

M E T R & M E

MAKING SPACES
AND GOING PLACES

OCTOBER 2018

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FOREWORD

Mark Barry

I have been involved in what is currently known as the “South Wales Metro” since 2010 when the first of several reports and studies I authored or contributed to was conceived. “*A Metro for Wales’ Capital City Region – Connecting Cardiff Newport and the Valleys*”, was published early in 2011 by the Institute of Welsh Affairs and the now defunct Cardiff Business Partnership (which included businesses like Admiral, Legal & General & PWC) and launched at an event at Cardiff City Hall. It galvanised widespread support for investment in transport infrastructure to support the region’s economy.

To be now discussing the post procurement timetable for the implementation of the next phase of Metro just seven years later is remarkable progress given projects of this scale typically take decades to develop (and in many places fail – look at Leeds and Bristol). So firstly, we must congratulate Welsh Government (and now Transport for Wales) on getting here and successfully securing the services of KeolisAmey to make the vision a reality.

Whilst building and operating (and extending) the Metro over the next 15 years is clearly a challenge, it is not perhaps the biggest. All of us in the Cardiff Capital Region need to fully engage in a debate about the kind of region we want to build. Clearly, much improved accessibility will help. However, we have deeper problems that go beyond accessibility and in many cases go back generations, related to poverty, economic inactivity, social inclusion, housing, skills, etc.

Strategic solutions will inevitably require new regional governance arrangements for planning, transport and economic development. However, we need to go much further and develop innovative regeneration programmes that reflect our unique urban geography and green infrastructure, engage local communities and exploit our artistic, cultural and industrial heritage. It is perhaps in these spaces we can begin to shape our new future.

As exemplified by this collection of essays, we must view the Metro as more than a transport project and as catalyst for change, so we can begin to develop a region fit for the 21st Century and our Future Generations. I am optimistic we can, in fact we don’t have a choice. We must.

In preparing for this publication and the event on the 8th October 2018, there are many people to thank. The core organising team of Capital Law, Cardiff University and IWA; the authors of the articles, Arup for the design and production of the report and Geraint Talfan Davies for collating, and editing it and contributing an introduction; and to our broader sponsors who helped fund the event: Transport for Wales, Acorn, KeolisAmey, Furrer+Frey, JLL, Icomera, The Urbanists, Cogitamus, Freshwater, Mott MacDonald and Cardiff Capital Region.

I would also like to acknowledge everyone who has been involved in the Metro journey to date. From the Cardiff Business Partnership, local business groups and the support at the outset of people like Roy Thomas, Robert John, Sion Barry, John Osmond and David Stevens; senior local authority members and officers (I have probably met most of them over the last 8 years), the Cardiff Capital Region Board (2013-16); MPs, AMs and especially ex Minister Edwina Hart (who commissioned the 2013 Metro Impact Study), First Minister Carwyn Jones (who launched the current Metro process in 2015) and Cabinet Secretary Ken Skates (who has overseen the procurement); senior Welsh Government officials & advisors like Jo Kiernan, James Price, Jeff Collins, Nathan Barnhouse, Gareth Morgan, Andrew Jeffreys & Simon Jones; consultants from Arup, Motts, Capita, JLL, WSP and others (special mention to Luke Albanese, Jon Fox, Simon Lander, Geoff Ogden, Andrew Jones, Roddy Beynon and Ben Hutchison); local companies like Smorgasbord and The Urbanists who have led on discussions related to design and place-making and transport advocates like Stuart Cole. There are really too many to mention (and apologies for omissions) but all have played a part in getting us this far on what has been a collective effort which we will need to sustain to ensure Metro really is a success.



Mark Barry

Professor of Practice in Connectivity, Cardiff University
October 2018

OVERVIEW

METRO – CATALYST TO A TRUE CITY REGION?

Geraint Talfan Davies

In May 2018 it was announced that the KeolisAmey joint venture had been chosen to operate the Wales and Borders rail franchise for 15 years from 14 October 2018. Given the general disparagement of rail franchisees in the UK in recent years, the announcement was greeted with an uncharacteristic fanfare of approval. Why should this be? After all, the two companies involved are hardly household names, and contractors and railway companies do not normally attract a fan base. Besides, the contest was held largely behind closed doors, so there was no public cheerleading for the bidders to be heard throughout the long selection process.

The undoubted pleasure at the result derived from three things: first, relief that the largest procurement process ever undertaken by the Welsh Government – via its newly minted Transport for Wales organisation – had been concluded successfully, disappointing the ranks of ‘Job’s comforters’ that usually attend on ambitious Welsh schemes; second, a realisation that the South Wales Metro – the central proposed advance on an embarrassingly antiquated rail *status quo* – would now move from pipedream to reality; third, that the Metro scheme could turn out to be the rejuvenated skeleton of a true city region, helping to give physical form to what is still a tentative administrative enterprise.

The Metro has also been one of the few big ideas to have completed a successful journey from civil society origins through government interest and sponsorship and on to delivery. On that journey it is fair to say that it has accrued an inordinately high level of expectation – a *grand projet* to cherish all the more as we count those that have withered on the vine. The essays that follow in this booklet spell out that level of expectation – not only for convenience and comfort but also for economic and physical renewal and regional integration, as well as for visible evidence of a fair share for Wales of reasonable modernity – the last a not unreasonable ask, you might think, but in the light of history, alas, not to be taken for granted.

Mark Barry, who, more than anyone, has levered the concept into the public imagination as well as government policy, reminds us that visions of a more

integrated region have been with us for more than 80 years, from Hilary Marquand’s 1936 essay, ‘South Wales needs a Plan’. Similarly, **David Llewellyn**, can trace the idea of a Valleys Regional Park – Welsh Government policy for the past 18 months – back to 1947. We do not stand only on the shoulders of today’s advocates.

But just as we can look back over many decades of lost opportunities, Mark Barry’s essay is also a reminder that the realisation of all this potential will not be achieved in the blink of an eye. It will take the resolve and commitment of more than one generation, almost certainly more than the span of the new 15-year rail franchise. The long-term vision for the building out of the Metro network may be a sign that the initial plans are soundly based, but its ambition is also certain to guarantee future frustration that its delivery cannot be accelerated or that, on delivery, it may fall short of the highest aims.

Brian Morgan and **Mark Lang**, in separate essays, discuss the possible impact of the Metro in spreading economic prosperity throughout the region. Brian Morgan is upbeat about the economic benefits to employers, commuters and other transport users, seeing positive impacts on productivity, agglomeration and the labour market. Mark Lang is more cautious, but both are making the same point that the economic benefits will not spring from the railway alone, rather they require the engagement and commitment of all the other actors in the public and private sectors as well as the wider civil society. In that sense the upgrading and extension of the railway system in the region is an inducement to the rest of society to respond in like measure.

Ed Green tries to imagine what it could mean for a single place on the railway line, Treforest, if improved connectivity were connected to forward-thinking ideology, acting through the demands of an energy positive policy, decarbonisation, and Wales’s Well-being of Future Generations Act. In this way, he argues, the Metro could stimulate investment and development in a way that provides new purpose and direction for settlements whose community and identity have been diminished or dismissed over the last fifty years.

South Wales has waited far too long for rail investment. I have talked to visitors from Scandinavia who marvel that some of our trains in Wales are not now in scrapyards or museums. The real test will be whether we can now develop this network to a standard that rises above a low cost, utilitarian solution. Many contributors are clearly concerned, and with some justification, that any ambition for quality in the execution of the Metro plan, as well as in related developments, can all too easily be whittled away in an ideologically driven age of austerity.

This worry is clearly at the heart of the essays by **Wayne Forster**, from the Welsh School of Architecture and **Carole-Anne Davies**, from the Design Commission for Wales. Wayne Forster is concerned that stations should become civilised gateways to communities, not sterile Parkways where “the travellers’ space has become the archetype of the ‘non-place’”. **Jamie Tucker** from Arup, makes a related case to consider more deeply the wider needs of stations users, both as individuals or as families or as potential businesses. Carole-Anne Davies makes a plea “to lock in the design understanding, skill and commitment that can lift Metro beyond mere compliance” and “to invest public money not for the short-term lowest capital cost but long-term highest quality public good”. Let us not forget the brilliance, the beauty and the sheer durability of all that Telford and Brunel achieved.

That said, alongside ambition, both Forster and Davies’s contributions are tinged with a foreboding that the highest design standards in our rail infrastructure will, as ever, be reserved for England’s metropolis, and that quality will decline in proportion to distance from it. The greatest challenge facing Transport for Wales and KeolisAmey - and it is a formidable one - is to prove them wrong. The one comfort is that that KeolisAmey are bringing a wealth of international experience and achievement to the table.

This is not just a matter of high quality place-making, it also pertains to the quality of thought that goes into customer service. For instance, why, on a brand new GWR train between Cardiff and London, is service information limited to a primitive scrolling screen at the end of each

carriage that tells me only where the train stops, when I can get on an inter-city train in Germany and find two or three screens per carriage that tell me the name of the next stop, whether we will be on time and, if not, how many minutes late we are running and, for good measure, the departure times of up to 12 bus services from the next station, including whether any of those bus services are themselves behind schedule? This degree of integrated customer service ought not to be beyond the imagination of our own authorities, and it is to be hoped that no procurement straitjacket will get in the way.

The integration of thinking is of concern, too, to **Wendy Maden** and **Francesca Sartorio**, this time in relation to three spatial dimensions - the region, nodes of development and individual sites. They have proposed an innovative methodology that attempts to connect all three. The characteristics of the natural and man-made environment, the variety of nodes and of individual sites will, they say, require us to take regional planning seriously so as to knit together the demands of differing scales of urban development and their necessary connectivity. Overlaying this are the worries of **Neil Harris** and **Brian Webb** that there is a strategic planning vacuum in the region. It will be interesting to see whether traditionally disconnected local authority planning departments - that have also become desperately under-resourced in the last decade - can respond positively to these integrationist ideas. Perhaps both these essays point to the need to create a discrete regional planning department, rather than relying solely on collaboration between ten local authority departments that will, inevitably, often have to face in more than one direction.

These concerns will not come as a surprise to anyone who has followed the bruising battles between the Welsh Government and its local authorities over local government reorganisation. Even the proffered incentives of ‘city deals’ - in this case £1.28 billion - may not be enough to soothe the traditional and powerful localism that is characteristic of Wales. But - and this would seem to be stating the obvious - reaping the full potential of the region will require a full-blooded regional approach. This means overcoming longstanding administrative and cultural obstacles.

Culture may seem a strange concept to introduce into the discussion of a railway project, but as **Yvette Vaughan-Jones** reminds us the Metro is a means to an end not an end in itself and that it can and should be a spur to cultural transformation. In this she speaks for a cultural community that has been thinking deeply on these issues.

It was a key point made in a joint submission to the Cardiff Capital Region Cabinet in 2017 by Cardiff University's Creative Cardiff initiative and What Next?, a loose cultural network that is UK-wide but has active chapters in both Cardiff and the valleys. This demonstrated that building a cohesive city region requires action from the bottom up not only from the top down. And there are signs that it is happening.

Last year the Design Circle, a group of south Wales architects, brought together a large multi-disciplinary team to explore the potential that exists around half a dozen stations – existing and proposed - on the Metro system. Later in the year the Design Commission for Wales and the Welsh School of Architecture conducted a similar creative exercise using Merthyr Tydfil's industrial heritage as a case study. The aim of both exercises was to push the boundaries of imagination in order to open up new possibilities. The latter has already resulted in Merthyr Council approving unanimously a report that recommended the creation of an independent charitable trust to develop the potential of Cyfarthfa Castle and Park.

In September 2018 the Arts and Humanities Research Council approved a £10m research and development project to build creative clusters in the region. Significantly, this was the very first time that the three universities in the region – Cardiff, Cardiff Met and the University of South Wales – had collaborated on a major research bid. One of the outcomes will be to extend Cardiff University's mapping of the creative industries in the city to the whole region.

So what is that end to which Vaughan-Jones refers? The challenge, surely, is to weld together different communities, not just government institutions, to create a common interest and a unity of purpose that will, ultimately, be of economic and social benefit to all.

But more than that, it is to break down the mental barriers that are often deep-seated: mental barriers between the coastal strip and the valleys, and between valley and valley - a combination of history, topography and, in the last half century at least, a stubborn economic inequality. But more than that, it is to develop a city region that not only has a sense of itself but is at ease with itself, whilst not in any way diminishing the sense of attachment that people have to their localities. We must make the Metro a railway to a better place – in all directions.



Geraint Talfan Davies

Geraint Talfan Davies OBE, DL., is a writer and broadcaster who has had a long involvement with public policy and the arts in Wales, and is currently leading a project, with the Design Commission for Wales, aimed at raising the profile of Merthyr Tydfil's industrial heritage. In a career that has spanned newspapers and broadcasting he was Controller of BBC Wales from 1990-2000. He is a co-founder of the Institute of Welsh Affairs and was its chairman from 1992-2014. He has also chaired Welsh National Opera, the Arts Council of Wales and Cardiff Bay Arts Trust. He is currently Chair of Wales for Europe, a Trustee of the Shakespeare Schools Foundation and a non-executive director of Severn Screen Ltd.

THE VISION

A ONCE IN A GENERATION PROJECT

Professor Mark Barry, the first to fully outline the Metro’s potential, maps how it might develop over the next decades

So now we know a little more: the next phase of the South Wales Metro to 2023 (Figure 1) really will be a radically improved and innovative rail network for the core valley lines from Merthyr, Rhymney, Treherbert, Aberdare & Coryton to Cardiff City Centre, Penarth and Barry.

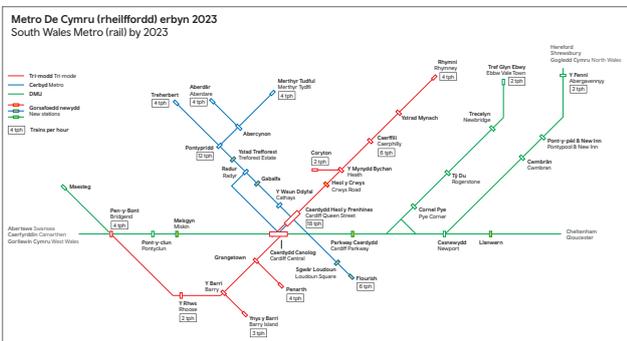


Figure 1: Transport for Wales Rail Services: next phase of Metro to 2023/4

Prof Hilary Marquand, “South Wales Needs a Plan”, 1936: “...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”

Metro will deliver four trains per hour (tph) from all points on the periphery of the core valley line network north of Cardiff (except Coryton) and many more on the routes into Cardiff from Pontypridd, Barry and Caerphilly. New types of Heavy Rail (HR) bi-mode and tri-mode rolling stock, and Lighter Rail (LR) tram-train “Metro Vehicles” (Figure 2) on many routes north of Cardiff will deliver faster, more frequent services and more capacity. More importantly, one of the key components of the Metro vision, extendibility (including on-street), is enabled via the tram-train; these LR vehicles enable greater flexibility and lower costs in developing new routes and services than traditional HR.

The commitment to new stations will improve accessibility at: Gabalfa, Crwys Road, Loudon Square, Nantgarw and near the Millennium Centre. In due course, I expect a few more to be added to this list. For example, Pontypridd bus station (to help bus/rail integration),



Figure 2: Transport for Wales Rail Services: Tram-train, Light Rail “Metro Vehicles”

Wedal Road in Cardiff (access to Heath Hospital/Roath Park and bus/rail integration) at Herbert Street (to take pressure off Cardiff Central & Queen Street). In addition, main line stations should also be considered ¹ at Magor, Llanwern, St Mellons, Rover Way, Miskin and Brackla. I also expect to see early work, where practicable, to enhance sections of the network that still have less than 4 tph - in Cardiff the Coryton and City Lines, and further afield Ebbw Vale, Maesteg and Marches services. For example, we may find that the future application of tram-train technology on the Maesteg line may enable us to deliver a lower cost and more deliverable intervention to increase capacity/frequency than is currently possible using a standard HR approach.

Prof Marquand, “South Wales Needs a Plan”, 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)

So, let’s get behind the Welsh Government, Transport for Wales (TfW) and KeolisAmey – it’s a big project. There will be some finessing of the scheme during detailed design and implementation to tease out the maximum benefits, but if all goes well it will be operating by 2024 very much along the lines of the vision I originally set out

¹ “The case for Investment in Welsh Rail Infrastructure”, Welsh Government 2018, <https://beta.gov.wales/rail-network-wales>

in 2011². Going further back, it really delivers Prof Hilary Marquand’s vision³ of an electrified commuter rail network published in “South Wales Needs a Plan” in 1936.

NETWORK EXPANSION

A key component of the Metro vision is extendibility – to connect more people, to more places and more employment opportunities. Given the application of tram-train on much of the core valleys network through Pontypridd, we can begin to consider how the network

can be expanded beyond the delivery of the next phase in 2024 to enable our wider ambitions for the region.

In developing a plan we have to be cognisant of the region’s demographic and economic realities and avoid the all too easy “Cardiff v. the Valleys” narrative. We need to ask: where do most people live and work, where & when do they need to travel, where can we enable further sustainable development, where are the major transport constraints and where are the biggest economic and social challenges and opportunities? This was how the 2013 Metro Impact Study⁴ was approached, and much of its content is still relevant today, although it could probably benefit from a refresh.

2 Mark Barry, “A Metro for Wales Capital City Region”, 2011, IWA and Cardiff Business Partnership <http://www.iwa.wales/wp-content/uploads/2011/02/iwa-metroreport.pdf>

3 Prof Marquand, “South Wales Needs a Plan”, 1936, George Allen & Unwin Ltd

4 Mark Barry & Metro Consortium, “Metro Impact Study” for Welsh Government, 2013 <https://gov.wales/docs/det/publications/131126-metro-impact-study-main-report-en.pdf>

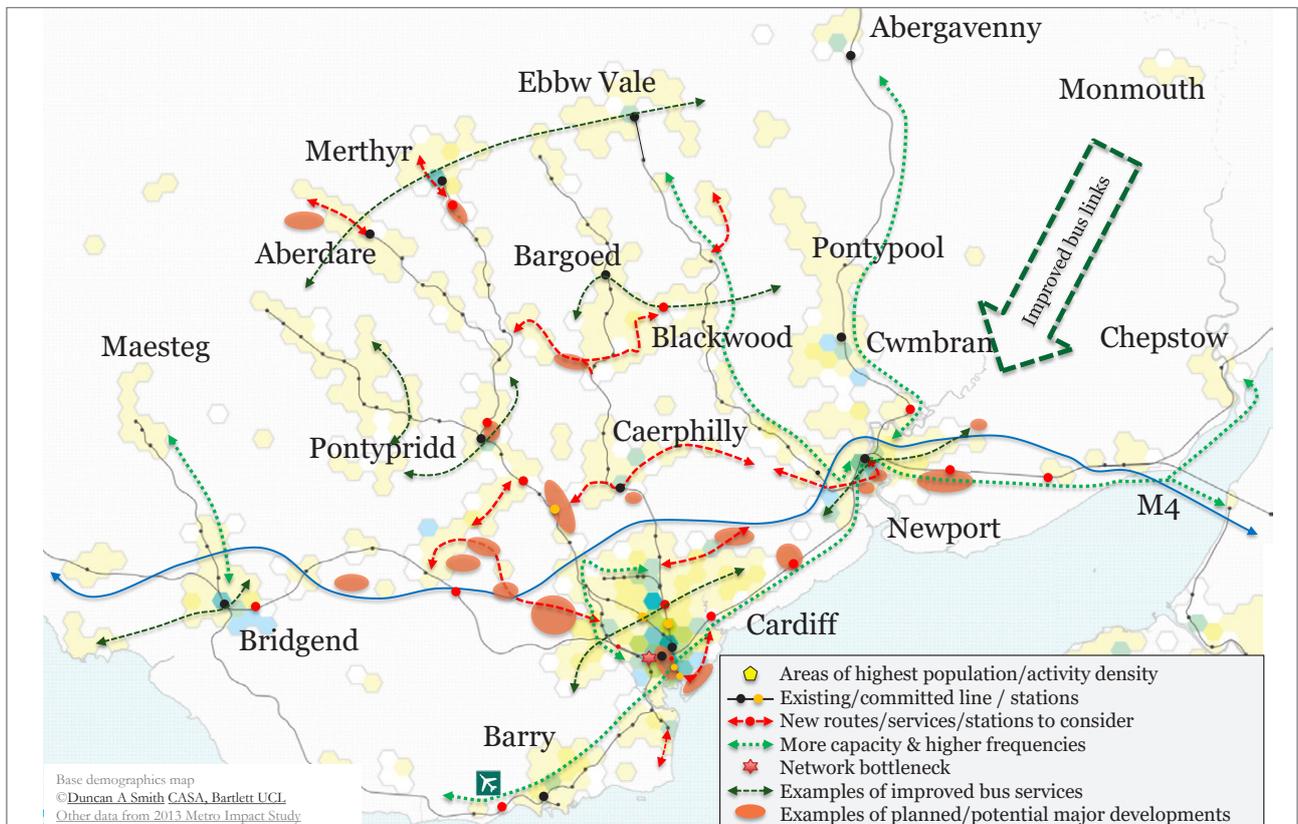


Figure 3: Illustration of possible spatial priorities for Metro expansion to 2033? (see⁵ for base data source)

5 http://luminocity3d.org/TransportRetina.html#rail_network_&_activity_density_2011/10/51.6483/-3.2025

The ongoing development of the Metro network will be pivotal to the region's development, so I would like to share a few ideas (Figure 3). Most have been aired before (and not just by me - groups like SEWTA, Network Rail and individuals like Prof Stuart Cole have all made contributions) and some are new. Not all of these will happen. Nonetheless, it is worth setting out examples of what is possible. There is also a pressing need to redesign bus networks to integrate with the Metro - which is perhaps a more challenging task. More importantly, at this stage we need to be unconstrained in our initial thinking to make the strategic case. We can reduce scope later as more detailed plans for scheme development and business cases emerge.

RHYMNEY VALLEY, BLACKWOOD AND NORTH EAST CARDIFF

The importance of the Metro's potential to enable more sustainable Transit-Oriented Development (TOD), especially housing, should not be understated especially

when there are still major car-based housing schemes coming forward across the region.

For instance, there are development opportunities around the Rhymney Line north of Cardiff in respect of housing and connectivity. The freight line from Ystrad Mynach to Nelson/Trelewis could also be included in the Metro if aligned to new housing. In future that extension and the application of tram-train could allow a connection between the Merthyr and Rhymney lines through Treharris as part of a cross valley service⁶ (Figure 4) that would also see a spur to Blackwood from Hengoed making use of the viaduct. This cross-valley route would increase the accessibility of Pontypridd from more of the upper valleys - especially important given the new office developments in the town.

Nearer to Caerphilly station there is an opportunity to revisit the housing proposed just to the south of the rail

⁶ <https://swalesmetroprof.blog/2018/06/04/making-metro-work-for-valleyscardiff/>

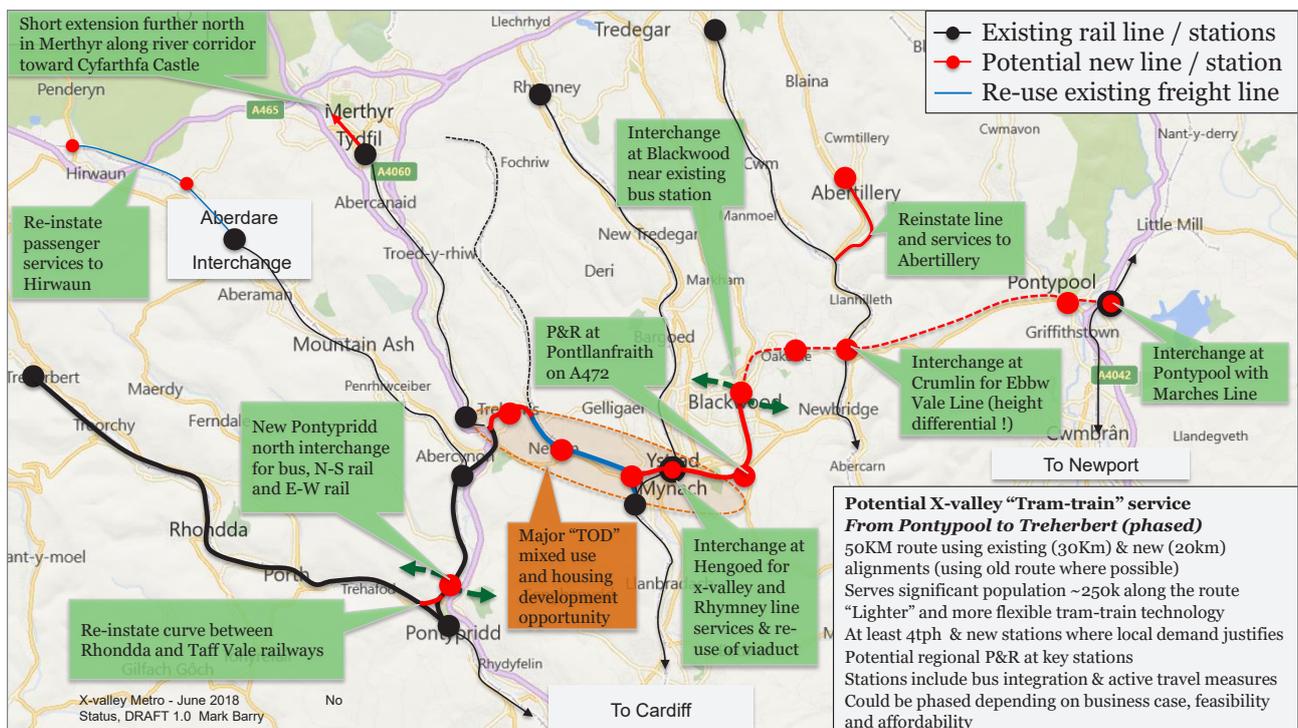


Figure 4: Illustration of possible cross-valley tram-train service

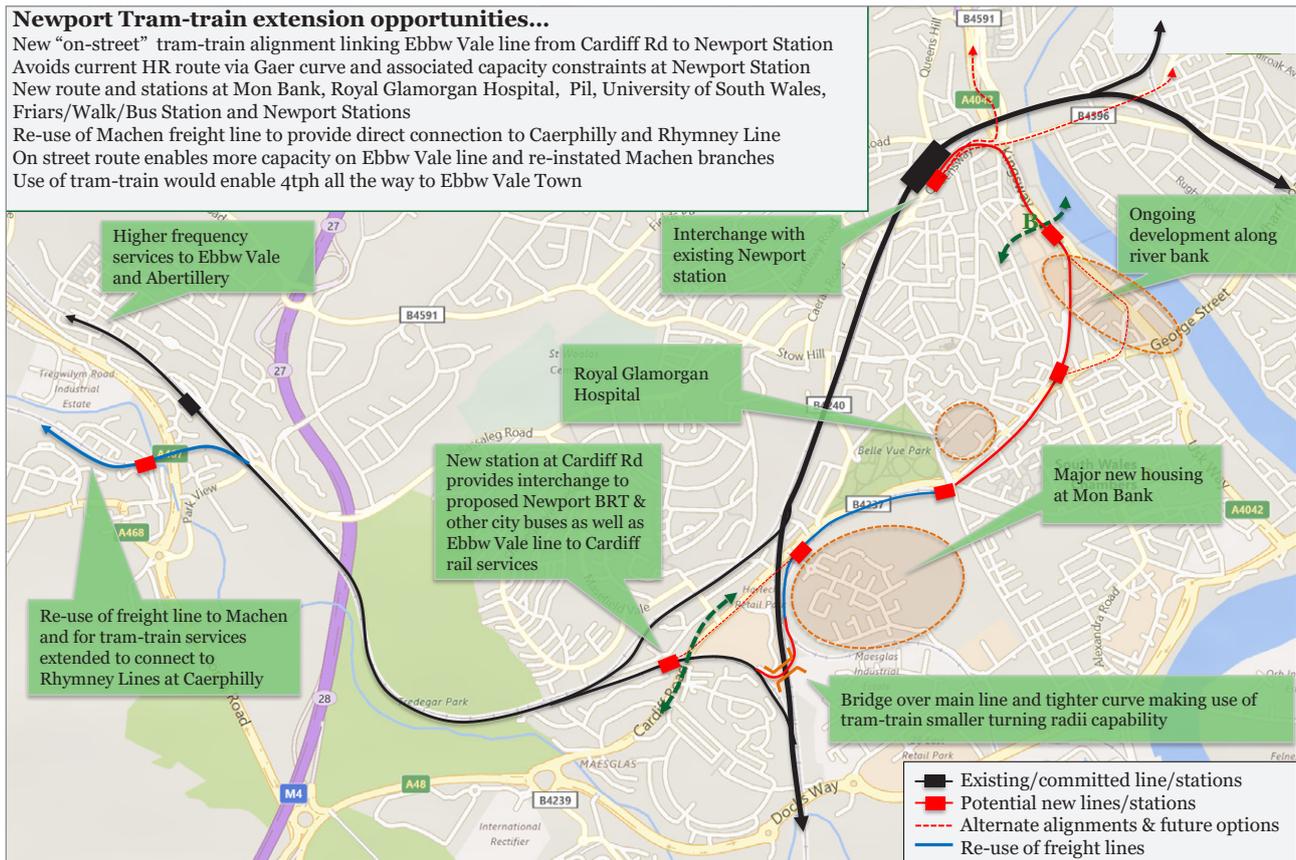


Figure 5: Tram-train extension opportunities in Newport

line – but with a smaller footprint and higher density as proposed by Wendy Maden and Francesca Sartorio in an accompanying article.

We should be aware though that the exclusive application of heavy rail (HR) tri-modes on the Rhymney line as proposed, is a potential constraint to extendibility, so I would like to see tram-train operations extended to the Rhymney Line to support extensions to places like Blackwood and perhaps, one day, north east Cardiff. More immediately I would like to see the tram-trains operating at 4tph on the Coryton line - *which is not currently proposed* – which would make further extension and perhaps a Cardiff circle line easier to deliver.

EBBW VALE, CAERPHILLY AND NEWPORT

The future economic development of Newport is to a great extent dependent on how well it is connected to its hinterland. In due course therefore, we should also expect to see more detail of how Ebbw Vale will be re-connected to Newport via additional services on the Ebbw Valley line – with the prospect of the spur to Abertillery being considered at the same time. Similarly, and in the longer term more services on the Marches line will be needed to deliver a 'turn and go' commuter service to places like Cwmbran, Caerleon (new station), Pontypool and Abergavenny.

There is also the prospect of applying tram-train capability to enable the re-introduction of passenger services on the Machen freight line to Newport by extending that line to Caerphilly. This line would enable direct services from north of Caerphilly on the Rhymney Line to Newport. It is likely that the case for this intervention will be strengthened with further housing allocations on the route.

Developing some segregated on-street sections along Cardiff Road and Kingsway in Newport (Figure 5) will avoid the capacity constraints on the main line into Newport station via a route that connects with more of the city centre. The on-street section also presents an

opportunity to introduce tram-train services between Ebbw Vale/Abertillery and Newport which may otherwise be constrained by a pure HR approach.

NORTH FROM CARDIFF TO PONTYPRIDD AND MERTHYR

At Merthyr there is an "on-street" opportunity (Figure 6) to extend the route from a point south of the current station to a point 1-2 kilometres north along the river towards Cyfartha Park and Trago Mills – probably the biggest generators of concentrated car usage in the valleys. It would also connect with Cyfarthfa Castle – where there are plans to develop a major visitor attraction for the region.

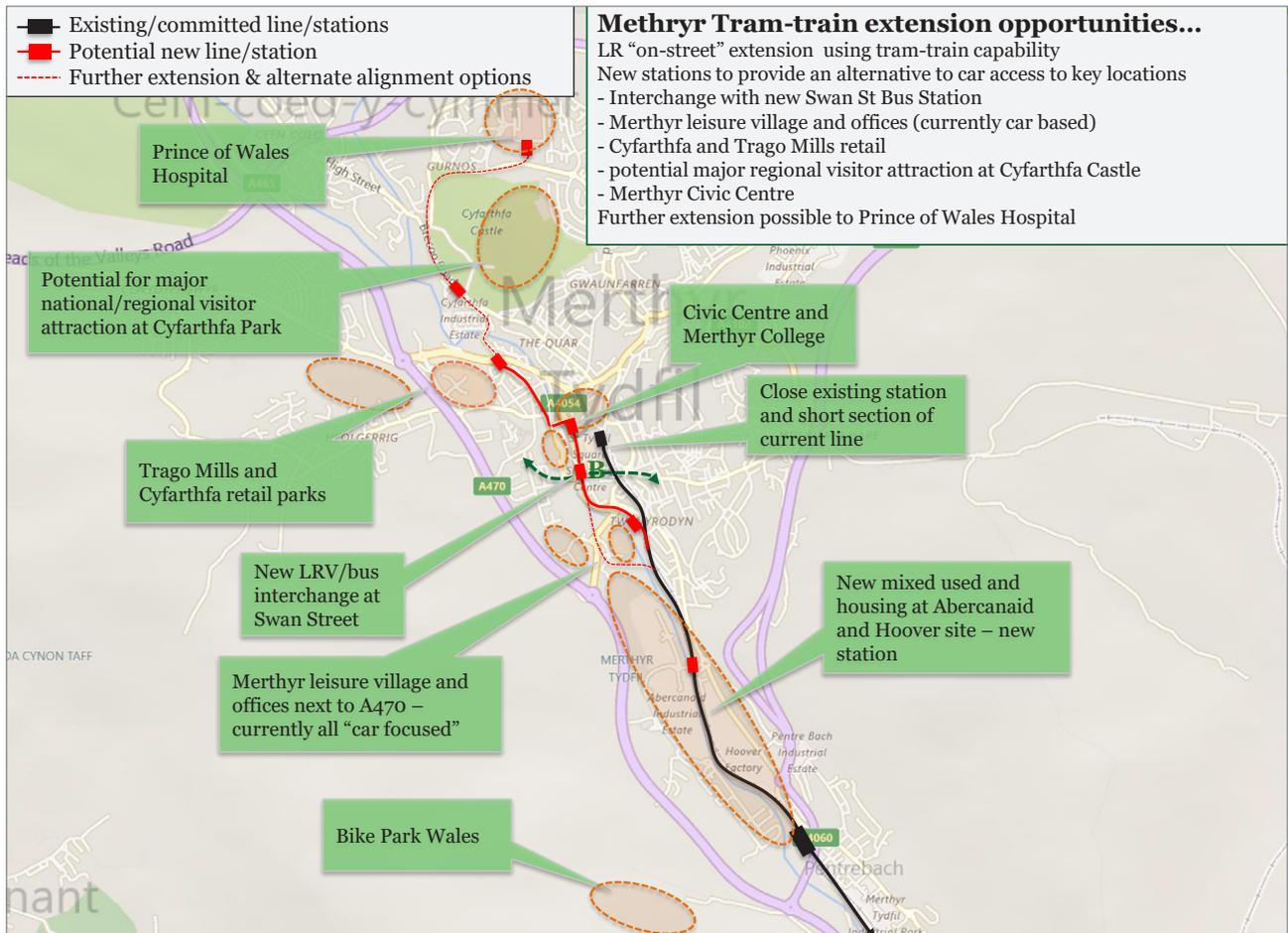


Figure 6: Potential Tram-train extensions in Merthyr

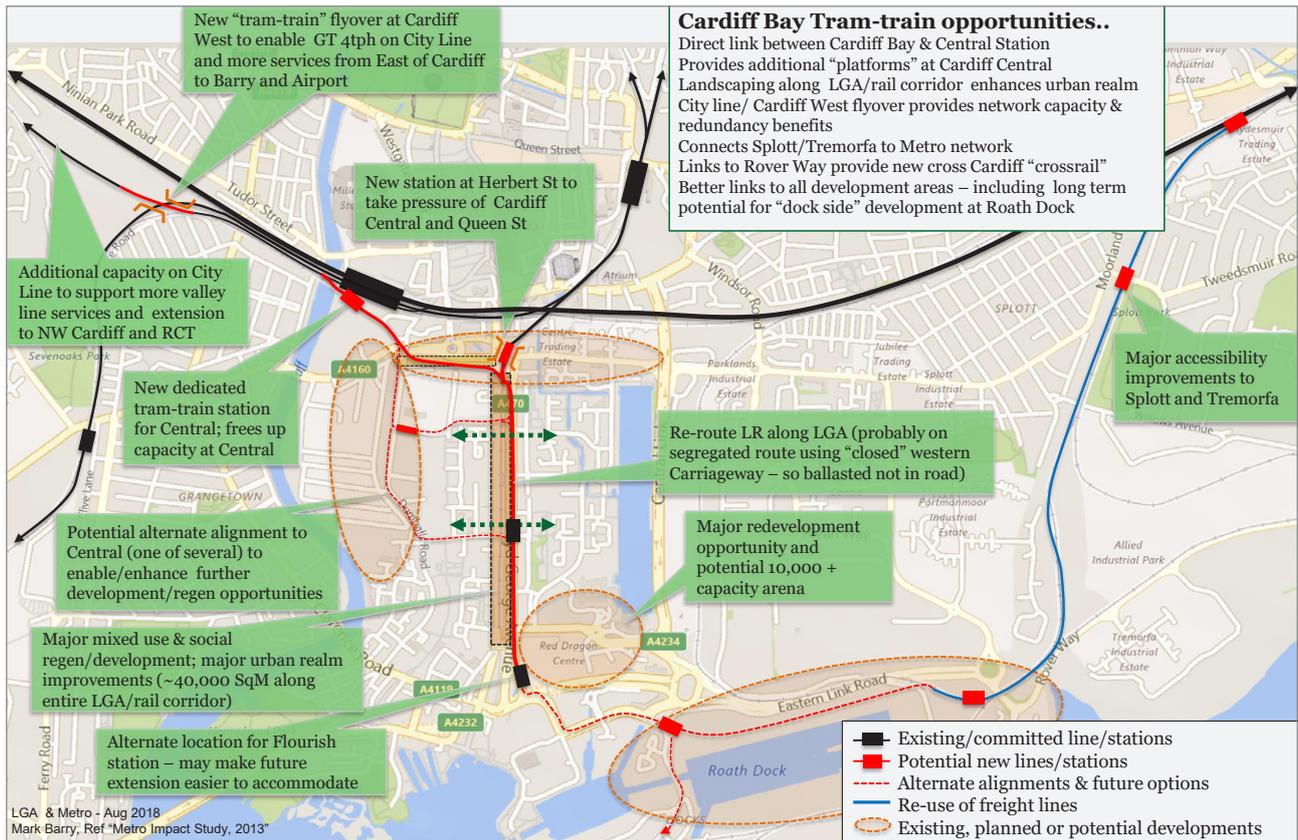


Figure 7: Illustration of potential re-alignment of rail to the bay and a links E-W across Cardiff

This extension could also support a station adjacent to the proposed new bus station on Swan Street, directly serving Merthyr College, and closer to the offices adjacent the A470, whilst still serving the town centre itself.

Between Merthyr and Pentrebach there is also potential for a further new station aligned to redevelopment of the Hoover site and the new housing proposed at Abercanaid. More challenging, perhaps, would be a direct link between Merthyr and Aberdare using the Abernant tunnel.

Further south there is need for a focussed effort to support broader regeneration in Pontypridd and the new development at the northern end of Taff Street, including a new LRV station adjacent to the bus station. At Nantgarw, the new station requires that we consider the future development of the whole Treforest industrial

estate - more and higher density housing and perhaps mixed uses.

CARDIFF BAY AND LLOYD GEORGE AVENUE

Finally, 30 years after it was originally proposed (Figure 7), a tram-train solution should enable a comprehensive re-design of the urban realm linking Cardiff City Centre and Cardiff Bay as well as the direct rail link between Cardiff Central and Cardiff Bay stations.

By realigning the rail services onto Lloyd George Avenue, which can be closed to traffic, the current rail corridor can be re-landscaped as an urban park - a “high line” perhaps - with some new development and at last integrate the original Butetown community into the wider and more recent development in the area. This idea was originally set out in, “A Metro for Wales’ Capital City

Region”, in 2011. This link can also enable extensions further into Cardiff Bay and/or east toward Splott using the tidal sidings freight line and back to re-join the main line near Rover Way.

NETWORK BOTTLENECK, NW CARDIFF/RCT AND SERVICES TO PENARTH, BARRY AND THE AIRPORT

There is a significant network constraint at the “Cardiff West junction” in Canton which limits services to the Vale of Glamorgan and on the City line in the west of Cardiff. The City Line, like the Coryton line, is restricted to 2tph which is a major under provision of Metro services to

large parts of Cardiff itself - especially given its growing population, road congestion and air quality issues. This bottleneck can be addressed by separating the Vale of Glamorgan and City lines with a “tram-train” flyover (Figure 7) to replace the Cardiff West junction. This will deliver more network capacity and redundancy north of Cardiff which is also constrained by a theoretical limit of perhaps 22tph that can pass through Queen Street station, even using the upgraded HR signalling proposed.

As importantly, a flyover would enable more services to operate from east of Cardiff (eg Newport, Ebbw Vale, Bristol, etc) to Barry and Rhoose/Cardiff Airport. In

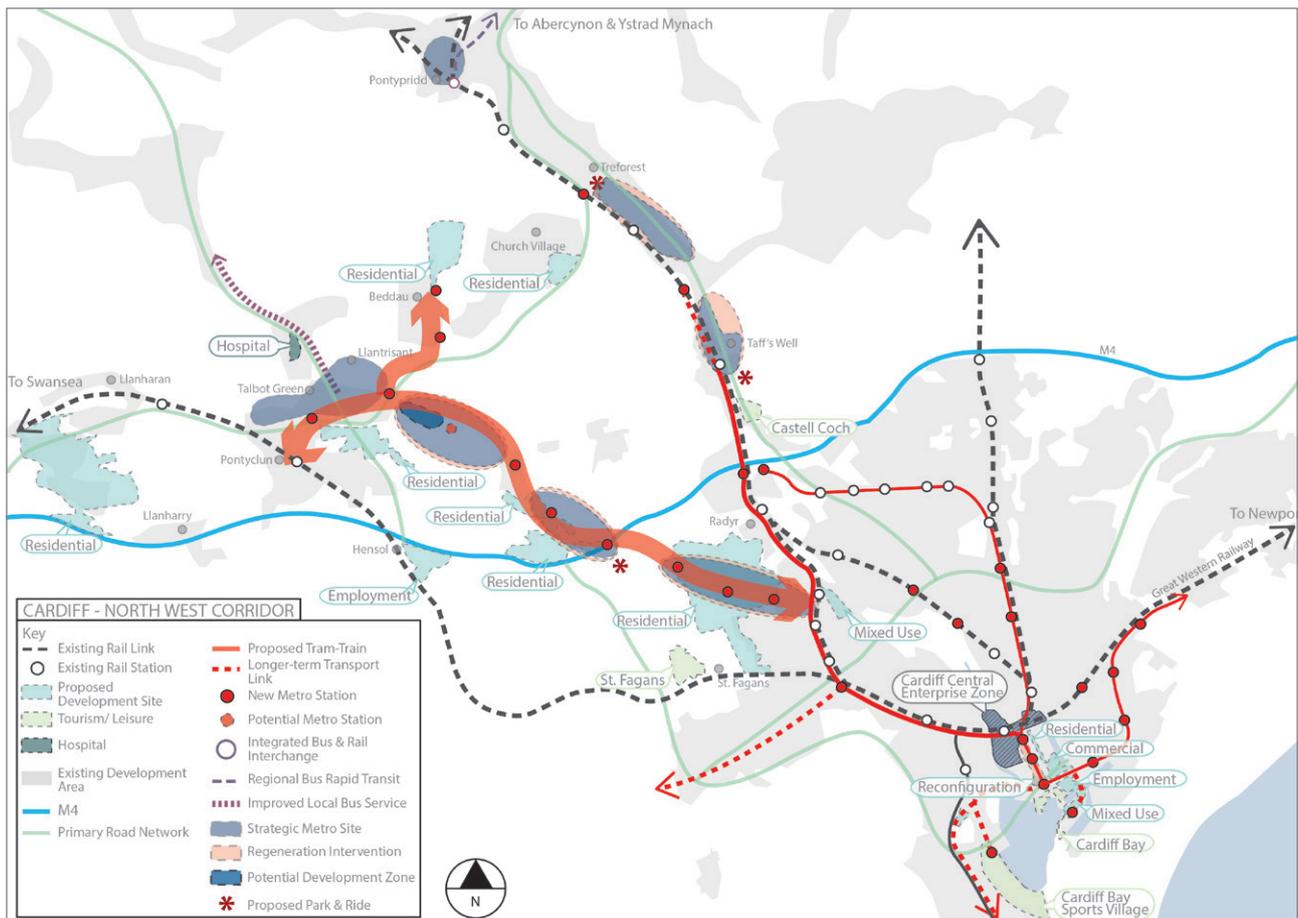


Figure 8: NW Corridor (from 2013 Metro Impact Study)

I set out some considerations in an article for the Bevan Foundation in 2016⁷ and later in a speech for Wales in London⁸ week. Interventions will likely include traditional “bricks and mortar” economic development in places like Pontypridd, through to local and community focused “foundational economy” interventions in places like Maerdy and Tredegar. I made a modest contribution in an article, “Hand made in Ebbw Vale,”⁹ about growing local skills in food and crafts last year.

There is no “one size fits all” and there are no easy answers to economic issues that go back generations; a number of proposals are set out in this publication which collectively build upon the 2016, Cardiff University, “What Metro Might Do?” event.

Prof Marquand, “South Wales Needs a Plan”, 1936:
 “...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?

Given the potential of all these Metro schemes and the likely limits on funds and delivery capacity, we need a robust process to determine its extension priorities over the next 10-20 years - *and in a way that explicitly links transport and land use planning as well as reflecting and influencing broader economic development and regeneration proposals*. This could be done via a Metro Development Strategy, set within the context of a regional Strategic Development Plan. A partnership between Transport for Wales, the City Region (via its nascent Regional Transport Authority) and Cardiff University could be assembled to develop that plan.

⁷ <https://swalesmetroprof.blog/2017/07/24/wider-impacts-of-south-wales-metro/>

⁸ <https://swalesmetroprof.blog/2018/04/30/economic-impacts-of-the-south-wales-metro/>

⁹ <https://swalesmetroprof.blog/2017/06/28/hand-made-in-ebb-w-vale/>

Furthermore, perhaps the City Deal could allocate further funds for potential Metro extensions; more ambitious still, the emerging city region could look to establish a Metro development fund, for example by pooling revenues from the Community Infrastructure Levy. In parallel Cardiff Capital Region local authorities should empower those officials responsible for local planning, economic development, regeneration, housing, etc to explore ways in which better connectivity can help grow the regional economy sustainably through complementary and innovative economic development and regeneration interventions.

The South Wales Metro is a once in a generation project. If we view it as more than a transport project and as a catalyst for change we can begin to develop a region fit for the 21st Century. I am optimistic we can. In fact, we don't have a choice. We must.



Mark Barry

Mark Barry is Professor of Practice in Connectivity at Cardiff University. In February 2011, his report, “A Metro for Wales’ Capital City Region - Connecting Cardiff, Newport and the Valleys”, made the case for a step

change in connectivity and city region governance for land use planning, transport & economic development in south east Wales, in order to help grow its economy. He has thirty years’ international experience in multiple industries including management consultancy, biotech, IT, finance, economic development & transport. From 1997 to 2002 he worked for the PA Consulting Group in London leading major projects for clients in Europe and North America. In 2003 he founded and was until 2009, CEO of biotech company Q Chip Ltd. In 2007 he was part of a review of IP commercialisation in Welsh HE.

In 2013 he and the Metro consortium were commissioned by the Welsh Government to produce “A Cardiff Capital Region Metro: Impact Study”. He then led Metro development for the Welsh Government until January 2016. He is currently leading a strategic study for Welsh Ministers to support further rail investment in Wales.

MAKING THE MOST OF OUR LANDSCAPE

Dr David Llewellyn, Managing Director of Blaengad Cyf, recounts the long genesis of the Valleys Regional Park

“After a study of the valley systems, our conclusions are that provision should be made... for four Regional Parks. (They) should have a good pathway system, with adequately planned bus stations and car parks, shelters and restaurants.”

Alwyn Lloyd and Herbert Jackson, 1947

In 1947 Alwyn Lloyd and Herbert Jackson proposed a series of Valleys Regional Parks as part of their South Wales Outline Plan. They understood completely the potential of the Valleys' landscape to deliver much needed social benefits, despite their despoliation. They also understood that an effectively planned transport system, as well as associated provision for hospitality, would be needed to realise that potential.

Today, more than 70 years later, we could and should be at the point of making the aims of those visionary proposals a reality, as the development of the south Wales Metro coincides with the proposed creation of a new Valleys Landscape Park or Valleys Regional Park to maximise the socio-economic potential of the region's natural and cultural heritage assets.

In the Lloyd and Jackson plan the four proposed regional parks were to be spread geographically across the valleys to serve the then industrial centres of population. As the map shows, these were the 'Monmouthshire Valleys' (essentially what became the Cwmcarn Forestry Drive area), the 'East Glamorgan Valleys' (concentrated on Llanwonno Forest), the 'Mid Glamorgan Valleys' (just to the south of Llangynwyd, abutting the Llynfi valley around Mynydd Baedan), and the 'Neath and Swansea Valleys', essentially a triangle of land situated between Clydach, Skewen and Pontardawe.

In their preface, Lloyd and Jackson urged that 'the claims of natural beauty should be allowed a more prominent place in the planning of this region'. Undoubtedly, this referred mainly to the emerging proposals for the creation of a National Park in the Brecon Beacons, eventually established in 1957, and the claims of the Gower Peninsula, which was designated a year earlier in 1956 as the UK's first Area of Outstanding Natural Beauty.

Indeed, much of the map produced for the Outline Plan covered nearly all the Valleys in a rather dreary shade of pink, noted simply as 'Upland Industrial Zone', with a considered call for greater afforestation in some areas as a contribution to 'enriching these bare valleys and hillsides'. The exceptions to this largely all-encompassing swathe of pallid pink were some relatively small existing patches of woodland dotted across the valleys and the areas where the four proposed Regional Parks would be created.

THE FOUR PROPOSED REGIONAL PARKS (LIGHT GREEN) IN THE VALLEYS IN 1947

It was foreseen that the proposed Brecon Beacons National Park would serve the recreational purposes of the Valleys, being 'within fairly easy reach of the populated districts'. Within the Valleys themselves, Lloyd and Jackson had vividly described the adverse environmental impact of over a hundred years of heavy industry with 'coal-tips... spread about the floors of the valleys and on nearby hillsides... (and) once fair valleys, with woodlands, pure streams and pastoral scenery, widely despoiled'.

Nevertheless, there was a clear recognition that afforestation, amenity planting and treatment of the (visible) spoil tips could help create the suggested Regional Parks, whose prime object was to 'meet the open-air recreational needs of the several groups of valleys in the Coalfield'. These would be complemented by specific zones of special landscape interest, such as Caerphilly Mountain, as well as, outside them, in the coastal belt.

Despite the fact that the Lloyd and Jackson plan was not officially accepted, significant elements did come to fruition, though not the Regional Parks. Alwyn Lloyd, one of Wales' foremost architects and town planners, died in 1960 and did not witness the dramatic and remarkable environmental transformation of the Valleys over the last 50 years.

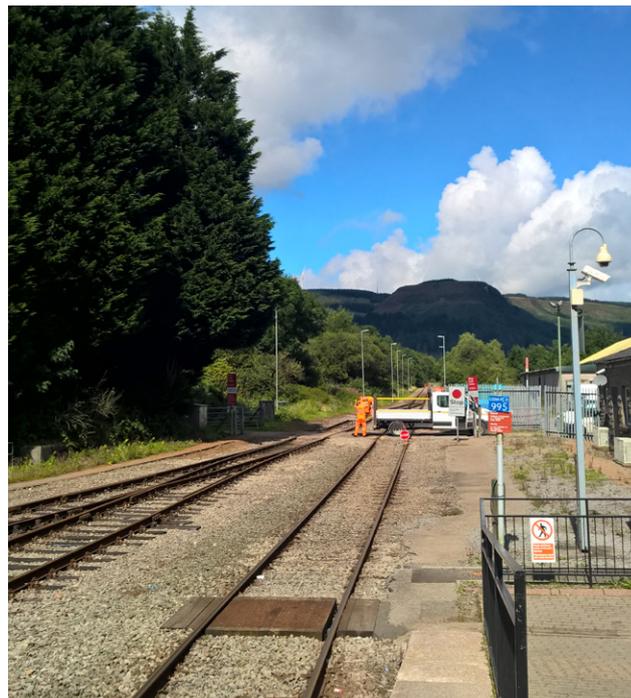
In that same year, 1960, another man of 'energy and ideas', Robin Huws Jones at University College of Swansea, proposed a study to address the dereliction of the Lower Tawe valley, which had been ravaged and contaminated by the copper industry and mining. The

Lower Swansea Valley Project ran for the next six years, demonstrating how such land could be remediated. In the year of its completion, 1966, tragedy struck at Aberfan, in a disaster that eventually catalysed extensive remediation right across the valleys, led by the likes of the redoubtable D. Gwyn Griffiths at the WDA. Although aimed primarily at bringing land back into light industrial use and housing, some new recreational areas were created, such as Dare Valley Country Park that opened in 1973 - the first park to be created on reclaimed land in the UK.

This work led, in 1998, to a much deeper strategic recognition of the regeneration potential of the Valleys' landscapes in the *Greening the Valleys* initiative, together with the *City of the Valleys* concept. These revived the idea of a Valleys Regional Park (VRP), aimed at harnessing and maximising the socio-economic potential of the natural environment, rather than simply environmental improvement. Between 2009 and 2013, amongst its breadth of activities, the Valleys Regional Park initiative carried out nearly 40 infrastructure projects across the valleys including, interestingly, the development of better transport provision and enhanced connections to Aberdare, at Dare Valley Country Park.

In 2017, seventy years after the visionary Lloyd and Jackson proposals, and further extensive community consultation partially based on the VRP *Further Options Study*, the Valleys Taskforce, led by Alun Davies AM, proposed as a key aim the establishment of a formally-designated Valleys Landscape Park or Valleys Regional Park. Work towards this is now ongoing with planned interlinked themes to maximise the opportunities around perception, sustainable tourism, enterprise, enhanced community stewardship, and health and wellbeing.

The aim is to focus some of these activities around potential Discovery Zones and Trails, connected across the valleys. For example, one can imagine that the proposed developments in Merthyr Tydfil around Cyfarthfa Castle could develop in such a way in future. Consequently, it is essential that the proposed Regional Park takes advantage of the opportunities provided by the Metro, while adding adding value to it.



Treherbert station

Eleven years before the initial publication of Lloyd and Jackson, Hilary Marquand at University College, Cardiff had proposed what was, in effect, an electrified commuter rail network across the valleys in his report, *'South Wales Needs a Plan'*. But by now there is clearly a common desire to go beyond simple commuting in order to maximise the potential of Metro.

Successful cities and regions around the world, such as Stuttgart, Øresund (Copenhagen/Malmö) and Portland in the USA, are demonstrating that working innovatively in harness with their natural and cultural assets, and connecting them effectively with transportation, underpins their future sustainability. In the Valleys, linking Metro with the surrounding environmental and heritage assets through cycling and walking routes should encourage greater recreational use whilst crucially supporting economic development through responsible tourism as well as revitalising places where businesses want to locate and develop.

TREHERBERT – A GREAT OPPORTUNITY TO DEVELOP A METRO-VRP LINK

In Treherbert, for example, where community-led initiatives and activities are blossoming, one might envisage a new Metro station creatively connecting the centre with Cwm Saerbren and beyond, including the Rhondda Tunnel, for the benefit of locals and visitors alike. Treherbert is fortunate in that it is already a terminus on the Valleys Lines. However, greater challenges will need to be met with respect to those locations and communities not currently as well served, especially in other upper reaches of the valleys essential to the Valleys Regional Park vision, e.g. the World Heritage Site at Blaenafon. In addition, imaginative development of the Metro transportation corridors themselves could enhance the ecosystem services they provide, boosting resilience to climate change as well as increasing biodiversity and ecological connectivity.

Amongst the best global examples of creative coordination of sustainable transport and green infrastructure networks is the Stuttgart city region where Regional Landscape Parks (*Landschaftsparks*) crucially and imaginatively connect and integrate strategic transport and environmental planning goals with local community-led development, creating a shared and enhanced sense of place within the region's towns and villages.

Looking to this example, linking Metro development with a community-embedded Valleys Regional Park, could achieve an even greater transformational impact in the Valleys. However, as this article illustrates, we seem sometimes not to have a gift for making things happen quickly and effectively in Wales. The challenges and opportunities are there, and we need the vision and wherewithal to meet them.



David Llewellyn

David Llewellyn runs his own company, Blaengad Cyf. and is co-owner and founding partner of the BRO Partnership, both specialising in research and working with communities and their natural and

cultural heritage assets to achieve sustainable change. David is currently contracted to the Welsh Government's Valleys Taskforce to lead on the development of the Valleys Regional Park (VRP) – he was previously the coordinator of the VRP pilot initiative and subsequently authored the VRP Future Options Study.

After more than 20 years as a research scientist and senior academic, he decided to undergo a radical career change to get involved in regeneration in his native valleys. In 2015, he led the BRO research underpinning the Big Lottery Fund in Wales' innovative £8.8 million Create Your Space programme and then co-led the successful bid by BRO/Severn Wye Energy for their current £2.2 million BLF Wales-funded rural poverty programme, Rural Futures.

MORE THAN A RAILWAY - A REGIONAL ACCELERATOR

Brian Morgan, Professor of Entrepreneurship at Cardiff Metropolitan University, considers how stakeholders in the region could work together to maximise the economic benefits from the Metro project

The South Wales Metro is a long-term investment project – probably 20 to 30 years or more – that could play a key role in improving Welsh economic performance. It will create an integrated transport system that will provide significant economic benefits to employers, commuters and other transport users. And, if the right conditions are put in place, this could lead to increased productivity in the regional economy as well as better access to markets.

Initially the people who commute every day to Cardiff and Newport (currently around 100,000 people, most of whom commute by car) will see a reduction in the cost of travelling, through shorter journey times for commuters and for those travelling on business. In general, the greater the time and cost of commuting, the lower is labour productivity. The Metro would significantly reduce commuting costs, increase commuting capacity, give rise to a larger and more effective labour market and thereby lead to an increase in productivity. These business benefits and reduced journey times would be enjoyed by firms and organisations across the Cardiff Capital Region (CCR) which would unlock further employment opportunities.

Wider community benefits would follow for local residents through better access to local public services, like care homes, hospitals and schools, and also better access to leisure facilities. There would also be environmental benefits by incentivising modal shift from road to more sustainable forms of transport. With about a quarter of CO₂ emissions in Cardiff coming from cars and trucks the potential modal shift away from road transport offers significant environmental benefits. This modal shift would also reduce the levels of congestion on existing roads and offer further benefits in the form of improvements in the flow of traffic.

The significant economic benefits will be linked directly to the total amount of capital investment that the Metro will generate. The initial £800m of infrastructure investment will provide a direct boost to local employment during the construction phase. The impact multiplier effect for construction investment in Wales is significant and is higher than most other forms of investment. However, the proportion of activities utilising Welsh firms within construction supply chains will need to rise

significantly in order to maximise the local economic impact. Procurement rules for the construction phase of the Metro will need to be used judiciously in order to create the potential for many more jobs in the area.

But the construction phase is only the start of the process and the potential impact of the Metro on the Welsh economy will be much greater. Increased rail capacity and improved connectivity can raise productivity and improve the working of the regional labour market but it will also bring wider potential benefits by facilitating the growth of business clusters in the Cardiff Capital Region and facilitating ‘agglomeration economies’.

These benefits arise as improved connectivity enables more economic activity to take place in urban centres where high-density agglomerations of activity can lead to greater creativity and higher productivity. This virtuous circle is achieved by increasing the potential market for firms; by increasing the use of local intermediate inputs and allowing firms to specialise in different stages of the supply chain; by creating a wider pool of labour that allows better matching between supply and demand; and by providing greater opportunities to share knowledge of innovative activity. These agglomeration effects typically add between 10% and 40% to the conventionally measured direct economic benefits.

Because of the size and duration of the Metro investment and its ability to harness agglomeration economies it is useful to distinguish between the medium term economic impacts of the investment in new and improved infrastructure and the wider, longer term ‘catalytic impacts’.

The medium term impacts (both direct and indirect) would include those benefits generated by the electrification of existing lines and the investment in new lines as well as the investment in rolling stock, new stations and the ongoing operation of the Metro once it is built.

The medium term impacts will be generated by the high quality rapid transit corridors created by the Metro, which have the potential to generate economic activity both around key terminal destinations and along the new transport corridors. However, the potential medium term impact of the Metro project would depend on the

amount of local sourcing embodied in every element of the development.

The wider, longer-term catalytic benefits that are generated by the Metro would be those positive impacts on productivity, agglomeration and the labour market that are likely to occur as the Metro becomes embedded into the regional economy and attracts further investment.

These catalytic impacts will arise from the effect that better connectivity will have on the Cardiff Capital Region in terms of enhancing business competitiveness. For example, an expanded commercial hinterland connected to quality labour will enhance the productivity of local firms by providing better access to suppliers and customers. The increased availability of valuable land around the new and expanded stations will favour the development of local business parks and improvement in inter-modal transport facilities across the region. This will act as a further magnet for inward investment and business growth in the CCR.

However, these medium term impacts and longer-term catalytic effects will depend on a number of factors - like productivity improvements and inward investment - that cannot be guaranteed. They would require a concerted effort to maximise the potential impact of the Metro and the intermodal connectivity that it offers - including the links to the electrified main line, the expanded capacity at Cardiff airport and the links to other regional developments such as the new Convention Centres and the Valleys Regional Park.

From the outset it is important that a programme team – the Metro Growth Team - is set up and charged with maximising the economic benefits and ensuring that every growth opportunity is harnessed. This would include identifying business development prospects adjacent to Metro stations and interchanges; identifying skills needs and apprenticeship opportunities during the roll out and maintenance of the track; working with the supply chain to maximise local content; looking at regeneration possibilities along the main commuting corridors; and developing synergies with the Valleys Regional Park and the airport.

In effect, the Growth Team will need to help put in place a coordinated investment plan to enhance the longer-term catalytic impacts of the Metro in both the construction phase, the roll out of services and the longer term utilisation and future development phases.

The Metro project is hugely important for Wales but, now that the tender has been won, we need to set down some challenging targets in order to maximise the regional economic impact.



Brian Morgan

Brian Morgan is Professor of Entrepreneurship at Cardiff Metropolitan University and is Director of its Creative Leadership and Enterprise Centre (CLEC).

Before returning to academia in 1997 he was Chief Economist at the WDA. He has advised the Welsh Government on several issues. In 2013 he produced the Business Rates Wales Review, and since 2016 has been a member of the Valleys Task Force. He is currently Economic Advisor to the Regulatory Policy Committee in Whitehall.

He is or has been a Director of a number of businesses in Wales. He is also the Founder and was first Chairman of Penderyn Whisky. In 2006 Brian was awarded the Hopkins Medal by the St David's Society of New York for his contribution to entrepreneurship and for creating the Penderyn Whisky brand.

PART OF THE MIX, BUT NO SILVER BULLET

Dr Mark Lang argues for integrating Metro planning and economic policy with well-being

In 2016 I was asked by the Federation of Small Businesses Wales to consider the potential local economic impacts of the Cardiff Capital Region Metro¹. The report welcomed the proposals to improve public transport infrastructure and services in South East Wales.

Since the decimation of the area's railway infrastructure as a result of the misguided short-termism of the Beeching cuts, the region has suffered more than many from poor public transport. Research in 2014 found, for example, that it was actually quicker and more direct to travel by public transport from Tredegar to Newport in 1958 than it is today². On the other hand, the report was sceptical about the hype that has built up around the Metro, and particularly about the significant claims that have been made about its 'transformative' power to improve the region's economy. To add perspective, it considered the Metro proposals within the context of the broader economic landscape. As well as understanding the socio-economic context in South East Wales, it also identified the mixed evidence concerning the impact of large-scale transport investments internationally.

Many of the arguments and justification put forward in support of the public investment for the Metro appear to derive from a belief that it will make the Cardiff city region more 'competitive' and, therefore, more prosperous. Debate and discussion about the Metro has, so far, failed to reflect on the 'collaborate to compete' perspective on local economic development, nor has it really considered foundational economics. This is an important omission, as the foundation economy is critical to the long-term social and economic sustainability of South East Wales. This point has been recently accepted by Welsh Government with the publication of its latest economic strategy³.

If this omission is not addressed, there is a danger that important opportunities to support local and distributed economies across South East Wales, as a means to achieve more 'inclusive' and sustainable growth, will be missed. Much will depend on what measurements of success are used in taking the Metro forward. I have argued elsewhere, that measurements of success should be more closely associated with a 'well-being economy' more clearly linked to the requirements of the Well-being of Future Generations Act than with an overriding concern with regional growth and GVA⁴.

More recently there has been an emphasis on the ability of so-called 'metro hubs' to support local economic development. As the FSB Report highlighted however, there is little international evidence concerning the non-transport benefits associated with transport infrastructure investments. There is a shortage of robust methodological approaches that can connect transport investment with social and economic outcomes. What evidence does exist about the impact of metro style hubs suggests that context is critical, as internationally such transport hubs have had negative and indifferent, as well as positive effects⁵.

The spatial context appears to be critical in determining who benefits from investment, yet there has been little spatial analysis forthcoming, and what analysis has been undertaken has some major shortcomings. The question of who will benefit from the Metro investment – centre or periphery – largely remains unanswered. There is then, a major need to improve whole-place planning in Wales if the benefits of the Metro are to accrue equitably across the region. If delivered inaccurately, the network could cut across existing local economies and weaken them even further.

1 Lang, M. (2016) *On the Right Track?* FSB Wales: Cardiff.

2 Adamson, D. and Lang, M. (2014) *Toward A New Settlement: A Deep Place Approach to Equitable and Sustainable Places*. CREW Merthyr Tydfil.

3 Welsh Government (2017). *Property for All: Economic Action Plan*. Welsh Government: Cardiff.

4 Lang, M. and Marsden, T. (2017) *Rethinking Growth: Toward the Well-being Economy*. PLACE: Cardiff.

5 See, for example: Cervero, R. and Landis, J. (1997). 'Twenty Years of the Bay Area Rapid Transit System: Land Use and Development Impacts', *Transport Research A*, 31:309-333.

The Metro has the potential to offer a scheme that garners widespread political support, and helps to build the architecture for the city region experiment and City Deal programme. This approach fits with an emphasis on internationally competitive cities, an agenda that has come to dominate economic priorities in Wales. Placing an overriding emphasis on securing foreign direct investment, however, risks overlooking opportunities to support Wales' existing and small businesses.

In the context of the Metro, it is important to understand that the overriding economic rationale for the investment has, thus far, been based on a particular view of the regional economy. There is a need for much greater debate on how the Metro can contribute to an alternative, more sustainable vision for the future of South East Wales, much more closely attuned to the requirements of the Well-being of Future Generations Act. As a major public transport initiative, it certainly has the potential to add much to this objective.

The extremely poor transport network in South East Wales cannot be ignored, and the Metro has the potential to offer much in this respect. The reality is however, that transport or any other form of infrastructural investment, will not in itself address the underlying economic problems of South East Wales or the social consequences. The balance of international evidence suggests that transport investment is not, as some would argue, a social and economic 'silver bullet'. On the other hand, public transport can form part of the broad mix of issues that contribute to sustainable place-making. The Metro could become a grid like network, helping to integrate communities and local economies across South East Wales. It could help secure sustainable and equitable outcomes. Equally, it could also become part of the series of factors that have contributed to the decline of local economies in communities across the region. Much depends on its rationale, how we chose to measure its success, and the evidence available to support its successful implementation.

RECOMMENDATIONS

1. There needs to be a serious consideration of how success is measured. Thus far regional priorities have been overwhelmingly based on growth and GVA, but there are major shortcomings in these as measurements of success.
2. There needs to be detailed whole-place planning in towns and communities across South East Wales. This will help progressively guide the implication of the Metro as part of a wider mix of interventions.
3. There needs to be greater integration between the Metro and economic policy, as well as with the Well-being of Future Generations Act. Thus far, well-being assessments have not fully integrated with economic policy, and vice versa.
4. There needs to be less unrealistic hype about the Metro, and more realism about what it may actually deliver.



Mark Lang

Mark Lang is an independent social and economic researcher who has occupied a number of key roles in the public, private and voluntary sectors over the last 18 years. He is an Honorary University Associate at the Sustainable Places Research Institute, Cardiff University. His research interests tend to focus on social and ecological economics, sustainable place-making and the anti-poverty agenda.

BEYOND THE MAP OF COLOURFUL LINES

Wendy Maden and Francesca Sartorio outline a three-tiered approach to planning the city region

The south Wales Metro provides a major opportunity to develop a truly regional approach to planning, in order to provide better and more sustainable urban developments within a valuable and valued landscape, shaped by the uniquely Welsh interaction of nature and history. But to realise this regional potential, communities and government will need to come together to devise and implement a multi-level methodology for the development of place-based, transit-oriented environments across the region.

Designing transit networks is a complex task, one that requires effort at all stages: from the formation of the initial idea, to the development of coalitions of interests to sustain it through to delivery. At the time of writing the south Wales Metro seems to have passed its first stages and its plans might soon move from drawing boards to building sites across the region. Yet, to transfer a relatively flat graph of colourful lines and chunky dots to a complex territory such as ours - from the deep Valleys to the scenic coastline, from the strong communities at the head of the valleys to the Welsh metropolis of the south - might not be entirely straightforward.

A large part of the rail network is already fixed, but as it develops and extends its reach it will need to adapt to fit its context, and possibly *vice versa*. The Metro will have to develop alongside the region, with its natural and man-made environment; the various nodes and their characteristic forms; and a variety of individual sites - making the most of the peaks and peculiarities of the local administrative and political culture, taking regional planning seriously by working flexibly up and down the scales and acknowledging south Wales' place in space and time.

To do this effectively, the planning approach will need to distinguish between, and knit together, the demands of the differing scales of urban development and their necessary connectivity. What follows is an exploration of this multi-scale approach to the design of what much of the research literature describes as 'transit-oriented development' (TOD) - an approach that can be used to integrate transit systems sustainably into existing settlements.

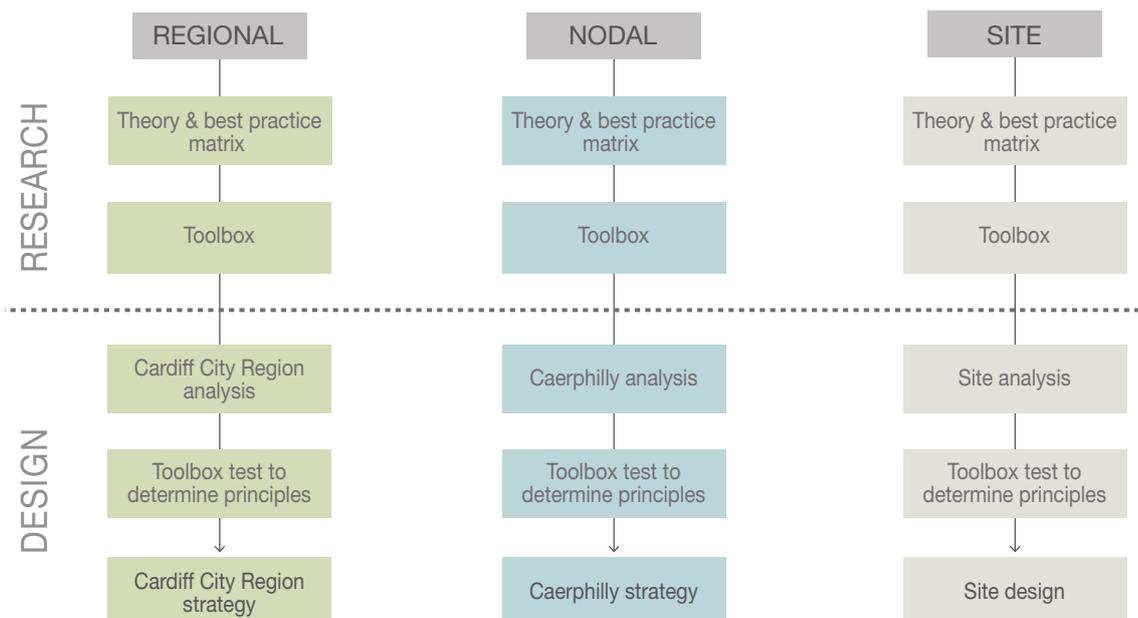


Figure 1: Methodology

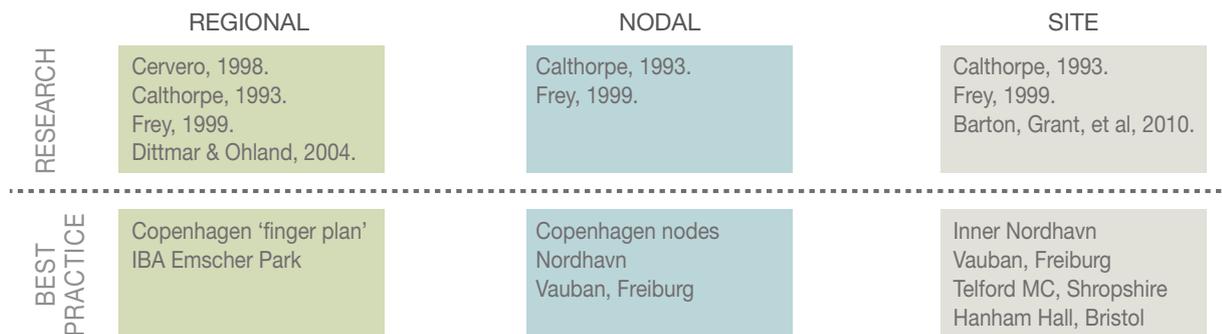


Figure 2: Multi-scalar TOD theory and best practice

The approach needs to operate at three levels – the region, identifiable nodes of development and individual sites. While each of these will have their individual characteristics, they do not work independently of one another, especially in encouraging transit use. Our approach is innovative as it looks at the natural and human context as a constituent part of the new system, whilst drawing on literature and best practice from elsewhere, suggesting a flexible method to provide relevant design principles applicable to different contexts. The following diagram summarises our methodology and anticipates the content of the next sections.

CONTEXT

In order to develop an innovative inter-scalar approach to designing TOD settlements for South Wales, we undertook a thorough literature and best practice review to ascertain the feasibility of the various approaches developed elsewhere, and their limitations, at the scale of the region, the node and the site. We drew our matrix and toolbox from Calthorpe (1993); Cervero (1998); Frey (1999); Dittmar & Ohland (2004); Barton, Grant, et al (2010) and from best practice and precedents in Copenhagen, IBA Emscher Park, Nordhavn, Freiburg, Telford and Bristol.

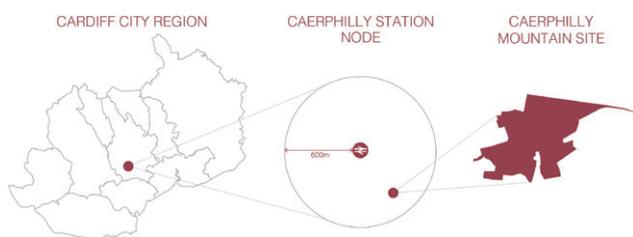


Figure 3: Site selection

From this research, a theory matrix and usable toolbox have been created for each of the three scales (regional, node and site), which allow planning and design practitioners to easily and quickly determine a set of TOD principles most applicable to their particular site. In order to test the matrices and toolboxes for usability, we applied the approach to the Cardiff Capital region, to envisage spatial strategies i) for the region, ii) for a node - Caerphilly, and iii) for a 500 unit sustainable TOD neighbourhood within walking distance of the Caerphilly transit node.

THE CAERPHILLY TEST-BED

In order to demonstrate how the toolbox works, we chose a site which would soon be impacted by the new transit system, that provides a challenging scenario, and is of interest at the three scales of regional, nodal and site. The proposed Metro scheme for the Cardiff Capital Region certainly provides a challenging scenario. Since the scheme is based on existing transport infrastructure, TOD concepts at regional level will have to be retrofitted onto that infrastructure and settlement form. At the nodal level TOD will have to work around existing stations in developed towns, just as site design will have to consider and the existing settlement and node context. Moreover, optimising the potential for TOD at the various scales in the Cardiff Capital Region will also have to meet

challenges posed by varied topography and by wealth disparity between settlements that have developed organically over the last 100 years or so (WG 2016).

From the many nodes within the region, we have selected Caerphilly to test this approach because it is medium-sized and located to the north of Cardiff where various regional employment policies identify potential for job growth. The *Our Valleys, Our Future* task force recently designated Caerphilly as a hub for employment and residential growth. (WG, 2017) In addition, Caerphilly Business Park, which is located within 600m of the transit stop, contains an enterprise innovation centre. This provides the Caerphilly node with a focus for job provision in its own right, rather than sole dependency on Cardiff and Newport for employment.

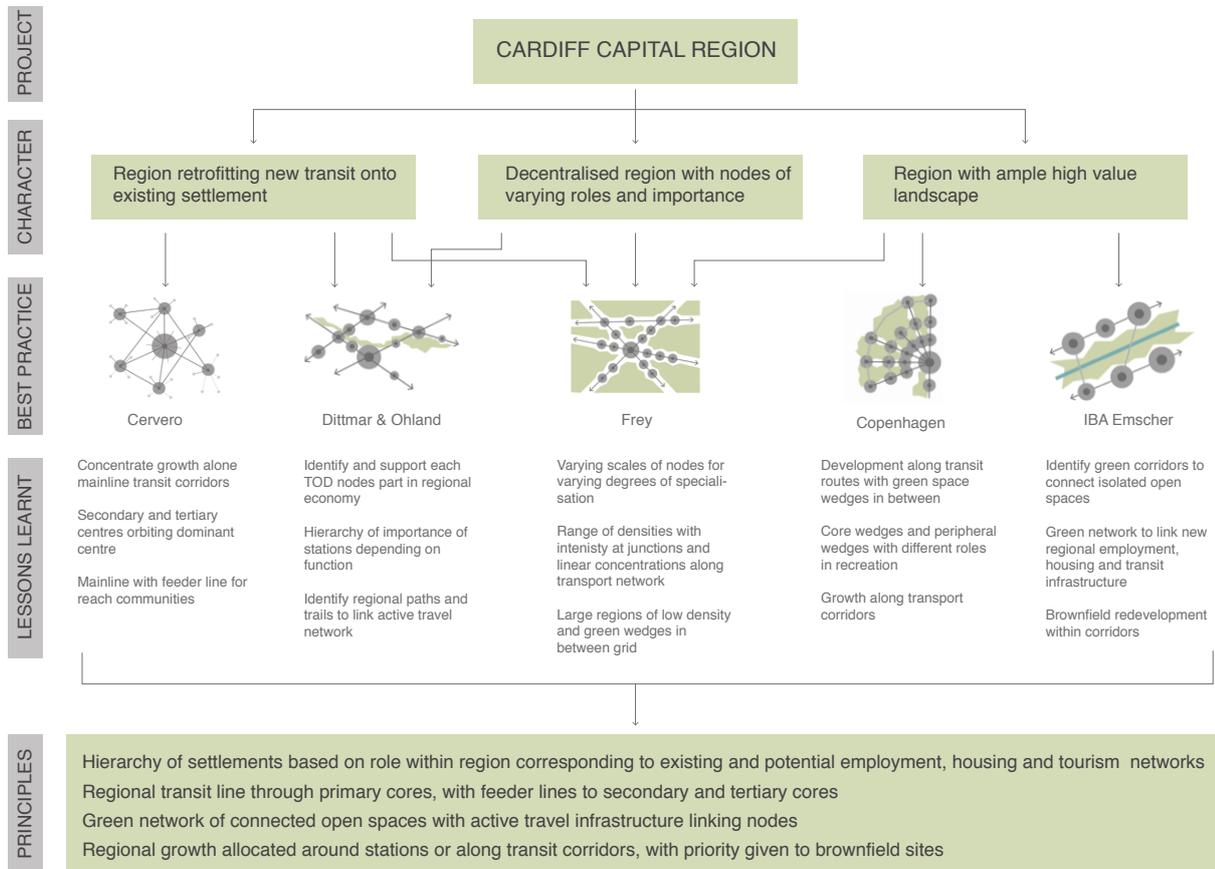


Figure 4: Determining the principles applicable to the Cardiff Capital Region

Additionally, Caerphilly has a large mixed-use development site within 600m of the transit stop, which provides a suitable site design test case. In the subsequently withdrawn 2015 Deposit Caerphilly LDP, the 25ha site was allocated for 500 units with some mixed use. It is adjacent to the rail line. Current plans for the Metro suggest that Caerphilly will be served with faster, more frequent, higher capacity services to Cardiff, making the node, and this site in particular, far more sustainable in terms of transport provision.

Once we focused on our specific test site in Caerphilly, we used the character traits determined from the regional analysis to apply the toolbox to its context. The theory matrices indicate the lessons and principles extracted from the relevant best practice examples. These can then be used to determine a set of principles to develop the TOD strategy for the region. Below is a diagram indicating the principles applicable in the Cardiff Capital Region and a synthetic representation of how these can be elaborated in a regional strategy.

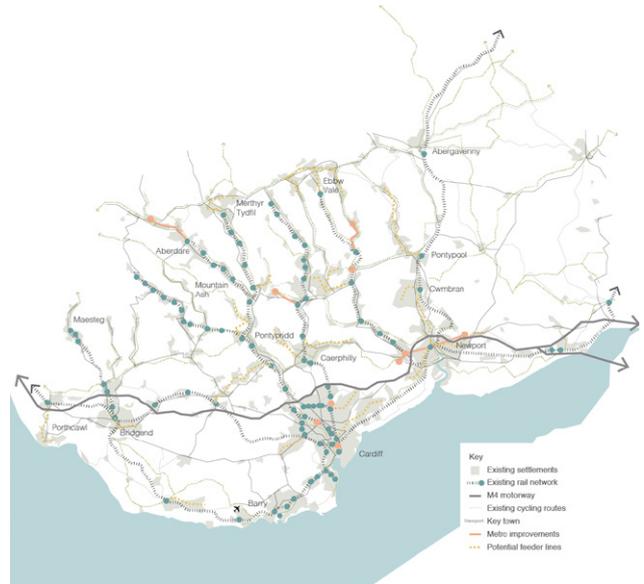


Figure 6: Cardiff Capital Region Movement Strategy

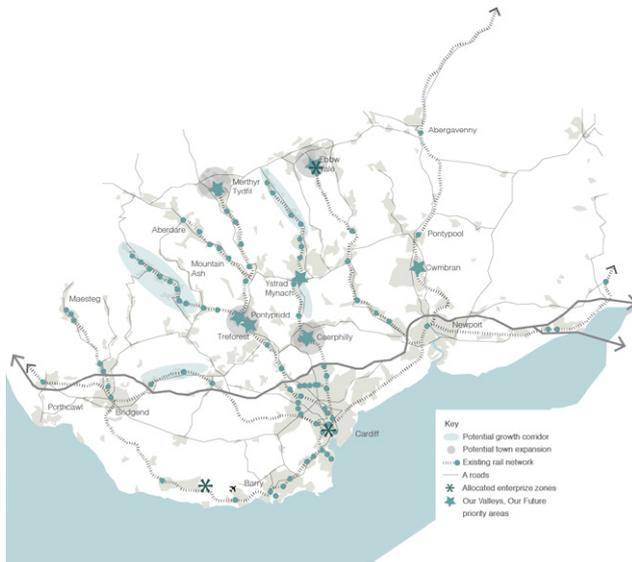


Figure 5: Cardiff Capital Region Growth Strategy



Figure 7: Cardiff Capital Region Green Network Strategy

Once the principles applicable at regional level were set, we followed a similar path to establish what best practice and learning could be applied at the nodal level and this enabled us to determine the principles relevant to the Caerphilly node.

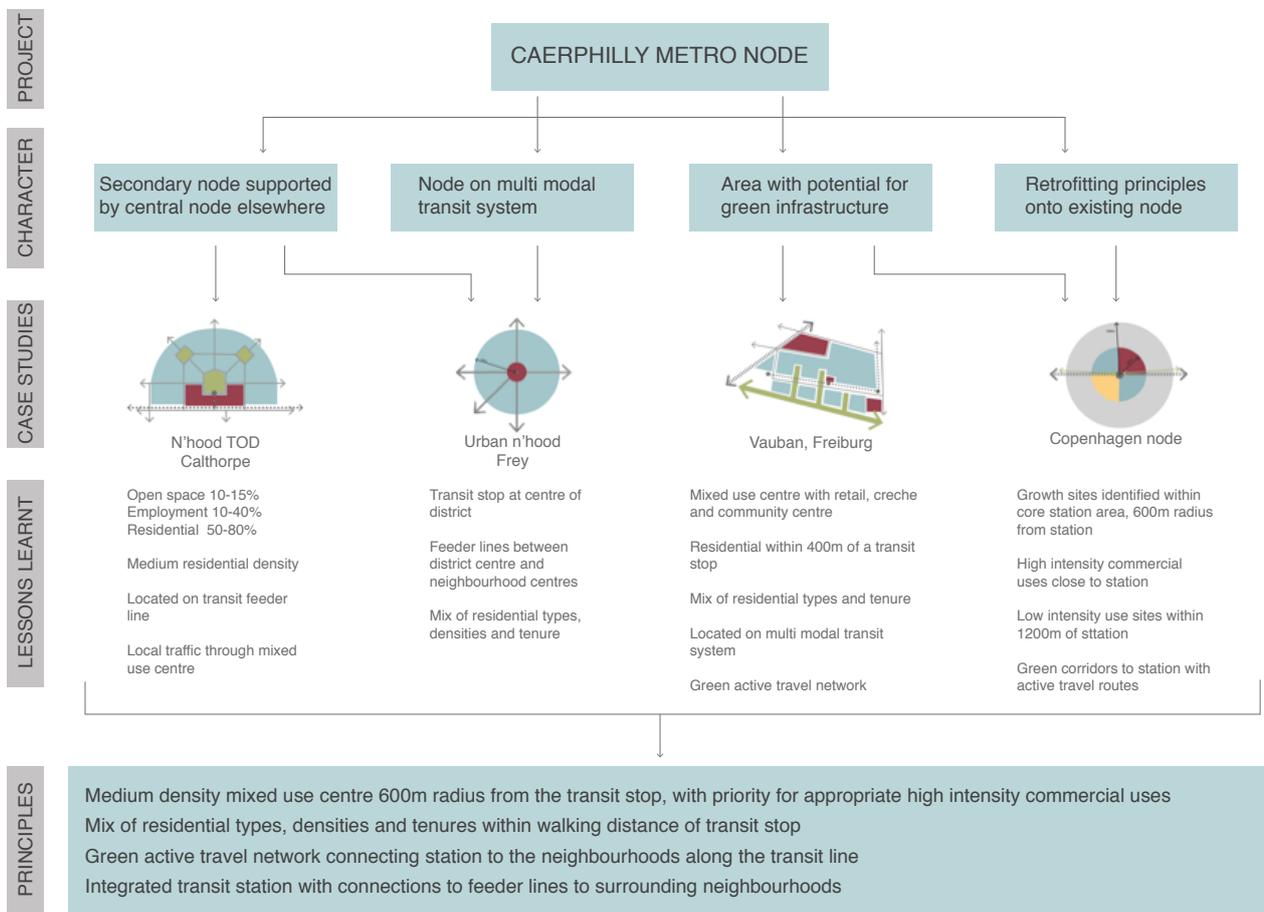


Figure 8: Determining the principles applicable to the Caerphilly node

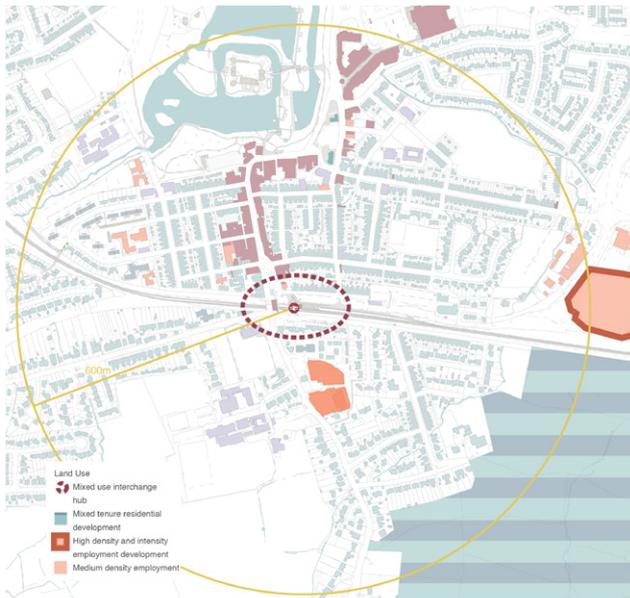


Figure 9: Caerphilly node - Opportunity Sites Strategy



Figure 11: Caerphilly node Green Network Strategy

Following the principles that emerged from this process, we developed three guiding strategies for Caerphilly (see Fig 9, 10 and 11):



Figure 10: Caerphilly node Movement Strategy

- 1 The *opportunity sites strategy* highlights the potential for an improved mixed use interchange, whilst stressing the importance of putting appropriate use and density on the three development sites within 600m of the node. The limited amount of mixed tenure residential indicates that the proposed 500 dwelling site to the south east of the station should endeavour to provide a mix of residential types, densities and tenures as it is within walking distance of the station.
- 2 The *transport strategy* alleviates the vehicular pressures through the high street and makes this key route active travel and bus only. The redirected traffic can cross the rail line through the proposed development site to the south-east, which has been allocated for a bypass in the current local plan (2010). To serve this new development, a new bus stop is proposed on the road south to Cardiff, increasing opportunities for residents to use transit. The transport strategy aims to optimise the multi-

modal interchange by providing cycle rental which is linked to other rental hubs around the node and wider Caerphilly County Borough area, making cycling easy and convenient. To support this, increased cycling infrastructure is necessary to connect destinations within the area.

- 3 The *green strategy* proposes extended allotments on the land to the south east of the station, to increase the opportunities for local food production and internalising of trips within the node. An improved

cycling network connected to the station should increase the number of people undertaking active travel. Additionally, a network of cycle rental hubs connecting key destinations like the station, Caerphilly Business Park and local tourist attractions is identified.

Finally, the application of the matrix to the site characteristics enabled us to develop a design brief which is stringent on what is crucial for the development of a TOD, but flexible enough to take into account market variability and policy changes.

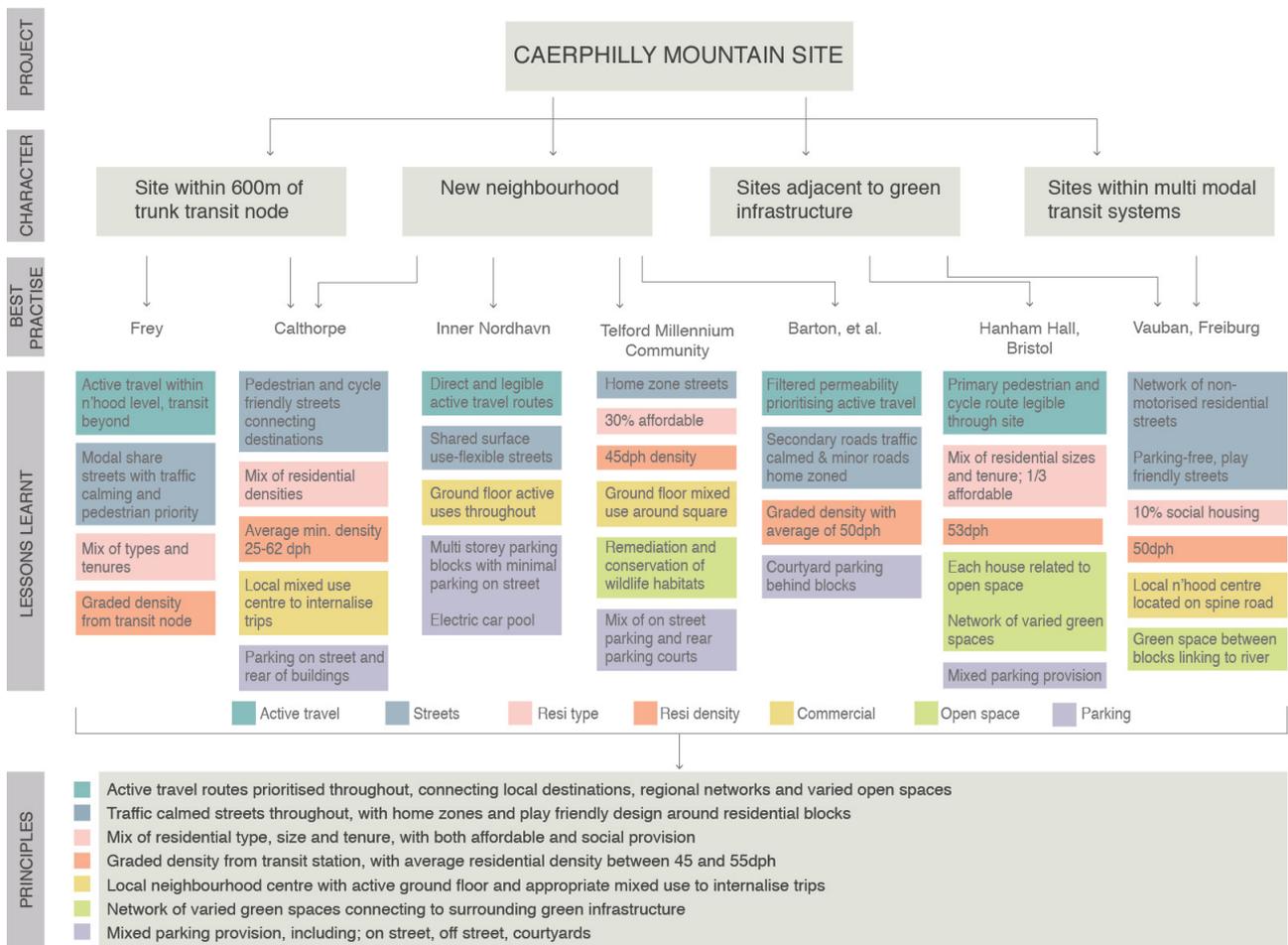


Figure 12: Determining the principles applicable to the Caerphilly site



Figure 13: Spatial Strategy for the Caerphilly site

We tested the principles by developing one of the possible spatial strategies. The priority of this spatial framework is to use the TOD principle of high density to allow land to be developed more efficiently. As such, when the required 500 units are delivered at a density of 45dph rather than the standard densities of around 30dph, the extent of the site is drastically reduced from 29 to 16 ha. This preserves valuable landscape for recreation and allows development to take place on the flattest parts of the site, avoiding the most challenging levels to the south of the site. The site boundary, therefore, has been reconfigured with regard to the natural boundaries and contours of the site. The spatial framework comprises a primary N-S movement route, with two secondary routes E-W. The built area is then broken into legible and permeable blocks. The neighbourhood centre is located on the spine road to the north of the site, so is highly

visible and benefits from passing trade and proximity to Caerphilly Business Park to the north of the site. Valuable green space is retained, green routes link through the site into the context and blocks interface in varied ways with the green infrastructure.

Whilst, admittedly, what is presented here is just an initial exploration of our newly developed methodology for a multi-scalar approach to designing new TODs in the Cardiff Capital Region, our findings seem to indicate that only a methodology that takes into account the peculiarities of place in space and time – emphasising regional character, node peculiarities and site forms – can support the effective development of transport and travel infrastructure that go hand in hand with new sustainable neighbourhoods fit for south Wales in the new millennium.

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Francesca Sartorio

Francesca Sartorio is a lecturer in planning at Cardiff University. Prior to her move to Cardiff in 2004 she worked both in practice and in academia in Scotland, Germany and Italy. She holds a PhD in territorial and urban planning from the University of Rome La Sapienza. Her research has focused on strategic planning practices, stakeholder engagement in planning processes and urban design cultures. Her teaching covers planning systems, comparative planning studies, urban design, and participation and engagement in planning. She has been Editor of the Journal of International Planning Studies since 2006 and a Director and Trustee of Planning Aid Wales (2009-17) and a member of the Civic Trust Cymru Policy Advisory Group (2014-16).

MIND THE GAP – THE STRATEGIC PLANNING VACUUM

Neil Harris and Brian Webb make the case for an enhanced strategic planning capacity

INTRODUCTION

The Metro has the capacity to transform South East Wales – a major project of regional significance and with extensive implications for the spatial development of the region. The absence of a strategic planning framework within which to understand the long-term implications of Metro is a concern. Recent legislation¹ has given planners powers to engage in strategic land-use planning, yet there is limited appetite to prepare Strategic Development Plans in key parts of Wales. The risk is that the Metro, as a major transport project, will be divorced from consideration of strategic land-use planning. This article explores how to fill this strategic planning gap in South East Wales.

METRO – A MAJOR PROJECT IN A STRATEGIC PLANNING VACUUM

Land use and transportation are two critical ingredients for the effective functioning of a place. Everybody recognises the importance of integrating land use and transportation, and everyone feels the negative effects when we get it wrong – we find it difficult to get around, find that facilities are not accessible to us, or that things are just ‘in the wrong place’. We may invest in projects that turn out to be redundant, or underperform, because we didn’t consider the impacts of land use and transportation on each other. And this is the challenge we face with Metro – in investing an initial £734million in the enhancement of the transportation network in South East Wales, how exactly does that project fit into the strategic land-use planning framework for the region?

This is not an easy question to answer, because we don’t have a strategic planning framework for South East Wales within which to contextualise a project of this scale. We desperately need such a framework to integrate the transport, travel and mobility issues that Metro raises with the wider range of considerations for the sustainable development of this complex, interdependent region. This framework needs to explore in an integrated way the social, economic and environmental resources and opportunities of the region, as well as its challenges, and do this strategically – in

terms of both scale and ways of thinking. We need that framework sooner rather than later, as we are already playing catch-up in developing a spatial vision for South East Wales.

STRATEGIC PLANNING OF SOUTH EAST WALES – THE PROMISES AND FAILURES OF THE PAST

Academics refer to past efforts at the strategic planning of South East Wales, arguing that you need to go back to the 1940s to find the last attempt of any significance to plan the region. The county councils later provided some form of strategic planning through structure plans, but these fragmented South East Wales into a series of comparatively small areas. The downplaying of strategic planning continued with unitary local government in the 1990s, to which planners responded by trying to build from the bottom-up some form of strategic planning guidance. The informal nature of this guidance left it toothless in securing any real influence over the strategic development of South East Wales. The Welsh Government’s later efforts to inject strategic spatial thinking into the region through the Wales Spatial Plan also faltered. What does this brief retrospective tell us? A pessimistic view sees this history as one of a region desperately in need of strategic planning, where it has been almost seventy years since anyone tackled the task with any degree of success.

NEW OPPORTUNITIES

Even a brief historical account shows that political and administrative arrangements matter to strategic planning. We have a city-region fragmented into ten small political-administrative units. Each unit identifies its boundary, and ‘paints in’ the land use planning issues affecting the locality, and allocates land for housing, employment, infrastructure, and other uses. However, new opportunities are emerging to do planning differently.

¹ Welsh Government

The establishment of the Cardiff Capital Region and introduction of the City Deal, which has provided funds necessary to create the Metro, has helped bring the ten disparate authorities of the region together, and tries to reframe a range of economic issues not as local problems but as regional challenges to be collectively addressed. At the same time, Welsh Government is preparing a National Development Framework, and powers were introduced a few years ago to enable local planning authorities to collaborate on Strategic Development Plans. These powers were thought necessary to tackle the strategic planning deficit in Wales, and especially in South East Wales. There nevertheless seems to be some reluctance – or at least a lack of urgency – in using these powers. What might explain this apparent reluctance – or perhaps inability – to collaborate on strategic planning across South East Wales? We identify in the rest of this article what we think needs to happen to establish a strategic planning framework for South East Wales, a framework that can guide and manage the impacts of Metro, but also goes well beyond the singular project of Metro.

WHAT, EXACTLY, ARE WE DEALING WITH? SOUTH EAST WALES AS PLACE

Strategic planning, like many forms of planning, often starts with developing an understanding of a place. How does South East Wales work? What are its strengths? What are its deficiencies? What are its interdependencies? We don't argue that a strategic planning framework needs to engage in a lengthy survey phase that kicks any progress in setting out a framework for the region several years down the line. Yet we do need a focused exercise on how the region works to support any sensible attempt at defining a possible future for South East Wales.

This exercise could concentrate on core issues of the economy, infrastructure, mobility, societal and economic resources, and so on (an initial mapping of which can be found in the City Region Exchange's 'State of the City Region' report for the Cardiff Capital Region²). It could extend to issues of environmental resources

and capacity, and the character of the region in social and cultural terms. Importantly, we don't need to start from scratch, and can build on what we already know about how South East Wales 'works', and fill in any critical gaps in our knowledge. Most importantly what we don't want is a generic, cookie-cutter plan for the region that mentions all the current buzzwords but lacks depth of understanding about what makes South East Wales unique.

THE IMPORTANCE OF SPATIAL VISION

Developing an effective strategic planning framework is as much a political exercise as a technical one. Politicians will need to guide a spatial vision for South East Wales. This will mean identifying genuinely strategic issues while ensuring local issues are dealt with locally. If we can fairly readily identify how our region works, then we need to build a vision for the future of our region. What kind of place will it be? The critical question in developing a spatial vision for the region is also 'where will things happen?' This means some places will get certain benefits and others will get different ones. It is about recognising the diversity of South East Wales and its interconnected needs. Identifying where things will happen also engenders a sense of permanence about where we are going, how we are going to get there, and how might we evaluate success. This calls for intense political work, avoiding the region being no more than the sum of its present administrative parts.

BUILDING CAPACITY FOR STRATEGIC PLANNING

The capacity to engage in strategic planning has progressively been eroded over the past twenty years. This is true in various parts of the United Kingdom as organisations for strategic planning have been dismantled. The loss of skills and expertise in strategic planning also means that there are very few professionals with significant experience in this critical area. Some of the skills planners already have in the planning of their local authority areas can be 'scaled up'. Yet dealing with a region does present

² <http://www.cardiff.ac.uk/city-region-exchange/resources/state-of-the-city-region>

different challenges – and it will need planners or other professionals who can think at this scale, thinking strategically in terms of both scale and ways of working. We will need people who can navigate complex issues, and shape the region over the longer-term.

A CULTURAL CHANGE TO SUPPORT STRATEGIC PLANNING

The challenge is not only about skills and capacity, but also culture. There has been a great deal of talk of developing a more positive culture in planning in Wales. So, what is it culturally that risks holding back a strategic plan or vision for South East Wales? We need to learn to see the region as a region – a place that is functionally interdependent, and planned as a whole; a region that, importantly, functions in social, economic and environmental terms. We need to leave behind an approach to thinking of the region in exclusively economic terms, in which each part of the region secures its preferred economic development project. We also need a change in political culture to ensure that there is a voice for the region, and that there is a proper recognition of the distinction between regional and local factors.

CONCLUSIONS

The question *'what can we do to set a strategic planning context for Metro?'* is being asked too late. The question indicates that a strategic planning vision will now be built around a transportation project, rather than a transportation project helping to deliver some wider spatial vision of development and activity across South East Wales. This does not mean that a strategic plan is no longer worthwhile, but it does mean critical parameters for South East Wales' future development have been set in the absence of any spatial vision for the region. We need to put that vision in place, built on a sound understanding of what South East Wales is, where it wants to go, and how to get there. This calls for political vision and professional capacity, and if present institutions cannot deliver this, then we need to establish ones that can.



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TRANSFORMATION MUST START WITH GOOD DESIGN

Carole-Anne Davies, Chief Executive, Design Commission for Wales, argues that design must be understood, championed and protected

In Paris in 2016, and later that year at the LSE, Lord Stern set out the once in lifetime opportunity (that just about still exists) for the transformation of our economy and the achievement of greater resilience against the effects of climate change. The opportunity is local and global. Much of it resides in using the public purse to achieve genuine public value and a good deal of it arises from our infrastructure needs.

We cannot afford to stand paralysed as we watch the Arctic ice retreat dramatically. Whilst our context is challenging it is not without opportunities and Stern was crystal clear on the pros and cons:

“The way investments are made, in transport, energy, water, buildings and land, will determine whether we can hold global warming to well below 2 centigrade degrees, or whether we are doomed to cities where people can neither move nor breathe, and to ecosystems that will collapse. If we get it right, making all future infrastructure investment sustainable, we will boost growth in the shorter term, launch a dynamic wave of innovation and growth in the medium term, and embark on the only long-term growth path which can be sustained. The consequences of getting it wrong are unthinkable.”¹

In Wales right now we hold a clutch of opportunities in our palms. The introduction of the National Development Framework and the opportunity for strategic and spatial planning; a place-led emphasis in national planning policy; ambitious infrastructure plans; culture-led revivals of historically important assets such as at Cyfarthfa, in Merthyr Tydfil; and improved connectivity across our long separated valleys. We have all to play for. If Stern were seeking a place in the UK with its ducks already in a row, surely that place should be Wales.

At the top of the list of Welsh projects is the Metro, large scale in its level of investment, its ambition and the scope of its potential. The transformation of key elements of public transport in Wales is perhaps the most important project on the table, holding as it does the capacity to galvanise and enable many other

developments. But if is to realise this potential, it must demonstrate commitment to the highest design quality and embed that commitment in the project’s DNA.

Design must be understood, championed and protected at political and executive level. It must be invested in across every aspect and fully integrated in the daily working practices of those who are responsible for delivery.

Here in 2018 the clock ticks on Metro. Key appointments have been made that crank up the momentum toward delivery. The profile of the project is high as is public expectation. The list of ‘we will’ items published in the project information carries commitments that rely fundamentally on high design quality for their success. From information and ticketing to end to end wifi and apps, from signage and wayfinding to increased frequency and service capacity, from new and refurbished stock and stations – across all these the success or otherwise of Metro will be judged on the quality of problem solving, AKA design.

Sound, creative, innovative problem-solving has been repeatedly shown to lift necessary development out of the ordinary. It is achievable only through the retention of exceptional design expertise and the consistent application of design processes, end to end. For transformative impact on quality of life, connectivity and environmental enhancement, design must be at the core – at the very heart.

This was recently expressed in the Assessment Report of the National Infrastructure Commission, Chaired by Sir John Armitt:

“Good design can save money, reduce risks, add value, deliver more projects on time and create infrastructure that looks good and works well for everyone. All nationally significant infrastructure projects should have a board level design champion, and use an independent design panel to maximise the value provided by the infrastructure.”²

¹ <http://www.lse.ac.uk/GranthamInstitute/news/nicholas-stern-urges-world-leaders-to-invest-in-sustainable-infrastructure-during-signing-ceremony-for-paris-agreement-on-climate-change/>

² https://www.nic.org.uk/wp-content/uploads/CCS001_CCS0618917350-001_NIC-NIA_Accessible.pdf

Across all areas of ownership and operational responsibility, we ought to be able to slice a section through Metro and find good design apparent in every stratum.

We are not yet there. We have a small window of opportunity to lock in the design understanding, skill and commitment that can lift Metro beyond mere compliance. Compliance is not a strategic objective - it's a baseline obligation. Public value through customer experience, social value for the wider community, urban renewal, excellent engineering, urban design, architecture, place-making and whole life value for the long term, all require that we reach further and aim higher.

An inclusive, collaborative approach is crucial: a culture where learning is actively sought from those with wider experience, and applied toward a common purpose, focussed on quality and excellence. To facilitate this there is one more essential ingredient, which Stern also touched on - leadership. In every successful case study, leadership and the clarity of vision and openness that accompanies it, is the critical factor in realising higher outcomes.

Looking back we hail the vision pursued by the change-makers of history - whether Telford or Brunel, Curie or Turing; in engineering, architecture, science and technology. Too often today, hot on the heels of that wonderment at past achievements, comes the killer shut-down 'of course we couldn't do it here, not today'. Couldn't do what? Take a leadership position that commits to quality, ambition and accountability? Seize an economic opportunity through projects of a scale that stimulate and necessitate innovation? Invest public money not for short-term lowest capital cost but long term, highest quality, public good?

If we are to avoid the waste that blights the environment and all our lives, and avoid the sacrifice of the interests of future generations, we can and must do the right thing, in the wider public interest. In Wales we have already set down legislation for the wellbeing of future generations and embedded it in policy and a raft

of public duties. We have set in train a de-carbonisation agenda. We are so very close to using these and other tools effectively to change and raise our game. Now is not the time for a failure of nerve. As Stern reminds us:

"The transition to the zero-carbon economy can create vibrant and cohesive economies and communities, where we can tackle poverty on all its dimensions. Delay is profoundly dangerous. We know what to do. We look to you, as leaders of the world, to be just that, leaders."

And in case you were wondering – that means us.



Carole-Anne Davies

Carole-Anne Davies is Chief Executive of the Design Commission for Wales. A career predominantly in senior management roles followed her time in industry with Thorn EMI. She was previously Director of Cardiff Bay Arts Trust and a Trustee of Amgueddfa Cymru/National Museum Wales. In 2015 she was appointed founding Chair of The Gregynog Trust. Carole-Anne established a co-production business model at DCFW integrating the expertise of independent, multi-disciplinary, private sector professionals with that of the core staff team. She is an alumna of the CSCLeaders Commonwealth International Study Conference, of Harvard Kennedy School Executive Programme and the Cambridge Institute for Sustainability Leadership (CISL).

GATEWAY NOT PARKWAY: METRO STATIONS AS DISTINCTIVE PLACES

Professor Wayne Forster, Deputy Head of the Welsh School of Architecture, calls for design that privileges place-making over technology and function

“The old home town looks the same as I step down from the train”....

Tom Jones

“If a place can be defined as relational, historical and concerned with identity, then it is a “place” – the rest would be “non-places”, such as for example highways, airports and supermarkets.

Marc Augé¹

Too often new transport infrastructures produce non-places which do not reflect or relate to earlier places. Worryingly, this weakness may be about to be replicated in the new Metro stations of south Wales. The first attempts at visioning and making these stations seem founded on the ubiquitous and rather sterile ‘Parkway’ model. If only a few steps could be taken now, things could be different and the places created on our new Metro made memorable.

The transportation terminal now tends to be the supreme example of the non-place, despite often being the initial link by which a traveller or resident orients himself or herself to a particular place or settlement. This architectural experience is potentially one of great importance and significance, new spaces of experience often associated with territoriality and temporality. Defined thus the proposed Metro, its stations and associated spaces, hold huge potential.

THRESHOLD

Transportation terminals - points of arrival and departure - usually act as an individual’s first and, subsequently, their final engagement with the place. They both greet and bid farewell. As threshold spaces they are also spaces of transition from in transit to in locus. They are also a buffer zone between the road, rail and settlement and the link to destination. Architecture and topography are crucial factors in the experiencing of this threshold, a place that has the potential to provide moments of celebration and demarcation.

But what is the current reality? The traveller’s space has become the archetype of the ‘non-place’: spaces where consumerism, economics and worse, car-parking, are more apparent than spaces that maintain a connection to history, culture and identity; non-places that present themselves as processing machines for efficient human movement and displacement; places where passengers are processed and building function (if the stop is lucky enough to have one) supersedes beauty and the poetics of space.

More often they are spaces characterised by inadequate bus/train shelters surrounded only by acres of tarmac. Only the intervening hillside prevent those arriving and departing seeing right through to the next valley. In general these places are risible – no, make that miserable. Travellers are not allowed to understand let alone interact with the site specificity of the locations they traverse. This is the case because architectural sensibilities of place and local distinctiveness are often disregarded abandoning the meaningful potential of these places as spaces that can be remembered and imagined and that we can hold in the mind.

TRIBAL GROUND

The places within the area described as the South Wales Metro Region are diverse and wear their local differences proudly. Here local identity has and continues to mean more. The answers to ‘What’s your name? What do you do? And where are you from?’ will often provide a more accurate geographic location than Satnav, as well as pedigree and cultural profile.

The geographical shape and industrial history of the valleys have their effect on culture and place. The roads stringing along the valleys connect distinct settlements. Consequently, whilst the different towns in a valley are apparently closely associated with each other, difference is critical. For example, a visitor to the Sirhowy Valley, driving up a typical ‘bottom of the valley’ road snaking past terraced houses and groups through Risca, could be forgiven for not noticing that she had entered Cross Keys. But to the resident of Risca, Cross Keys is a foreign

¹ <http://www.lse.ac.uk/GranthamInstitute/news/nicholas-stern-urges-world-leaders-to-invest-in-sustainable-infrastructure-during-signing-ceremony-for-paris-agreement-on-climate-change/>

country and vice versa. Physical, cultural and societal boundaries are palpable. Rivalries are keenly preserved, feuds kept warm to be enjoyed on cold winter nights only to be suspended temporarily if someone from the next valley, or worse Newport, interferes.

This tribalism, whilst troublesome in terms of political cohesion and decision making, is vital in terms of place identity in South Wales. Here, in architecture, a critical regionalism is undeveloped and incoherent. Critical tribalism may better capture the zeitgeist. Difference could and should be celebrated through the architecture of the Metro. This would differ from many recent similar schemes in which the design of the transport interchange and associated gateway buildings is often treated in a generic, corporate way – flattening ideas of place.

COLLAGE AND BRICOLAGE

Colin Rowe, who was concerned with the relationship between buildings and their urban contexts, suggested that ideas can be assembled from found objects in the physical and historical context of site². The term *collage* comes from the French verb *coller*, the act of gluing or sticking together and *bricolage*, is defined as the putting together of seemingly dissimilar objects or pieces. Both *coller* and *bricolage* originated from the Greek term *kolla*, meaning glue. Urban design is often described, rightly, as glueing a place together.

AN URBAN PORTRAIT

In order to begin a dialogue around place recognition, it would be more creative to identify and access a reservoir of these 'found objects' and other pieces that would be useful - imaginatively and, at times, even physically - to designers of the new metro stations and connections.

The kind of information available in the now moribund Wales Spatial Plan and the more current CADW characterisation studies and other architectural guides won't do it. They merely describe and often isolate the past. In the absence of a WG Sebald who created narratives of place, weaving time and place together, or a Tim Robinson who re-mapped whole chunks of the West of Ireland by filling in the cultural and physical gaps

obliterated by the English Ordnance Survey, where will designers and developers be able to go for these clues – catalysts to the imagination?

One possibility, if it is not too late, is to make an urban portrait of the area which embraces a deeper and broader form of mapping. In 1949 T. Alwyn Lloyd and Herbert Jackson produced the impressive South Wales Outline Plan³, devised to guide the future development of the region. It seems that the proposed Metro has the potential to act as more of a catalyst for action than any more recent plan or policy document but it could be richly augmented by material that accompanies and informs design and privileges place over technology and function.



Wayne Forster

Professor Wayne Forster is deputy head of the Welsh School of Architecture. His role centres on academic leadership in design, teaching and learning and practice-based research through the School's

Design Research Unit. DRUw have won a number of design awards including RIBA awards for design in 2001 and 2010 and for research conducted in UK Universities in 2013.

In his approach to architecture, emphasis is placed on the geographical context of the building - on topography, climate, light and tectonic form and energy use and sustainability. This has dominated much of his work over the past 25 years both in the design studio and in more orthodox research work. He aims for an architecture that can encompass culture and nature, and the public and private arenas, creating "a place-conscious poetic".

2 C. Rowe and F Koetter, *Collage City* MIT Press, 1979

3 T.A. Lloyd and H.J. Jackson, *South Wales Plan for the South Wales and Monmouthshire Development Area*.

USER NEEDS

THE USER-CENTRIC 21ST CENTURY STATION

Jamie Tucker, a senior urban designer with Arup, says the human factor must be central in developing our rail stations

A high quality integrated transport system will impact positively on the economic and environmental wellbeing of Wales. It will also impact socially. It will affect communities and the daily lives of thousands of citizens including their physical and mental well-being. That is why consideration of human factors must be a primary concern and a design driver for the South Wales Metro.

We need to understand the traveller experience at all journey stages and meet their needs in an integrated and seamless manner. Metro should not be something that is done to people but with and for them. Technical excellence in the planning, design and delivery of transport infrastructure needs to be complemented by user-centric and holistic thinking that concerns people and place.

This step change in approach will help make public transport, and connected active travel options, the first choice for a wider range of users. The additional benefits are potentially considerable. For example, better journey choices and experiences can make for happier and healthier people. Less stressful journeys can make for more a productive workforce and invite visitors to explore the rich diversity of destinations and attractions Wales has to offer.

Despite the many and varied discussions on transport planning, rail technology and economic viability often associated with the South Wales Metro, it will be experienced at a human level. Understanding this and considering those who use it as 'customers' should be central to decision making. Customers using the Metro will be from all walks of life - the young, the old, the employee, the commuter and the visitor to name but a few.

THROUGH THE LENSES OF DIFFERENT USERS

Design decisions need to be viewed through these different lenses. They will need different support at different stages of their journey and throughout different times of the day and year. We need to understand how people use, move around and dwell in order to design, build and shape the places that will contain new and improved metro stations. It will also require us to rethink what a station is and how it functions.

We will need to understand how each of these groups is affected physically and mentally. There is an inextricable link between how we plan, manage and maintain the environment and the impact this has on our physical and mental well-being. Our transport systems are used by all of us every day and permeate all aspects of our lives from where we live and work to where we play and socialise. The experience of the daily commute can be fundamental in impacting negatively or positively on our health.

Metro stations should not be static, mono-use places used only for boarding and alighting from trains. When we contemplate what else stations could provide – things that can fit with users needs and aspirations and contribute to local place-making – we reveal immense opportunities to serve the needs of regular users and commuters - as individuals and as families - as well as the needs of visitors and businesses.

Regular users and **commuters** require ease of movement, convenience and facilities to improve this: places to pick up lunch and dinner, maybe use a gym or, possibly, the provision of flexible work hubs. We also need to consider how we can avoid social isolation and increase social interaction and enterprise by providing space at stations for cafes, bars and restaurants which can be used to meet over coffee or even have dinner. Food and beverage outlets might also better represent and support the region as well as assisting the health agenda by offering healthy, fresh produce.

Families also need to be catered for. Their needs will include family parking spaces, family friendly changing facilities and eateries, and areas for children to play safely. Locating nursery facilities adjacent to stations will also reduce further travel needs and offer parents more time with their children.

Cyclists will need safe, secure and attractive storage for bikes within the station area. Beyond this we need to consider how further active travel facilities can be integrated by providing repairs, storage, changing facilities and charging points allowing electric bikes to be charged during the working day.

Not all travellers will be regular users. We need to create lasting impressions for **visitors and tourists** through multi-lingual signage and trained staff who act as ambassadors for local towns, cities and villages going beyond the current role of station staff. Where staffing is not practicable we need to employ multi-channel wayfinding and information to direct people to local attractions and forward destinations – showcasing the best the region has to offer.

Then there is the economic potential. We need to think how to develop new **business** communities and networks of local place champions by providing flexible business space within or adjacent to stations catering for both existing and new businesses. To this end we will need to ensure that these are highly connected places, future proofed via 5G high speed digital access, facilitated through a wider communications upgrade associated with the Metro network.

In all this we also need to consider how **environmental design** within and around the station can reduce stress through the use of:

- biophilic design in the form of landscaping, green walls and green roofs
- lighting strategies that assure people by increasing a sense of safety, and align with our natural daily patterns or circadian rhythms by altering intensity throughout the evening and night.
- materials that reduce resource consumption and where possible integrate energy generation opportunities to create stations that generate revenue instead of requiring support.

CRAFTING A NEW MODEL FOR A STATION

As we seek to decarbonise our society and migrate away from the personal car the Metro can create a cultural shift of generational importance in Wales. In doing so, the very idea of what a station is and how it functions needs to be challenged. The 'red line' that separates travel spaces from surrounding areas will hopefully become blurred and fade. Station designers need to involve a wide range of stakeholders in defining what

a station is and agreeing what it will contain and how it contributes to the surrounding area. This experiential approach will allow us to imagine and craft a 21st century model of a station and interchange through the eyes of those who will inherit it. We must make the 'human factor' central to delivering both functional and enduring places of quality that respond to the breadth of people we want to use them.



Jamie Tucker

Jamie is an experienced urban designer who focuses on adding value through design quality and creative thought without compromising viability. He has over a decade of experience within

both the public sector and private sector in the UK and internationally.

Jamie has acted as design lead on a multitude of projects ranging from strategic frameworks, city-wide regeneration, waterfront masterplans to detailed public realm design.

HOUSING

A CATALYST FOR SOLUTIONS TO THE HOUSING CRISIS

Ed Green, from the Welsh School of Architecture, imagines a new future for Treforest as the Metro develops

“We are still nowhere near tackling our national housing crisis, which is causing misery for millions of people who are unable to secure a decent home at a price they can afford.”

Grainia Long, Chief Executive,
Chartered Institute of Housing, 2015

Wales has one of the oldest housing stocks in Europe, and almost a quarter of households suffer from “fuel poverty”.¹ Each year, we build fewer than half the new homes that we need.² Social housing completions are particularly low, at around 15% of all homes built. Depressed or non-existent profit margins mean that commercial contractors are reluctant to operate anywhere outside the highest market value locations. As a result, across much of Wales, there is no likelihood of new housing being delivered by the larger volume house-builders. Many of these areas also suffer from a high proportion of housing that has been poorly maintained and, in some cases, lies unoccupied or unfit for habitation.

The homes that do get built tend to be criticised for poor quality – in terms of both design and workmanship. Last year’s Building Performance Evaluation Programme found a consistently huge performance gap between housing ‘as designed’ and ‘as built’, and observed that “there is no way to meet the Government’s 80% carbon reduction target by 2050 without a revolution in the way we construct and run buildings”.³

In response to this challenging context, a number of South Wales’ social housing providers are already exploring the possibility of regional centres for off-site fabrication and delivery of new housing. Simultaneously, local authorities within the city regions are exploring development pathways that diminish, or even remove, the barriers most likely to prevent communities from commissioning or building their own homes.

Could the South Wales Metro, harnessed correctly, provide a vehicle to address these wicked issues, and meet the challenges imposed by the housing crisis?

Could it encourage the delivery of more, better homes in Wales, through improved place-making and new community-building opportunities?

Let’s imagine how we might exploit the opportunities that may be latent in a ‘typical’ community - in this case, Treforest:

TREFOREST: A CASE STUDY

Treforest is, in many ways, representative of the smaller settlements that constitute the Welsh valleys communities. Located between Cardiff and Pontypridd, its linear form runs along the west bank of the River Taff. The town hosted a major tinplate works from 1835, and supported a wide range of industries over the subsequent two centuries. However, it is also unique. The Treforest Industrial Estate to the south of the original town was granted Special Area status in the 1930s as part of the government’s response to high levels of unemployment in the South Wales coalfield. In the decade that followed, Jewish entrepreneurs and tradesmen fleeing persecution elsewhere in Europe relocated to the estate, which housed a wide range of furniture makers, metal workers, fabricators and suppliers, until the decline of local industry.

In recent years, the University of South Wales has increased its presence in the town. Established as the School of Mines in 1913, the university developed a town centre site immediately west of the railway, along with a site in nearby Glyntaf (to the east), as the *Pontypridd campus*. However, trapped between these two campus sites is the old town of Treforest.

Today, Treforest has a split personality. Students tend to leave the town outside of term time, and many do not even live (or spend) within the town during the academic year. The remaining ‘local’ residents have, for the most part, been left behind by an ongoing exodus of locals who have left in search of employment elsewhere. These two divided communities, located either side of the railway line, are in need of reconnection.

1 UK Fuel poverty monitor 2016 2017, NEA

2 Future need and demand for housing in Wales, PPIW 2015

3 InnovateUK, 2016

The following sections imagine a possible future for Treforest, one that builds on a history of fabrication, a latent but skilled workforce, and a desperate need for a new direction...

STOP 1: TREFOREST INDUSTRIAL ESTATE

As we ride the light electric train northwards through Treforest industrial estate towards the town centre, it rolls quietly alongside a wall made of giant rectangular forms. The boxes that compose the wall are stacked five or six high, each one between six and twelve metres long and three metres tall. Together, these great building blocks line the east side of the track where they resemble harbour-side shipping containers. Wrapped in breather membranes of silver, green and black, windows and doors in-situ, they stand waiting to be transported to housing sites across the city region.

Through a break in the crisp and colourful wall, I glimpse a busy manoeuvring yard, onto which one factory unit in a series of elongated, metal-clad portal frames stands open. As the train passes by, another silver-clad volume swings out of the factory under a bridge crane, and is loaded onto a waiting flatcar. Two of these volumes make an apartment; four will assemble a house. By rail, they can be transported north or south, to small and large housing sites that line the expanding Metro network. Because they are fabricated offsite, the quality is much higher than is typically achieved using traditional methods, and defects are all but a thing of the past. While the fabrication costs are not dramatically different to bricks and mortar construction, the increase in quality and workmanship, a significant reduction in the length of the construction programme (about half the time of a conventional build), and a dramatically reduced impact on the neighbourhood (in terms of noise, dirt, and inconvenience) have made this approach popular with homeowners, developers, housing providers and local authorities alike.

The factory itself was once the location of the General Paper and Box Manufacturing Co Ltd, which was established after WWII and employed more than

300 people to fabricate products using timber and paper. The offsite housing programme was also born around this time with *homes for heroes*, but stalled due to technical challenges and a lack of incentives. Eighty years later, the programme as envisaged has finally come to fruition. At one end of the new factory complex, a vast press transforms low grade, Welsh-grown timber into CLT panels. These panels are then digitally milled to fabricate building blocks for new housing units. A dwelling-sized unit takes approximately twelve days to move through the factory floor, from station to station, from structure to carcassing to fit out, through to sign-off. When it leaves the factory gates, all that remains is for services to be connected, and for it to be clad in a skin that suits its destination.

Use of locally grown resources is of benefit to the Welsh economy, with increasing amounts of the Welsh landscape used for forestry following the loss of EU sheep farming subsidies. It is now a common sight to see freight trains full of fresh-sawn, Welsh grown lumber running down the Metro lines. The material also has significant environmental benefits, locking carbon into construction, and helping us meet the decarbonisation agenda – no less than an 80% reduction in carbon by 2050. Waste product is fed to a nearby biomass plant, to generate hot water and energy for the surrounding neighbourhood...

STOP 2: TREFOREST

As the Metro pulls into Treforest itself, the signs of revitalisation are everywhere. In place of the expansive park and ride tarmac that once dominated the experience of arrival in old Treforest, an incubator hub stands tall. The hub offers a whole series of lettable, flexible spaces for businesses to find their feet in the town centre. Under the umbrella of the University of South Wales, this vibrant new 'high street' provides an energised shop window for the community, and a shared domain for 'town' and 'gown' to mix. Surrounding the main hub building, a colourful patchwork of new homes, commercial and mixed use, live/work enterprise is now taking shape.

But how is this happening? At one end of the incubator hub, and facing the rail line, is a fabrication facility. Much like Cardiff Met's FabLab, the space is open to all, and used by a wide range of constructors, makers, academics and hobbyists. For the last three weeks, an intentionally formed community of young people have been using the facility to fabricate the components for their future homes. Facilitated by a local housing provider, the group have communally designed their future neighbourhood, for a site earmarked for self-build by a local council.

The council themselves carried out considerable planning and enabling works. They worked in partnership with the University to identify suitable land, and to draw up a 'living' development and consultation strategy with the aim of making the town centre as dense and attractive as possible, for students and local townspeople alike. Some land has been sold to generate a revenue stream, notably along the Metro line, which is bringing both people and spending into the town centre, raising the standard of living and contributing to wellbeing in a broad, holistic sense at a community level. They are also leasing land to business start-ups and first time home-owners, to mitigate the cost of developing. To further reduce barriers, they have removed the need for planning permission through adoption of design codes and have pre-secured building regulations certification for house 'types'. They have even developed a range of finance packages with some of the more flexible high street lenders...

Digital design and fabrication techniques allow likeminded groups with low skill and no experience to get involved in the construction process, and to make housing happen in neighbourhoods where conventional housebuilders will not, or cannot, work. Today, the group are using CNC technology to cut jigsaw-like components out of sheet plywood. Over the course of the next month or so, they will assemble their starter homes on a site they are leasing from the council at the edge of town, at a rate of about one house 'chassis' per week. Because these homes are designed by the end user, they will be characterful, they will have identity and they will be fit for purpose. Because the end users are constructing them, they will be focussed on quality, and they will understand how to adapt and change them, as and when their own needs change...

GOING FORWARDS...

The Metro could stimulate investment and development in a way that provides new purpose and clearer direction for settlements whose identity and strength of community have been diminished or dismissed over the last fifty years.

Thinking and working holistically, opportunities should be nurtured that develop local skills and local industry, and strengthen local economies. By building on (and learning from) history, these opportunities will respond to, and reinforce, existing sense of place.

Some of the many possible benefits include increased employment, long term economic resilience through the development and promotion of local materials and supply chain, and the empowering of marginalised but potentially distinctive communities.

If we adopt this type of approach, the Metro provides us with an opportunity to reshape existing neighbourhoods and communities around a forward-thinking ideology (with reference to both the Wellbeing of Future Generations Act (2015) and the ecological imperative to transition towards an energy positive and decarbonised economy by 2050). By travelling in this direction, the Metro could be instrumental in offering Wales a vision of an interconnected, sustainable and equitable future.



Ed Green

Dr Ed Green is Director of Engagement at the Welsh School of Architecture at Cardiff University, and chair of the year 2 BSc (undergraduate programme).

His research focus is on housing. He has practiced as an architect for fifteen years and is a member of the Design Commission for Wales's review panel. He has produced work for numerous exhibitions and publications, and has won a number of international design competitions. He is currently working with Welsh Government on their Innovative Housing and Housing Decarbonisation programmes, and is involved in the delivery of prototype non-traditional housing for the private and social/affordable housing sectors.

A MEANS TO END THE STEREOTYPING OF THE VALLEYS

Yvette Vaughan-Jones, Chief Executive of Visiting Arts, argues that the Metro can be a spur to cultural transformation

The Metro is a means to an end and not the end itself. In order that it can maximise its potential we need to ensure it is integrated into a region-wide vision and strategy. Of course, we need to have smart trains, good stations and a frequent, reliable and affordable service that reflects the needs of the community, but it also offers us the opportunity to create new services and ideas that can contribute to a transformation of people's lives in the Valleys.

So, what impacts will it have, or could it have? What are the big issues it is trying to solve, and what needs to be in place to ensure that positive transformation?

WHAT CAN THE METRO DO?

- It can bring people together – it can link the City to its hinterland bringing people out of the centre to work, live, play and explore the Valleys. Creating a positive sense of place could change local, regional and national attitudes to the Valleys and help to reverse decades of negative stereotyping of the area.
- It can enable the transit of goods and ideas – increasing trade and opportunities in both directions can boost local small businesses but it is also the networking of ideas and connections that leads to more innovation. It can connect people to global markets and make the Valleys a good place to do business.
- It can create accessible attractive places – building on ideas such as the green park flanking the metro, the stations and town centres can begin to reflect the identity of places in transit; changing and growing in confidence.

WHAT DOES IT NEED?

- Make the journey a key part of the transformation – clean, efficient and reliable services with wifi mean that commuting can become part of the working day and no longer the down time it used to be. Many arts projects are centred around journeys – poetry on the tube, commuter book clubs, art installations and public art can all become part of the journey;

- Create points of contact, information sharing and knowledge – stations can become libraries, information points and places to meet and exchange. Stations have already changed into retail centres but they could also provide a social purpose with advice and information hubs.
- Be the conduit for ideas and needs – 'help my voice be heard'. The recent project "Stories of Change" that took place in three areas in the Valleys, identified the strong feeling by participants that their voices are not heard by those in power; that they were "done to" rather than sharing in shaping their futures. The Brexit vote confirmed the sense of frustration. The Metro will provide lines of communication, listening posts along the lines from the people in the Valleys to the people in power.
- Facilitate growth and development of people and communities – creative place-making is the key to the transformation: it stimulates local economies and leads to increased innovation, cultural diversity, and civic engagement.

Fine words, but how can this be achieved?

1. ENGAGEMENT OF PEOPLE

The first thing is to ensure that this wide interest group is able to work closely with the developers of the scheme from the outset. Not just as advisers but to stimulate new ideas and approaches. In Los Angeles, the mayor's office recently created an artist residency within the Department of Transportation: "to help traffic engineers rethink how cars and people get from point A to point B – let's bring a creative catalyst into an agency to help transform it from the inside and pilot it on the outside".

Artists working closely with the developers is a good idea but so too is giving voice and opportunities to local people and interest groups to talk about how they would like to see it develop. Most people self identify as non-arts attenders and so, despite really good work having been done by arts organisations in the Valleys and national companies and organisations working in the Valleys, still the perception of the arts as being for the "other" is still prevalent.



Credit: Nick Treharne

Community engagement in Treherbert

However, participation is strong in the Valleys and creating bridges between the existing local participation, the socially engaged practice of such organisations as Valleys Kids, Artis Community etc. and the outreach programmes of the more committed arts and cultural organisations is an established and successful strategy that could be enhanced across the region in a far more systematic way to achieve more.

2. INTEGRATION OF POLICIES AND IDEAS

The Metro can best serve businesses and communities if it is part of the planning of a wide range of organisations. There is currently a wide and very fractured community of interests embracing: Arts Council of Wales Visit Wales, local authorities, economic development departments, Welsh Government economic and social plans, cultural organisations, housing associations, third sector single interest groups etc., all of whom intersect particularly through the lens of social and cultural development.

3. DEVELOP MILESTONES – FESTIVALS AND MAJOR EVENTS

People need to be engaged throughout the process to ensure that the ideas reflect the changing needs of people in the region. But long processes bring fatigue and disengagement. There need to be points of interest to energise people and to give tangible reward for effort as well as built-in milestones to reflect back to the community the ideas and plans and to offer fresh ways of imagining and feeding into the plans. Major events can provide a focus. There are already burgeoning festivals –

for example, the Documentary Film Festival in Blackwood – and very successful music festivals. But adding scale, international involvement, professional/trade and industry involvement as well as public participation could enhance these to create greater impact.

There are also opportunities to bring major cultural events and conferences to the region. The Metro should also enable current major events in Cardiff to expand into the Valleys venues and break down the barriers between the City and the region.

Major international events that bring cultural industry professionals to the region will also help to develop the cultural infrastructure of the region and, ultimately help to create the kind of place that will attract people to work and re-locate there. Good working spaces as well as good affordable accommodation is vital alongside good connectivity, if the promotion of the region is to be effective.

To build the future programmes of existing festivals and events around the icon of the Metro would give the Metro a central role and a compelling narrative around connectivity and growth.



Yvette Vaughan-Jones

Yvette Vaughan-Jones is Chief Executive of Visiting Arts and Chair of Cardiff-based Nofitstate Circus.

She has worked in the creative economy internationally for the past 25 years, with the Arts Council of Wales and as the first Director of Wales Arts International. She spent three years in Brussels as Policy Manager for the Wales European Centre Wales. In 2005 she authored Cardiff's bid for the 2008 European Capital of Culture. She has led AHRC research programmes on the role of the arts and artists in community development and, while at Visiting Arts, was the lead partner in the Africa Caribbean Pacific programme Culture Works and the European Commission's Creative Tracks programme.

HOME?

3 Camel – Relics of unknown origin (Matthew Diggle)

This is a bungalow near my house, which has loads of random junk outside. This shows some people's disregard for appearance and pride in their area.

4 & 5 Tents and graffiti next to Huggard Centre (Lilly Evans)

This exemplifies the homelessness crisis. I really like the graffiti by the Huggard centre because it's so bright and in your face and you're greeted by that before you walk on the road, Dumballs Road, with this big group of offices. It's a good reminder of what's actually going on on the street. You don't just walk past Huggard Centre and think, Oh, it's just a place with a few dodgy people.



NATURE AND PLACE ATTACHMENT

6 Rhondda Valley (Charlotte Howson)

This photo encapsulates the whole of what I consider to be my region, the Rhondda Valley, and I think it shows the valley to be a place of great beauty, with a lot to offer. At the same time, I would like to see the whole of the region doing more to showcase that it has a lot of positives, in order to change the stigma and bad press that it currently has, both with those who live inside and outside of the region.

7 Keepers Pond (Kieran Warburton)

We went to the Keepers Pond to take photos, it's a really scenic place. The best thing about living in my region is the countryside, as it's very enjoyable to go on hikes with my friends and take pictures.

8 Trago Mills, Merthyr Tydfil (Lilly Evans)

When this wasn't there, it was just the mountains and then the landscape changed completely.



CREATIVE CARDIFF CAPITAL REGION

9 St Mary Street, Cardiff (Simona Vaipan)

I tried to capture the lively beautiful streets in Cardiff city centre in the summer. One day I was passing by and I found the flowers really pretty.

10 Robbie Williams at the Principality Stadium, Cardiff (Bethan Hill-Howells)

Principality Stadium is a real tourist destination for Cardiff as it's an excellent arena for international rugby and entertainment. This is one of the main hubs of Cardiff.



Lorena Axinte

Lorena Axinte is a Marie Skłodowska-Curie Early Career Researcher in the SUSPLACE ITN. With a background in urban studies, she is currently exploring city-regional planning and governance,

driven by the idea that collaboration, not competition, should be the mantra for development. She is mostly interested in how individuals and communities can get involved in decision-making processes. While following the evolution of Cardiff Capital Region, she chose to focus on young people and look for meaningful ways of engaging them in envisioning the future of their region.

The *Metro and Me* event has been supported by:



M E T R ● & M E

As Transport for Wales embarks on the development of the South Wales Metro, this booklet and the associated conference have been created to foster ideas that can take the whole Cardiff Capital Region forward, based around the need for:

- an ongoing conversation across the region about the kind of place we want to live in – a place that reflects our unique urban and green landscape, engages local communities in its development and respects and exploits our artistic, cultural and industrial heritage
- coherent strategic development plans that link transport and land use planning so that we start to locate homes, jobs, shops, public services and visitor attractions in places that can be easily connected with good quality and environmentally friendly public transport
- economic development and regeneration plans throughout the region that integrate traditional bricks and mortar projects with more innovative interventions that can support and grow the foundational economy.

For more information, please contact

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