

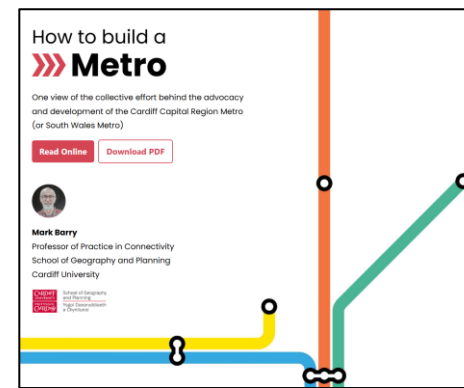
Why Metro....

Wales Rail April 2025

Mark Barry
Professor of Practice in Connectivity
Cardiff University
School of Geography and Planning
M&G Barry Consulting
2nd April 2025



School of Geography
and Planning
Ysgol Daearyddiaeth
a Chynllunio



www.cardiffmetro.wales

How to build a **>>> Metro**

For more details of this Welsh Government
Project see

[South Wales Metro | TfW](#)

Earlier/Other Refs:

[south-wales-metro-impact-study.pdf \(gov.wales\)](#)

[iwa-metroreport.pdf](#)

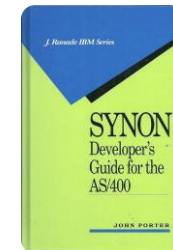
[Mark Barry – @SWalesMetroProf](#)

[About Mark Barry – Mark Barry](#)

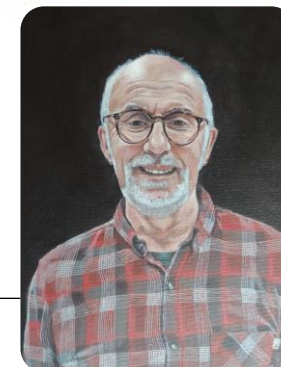
[Mark Barry | LinkedIn](#)

Please note: This presentation is based entirely on the views of Prof Mark Barry based on his knowledge and material already in the public domain and does not represent in any way the views, thoughts, intentions, plans, policies or strategies of Welsh Government, Transport for Wales, Cardiff University or any other organisation.

Mark Barry, in summary..1963 to present day!

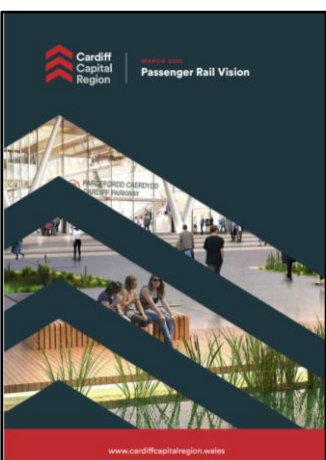
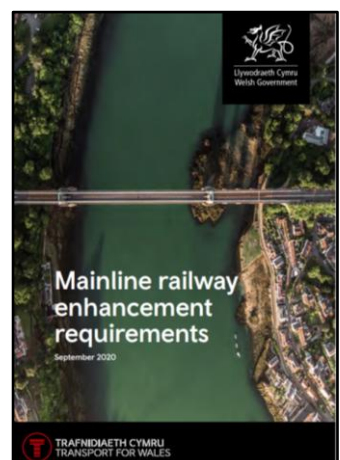
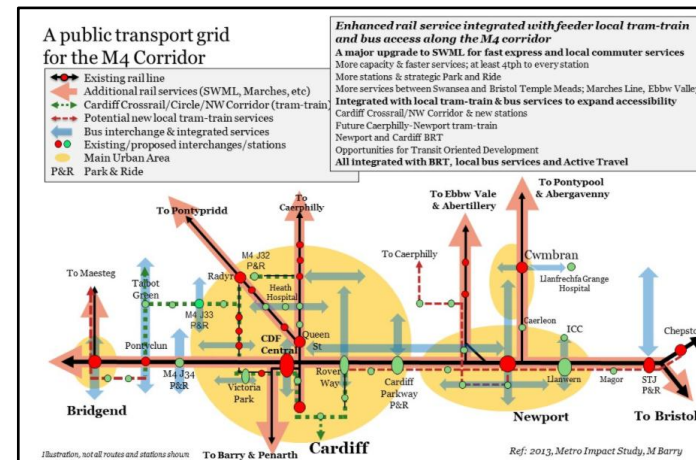
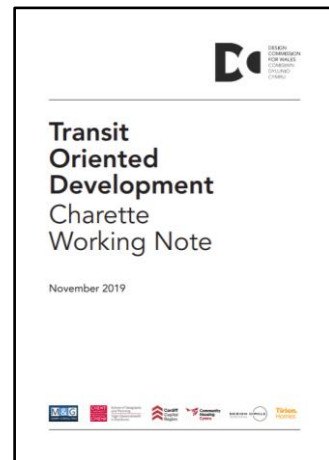
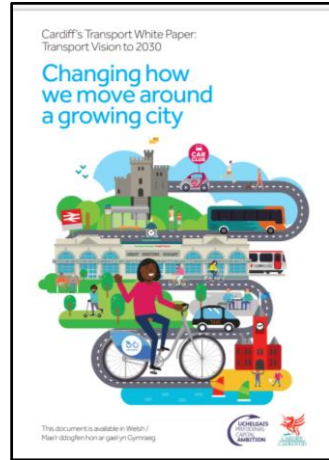
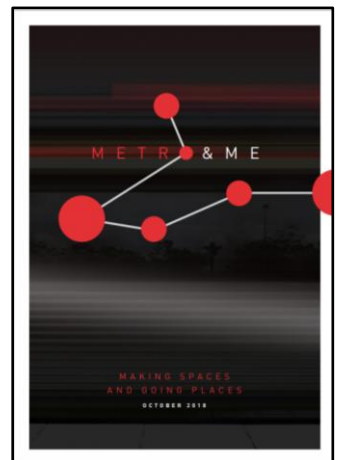
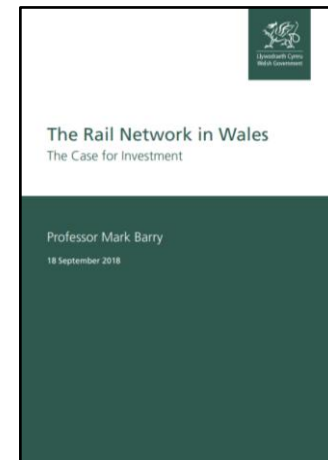
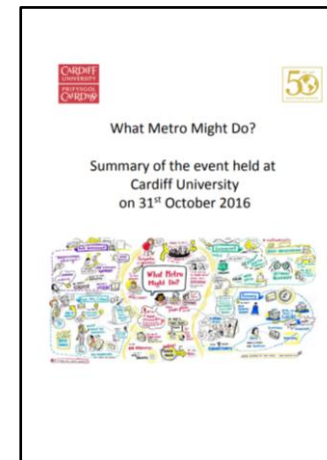
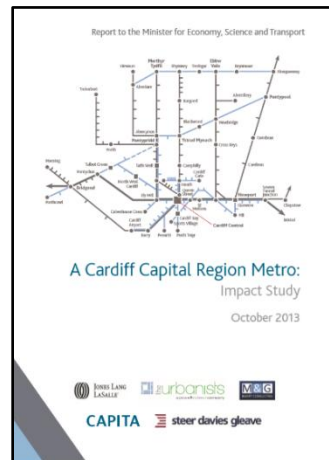
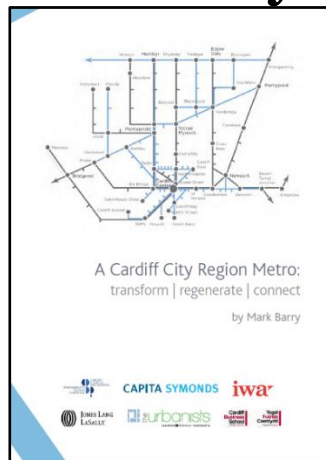
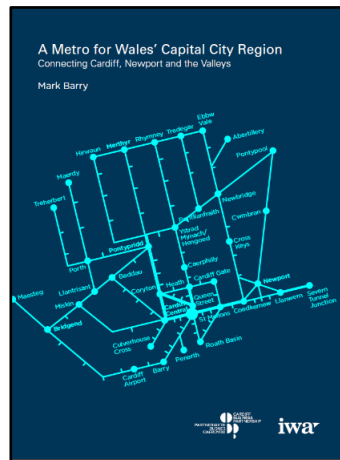


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Metro

Over the last fifteen years I have been involved in...



TRAFNIDIAETH CYMRU
TRANSPORT FOR WALES



Cardiff Capital Region

Llywodraeth Cymru
Welsh Government

Western Gateway Porth y Gorllewin

I'll try and cover some of the following...

How to build a Metro...?

- > Why Metro
- > How Metro
- > What Metro
- > Future Metro
- > Transit Oriented Development (TOD)
- > What we need to do...

Why Metro...?

We are not living in balance with nature.....

GDP is a broken metric – fails to account for externalities!

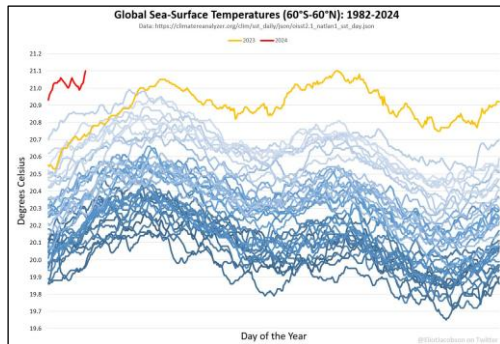
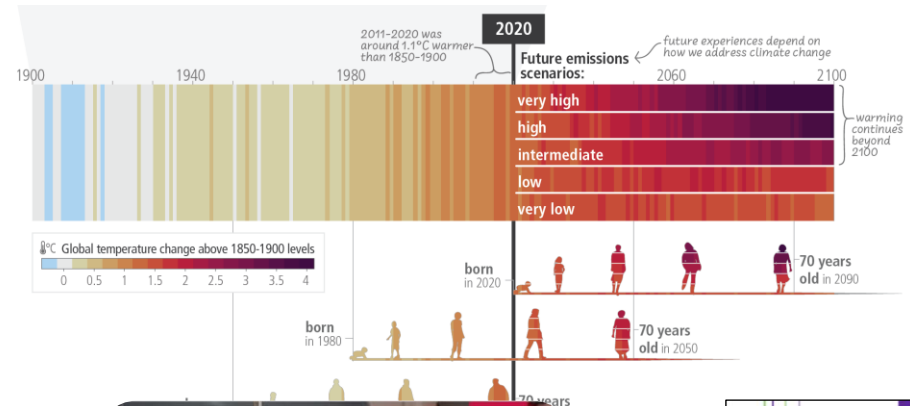
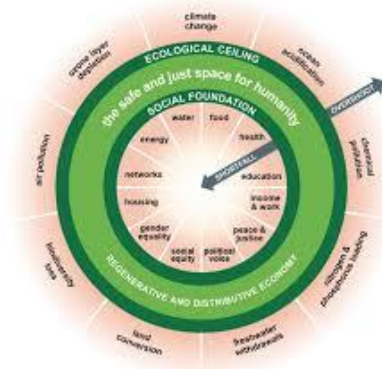
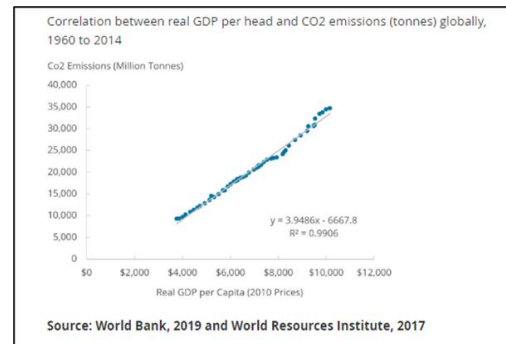
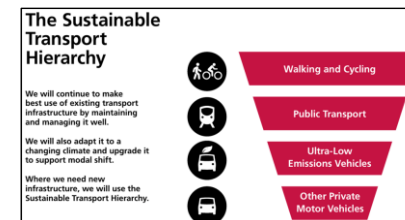
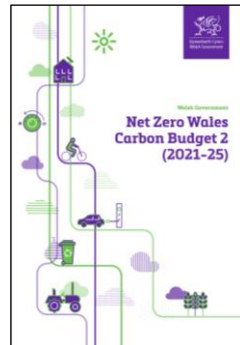


Table 1 Net Zero Wales Mode Share Targets

Mode	Current Share	By 2030	By 2040
Car	70%	60%	50%
Public Transport	5%	7%	13%
Active Travel	27%	33%	35%



Source: World Bank, 2019 and World Resources Institute, 2017



Climate Change 2022: Impacts, Adaptation and Vulnerability | Climate Change 2022: Impacts, Adaptation and Vulnerability (ipcc.ch)

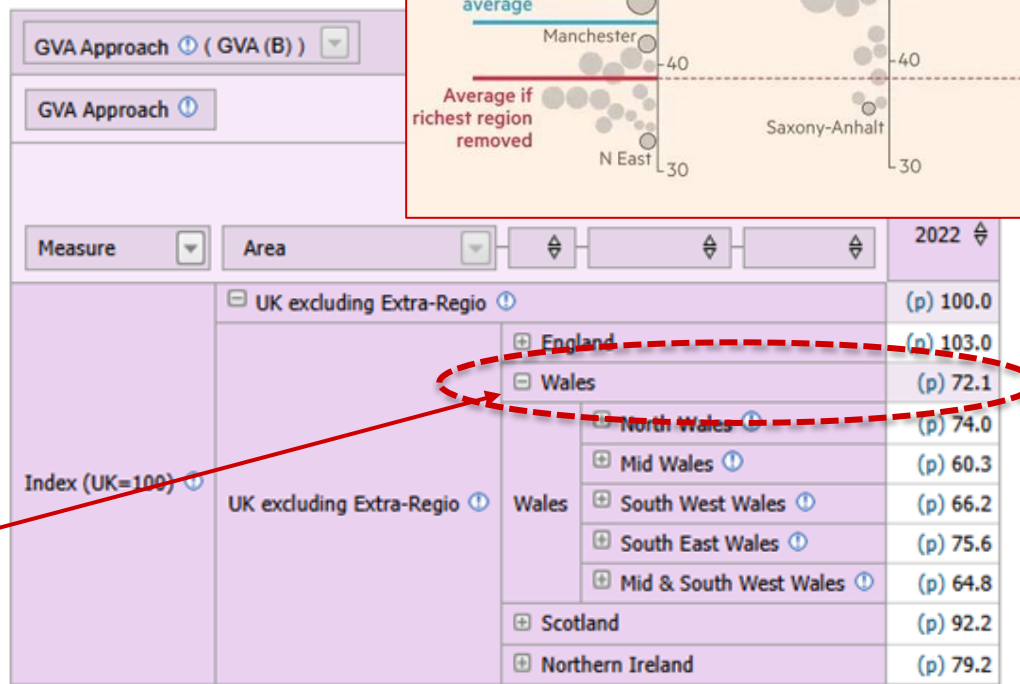
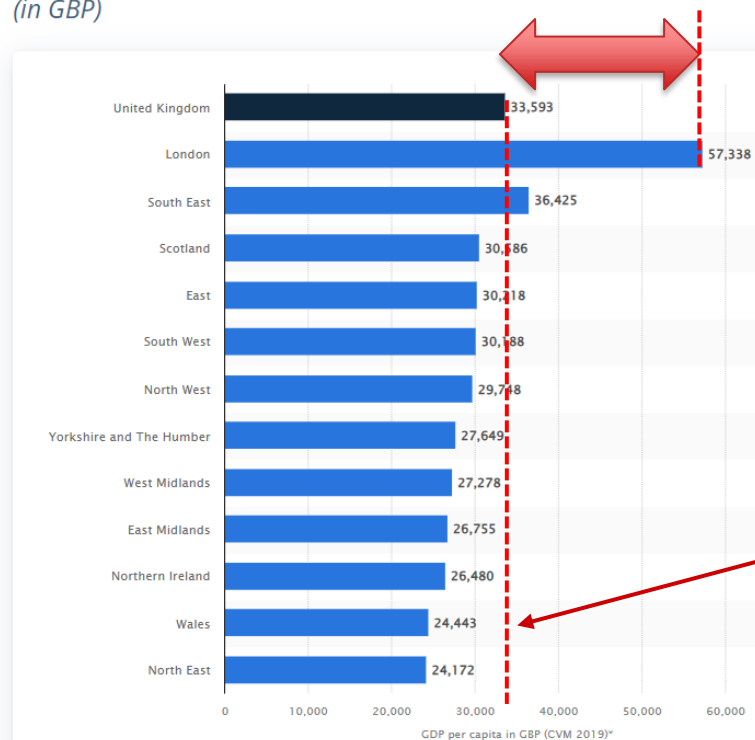
Net Zero Wales sets out a target to treble Public Transport by 2040

Why Metro...?

Enabling economic development....

(even with caveat that GDP is a broken metric)

Gross domestic product per capita of the United Kingdom in 2022, by region
(in GBP)



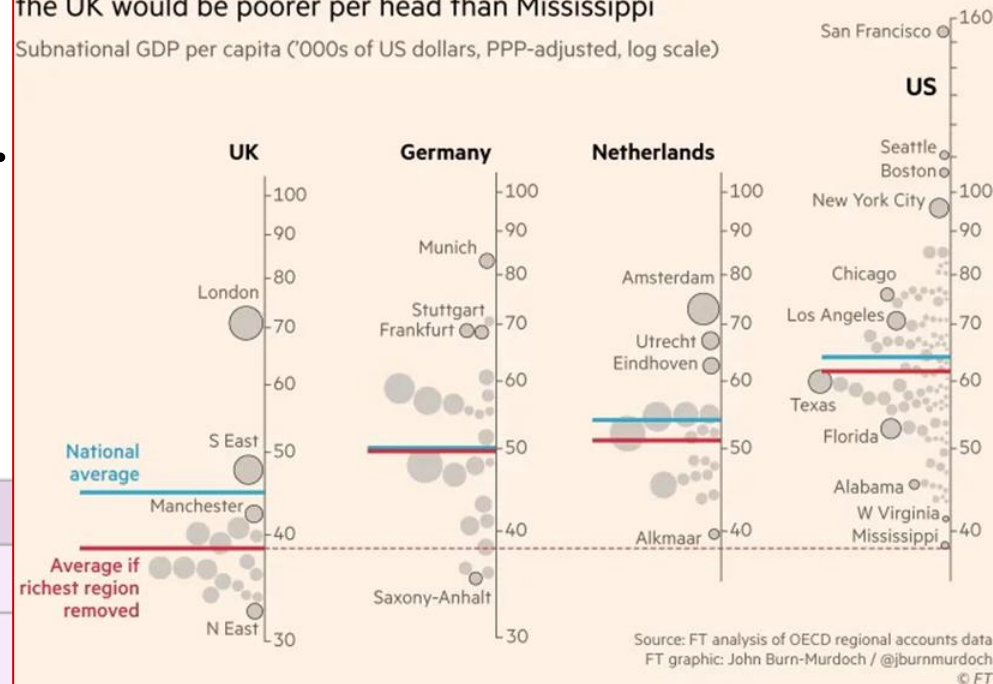
Gross Value Added by measure, Welsh economic region and year

London is the outlier for economic output...+50% more than any other nation or region! (hold that thought!)

If you ignore externalities...!

Britain's economy is highly London-centric. Without the capital, the UK would be poorer per head than Mississippi

Subnational GDP per capita ('000s of US dollars, PPP-adjusted, log scale)



<https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Regional-Accounts/Gross-Value-Added-GDP/gva-by-measure-welsheconomicregion-year>

UK GDP per capita by region 2022 | Statista

Why Metro...?

Too many cars with huge ££ externalities

According to DfT RTAs cost over £40Bn/annum (inc unreported)

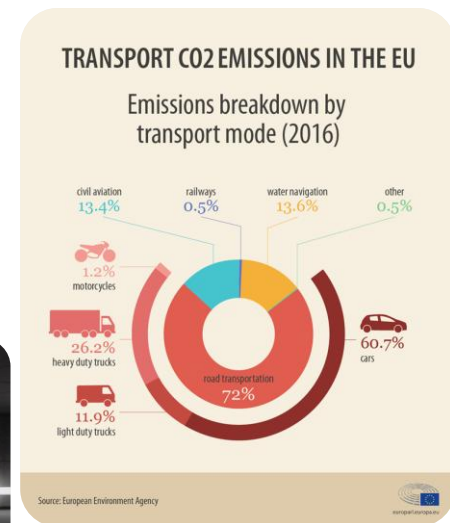
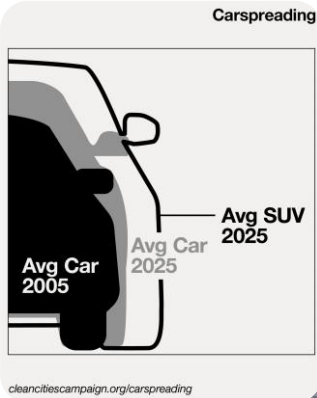
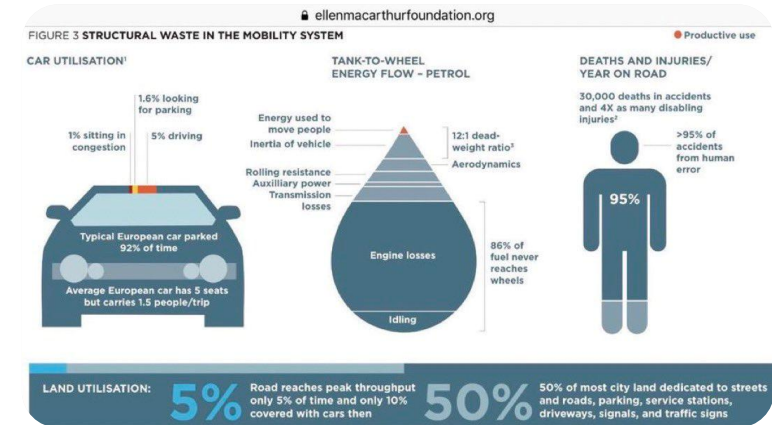
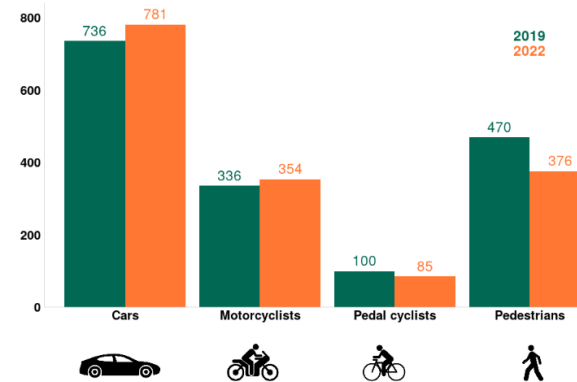


Chart 3: Reported road fatalities by road user type, Great Britain in 2022 (provisional) compared with 2019 [RAS9101](#)



We need to reduce “the road use discount”

Cars, Congestion, Health and Road Pricing... – Mark Barry (swalesmetroprof.blog)

Transit Oriented Development (TOD) in the Cardiff Capital Region (CCR) #3 – Mark Barry (swalesmetroprof.blog)

Reported road casualties in Great Britain: main results 2015 (publishing.service.gov.uk); [ras4001.ods \(live.com\)](#)

Reported road collisions, vehicles and casualties tables for Great Britain. – GOV.UK (www.gov.uk)

A Public Transport Grid for the M4 Corridor... – Mark Barry (swalesmetroprof.blog)

(UK air pollution could cause 36,000 deaths a year (kcl.ac.uk))

Car tyres produce vastly more particle pollution than exhausts, tests show | Pollution | The Guardian

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/762976/latest-evidence-on-induced-travel-demand-an-evidence-review.pdf

https://web.archive.nationalarchives.gov.uk/20050304041634/http://www.dft.gov.uk/stellent/groups/dft_ec_onappr/documents/pdf/dft_econappr_pdf_022512.pdf

How highways make traffic worse – YouTube

Roads cars induced demand and costs DRAFT Nov 2022 – YouTube

Why Metro...?

Our rail services & network have been starved of investment.....



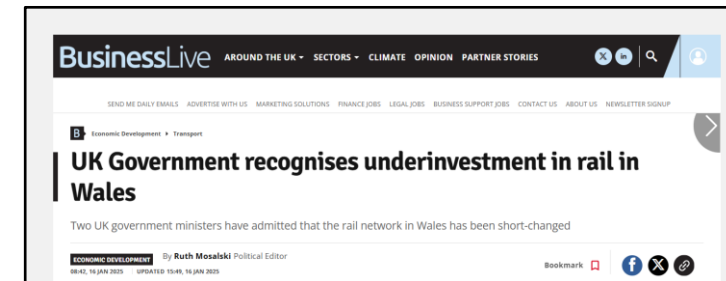
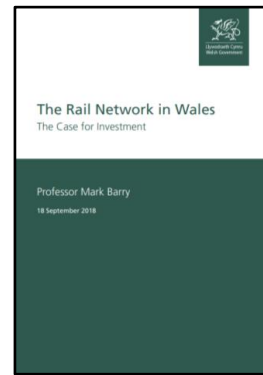
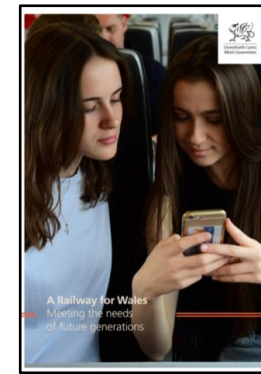
13 The rail industry, Wales & HS2 – How to build a Metro...

How Metro...? *Devolved Powers...*

No rail infrastructure devolution - yet!

> Wales Route Historic Uk Gov funding

- 10% of UK Network
- 5-6% of OMR
- 1-2% of Enhancement investment



In February 2025 Uk Government acknowledge the relative underfunding of rail enhancement in Wales v rest of UK (I have been going on about this issue for a while!)

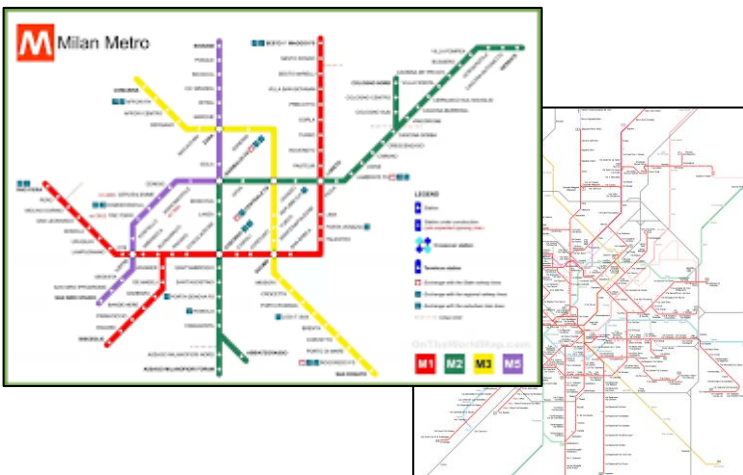
<https://swalesmetroprof.blog/2025/01/21/welsh-rail-funding-ministerial-correspondence-december-2024/>

Since 2020 TfW have developed Outline Business Cases for circa £3bn of rail enhancements in Wales (SWML, NWML, Borderlands, Swansea Bay, Crossrail, Marches, etc)

Now (March 2025) needs a funding solution!

Why Metro? Look at Europe...

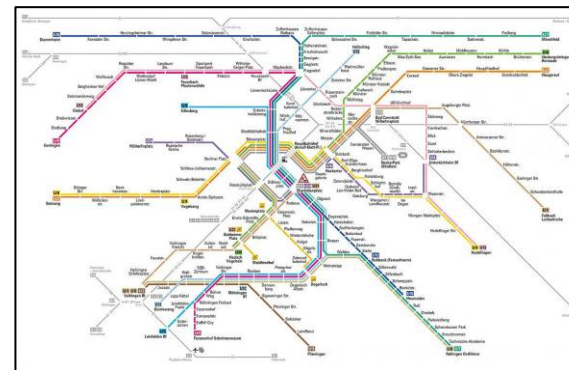
Significant local powers & funding capacity for regional PT.....



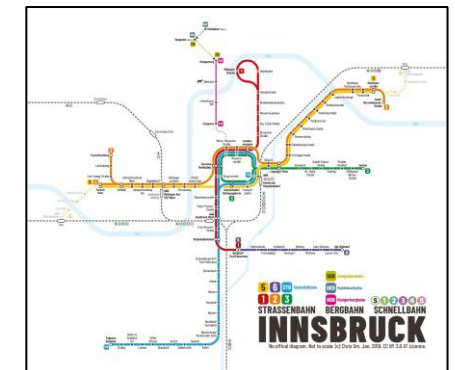
Milan (~3M)



Lyon (~2M)



Stuttgart (~2.5M)



Innsbruck (0.3M)

Could have added any major European city...

Typically, one finds more local Public Transport (PT) development capacity, institutional delivery capability, local powers and especially funding....

...leading to much better local and integrated PT (generally)

...contributing to higher productivity!!



..and now in France, SERM expanded

Transport devolution is delivering, but must go 'further and faster' to unlock economic growth – report highlights | Urban Transport Group

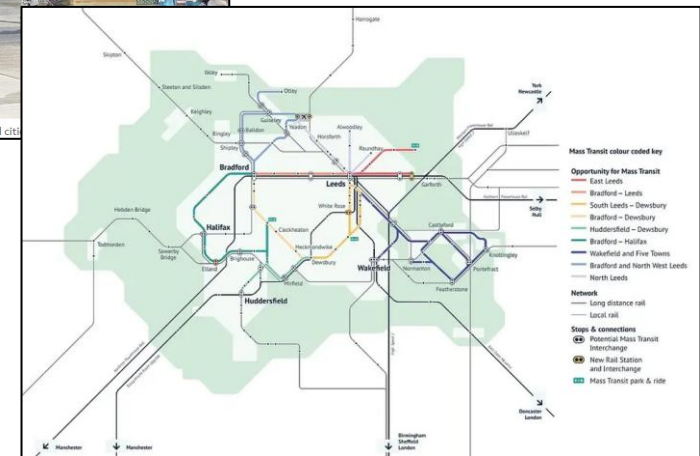
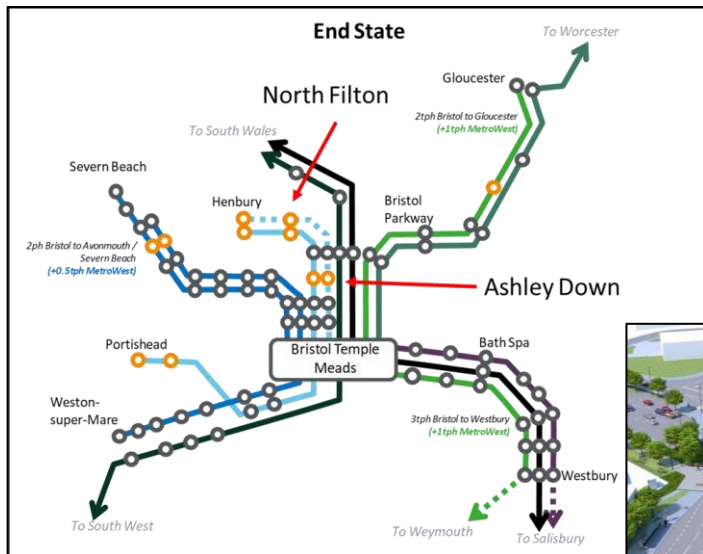
The role of transport in improving access to opportunities – POST

What are the French up to? Part 2 – Freewheeling

Europe: Population Statistics in Maps and Charts for Cities, Agglomerations and Administrative Divisions of all Countries in Europe

Why Metro? Whilst in the UK...

Let's look at Bristol and Leeds.....



Bristol Region (>1M)

Leeds/Bradford (>2M)

Long overdue...

Metro West not really an urban mass transit system – 2tph & 1tph Portishead ?!

Where will Tracy Brabin find £2Bn+ for the tram??

All the big decisions are made in London....!

Why Metro? 2006 Eddington Transport Study...

More localisation...

The 2006 Labour Government Commissioned *Eddington Transport Study*

One of its key findings was that many of our mobility challenges and issues are intra-regional, and found...

“... the strategic economic priorities for long-term transport policy should be growing and congested urban areas and their catchments....”

[ARCHIVED CONTENT] Department for Transport - The Eddington Transport Study

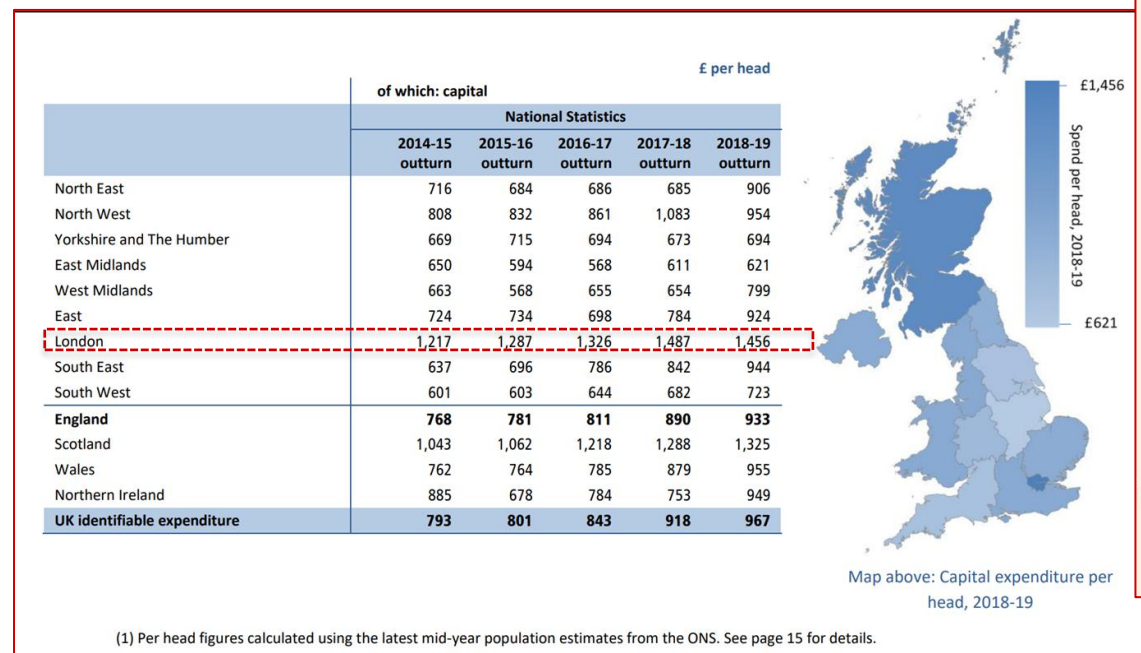
Why Metro? Whilst in the UK?

Levelling up & capital investment....or lack thereof!

& Rail is *STILL* not devolved in Wales!

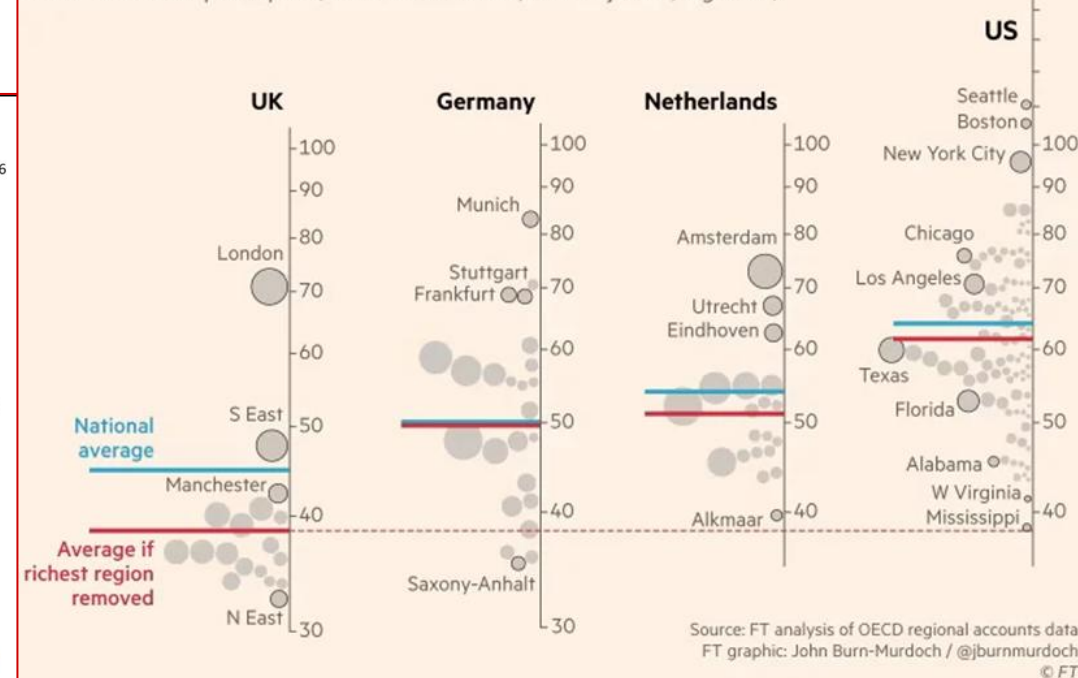
London is also the outlier for economic investment!

Capital investment/capita in London +50% more than any English region and Wales



Britain's economy is highly London-centric. Without the capital, the UK would be poorer per head than Mississippi

Subnational GDP per capita ('000s of US dollars, PPP-adjusted, log scale)



- > The UK needs to equitably invest in economic infrastructure across the whole UK
- > However, its major cities/city regions are "undercapitalised" and not "set up/empowered" to fix it!
- > This has constitutional implications that cannot be ignored – in Leeds, Bristol and Manchester as well as in Cardiff and Edinburgh...

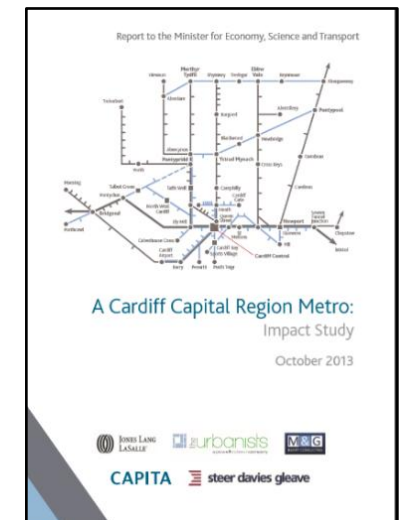
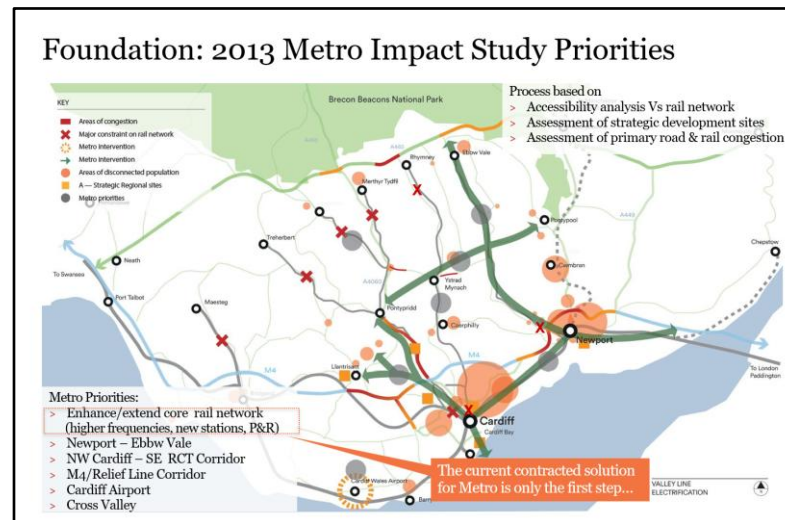
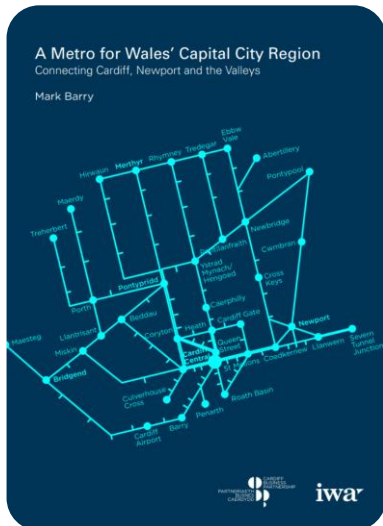
How Metro...?

Have a Vision...

Quote - Daniel Burnham 19th C...

“Make no little plans. They have no magic to stir men's blood and probably themselves will not be realized.

Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency.”



How Metro...?

A simple Vision statement used on all my Metro slides since 2011!

- > Connecting more people, to more places
- > Enabling development & regeneration.
- > Modal shift & lower CO₂.

To address issues of economic inactivity, deprivation and poverty

And deliver a sustainable, economically dynamic city region of 1.6 M people.

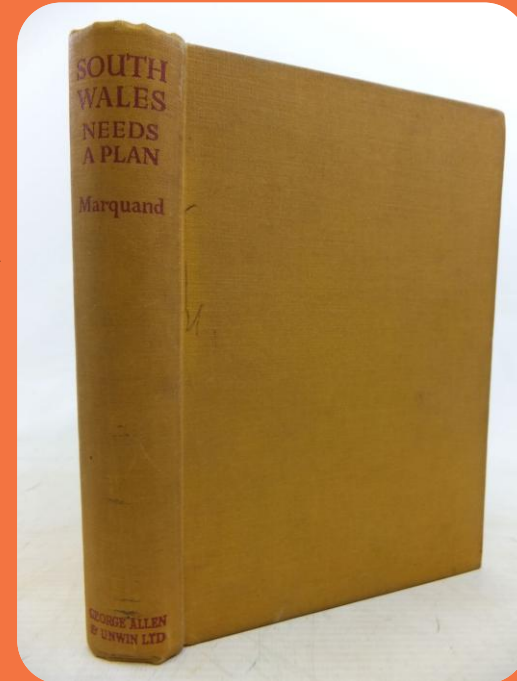
...not a new idea, from, “South Wales Needs a Plan”, by H A Marquand published by George Allen & Unwin Ltd in 1936!

“ ... a more rapid movement of population up and down the valleys must be encouraged, so as to save the inhabitants of the northern towns from economic isolation. How that rapidity of movement can best be secured should be decided by an authority responsible for a co-ordinated transport service throughout the Region. No such authority exists. (p48)

“... perhaps the Ministry of Transport could be asked to report whether it would be best to electrify the railways.”

“With rapid transport, it should be no more difficult for workers from Aberdare or Ebbw Vale to reach Cardiff or Newport than it is for clerks to travel to their daily work in the City of London from Wimbledon or Ealing”

...” political and social institutions have failed to adopt themselves with sufficient rapidity to the economic changes that have taken place. One small symptom of this is the maintenance of local government boundaries which have long lost their significance and of authorities which are inadequate to the larger tasks which need to be undertaken.”(p209)



How Metro...?

Dealing with inertia & resistance...

I was told this once by a senior civil servant

...“Mark, what you fail to understand, our job, sometimes, is to do the wrong thing in the best way we can”

My observation: governments and their bureaucracies tend to prefer the small and tactical and less so the big and strategic? (*HS2 an exception!*)

How Metro...?

Dealing with inertia & resistance...

That statement is on a par with...

...“Mark, that’s an interesting idea!”

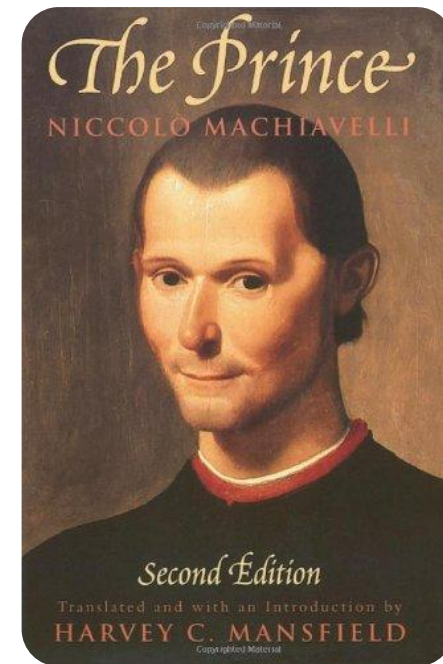
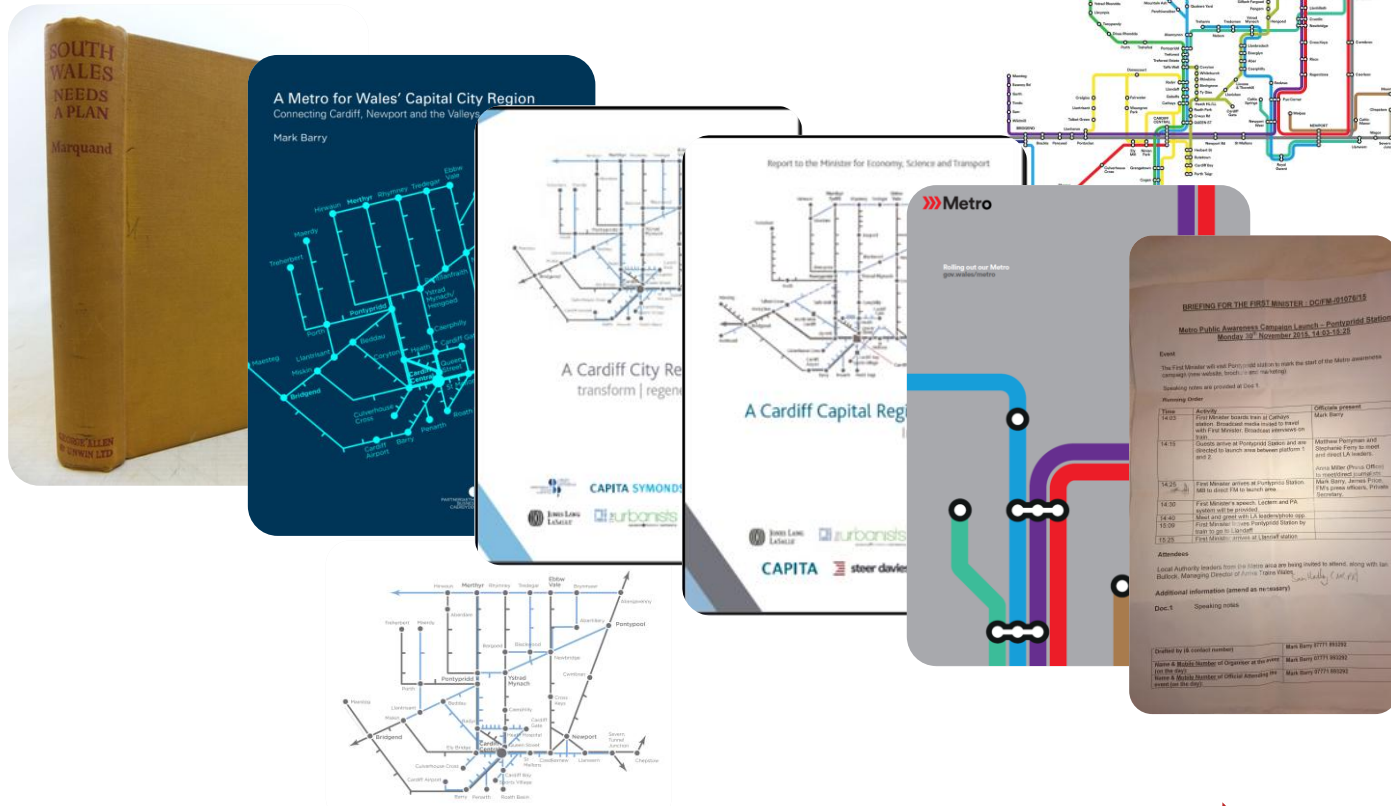
Which is civil service speak for “*that will never happen*”

My observation: governments and their bureaucracies tend to prefer the small and tactical and less so the big and strategic? (*HS2 an exception!*)

How Metro...?

Advocacy and Development...

- > Takes time and persistence
- > “Make no little plans...”



Launched by The First Minister, Carwyn Jones,
November 30th, 2015
www.gov.wales/metro



1936

2011

2013

2015

How Metro...?

Features of Vision...

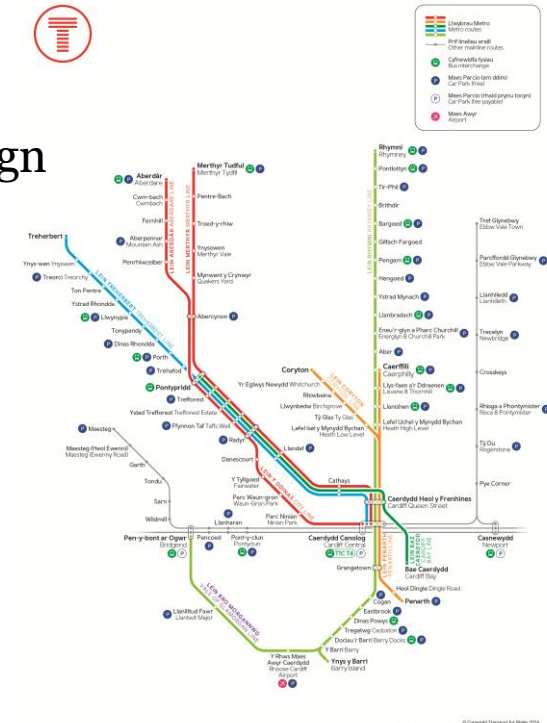
- > Your Vision should have fuzzy edges and support a narrative from advocacy, through development into implementation
- > Focus on Wider Benefits (*less so technical transport stuff!*)
- > Use maps to tell a story to
- > Share & engage widely (inc. via press/media), so that everyone wants it...
- > ...but few know exactly what it is!
- > Details adjust flight – *don't hold to one detailed manifestation*
- > Maintain a golden thread between the formal business case/scheme development and the vision/story telling
- > Repeat story over and over again....for years!!!
- > Be Machiavellian if you have to



What Metro: in 2024/2025/2026...

Yes, it's occurring- A £1bn+ investment

- > Following 2 years of procurement (2016-18) & 6 years of planning, design and construction (punctuated by Covid) work is now well advanced...
- > Will serve nearly 1M people in wider region of 1.6M



Gorsafoddd Metro
Metro Stations



£1Bn+ transformation in progress, **well done WG/TfW and hats off to all involved**

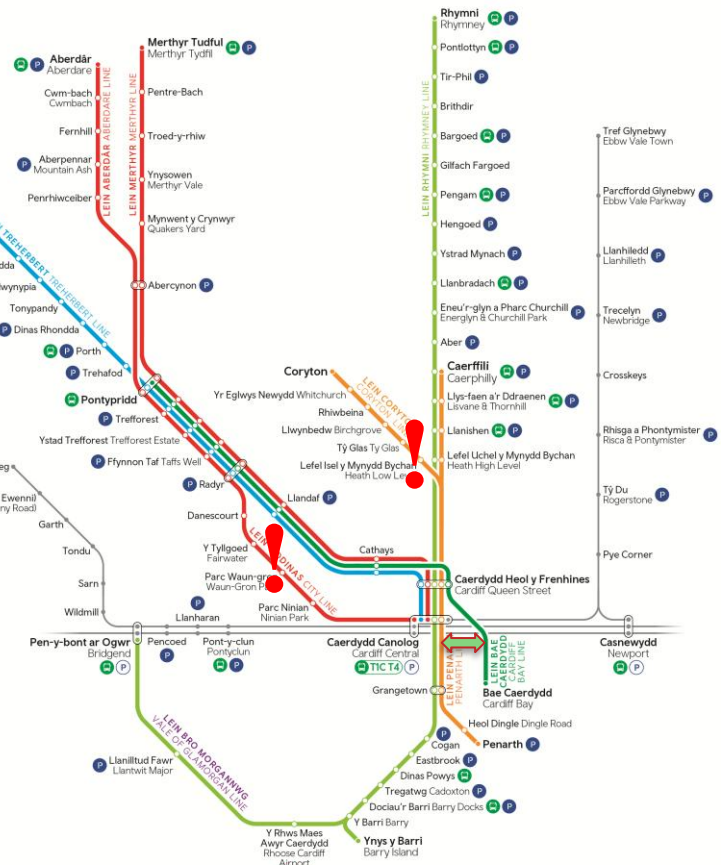
- > All new electric rolling stock using Stadler Tram-trains and FLIRTs
- > CVL discontinuous “smart” electrification – *now a TfW asset*
- > Quicker & more frequent journeys
- > Double network capacity
- > Foundation for future growth
- > Level Boarding
- > Remarkable given ***rail is “non devolved”!*** (so WG paying most out of block grant that includes £0 for rail –so comes from Health, Education, etc)
- > Apart from bay line, tram-trains operating on HR network?!



Metro in 2024/2025/2026...

Yes, it's occurring

- > New interim timetable from June 2024; *in advance of full services 2025/2026*
- > Beginning to look like a Metro network
- > Delineated service patterns
- > Info re integration at key stations
- > From 2025/6 all new Stadler tram-train and “Flirt” rolling stock will be in operation delivering more capacity and reduced journey times
 - 4tph from Treherbert, Merthyr, Aberdare, Rhymney (?)
 - 12tph through Pontypridd
 - Tramway 6tph to the bay
 - New stations at Butetown and Crwys Rd will be under construction
- *Crossrail Phase 1a to connect the bay line directly to Cardiff Central will be under construction* ↔
- *Plans and business case development for Crossrail Phase 2 (to deliver 4tph every where and connect Crossrail to the west at Central will be in progress) !*



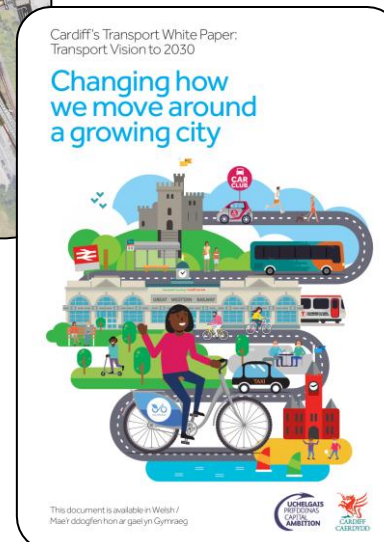
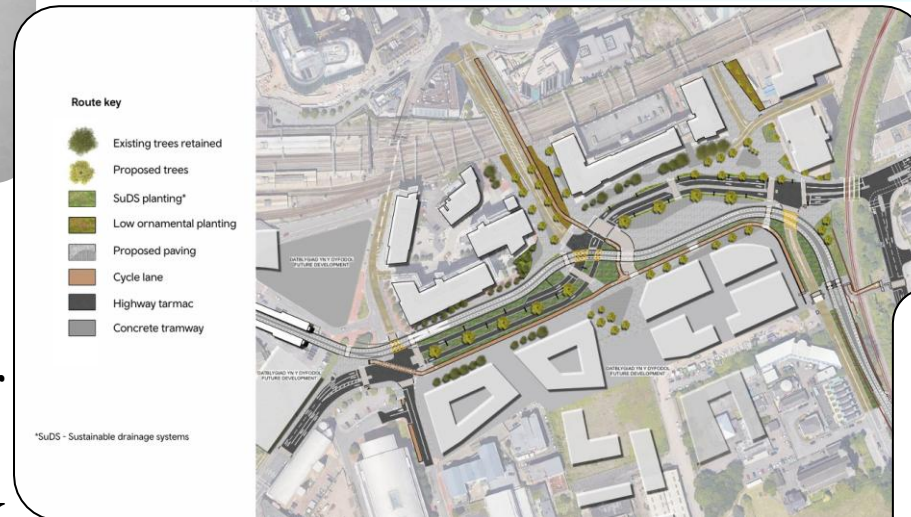
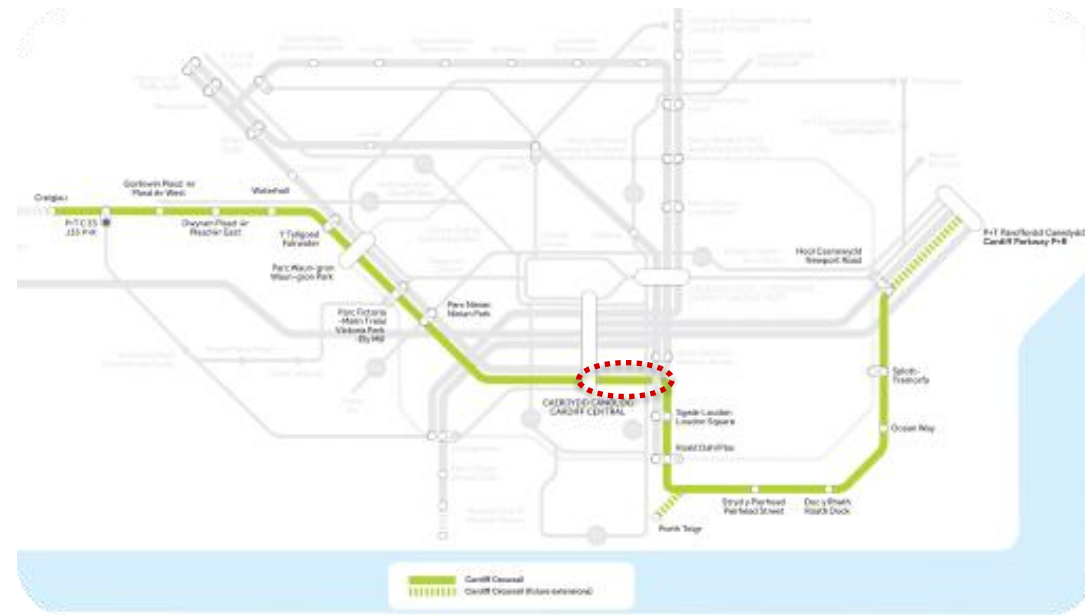
© Copyright Transport for Wales 2024.
The colours used for the routes on the map are for illustrative purposes.

What Metro...

Cardiff Crossrail: Core Phase 1a



- > More than just 800m of new tramway
- > Direct link between Central and Bay
- > Core and essential component of larger full Crossrail scheme for city....
- > Will provide more overall CVL network capacity, reliability and redundancy
- > And support TOD along entire route



Credit CCC/TfW/The Urbanists: [Cardiff Crossrail](#) | [Have your say by Transport for Wales \(tfw.wales\)](#)
A Cardiff Crossrail... – Mark Barry ([swalesmetroprof.blog](#))
Cardiff Council - Transport White Paper 202 (inc Cardiff Crossrail)

Metro Future....

This is the start of journey to 3 times more PT by 2040

- > Bus Reform & network integration/redesign
- > TfW's Multi-modal capped PAYG - now live on CVL



The network effect for the users of public transport



Low frequency network

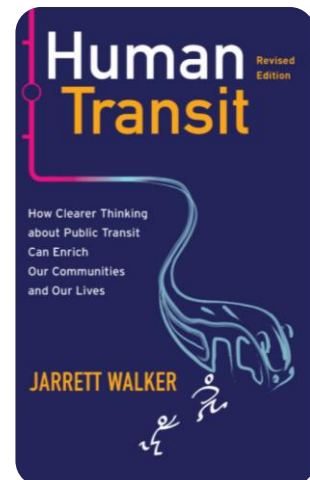
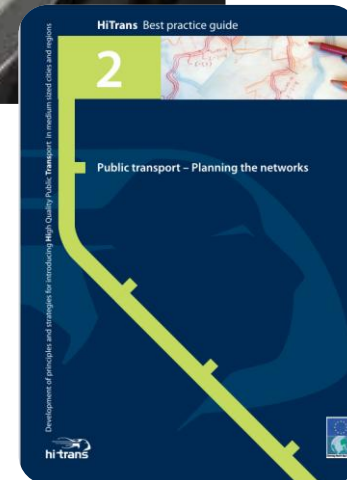
A collection of lines that function separately if you are willing to plan your journey in detail. The area you can reach by a simple journey is restricted to those places that are within walking distance from the line that passes the place where you are. Change of lines where they cross each other is not very attractive. Waiting times will often be long, and you will need detailed information about more than one line. Transferring is perceived as a large barrier, and these crossing points are seen as being of little value. In reality, it is misleading to call this collection of lines a network.

Network with some high frequency lines or sections

The service is good along the lines or sections with high frequency. Transfer is more attractive at places with such a service, but only in one direction, towards the high frequency section. The total number of origin-destination combinations that are given a better service is limited. Even very high frequencies on the best sections will not change this general picture.

High frequency network: Network effect

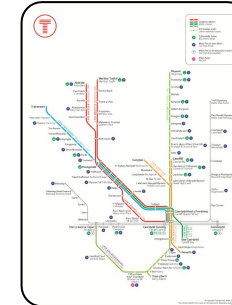
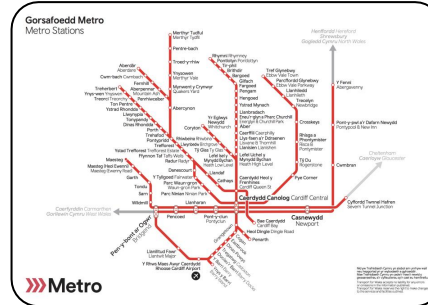
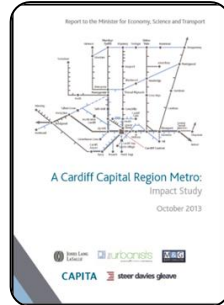
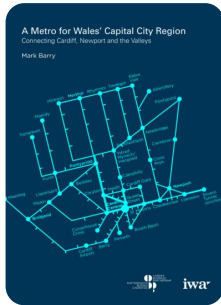
When all or many of the lines or sections have high frequency, the network effect is created. The network can be used by the public transport passengers in a similar manner to motorists' use of the road network. You may travel everywhere in the network, almost at the time of your own choice. Instead of being barriers to travel, transfers open up a large number of new travel opportunities. All lines and all modes of transport "feed" each other with traffic and increase each other's market share.



One network, one timetable, one ticket, Welsh Government sets out plans to change the way we travel | [GOV.WALES](https://gov.wales)
[HI-Trans-vol2-planning-the-networks.pdf](#)
[Human Transit — The professional blog of public transit consultant Jarrett Walker.](#)

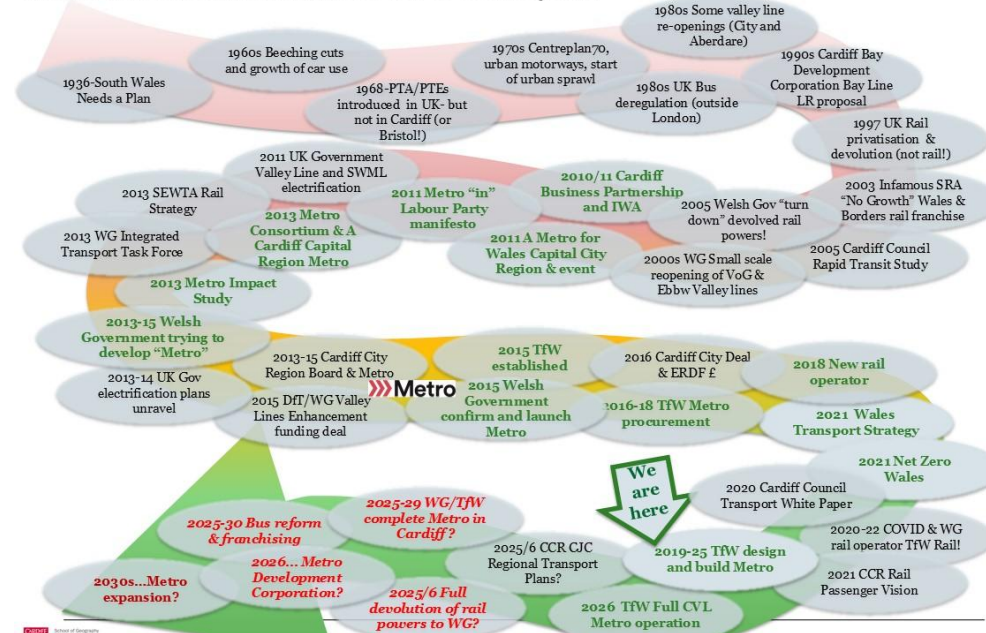
How Metro...?

It's been a collective effort...



Adam Palmer	Byron Davies(Ex. CEO)	Darren Mephram	Gareth Stevens	James Price	Lewis Brencher	Nick Speed	Russell Cohen
Adrian Healy	Byron Davies(Ex. MP)	Darryn Lewis	Gary Davies	James Williams	Liam Hopkins	Nick Thompson	Russell Goodway
Adrian Clark	Callum Gibson	Dave Hewings	Gary Dralsey	Liane Hartley	Dave Heavings	Nicola Sommerville	Ruth Thomas
Alan Wilkins	Calvin Jones	Dave Thomas	Gavin Davies	Janie Tucker	Liz Chandley	Nigel Roberts	Ruth Woflan
Alex Frew	Carl Jones	David & Jeanne-Helene Eggleston	Gavin James	Jan Chaudhry van der Velde	Liz Millett	Noel Dolphin	Sam Hadley
Alex Smart	Carl Sargeant	David Crockett	Gavin Lewis	Jane Cook	Lois Park	Sara Pepper	Sara Jones
Alexia Course	Carl Waring	David Conway	Geoff Inskip	Janice Morphet	Lucy Forester	Oliver Bratton	Sarah Reardon
Alice Bulpin	Caro Wild	David Flint	Geoff Ogden	Jarrett Walker	Lynda Campbell	Owen Smith	Scott Pearson
Aliston Thomas	Carol-Anne Davies	David Hand	Georgina Lloyd	Jason Dixon	Mai Drury Rose	Patricia Freeth	Sheila Davies
Aliston Walker	Carole Green	David Jones	Geraint Davies	Jason Thomas	Marc Jennings	Paul Carter	Simon Coulthard
Alistair Gordon	Carwyn Jones	David McCaullum	Geraldine Barry	Jayne Brechen	Marcelle Maxwell	Paul Fishwick	Simon Gable
Alun Cairns	Cathiona Lloyd	David Northey	Gerry Holtham	Jeff Collins	Mari Stevens	Paul Malphand	Simon Gibson
Alun Evans	Ceri Davies	David Nott	Gethin George	Jenny Rathbone	Marie Day	Paul Matthews	Simon Jones
Amy Nichols	Chris Busch	David Potts	Gethin Shields	Jeremy Whitaker	Mark Beckett	Paul McCarthy	Simon Lander
Andrew Bold	Chris Gibb	David Roberts	Gillian Ollitt	Jessica Morden	Mark Casey	Paul Orders	Simon Power
Andrew Davies	Chris Gregory	Chris Potts	Graham Morgan	Jo Kiemann	Mark Drakeford	Peter Cushing	Simon Power
Andrew Gainsbury	Chris Nott	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andrew Jeffreys	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andrew Jones	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andrew Jenkins	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andrew Morgan	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andrew Potter	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andrew Roberts	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andrew Sherrington	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andrew Sutton	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andy Falley	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andy Holder	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Andy Scoggins	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Anthony McKenna	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Aron Silva	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Aurion Miller	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Bayo Dosunmu	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Ben Freeman	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Ben George	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Ben Hutchinson	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Ben Pritchard	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Bob Bright	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Bob Wellington	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Brendon Toomey	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Brett Chatwin	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Brian Meechan	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Brian Webb	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev
Bruce Morris	Chris Potts	Chris Roberts	Gwyn Roberts	Jo Kiemann	Mark Langman	Peter Fox	Simon Tev

Metro timeline...from 1936 to 2026 and beyond



M Barry, Oct 2 2024

...some of those I worked with directly on Metro or who influenced my thinking/approach over the last 15 years
There are many more people closer to the "spade in ground" details and activities, and others I have erroneously omitted!

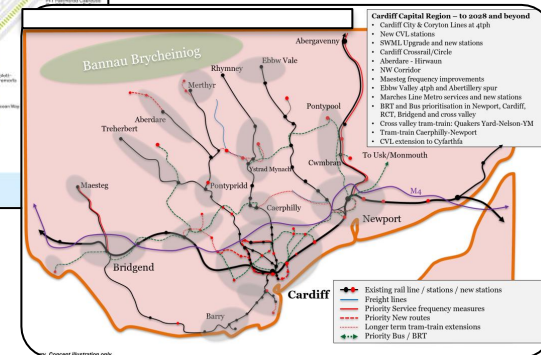
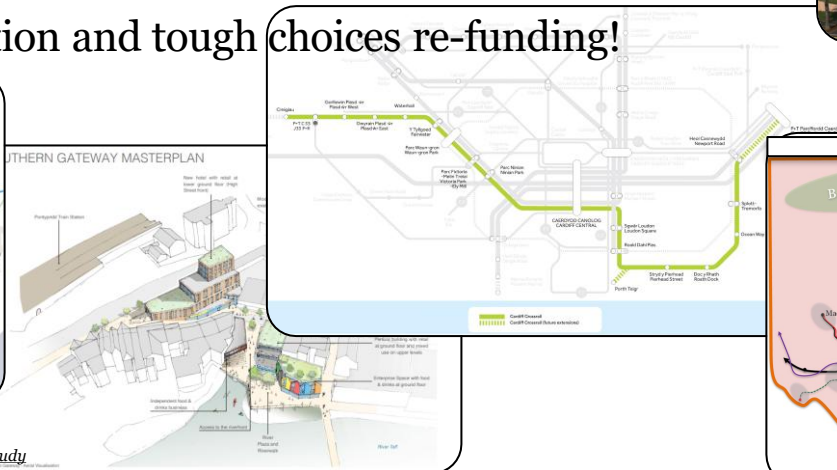
Metro Future?

...what does Cardiff & CCR need

- > **Cardiff needs min 4tph Metro services!**
- > Easier access to employment & public services for more people across 1.6M city region
- > Making it easier for people from across the region AND city to be able to access the city centre/bay/major destinations using Public Transport
- > Reducing transport-based carbon emissions
- > Reduced Road Traffic Accidents (RTAs)
- > More transport led development and regeneration (TOD) – esp housing
- > Much of this set out in policy terms in CCC Transport White Paper
- > Less “zoned” city centre
- > Needs more Bus AND rail – and some innovation and tough choices re-funding!



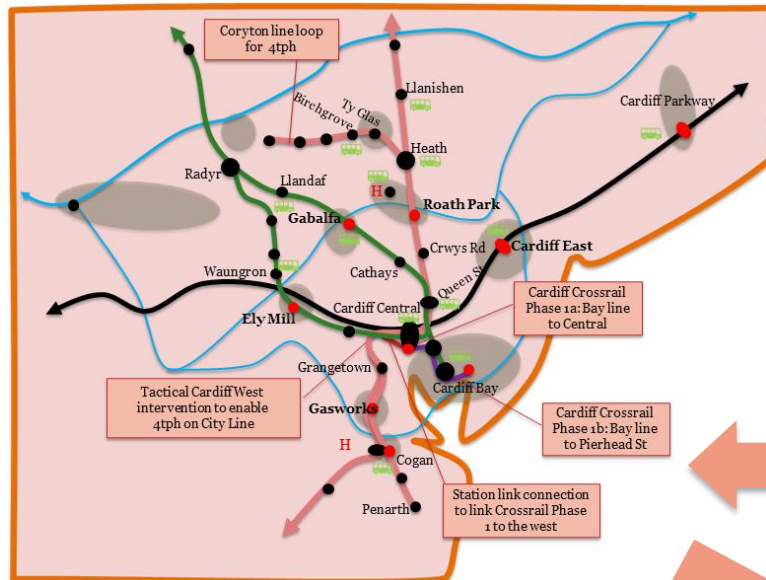
<https://beta.gov.wales/south-wales-metro-impact-study>
Metro Impact Study



Metro Future - including phased Crossrail out to 2040...

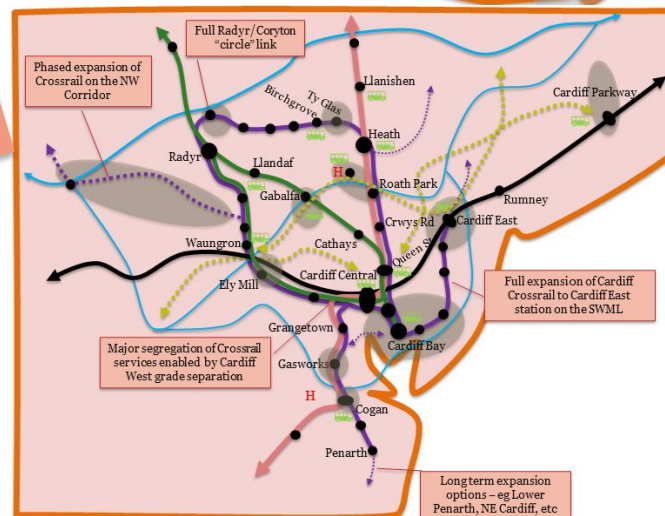
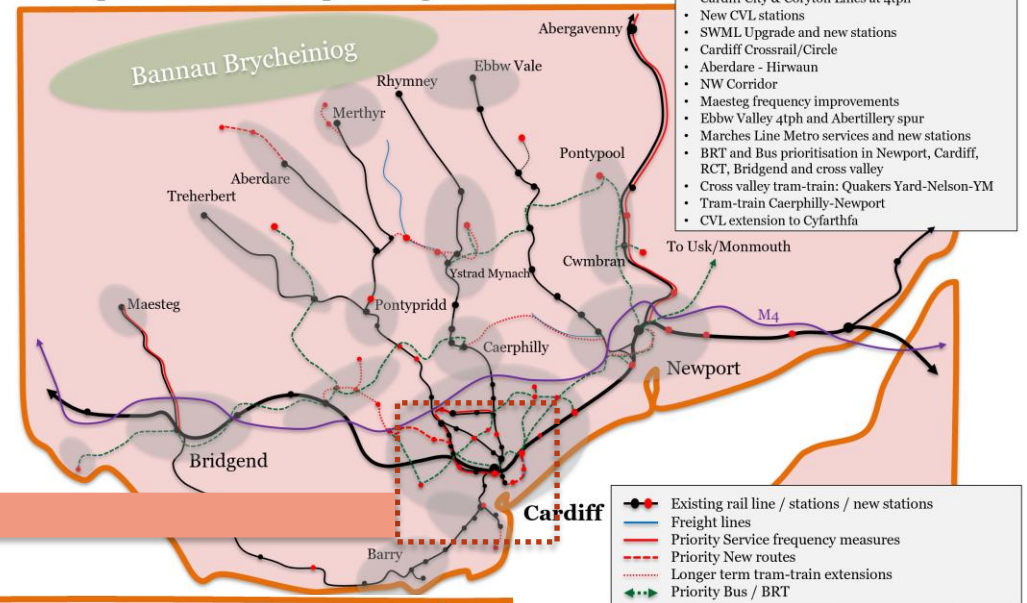
Can't lose sight of long-term ambition

Cardiff Crossrail Phase 1 and Phase 2



- > Simplified CVL network & min 4tph
- > More PAX, mode shift & carbon reduction
- > More network capacity, resilience and redundancy
- > Reduction in the subsidy
- > Much better utilisation of rail infrastructure in Cardiff
- > Enable bus/rail integration
- > More platform capacity for SWML at Cardiff Central
- > Enhance development & regeneration around the network
- > Foundation for further expansion

An Expanded Cardiff Capital Region Metro...

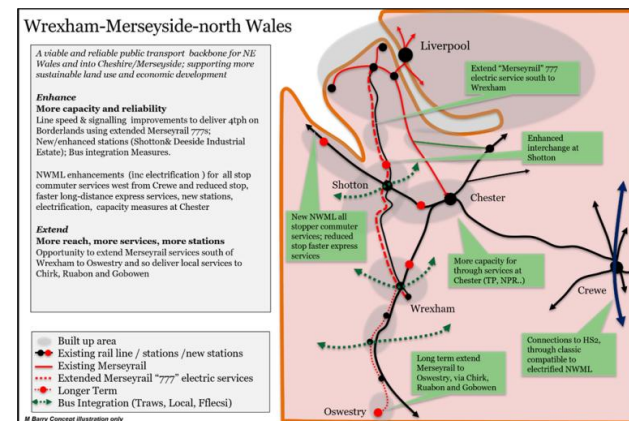
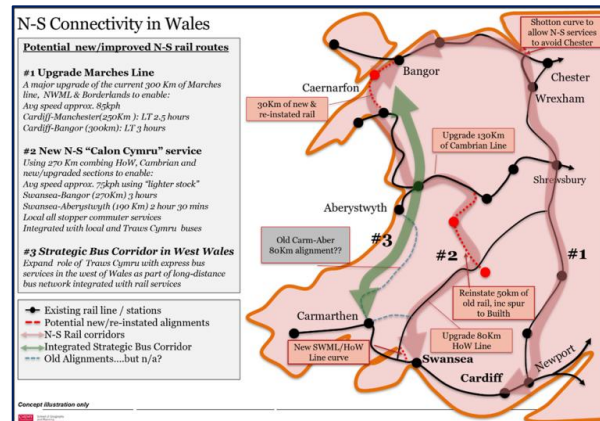
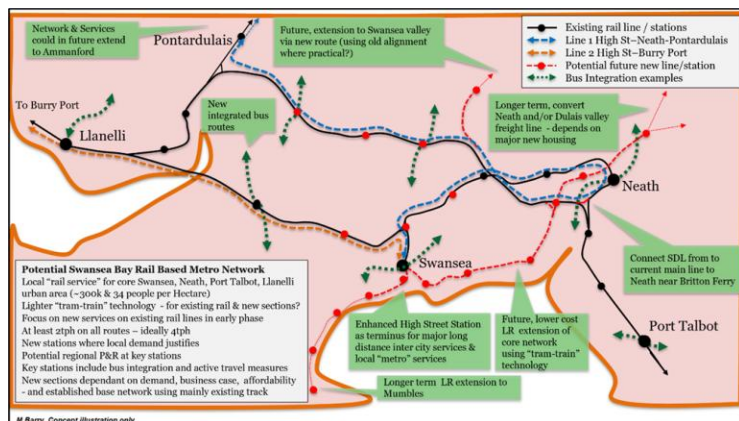
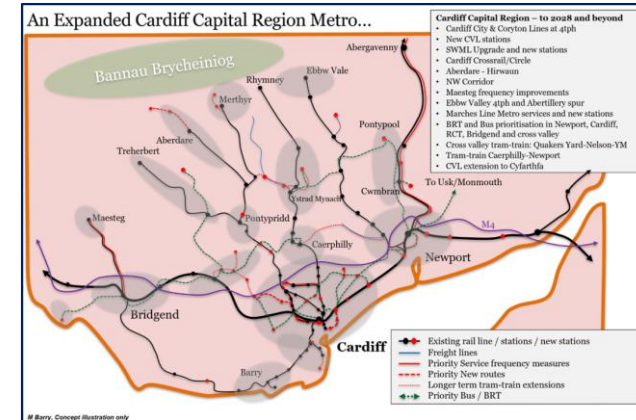
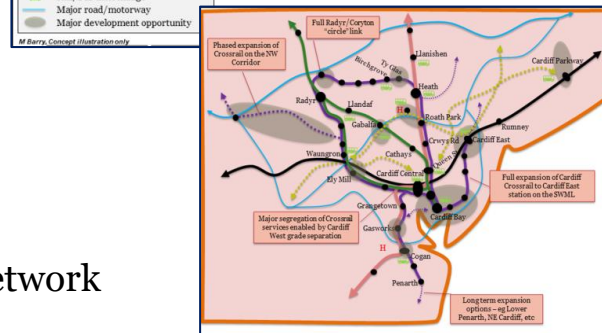
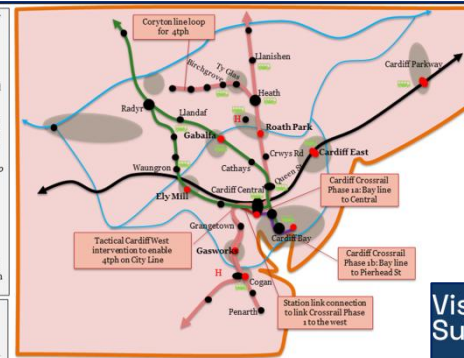


Full Cardiff Crossrail has potential for biggest mode shift and economic impact of any scheme in Wales...

CF £60-80Bn in England over same period

Primary Benefits:

- More network capacity and new Metro services focused on addressing immediate gaps in provision in Cardiff - esp. minimum metro service frequencies of 1ph
- Building on CVL transformation & Crossrail Phase 1, a series of tactical measures
- Crossrail Phase 2: to improve network capacity, resilience & redundancy; greater operational flexibility to allow more services to be run in times of peak stock and so reduce subways per passenger.
 - Crossrail Phase 2a (to Central and 1st to Pierhead) Stop
 - Crossrail West tactical intervention to enable stops on City Line
 - Loop to enable stops on Croydon Line
 - New stations at Central, Pierhead, St. Road, Cardiff, Cardiff, Cardiff East(Tremorfa), Cogan, Pierhead
 - Station Link to connect Crossrail to west
 - Initial bus network redesign in integration with Metrolink services
- SWML and stations/new stations
- CVL/metro/NoC Line
- CVL/Metro Services
- Cardiff Crossrail
- Bus prioritisation/segregation/BRT
- Major bus interchange
- Major road/motorway
- Major development opportunity



Metro Future: Transit Oriented Development...

What is it?

I often use this reply when talking to developers who assert the environmental credentials of their new developments...

“... you can't claim you new house or development is sustainable and environmentally friendly if you have to get in a car every time you want to buy a bag of sugar or pint of milk....”

The problem is perhaps less what we build and more where we build!

This impacts opex for PT (esp. when compared to European cities that are typically much higher density)

Metro Future: Transit Oriented Development (TOD)...

What is it?



Over time TOD can make Public Transport more accessible to more people and so more cost effective to deliver...

Illustration of "TOD" from Institute of Transportation and Development Policy

What is TOD? - Institute for Transportation and Development Policy (itdp.org)

Why UK City Regions need Metros (like the South Wales Metro)

Transit Oriented Development (TOD) in the Cardiff Capital Region (CCR) #3 – Mark Barry's blog site

Wales, Metro, TOD & Devolution... – Mark Barry's blog site

Lessons for Metro in South Wales...

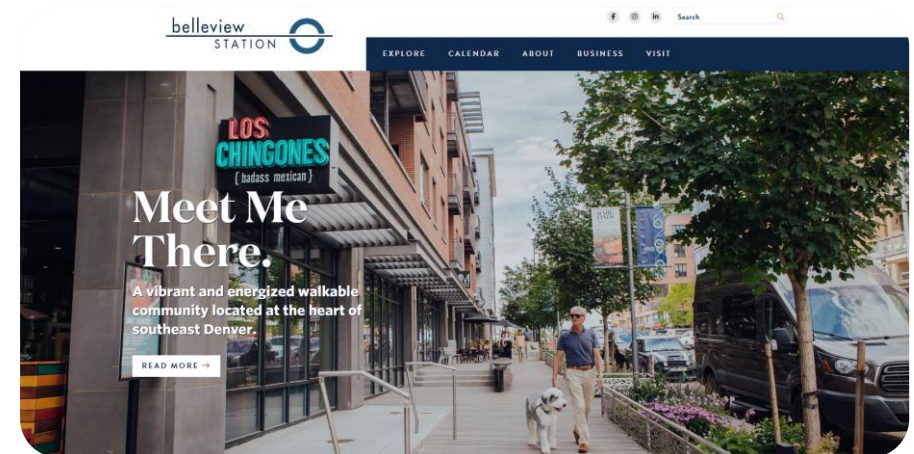
Transit Oriented Development

Plenty of examples worldwide...

- > Barcelona
- > Freiburg
- > Denver... beginning to happen
(eg Belleview in S Denver)

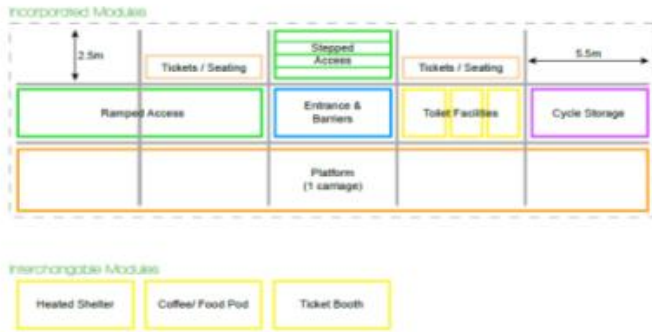


Transit Oriented Development -
Welcome Message (denvergov.org)
Belleview Station | Denver, CO



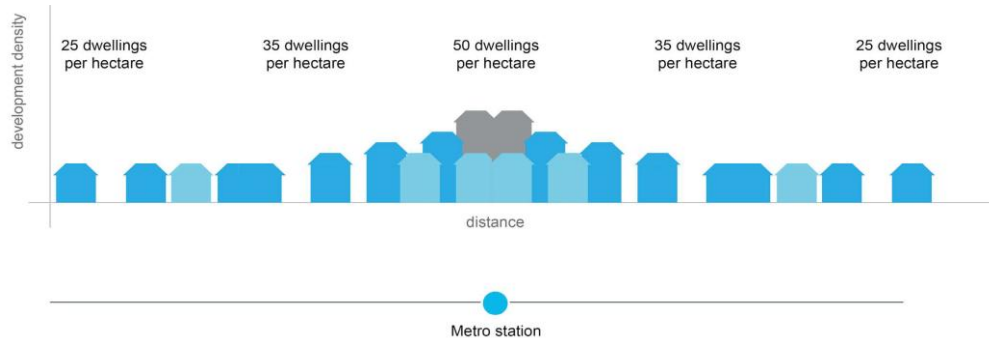
Metro: Transit Oriented Development (TOD)– different scales:

#1 Station, #2 Local/Around Station, #3 Sub-regional and #4WEB



#1 High quality simple design for Metro stations

#2 Placemaking/ masterplanning to ensure stations integrate with their communities; Exploit footfall and commercial opportunities, mixed uses, AT, etc



#3 Increase development density around Metro stations/corridors – Transit Oriented Development (TOD)

Placemaking Charter - Design
Commission for Wales (dcfw.org)

#4 Wider Economic Benefits....

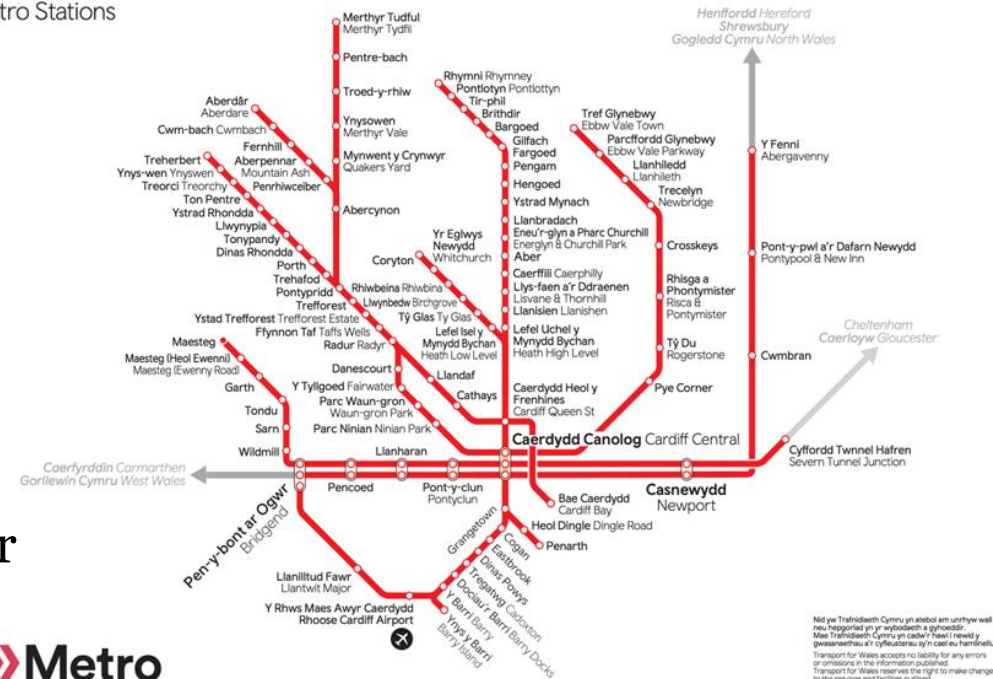
Lessons for Metro in South Wales...

Transit Oriented Development

But even bigger opportunities right across the Metro Network

- > Every station and community around it
- > Local “development and regeneration” with a focus on housing
- > The challenge is to develop the institutional capacity and capability to “curate” many smaller PT connected and likely more constrained sites with multiple/complex land ownership

Gorsafoddd Metro
Metro Stations



Vs

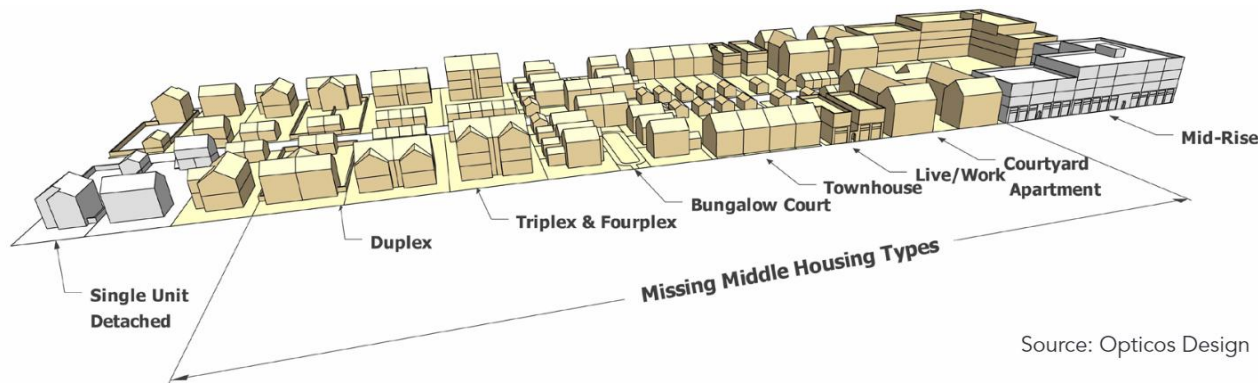
fewer “easier” larger unconstrained green field site (*which volume house builders prefer*)

Metro

Transit Oriented Development

Do we need a “Metro Development Corporation?”

- > To curate transit focussed development & regeneration – esp. around key network hubs in Cardiff as well as across the wider CVL network - Pontypridd, Caerphilly, etc
- > To lead on high street regeneration
- > To work with private sector
- > To provide vision, leadership and delivery capacity



Transit Oriented Development

04



Metro Future: We need to decide how and where we live & work

Transit Oriented Development - Tough Choices *esp re decarbonisation!*

A good transport plan is a good land use plan!



OR



> **Car based and environmentally damaging sprawl, more CO₂, etc**

> **Higher density living with more PT and AT - focus on town/city centres and repurpose car based edge of/out of town development**

Recent report for WG by Foundational Economy Research re impact of out of town development on town centres viability (inc analysis of Bridgend) adds to growing evidence base as does this Audit Wales report *Regenerating Town Centres in Wales* (audit.wales)

Transit Oriented Development in the Cardiff Capital Region #2 – Mark Barry
Transit Oriented Development (TOD) in the Cardiff Capital Region (CCR) #3 – Mark Barry
Mark Barry, May 2022: Submission to Senedd Climate Change Committee – Mark Barry

UK: The Future...



***Move power, ££ and
accountability
out of Westminster***



***More devolution...and a major fiscal overhaul to reallocate taxes away
from “income” and to damaging externalities (like excessive car use)***

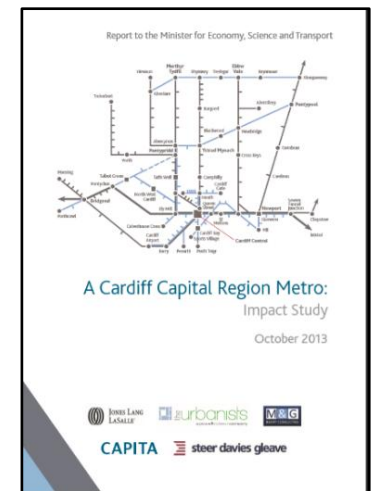
Anywhere...

My advice....

- > Develop a “Metro Vision” (*see earlier*) and don’t get bogged down in detail
- > Focus on the Wider Benefits (inc. WEI), local regeneration, TOD, etc – the transport details will sort themselves out!
- > Find a champion/champions
- > Engage with key stakeholder groups, esp. business community, and media
- > Build a coalition of the willing and be Machiavellian if you have to!
- > Given constitutional failings and over centralised nature of UK governance, will need strong “regional” leadership & curation
- > Take a long-term view.....and be prepared to adjust in flight
- > Look at the 2013 Metro Impact Study for Welsh Government – it provided a key foundation for all that followed

How to build a **»» Metro**

is now online!



Watch out for ...

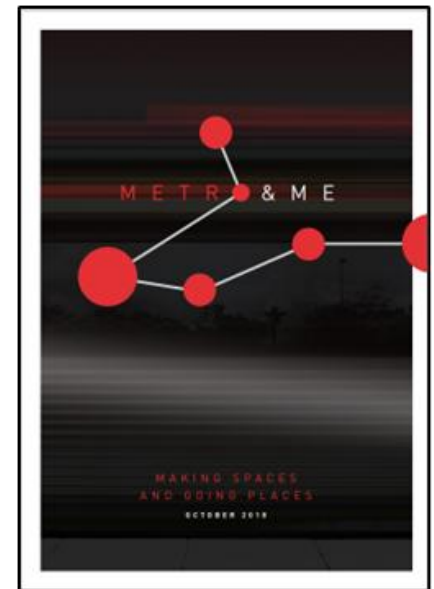
More Metro related stuff...

- > My book How to build a **>>> Metro** is now online, free of charge – although I do accept voluntary contributions to cover web hosting/admin!
You can support using ☕ Buy me a coffee <https://buymeacoffee.com/swalesmetroprof>
- > My Metro talk at Cardiff University's School of Geography and Planning on 27th May – book via Eventbrite
- > Also, with the support of Capital Law, Arup, and others we will be running a “Metro and Me” #2 event in Spring 2026 (look at the 2018 event *Metro & Me, October 2018* and publication *MetroAndMe.pdf* – all still relevant!)

ARUP

Prof Mark Barry of
Cardiff University and
M&G Barry Consulting

Capital
Law



- > We will need willing participants, support & sponsors.....

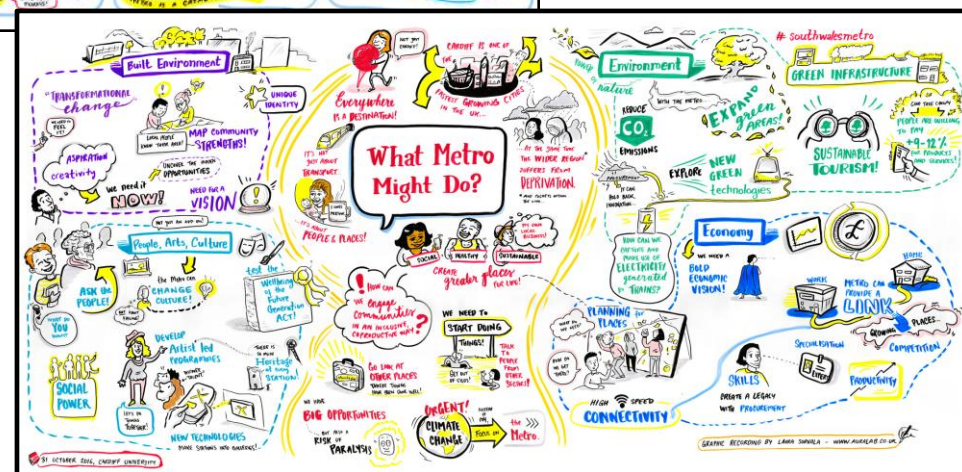
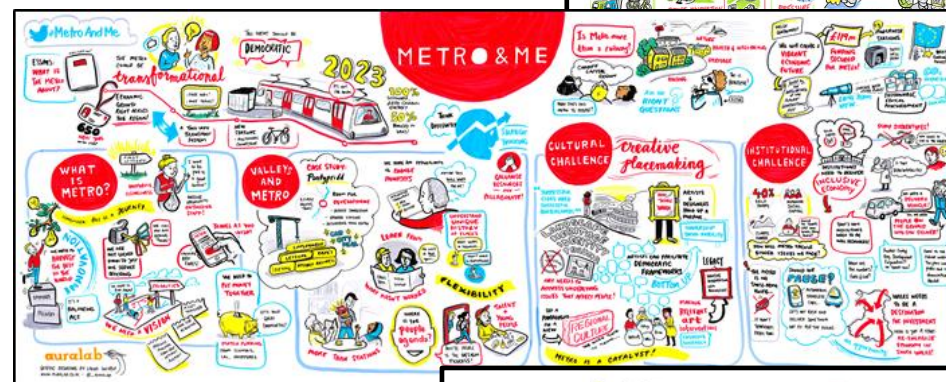
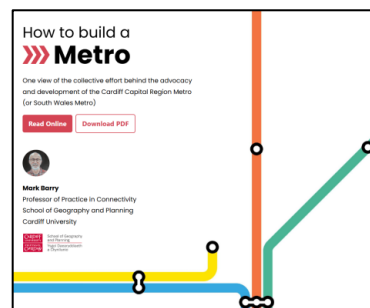
Thank You...



School of Geography and Planning
Ysgol Daearyddiaeth a Chynllunio

New “book” now available: <https://cardiffmetro.wales/>

How to build a Metro



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