs. Cenex also undertook a higher-level estimation of the future demand from plug-in taxis, car clubs, buses and the potential for the metro sites to host a limited number of rapid chargers for wider community use (non-rail service users) with PiVs – these high level estimates should be subject to further study before infrastructure purchase decisions are made.

Table 1 displays the resultant estimates for each site to support expected demand in 2025 under a high PiV adoption scenario. The report also details expected infrastructure requirements to 2030. Providing enough chargepoint infrastructure is one of the key factors that will determine whether this scenario is achieved, so it is advisable to set a high target initially. It is recommended that infrastructure to support PiV demand for 2025 is installed, along with providing passive chargepoint provision[1], which involves providing cabling to parking bays and carrying out any network upgrades to support 2030 demand so that chargepoints can easily be added later.

The provision of charging infrastructure across all sites to meet the anticipated 2025 demand for standard charging (7kW) of rail users' PiVs is estimated at £191k. To future proof the installations for an increased demand, the addition of passive infrastructure to support anticipated 2030 needs would cost an additional £110k. When infrastructure provision to supply other PiVs (taxi, car club, bus and public rapid chargers, the estimated costs for provision rises to £3,135k.

[1] Passive chargepoint provision involves installing the necessary underlying infrastructure (including capacity in the connection to the local electricity distribution network and electricity distribution board, as well as cabling to bays) to enable simple installation and activation of a charge point at a future date.

	2025 Base provision for metro rail customers			2025 Potential provision for other services (car club, taxi, public rapid charge point, passive bus)					
Metro site	7kW charge outlets	Peak power requirement (kW)	Estimated cost	22kW fast chargers for car clubs	50kW rapid chargers for taxi	50kW rapid chargers for public use	50kW passive provision for bus use	2025 Total peak power requirement (kW)	2025 Total estimated cost
Bridgend	2	14	£14.6k	1	1	2	2	286	£252k
Vale of Glamorgan	2	14	£14.6k	1	1	2	5	436	£347k
Cardiff	6	42	£29.8k	2	5	5	14	586	£433k
Rhondda Cynon Taf	2	14	£14.6k	1	2	0	2	286	£252k
Merthyr Tydfil	2	14	£14.6k	1	1	2	14	586	£443k
Pentrebach	2	14	£14,6k	1	0	1	3	236	£220k
Caerphilly	3	28	£22.2k	1	3	1	6	550	£418k
Blaenau Gwent	2	14	£14.6k	1	1	1	2	186	£189k
Torfaen	2	14	£14.6k	1	0	1	1	136	£157k
Monmouthshire	3	28	£22.2k	1	1	0	2	222	£203k
Newport	2	14	£14.6k	1	2	2	0	236	£221k
Total	**28**	**210**	**£191k**	**12**	**17**	**17**	**51**	**3,746**	**£3,135k**

Table 1. Infrastructure estimates required to achieve 2025 PiV adoption, by target location.

1.2 Car clubs

We interviewed two car club representatives for this research. Car clubs provide a cost-effective and flexible alternative to owning a car, and can help alleviate parking congestion, pollution and transport poverty. The feasibility of a car club typically depends on three conditions: a relatively affluent, young local population; high population density; and a location near major public transport routes or key destinations. Based on these factors we estimated the potential success of electric cars clubs at each metro site. We recommended providing 22kW chargepoints for car clubs, as they strike a balance between providing a fast charge to top up vehicles between bookings, while hardware and installation costs are lower than for 50kW rapid chargers.

1.3 Renewables, energy storage and smart charging

Clean, smart and integrated technology can transform the metro sites' electrical and recharging network into a modern low emission and profitable energy system. Individually or combined renewables, energy storage and smart charging of vehicles can be integrated into the electrical network upgrades. Solar PV installations are characterised by long payback periods but can enable local authorities to meet CO_2 reduction targets and access low cost borrowing and grant funding. The greater economic benefit of adding PV is available when off-setting grid electricity costs and reducing any capacity upgrade costs (and providing a zero-carbon energy supply).

1.4 Supporting national and local policy and funding

There are several Welsh Government strategies that strongly support the development of PiV infrastructure, most notably, the recent strategy to support implementation of Environment Act targets for decarbonisation; 'Achieving our low carbon pathway to 2030' on which consultation has recently closed. The document details proposed actions to 2030 including; develop a charging network that encourages early take-up of electric vehicles (EVs). It also echoes a target set out in the Economic Action Plan (2017) to reduce the carbon footprint of taxis and buses to zero within 10 years. The National Assembly has also recently (2018) consulted on

EV charging infrastructure in Wales to which there have been several useful responses, notably, Western Power.

Policy at the local authority level is less advanced except for Caerphilly and Cardiff City Council which have adopted an electric vehicle strategy and action plan (2018) and low emission transport strategy (2018) respectively.

The options for Local Welsh funding to deliver PiV infrastructure would be to incorporate the PiV infrastructure as part of the development costs and therefore access the various infrastructure and regeneration sources being used to develop the metro sites. There is a limited direct £2m fund being administered by Welsh Government for the development of PiV infrastructure on key strategic routes and the Welsh public sector also has access to national OLEV funding both directly or in partnership with private sector stakeholders such as the bus providers.

1.5 Recommendations and conclusions

This study provides a review of potential electric vehicle infrastructure requirements and provisions across 11metro sites setting out the potential power requirements, infrastructure numbers, and potential supporting technologies such as renewables, energy storage and smart charging. Recommendations are provided below to enable the progression of the infrastructure upgrades at each of the metro sites. Cenex can also provide further support in all the following areas.

Car park infrastructure (7kW): It is recommended that the 2025 infrastructure provision is installed in full, with passive infrastructure provision provided for the anticipated use in 2030.

Other charging services (22kW – 50kW): A high-level estimate has been provided for infrastructure provision for other types of charge point users (car club, taxi, public rapids and bus) representing the scale of the provision. These services should be subject to a specific study before further consideration.

Refine chargepoint costs and select service model: The costs provided for chargepoint hardware, installation and Distribution Network Operator (DNO) services are best estimates based on our experience of working with other local authorities. Cost should be further refined through establishing connection costs with the DNO, undertaking a detailed siting study to allow a tender specification for chargepoint infrastructure. This report sets out the various operating models available, with some benefits and drawbacks of each. The next step is to draw up a joint procurement and contracting framework and carry out market research into the hardware options and network services available.

Renewable energy and energy storage: The report discusses the use of renewable (both on-site and linking to off-site) energy developments, battery storage and smart charging. Further exploration of the benefits of these technologies should be undertaken, especially where they allow avoided network upgrade costs, which will provide a strong business case.

Co-ordinated approach: A working group attended by representatives of each of the 10 local authorities (and external actors where necessary) should be set-up to co-ordinate PiV actions plans, funding plans, bids, infrastructure procurement strategies and frameworks.

2 Introduction

2.1 Background

The Environment (Wales) Act places a duty on Welsh Ministers to ensure that in 2050 net carbon dioxide (CO_2) emissions are at least 80% lower than the baseline set in legislation. This will be achieved through interim targets for 2020, 2030 and 2040 and five yearly carbon budgets up to 2050. Decarbonising transport by investing in zero emission capable public transport and chargepoint infrastructure for fleets and private car owners will be essential to help achieve these targets. Improved access to a connected, affordable, low carbon multi-modal transport network can help regenerate South East Wales and attract inward investment in the local economy.

2.2 Scope and approach

Cardiff Capital Region commissioned Cenex to assess the potential impact of zero emission capable vehicles on the recharging infrastructure and energy requirements at 11 metro sites.

This report presents:

- Forecast uptake of plug-in vehicles, including cars, buses and taxis.
- Estimated charging infrastructure requirements to support these vehicles.
- Preliminary assessment of potential for a plug-in car club scheme.
- Infrastructure considerations, including onsite renewables, energy storage, capital costs, operating models, and policy and planning requirements
- Details of relevant local and national policies, developments and funding opportunities

Cardiff Capital Region specified 11 locations to be in the scope of this project: East Cardiff Bus Corridor, the Newport to Cardiff bus corridor, Barry Docks Interchange, Caerphilly Transport Hub, Ebbw Vale Abertillery Spur, Merthyr Tydfil Bus Station, Pentrebach Station and Park & Ride, Pontypool and New Inn Park & Ride, Porth Interchange, Pyle Park & Ride and the Severn Tunnel Junction Park & Ride.

The scope was specifically limited to considering the infrastructure requirements at these Metro sites. Cenex was not asked to look at the more general patterns of plug-in vehicle uptake and charging infrastructure requirements across the region. For many vehicle types, particularly buses and taxis, a strategic, regional approach should be taken. This would involve considering how the fleet will change across a wider geographical area, and then determining potential chargepoint locations. This work could be undertaken as a follow-on to this study, subject to further discussions with the Cardiff Capital Region.

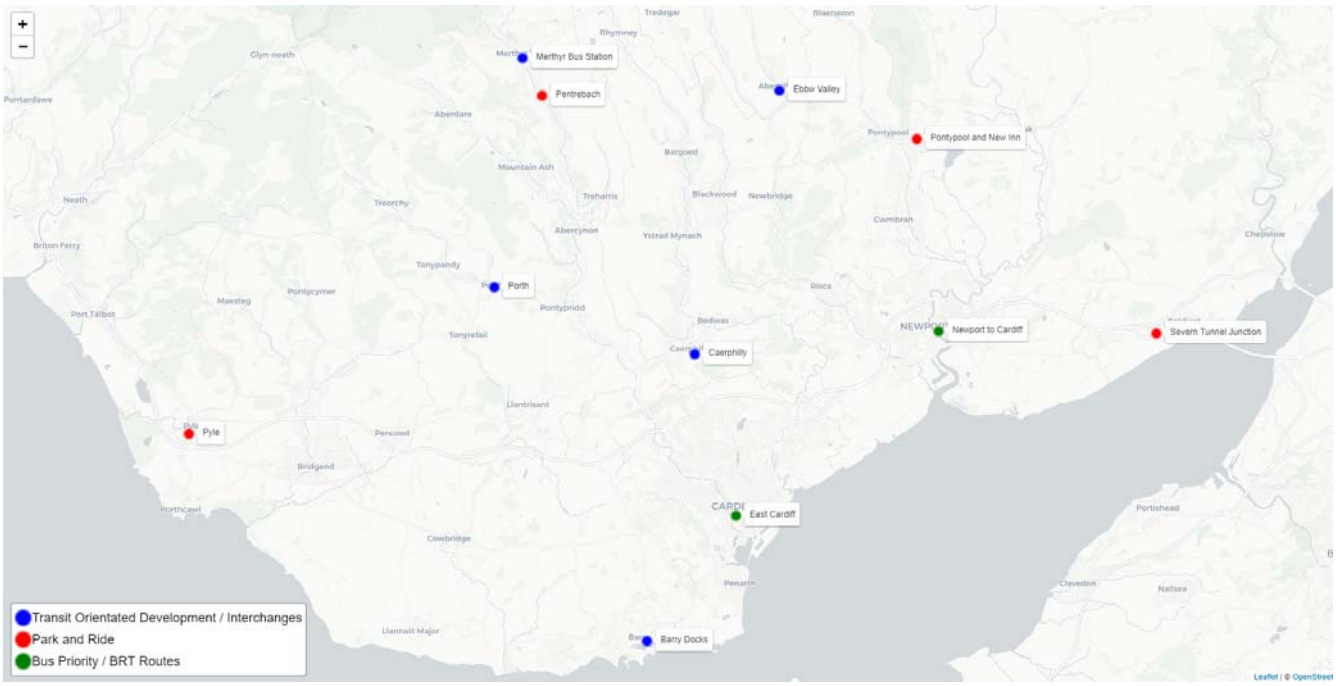


Figure 1. Map of sites in scope of this report.

3 Vehicles and infrastructure scenario development

This section explains how we estimated chargepoint numbers for private cars, car clubs, taxis and buses. It then includes 11 single page overviews of each site, showing key characteristics of the local area, development opportunities and constraints, forecasts for PiV uptake and chargepoint requirements, and preliminary car club suitability assessment.

We have a higher level of confidence around estimates provided for 7kW chargepoints for metro site users parking their private cars as these are based on a robust dataset and well understood assumptions. Estimates for rapid chargepoints for private cars, car clubs, taxis, and buses, are provided with a lower degree of confidence as they rely on more complex methodologies and less certain assumptions.

3.1 Infrastructure for rail customers' privately-owned cars

3.1.1 Proportion of PiVs in each local authority

To understand how many rail users may wish to charge EVs at each metro site, we first need to establish the proportion of PiVs in the local areas. A brief summary of the methodology is provided here and is provided in full in Appendix **Error! Reference source not found.**

We developed three scenarios for the uptake of privately-owned plug-in cars in each local authority area through to 2030. These scenarios are summarised below.

1. Business as usual: uptake of PiVs continues to be slow. Figures were estimated by extrapolation from the number of PiVs currently registered in the relevant local authority for each site[2].
2. Medium: PiV uptake accelerates in line with the 'low' scenario in the Department for Transport (DfT)'s *Road to Zero*[3] strategy, i.e. at least 30% of new car sales will be PiVs in 2030.

[2] DfT table VEH0130/1

[3] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf

3. High: PiV uptake accelerates in line with the 'high' scenario in *Road to Zero*, i.e. at least 70% of new car sales will be PiVs in 2030.

The proportion of PiVs in each local authority is not equal and is weighted by the current relative performance of uptake between authorities and the UK overall.

We believe the high scenario described above is achievable, given appropriate national and local support, and should be used as the basis for chargepoint network planning. There are several reasons for this assertion:

- Access to enough chargepoint infrastructure, of the right type and rate, at the right locations, is one of the most significant factors influencing plug-in vehicle uptake. If chargepoint provision is not planned based on the high scenario, plug-in vehicle uptake will always be constrained. The only way to achieve this high forecast is by making enough infrastructure available.
- If vehicle uptake falls behind forecasts, local authorities can focus on providing passive chargepoint provision, which involves providing cabling to parking bays and carrying out any network upgrades[Error! Bookmark not defined.]. This will deliver a better and more cost-effective outcome than providing enough chargepoints for a low or medium scenario and then carrying out additional network upgrades later.
- Even with the high scenario applied, forecast numbers are low in many instances and, based on our experience, would appear to be achievable targets.
- The baseline of current plug-in vehicle ownership is low, partly reflecting limited support for purchase and use. Our choice of the high scenario assumes that the Welsh Government will enact policies to deliver on its ambitions for decarbonising road transport.

For the reasons outlined above, we use our high scenario for plug-in car uptake to calculate infrastructure requirements and estimate costs throughout this report.

Uptake figures in this scenario for each local authority are shown in Table 2.

	2020		2025		2030	
	PiVs (% of all cars)	All cars	PiVs (% of all cars)	All cars	PiVs (% of all cars)	All cars
Bridgend	626 (0.8%)	77,617	3,841 (4.6%)	83,841	12,878 (14.3%)	90,065
Vale of Glamorgan	547 (0.8%)	70,012	3,357 (4.4%)	75,626	11,254 (13.9%)	81,240
Cardiff	994 (0.7%)	148,746	6,096 (3.8%)	160,674	20,437 (11.8%)	172,601
Rhondda Cynon Taf	367 (0.3%)	116,508	2,255 (1.8%)	125,851	7,559 (5.6%)	135,193
Merthyr Tydfil	68 (0.2%)	27,750	418 (1.4%)	29,975	1,400 (4.3%)	32,200
Caerphilly	248 (0.3%)	90,343	1,520 (1.6%)	97,588	5,095 (4.9%)	104,832
Blaenau Gwent	63 (0.2%)	34,333	384 (1.0%)	37,086	1,288 (3.2%)	39,839
Torfaen	180 (0.4%)	48,521	1,102 (2.1%)	52,412	3,695 (6.6%)	56,303
Monmouthshire	506 (0.9%)	56,779	3,107 (5.1%)	61,332	10,414 (15.8%)	65,885
Newport	397 (0.5%)	75,056	2,438 (3.0)	81,075	8,175 (9.4%)	87,093

Table 2. Cumulative forecast of plug-in car uptake in each local authority in 2020, 2025 and 2030 in the high uptake scenario (based on PiVs accounting for 70% of new car sales)

3.1.2 Infrastructure for rail customers' privately-owned cars

The ratio of PiVs to conventional vehicles in each local authority, established in the table above, was used to estimate the number of PiVs using the metro sites car parks, with appropriate adjustments as detailed below:

1. **Off-street parking:** PiV owners with off-street parking will primarily charge their vehicles at home as costs will be lower. Therefore, adjustments were made based on the estimated proportion of local households with off-street parking:
    a. High availability of off-street parking: 20% of PiV customers standard rate charging events will take place at the Metro site.
    b. Medium availability of off-street parking: 50% of PiV customers standard rate charging events will take place at the Metro site.
    c. Low availability of off-street parking: 80% of PiV customers standard rate charging events will take place at the Metro site.
2. **Technology selection:** PiV registrations will be 50% plug-in hybrid (PHEV) and 50% pure battery electric vehicle (BEV). This split is modified from the Committee on Climate Change's central scenario[4] which estimates 70% PHEV and 30% BEV. However, more recent evidence suggests PHEVs are not plugged in, reducing their benefits, and UK Government subsidies for them have been reduced. The relative proportion of BEV sales is therefore expected to increase.

[4] This split may change due to the introduction of the World Harmonised Light Vehicle Test Procedure (WLTP), recent changes to OLEV's Plug-in Car Grant, and improvements to BEV technology.

3. **Charging events:** PHEVs will need to recharge every day, and BEVs will be recharged on average twice weekly[5]. BEV battery capacities are expected to continue increasing, so their requirement for frequent charging events will reduce.
4. **Parking spaces:** the planned number of parking spaces, as provided by Cardiff Capital Region, was multiplied by the proportion of cars expected to be PiVs (derived from the assumptions above) to estimate the number of chargepoints required at each site.

Cars which are parked for more than a couple of hours, for example for shopping and commuting trips, can be charged using a 7kW (standard rate) unit. The assumptions above allow us to calculate with reasonable confidence the number of 7kW chargepoints required at each site.

3.1.1 Infrastructure metro sites rapid charging customers

The metro sites may also act as a charging hub for the general PiV users, and could encourage the use of PiVs, especially in areas with low availability of off-street parking. Rapid (50kW) chargepoints, able to charge vehicle in 30 to 60 mins could also be provided where needed for use by the local community. These chargepoints will be used by residents who visit the Metro site primarily in order to recharge their vehicle. Accurately forecasting the number of rapid chargepoints required for this use case is not possible at this time as it will require a more detailed study of the availability of other rapid chargepoints in the area, for example at a fuel forecourt or supermarket.

For the purposes of this high-level report, we estimated rapid chargepoint requirements based on the following assumptions:

1. **Off-street parking:**
    a. High availability of off-street parking: 0% of potential rapid charging events will take place at the Metro site.
    b. Medium availability of off-street parking: 50% of potential rapid charging events will take place at the Metro site.
    c. Low availability of off-street parking: 100% of rapid charging events will take place at the Metro site.
2. **Vehicle type.** Only BEVs (rather than PHEVs) will use rapid chargepoints.
3. **Charging frequency.** Vehicles will require an average of two rapid charges per week in 2020, and one per week in 2025 and 2030. This reflects expected increases in battery capacity. Rapid chargers will be able to deliver up to 12 charging events per day.
4. **Capping parking bay reallocation.** The designated spaces for public rapid charging bays have been capped at each site due to the uncertainty of future rapid charge provision in the wider area (e.g. supermarkets, petrol forecourts, public car parks etc.) and the fact that rapid chargers provisioned for the general public reduce the capacity of the car park for public transport users. The local authority should ensure that rapid chargepoint provision is capped so that the car park can serve its primary function and protect parking revenue. Ultimately this cap will need to be set individually for each site. For this report, we set an arbitrary limit of two per cent of car park spaces to be reassigned for rapid charging.

3.1.2 Car clubs

Car clubs provide a cost-effective and flexible alternative to owning a car, and can help alleviate parking congestion, pollution and transport poverty. Car clubs are typically provided

[5] Based on an average PHEV electric-only range of 20 miles, average BEV range of 250 miles, and national average daily mileage of 23 miles per day. We also assume BEV drivers will keep batteries topped up rather than running them almost to empty and then fully recharging.

by a private sector operator, although they can be run in-house by a local authority. Operating models vary, but typically users will pay a monthly or annual subscription plus a fee per hour of vehicle rental.

The feasibility of a car club depends on the characteristics and demographics of the local area. Typically, three conditions are required for a viable car club scheme: a relatively affluent, young local population; high population density; and a location near major public transport routes or key destinations. The relative importance of these factors varies for different car club operators; for example, some place little importance on the socio-economic group of the local area.

The most successful schemes have demand from public or private sector organisations during the day and residential demand during evenings and weekends. Many car clubs rely on an anchor client, often a local authority or other large public sector employer, to supply much of the weekday demand. New housing developments will often generate residential demand and improve viability.

We interviewed two car club representatives for this research: Keith Kelly, Head of Projects and Partnerships from Enterprise Car Club and Russell Fenner**,** Head of Innovation from E-Car Club. Enterprise primarily provide petrol and diesel vehicles but are increasingly offering plug-in hybrid and pure battery electric cars. E-Car Club only offers plug-in vehicles. We used qualitative data from these interviews, together with our experience and understanding of car clubs from undertaking other work in this sector, to make a preliminary assessment of the suitability of each site for a plug-in car club. Sites were categorised as high, medium or low, defined as follows:

- High: relatively high population density, relative medium or highly affluent population[6], and large residential, commercial or mixed development planned in the area
- Medium: lower population density and affluence and smaller developments planned
- Low**:** low population density and affluence and no significant developments planned

We recommend providing 22kW chargepoints for car clubs, as they strike a balance between providing a fast charge to top up vehicles between bookings, while hardware and installation costs are lower than for 50kW rapid chargers. (See Section 4.1.1 for more on the benefits and drawbacks of different charging speeds). The car club industry interviewees also proposed providing 22kW units.

It is beyond the scope of this review to undertake a detailed appraisal for the potential for car clubs at each site, using the criteria outlined here. Primarily this is because such review would need to be area-based, with the metro sites used as potential host locations, rather than working upwards on a site-specific basis. Based on discussions with Cardiff Capital Region, and our understanding of the car club market, we would recommend provisional deployment of at least one chargepoint at each site to support a car club vehicle. East Cardiff, which we expect would have the type of characteristics to support car club use, should consider making additional infrastructure available.

These recommendations are shown on the one-page overview for each site. We emphasise that further work would be required to refine these estimates, considering the factors discussed above. Car club operators would be able to undertake a more detailed demand assessment, or an independent assessment could be provided by Cenex.

[6] Affluence estimated using the Welsh Index of Multiple Deprivation

3.1.3 Buses

For this report we assessed each site to determine whether any of the proposed developments include a new or substantially rebuilt bus interchange. Where such developments are taking place, the local authority should mandate passive chargepoint provision, which involves installing the necessary underlying infrastructure (including capacity in the connection to the local electricity distribution network and electricity distribution board, as well as cabling to bays) to enable simple installation and activation of a charge point at a future date.

We recommend that all new bays at sites undergoing redevelopment are provided with passive charging capability to support charging at 50kW. It is possible that buses will be able to accept charging at faster rates; use of smart charging and energy storage (explained in Section 5) can be used to facilitate this without requiring an over-specified grid connection. Refer to the one-page overviews for each site for the number of passive bays needed at each site.

From an operational perspective it is not practical to provide charging infrastructure at all sites. Those where buses are stationary for at least 15 minutes, i.e. park & ride and layover sites should have passive infrastructure installed. At other sites, such as East Cardiff, vehicles are only stationary for a couple of minutes, and therefore it would not be practical to provide chargepoints. Bus operators should primarily use overnight charging at depots. For certain routes, opportunity charging may be required if the distance exceeds the vehicle's range. Technologies such as pantograph (overhead) and inductive charging are in development, and it may be useful to trial these, subject to funding. Further discussion of these technologies is in Section 4.

Providing passive capacity now allows a potential revenue stream from bus operators in the future as they look to incorporate plug-in buses. This will increase the bus operator's choice of plug-in technology and alleviate the need for buses to return to base for charging, increasing operating efficiency and reducing the power demand on bus depots as electrification increases.

Cardiff, Caerphilly and Newport Local Authorities have recently submitted low carbon bus bids to the Office for Low Emission Vehicles (OLEV) in partnership with the local private bus providers.

3.1.4 Taxis

DfT figures[7] show that the current provision of taxis and private hire vehicles licenced in each local authority is as shown in Table 3:

[7] TAXI 0105 https://www.gov.uk/government/statistical-data-sets/taxi01-taxis-private-hire-vehilces-and-their-drivers

	Taxi and private hire vehicles
Bridgend	460
Vale of Glamorgan	288
Cardiff	2,162
Rhondda Cynon Taf	462
Merthyr Tydfil	174
Caerphilly	427
Blaenau Gwent	157
Torfaen	201
Monmouthshire	212
Newport	885

Table 3. ***Current provision of taxi and private hire vehicles in each local authority.***

Local authorities are responsible for taxi licensing and are therefore able to mandate the uptake of PiVs by amending local policies. Cardiff Council already has a six-year age limit in place for saloon Hackney taxis and private hire vehicles, which means any policy changes would alter the fleet composition relatively quickly. However, others have much less restrictive age limit policies. We have therefore made two assumptions to inform development of a 'high' scenario for plug-in taxi uptake which attempts to balance the different policy baselines of the various local authorities:

- All local authorities adopt a ten year age limit policy for Hackney and private hire vehicles.
- All 10 local authorities implement a policy which requires newly licensed Hackney and private hire vehicles to be plug-in (PHEV or BEV) from January 2022.

These assumptions are made to show what would be required in order to achieve a 'high' scenario of plug-in vehicle uptake. We are not assessing their feasibility as part of this report. Further work would be required to appraise them and propose policy levers to support their implementation, such as in-service financial support for drivers or tools and guidance to help with the transition to plug-in vehicles.

Aside from a small number of exemptions such as limousines and classic cars, the policies detailed above would transition approximately 30% of the taxi fleet to plug-in by the start of 2025 and around 80**%** by the start of 2030, as shown in Table 4. Note that these outcomes fall short of the Welsh Government's ambition (announced in 2017) to move buses and taxis to zero-carbon alternatives within 10 years.

	Plug-in taxi and private hire vehicles	
	2025	**2030**
Bridgend	138	368
Vale of Glamorgan	86	230
Cardiff	649	1730
Rhondda Cynon Taf	139	370
Merthyr Tydfil	52	139
Caerphilly	128	342
Blaenau Gwent	47	126
Torfaen	60	161
Monmouthshire	64	170
Newport	266	708

Table 4. Forecast uptake of plug-in taxi and private hire vehicles in each local authority.

In order to estimate chargepoint requirements at each site we would need detailed information on taxis in each area, including number of trips to and from each site, dwell time, and total daily mileage. Sourcing this data was outside the scope of this report. However, we were able to make a high-level assessment of likely charging needs, using the following assumptions:

- 30% of taxis being plug-in by 2025, and 80% by 2030, as discussed above
- 20% of taxis in each local authority will frequent the specific Metro site and require access to rapid charging. This assumes that each local authority will have five rapid charging hubs available for taxis, which we estimate would be enough to give good geographical coverage. Further work is needed to refine this estimate; as with the car clubs this work needs to be undertaken on an area-led, rather than site-specific basis.
- One rapid chargepoint is needed per 25 plug-in taxis in the fleet. This is the ratio calculated by Cenex for Kent County Council following in-depth analysis of their taxi parc.

Results are shown on the one-page overviews for each site.

3.2 Infrastructure requirements and costs

The following pages present the results of our analysis for all 11 sites for 2025 and 2030, for the high uptake scenario[8]. The first page is a template provided to define key terms and explain how results were calculated or estimated. Each page includes the following:

- **Site characteristics:** type, catchment areas, estimated catchment population, catchment affluence, off-street parking availability, planned parking spaces, development opportunities and potential constraints.
- **Graph**: forecast cumulative plug-in car uptake in the relevant local authority.
- **High confidence results:** a table showing the results in which we have a high degree of confidence, i.e. number of 7kW chargepoints required at each site and costs (including installation and DNO costs).
- **Low confidence results:** a table showing the results in which we have a lower degree of confidence: number of rapid chargepoints required for cars, car clubs and taxis; passive chargepoint requirement for buses; peak power requirements; and total costs

[8] Sensitivity analysis, plus figures for 2020, can be found in Appendix B.

for 7kW and rapid chargepoints (including installation and DNO costs). This also includes total power provision and estimated costs of all infrastructure provision.

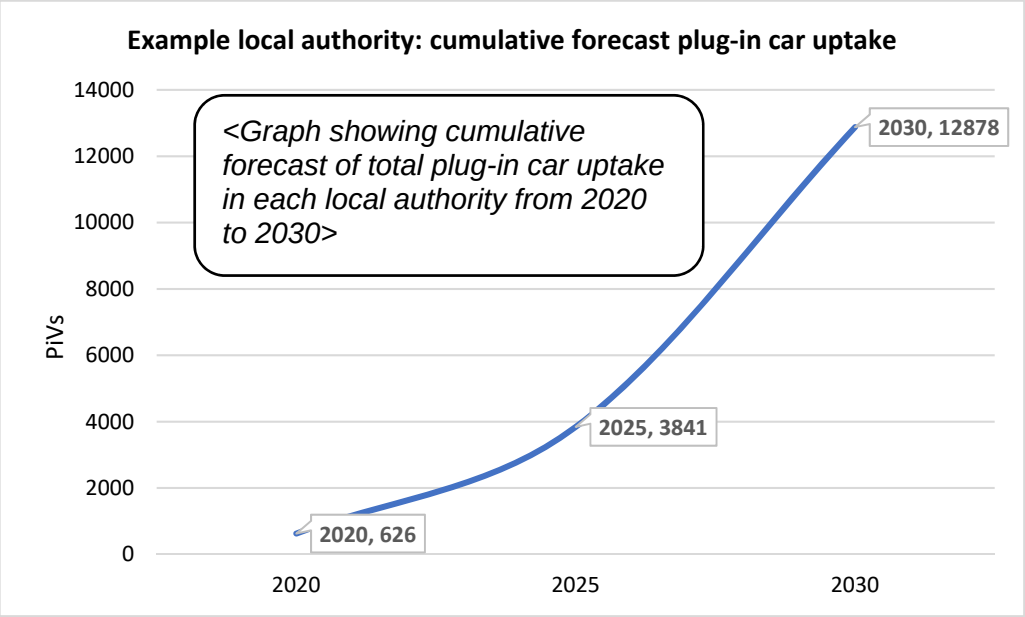
DNO costs are the most significant cost element for medium and high capacity installations. A low capacity installation, up to 70kVA, would typically cost around £3,000. A medium capacity installation, between 70 and 1,000 kVA, may incur costs in the region of £75,000. A high capacity installation, above 1,000 kVA, could incur costs of around £200,000. Since only two rapid chargers at one site would require a medium capacity installation, it is clear that DNO costs across the region will be substantial.

Please note the following when interpreting the results:

- Chargepoint forecasts for metro rail customers requiring standard charging (7kW) have been provided with a high level of confidence.
- Lower confidence estimations of the future demand from plug-in taxis, car clubs, buses and the potential for the metro sites to host rapid chargers for wider community use (non-rail service users) with PiVs have also been provided – these should be subject to further study before infrastructure purchase decisions are made. Cost and infrastructure provision are provided in 2 scenarios:
    - 2025 scenario includes all installation costs relating to infrastructure to support 2025 PiV usage estimations.
    - 2025 & 2030P scenario includes all 2025 infrastructure costs plus the provision of passive (P) infrastructure to support expected infrastructure requirements for 2030 PiV usage estimations.
- Costs for chargepoint hardware and installation are industry averages: individual site surveys and quotes will be required to obtain accurate prices. See Section 5 for more information.
- Costs for DNO services are ’worst typical case’. They assume that peak power cannot be offset by Smart Charging or energy storage, and they assume the highest end of the cost range for typical network connections and upgrades. See Section 5 for more information on infrastructure cost factors.
- Summary cost tables breaking down costing assumptions at each site are provided in Appendix B.

Site: *<Example>* **Local authority:** *<Example>* **Type**: *<Type of site, e.g. park and ride or bus priority route>*

Catchment areas: *<Names of local towns or areas which provide demand for transport services at this site>*	**Planned parking spaces:** *<Provided by Cardiff Capital Region, or plans that are in the public domain>*
Catchment affluence: <Categorised using the Welsh Index of Multiple Deprivation as low (below 700), medium or high (above 1,000)>	**Off-street parking availability:** *<Estimated availability of off-street parking, taken from Google Earth, and categorised as high, medium or low. This was used to help estimate demand for charging as explained in Section 3.2.1>*
Opportunities: *<Qualitative assessment of local considerations e.g. planned developments that could impact demand or changes to local public transport services>*	
Constraints: *<Qualitative assessment of any constraints that may impact plans for plug-in vehicles, such as potential land ownership or planning permission issues>*	

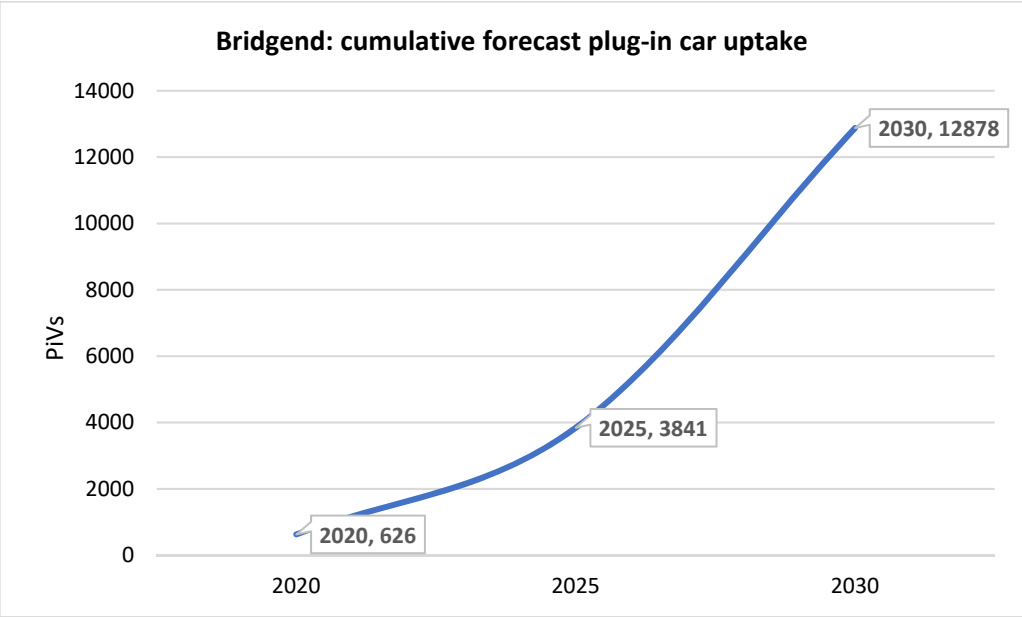


Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	*<Forecast 7kW chargepoints for rail users' private cars. Numbers are for total outlets, but costs assume double head units will be installed. Costs include installation and DNO services 2030 provision is for passive (P) installations only.>*	
Cost of 7kW chargepoints		
7kW peak power requirement	<Peak power requirement for rail user private car provision>	

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	*<Forecast fast and rapid chargepoint requirements for all vehicles, peak power requirement (total amount of power needed to serve all chargepoints), and total estimated costs including installation and DNO services. 2030 provision is for passive (P) installations only >*	
50kW chargepoints (taxis)		
22kW chargepoints (car clubs)		
Passive 50kW provision (buses)		
Peak power requirement (kW)		
Total costs (7kW, 22kW and 50kW including passive)		

Site: Pyle **Local authority:** Bridgend **Type**: Park and ride

Catchment areas: Pyle, Porthcawl, Kenfig Hill, Cefn Cribwr and Cornelly	**Planned parking spaces:** 75
Catchment affluence: Medium	**Off-street parking availability:** Medium
Opportunities: The demand for park and ride (P&R) spaces at Pyle station is increasing in line with station usage data: journeys increased 35% between 2011/12 an 2016/17. The expanded integrated transport hub will serve Pyle and its catchment area, improve links to Village Farm Industrial Estate and provide P&R facilities for commuting to Swansea and Cardiff. The station's proximity to Porthcawl provides access to the Metro network for current residents and those that will be attracted by the regeneration of the town. The 23-space car park operates over capacity; at least 75 additional spaces should be considered as part of any future development, subject to an updated business case. The proposal will also include Active Travel connections and consider including EV charging points and cycle parking facilities where appropriate.	
Constraints: Ownership of land extending from the current car park to the West alongside the train station should be investigated. As with all sites, availability of Western Power Grid Connection and cost of any required reinforcement will need to be determined via a budget estimate request and subsequent application.	



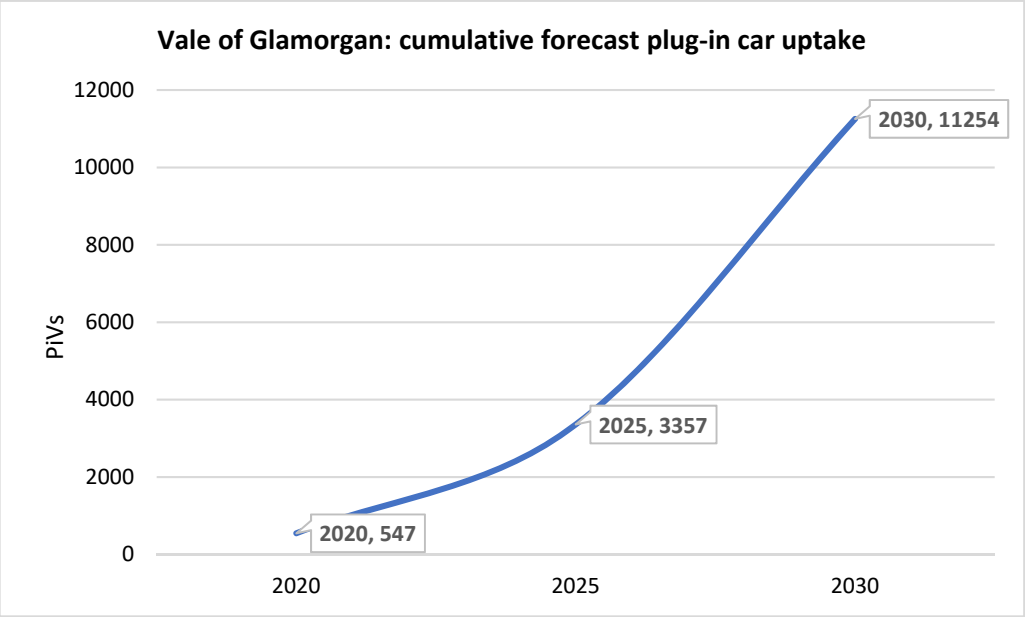
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	2	2 & 2P
Cost of 7kW chargepoints	£14,600	£16,300
Peak power requirement (kW)	14	28

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	2	2 & 2P
50kW chargepoints (taxis)	1	1 & 3P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	2	2 & 2P
Peak power requirement (kW)	286	500
Total costs (7kW, 22kW and 50kW including passive)	**£252,100**	**£259,000**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: Barry Docks **Local authority:** The Vale of Glamorgan **Type:** Transit Orientated Development / Interchange

Catchment areas: Barry, Barry Waterfront, Cardiff Airport	**Planned parking spaces:** 100
Catchment affluence: Medium	**Off-street parking availability:** Medium
Opportunities: A proposed bus interchange would include four or five bus bays, provision for taxis and possibly a 60 space extension to the existing P&R which is at capacity. The new rail franchise includes additional line capacity and all P&R sites within Barry are at or over capacity. Phase 2 of the Barry Waterfront development will include over 1,500 new houses, a school and retail units. Additional regeneration is planned to include a mixed use provision between two locations identified along the rail corridor and a Targeted Regeneration Investment (TRI) bid has been submitted for this provision. A North–South Barry bus provision to link with the railway could reduce the congestion on the Port Road / Culverhouse Cross corridor and the Dinas Powys corridor. EV chargepoints will be included in any future proposal implemented.	
Constraints: A feasibility study is required to identify the most suitable location and to also assess suitability of the land adjacent to the railway and park & ride site, which would be the most obvious strategic location. Local Transport Fund is being allocated to carry out this work in 2018/19.	



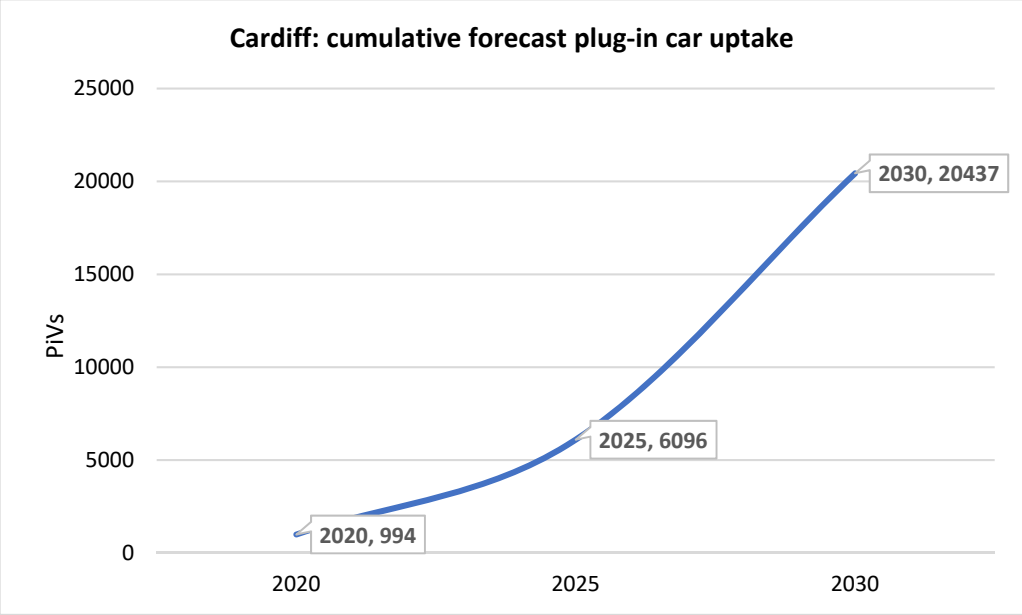
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	2	2 & 4P
Cost of 7kW chargepoints	£14,600	£18,000
Peak power requirement (kW)	14	42

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	2	2 & 0P
50kW chargepoints (taxis)	1	1 & 1P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	5	5 & 0P
Peak power requirement (kW)	436	514
Total costs (7kW, 22kW and 50kW including passive)	**£347,350**	**£352,050**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: East Cardiff **Local authority:** Cardiff **Type:** Bus priority route

Catchment areas: Cardiff	**Planned parking spaces:** 269
Catchment affluence: High	**Off-street parking availability:** Low
Opportunities: Planning permission has been granted for a new transport interchange opposite Cardiff Central station. This is part of a larger mixed use scheme providing retail, offices and flats. The nearest large development is 7,000 houses at Radyr on the outskirts of North East Cardiff. The City Centre East project will incorporate a series of sustainable and active travel packages that will enable improved bus connections in Cardiff City Centre, improved active travel infrastructure and pedestrian safety improvements. The infrastructure improvements will benefit local and regional transport through providing improved sustainable connections to key transport hubs, employment zones and visitor destinations. Improvements include new bus priority measures to connect local and regional buses through the east and south of the city to the Enterprise Zone, Queen Street Station, Retail Quarter (St David's Shopping Centre), Central Square, The Transport Interchange, Central Quay, and Cardiff Bay; bus priority measures that will allow buses to service the Transport Interchange on major event days; installation of Central Cycle Superhighway Section that will connect and link all 4 superhighways to the city centre; pedestrian crossing and public realm improvements on/to Dumfries Place, Station Terrace, Queen St Station, Stuttgart Strasse; 20mph Zone and traffic calming measures; air quality improvements (outside Queen Street Station); cycle parking and Next Bike; and EV chargepoint infrastructure.	
Constraints: The willingness of the developer to integrate zero emission infrastructure into the scheme could be a constraint, although Section 106 could be used to help mitigate this. Electricity capacity is likely to be a constraint, given the scale of chargepoint infrastructure required.	



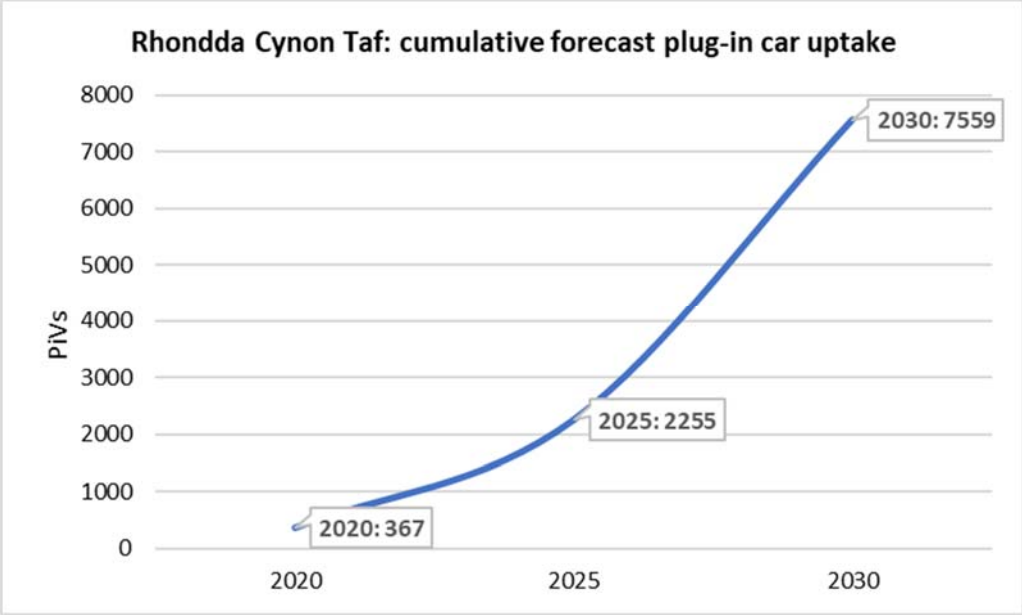
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	6	6 & 14P
Cost of 7kW chargepoints	£29,800	£113,700
Peak power requirement (kW)	42	140

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	5	5 & 0P
50kW chargepoints (taxis)	5	5 & 9P
22kW chargepoints (car clubs)	2	2 & 0P
Passive 50kW provision (buses)	14	14 & 0P
Peak power requirement (kW)	586	1127
Total costs (7kW, 22kW and 50kW including passive)	**£432,800**	**£581,400**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: Porth **Local authority:** Rhondda Cynon Taff **Type:** Transit Orientated Development / Interchange

Catchment areas: Porth, Rhondda Fach, Trebanog, Tonyrefail, Gilfach Goch	**Planned parking spaces:** 150
Catchment affluence: Low	**Off-street parking availability:** Medium
Opportunities: A modern transport hub and station quarter is proposed to present a transformational change for Porth and improve connectivity in the Town Centre. The strategy identifies the Alec Jones Day Centre site for a new Transport Hub, – including a seven bay bus interchange, taxi rank, cycle stores, park and ride and train station links. The current interchange between bus and rail services is poor. The vision is to transform Porth into a prosperous and attractive town, with improved connectivity to and from surrounding areas, anchored by a Transport Hub and a regenerated "Station Quarter". Electric chargepoints will be included within any future proposal implemented.	
Constraints: There is no rail link to many of the communities surrounding Porth, such as the Rhondda Fach, Trebanog, Tonyrefail and Gilfach Goch, and interchange at Porth is vital to allow commutable journeys, particularly to Pontypridd and Cardiff, to be made by public transport. The current on-street set up has three main bus stops 450 metres apart and removed from the railway station, thus preventing a seamless transition between the two modes.	



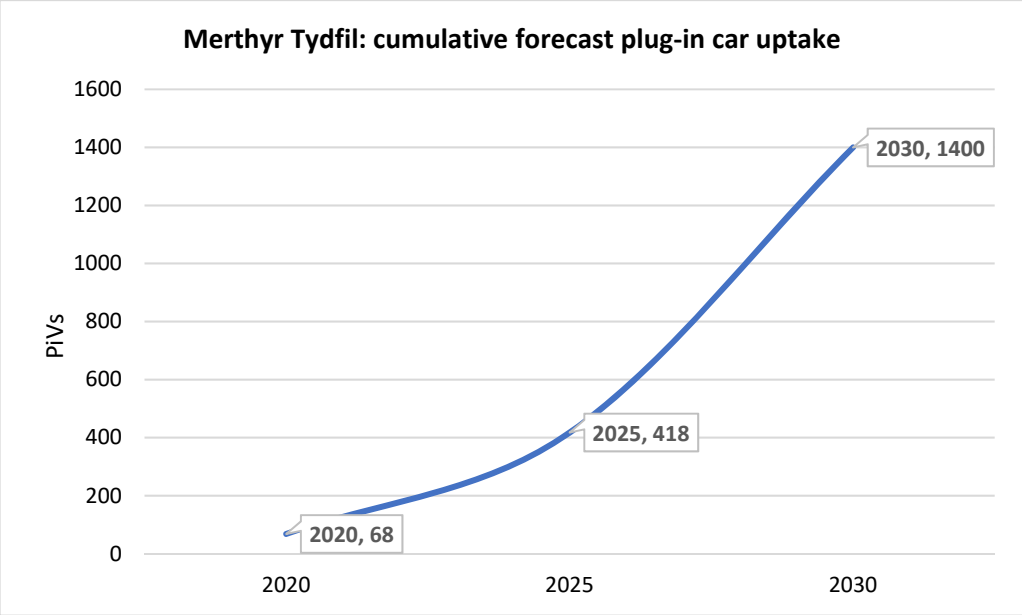
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	2	2 & 2P
Cost of 7kW chargepoints	£14,600	£16,300
Peak power requirement (kW)	14	28

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	0	0 & 1P
50kW chargepoints (taxis)	2	2 & 1P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	2	2 & 0P
Peak power requirement (kW)	286	450
Total costs (7kW, 22kW and 50kW including passive)	**£252,100**	**£257,700**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: Merthyr Bus Station **Local authority:** Merthyr Tydfil **Type:** Transit Orientated Development / Interchange

Catchment areas: Merthyr Tydfil, including Dowlais and Treharris	**Planned parking spaces:** 76 (+33 at the rail station)
Catchment affluence: Low	**Off-street parking availability:** Low
Opportunities: Merthyr Bus Station is a fully developed project comprising a new 14 bay bus interchange and link between bus and rail. Project managers are reconsidering renewable energy provision to support zero emission capable buses (and possibly taxis) at the station. Large developments in the area include Goat Mill Road mixed use and plans for a large leisure facility at Rhydycar West.	
Constraints: If local renewable energy provision is not included in the scheme, electricity demand could exceed local grid capacity and therefore power could be a constraint here.	



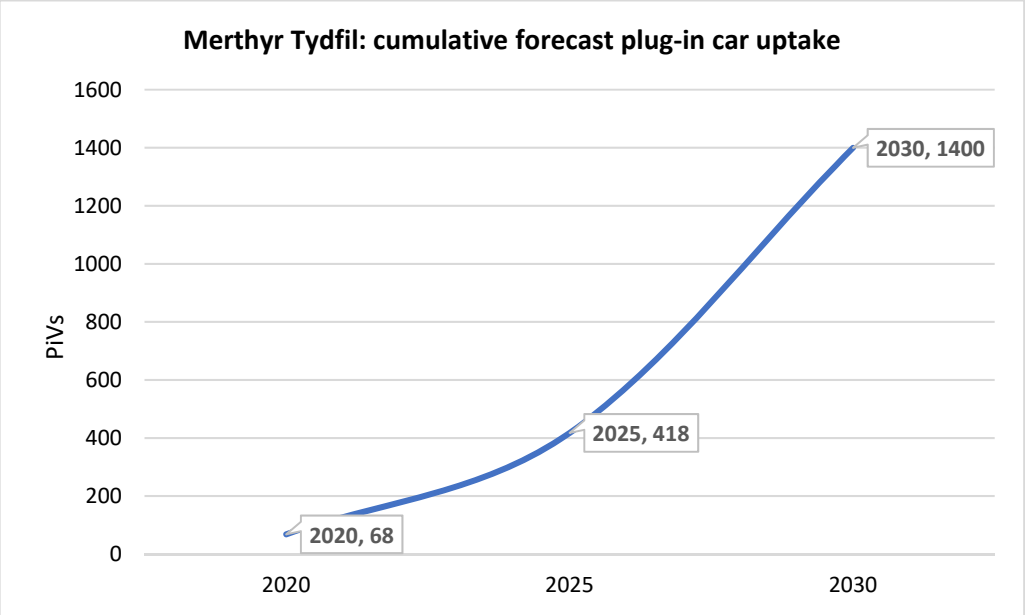
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	2	2 & 2P
Cost of 7kW chargepoints	£14,600	£16,300
Peak power requirement (kW)	14	28

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	2	2 & 0P
50kW chargepoints (taxis)	1	1 & 1P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	14	14 & 0P
Peak power requirement (kW)	586	686
Total costs (7kW, 22kW and 50kW including passive)	**£442,600**	**£446,900**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: Pentrebach **Local authority:** Merthyr Tydfil **Type:** Park & ride

Catchment areas: Merthyr Tydfil, including Dowlais and Treharris	**Planned parking spaces:**
Catchment affluence:	**Off-street parking availability:**
Opportunities: A brownfield site that has been largely vacant for nearly 10 years is being regenerated. The South Wales Metro, with high frequency light rail connections, will catalyse development of a sustainable, mixed use neighbourhood with excellent links to the local area and Merthyr Tydfil Town Centre. The redevelopment can maximise opportunities from planned transport infrastructure investment, i.e. increases in service capacity, Pentrebach station and park and ride improvements and a potential future new metro station. It would provide approximately 20% of the identified housing requirement over the LDP Plan period, new employment and local retail provision and offer opportunities for improved green infrastructure along the River Taf corridor. The Hoover Strategic Regeneration Area is a major mixed-use development comprising 440 new homes, local convenience retail provision of 409m^2, new employment development on 6.5 hectares of land, Pentrebach Station Park and Ride, a new footbridge to Abercanaid, and safeguarded land for a new Metro station. The Council has worked with Welsh Government and Transport for Wales to prepare a draft Framework Masterplan (June 2018) for the area. This has been informed by providing a layout that indicates densities of between 30 to 45 dwellings per hectare. It identified 6.5 hectares of vacant and underused land for new employment use at the Willows/Abercanaid Industrial Estate and reflects sustainable placemaking principles and the Hoover Factory site legacy.	
Constraints: No significant constraints identified	



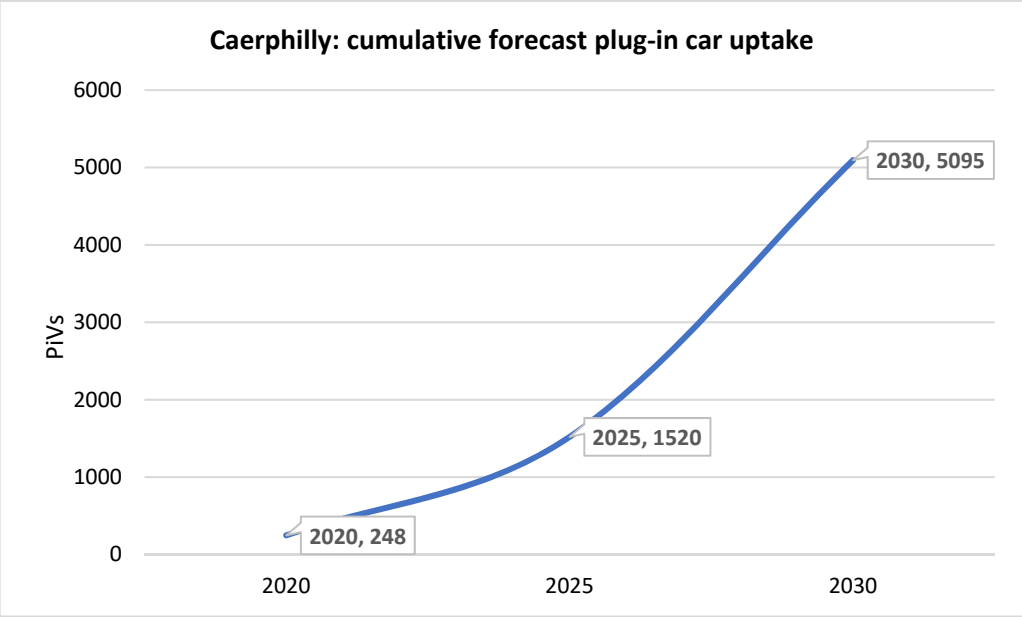
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	2	2 & 2P
Cost of 7kW chargepoints	£14,600	£17,200
Peak power requirement (kW)	14	28

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	1	1 & 1P
50kW chargepoints (taxis)	0	0 & 1P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	3	3 & 0P
Peak power requirement (kW)	236	350
Total costs (7kW, 22kW and 50kW including passive)	**£220,350**	**£224,650**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: Caerphilly **Local authority:** Caerphilly **Type**: Transit Orientated Development / Interchange

Catchment areas: Caerphilly, Bedwas, Trethomas, Machen and Abertridwr (Aber Valley)	**Planned parking spaces:** 280
Catchment affluence: Medium	**Off-street parking availability:** Medium
Opportunities: Caerphilly is an interchange where the frequency of bus and rail services promotes natural integration. Caerphilly is developing a brief to implement a seamless interchange between rail and bus. High quality passenger facilities will be provided, including electronic information, increased capacity with 280 park and ride spaces, and electric vehicle chargepoints for buses and private cars. A bid has been submitted to OLEV for electric buses with the local commercial operator and the results of the bid are due imminently. If successful, the town would benefit from fully electric buses, including charging infrastructure at the commercial operator's depot. A town centre clean air zone will be created, affecting buses and taxis; the project will include wider goals such as tying into business development and a green hub for technology.	
Constraints: No significant constraints were identified.	



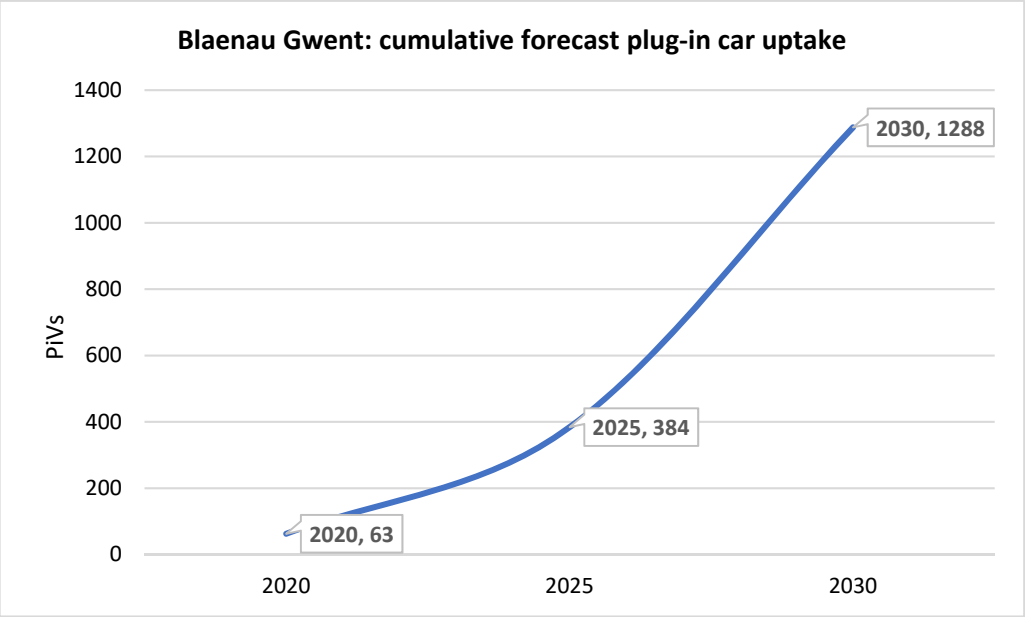
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	4	4 & 4P
Cost of 7kW chargepoints	£22,200	£25,600
Peak power requirement (kW)	28	56

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	1	1 & 3P
50kW chargepoints (taxis)	3	3 & 3P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	6	6 & 0P
Peak power requirement (kW)	550	828
Total costs (7kW, 22kW and 50kW including passive)	**£418,450**	**£428,350**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: Ebbw Valley/Abertillery **Local authority:** Blaenau Gwent **Type**: Transit Orientated Development / Interchange

Catchment areas: Abertillery, Cwmtillery, Blaina, Nantyglo and Six Bells	**Off-street parking availability:** 100
Catchment affluence: Low	**Off-street parking availability:** Low
Opportunities: The current Ebbw Valley Railway service is one train per hour. The Transport Minister made a commitment for a second train service per hour to Newport to be introduced by 2021. The Abertillery Spur option will create a link from Abertillery to Ebbw Valley at Aberbeeg. Previous proposals regarding Heavy Rail to Abertillery are being reviewed with a range of options being considered, e.g. light rail or guided bus. Electric vehicle chargepoints will be included within any future proposals implemented. Trains from Llanhilleth take around 48 minutes to Cardiff Central (with onward connections to Bristol and London Paddington).	
Constraints: Currently, the proposed site is a Tesco including a fuel forecourt.	



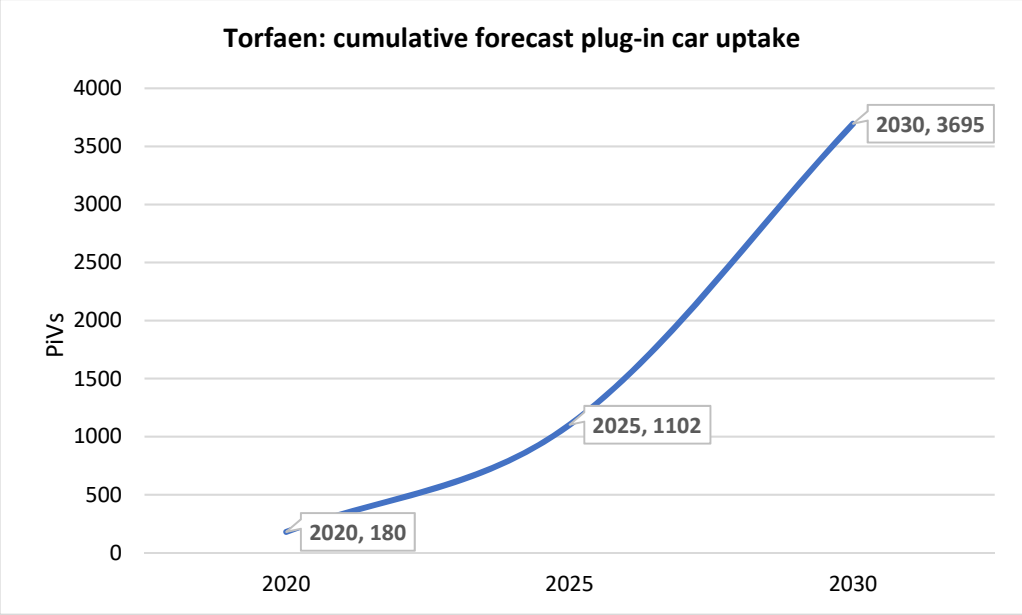
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	2	2 & 2P
Cost of 7kW chargepoints	£14,600	£16,300
Peak power requirement (kW)	14	28

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	1	1 & 1P
50kW chargepoints (taxis)	1	1 & 1P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	2	2
Peak power requirement (kW)	186	400
Total costs (7kW, 22kW and 50kW including passive)	**£188,600**	**£195,500**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: Pontypool/New Inn **Local authority:** Torfaen **Type:** Park and ride

Catchment areas: Blaenavon, Abersychan, Pontypool (including Trevethin), New Inn, Little Mill and Usk	**Planned parking spaces:** 200
Catchment affluence: Low	**Off-street parking availability:** Medium
Opportunities: The scheme is for provision of a Park & Ride facility with a minimum of 200 spaces including electric vehicle chargepoints on the South Side of A4042 at Pontypool and New Inn Rail Station, which has DDA compliant platform access and improved station facilities including cycling facilities. The aim is to develop the station as a key regional travel hub. The station is a potential interchange point for passengers from the 'Eastern Valley' (including Blaenavon, Abersychan, Pontypool, New Inn), Usk and the West of Monmouthshire. The station has good connections to the North of England, e.g. Crewe and Manchester. The station will support the proposed Mamhilad development with a current allocation of 1,800 dwellings and up to 12,000 houses planned at Llanfrechfra. The station has already benefited from WG investment for physical improvements and design and development works for the current park and ride served off the A4042(T), with associated accessibility improvements. The former project consisted of the improvement of parking, pedestrian and cycling facilities and included the provision of a bus stop and turning area to accommodate any future interchange facilities. Active Travel improvements have been undertaken to better connect the station to the surrounding area and facilities.	
Constraints: No significant constraints identified.	



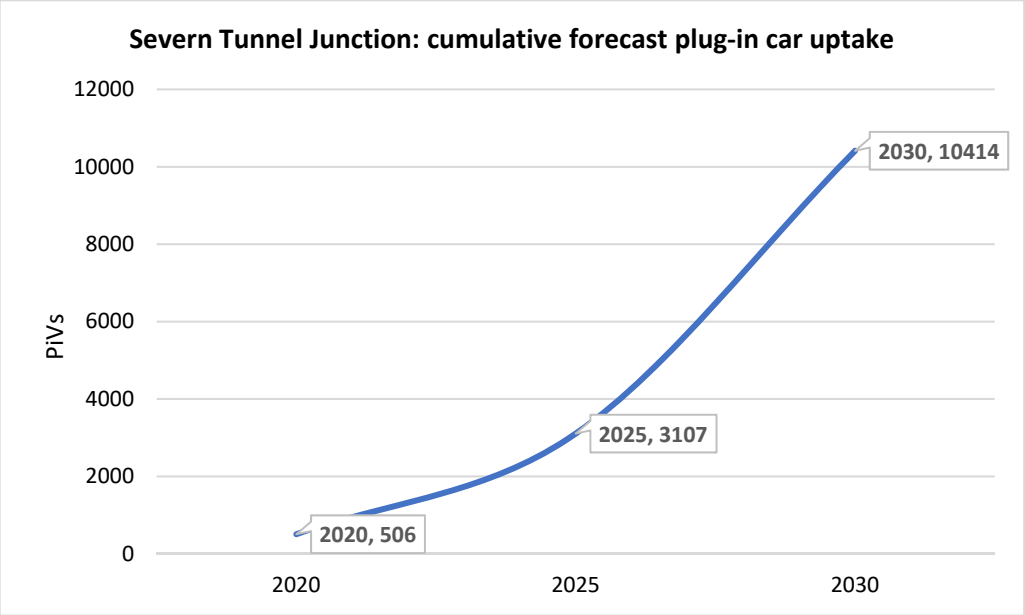
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	2	2 & 4P
Cost of 7kW chargepoints	£14,600	£18,000
Peak power requirement (kW)	14	42

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	1	1 & 2P
50kW chargepoints (taxis)	0	0 & 1P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	1	1
Peak power requirement (kW)	136	414
Total costs (7kW, 22kW and 50kW including passive)	**£156,850**	**£166,750**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: Severn Tunnel Junction **Local authority:** Monmouthshire **Type:** Park and ride

Catchment areas: Rogiet, Caldicot, Magor & Undy, Shirenewton, Chepstow and Caerwent	**Planned parking spaces:** 314
Catchment affluence: High	**Off-street parking availability:** High
Opportunities: The scheme includes a proposal for 200 additional parking spaces. The existing car park will be repurposed to provide 40 additional bike and ride spaces, safer walking and cycling access, a revamped bus-rail interchange and plug-in vehicle chargepoints. The Severnside development near Chepstow will include 13,000 new homes; developments are also planned for Crick and Caldicot.	
Constraints: There are possible land issues, but no details have been made available.	



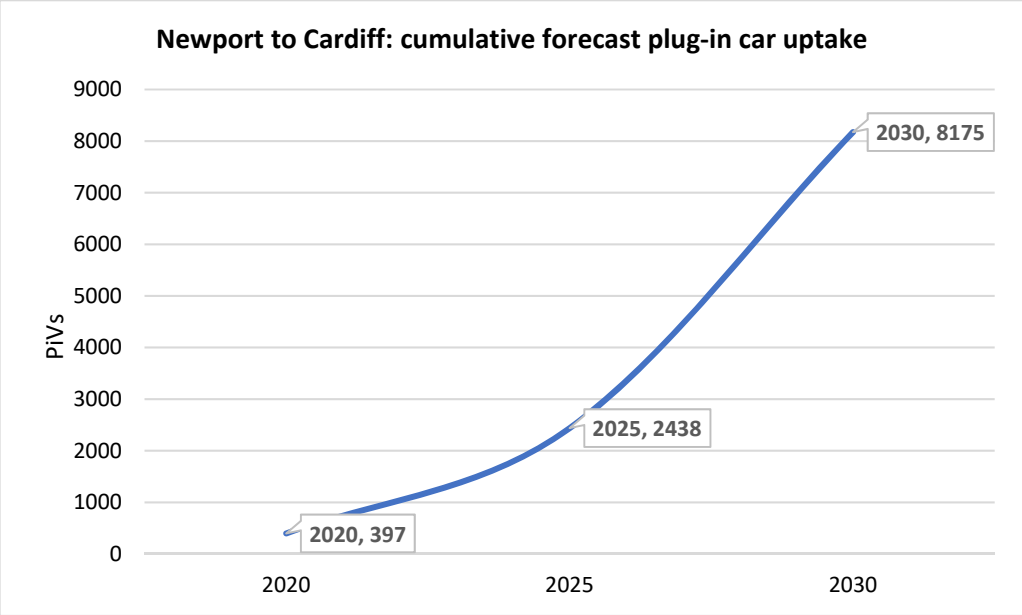
Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	4	4 & 4P
Cost of 7kW chargepoints	£22,200	£25,600
Peak power requirement (kW)	28	56

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	0	0 & 0P
50kW chargepoints (taxis)	1	1 & 1P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	2	2
Peak power requirement (kW)	222	350
Total costs (7kW, 22kW and 50kW including passive)	**£202,950**	**£208,950**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

Site: Newport to Cardiff **Local authority:** Newport **Type:** Bus priority corridor

Catchment areas: Newport and Cardiff	**Planned parking spaces:** 100
Catchment affluence: Medium	**Off-street parking availability:** Medium
Opportunities: The Newport to Cardiff Bus Corridor links several significant trip attractors in the Cardiff Capital Region. A large scale mixed use development is planned between St Mellons and Duffryn, to include a new railway station. Residential developments include Glan Llyn (4,000 houses) and Llanwern (1,100 houses). The new International Convention Centre Wales is being developed at Celtic Manor. With a total cost of £83.7m including car parking and external landscaping, ICC Wales will be capable of accommodating up to 5,000 delegates with a total floor space exceeding 26,000 square metres. Services on this corridor currently suffer from extended journey times (around one hour for a 15 mile journey). The scheme would provide new bus priority measures from Newport to Cardiff along the M4 and A48 corridors, including consistent, high-quality roadside infrastructure to promote and facilitate increased bus use. This will improve journey times and reliability. The scheme will also provide the foundation to introduce a Park and Ride facility to the East of Newport, including charging for electric vehicles.	
Constraints: Land ownership along the route and current traffic flows and congestion could potentially be constraints: further work is required to understand these issues.	



Metro customer user private car provision		
High confidence results	**2025**	**2025 & 2030P**
7kW chargepoints (cars)	2	2 & 2P
Cost of 7kW chargepoints	£14,600	£16,300
Peak power requirement (kW)	14	28

All infrastructure provision		
Low confidence results	**2025**	**2025 & 2030P**
50kW chargepoints (private cars)	2	2 & 0P
50kW chargepoints (taxis)	2	2 & 4P
22kW chargepoints (car clubs)	1	1 & 0P
Passive 50kW provision (buses)	0	0
Peak power requirement (kW)	236	450
Total costs (7kW, 22kW and 50kW including passive)	**£220,950**	**£227,250**

The infrastructure estimates and associated costs must be subject to further study before investment decisions are made. Site specific installation and connection costs have not been determined.

3.1 Site attribute summary

Target Location	Type	Catchment areas	Catchment affluence	Off-street parking availability	Planned parking spaces	Bus Interchange
Bridgend	Park & Ride	Pyle, Porthcawl, Kenfig Hill, Cefn Cribwr & Cornelly.	Medium	Medium	75	Yes
Vale of Glamorgan	Transit Oriented Development /Interchange	Barry, Barry waterfront, Cardiff Airport	Low	Low	100	Yes
Cardiff	Bus priority route	Cardiff	Medium	Low	269	Yes
Rhondda Cynon Taf	Transit Oriented Development /Interchange	Porth, Rhondda Fach, Trebanog, Tonyrefail, Gilfach Goch	Low	Medium	150	Yes
Merthyr Tydfil	Transit Oriented Development /Interchange	Merthyr Tydfil, including Dowlais and Treharris	Low	Low	76(+73 rail station)	Yes
Merthyr Tydfil (Pentrebach)	Park & Ride	Merthyr Tydfil, including Dowlais and Treharris	Low	Low	100	Yes
Caerphilly	Transit Oriented Development /Interchange	Caerphilly, Bedwas, Trethomas, Machen and Abertridwr (Aber Valley)	Medium	Low	280	Yes
Blaenau Gwent	Transit Oriented Development /Interchange	Abertillery, Cwmtillery, Blaina, Nantyglo and Six Bells	Low	Low	100	Yes
Torfaen	Park & Ride	Blaenavon, Abersychan, Pontypool (including Trevethin), New Inn, Little Mill and Usk	Low	Medium	200	Yes
Monmouthshire	Park & Ride	Rogiet, Caldicot, Magor & Undy, Shirenewton, Chepstow and Caerwent	High	High	314	Yes
Newport	Bus Priority Corridor	Newport & Cardiff	Medium	Medium	100	Yes

Table 5. Summary of target location catchments & proposed infrastructure.

3.2 Site infrastructure and power requirements summary

	2025 Base provision for metro rail customers			2025 Potential provision for other services (car club, taxi, public rapid charge point, passive bus)					
Metro site	**7kW charge outlets**	**Peak power requirement (kW)**	**Estimated cost**	**22kW fast chargers for car clubs**	**50kW rapid chargers for taxi**	**50kW rapid chargers for public use**	**50kW passive provision for bus use**	**2025 Total peak power requirement (kW)**	**2025 Total estimated cost**
Bridgend	2	14	£14.6k	1	1	2	2	286	£252k
Vale of Glamorgan	2	14	£14.6k	1	1	2	5	436	£347k
Cardiff	6	42	£29.8k	2	5	5	14	586	£433k
Rhondda Cynon Taf	2	14	£14.6k	1	2	0	2	286	£252k
Merthyr Tydfil	2	14	£14.6k	1	1	2	14	586	£443k
Pentrebach	2	14	£14,6k	1	0	1	3	236	£220k
Caerphilly	3	28	£22.2k	1	3	1	6	550	£418k
Blaenau Gwent	2	14	£14.6k	1	1	1	2	186	£189k
Torfaen	2	14	£14.6k	1	0	1	1	136	£157k
Monmouthshire	3	28	£22.2k	1	1	0	2	222	£203k
Newport	2	14	£14.6k	1	2	2	0	236	£221k
Total	**28**	**210**	**£191k**	**12**	**17**	**17**	**51**	**3,746**	**£3,135k**

Table 6. 2025 Installed infrastructure & charge points values and costs.

	2025 & 2030P Base provision for metro rail customers			2025 & 2030P Potential provision for other services (car club, taxi, public rapid charge point, passive bus)					
Local authority metro site	**7kW charge posts**	**Peak power requirement**	**Estimated cost**	**22kW fast chargers for car clubs**	**50kW rapid chargers for taxi**	**50kW rapid chargers for public use**	**50kW passive provision for bus use**	**2025 Total peak power requirement**	**2025 Total estimated cost**
Bridgend	2 & 2P	28	£16.3k	1 & 0P	1 & 3P	2 & 2P	2 & 2P	500	£259k
Vale of Glamorgan	2 & 4P	42	£18.0k	1 & 0P	1 & 1P	2 & 0P	5 & 0P	514	£352k
Cardiff	6 & 14P	140	£113.9k	2 & 0P	5 & 9P	5 & 0P	14 & 0P	1127	£581k
Rhondda Cynon Taf	2 & 2P	28	£16.3k	1 & 0P	2 & 1P	0 & 1P	2 & 0P	450	£258k
Merthyr Tydfil	2 & 2P	14	£14.6k	1 & 0P	1 & 1P	2 & 0P	14 & 0P	686	£445k
Pentrebach	2 & 2P	28	£17.2k	1 & 0P	0 & 1P	1 & 1P	3 & 0P	343	£225k
Caerphilly	4 & 4P	56	£25.6k	1 & 0P	3 & 3P	1 & 3P	6 & 0P	828	£428k
Blaenau Gwent	2 & 2P	28	£16.3k	1 & 0P	1 & 1P	1 & 1P	2 & 0P	400	£196k
Torfaen	2 & 4P	42	£18.0k	1 & 0P	0 & 1P	1 & 2P	1 & 0P	364	£167k
Monmouthshire	4 & 4P	56	£25.6k	1 & 0P	1 & 1P	0 & 0P	2 & 0P	350	£209k
Newport	2 & 2P	28	£16.3k	1 & 0P	2 & 4P	2 & 0P	0 & 0P	450	£227k
Total	**30 & 42P**	**504**	**£299.6k**	**11 & 0P**	**17 & 26P**	**17 & 10P**	**51 & 2P**	**5,999**	**£3.348k**

Table 7. 2025 infrastructure & charge points + 2030 passive (P) infrastructure values & costs.

4 Chargepoint installation and operation

Installing and operating chargepoint infrastructure is complex and has multiple risks that need to be considered and managed. This section explains some of the issues to be aware of and makes recommendations for setting up a cost-effective, reliable network. More information on funding options is provided in section 6.

4.1 Introduction to electric vehicle charging

4.1.1 Charging speeds

Chargepoints are specified by the power (kW) they produce and therefore the speed at which they can charge a vehicle.

- Slow charging (up to 3kW) is supplied via a three pin socket. Charging can take 10 to 12 hours or more and is less safe than using a dedicated outlet. However, it can be used if no other charging points are available.
- Standard charging (3.5 to 7kW) can supply a typical electric vehicle (EV) battery (15 to 60 kWh) with a full charge in two to eight hours from a 3.6kW unit or three to four hours from a 7KW unit.
- Fast Charging (above 7 and below 25kW) typically provides an 80% charge in three to five hours from a 7kW unit and one to two hours from a 22kW unit.
- Rapid charging is typically supplied at either 43kW (AC units) or 50kW (DC units). This can supply most EVs with an 80% charge in around half an hour, depending on battery capacity. We have recommended the installation of 50kW rapid chargers.
- Ultra-rapid charging refers to even higher rates of charging, such as the 120kW Tesla Supercharger units. Higher rates are in trials for use with buses. As vehicle battery sizes increase, and to overcome barriers to widespread EV adoption, automotive manufacturers are keen to support wider deployment of ultra-rapid charging units. Any passive charging provision provided at the metro site should also enable larger cables to be run through ducting to allow for higher capacity cables should ultra-rapid charging become prevalent for buses in the future.

The table below shows indicative costs of standard chargers, excluding installation costs.

Chargepoint Type	Cost Range
Type 2 3.6kW Wall Mounted	£300-£500
Type 2 Wall Mounted 7kW	£750-1,500
Dual Type 2 Wall Mounted 7 kW	£1,700-2,700
Dual Ground Mounted 7kW	£1,700-5,000
Dual Type 2 Wall Mounted 22kW	£1,800-4,000
Dual Type 2 Ground Mounted 22kW	£3,000-5,000
Triple outlet 25kW Ground Mounted	£12,000 - £18,000
Dual Outlet 43-50 kW, Type 2 and CHAdeMO	£15,00-26,000
Triple outlet 43-50kW, Type 2, CHAdeMO and CCS	£16,000-30,000

Table 8: Indicative costs of standard chargers, excluding installation costs.

4.1.2 Mounting and siting

Chargepoints can be wall or floor mounted, depending on availability of space and ventilation. Air flow to charging equipment is critical to prevent overheating and ensure safe and effective

working of the power electronics, although this is generally only an issue for rapid chargepoints. The chargepoint should be sited to avoid obstructing walkways, passages, fire escapes or any other high footfall areas. Wireless or inductive charging systems can overcome some of the issues associated with charging via a cable, but are currently only available for slow charging, and are more costly than conventional chargepoints.

4.1.3 Charging connectors

In the UK, slow and standard charging (3kW and 7kW) is supplied by either a Type 1 AC or a Type 2 AC connector. Electric vehicles will be supplied with the appropriate lead for connecting to these chargepoints, which are typically installed at residential or workplace sites, and kerbside public chargepoints.

Fast and rapid charging (20kW and above) can be supplied by either alternating current (AC) or direct current (DC). AC rapid charging is always supplied via a Type 2 connector. DC rapid charging has two connector types, depending on the vehicle:

- Japanese vehicle manufacturers such as Nissan and Mitsubishi use the CHAdeMO connector.
- European vehicle manufacturers use the Combined Charging System (CCS)

Rapid chargepoints have tethered cables for both DC protocols, and often for AC Type 2 as well, so it is not necessary to carry a cable in the vehicle. AC charging requires an on-board charger on the vehicle to convert the current to DC; therefore, DC is more suitable for very fast charging rates.

4.1.4 Alternative charging options

The use of cable charging at bus stations may not be appropriate in all cases. This could be because buses don't have enough dwell time to plug-in, there isn't enough space for charging hardware, or due to electricity supply constraints. There are two dynamic charging technologies being developed which could help overcome this limitation: overhead catenary cables with pantographs, and wireless inductive charging.

Pantograph charging involves power being supplied to the vehicle from an overhead catenary cable. Several trials are underway around the UK, primarily involving Volvo, which is working with Kent County Council and Merseytravel to demonstrate this technology. In addition, we understand that the Newport bus bid proposes opportunity charging during layover time at the end of the route to minimise impact on journey time. Power would be supplied by a pantograph that deploys automatically. Theoretically, this technology has the potential to allow electrification of longer bus routes that exceed current EV bus ranges. It could also allow smaller battery packs to be specified on the vehicle, reducing weight and costs. Currently this technology is expensive, so deployment is only possible as part of a funded trial.

Wireless inductive charging works by power being transmitted from a primary coil buried in the road and being picked up by a secondary coil on the vehicle. This allows charging to take place at locations where the vehicle will stop at a predictable place for a short period of time, such as a bus stop. This technology is also at demonstration stage; Arriva has trialled eight Wrightbus StreetLite electric buses with inductive charging in Milton Keynes. Inductive charging allows substantial theoretical rates of power transfer – up to 200kW – but transfer losses are higher than for wired charging.

4.2 Cost and ownership

4.2.1 Hardware costs

A chargepoint's power rating has a near exponential impact on the cost of the hardware. It is therefore crucial to select the appropriate power rating for each location and scenario,

considering expected dwell time[9] for each vehicle type and the distance travelled between charges. Examples of how to determine the charger power rating required are given below:

- **Example 1**: a commuter owns an electric car and wants to charge it at a rail station then take the train to their office. The vehicle will be on charge for eight hours while the employee is at work. A 7kW charge point would supply c.50kWh during that time. This is the equivalent of 200 miles range in a typical EV and exceeds the battery capacity of many cars. Therefore, a 7kW charge point is enough and it may be worth considering 3kW.
- **Example 2**: A car club operating from a metro site wishes to switch to electric vehicles. Cars will be returned to the metro site between rentals. The car club operator has calculated that the vehicle needs to have a maximum 100 mile range for customers to have confidence that it will meet their requirements. A 22kW charger would support this duty cycle, assuming vehicles can stay at the metro site for an hour to recharge between bookings. A 50kW charger would halve this downtime, increasing vehicle productivity, and allowing more vehicles to be charged from a single point. The organisation will need to assess the costs of the upgraded hardware against the forecast increased revenue.

4.2.2 Installation costs

Chargepoint installation costs vary significantly depending on the site, the hardware, and the ownership model. Detailed site surveys are required in order to provide accurate quotes. As this was outside the scope of this report, we have used indicative costs and provide information on what you need to consider below. This is broken down by the five key stakeholder groups you are likely to encounter: DNOs, energy suppliers, landlords, internal partners, and chargepoint installers.

1. **Distribution Network Operators**. DNOs are responsible for ensuring that the local electrical network has the capacity and reliability to meet demand. Increases in demand by a customer can require the DNO to carry out network upgrades. Costs are passed to the end customer and vary significantly depending on the characteristics of the network and the additional demand required. Upgrades can take six months or more and be very costly, so it is vital to engage with the DNO as early as possible to agree a timescale and secure funding. There are steps you can take to reduce costs associated with the DNO:
    - Investigate ‘timed-profile connections’, which have set times when demand must be below a certain level but permit higher demand at other times. This would minimise the DNO upgrade work required to meet demand.
    - A large site may be supplied by more than one substation, so the DNO may be able to provide the capacity at a cheaper cost elsewhere on the estate.
    - Consult local organisations who may also need extra capacity, with a view to spreading costs.
    - Consider smart charging or vehicle-to-grid (V2G) services (see Section 4.3.2).

    Figure 2 illustrates example costs and timescales.

[9] The amount of time an electric vehicle will remain stationary at a charge point.

Small (up to 70kVA)	Medium (200kVA – 1,000kVA)	Large (above 1,000kVA)
Number of charge points		
1-3 Fast or 1 Rapid	10-50 Fast, 4-20 Rapid or 1-6 Ultra-Rapid	50+ Fast, 20+ Rapid or 6+ Ultra-Rapid
Approximate Connection Time		
8-12 Weeks	8-12 Weeks	6 Months +
Approximate Connection Cost		
£1,000 - £3,000	£4,500 - £75,000	£60,000 - £2 million
Other Consideration Affecting Cost		
• Street work costs	• Street work costs • Legal costs for easement and wayleaves	• Street work costs • Legal costs for easement and wayleaves • Planning Permission • Space for a Substation

Figure 2. Example costs and timescales of small, medium and large-scale projects.

2. **Energy suppliers**. Installations may require a new electrical supply point and meter point administration number (MPAN). This must be provided by the relevant energy supplier. This is a free service; however, the customer and energy supplier need to agree a tariff for the supply point or add it to an existing tariff. Engage with the energy supplier early in the installation process to avoid delays to the timescale.
3. **Landlords**. Landlords' permission should be sought for any charge point installations prior to starting work. This may require updates to legal agreements which can incur costs and will take anywhere from a few weeks to a year.
4. **Internal partners**. Effective engagement with internal stakeholders is an essential part of a successful installation. The health and safety team must be consulted as the installation contractor will be subject to their rules and processes, so these must be set out during the procurement process. Ensure you have considered the management sign-off needed and the timescales involved.
5. **Chargepoint installers**. Determine the location and power of chargers required before engaging an installer. This will streamline the procurement process by ensuring tenders meet requirements. Source quotes from at least three suppliers as services offered and prices can vary significantly. Installation consists of the purchase of the charge point and the associated enabling activities. The charge point hardware typically accounts for up to 50% of the total budget, although costs and this split can vary significantly. Factors to consider include:
    - Costs for excavations and cabling increase with distance between the electrical supply (distribution board, MPAN, transformer and/or substation) and the chargepoint site. These are generally the most expensive aspects of an installation and should therefore be minimised, for example by selecting an appropriate parking bay for the chargepoint.
    - Different ground types can have a significant impact on the cost of underground cabling; the cost of excavating a road is more than double that of turf or soil.
    - Demarcation of parking bays with paint, protective barriers and signage must be considered prior to engaging an installer.

Examples of typical costs[10] for installations are illustrated in Figure 3, with details of typical component costs shown in Table 8.

[10] Prices exclude chargers and are based on 5-10m travel from supply to charge position.

Figure 3. Typical installation costs (excluding chargers).

Installation Component	Typical Costs
Excavations	**Turf:** up to £120 per meter, **Pavement**: up to £200 per meter, **Road:** up to £250 per meter
Earthing	£300 - 500 per pit
Electrical Cabling	£40 - 50 per meter
Signage	£75 – 100 per sign
Road Markings	£75 - 150 per bay
Protective Barriers	£200 – 300 per bay

Table 8. Typical installation cost breakdown per component.

4.2.3 Ownership and operating models

Choosing the right ownership model is important to ensure the financial viability of a chargepoint infrastructure project. There is a trade-off to consider as increased financial returns typically come with increased risk. There are three categories of ownership model, each with its own benefits and drawbacks:

1. Own and operate: the local authority installs and operates the chargepoints themselves. They have full responsibility for the network including maintenance and back-office systems.
    - **Benefits**: this approach offers the highest potential returns as there are limited third party costs and all revenue goes to the local authority.
    - **Drawbacks**: requires substantial upfront capital to procure and install the network. Local authorities may not have the necessary expertise to install and operate a chargepoint network.
    - **Example**: Somerset County Council.
2. Third party operator: the local authority installs the network and procures a contractor for operations and maintenance.
    - **Benefits**: outsources the expertise needed to run a network
    - **Drawbacks**: requires substantial upfront capital and reduces revenue compared to the own and operate model, making it harder to recover the initial investment.
    - **Example**: Plymouth City Council.
3. Concessionaire model or lease ownership: a third-party operator funds the hardware and installation costs and runs the network. The authority should take responsibility for ensuring that sites have sufficient electricity supply and are suitable for installation.
    - **Benefits**: upfront costs are reduced, making it a good option for local authorities facing budgetary challenges, and risk is similarly reduced. It is flexible: for example, the supplier can rent equipment to the local authority and split the profits. It is also relatively easy to transition to a new supplier once the first lease agreement expires.

- **Drawbacks**: the authority's share of revenue is reduced and would be zero in a concessionaire model. If the authority doesn't ensure that sites have enough electrical capacity, network operators may target sites where installation costs are low, leading to low utilisation rates.
- **Examples**: Transport for London (concessionaire); Nottingham City Council (lease ownership)

Private sector funding can be sought to offset the costs of the outright ownership and third-party operator models. Mid Devon District Council used this approach for its chargepoint network, allowing infrastructure to be rolled out without the authority facing substantial upfront costs. However, this option lacks flexibility, as sites can be tied up for long lease periods.

Cenex would generally recommend a concessionaire or lease ownership model, as the capital investment and risk involved in the other options are too high for many local authorities. A detailed network feasibility study was not in the scope of this project: however, Cenex has completed such studies for other authorities and would be pleased to submit a proposal to Cardiff Capital Region.

Whichever approach is taken, it is important to consider service level agreements (SLAs) and key performance indicators (KPIs) for network reliability. These should cover proactive and reactive maintenance, and phone or online customer support.

A standard framework should be established for the Welsh public sector to support procurement and installation of infrastructure.

4.3 Planning considerations

It is not always necessary to secure planning consent for chargepoints – they can often be installed under permitted development rights, as detailed in Statutory Instrument 2056. Planning permission will generally be required if the chargepoint:

- Is wall mounted at an off-street location and exceeds 0.2 cubic metres
- Is ground mounted at an on-street location and the height exceeds 1.6 metres
- Faces onto and within two metres of the highway
- Is within a site designated as a scheduled monument or within the curtilage (open space surrounding) of a listed building

Usually only rapid charge points (20kW or above) exceed the height and volume criteria detailed above. At the time of writing, planning regulations are undergoing revision to make streamline the process for installing chargepoints, including allowing rapid chargepoints to exceed the 1.6 metre restriction.

If you are unsure whether you need planning permission, check with the local authority planning department. You will need to supply details of the equipment and a map of the location. Ordinance Survey maps may be available from the Council or you may have site plans if the installation is on your estate.

5 Renewables, energy storage and smart charging

Clean, smart and integrated technology can transform the metro sites' electrical and recharging network into a modern low emission and profitable energy system. Individually or combined renewables, energy storage and smart charging of vehicles can be integrated into any electrical network upgrade.

The following subsections give a very high-level overview of the benefits and barriers of integrating clean technology into the metro-site. Each of these must be assessed in more detail and on a site-specific basis to determine the costs and benefits.

5.1 Renewables and energy storage

5.1.1 On-site renewables

Description Generating renewable energy on-site can reduce peak demand for grid electricity, reducing total CO_2 emissions and saving money. Solar PV panels can be installed on a solar car port or on nearby land. Wind generation requires far less space than a comparable solar PV system. Cardiff is a good location for generating electricity from wind as the average annual wind speed exceeds 4m/s. It can be challenging to secure planning permission, particularly in urban areas.

Economics Capital and installation costs vary greatly depending on the size of the system. Potential costs of a solar installation are shown in Table 9. Solar PV installations are characterised by long payback periods but can assist enable local authorities to meet CO_2 reduction targets and access low cost borrowing and grant funding. The greater economic benefit of adding PV is off-setting grid electricity costs and reducing any capacity upgrade costs (and providing a zero carbon energy supply). Therefore, for maximum economic benefit PV arrays should be sized to allow a high level of avoided electricity purchase.

PV Array Size	CAPEX[11]	Balance of system	Development fees	OEPX
7kWp	£5,390.00	£2,198.00	£6,160.00	£1,512.00
10kWp	£7,700.00	£3,140.00	£8,800.00	£2,160.00
15kWp	£11,550.00	£4,710.00	£13,200.00	£3,240.00
20kWp	£15,400.00	£6,280.00	£17,600.00	£4,320.00

Table 9. Potential costs and benefits of a solar PV array

Opportunity Whilst the income from the sale of electricity does not make a compelling case for installation, offsetting electricity purchased from the grid for site use and vehicle charging may form an attractive business case. Clearly electricity generation and demand do not always match, therefore energy storage could be used to store wrong time renewable generation.

5.1.1 Off-site renewables

Local renewable developments being established by the private and public sector have been identified in relation to the 11 sites. Further feasibility work should be undertaken to understand the potential for integration of renewable electricity supply from these schemes to the metro but there are potentially significant mutual benefits to utilising energy from these schemes in the metro development.

A summary of the known developments in relation to each site is given below.

[11] Pricing taken from Solar Trade Association[11] £/kW installed, as such is an approximation.

	Local Authority Area	Related Hub	Planned (& Existing) renewable energy schemes nearby
1	Blaenau Gwent	Ebbw Valley Line/Abertillery Spur and Interchange	Planned Caerphilly 2MW Trinant Solar PV in close proximity to Llanhilleth. Torfaen local authority site 'The British' is in close proximity to Abertillery; 8MW wind and solar option on the table.
2	Caerphilly	Caerphilly	Nothing known of near-by (but their might be renewable developments in and around Caerphilly we're unaware of to be further explored).
3	RCT	Porth	RCT Local Authority are reviewing a wind development at Lewis Merthyr (4MW wind adjacent to Porth) and Wattstown (6MW wind 1.7 miles away)
4	Vale of Glamorgan	Barry Docks	Existing private 5MW solar farm on Barry Docks (ABP development) ABP have previously expressed interest in adding value to their scheme which is currently supplying electricity directly to the grid.
5	Merthyr	Merthyr Bus Station	Merthyr CBC could incorporate solar into the bus station roof and Capita have now been asked to review, further exploration of the potential for hydro on the adjacent river taff should be explored.
6	Bridgend	Pyle	Private renewables nearby; Private solar farm around 1.5miles away (to the North West of Pyle). A full asset review hasn't been undertaken with Bridgend Local Authority to identify options for renewable developments.
7	Monmouthshire	Severn Tunnel Junction	Monmouthshire Local Authority own Crick solar farm (5MW) 4 miles from STJ.
8	Torfaen	Pontypool and New Inn	A private solar farm is located opposite the Mamhilad development site. Torfaen local authority don't have any sites in proximity identified as having potential for renewables.
9	Newport	Newport to Cardiff	Newport County Borough Council have a ~ 2.5MW 'East of Ebbw' solar PV project which is likley to progress. Cardiff Local Authority have 5MW solar progressing at Lamby Way (Cardiff) Newport also have Duffryn Solar opportunity (West Newport) and docksway opportunities. Llanmartain (Newport East) is identified as a potential solar site, and an existing solar farm has been privately developed in Langstone. Private developments: The recently consented 50MW Gwent Farmers Community Solar Scheme and the proposed 50MW Wentlooge solar and wind project. These have a combined capacity of 100MW and when combined with batteries, which are proposed for both schemes, could make an important contribution to the Metro.
10	Cardiff	East Cardiff	Lamby way 5MW solar scheme is currently being developed.

5.2 Energy storage

Description Renewable generation is unpredictable and often happens when vehicles aren't available for charging. Therefore, it can be used in conjunction with a battery energy storage system to maximise income. This allows energy to be stored during off-peak times and then fed into vehicles as required. This has several potential benefits for the metro sites:

- Provide load management services by charging when electricity demand is low and discharging to offset demand at peak times.
- Increase self-sufficiency through reduced reliance on the grid.
- Revenue can be produced by providing network flexibility to aggregators which manage supply and demand.

Further feasibility work needs to be undertaken to cost out the benefits of renewable installations and energy storage at each of the site.

5.3 Smart charging and V2G

Charging large numbers of vehicles at the same time can have a significant impact on site and local electricity network supply, particularly at peak times. Smart charging and V2G can help manage this demand and offset the need for costly network upgrades.

5.3.1 Smart charging

Description Smart charging is the ability for electric vehicle supply equipment to control the timing of charging and the power output level in response to a user-defined input or signal. At the most basic level, this allows charging to be scheduled for times when grid demand is lower. Dynamic demand shifting can also be used to provide energy services including time of use tariff optimisation, peak demand shaving, network constraint management and simple renewable electricity generation optimisation.

Economics Network upgrade costs for multiple charge points can run to tens of thousands making network connection unviable. Smart charging capability is an embedded functionality in all modern charge points. The functionality will be dependent upon the capability of the charge point management system. But the charge across a group of charge points can be limited so that at times of low EV demand chargepoints operate at full power but at times of high EV demand charge rates to all the points is limited. This allows the avoidance of network upgrade costs in some cases.

Opportunity At a rail site carpark, it is likely that users will leave vehicles to charge for a long amount of time. Therefore, smart charging can reduce the power rating of the chargers to allow the installation of many charge points but allow charging times to be increased to avoid costly network upgrades.

5.3.2 V2G

Description V2G is a system whereby vehicles can provide bi-directional flows of energy when connected to electric vehicles supply equipment. Energy can be discharged from the EV to meet on-site demand or to export electricity to the network.

Economics This allows the energy stored in an EV to be traded in electricity markets to generate income from the vehicle whilst it is not in use. Because the electricity can be dispatched when the grid needs it most, it can be sold at a profit. V2G is not yet fully developed or commercially viable, current V2G charging units cost around £10k, with prices expected to fall by around 70% over the next 2-3 years. The revenue models available to EV owners through V2G activity is also not well proven.

Opportunity The development of V2G equipment and business models is an active and well-funded area of R&D at the moment. Long stay car parks, such as rail, multi-story, airport could form part of the power stations of the future using EV batteries. There is a potential opportunity for Cardiff and the metro sites to bid for innovation funding to showcase new technology from the sites.

6 Policy and funding

There is a complex national and local policy landscape which could affect, and ideally help support the uptake of PiVs and provision of chargepoint infrastructure. There are also various funding opportunities that Cardiff Council and the other local authorities may wish to investigate. The sections below summarise key supporting policy and known potential funding opportunities.

6.1.1 UK policy

- Air quality plan for nitrogen dioxide. The UK Government's most recent air quality plan, published in 2017, states that the UK will end the sale of new conventional petrol and diesel cars and vans by 2040. The Road to Zero (see below) provides more detail on how this will be achieved.
- Road to Zero. Published in July 2018, Road to Zero sets out the UK Government's ambition for at least half of new cars to be ultra-low emission by 2030. Specific proposals and measures include:
    - All new homes and offices to have chargepoints installed, subject to consultation in 2019.
    - A £400 million charging infrastructure investment fund to help new and existing companies that produce and install charge points.
    - Up to £500 for electric vehicle owners to put in a charge point in their home through the Electric Vehicle Homecharge Scheme.
    - The continuation of the plug-in car and van grants until at least 2020.
    - The launch of an electric vehicle energy taskforce to bring together the energy and automotive industries to plan for the increase in demand on energy infrastructure that will result from a rise in the use of EVs.
    - New powers through the Automated and Electric Vehicles Bill to ensure chargepoints are easily accessed and used across the UK, available at motorway service areas and large fuel retailers.

  The full document is available on the UK Government website[12].

6.1.2 Welsh policy

- Clean Air Zone Framework for Wales. The Clean Air Zone Framework for Wales provides guidance to local authorities who are considering options to address local air quality issues. The framework, which was consulted on in 2018, is available online[13].
- Achieving our Low Carbon Pathway to 2030. At the time of writing, the consultation on this strategy had just closed. Proposed actions to 2030 include developing a chargepoint network to encourage early take-up of plug-in vehicles and exploring the merits of measures such as access to bus lanes and free municipal parking. If the strategy is translated into policy, it will provide national support for Cardiff Capital Region's plans.
- National Assembly consultation on EV charging in Wales, 2018. Western Power Distribution's response stated that the South Wales distribution network has enough capacity to connect additional electric vehicle chargers without the need for intervention

[12] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf

[13] https://beta.gov.wales/sites/default/files/consultations/2018-04/180424-clean-air-zone-framework-en.pdf

or reinforcement. There will however be some occasions where clusters of connections, for example at some of the sites in scope of this report, exceed available capacity and therefore the network would need to be reinforced.

- Local Air Quality Management (LAQM) requires local authorities to undertake regular air quality assessments against common standards and objectives. Where standards and objectives are unlikely to be met, authorities must designate air quality management areas (AQMAs) and implement remedial action plans. AQMAs have been identified in multiple areas in scope of this report: Caerphilly town centre, Cardiff (four areas including city centre and key arterial roads), Newport (including George Street near the new bus route) and Rhondda Cynon Taf (Cymmer, adjacent to Porth).
- Prosperity for All: Welsh Government Economic Action Plan 2017. This plan sets out what the Welsh Government is seeking to achieve including building a connected infrastructure that supports growth and investment.

  "Our roads, railways, ports, airports, energy infrastructure and digital networks form the arteries that enable our economy to function. Fit for purpose and resilient energy networks will be essential for accommodating the future growth expected in EVs as well as to respond to wider changes in the energy system. We will decarbonise our transport networks and improve the air quality of the communities they serve. To support this, we will introduce a range of measures whose aim is that all taxis and buses in Wales will have a zero-carbon footprint within 10 years". This is echoed in the strategy 'Achieving our low carbon pathway to 2030'.
- Improving Public Transport is a White Paper which was released for consultation in December 2018. The purpose is to set out the Welsh Government's proposals for improving the legislative framework in Wales for how local bus services are planned and delivered, together with reform of the licensing regime for taxis and private hire vehicles. The paper sets out a recommendation for establishing Joint Transport Authorities (JTAs) to establish a distinct regional approach linked to the national context. It reiterates the Welsh Government's aim for all taxis to have a zero carbon footprint within 10 years.
- South East Wales Regional Transport Strategy: we understand that Cardiff Capital Region has been tasked with preparing a regional Transport plan which presents the opportunity to identify and deliver regional charging infrastructure.
- Planning Policy Wales (PPW) is the Welsh Government's national land use planning policy and was first published in 2002. It's the first point of call for Welsh planning policy and is supported by a suite of Technical Advice Notes (TANs) and other guidance. PPW is being updated to align with the Well Being of Future Generations (Wales) Act 2015 and includes policy changes including thresholds for the provision for electric vehicle charging infrastructure.
- The National Development Framework (NDF) will set out a 20 year land use framework for the whole of Wales and will direct the development plans that sit below it – Strategic Development Plans (SDPs) and Local Development Plans (LDPs). It will also support decisions on large scale infrastructure projects through the Developments of National Significance (DNS) process. The final NDF is due to be published in early 2020, following an extensive consultation period which will include scrutiny by the Assembly and will replace the current Wales spatial plan. The NDF will:
    - Set out where nationally important growth and infrastructure is needed and how the planning system - nationally, regionally and locally - can deliver it.
    - Provide direction for Strategic and Local Development Plans and support the determination of Developments of National Significance.

- Sit alongside Planning Policy Wales, which sets out the Welsh Government's planning policies and will continue to provide the context for land use planning.
- Support national economic, transport, environmental, housing, energy and cultural strategies and ensure they can be delivered through the planning system

6.1.3 Local authority policy

Our review found a lack of local policies and strategy documents which specifically relate to the uptake of plug-in vehicles and associated infrastructure. Local policies should explicitly set out how they contribute to national policy ambitions, such as the intention to decarbonise taxis and buses within 10 years. All policies should be updated once the Welsh Government finalises its *Achieving our Low Carbon Pathway* strategy, with clear targets set and measures planned for plug-in vehicle and chargepoint infrastructure deployment.

The white paper currently out for consultation on improving public transport will support a better and more informed regional delivery approach addressing capacity, skills and knowledge challenges, but timeframes need to be expediated to align with delivery of the metro hubs. There's also potentially scope to utilise S106 agreements to support the delivery of some of the infrastructure.

We identified just two documents (out of around 20 reviewed) that specifically mention plug-in vehicles:

- Caerphilly's *Electric Vehicle Strategy and Action Plan* (2018) includes a vision for the introduction of EV infrastructure across Caerphilly to maximise the economic, social and environmental benefits and opportunities of plug-in vehicles.
- Cardiff City Council's *Low Emission Transport: a strategy for cleaner, greener transportation fuels* (2018) sets targets for a pathway to zero emission transport including fleet, infrastructure, renewable technologies, procurement, local partners and supporting innovation.

6.1.4 National and local funding

There are multiple funding sources which Cardiff Capital Region should investigate further. It should develop a coherent funding strategy for each of the 11 sites, with synergies identified and an exploitation plan in place.

- **Plug-in car and van grants:** government grants administered by OLEV to support the uptake of plug-in vehicles. Grants are applied at the point of purchase so there is no need to apply. Refer to the OLEV website[14] for the latest grant values and eligible vehicles.
- **Electric Vehicle Homecharge and Workplace Charging Schemes**: government grants administered by OLEV to support the wider use of electric and hybrid vehicles. Refer to the OLEV website[15] for the latest grant values and eligibility criteria.
- **Ultra-Low Emission Bus Scheme**: an OLEV and DfT fund to support the purchase of new buses. The £48m scheme is available to local authorities and bus operators in England and Wales to help purchase Ultra Low Emission Buses (ULEBs) and supporting infrastructure between 2018-2021.
    - Grants can be provided for up to 75% of the cost difference between a ULEB and a Euro VI diesel equivalent model. All pure electric buses will technically qualify for this scheme, though manufacturers need to test the vehicle on the UK Bus

[14] https://www.gov.uk/plug-in-car-van-grants

[15] https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles

Cycle and submit the results to the Low Carbon Vehicle Partnership to gain certification.

  - Successful grant applicants can also apply for up to 75% of the cost of installing electric charge point infrastructure.

- **City Deal Capital Finance**: a £30m City Deal and Welsh Government fund to 2021 for delivery of these initial 11 schemes. Provisionally £3m has been allocated to each development but this will be managed on a portfolio basis.
- **Local Transport Fund**: £26m available annually for 2018-19, 2019-20 and 2020-2021 from the Welsh Government via the local transport fund. Funding is generally limited to £1.5m per scheme.
- **Targeted Regeneration Funding**: a £100m fund with £44m allocated to SE Wales. Projects must secure 30% match funding. Cardiff Capital Region City Deal has been asked to prepare a regional development plan that could support an application to this funding pot for mutual transport and regeneration schemes.
- **Wales Infrastructure Investment Plan**: Funding allocated for delivery of the Cardiff interchange
- **Building for the Future**: a £120m EU-funded programme which runs to 2023 and which aims to regenerate town centres by investing in under-utilised land or buildings.
- **Transport for Wales**: Within funding to upgrade the rail network, 1,500 additional park and ride spaces have been allocated; this could be a source of funding for the park and ride facilities planned as part of the metro upgrades.
- **Local Authority Capital Reserves**: Rhondda Cynon Taf County Borough Council is contributing capital reserves towards the Porth interchange. Similarly, Caerphilly has committed £8m to an all-electric public transport network.
- **Welsh Government fund for EV charging infrastructure**: the £2million funding will help create a publicly accessible national network of rapid charging points by 2020, focusing on locations on or near strategic Welsh road networks. The Transport Secretary Ken Skates has asked officials to explore the feasibility of funding chargepoints at park and ride facilities and taxi ranks, to be operated via a national concession model.
- **Bus Operator Contributions**: For example, Stagecoach is supporting Caerphilly's town centre electrification ambitions.
- **OLEV**: funding bids have been submitted for electric buses and associated infrastructure by Cardiff, Newport and Caerphilly.
- **InnovateUK**: Abercynon Park and Ride and Maesteg are applying for funding to procure and install chargepoints.
- **Welsh Government Invest to Save**: This is a fund to support deployment of low carbon technology across the public sector and is based on criteria of an 8 year payback and carbon savings of £200/tonne carbon saved over the life of the project. Typically, the fund is used for energy efficiency measures and is administered by SALIX, however, the fund can be used in conjunction with other funding if a project payback exceeds 8 years but still meets the carbon criteria.
- **Public Works Loan Board**: The public sector has unique access to low cost finance via the PWLB. This funding stream is being utilised by Local Authorities to take forward several large-scale renewable energy developments across South East Wales and might be considered as a funding option for an own and operate infrastructure model.

- **Section 106 agreements** between local authorities and developers can be attached to planning permission to make a development proposal acceptable in planning terms that would not otherwise be acceptable. Section 106 funding from private sector development could be channelled towards delivery of infrastructure. With the right planning conditions in place, Section 106 agreements can also be used to require charging infrastructure in new developments, PiV-only parking bays and taxi ranks.

7 Recommendations and conclusions

This study provides a review of potential electric vehicle infrastructure requirements and provisions across the 11 metro sites setting out the ball park power requirements, infrastructure numbers, and potential supporting technologies such as renewables, energy storage and smart charging. Recommendations are provided below to enable the progression of the infrastructure upgrades at each of the metro sites in a co-ordinated manner.

7.1 Recommendations

7.1.1 Set up a cross-authority working group

The first step should be to set up a working group attended by representatives of each of the 10 local authorities. This should be attended by environmental or sustainability officers and transport planners or project managers responsible for each site. Currently there is a risk that efforts to increase plug-in vehicle uptake is not coordinated across the 10 authorities; it is therefore possible that some of these may compete with others for funding and resources. There are multiple benefits to closer collaboration, including improving the strategic case to support funding bids, pooling resources, and sharing best practice.

The working group should develop a regional plug-in vehicle and infrastructure strategy with a focus on the 11 metro sites for the period 2020 to 2030. This should include a detailed roadmap for plug-in vehicle uptake and plans for implementing or facilitating provision of chargepoint infrastructure. Some local authorities have already published strategies, such as Caerphilly County Borough Council's Electric Vehicle Strategy and Action Plan, and we would recommend drawing from these to produce the regional document. The working group should consider setting up sub-groups for specific vehicle types (cars, buses, taxis and car clubs).

7.1.2 Develop a regional strategy

Undertake a strategic appraisal of the fuels and technologies that Cardiff Capital Region should consider for all vehicle types, with indicative analysis and discussion of environmental performance, cost and implementation timelines. The proposed low emission vehicle strategy would complement existing strategies and policies to promote uptake and use of plug-in vehicles in South East Wales. The objectives should be to improve air quality, reduce carbon dioxide emissions, and encourage regional economic development. It would also form an evidence base that can be used to support local, national and European funding bids.

The strategy should be broader in scope than this Infrastructure Review, encompassing more vehicle types (such as vans and HGVs) and more fuel types, including gas and hydrogen. The primary outputs will be a low emission vehicle and fuels road transport strategy and recommendations on the implementation steps, timelines and benefits of the strategy.

This strategy should seek to develop scenarios for low emission vehicle uptake: low (business as usual), medium (in line with best practice), and high (exemplar region), and equivalent scenarios for likely recharging and refuelling requirements. It may then be possible to assess the potential impact on local economic growth, investment and employment.

7.1.3 Coordinate funding bids

The areas could benefit from the coordinated development of a funding plan for each of the metro sites in partnership with the local stakeholders, and coordination of funding applications. Some bids have already been submitted; for example, Caerphilly County Borough Council, Newport CBC and Cardiff City Council have submitted OLEV bids in conjunction with local bus operators. We are not aware of the extent to which these submissions were aligned, but it is likely that bids would be strengthened by referring to a coherent and strategic regional approach to plug-in vehicle uptake. Section 6 of this report identified several additional funding streams from which the 11 sites could potentially benefit. The working group should discuss the best way of securing funding and maximising its use.

7.1.4 Refine chargepoint cost estimates

The costs provided in Section 4 for chargepoint hardware, installation and DNO services are best estimates based on our experience of working with other local authorities. However, hardware costs vary for different chargepoint types and manufacturers, and installation and DNO costs are highly site specific. Cardiff Council, working with the other nine local authorities, should obtain quotes to refine these estimates.

The first step is to contact the local DNO, Western Power Distribution (WPD). It is vital to engage with the DNO as early as possible and work closely with them throughout the journey from initial strategy to chargepoint operation. For larger installations, DNO services will be the most expensive and time consuming part of the process.

Apply to WPD for an initial budget estimate, providing details of the location and the required power. An indicative location for installation will need to be supplied for each site. The DNO will use the cumulative maximum capacity of all the chargepoints to determine the total load and estimate costs for upgrades and connection. Any capacity identified is not reserved until a formal quotation is supplied. This should be requested once the type and number of chargepoints has been finalised and a provisional date set for network operation to start.

7.1.5 Select and implement a chargepoint operating model

Section 4.2.3 of this report sets out the various operating models available, with some benefits and drawbacks of each. Cardiff Capital Region should review these with respect to their own objectives and budgets and select the most appropriate approach. We recommend developing a bespoke cost tool to compare the various models and produce a cash flow based on inputted values. Scenarios and sensitivity analysis could then be used to show payback and risk under the different ownership models and to understand if scale plays a part in the appropriate ownership models.

The next step is to draw up a procurement strategy and contracting framework carry out market research into the hardware options and network services available. Cenex has substantial experience and industry contacts and can advise on this step.

The working group should support development of a procurement framework across all 11 local authorities which could be managed centrally by Cardiff Capital Region with engagement from National Procurement Service to support this approach. This approach has been successfully implemented by Nottingham City Council in conjunction with 15 other local authorities. Cenex may be able to facilitate sharing of best practice and lessons learned from this innovative scheme. Additionally, there is an opportunity to up-skill locally for the installation and management of charge point infrastructure as supported by the Valley's Task Force Regional skills partnerships.

7.1.1 Renewable and energy storage

Section 5 discussed the use of renewable (both on-site and linking to off-site) energy developments, battery storage and smart charging. Further exploration of the benefits of these technologies should be undertaken. The economic case for the technology will be greater where upgrade constraints exist and a higher level of PiV charging is expected. Following DNO feedback a more detailed feasibility study can be undertaken, looking at the most appropriate sites for technology integrations. The available mechanisms (physical or contractual) which can link into the planned public sector renewable energy developments should also be further explored.

7.1.2 Assess car club feasibility

The car club suitability assessments provided in Section 3.1.2 are based on incomplete information and should be treated as indicative at this stage. We recommend Cardiff Capital Region undertake feasibility studies to address these knowledge gaps. Cenex has developed a

bespoke car club feasibility methodology based on the Public Transport Accessibility Levels approach. Enterprise Car Club and E-Car Club both have bespoke software to help estimate demand and viability. Cenex would be pleased to make the relevant introductions and help Cardiff Capital Region scope and undertake a feasibility study, to include:

- An assessment of the local demographics and likely impact on car club feasibility.
- A preliminary cost model of a car club scheme.
- Quantification of the environmental benefits in terms of pollutant and CO_2 emissions.
- A bespoke assessment of the various car club operating models, with recommendations for the most appropriate for each site.
- Strategies to improve car club utilisation rates and therefore viability

7.1.3 Assess bus infrastructure requirements

Requirements for charging infrastructure for buses should be assessed on a regional, or at least route-specific basis, rather than working upwards from individual sites. This will involve reviewing available technology, determining which routes are good candidates for electrification, and deciding on an appropriate combination of at depot, wired rapid, and other opportunity charging technologies.

Feasibility work will be required to determine what charging requirements are appropriate at each site. The two main points to consider are route length and dwell time at each site, to estimate whether charging is required and feasible. A more detailed study, looking at bus provision and talking to bus operators, can then be undertaken to estimate the number and type of chargepoints required. This can in turn feed into bids to OLEV and the Welsh Government to support deployment of vehicles and infrastructure.

Where passive charging has been recommended, local authorities should consider this as part of ongoing or planned site developments. Providing electricity capacity and carrying out major cabling and groundworks will be more cost effective and less disruptive if carried out as part of a new development, rather than as a retrofit project in the future.

7.1.4 Refine taxi forecasts

Plug-in taxi uptake and infrastructure requirements need to be considered on a regional basis (rather than at individual metro site level). We recommend developing a taxi strategy for South East Wales, encompassing the 10 local authorities in scope of this original report. This would involve collating data to better understand the current taxi fleet and vehicle movements, estimating the potential for plug-in vehicle uptake, determining the level of chargepoint infrastructure required, and making recommendations for supporting policies and incentives.

A feasibility study should include the following:

- Fleet benchmarking and technology review.
- Driver survey and cost modelling.
- Licensing policy review.
- Infrastructure requirements review.

7.2 Conclusions

This report provides estimates for plug-in car uptake and demand for charging infrastructure at each site, and Cenex has a good degree of confidence in these figures. High level assessments of the potential for plug-in taxi, bus and car club fleets have also been put forward, with recommendations for refining these estimates.

The South East Wales region has a good opportunity to tackle multiple challenges including congestion, pollution and transport poverty, while also stimulating economic growth. A coordinated strategic approach, closer ways of working, and joint funding bids will be key to helping this region achieve its policy goals.

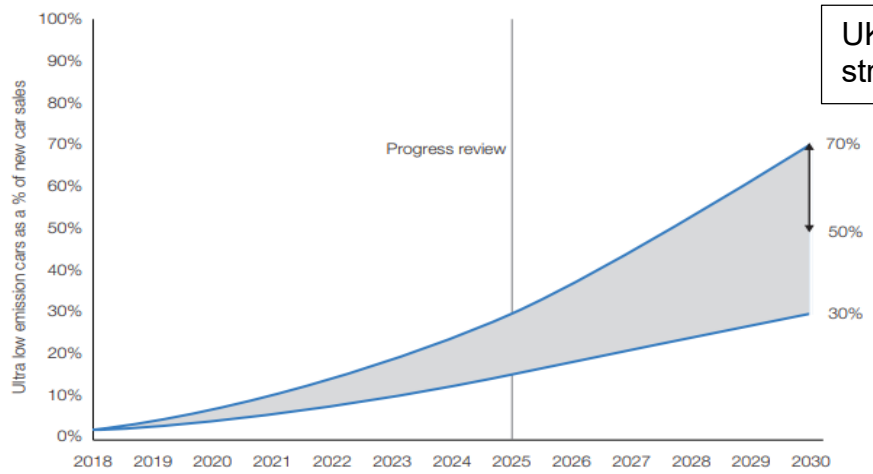
The local authorities involved should consider how to lead by example by focusing on their own transport needs and impacts. For example, reducing grey fleet use by switching to an electric pool car fleet can help create demand for charging infrastructure. Finally, we encourage Cardiff Capital Region to ensure it strikes the right balance between supporting plug-in vehicle uptake by private car owners and encouraging a shift to public transport and active travel. The additional benefits from improved public health and reduced congestion must be considered as part of the policy mix.

A. Appendix A: Methodologies

Establishing the number of PiVs in each local authority area

1. Establish the total number of cars registered in the UK, Wales, and at each Metro site local authorities per quarter since 2014 (from DfT- veh0105)
2. Establish the total number of PiV cars registered in the UK, Wales, and at each Metro site local authorities per quarter since 2014 (from DfT- veh0130/1)
3. Establish number of annual new vehicle registrations each year base on historic trends (from DfT – veh0150)
4. Establish PiV uptake scenarios to 2030
    a. Low – exponential increase based on PiV historic vehicle registration trends
    b. Medium – apply Road-to-Zero projections of % of new registrations being PiVs to 2030, which equates to 30% in 2030
    c. High – apply Road-to-Zero projections of % of new registrations being PiVs to 2030, which equates to 70% in 2030

Figure 1: Illustrative ultra low emission car uptake trajectory as a percentage of new car sales



UK Gov. Road to Zero strategy PiV (cars) projections

5. Using the High scenario (for the purpose of this study), calculate the % PiVs per year as % of UK cars.
6. Apply weighting to PiVs by each local authority (established in No.1 above), so that the same proportion of current UK PiVs is applied to future vehicle projections.

B. Appendix B: Cost tables

		Local Authority:	Bridgend		The Vale of Glamorgan		Cardiff		Rhondda Cynon Taf		Merthyr Tydfil		Merthy Tydfil		Caerphilly		Blaenau Gwent		Torfaen		Monmouthshire		Newport	
		Site:	Pyle		Barry Docks		East Cardiff		Porth		Merthyr bus station		Pentrebach		Caerphilly		Ebbw Valley/ Abertillery		Pontypool/New Inn		Severn Tunnel Junction		Newport to Cardiff	
Charge point type	**Cost per unit**		**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**
Dual ground mounted (7kW)	£5,000	per charger	1	£5,000	1	£5,000	3	£15,000	1	£5,000	1	£5,000	1	£5,000	2	£10,000	1	£5,000	1	£5,000	2	£10,000	1	£5,000
Rapids (50kW) for cars	£30,000	per charger	2	£60,000	2	£60,000	5	£150,000	2	£60,000	1	£30,000	1	£30,000	3	£90,000	1	£30,000	1	£30,000	0	£0	2	£60,000
Fast (22kW) for car clubs	£5,000	per charger	1	£5,000	1	£5,000	2	£10,000	1	£5,000	1	£5,000	1	£5,000	1	£5,000	1	£5,000	1	£5,000	2	£10,000	1	£5,000
Rapids (50kW) for taxis	£30,000	per charger	1	£30,000	1	£30,000	5	£150,000	1	£30,000	0	£0	0	£0	1	£30,000	0	£0	0	£0	1	£30,000	2	£60,000
Passive bays (50kW) for buses	£30,000	per charger	2	£60,000	5	£150,000	0	£0	2	£60,000	10	£300,000	3	£90,000	6	£180,000	2	£60,000	1	£30,000	2	£60,000	0	£0
Installation (inc. rapids)																								
Excavations	£200	per meter	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000
Earthing	£400	per earth pit	8	£3,200	11	£4,400	18	£7,200	8	£3,200	14	£5,600	7	£2,800	15	£6,000	6	£2,400	5	£2,000	9	£3,600	7	£2,800
Electrical cabling	£45	per meter	140	£6,300	200	£9,000	300	£13,500	140	£6,300	260	£11,700	120	£5,400	260	£11,700	100	£4,500	80	£3,600	140	£6,300	120	£5,400
Signage	£75	per sign	8	£600	11	£825	18	£1,350	8	£600	14	£1,050	7	£525	15	£1,125	6	£450	5	£375	9	£675	7	£525
Road markings	£125	per bay	8	£1,000	11	£1,375	18	£2,250	8	£1,000	14	£1,750	7	£875	15	£1,875	6	£750	5	£625	9	£1,125	7	£875
Protective barriers	£250	per bay	8	£2,000	11	£2,750	18	£4,500	8	£2,000	14	£3,500	7	£1,750	15	£3,750	6	£1,500	5	£1,250	9	£2,250	7	£1,750
DNO costs inc. rapids and passive	**Min**	**Max**																						
Small (up to 70KVA)	£1,000	£3,000	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0
Medium (up to 1000kVA)	£4,500	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000
High (above 1000kVA)	£60,000	£200,000	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0
Costs for 7kW for cars only		**Hardware costs:**		*£5,000*		*£5,000*		*£15,000*		*£5,000*		*£5,000*		*£5,000*		*£10,000*		*£5,000*		*£5,000*		*£10,000*		*£5,000*
		Installation costs:		*£6,600*		*£6,600*		*£11,800*		*£6,600*		*£6,600*		*£6,600*		*£9,200*		*£6,600*		*£6,600*		*£9,200*		*£6,600*
		DNO costs:		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*
		TOTAL COST:		**£14,600**		**£14,600**		**£29,800**		**£14,600**		**£14,600**		**£14,600**		**£22,200**		**£14,600**		**£14,600**		**£22,200**		**£14,600**
Costs for 7kW for cars, 22kW for car clubs, 50kW for taxis and 50kW passive for buses		**Hardware costs:**		*£160,000*		*£250,000*		*£325,000*		*£160,000*		*£340,000*		*£130,000*		*£315,000*		*£100,000*		*£70,000*		*£110,000*		*£130,000*
		Installation costs:		*£17,100*		*£22,350*		*£32,800*		*£17,100*		*£27,600*		*£15,350*		*£28,450*		*£13,600*		*£11,850*		*£17,950*		*£15,350*
		DNO costs:		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*
		TOTAL COST:		**£252,100**		**£347,350**		**£432,800**		**£252,100**		**£442,600**		**£220,350**		**£418,450**		**£188,600**		**£156,850**		**£202,950**		**£220,350**
Peak power requirement (kW) inc. buses				286		436		586		286		586		236		550		186		136		222		236
Power requirement for 7kW only				14		14		42		14		14		14		28		14		14		28		14

Table 10. 2025 costs per targeted area of charge points and infrastructure.

Charge point type	Cost per unit		No. units	Cost	No. units	Cost	No. units	Cost	No. units	Cost	No. units	Cost	No. units	Cost	No. units	Cost	No. units	Cost	No. units	Cost	No. units	Cost	No. units	Cost
Dual ground mounted (7kW)	£5,000	per charger	2	£5,000	3	£5,000	10	£15,000	2	£5,000	2	£5,000	2	£5,000	4	£10,000	2	£5,000	3	£5,000	4	£10,000	2	£5,000
Rapids (50kW) for cars	£30,000	per charger	2	£60,000	2	£60,000	5	£150,000	3	£60,000	2	£30,000	2	£30,000	6	£90,000	2	£30,000	4	£30,000	0	£0	2	£60,000
Fast (22kW) for car clubs	£5,000	per charger	1	£5,000	1	£5,000	2	£10,000	1	£5,000	1	£5,000	1	£5,000	1	£5,000	1	£5,000	1	£5,000	2	£10,000	1	£5,000
Rapids (50kW) for taxis	£30,000	per charger	3	£30,000	2	£30,000	14	£150,000	3	£30,000	1	£0	1	£0	3	£30,000	1	£0	1	£0	1	£30,000	6	£60,000
Active bays (50kW) for buses	£30,000	per charger	2	£60,000	5	£150,000	0	£0	2	£60,000	10	£300,000	3	£90,000	6	£180,000	2	£60,000	1	£30,000	2	£60,000	0	£0
Passive bays (50kW) for buses)	£0	per charger	2	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	2	£0	1	£0	2	£0	0	£0
Installation (inc. rapids)																								
Excavations	£200	per meter	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000
Earthing	£400	per earth pit	14	£5,600	16	£6,400	41	£16,400	13	£5,200	18	£7,200	11	£4,400	24	£9,600	12	£4,800	14	£5,600	15	£6,000	13	£5,200
Electrical cabling	£45	per meter	240	£10,800	260	£11,700	620	£27,900	220	£9,900	320	£14,400	180	£8,100	400	£18,000	200	£9,000	220	£9,900	220	£9,900	220	£9,900
Signage	£75	per sign	14	£600	16	£825	41	£1,350	13	£600	18	£1,050	11	£525	24	£1,125	12	£450	14	£375	15	£675	13	£525
Road markings	£125	per bay	14	£1,000	16	£1,375	41	£2,250	13	£1,000	18	£1,750	11	£875	24	£1,875	12	£750	14	£625	15	£1,125	13	£875
Protective barriers	£250	per bay	14	£2,000	16	£2,750	41	£4,500	13	£2,000	18	£3,500	11	£1,750	24	£3,750	12	£1,500	14	£1,250	15	£2,250	13	£1,750
DNO costs inc. rapids and passive	**Min**	**Max**																						
Small (up to 70KVA)	£1,000	£3,000	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0
Medium (up to 1000kVA)	£4,500	£75,000	1	£75,000	1	£75,000	0	£0	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000
High (above 1000kVA)	£60,000	£200,000	0	£0	0	£0	1	£200,000	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0
Costs for 7kW for cars only		**Hardware costs:**		*£5,000*		*£5,000*		*£15,000*		*£5,000*		*£5,000*		*£5,000*		*£10,000*		*£5,000*		*£5,000*		*£10,000*		*£5,000*
		Installation costs:		*£8,300*		*£10,000*		*£23,700*		*£8,300*		*£8,300*		*£9,200*		*£12,600*		*£8,300*		*£10,000*		*£12,600*		*£8,300*
		DNO costs:		*£3,000*		*£3,000*		*£75,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*
		TOTAL COST:		**£16,300**		**£18,000**		**£113,700**		**£16,300**		**£16,300**		**£17,200**		**£25,600**		**£16,300**		**£18,000**		**£25,600**		**£16,300**
Costs for 7kW for cars, 22kW for car clubs, 50kW for taxis and buses, plus additional passive for buses		**Hardware costs:**		*£160,000*		*£250,000*		*£325,000*		*£160,000*		*£340,000*		*£130,000*		*£315,000*		*£100,000*		*£70,000*		*£110,000*		*£130,000*
		Installation costs:		*£24,000*		*£27,050*		*£56,400*		*£22,700*		*£31,900*		*£19,650*		*£38,350*		*£20,500*		*£21,750*		*£23,950*		*£22,250*
		DNO costs:		*£75,000*		*£75,000*		*£200,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*
		TOTAL COST:		**£259,000**		**£352,050**		**£581,400**		**£257,700**		**£446,900**		**£224,650**		**£428,350**		**£195,500**		**£166,750**		**£208,950**		**£227,250**
Peak power requirement (kW) inc. active and passive for buses				500		514		1134		450		700		350		828		400		414		350		450
Power requirement for 7kW only				28		42		140		28		28		28		56		28		42		56		28

Table 11. 2025 costs per targeted area of charge points and infrastructure. Also includes additional passive costs for 2030 chargepoints. The additional values (+nP) represent the additional passive infrastructure prepared for each charge point as expressed in additional installation costs (earthing, cabling).

	Local Authority:		Bridgend		The Vale of Glamorgan		Cardiff		Rhondda Cynon Taf		Merthyr Tydfil		Merthy Tydfil		Caerphilly		Blaenau Gwent		Torfaen		Monmouthshire		Newport	
	Site:		Pyle		Barry Docks		East Cardiff		Porth		Merthyr bus station		Pentrebach		Caerphilly		Ebbw Valley/ Abertillery		Pontypool/New Inn		Severn Tunnel Junction		Newport to Cardiff	
Charge point type	**Cost per unit**		**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**	**No. units**	**Cost**
Dual ground mounted (7kW)	£5,000	per charger	2	£10,000	3	£15,000	10	£50,000	2	£10,000	2	£10,000	2	£10,000	4	£20,000	1.5	£7,500	3	£15,000	4	£20,000	2	£10,000
Rapids (50kW) for cars	£30,000	per charger	2	£60,000	2	£60,000	5	£150,000	3	£90,000	2	£60,000	2	£60,000	6	£180,000	2	£60,000	4	£120,000	0	£0	2	£60,000
Fast (22kW) for car clubs	£5,000	per charger	1	£5,000	1	£5,000	2	£10,000	1	£5,000	1	£5,000	1	£5,000	1	£5,000	1	£5,000	1	£5,000	2	£10,000	1	£5,000
Rapids (50kW) for taxis	£30,000	per charger	3	£90,000	2	£60,000	14	£420,000	3	£90,000	1	£30,000	1	£30,000	3	£90,000	1	£30,000	1	£30,000	1	£30,000	6	£180,000
Active bays (50kW) for buses	£30,000	per charger	2	£60,000	5	£150,000	0	£0	2	£60,000	10	£300,000	3	£90,000	6	£180,000	2	£60,000	1	£30,000	2	£60,000	0	£0
Passive bays (50kW) for buses)	£0	per charger	2	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	2	£0	1	£0	2	£0	0	£0
Installation (inc. rapids)																								
Excavations	£200	per meter	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000	20	£4,000
Earthing	£400	per earth pit	14	£5,600	16	£6,400	41	£16,400	13	£5,200	18	£7,200	11	£4,400	24	£9,600	11	£4,400	14	£5,600	15	£6,000	13	£5,200
Electrical cabling	£45	per meter	240	£10,800	260	£11,700	620	£27,900	220	£9,900	320	£14,400	180	£8,100	400	£18,000	190	£8,550	220	£9,900	220	£9,900	220	£9,900
Signage	£75	per sign	14	£1,050	16	£1,200	41	£3,075	13	£975	18	£1,350	11	£825	24	£1,800	11	£825	14	£1,050	15	£1,125	13	£975
Road markings	£125	per bay	14	£1,750	16	£2,000	41	£5,125	13	£1,625	18	£2,250	11	£1,375	24	£3,000	11	£1,375	14	£1,750	15	£1,875	13	£1,625
Protective barriers	£250	per bay	14	£3,500	16	£4,000	41	£10,250	13	£3,250	18	£4,500	11	£2,750	24	£6,000	11	£2,750	14	£3,500	15	£3,750	13	£3,250
DNO costs inc. rapids and passive	**Min**	**Max**																						
Small (up to 70KVA)	£1,000	£3,000	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0
Medium (up to 1000kVA)	£4,500	£75,000	1	£75,000	1	£75,000	0	£0	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000	1	£75,000
High (above 1000kVA)	£60,000	£200,000	0	£0	0	£0	1	£200,000	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0	0	£0
Costs for 7kW for cars only		**Hardware costs:**		*£10,000*		*£15,000*		*£50,000*		*£10,000*		*£10,000*		*£10,000*		*£20,000*		*£7,500*		*£15,000*		*£20,000*		*£10,000*
		Installation costs:		*£9,200*		*£11,800*		*£30,000*		*£9,200*		*£9,200*		*£9,200*		*£14,400*		*£7,900*		*£11,800*		*£14,400*		*£9,200*
		DNO costs:		*£3,000*		*£3,000*		*£75,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*		*£3,000*
		TOTAL COST:		**£22,200**		**£29,800**		**£155,000**		**£22,200**		**£22,200**		**£22,200**		**£37,400**		**£18,400**		**£29,800**		**£37,400**		**£22,200**
Costs for 7kW for cars, 22kW for car clubs, 50kW for taxis and buses, plus additional passive for buses		**Hardware costs:**		*£225,000*		*£290,000*		*£630,000*		*£255,000*		*£405,000*		*£195,000*		*£475,000*		*£162,500*		*£200,000*		*£120,000*		*£255,000*
		Installation costs:		*£26,700*		*£29,300*		*£66,750*		*£24,950*		*£33,700*		*£21,450*		*£42,400*		*£21,900*		*£25,800*		*£26,650*		*£24,950*
		DNO costs:		*£75,000*		*£75,000*		*£200,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*		*£75,000*
		TOTAL COST:		**£326,700**		**£394,300**		**£896,750**		**£354,950**		**£513,700**		**£291,450**		**£592,400**		**£259,400**		**£300,800**		**£221,650**		**£354,950**
Peak power requirement (kW) inc. active and passive for buses				500		514		1134		450		700		350		828		393		414		350		450
Power requirement for 7kW only				28		42		140		28		28		28		56		21		42		56		28

Table 12. 2030 cost per targeted area of charge points & infrastructure.

C. Appendix C: Local policy and funding

1. Welsh Government Policy & Strategy

Document Reference	Purpose	Reference to supporting zero emissions transport
Welsh Transport Appraisal (WelTAG) guidance used to assess applications to the Local Transport Capital Grants 2018-19	WelTAG should be used in the development and appraisal of transport proposals promoted or funded by Welsh Government	WFGA guidance provided to support project appraisal, also requirement to reference active travel plan and the environment act re carbon emissions. No specific mention of ZE capability. Essentially a 5 case business model.
Environment (Wales) Act 2016 PART 2 Climate Change	The purpose of Part 2 is to require Welsh Ministers to meet targets for reducing emissions of greenhouse gases from Wales. The achievement of this aim is set out in 'Achieving our Low Carbon Pathway to 2030' Strategy document.	Emissions of GHG from sources in Wales. Hopefully Welsh Government Transport Policy Leads can provide more detail on how the transport emission reductions set out in the strategy will be supported by policy.
Achieving our Low Carbon Pathway to 2030 (2018) consultation has recently closed.	This strategy sets out target for achieving decarbonisation and covers Transport. The report makes recommendations for decarbonisation including provision of infrastructure. In relation to Transport, 14% of Welsh emissions are from transport (significantly less than the UK average at 33%)	Proposed actions to 2030 include; Develop a charging network that encourages early take-up of electric vehicles (EVs) and explore the merits of other measures, including access to bus lanes and free municipal parking; Reduce the carbon footprint of taxis and buses to zero within 10 years to achieve the aim in the Economic Action Plan (from 2017);

Prosperity for All: Welsh Government Economic Action Plan	Includes ambition to 'Drive sustainable growth and combat climate change' and 'Deliver Modern and Connected Infrastructure'.	The document sets out what Welsh Government is seeking to achieve including; We will build a connected infrastructure that supports growth and investment. Our roads, railways, ports, airports, energy infrastructure and digital networks form the arteries that enable our economy to function. Fit for purpose and resilient energy networks will be essential for accommodating the future growth expected in take up of electric vehicles as well as respond to wider changes in the energy system. W*e will decarbonise our transport networks and improve the air quality of the communities they serve. To support this, we will introduce a range of measures whose aim is that all taxis and buses in Wales will have a zero carbon footprint within 10 years.*
Well Being of Future Generations Act (2015)	The Well-being of Future Generations (Wales) Act 2015 sets the framework for the Welsh Government's approach to sustainability and how this will improve the social, economic, environmental and cultural well-being of Wales. The aim of the Act and its local interpretation will be to create an environment that is sustainable both now and into the future.	The WFGA Commissioner recently released a report challenging the proposed £1.4bn investment in the proposed M4 relief road, planned to ease congestion on the M4 at Newport tunnels. The report 'Transport Fit for Future Generations' sets out proposals for an alternative sustainable transport strategy. We set out 3 case study ideas of public transport schemes to complement the South Wales Metro at a cost of approximately £460m. This could be complemented by additional active travel measures (in the 3 local authorities) at a cost of £118m. The total cost of our package would be approximately £578m, delivering an integrated system of public transport and active travel infrastructure to complement the planned Metro phases 2 and 3, at a fraction of the proposed £1.4bn investment on the Black Route.
National Assembly has consulted on EV charging in Wales (2018)	To understand the gaps in EV infrastructure and progress against the recommendations in the low carbon vehicle report (Sept 2015)	Useful responses so far including WPD with estimates of EV uptake in South Wales for reference. http://www.senedd.assembly.wales/mgIssueHistoryHome.aspx?IId=22874
Low carbon vehicle report (Sept 2015)	The Group's remit is to provide the Minister with advice and recommendations on the development of the LCV sector in Wales to maximise the sector's opportunities for growth and jobs and to support social and environmental benefits.	Includes recommendations on improving infrastructure (that haven't been delivered). https://gov.wales/docs/det/publications/160322-lcv-steering-group-report.pdf

Active Travel (Wales) Act 2013	With the Active Travel (Wales) Act 2013, we have set Wales on a path to help transform our country into an ‘active travel nation’. Focuses on increasing walking and cycling as modes of transport and requires consideration within LDP's of active travel options.	Link to accessing the transport hubs and a more integrated transport system. https://beta.gov.wales/sites/default/files/publications/2017-09/active-travel-action-plan.pdf
National Transport Finance Plan 2017 Update	Sets out in detail how WG propose to deliver the outcomes set out in the Wales Transport Strategy from 2015 and beyond. The Plan includes all transport interventions financed by the Welsh Government. No mention of ZE transport.	References air quality management areas and 'Measures to reduce our energy consumption such as low energy lighting and innovative techniques to manage the network will be rolled out where specific business cases allow'
Integrated Transport in Wales report 2013	Focus on integration of transport to facilitate an end to end journey	Relevant to the ZE as the hubs should cater for the integration of all transport solutions (focus in the report on public transport bus and rail links)
The Wales Transport Strategy (2008)	References climate change and environmental benefits but seems out of date now.	
The Air Quality Standards (Wales) Regulations 2010:	These regulations bring into the law in Wales the limits set out in European Union Directives on Air Quality. The regulations require that Welsh Ministers divide Wales into air quality zones.	Requires action to improve air quality standards.
Air Quality Strategy 2007	The UK Government and Devolved Administrations have to produce a national ambient air quality strategy containing objectives and standards for improving air quality.	

Local Air Quality Management (LAQM)	Local Authorities must carry out regular reviews and assessments of air quality in their area against standards and objectives. Where these standards and objectives are unlikely to be met authorities must: designate air quality management areas (AQMAs); and prepare and implement remedial action plans.	With the scope of the Metro, Air Quality Management Areas have been identified in; Caerphilly town centre, Cardiff (x 4 areas including city centre and key arterial roads), Newport (x14 but George street nearest to the route of the new bus route), RCT (x14 nearest is Cymmer, adjacent to Porth) https://airquality.gov.wales/laqm/air-quality-management-areas
Our Valleys, Our Future delivery plan	The Valley's Task Force is an arm's length body to Welsh Government (it's not a separate organisation) that is made up of Valley's stakeholders that inform Welsh Government policy and will work with existing programmes and partners to deliver objectives. Its delivery plan includes 7 strategic sites, some of which include the Metro sites (Merthyr and Caerphilly).	P.29 list of key milestones NB Regional skills partnerships - opportunity to up-skill local people re installation of EV and infrastructure associated with the hub upgrades. https://gov.wales/docs/dsjlg/publications/comm/171107-our-valleys-our-future-delivery-planv3-en.pdf
Wales Infrastructure Investment Plan – Project Pipeline Update 2018	Include allocated funding £738m for delivery South Wales Integrated Transport – Metro (This include funding for the newly established Transport for Wales).	

2. Local Policy and Strategy

Local Authority Area & Related Hub	Any adopted Strategies or work to date?	Planning policy requirements to support delivery of Zero Emission Transport and Infrastructure
Blaenau Gwent: Ebbw Valley Line/Abertillery Spur and Interchange	South East Wales Valleys Local Transport Plan (Jan 2015)	**Objectives of the local transport plan;** No. 8 To achieve a modal shift towards more sustainable forms of transport for moving people and freight. 9. To reduce significantly carbon emissions from transport. Lists out issues, opportunities and interventions across the SE region - key schemes. No mention of zero emissions. **NB: These plans are expected to be updated every 3-5 years**.
	BG LDP 2012 - 2021	No mention or consideration to ZE in the current plan
Caerphilly: Caerphilly Town Centre	South East Wales Valleys Local Transport Plan (Jan 2015)	As above
	Electric Vehicle Strategy and Action Plan (Sept 2018)	Vision: Introduce an electric vehicle infrastructure across Caerphilly county borough, to maximise the economic, social and environmental benefits and opportunities that the electric vehicle agenda will provide.
RCT: Porth	South East Wales Valleys Local Transport Plan (Jan 2015)	As above
	RCT LDP (2006 - March 2021)	No mention or consideration to ZE in the current plan
	Porth Town Centre Strategy	Sets out ambition to develop Porth as a strategic transport hub. No mention of ZE transport or infrastructure.
Merthyr: Merthyr Bus Station	South East Wales Valleys Local Transport Plan (Jan 2015)	As above
Torfaen: Pontypool and New Inn	South East Wales Valleys Local Transport Plan (Jan 2015)	As above

Vale of Glamorgan: Barry Docks	Local Transport Plan 2015-2030	This Local Transport Plan (LTP) seeks to identify the sustainable transport measures required to ensure the Vale of Glamorgan Council adheres to current requirements and good practices to allow for a sustainable transport environment for the period 2015 to 2020 as well as looking forward to 2030. No mention of ZE (although includes air quality and active travel)
Bridgend: Pyle	Local Transport Plan 2015-2031	However, the Local Development Plan does not contain all the transport measures that address local transport issues in the County Borough. Instead, it addresses transport schemes that are of a strategic nature and which are necessitated by land-use developments' Also no mention of ZE in the plan.
Monmouthshire: Severn Tunnel Junction	Monmouthshire local transport plan	No mention of ZE in the plan. **NB all plans set out the same objectives around** "To achieve a modal shift towards more sustainable forms of transport for moving people and freight. 9. To reduce significantly carbon emissions from transport" but the focus is on active travel rather than a shift towards ZE.
Newport: Newport to Cardiff	Newport City Council Local Transport plan (2015-2020)	No mention of ZE in the plan although recognition of changing working patterns (for example)
Cardiff: East Cardiff	Cardiff Transport Strategy 2017	Our transport strategy is underpinned by two main plans – **the Local Development Plan (LDP**) and **Local Transport Plan (LTP)** – which are also the main tools for securing the transport improvements needed to help Cardiff grow and become a truly liveable city. Focus is on moving around the city sustainably (walking, cycling and public transport) rather than ZE. 'Investigate green buses' is the most related statement.
	Local Transport plan 2015-2020	No mention of ZE
	Low Emission Transport: A Strategy for Cleaner, Greener Transportation Fuels. Approved April 2018	Sets out targets for facilitating and speeding up a pathway to zero emission transport including fleet, infrastructure, renewable technologies, procurement, local partners, city growth (an ensuring new infrastructure is fit for purpose) and supporting innovation.

3. Potential Funding Opportunities by Local Authority

	Local Authority Area	Related Hub	Funding Options											
			City Deal Capital Finance (£3m per scheme)	**Local Transport Fund** (Usually capped at around £1.5m per scheme)	**Targeted Regeneration Funding** (£100m 70% fund)	**Building for the Future (EU funded)** running to 2023 (£120m) **Town Centre Regen**	**Infrastructure Investment Plan**	**Transport for Wales P&R**	**£2m WG Electric Vehicle Fund**	**OLEV**	**SALIX**	**PWLB**	**Own Capital Reserves**	**Innovate UK**
1	Blaenau Gwent	Ebbw Valley Line/Abertillery Spur and Interchange	✓	✓	✓	✓		✓	To be determined	✓	To be determined	✓	Unknown	To be determined
2	Caerphilly	Caerphilly	✓	✓	✓	✓		✓		✓		✓	Unknown	
3	RCT	Porth	✓	✓	✓	✓		✓		✓		✓	✓	
4	Vale of Glamorgan	Barry Docks	✓	✓	✓	✓		✓		✓		✓	Unknown	
5	Merthyr	Merthyr Bus Station	✓	✓	✓	✓	✓ (?)			✓		✓	No	
6	Bridgend	Pyle	✓	✓	✓	✓		✓		✓		✓	Unknown	
7	Monmouthshire	Severn Tunnel Junction	✓	✓				✓		✓		✓	Unknown	
8	Torfaen	Pontypool and New Inn	✓	✓				✓		✓		✓	Unknown	
9	Newport	Newport to Cardiff	✓	✓						✓		✓	Unknown	
10	Cardiff	East Cardiff	✓	✓			✓			✓		✓	Unknown	

Independent, not-for-profit, low carbon vehicle technology experts

Research

Programme Development

Consultancy

Low Carbon Vehicle Event

Cenex
Holywell Building
Holywell Park
Ashby Road
Loughborough
Leicestershire
LE11 3UZ

Tel: 01509 642 500
Email: info@cenex.co.uk
Website: www.cenex.co.uk
Twitter: @CenexLCFC

Local Scheme Summary

Interchanges

EVR/ Abertillery Spur – Estimated Cost £12m - Blaenau Gwent Council
The Abertillery Spur & Interchange proposal is seeking to create a 3-4 mile link from Abertillery to Ebbw Valley at Aberbeeg, including a park & ride for 100 vehicles. The current Ebbw Valley Railway service is 1tph and the Transport Minister announced that a 2nd train service per hour will be introduced by 2021 to Newport.
Work is ongoing to review and revisit previous proposals that included a Heavy Rail to Abertillery option, through identifying current transport issues from Abertillery. This will include consideration of a range of options such as light rail or guided bus. Electric charging points will be included within any future proposal implemented.

Caerphilly – Estimated Cost £4-5m - Caerphilly CBC
Funding has recently been awarded from Targeted Regeneration Investment Fund (TRI) to develop a proposal to implement seamless interchange between rail and bus, including high quality passenger facilities, electronic information, increased capacity from existing 280 park and ride spaces, and Electric Vehicles (EV) charging for bus and private car. Wider goals will be sought, such as tying into business development, green hub for technology etc.

Porth – Estimated Cost £4-5m - RCTCBC
Transport interchange between bus and rail services within Porth is poor. The current on street set up, with its three main bus stops being 450 metres apart and removed from the railway station, prevents a seamless transition for those who use the buses and trains for onward journeys. There is no rail link to many of the surrounding communities, such as the Rhondda Fach, Trebanog, Tonyrefail and Gilfach Goch, and interchange at Porth is vital to allow commutable journeys, particularly to Pontypridd and Cardiff in the south to be made by public transport. The vision is to transform Porth into a prosperous and attractive town, which offers a wide range of opportunities for visitors, residents and businesses, with improved connectivity to and from the surrounding areas being anchored by a Transport Hub and a regenerated “Station Quarter”. A site has been identified that has the potential for this Transport Hub, which will house a seven bay bus interchange, taxi rank and cycle racks, and have direct, adjacent, access to the station platforms and the Park and Ride. Electric charging points will be included within future proposal implemented.

Barry Docks – Estimated Cost £3-4m - VOGC
The VoG has identified a bus interchange for Barry Docks to include rail, Park and Ride, active travel, bus and taxi. The rail, Park and Ride and some active travel have already been provided and the bus and taxi need to be addressed to ensure a seamless interchange. The Council has also identified the area between the Docks Office and the Gladstone Bridge to be in desperate need of regeneration. The Transport Minister announced at the Cardiff Airport Masterplan launch that Barry is in need of bus interchange to feed into the airport and that TfW would be seeking to provide this. There are various options, and discussions have been ongoing with the predominant bus operator and the VoG to identify a suitable location. Feasibility and optioneering are ongoing to consider land suitability. It is anticipated that the bus

interchange would include 4- 5 bus bays, have provision for taxis and extend the existing Park and Ride site which is at / overcapacity. The new rail franchise includes additional rail capacity on the line and currently all Park and Ride sites are at or over capacity within Barry. There is a regeneration intention to include a mixed use provision between the two locations identified along the rail corridor and a TRI bid has been submitted for this provision. A North – South Barry bus provision to link with the railway could reduce the congestion both on the Port Road / Culverhouse Cross corridor and the Dinas Powys corridor. Electric charging points will be included within any future proposal implemented.

Park & Ride

Pentrebach Station – £4-5m – Merthyr CBC
The focus at Pentrebach is the regeneration of a significant brownfield site in Merthyr Tydfil that has been largely vacant for nearly 10 years. The South Wales Metro, with high frequency light rail connections, will be the catalyst for the development of a sustainable, mixed use, neighbourhood in which new businesses, homes, shops and parkland will flourish in a riverside environment with excellent links to the green hillsides, the Taff & Trevithick trails and the amenities of Merthyr Tydfil Town Centre. Redevelopment of the area has the potential to maximise opportunities provided from planned transport infrastructure investment (increases in service capacity, Pentrebach station and park and ride improvements and a potential future new metro station) and to support 440 homes and employment land. The regeneration of the area would provide approximately 20% of the identified housing requirement over the LDP Plan period as well as new employment and local retail provision. The site also provides significant opportunities to provide improved open space and green infrastructure along the River Taf corridor.
The Hoover Strategic Regeneration Area is identified to facilitate a major mixed-use development comprising of 440 new homes, local convenience retail provision of 409 sqm, new employment development on 6.5 hectares of land, Pentrebach Station Park and Ride, provision of a new footbridge to Abercanaid; and safeguarded land for a new Metro station.
Development at the 'Hoover Strategic Regeneration Area' will be informed by the development of a master plan. The Council has worked with Welsh Government and Transport for Wales to prepare a draft Framework Masterplan (June 2018) for the area. This has been informed by providing a layout that indicates densities of between 30 to 45 dwellings per hectare. It has also identified 6.5 hectares of vacant and underused land for new employment use at the Willows/Abercanaid Industrial Estate. The Framework Master plan also seeks to reflect sustainable placemaking principles and reflect the legacy of the Hoover Factory site.

Pyle – Estimated Cost £3m - Bridgend CBC
This proposal includes the implementation of a Park and Ride facility as part of the development of an integrated transport hub that serves the local community of Pyle and the nearby settlements of Porthcawl, Kenfig Hill, Cefn Cribwr and Cornelly. Due to the station's proximity to the town of Porthcawl, it is ideally placed to provide access to the South East Wales Metro network for the existing residents, and those that will be attracted due to the planned regeneration proposals within the town. The existing 23-space car park at Pyle, including 2 disabled bays, are located on the westbound side of the railway with an informal parking area available on the

eastbound side which serves Pyle RFC. An initial business case assessment was undertaken in 2013 which suggested that the formal car park was operating over capacity, and that a minimum of 75 additional spaces be considered as part of the development of any future proposals. The most recent figures for Pyle station usage from 2016/17 show that 118,910 journeys were made from the station, an increase of 35% from the levels recorded in 2011/12. The scheme will therefore include the design and delivery of an additional Park and Ride facility that can cater for current demand and future growth based on an updated business case. The proposal will also include appropriate Active Travel connections to maximise accessibility of the station for local residents, and will improve links to the nearby Village Farm Industrial Estate which is located 500m east of the station. The enhanced Park and Ride facilities will also give full consideration to the inclusion of EV charging points, and the provision of additional cycle parking facilities where deemed appropriate.

Severn Tunnel Junction – Estimated Cost £4-5m - Monmouthshire CC
The scheme proposes to provide an additional 150-200 space car park on the south side of Severn Tunnel Junction station. There is currently a substantial shortfall of spaces, which creates problems within the existing car park and nearby streets. The scheme will enable reconfiguration of the existing (north-side) station car park including more than 40 additional bike & ride spaces, safer walking & cycling access, a revamped bus-rail interchange, EV charging spaces and potentially an improved station building (with ticket office, café, shop, WC).

Pontypool and New Inn Station – Estimated Cost £3-4m - Torfaen CBC
Opportunity to provide at least 200 spaces including EV charging. The aim of the scheme is to break the current cycle of poor facilities/services by providing an interchange provision so that the station acts as a key hub for regional travel for the area. The proposed enhancements at Pontypool and New Inn Rail Station includes a new Park and Ride which will be accessed from the A4042 trunk road, DDA compliant platform access and improved station facilities including cycling facilities. The station is a potential interchange point with passengers from the 'Eastern Valley' including Blaenavon, Abersychan, Pontypool, New Inn, and also for Usk and the West of Monmouthshire. This station will support the nearby proposed Mamhilad development with a current allocation of 1,800 dwellings. The station has to date benefited from WG investment for both physical improvements and design and development works for the creation of a strategic park and ride served off the A4042(T) with associated accessibility improvements. The former has consisted of the improvement of parking, pedestrian and cycling facilities and included the provision of a bus stop and turning area to accommodate any future interchange facilities. Allied to this work, Active Travel improvements have been undertaken to better connect the station to the surrounding area and facilities.

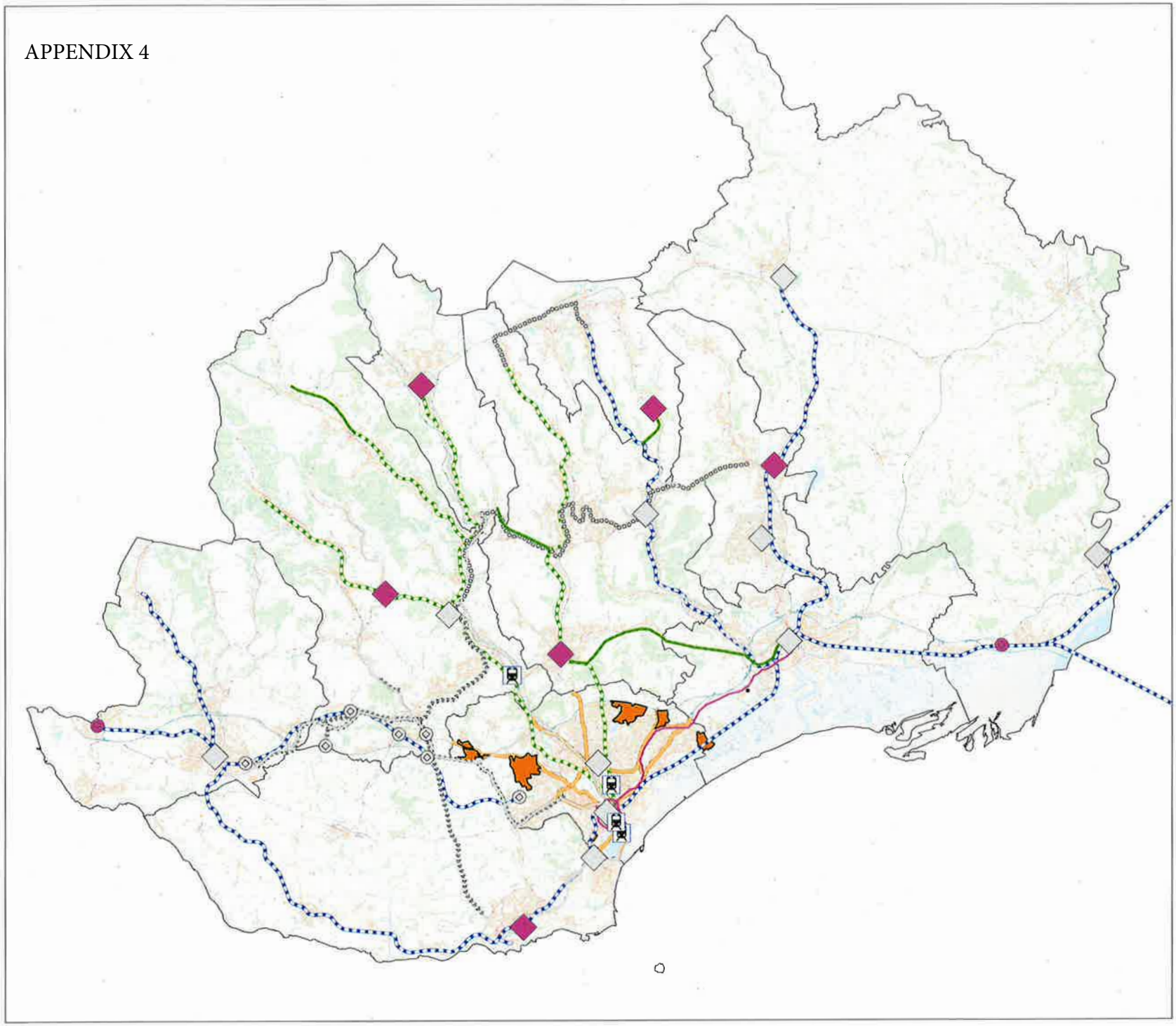
Bus Priority

Newport to Cardiff - £3m - Newport CC
The Newport to Cardiff Bus Corridor links a number of significant trip attractors in the Cardiff Capital Region, including: Cardiff City Centre, Newport Road Retail Park, St Mellons Business park, Cleppa Park/IQE Semi-conductor plant, Office of National Statistics / Patent Office, Royal Gwent Hospital, Newport City Centre and Wales International Conference Centre.

Services on this corridor suffer from extended journey times (current schedules indicating a time of circa 1 hour to undertake the 15-mile journey), with operators confirming services are subject to considerable journey time variability. There is also a lack of consistency in roadside infrastructure, which does not present a coherent offer to potential users. It is proposed that an improvement package is developed to address these issues to provide a high-quality public transport link that showcases bus travel in the region. This will include consistent, high-quality roadside infrastructure to promote and facilitate increased bus use, improved journey time and consistency resulting in reduced generalised journey times for users and operational efficiencies. The scheme will also provide the foundation to introduce a Park and Ride facility to the East of Newport and could be operated by vehicles using more environmentally sustainable forms of propulsion, including charging for electric vehicles.

East Cardiff – Estimated Cost £5-6m - Cardiff CC
The City Centre East project will incorporate a series of sustainable and active travel packages that will enable improved bus connections in Cardiff City Centre, improved active travel infrastructure and pedestrian safety improvements. The infrastructure improvements will benefit local and regional transport through providing improved sustainable connections to key transport hubs, employment zones and visitor destinations. Improvements include new bus priority measures to:
• Connect local and regional buses through the east and south of the city to the Enterprise Zone, Queen Street Station, Retail Quarter (St David's Shopping Centre), Central Square, The Transport Interchange, Central Quay and Cardiff Bay;
• Bus priority measures that will allow buses to service the Transport Interchange on major event days;
• Installation of Central Cycle Superhighway Section that will connect and link all 4 superhighways to the city centre;
• Pedestrian Crossing and Public Realm Improvements on/to Dumfries Place, Station Terrace, Queen St Station and Stuttgart Strasse;
• 20mph Zone and traffic calming measures;
• Air Quality Improvements (outside of Queen Street Station);
• Cycle Parking and Next Bike; and
• Charging Points.

APPENDIX 4



Cardiff Capital Region City Deal

IQE Centre
Strategic_Development_Sites

BRT

Pontypridd, Abercynon, Ystrad Mynach, Blackwood, Newbridge, Pontypool
Rhymney to Ebbw Vale via A465
New Train Stations
Potential Rail Extensions

Schemes

Corner Park Garage J1
J34 Parkway Station
J34A
Park and Ride Llanharran
Park and Ride Pontyclun
Rail Station Brackla
St Fagans New Station
Severn Tunnel Junction
Park and Ride Pyle

Bus Priority

A470 Merthyr-Pontypridd-Cardiff
Abertillery - Blackwood - Newport
Barry - Cardiff via Barrage
Cardiff - Newport (A48) - Malpas Main Corridor
Cardiff City Centre
Dinas Powys - Cardiff
M4 Junction 36
Newport City Centre - Old Green Central Bus Circular
Tonyrefail - Llanharan - Cardiff

Schemes

Bus Lane J34 - Corner Park
Bus Priority A473 Talbot Green - Bridgend
Bus Priority Talbot Green to Pontypridd
By-pass to new Park and Ride J34
Castle Mynach J.I Increase Capacity
Five Mile Lane
J34 - A48
Llanharran By-Pass
Llanharran By-Pass to J34A
New Rail Link for Light Rail or Bus Rapid Transit
Option for Tidal Lane A4119
Road Link Corner Park A4119
Stinkpot Hill Dualling
Western Cardiff Bus Corridor

Rail

Diesel
Electric
Cardiff Bus Routes

Interchanges

Abergavenney
Abertillery
Barry Docks
Bridgend
Caerphilly
Cardiff
Chepstow
Cogan
Cwmbran
Heath Hospital
Merthyr
Newbridge
Newport
Pontypool and New Inn
Pontypridd
Porth

Cardiff Capital Region City Deal
Cytundeb Dinesig Prifddinas Ranbarth Caerdydd

Future Generations Assessment

Name of the Officer completing the evaluation: **Clare Cameron** **Phone no: 07976 708539** **E-mail: clare.cameron@cardiff.gov.uk**	**Please give a brief description of the aims of the proposal** Setting out substantive performance and progress against the Metro Plus (Wave 1) Programme of Local Future Mobility Schemes
Proposal: Quarter 1 Performance	**Date Future Generations Evaluation form completed: 25 Jan 2019**

1. **Does your proposal deliver any of the well-being goals below?** Please explain the impact (positive and negative) you expect, together with suggestions of how to mitigate negative impacts or better contribute to the goal.

Well Being Goal	**Does the proposal contribute to this goal? Describe the positive and negative impacts.**	**What actions have been/will be taken to mitigate any negative impacts or better contribute to positive impacts?**
A prosperous Wales Efficient use of resources, skilled, educated people, generates wealth, provides jobs	Assessing progress with City Deal and the targets set around GVA, jobs and leverage – is our key means of securing greater prosperity. Reporting progress in this way contributes to a growing sense of self awareness.	Proposals to improve progress against each of the projects currently in progress – are set out in the report. This report does not seek to simply report progress – but to address the actions needed to drive it.
A resilient Wales Maintain and enhance biodiversity and ecosystems that support resilience and can adapt to change (e.g. climate change)	New infrastructure and enhancement of provision will open up journey alternatives for commuters, business users and leisure users. Instead of automatically undertaking a journey by car, the Metro Plus Programme will promote and provide an	This activity will be driven up in future. In addition as physical infrastructure schemes enter delivery – more comprehensive assessments will need to be carried out in full.

Well Being Goal	Does the proposal contribute to this goal? Describe the positive and negative impacts.	What actions have been/will be taken to mitigate any negative impacts or better contribute to positive impacts?
	alternative thereby encouraging modal shift to public transport for a range of journey types. This could help to reduce the number of car journeys undertaken, helping to reduce congestion and improve other environmental factors such as an improvement in air quality. The development of new transport schemes which can utilise new technologies such as electronic charging points and electronic vehicles etc within its operation and design will also allow formation of new industries to supply these services. A report prepared by Cenex demonstrates the need for a Programme of Electric Vehicle Infrastructure within the Programme and has proposed the level of infrastructure likely to be required up to 2030. The delivery of this programme will seek to expand on this provision for the region as a whole, which will help combat climate change.	
A healthier Wales People's physical and mental wellbeing is maximized and health impacts are understood	A potential reduction in car trips may make the roads safer, thus opening them up for more Active Travel journey opportunities. There is also likely to be growth in active travel journeys undertaken to interchanges to access the Metro Plus Programme of schemes. This potential increase in active travel journeys could have associated health benefits leading to cost savings across a range of health service provisions (a 2012 meta-analysis estimated physical inactivity to be responsible for 5.3 million (of 57 million) deaths	

Well Being Goal	Does the proposal contribute to this goal? Describe the positive and negative impacts.	What actions have been/will be taken to mitigate any negative impacts or better contribute to positive impacts?
	worldwide, similar to the burden of tobacco smoking and obesity11). There can also be economic benefits for the region from increasing active travel. It has been quoted in a recent report by the 'Transport Fit for Future Generations Report' that 'expanding the investment programme in Active Travel out to the whole Cardiff Capital Region would cost approx. £290 million but would result in economic benefits of £2.5bn over 20 years, delivering a 19% and 82% increase in walking and cycling trips respectively'.	
A Wales of cohesive communities Communities are attractive, viable, safe and well connected	The programme will greatly assist in providing the right infrastructure to improve connectivity by means of good transport links. Those schemes where new links or improvements in corridors are to be implemented are likely to have the largest benefit for example, Abertillery Interchange. All of the combined improvements in interchanges, Park and Ride and bus priority will assist in creating a seamless network allowing ease of transfer between modes. This will facilitate ease of access for communities across south east Wales, for those with and without access to a private car thereby improving connectivity to a range of services. The Metro Plus Programme will also improve connectivity to the South Wales Metro, permitting regional connectivity throughout south east Wales and further beyond.	A greater contribution will be made to this by the aforementioned data capability, sectoral analysis and place assessments.

Well Being Goal	Does the proposal contribute to this goal? Describe the positive and negative impacts.	What actions have been/will be taken to mitigate any negative impacts or better contribute to positive impacts?
	Currently most travel-to-work trips into Cardiff are made by car (58%), while the proportion of sustainable travel-to work trips diminishes with the distance of commuting. The Metro Plus Programme provides an alternative for access into areas such as Cardiff from all areas of south east Wales helping to facilitate modal shift. This could lead to journey time savings on the road network across south east Wales helping businesses and promoting economic development. Journey time savings could also be achieved for users of the public transport network, as the Metro Plus Programme promotes the co-locating of modes via seamless interchanges.	
A globally responsible Wales Taking account of impact on global well-being when considering local social, economic and environmental wellbeing	The Metro Plus Programme includes investment across the whole of south east Wales and it will improve the quality of the region as a whole. Therefore it is likely to encourage new inward investment as businesses have access to a wide pool of potential resources that can easily travel around the region and wider, to access new job and training opportunities.	Develop the legacy impact of the event, sustaining new connections, sharing great practice and potentially securing propositions and deals that support economic growth.
A Wales of vibrant culture and thriving Welsh language Culture, heritage and Welsh language are promoted and protected. People are encouraged to do sport, art and recreation	Providing new and improved sustainable transport infrastructure across the Region will help increase the means of access to sport and recreation. All signage will be bilingual and buses are already equipped with AudioVisual (AV) for those vehicles younger than 2012 to enable them to deliver bilingual messaging.	

Well Being Goal	Does the proposal contribute to this goal? Describe the positive and negative impacts.	What actions have been/will be taken to mitigate any negative impacts or better contribute to positive impacts?
A more equal Wales People can fulfil their potential no matter what their background or circumstances	City Deal is about delivering as far as possible across 10 LAs and a population of 1.5m people. It is about economic gains – but importantly how this will convert as tools for improving people's lives. The programme will support a more productive economy through an increase in access to the South Wales transport network. This will allow for individual, households, public sector and business to grasp new opportunities, from the improved access provided by new and improved transport options. Transport improvements that improve access throughout the south east Wales region will help increase the skills base of the labour market, through providing means of access to new educational, employment, healthcare and training opportunities. The Metro Plus Programme will deliver direct transport improvements into those areas where evidence shows high rates of claiming job seekers allowance, allowing access to sustainable public transport for those seeking employment, increasing their chance of gaining employment through access to wider employment markets. This will increase their personal prosperity and the economic prosperity of the area within which they live as they spend their income on local goods and services.	

2. **How has your proposal embedded and prioritized the sustainable governance principles in its development?**

Sustainable Development Principle	Does your proposal demonstrate you have met this principle? If yes, describe how. If not explain why.	Are there any additional actions to be taken to mitigate any negative impacts or better contribute to positive impacts?

 Balancing short term need with long term and planning for the future	The Metro Plus Programme assists Government with delivering on the four Grand Challenges within the UK Industrial Strategy - Future of Mobility; Artificial Intelligence and Big Data; Clean Growth and Meeting the Needs of an Ageing Society. Table 2.2 of the attached Redstart report shows the impact of the individual options and the Metro Plus Programme as a whole against the goals of the Well-Being of Future Generations (Wales) Act 2015. It can be seen that overall the Metro Plus Programme will have a positive impact on the Welling Being of Future Generations Act (Wales), 2015 goals. Being a programme that is focused on the provision and improvement of sustainable transport, it helps in particular to achieve the goals of a 'globally responsible Wales', 'A Wales of cohesive communities', 'a healthier Wales' and 'a prosperous Wales'. The Metro Plus Programme will provide increase network capacity, providing new and improved transport facilities, increasing capacity at interchanges across the rail network along with providing new capacity along transport corridors such as between Newport and Cardiff and the Abertillery to Ebbw Valley Railway line. In developing the programme long terms trends have been analysed. For example, the need to provide for electric powered vehicles at all sites with the programme has been investigated. A separate report produced by Cenex has considered how electric vehicle charging can be provided, what type of provision is required and the operating model for implementation. The Metro Plus programme also looks to address future trends such as population increases and decreases, providing increased public transport capacity	

Sustainable Development Principle	Does your proposal demonstrate you have met this principle? If yes, describe how. If not explain why.	Are there any additional actions to be taken to mitigate any negative impacts or better contribute to positive impacts?
	and helping to prevent out-migration from some communities through improved access.	
 Working together with other partners to deliver objectives	The Metro Plus Programme has been formed through collaborative working by ten local authorities (Caerphilly CBC, Cardiff CC, Bridgend CBC, Newport CC, Vale of Glamorgan Council, Rhondda Cynon Taf CBC, Merthyr Tydfil CBC, Monmouthshire CC, Torfaen CBC, Blaenau Gwent CBC). The Well-being objectives of each of the local authorities have been considered when developing the programme. The inclusion of EV Charging is also supported by WG and work has been undertaken by Cenex to assess the demand up to 2030 at the locations identified.	Public consultation will take place through the WelTAG process as each scheme develops through the WelTAG stages, and, as the proposal includes all schemes identified within individual LA LDPs, the public will have been made aware of the proposals and would have already had an opportunity through the LDP consultation process to consider the principle of individual schemes.

Sustainable Development Principle	Does your proposal demonstrate you have met this principle? If yes, describe how. If not explain why.	Are there any additional actions to be taken to mitigate any negative impacts or better contribute to positive impacts?
 Involving those with an interest and seeking their views	The Metro Plus Programme has been formed through collaborative working by ten local authorities (Caerphilly CBC, Cardiff CC, Bridgend CBC, Newport CC, Vale of Glamorgan Council, Rhondda Cynon Taf CBC, Merthyr Tydfil CBC, Monmouthshire CC, Torfaen CBC, Blaenau Gwent CBC). The Well-being objectives of each of the local authorities have been considered when developing the programme. Cenex were commissioned to consider EV Charging to be included within the Programme and to assess likely demand up to 2030. REDSTART were commissioned to appraise the Programme, and the is working with TfW to develop the Programme and ensure that the proposal fits with TfW's vision and Metro Programme.	More needs to be done to develop engagement platforms – beyond formal partnerships – to reach communities, hard to reach groups and those who currently have a limited understanding of City Deal. Improving social media, web presence and marketing materials will increasingly make a contribution to this. The RTA will ensure that all partners are included whilst delivering the Programme.

Sustainable Development Principle	Does your proposal demonstrate you have met this principle? If yes, describe how. If not explain why.	Are there any additional actions to be taken to mitigate any negative impacts or better contribute to positive impacts?
 Putting resources into preventing problems occurring or getting worse	The Metro Plus Programme is designed to prevent further environmental damage from transport through the promotion and development of a sustainable transport network. Population in some communities is projected to decline (such as some valleys communities, where younger members of the community leave to seek job opportunities in larger towns and cities). The Metro Plus Programme linking into the wider Metro network will provide an effective transport system, connecting major towns and cities across Wales for those communities where population is declining. This may permit people to stay within the community within which they have grown up, commuting to and from employment as an efficient transport network is available, rather than needing to relocate to seek employment.	This will be an increasing focus of scheme and programme delivery.

Sustainable Development Principle	Does your proposal demonstrate you have met this principle? If yes, describe how. If not explain why.	Are there any additional actions to be taken to mitigate any negative impacts or better contribute to positive impacts?
 Considering impact on all wellbeing goals together and on other bodies	The Metro Plus Programme has been developed with consideration to a wide range of contextual factors. Strategic fit of the programme has been considered along with a number of other wider issues such as carbon reduction. Table X.X in the REDSTART Report includes a review of the impact of the individual schemes and the Metro Plus RTA Programme (Wave 1) against the wellbeing objectives of each of the ten local authorities which the programme will be implemented. In terms of the programme impact on local authority wellbeing goals, a positive impact can be seen. In particular the Metro Plus Programme will help to achieve goals that aim to tackle poverty and deprivation, improve access to skills, improve employment opportunities and provide improved infrastructure and healthier communities.	

3. **Are your proposals going to affect any people or groups of people with protected characteristics?** Please explain the impact, the evidence you have used and any action you are taking below.

Protected Characteristics	Describe any positive impacts your proposal has on the protected characteristic	Describe any negative impacts your proposal has on the protected characteristic	What has been/will be done to mitigate any negative impacts or better contribute to positive impacts?
Age	The report is an overview of performance in all of the relevant aspects of the projects, partnership, governance and investment. The Metro Plus Programme will help to achieve goals that aim to tackle poverty and deprivation, improve access to skills, improve employment opportunities and provide improved infrastructure and healthier communities for all characteristics as all infrastructure included within the projects will be designed in accordance with current inclusive design.	None arising at this time.	
Disability	As above	As above	
Gender reassignment	As above	As above	
Marriage or civil partnership	As above	As above	
Pregnancy or maternity	As above		
Race	As above		
Religion or Belief	As above		

Protected Characteristics	Describe any positive impacts your proposal has on the protected characteristic	Describe any negative impacts your proposal has on the protected characteristic	What has been/will be done to mitigate any negative impacts or better contribute to positive impacts?
Sex	As above		.
Sexual Orientation	As above		
Welsh Language	As above	Not at this time but the situation will be kept under review.	

4. Safeguarding & Corporate Parenting. Are your proposals going to affect either of these responsibilities?

	Describe any positive impacts your proposal has on safeguarding and corporate parenting	Describe any negative impacts your proposal has on safeguarding and corporate parenting	What will you do/ have you done to mitigate any negative impacts or better contribute to positive impacts?
Safeguarding	Not directly relevant –however, building the future economy should have a profoundly positive impact on ability to safeguard the future of our residents		
Corporate Parenting	Not directly relevant – however building strength in the economy should create opportunities for all of the young people entrusted in our care		

5. What evidence and data has informed the development of your proposal?

- Evidence and input contributed by theme leads
- Outcomes of assessments such as audit reports
- Delivery against targets set out in individual business cases/ approved project documentation

6. SUMMARY: As a result of completing this form, what are the main positive and negative impacts of your proposal, how have they informed/changed the development of the proposal so far and what will you be doing in future?

The areas requiring attention and focus are set out and follow-up actions will be assessed and monitored ongoing through the quarterly reporting mechanism. .

7. MONITORING: The impacts of this proposal will need to be monitored and reviewed. Please specify the date at which you will evaluate the impact, and where you will report the results of the review.

The impacts of this proposal will be evaluated on:	**Quarter 3**

WELSH GOVERNMENT CAPITAL TRANSPORT GRANTS FY2019-20
SCHEME APPLICATION FORM
Local Authorities shall complete one form per scheme. A scheme may comprise a single project or package of associated projects

Local Authority	Merthyr Tydfil CBC
Scheme Name	RTA Metro Plus Programme
Scheme Priority Rank Number	1
Existing or New Scheme	Existing
Grant (please select one)	Local Transport Fund
Date of Scheme	Start April 2018 Estimated Completion March 2023
Scheme Category (please select one)	**Integrated Transport** / Highways / Rail / Active Travel Strategic Scheme / Active Travel Local Scheme / Safe Routes in Communities
Funding required for 2018-19	*£4,269,000*
Total funding required to complete scheme from 2019-20 onwards	*£10,731,000 (plus total match funding of £15m by City Deal)*
Project Manager Contact Name	Alun Evans
Contact Telephone	01495 355363
Contact email	alun.evans@blaenau-gwent.gov.uk
Authorised by (e.g. Head of Finance or Transport Services)	Name: Chris Long Job Title: Economic Development and Strategic Tourism Manager Signature:

SCHEME DESCRIPTION

Please provide a brief description of the scheme. If your application is for a scheme that will take longer than a financial year to complete, we require a description of the whole scheme and the elements to be delivered in each financial year. Applications for a package of schemes should contain a costed list of the associated projects in priority order.

Attach A4 location maps, project(s) drawing(s) and any other supporting information separately.

OS GB grid reference:
The Cardiff Capital Region City Deal in collaboration with Welsh Government and Transport for Wales has identified a package of schemes to a value of c£50M that will enhance, extend, add value and future proof commitments to the south east Wales Metro. The package has been developed on the basis that both the Welsh Government and City Deal will commit, subject to full business case, a contribution of £15M each for scheme delivery. Additional funding will be secured from a number of sources, including; developer contributions, third party and private sector funding, other government grants and the councils' own capital programmes. The individual schemes include Transit Orientated Developments (interchanges of the future based around a range of uses beyond transport), enhanced park and ride facilities that promote interchange and integration for all modes, and new and extended Metro networks that allow the wider community to access sustainable opportunities to travel for work, education, retail or leisure purposes. This exciting package of Metro+ schemes will be future proofed by the inclusion of the latest technological advances in vehicle charging for bus, taxis, car clubs and cycles, including energy generation where possible. In addition, the wider City Deal priorities around economic growth, the skills agenda, digital inclusion and open data will form a key aspiration. The programme comprises the following projects: **Abertillery Interchange** – the current Ebbw Valley Railway service is one train per hour, with a further hourly service committed as part of the new rail partnership. A long standing aspiration of local residents of the Ebbw Fach and Abertillery is the provision of a link to the EVR, so the initial work is focussed on identifying the current accessibility problems and issues, identifying smart,

strategic objectives and developing a short list of options to provide this link. Electric charging points will be included within any future proposal implemented.

Caerphilly Interchange – at an early stage of development, the provision of a new transport interchange for Caerphilly, on the site of the current bus and rail stations. High quality passenger facilities to be provided including electronic information, EV charging for buses and a larger park and ride facility. The initial stage development will also consider the wider business and green technology hub opportunities.

Porth Interchange – the vision is to transform Porth into a prosperous and attractive town, which offers a wide range of opportunities for visitors, residents and businesses, with improved connectivity to and from the surrounding areas being anchored by a Transport Hub and a regenerated “Station Quarter”. A site has been identified for this Transport Hub, which will house a seven bay bus interchange, taxi rank and cycle racks, with direct access to the rail station platforms and the Park and Ride, which will be further extended. Electric charging points will be included within the future proposal.

Barry Docks Interchange – the development of bus and rail interchange at Barry is a key aspiration, especially given its location in relation to Cardiff Wales Airport. It is anticipated that the interchange would include 4- 5 bus bays, have provision for taxis and potentially extend the existing Park and Ride site (currently at capacity) as the new rail partnership includes line frequency enhancement. Electric charging points will be included within any future proposal implemented.

Pyle Interchange - implementation of a Park and Ride facility as part of the development of an integrated transport hub that serves the local community of Pyle and the nearby settlements of Porthcawl, Kenfig Hill, Cefn Cribwr and Cornelly. The existing 23-space car park at Pyle is currently at capacity and a minimum of 75 additional spaces are being considered as part of the future development. The scheme will include the design and delivery of an additional P&R facility that can cater for current demand and future growth based on an updated business case. The proposal will also include appropriate Active Travel connections and will also give full consideration to the inclusion of EV charging points, and the provision of additional cycle parking facilities.

Pentrebach Station and Park and Ride – the focus at Pentrebach is the regeneration of a significant brownfield site (Hoovers) that has been largely vacant for 10 years. The South Wales Metro, with high frequency light rail connections, will be the catalyst for the development of a sustainable, mixed use, neighbourhood with new businesses, homes, shops and parkland, the Taff &

Trevithick trails and on the doorstep of Merthyr Tydfil Town Centre. Redevelopment of the area has the potential to maximise opportunities provided from planned transport infrastructure investment (increases in service capacity, Pentrebach station and park and ride improvements and a potential future new metro station) and to support 440 homes and employment land. Electric charging points will be included within any future proposal implemented.

Severn Tunnel Junction Park & Ride - an additional 150-200 space park & ride facility on the south side of Severn Tunnel Junction station. There is currently a substantial shortfall of spaces, which creates problems within the existing car park and nearby streets. The scheme will enable reconfiguration of the existing (north-side) station car park including more than 40 additional bike & ride spaces, safer walking & cycling access, arevamped bus-rail interchange, EV charging spaces and potentially an improved station building (with ticket office, café, shop, WC).

Pontypool and New Inn Station Park and Ride – the proposed enhancements at Pontypool and New Inn Rail Station include a new Park and Ride (200 spaces) which will be accessed from the A4042 trunk road, DDA compliant platform access and improved station facilities including cycling facilities. The station is a potential interchange point with passengers from the 'Eastern Valley' including Blaenavon, Abersychan, Pontypool, New Inn, and also for Usk and the West of Monmouthshire. This station will support the nearby proposed Mamhilad development with a current allocation of 1,800 dwellings. EV charging spaces provided within the new P&R.

Newport to Cardiff Bus Priority - the Newport to Cardiff Bus Corridor links a number of significant trip attractors - Cardiff City Centre, the St Mellons Business park, Cleppa Park/IQE Semi-conductor plant, the Office of National Statistics and Patent Office, the Royal Gwent Hospital, Newport City Centre and the Wales International Conference Centre. Services on this corridor suffer from extended journey times (current schedules indicating a time of circa 1 hour to undertake the 15-mile journey), with operators confirming services are subject to considerable journey time variability. Initial work is ongoing on an improvement package that includes high-quality roadside infrastructure to promote and facilitate increased bus use. The scheme will also provide the foundation for a Park and Ride facility to be developed on the eastern side of Newport, where EV charging could figure prominently.

East Cardiff Bus Priority – this project incorporates a series of sustainable and active travel packages that will enable improved bus connections in Cardiff City Centre, improved active travel infrastructure and pedestrian safety improvements. The infrastructure

improvements will benefit local and regional transport through providing improved sustainable connections to key transport hubs, employment zones and visitor destinations. Improvements include new bus priority measures to connect local and regional buses through the east and south of the city, installation of Central Cycle Superhighway that will connect and link all 4 cycle superhighways to the city centre, 20mph Zone and traffic calming measures, air quality Improvements, cycle parking and Next Bike, and EV charging points.

REDSTART Stage 1 Draft Report attached.

Cenex Stage 1 Draft Report attached.

Safe Routes in Communities Schemes ONLY

Name of school/s on which the scheme is focused	Number of pupils

Is the scheme included in your Existing Routes Map or your Integrated Network Map? If yes, please show the route reference, taken from the Active Travel Mapping System and describe how the scheme fits into your existing or planned active travel network.

Route Reference:

If the scheme does not fall within a designated locality, as per the Active Travel (Wales) Act 2013, does it serve one or more schools that were included in the list of schools which required improvements to routes, as submitted by your local authority in July 2014?

Yes ☐

If neither of the above apply, please provide evidence why your scheme should be considered for funding:

Sustainable Development Principle

The Well-Being of Future Generations (Wales) Act 2015, places a duty on public bodies to apply the sustainable development principle in everything they do, through the five ways of working. Please describe how you have followed the five ways of working in the development and appraisal of your scheme. Please use the Future Generations Framework https://futuregenerations.wales/wp-content/uploads/2017/12/FGCW-Framework.pdf

PLEASE ONLY PROVIDE INFORMATION RELATED TO YOUR SCHEME

The Five Ways of Working	
Long Term – please describe how you have considered long term needs related to your scheme. What are the impacts of your scheme on future generations?	The Metro Plus RTA Programme assists Government with delivering on the four Grand Challenges within the UK Industrial Strategy - Future of Mobility; Artificial Intelligence and Big Data; Clean Growth and Meeting the Needs of an Ageing Society. Table 2.2 of the attached Redstart report shows the impact of the individual options and the Metro Plus RTA Programme as a whole against the goals of the Well-Being of Future Generations (Wales) Act 2015. It can be seen that overall the Metro Plus RTA Programme will have a positive impact on the Welling Being of Future Generations Act (Wales), 2015 goals. Being a programme that is focused on the provision and improvement of sustainable transport, it helps in particular to achieve the goals of a 'globally responsible Wales', 'A Wales of cohesive communities', 'a healthier Wales' and 'a prosperous Wales'.

	The five ways of working of the WBFG (Wales) Act have been considered in developing the programme and long term trends have been analysed. For example, the need to provide for electric powered vehicles at all sites with the programme has been investigated. A separate report produced by Cenex has considered how electric vehicle charging can be provided, what type of provision is required and the operating model for implementation. The Metro Plus RTA programme also looks to address future trends such as population increases and decreases, providing increased public transport capacity and helping to prevent out-migration from some communities through improved access. Population within some areas of South East Wales are projected to increase. Newport, Bridgend, Cardiff, Caerphilly and Rhondda Cynon Taf are all projected to have larger populations by 2039. Providing a future focused transport network to meet the rising population will be required. The Metro Plus RTA Programme will provide increase network capacity, providing new and improved transport facilities, increasing capacity at interchanges across the rail network along with providing new capacity along transport corridors such as between Newport and Cardiff and the Abertillery to Ebbw Valley Railway line.

Prevention – please describe how you considered options to prevent the problems that your scheme is addressing, from getting worse or occurring in the first place.	The Metro Plus RTA Programme is designed to prevent further environmental damage from transport through the promotion and development of a sustainable transport network. Population in some communities is projected to decline (such as some valleys communities, where younger members of the community leave to seek job opportunities in larger towns and cities). The Metro Plus RTA Programme linking into the wider Metro network will provide an effective transport system, connecting major towns and cities across Wales for those communities where population is declining. This may permit people to stay within the community within which they have grown up, commuting to and from employment as an efficient transport network is available, rather than needing to relocate to seek employment.
Integration – please describe how you have considered the well-being objectives of other public bodies.	The Metro Plus RTA Programme has been developed with consideration to a wide range of contextual factors. Strategic fit of the programme has been considered along with a number of other wider issues such as carbon reduction. Table X.X attached includes a review of the impact of the individual schemes and the Metro Plus RTA Programme against the wellbeing objectives of each of the ten local authorities which the programme will be implemented. In terms of the programme impact on local authority wellbeing goals, a positive impact can be seen. In particular the Metro Plus RTA Programme will help to achieve goals that aim to

	tackle poverty and deprivation, improve access to skills, improve employment opportunities and provide improved infrastructure and healthier communities.
Collaboration – please describe who you collaborated with and how, in the development and appraisal your scheme.	Through implementation of a programme of measures that are instigated in ten local authorities, co-ordinated working between political and commercial partners is being promoted at a regional level. The schemes stem from a list of schemes identified by the Regional Transport Authority and in discussion with WG and TfW to enhance the current Metro Programme. The inclusion of EV Charging is also supported by WG and work has been undertaken by Cenex to assess the demand up to 2030 at the locations identified. REDSTART was also commissioned to appraise the Programme in terms of Strategic Fit and Wellbeing and Future Generations considerations. The Stage 1 Draft Report is supplied for information. The WB&FG Office has also been approached and will be included in the development of the Programme. Public consultation will take place through the WelTAG process as each scheme develops through the WelTAG stages, and, as the proposal includes all schemes identified within individual LA LDPs, the public will have been made aware of the proposals and would have already had an opportunity through the LDP consultation process to consider the principle of individual schemes.

Involvement – please describe who you have involved and how, in the development and appraisal of your scheme	The final Metro Plus RTA Programme has been formed through a process of appraisal, with stakeholder input. A long list of options has been sifted to the final list of schemes included within the programme. The recommended final Metro Plus RTA Programme has been agreed with all ten south east Wales local authorities and will be subject to further approval with CCRCD board members and Welsh Government representatives. Cenex were commissioned to consider EV Charging to be included within the Programme and to assess likely demand up to 2030. REDSTART were commissioned to appraise the Programme, and the RTA is working with TfW to develop the Programme and ensure that the proposal fits with TfW's vision and Metro Programme. WBFG has been included in the discussion and will be actively involved in considering the proposal and ensuring its fit to the WB&FG Act goals and objectives. The RTA will ensure that all partners are included whilst delivering the Programme.

SCHEME BUSINESS CASE

1. STRATEGIC CASE

The case for change, fit with policies and objectives.

The Case for Change	
Current and Future Situation and Issues What are the local and wider issues that this scheme will address? Include baseline data where available. What will happen if no action is taken?	The collective benefits of a Metro Plus RTA Programme are greater than if implemented as individual schemes. All of the transport interventions included within the programme will support, promote and enhance sustainable travel, thus contributing to the development of a sustainable economy. Sustainable travel also promotes long term well-being and the quality of life of people and communities. The programme will facilitate improved access to employment and therefore new economic opportunities. All of the transport interventions within the programme are public transport based, thus will provide enhanced and new employment access opportunities, particularly for those sectors of society without a private car (helping address deprivation where caused by a lack of access to transport). Improving access for those sectors of society without a private car, demonstrates the programmes ability to contribute towards

	permitting participation in the labour market for all members of society. The programme will also support a more productive economy through an increase in access to the South Wales transport network. This will allow for individual households, public sector and business to grasp new opportunities, from the improved access provided by new and improved transport options. All of the transport improvements contained within the programme will improve access throughout the south east Wales region. This will help increase the skills base of the labour market, through providing means of access to new educational, employment, healthcare and training opportunities. New and enhanced public transport provision will also improve access to education and training, healthcare and social and recreational opportunities, all of which will promote inclusion and equality across south east Wales. Through a programme of measures that support the Metro, south east Wales will become a region that is easy to navigate by seamless passenger transport. The Metro Plus RTA Programme will provide new and enhanced public transport facilities, which will feed into the wider network of South Wales Metro improvements. This will collectively contribute to forging a clear identity and strong reputation as a City-Region that has a good quality of life, with an interconnected high quality transport network.

	All of the schemes within this Programme will help to ensure that urban centres are vibrant and vital with unique identities which all of the regions residents can use and be proud of. In particular Caerphilly Interchange, Porth Interchange, Barry Docks Interchange and Merthyr Bus Station will link to wider town centre regeneration schemes, to create a sense of place and identity. These key interchanges (along with the other transport improvements within the programme) will deliver people into key urban centres making them vibrant places, with transport facilities often providing the hub around which the urban centre operates and develops. Many interventions within the programme will help to respect, project and support the rural and natural environment to promote economic and social outcomes through provision of improved sustainable transport facilities and improved transport access into and out of rural communities. For example, Severn Tunnel Junction improvements will improve access for communities within rural Monmouthshire. In relation to this, the Programme will have a beneficial impact on developing and promoting world- class cultural and recreational opportunities through opening up access to areas of natural beauty and historic importance, thus promoting tourism within the South Wales region. By implementing a programme of transport measures which connect into the wider Metro network, the region as a whole

	becomes easier to travel around thus promoting the South Wales area as a whole offering.
Scheme outputs What are the specific outputs that the scheme will deliver? (objectives and outcomes should be set out in the next section)	Key outputs of the Metro Plus RTA Programme: • Number of interchanges improved = 9 • Approximate KM's of passenger transport network improved or provided = 32 km (Newport to Cardiff 26km and Abertillery Spur 6km) • Number of new park and ride spaces provided is estimated to be 453, but will increase following development of the individual schemes The outputs of the following TRI bids which would be supported by the Metro Plus RTA include • 393 gross jobs to be created; • 260 construction sector jobs to be created; and • 47 traineeships.
Fit with Policies and Plans Please indicate where this scheme fits with local policies and plans such as the Local Transport Plan and any other related policies and plans. **Please also indicate the Integrated Network Map route reference for this scheme, taken from the Active Travel Mapping System.**	Each of the schemes identified in this Programme have evolved through the RTA and have been identified in individual LDPs and LTPs for each of the 10 LAs. All Active Travel elements delivered within the schemes, will have been included in the individual LAs Integrated Network Maps.

	The EV Charging element within the Programme fits with the WG Carbon agenda and the Programme strategically fits with the Cardiff Capital Region, WG and TfW plans and objectives for a seamless sustainable transport network for the region.

Fit with Well-being Objectives

The Well-Being of Future Generations (Wales) Act 2015, places a duty on public bodies to seek to achieve the well-being goals and objectives in everything they do. Please outline below how your scheme fits with the Welsh Government's Well-being Objectives:

http://gov.wales/docs/dsjlg/publications/150623-guide-to-the-fg-act-en.pdf
http://gov.wales/docs/strategies/170919-prosperity-for-all-en.pdf

Prosperity for All	Well-being Objectives	Scheme contribution
Prosperous & Secure	• Support People and businesses to drive prosperity • Tackle regional inequality and promote fair work • Drive sustainable growth and combat climate change	Overall the Metro Plus RTA Programme will have a slight to large positive impact on the strategic objectives contained within the Prosperity and Opportunity theme. In particular, the programme will greatly assist in providing the right infrastructure to improve connectivity by means of good transport links. Those schemes where new links or improvements in corridors are to be implemented are likely to have the largest benefit for example, Abertillery Interchange. As a whole, connectivity across the region will improve through implementation of the programme. All of the combined improvements in interchanges, Park and Ride and bus priority will assist in creating a seamless network allowing ease of transfer between modes. This will facilitate ease of access for communities across south east Wales, for those with and without access to a private car thereby improving connectivity to a range of services.

		The Metro Plus RTA Programme will also improve connectivity to the South Wales Metro, permitting regional connectivity throughout south east Wales and further beyond. The programme will also support a more productive economy through an increase in access to the South Wales transport network. This will allow for individual, households, public sector and business to grasp new opportunities, from the improved access provided by new and improved transport options. All of the transport improvements contained within the programme will improve access throughout the south east Wales region. This will help increase the skills base of the labour market, through providing means of access to new educational, employment, healthcare and training opportunities. As the Metro Plus RTA Programme includes investment across the whole of south east Wales it will improve the quality of the region as a whole. This is likely to encourage new inward investment as businesses have access to a wide pool of potential resources that can easily travel around the region to access new job and training opportunities. The programme clearly demonstrates a commitment to a sustainable future, as all of the transport interventions

		include focus on facilitating and promoting sustainable transport access. The Statistical Bulletin on the regional economic and labour market profile issued by the Welsh Government in January 2018 shows the employment rate, economic inactivity rate and benefit claims and ILO unemployment rates for 16+ across Wales. It can be seen that the International Labour Organisation (ILO) unemployment rate for south east Wales is higher than for Wales as a whole (5.6 compared to 4.7 for wales as a whole). A breakdown of the data shows that the highest rate of ILP unemployment for 16+ is within Merthyr Tydfil (7.6) and second is Rhondda Cynon Taf (6.3). Both these local authority areas are within south east Wales and will directly benefit (as will all communities across south east Wales) from the improved transport provision that the Metro Plus RTA Programme would deliver. The Metro Plus RTA Programme will deliver direct transport improvements into those areas where evidence shows high rates of claiming job seekers allowance, allowing access to sustainable public transport for those seeking employment, increasing their chance of gaining employment through access to wider employment markets. The majority of the schemes included within this Programme are located within the most deprived areas.

		Those that are corridor based can be seen to be passing through a number of those areas classified as the most deprived. Improvements in access to sustainable public transport provided will help to improve levels of deprivation in these areas, where caused by a lack of transport options. The Programme will provide an efficient network penetrating the most deprived areas providing a means to travel to major cities such as Cardiff and Newport and a range of areas across south east Wales. Tying into the wider Metro Network this will permit access to a vast range and higher number of employment opportunities for all community members located within the most deprived areas of south east Wales. This will increase their personal prosperity and the economic prosperity of the area within which they live as they spend their income on local goods and services The development of new transport schemes which can utilise new technologies such as electronic charging points and electronic vehicles etc within is operation and design will also allow formation of new industries to supply these services. A report prepared by Cenex demonstrates the need for a Programme of Electric Vehicle Infrastructure within the wider RTA Programme and has proposed the level of infrastructure likely to be required up to 2030. This proposal will include the provision of this infrastructure in its delivery programme and will seek to

		expand on this provision for the region as a whole and which will help combat climate change. New infrastructure and enhancement of provision will open up journey alternatives for commuters, business users and leisure users. Instead of automatically undertaking a journey by car, the Metro Plus RTA Programme will promote and provide an alternative thereby encouraging modal shift to public transport for a range of journey types. This could help to reduce the number of car journeys undertaken, helping to reduce congestion and improve other environmental factors such as an improvement in air quality. Currently most travel-to-work trips into Cardiff are made by car (58%), while the proportion of sustainable travel-to work trips diminishes with the distance of commuting. The Metro Plus RTA Programme provides an alternative for access into areas such as Cardiff from all areas of south east Wales helping to facilitate modal shift. This could lead to journey time savings on the road network across south east Wales helping businesses and promoting economic development. Journey time savings could also be achieved for users of the public transport network, as the Metro Plus RTA Programme promotes the co-locating of modes via seamless interchanges.
Healthy & Active	• Deliver quality health and care services fit for the future • Promote good health and well-being for everyone • Build healthier communities and better environments	A potential reduction in car trips may make the roads safer, thus opening them up for more Active Travel journey opportunities. There is also likely to be growth in

		active travel journeys undertaken to interchanges to access the Metro Plus RTA Programme of schemes. This potential increase in active travel journeys could have associated health benefits leading to cost savings across a range of health service provisions (a 2012 meta-analysis estimated physical inactivity to be responsible for 5.3 million (of 57 million) deaths worldwide, similar to the burden of tobacco smoking and obesity11). There can also be economic benefits for the region from increasing active travel. It has been quoted in a recent report by the 'Transport Fit for Future Generations Report' that 'expanding the investment programme in Active Travel out to the whole Cardiff Capital Region would cost approx. £290 million but would result in economic benefits of £2.5bn over 20 years, delivering a 19% and 82% increase in walking and cycling trips respectively'.
Ambitious & Learning	• Support young people to make the most of their potential • Build ambition and encourage learning for life • Equip everyone with the right skills for a changing world	Implementation of this Programme will provide opportunity for provision of Apprenticeships during construction of schemes both directly within those companies employed as contractors and within the local supply chain industry. This will help to grow the skills of the workforce within the local community of each of the interventions included within the programme. Implementation of the Metro Plus RTA interventions as a whole programme will offer further opportunity for growth in skills, as economies of scale may permit opportunities for contractors to work together

		during construction of the programme to cross train employees in a range of skill areas. In addition, the programme could promote apprenticeships in the STEM industries through creating opportunity in those organisations involved in the planning and design of the programme interventions e.g. Civil Engineering and Architecture. Promoting more higher skilled apprenticeships in STEM industries is an aim of the WG, with the 'Aligning the Apprenticeship model to the needs of the Welsh Economy' documents stating that 'Action will be taken to increase Apprenticeships in Science Technology Engineering and Mathematics (STEM) occupations'.
United & Connected	• Build resilient communities, culture and language • Deliver modern and connected infrastructure • Promote and protect Wales' place in the world	Transport is key to promoting and supporting growth and providing the right physical place. Many of the elements of the Metro Plus RTA Programme will include schemes that will provide an improvement to physical place by providing a new hub to a town centre. Radiating from these hubs is wider improvements that will aid in promoting town centre growth and economic development. The Metro Plus RTA Programme also aligns with the Targeted Regeneration Investment (TRI) bids, which are for schemes to be delivered between 2018 and 2021 and beyond. Improved access provision, transport network development and transport options will help to support the

		regeneration of an area by attracting inward investment and enabling access to labour markets. The outputs of the following TRI bids which would be supported by the Metro Plus RTA include • 393 gross jobs to be created; • 260 construction sector jobs to be created; and • 47 traineeships. The Programme will facilitate not only local connectivity but also regional and global connectivity by directly supporting access to the Metro which ties into national services at key hubs such as Newport and Cardiff, as well as internationally via Cardiff airport. Having a well-connected regional area which enables access to a wide range of skills, services and resources will assist in promoting entrepreneurial activity and fostering innovation. Enabling new start-up businesses access to a skills market and resources via an integrated and forward thinking transport network, attract new innovation districts to form.

Scheme Objectives

Please outline below how your scheme fits with the relevant grant objectives. Please only fill in for the grant that you are applying for and leave the other blank.

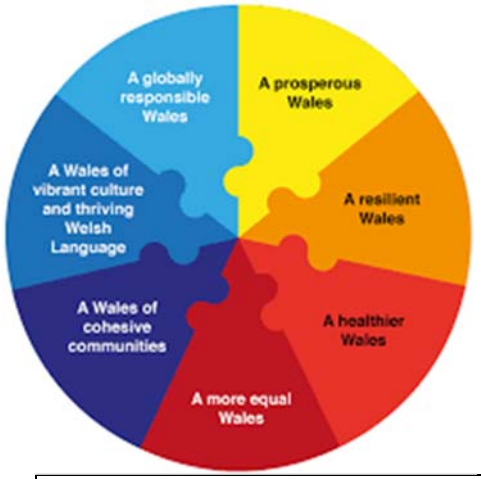
Grant name	Grant objectives	Scheme Contribution
Local Transport Fund	• Support WG economic priorities for jobs and growth, in particular for City Regions, Enterprise Zones, North Wales Economic Ambition Board, local growth zones and regeneration areas • Reduce economic inactivity by delivering safe and affordable access to employment sites • Encourage active and sustainable travel • Improve quality of life particularly those living in disadvantaged and rural communities by delivering safe and easy to use transport to key facilities and services • Connect communities and enable access to key services	All of the transport improvements contained within the programme will improve access throughout the south east Wales region. This will help increase the skills base of the labour market, through providing means of access to new educational, employment, healthcare and training opportunities. The Programme is likely to encourage new inward investment as businesses have access to a wide pool of potential resources, who can easily travel around the region to access new job and training opportunities. The programme clearly demonstrates a commitment to a sustainable future, as all of the transport interventions include focus on facilitating and promoting sustainable transport access.
Local Transport Network Fund	• Improve public transport journey time reliability • Reduce public transport journey times • Connect communities and enable access to employment, education and key services	

Active Travel Fund	• Improve active travel access to employment, education, key services, destinations and public transport • Increase levels of active travel • Connect communities	
Safe Routes in Communities	• Increase levels of active travel among children travelling to school • Increase levels of active travel in the wider community (Please indicate the position of the community in the Welsh Index of Multiple Deprivation)	

2. TRANSPORT CASE

Contribution to Well-being Goals

Transport schemes must seek to maximise their contribution to the well-being goals. Please provide a summary of the impacts of the scheme to the well-being goals. This should be informed by the statutory and non-statutory impact assessments of the scheme.



Well-being Goal	Impact (select one for each goal)
A prosperous Wales	Positive
A resilient Wales	Positive
A healthier Wales	Positive
A more equal Wales	Positive
A Wales of cohesive communities	Positive
A Wales of vibrant culture and thriving Welsh language	neutral
A globally responsible Wales	Positive

Value for Money
Please explain what steps have been taken to ensure costs have been kept as low as possible and to quantify if the funding requested will represent value for money. Include Benefit Cost Ratio (BCR) if known:

Each scheme will be peer reviewed and value engineered to ensure maximum benefits. All schemes will be procured using each Council's procurement rules.

Impact Assessment

Please provide a summary of the social, cultural, environmental, and economic impacts of the scheme, who is affected, how, and key qualitative/ quantitative supporting evidence.

Social Impacts Please consider physical activity, journey quality, number and severity of accidents, security, access to employment, access to services, affordability, severance.	Improved access to the rail stations and bus services and improved infrastructure at the interchanges and park and ride sites will encourage greater use of public transport. The schemes will provide improved accessibility to employment opportunities, education facilities and health services through the interchange of bus and rail.
Cultural Impacts Please consider cultural impacts including welsh language.	The aims of the schemes seek to ensure a positive impact on organisations and individuals who have protected characteristics.
Environmental Impacts Please consider noise, air quality, greenhouse gases, landscape, townscape, historic environment, biodiversity, water environment.	The schemes will encourage car users to use public transport and therefore reduce congestion on the highway network and

	improve the efficiency of public transport journey times along the strategic transport corridors. This will have a positive impact on local air quality, biodiversity, heritage and noise. The provision of EV Charging at park and ride sites will allow those without off-street parking provision to consider changing to EVs. Landscape and townscape will also be positively impacted through the regeneration of unoccupied land for the park and rides.
Economic Impacts Please consider journey time, journey time reliability, transport costs, accident costs, productivity, local economy, land, capital costs, and revenue costs. Include evidence on Transport economic benefits and on wider economic benefits including jobs created.	Many of the schemes are currently within the top 25% and 50% most deprived areas in Wales (WIMD 2014), and between 35-45% of households in these areas have access to a vehicle (2011 Census). Therefore by improving accessibility to public transport, residents of these areas and beyond will benefit from its connectivity to services. The park and ride sites will complement the anticipated frequency enhancements to the core valley lines that are being delivered as part of the Metro. By providing park and ride on strategic locations, it will aid in unlocking other brownfield sites for housing, commercial and mixed use development.

	The schemes will reduce the level of traffic on the strategic highway network, which will have a positive impact on public transport journey time and reliability, as well as reducing the potential for accidents. The bus corridor improvements will allow for easier, faster and more efficient movement of buses into Cardiff and around the City Centre and will enable regional routes to operate more effectively.

3. MANAGEMENT CASE

Can the scheme be delivered? What are the risks?

A project plan identifying timelines for activities and key milestones must be provided for each scheme appropriate to the scale, complexity and risks associated with the scheme. Where key stages / milestones have been reached / completed, give date when reached where applicable. As a minimum, information should be provided on design; timing of statutory processes/planning consent, land acquisition, procurement, construction, scheme opening and completion where these apply to the scheme.

Information on risks to delivery and mitigation measures in place or proposed must be included.

The Metro Plus RTA programme includes 10 individual schemes at varying stages of development:

Strategic Outline Case development stage – Abertillery, Pentrebach, Caerphilly, Barry Docks, Newport to Cardiff

Outline Business Case development stage – Pyle, Porth

Full Business Case stage – East Cardiff

Implementation stage – New Inn & Pontypool, Severn Tunnel Junction

Future costs have only been included at this stage for schemes at either Full Business or Implementation Stage. Further information will be provided as schemes develop.

Caerphilly Interchange

4. FINANCIAL CASE

Financial expenditure profile

Overall Programme

	Pre 2019/20	2019/20 projected	2020/21	2021/22	2022/23	Later	Total
Surveys	**136**	**835**	**22**				**993**
Design	**410**	**1646**	**35**				**2091**
Land Purchase	**150**	**180**					**330**
Accommodation Works	**44**	**315**	**123**	**15**			**497**

Construction		**1015**	**4727**	**3000**			**8742**
Project Management		**256**	**327**	**243**			**826**
Monitoring and Evaluation		**17**	**10**		**20**		**47**
Promotion		**5**	**15**				**20**
GROSS TOTAL	**740**	**4269**	**5259**	**3258**	**20**		**13546**
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)	**255 CCC 100%**	**120 VTF 20 WG 40 CCBC**	**City Deal TBC**	**City Deal TBC**	**City Deal TBC**		**City Deal TBC**
NET TOTAL	**485**	**4089**					

Abertillery Interchange

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	**2019/20 projected**	**2020/21**	**2021/22**	**2022/23**	**Later**	**Total**
Surveys	**15**	**100**					
Design		**200**					
Land Purchase							
Accommodation Works							
Construction							
Project Management		**20**					

Monitoring and Evaluation							
Promotion							
GROSS TOTAL	**15**	**320**					
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)							
NET TOTAL	**15**	**320**	**TBC**	**TBC**	**TBC**		**TBC**

Caerphilly Interchange

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	**2019/20 projected**	**2020/21**	**2021/22**	**2022/23**	**Later**	**Total**
Surveys							
Design (including feasibility/studies)	**20**	**180**					
Land Purchase							
Accommodation Works							
Construction							
Project Management							

Monitoring and Evaluation							
Promotion							
GROSS TOTAL	**20**	**180**					
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)		**120 VTF 20 WG 40 CCBC**					
NET TOTAL	**20**	**0**	**TBC**	**TBC**	**TBC**		**TBC**

Porth Interchange

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	2019/20 projected	2020/21	2021/22	2022/23	Later	Total
Surveys	**15**	**20**					
Design	**60**	**564**					
Land Purchase	**150**	**150**					
Accommodation Works		**200**					
Construction							
Project Management		**50**					

Monitoring and Evaluation							
Promotion							
GROSS TOTAL	**225**	**984**					
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)							
NET TOTAL	**225**	**984**					

Barry Docks Interchange

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	2019/20 projected	2020/21	2021/22	2022/23	Later	Total
Surveys	**10**						
Design		**90**					
Land Purchase							
Accommodation Works							
Construction							
Project Management		**10**					

Monitoring and Evaluation							
Promotion							
GROSS TOTAL	**10**	**100**					
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)							
NET TOTAL	**10**	**100**					

Pentrebach Station & Park & Ride

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	2019/20 projected	2020/21	2021/22	2022/23	Later	Total
Surveys		**160**					
Design							
Land Purchase							
Accommodation Works							
Construction							
Project Management		**20**					

Monitoring and Evaluation							
Promotion							
GROSS TOTAL		**180**					
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)							
NET TOTAL		**180**					

Pyle Interchange

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	**2019/20 projected**	**2020/21**	**2021/22**	**2022/23**	**Later**	**Total**
Surveys		**30**					
Design		**175**					
Land Purchase		**30**					
Accommodation Works		**40**					
Construction							
Project Management		**20**					

Monitoring and Evaluation							
Promotion							
GROSS TOTAL		**295**					
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)							
NET TOTAL		**295**					

Severn Tunnel Junction Park & Ride

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	2019/20 projected	2020/21	2021/22	2022/23	Later	Total
Surveys			**2**				**2**
Design		**30**	**35**				**65**
Land Purchase							
Accommodation Works		**25**	**15**				**40**
Construction		**615**	**1015**				**1630**
Project Management		**46**	**46**				**92**

Monitoring and Evaluation		**17**	**10**				**27**
Promotion		**5**	**5**				**10**
GROSS TOTAL		**738**	**1128**				**1866**
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*) CCRCD							
NET TOTAL		**738**	**1128**				**1866**

Pontypool & New Inn Station Park & Ride

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	2019/20 projected	2020/21	2021/22	2022/23	Later	Total
Surveys							
Design		**150**					**150**
Land Purchase							
Accommodation Works		**50**					**50**
Construction		**490**	**712**				**1202**
Project Management		**60**	**38**				**98**

Monitoring and Evaluation							
Promotion							
GROSS TOTAL		**750**	**750**				**1500**
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*) CCRCD							
NET TOTAL		**750**	**750**				**1500**

Newport to Cardiff Bus Priority

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	2019/20 projected	2020/21	2021/22	2022/23	Later	Total
Surveys	**15**	**15**					
Design	**200**	**100**					
Land Purchase							
Accommodation Works							
Construction							
Project Management		**10**					

Monitoring and Evaluation							
Promotion							
GROSS TOTAL	**215**	**125**					
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)							
NET TOTAL	**215**	**125**					

East Cardiff Bus Priority & Cycle Super Highway (£3m bus priority to be funded from this grant, cycle superhighway to be funded separately)

£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	2019/20 projected	2020/21	2021/22	2022/23	Later	Total
Surveys	**81**	**330**	**20**				**131**
Design	**130**	**157**					**287**
Land Purchase	**0**						**0**
Accommodation Works	**44**		**108**	**108**			**260**
Construction	**0**		**3000**	**3000**			**6000**

Project Management	**0**	**23**	**243**	**243**			**509**
Monitoring and Evaluation	**0**				**20**		**20**
Promotion	**0**		**10**				**10**
GROSS TOTAL	**255**	**510**	**3381**	**3351**	**20**	**0**	**7517**
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)	**255 CCC 100%**						**255 CCC 100%**
NET TOTAL	**0**	**510**	**3381**	**3351**	**20**	**0**	**7262**

Regional Development Fund
£000s, Outturn prices (gross of grant / contributions shown separately below)

	Pre 2019/20	**2019/20 projected**	**2020/21**	**2021/22**	**2022/23**	**Later**	**Total**
Surveys		**180**					
Design							
Land Purchase							
Accommodation Works							
Construction							

Project Management		**20**					
Monitoring and Evaluation							
Promotion							
GROSS TOTAL		**200**					
Match funding amount, percentage contribution and funding source(s) *(insert name of organisation*)							
NET TOTAL		**200**					

Quarterly Expenditure Profile

(Expenditure should be planned as early as possible in the financial year to ensure confidence in a full spend. Expenditure planned for Quarter 4 should be limited to minimise the risk of underspend)

Quarterly Expenditure Profile

	Forecast FY2019-20 Expenditure (in £000s)			
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Surveys	**200**	**200**	**200**	**235**
Design	**400**	**400**	**400**	**446**
Land Purchase	**40**	**40**	**40**	**40**
Accommodation Works	**80**	**80**	**80**	**75**
Construction	**250**	**250**	**250**	**265**
Project Management	**64**	**64**	**64**	**64**
Monitoring and Evaluation				**17**
Promotion				**5**
GROSS TOTAL	**1034**	**1034**	**1034**	**1147**
Match funding amount, percentage contribution and source(s) *(insert name of organisation*)	**40**	**40**	**40**	**40**
NET TOTAL	**994**	**994**	**994**	**1107**

5. COMMERCIAL CASE

How will the scheme be procured? What is the number and experience of the likely suppliers? What are the key contractual arrangements, what is the contract length?

Where appropriate commissions will utilise the National Procurement Service framework for the provision of appropriate professional services / contractor's or other approved procurement routes. The appointment of the consultants to undertake the design will be in accordance with the procurement policy of the Council.	

MONITORING AND EVALUATION

How and when will you measure if the scheme has been successful? Post delivery monitoring plan, data collection, and relevant targets?

The monitoring will be undertaken by the promoting Council of the main outputs of the scheme. Park and ride usage will be monitored by means of site surveys and satisfaction will be monitored by means of user feedback through customer surveys. Bus services reliability will be monitored by the bus operators.	