Coventry VLR – Programme Update

Colin Knight, Director of Innovation, Coventry City Council

And

Nicola Small, Very Light Rail Programme Director, Coventry City Council/ TfWM

Agenda

- Why CVLR?
- VLRRP Programme and Dependencies
- VLRRP Governance
- CVLR Project Status

Why Coventry Very Light Rail?

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Coventry City Council

Coventry Very Light Rail

New system can deliver affordable urban mass transit across the UK and beyond:

- Easily retrofitted with minimal disruption
- Zero emission, turns tight corners, no OLE
- New manufacturing sector in UK, creating jobs and skills

Cost cutting game-changer trackform:

- Majority of utilities remain in situ

Regional VLR Programme

- Coventry Very Light Rail (CVLR) scheme promoted by Coventry City Council (CCC) (£40.5m)
- Dudley Very Light Rail National Innovation Centre (VLRNIC) promoted by the Black Country Innovative Manufacturing Organisation (BCIMO) and Dudley Council (£12m)
- Mass Transit Options Appraisal study which is to include an assessment of urban VLR promoted by Transport for West Midlands (TfWM) (£5m)

VLR Dependencies

The three schemes within the business case complement each other:

- CVLR is the pilot scheme, with Coventry leading the development of the VLR product (CVLR Vehicle and CVLR Track) and facilitating the construction of the first in-highway section of CVLR track as the final demonstration of the proof of concept for the system.
- VLRNIC is supporting the CVLR R&D (Research & Development) programme by providing test facilities for the system before the installation in a live highway.
- TfWM are in the early stages of exploring the use of CVLR technology (as well as other mass transit options) for corridors in the West Midlands

CVLR Governance

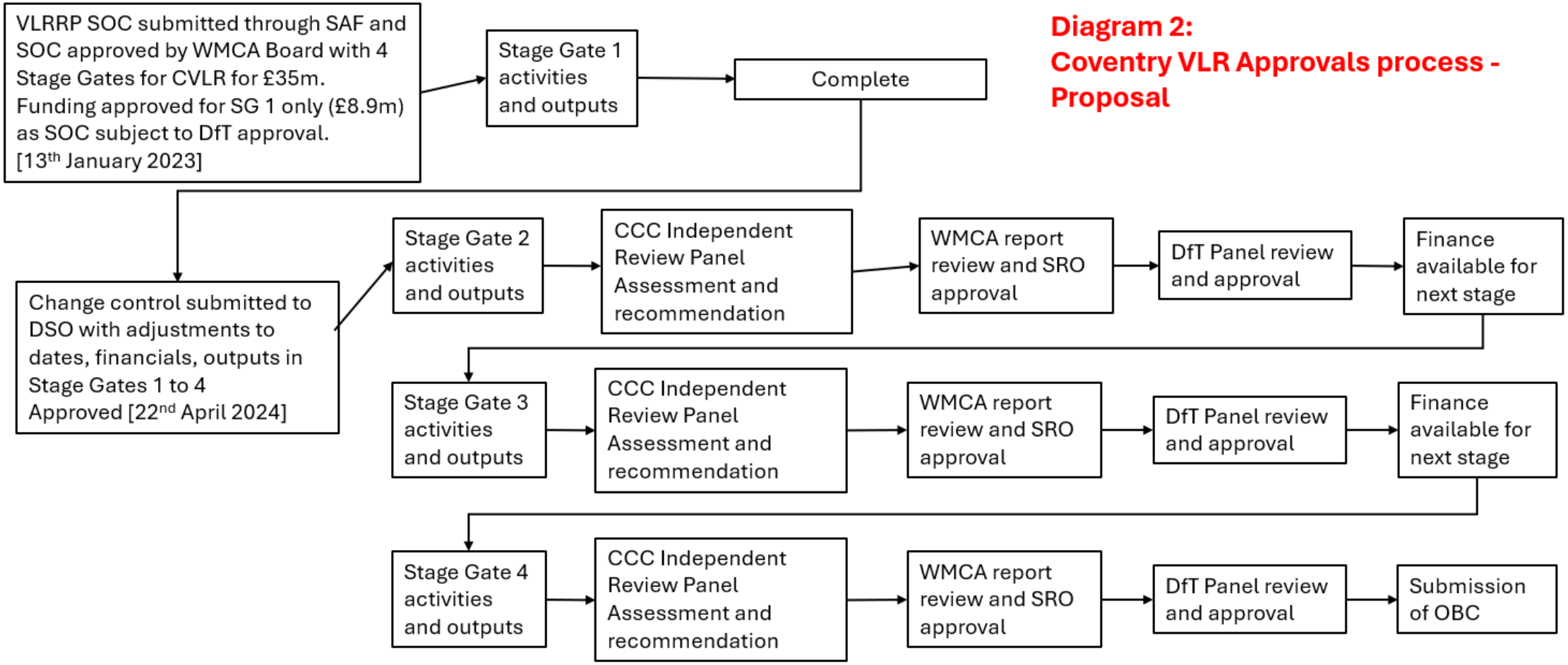


Diagram 2:
Coventry VLR Approvals process - Proposal

Funding – Secured and unsecured

The table below shows:

- What has been secured to date and actuals spent so far
- Unsecure funding requirement

	VLR Resources	Forecast	Actuals to Date	Commitments	Actuals + Commitments	Actuals + Commitments
SECURED FUNDING	Growth Deal	246,000.00	2,460,000.00		2,460,000.00	2,460,000.00
	Getting Building Fund (GBF)	1,765,800.00	1,765,800.00		1,765,800.00	1,765,800.00
	WMCA - Investment Programme	12,204,821.00	12,204,821.00		12,204,821.00	12,204,821.00
	Coventry City Council - CCR	3,200,000.00	153,942.17		153,942.17	153,942.17
	CRSTS - SECURED	15,087,776.90	7,031,417.44	2,480,777.19	9,512,194.63	11,992,971.82
UNSECURE FUNDING	CRSTS	25,412,223.10	0.00		0.00	0.00
	Alternative Funding	0.00	0.00		0.00	0.00
		57,916,621.00	**23,615,980.61**	**2,480,777.19**	**26,096,757.80**	**28,577,534.99**

Stage Gate 1 complete – Dec 23

1. Installation of 3 Track Test Sites (WMG, Whitley Depot and Dudley Loop)
2. Evidence from vehicle and track testing, including gap analysis for the vehicle and latest safety case assessment
3. Design and partial implementation of the City Centre Traffic Management Plan
4. Design for City Demonstrator Route from Rail Station to Former Ikea Building (800m)
5. Concept design for CVLR route 1 from Rail Station to University Hospital
6. Baseline accident data on the City Demo route across all modes.
7. Baseline air quality exhaust and non-exhaust emissions data of the City Demo route.
8. Evidence illustrating Coventry's understanding of the regulatory regime to implement the CVLR City Demo route
9. Evidence of potential market for CVLR

Coventry Very Light Rail Track test site at the University of Warwick since September 2022


Coventry Very Light Rail Track test site at Whitley Depot since February 2023
COVENTRY VLR
R&M

Key Lessons Learnt – Whitley Depot Pilot Installation

- ✓ Successful construction of 36m of CVLR track which included a 4.5% slope, straight transitioning to 25m radius horizontal curve alignment and included a utility Access Chamber
- ✓ Track includes a state-of-the-art structural performance system which automatically captured the impact of every passing vehicle
- ✓ Installation complete against planned schedule in approx. 2 weeks
- ✓ Expert rail contractor supporting the DLO claimed the installation process was comparatively simple and efficient.
- ✓ Realistic forecast that a junction-to-junction section of approx. 100 m – 150 m double track can be delivered in 2 weeks utilising normal day shift operation
- ✓ Project-optimised aluminothermic welding technique trialled out successfully
- ✓ Project specific materials developed by key partners (slab bedding mortars and pavement asphalt) performed successfully.
- ✓ Pilot installation provided critical design optimisation of sub-systems including the Slab and Encapsulation

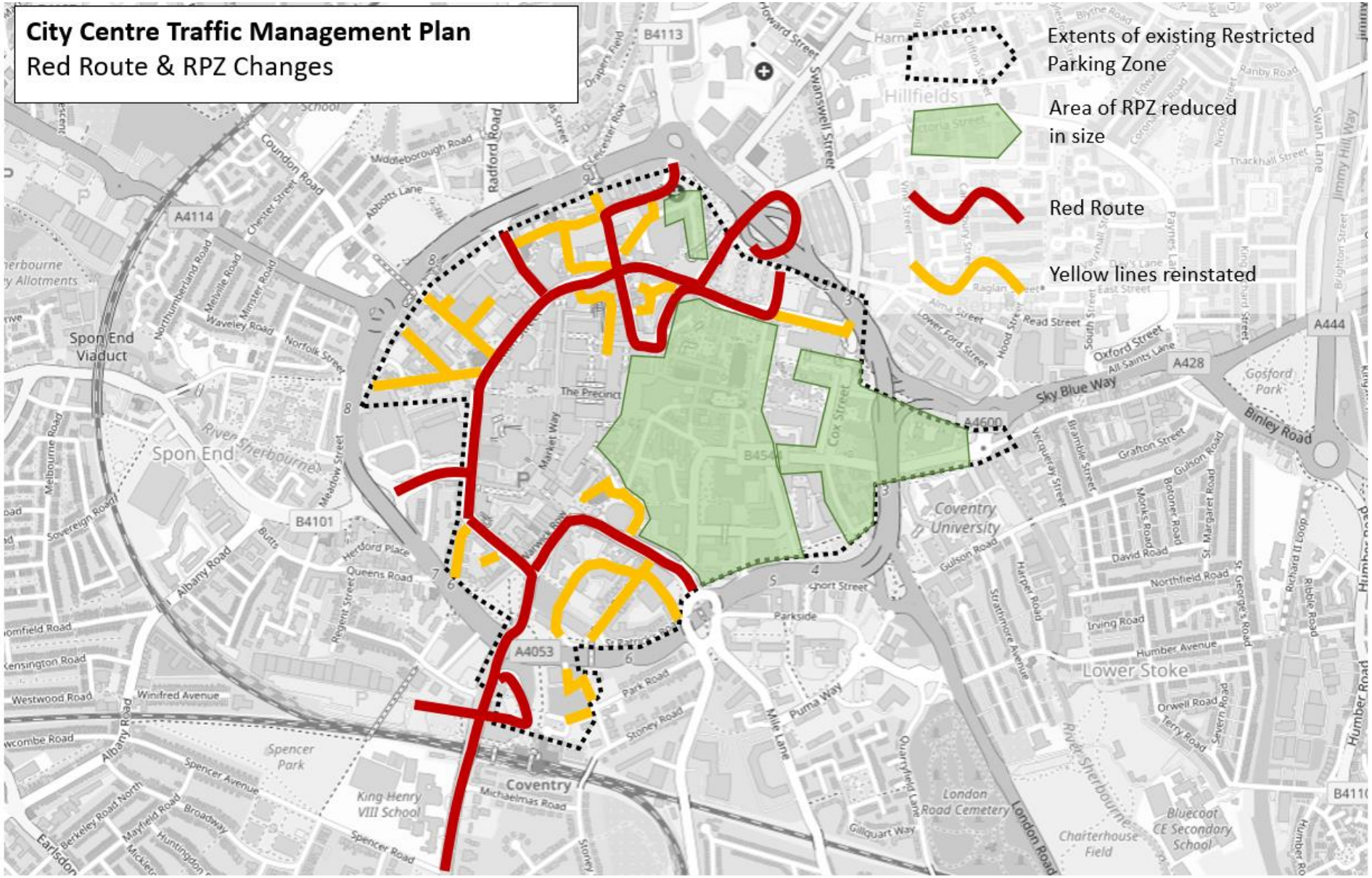

Coventry Very Light Rail track test site at the VLRNIC since August 2023

Key Lessons Learnt – VLRNIC Pilot Installation

- ✓ Successful delivery of complex 3D alignment (250m radius vertical sag and crest curvature and 15m horizontal radius).
- ✓ A different installation sequence trialled to previous pilot installation enabling increased installation flexibility.
- ✓ Installation was successfully carried out by a different contractor to the previous pilot installations in approx. 3 weeks.
- ✓ Verification of dynamic loading imposed on CVLR Track by CVLR vehicle.
- ✓ 2000 loading cycles around the loop providing useful set of data on wheel-rail interface/wear.
- ✓ Set of Noise and Vibration measurements.
- ✓ Issues with logistics planning, quality assurance and digital construction site management provided key lessons learnt in preparation for the upcoming city centre demo project.

City Centre Demonstrator 2024/ 25

- Rail Station to City Centre
- Showcase Technology
- Operate Prototype Vehicle
- 800m twin track
- Stabling and charging in the City
- Demonstrate can achieve installation cost of circa £10m/km
- Demonstrate can install at speed
- Prove that most utilities can remain in situ


City Centre Traffic Management Plan
Red Route & RPZ Changes
Extents of existing Restricted Parking Zone
Area of RPZ reduced in size
Red Route
Yellow lines reinstated
A4114
B4113
A4053
B4101
A4600
A428
A444
B4544
Spon End
Spon End Viaduct
River Sherbourne
The Precinct
Coventry University
Lower Stoke
Hillfields
Spencer Park
King Henry VIII School
London Road Cemetery
Charterhouse Field
Bluecoat CE Secondary School
Gosford Park
Coventry
Radford Road
Swanswell Street
Coundon Road
Middleborough Road
Abbotts Lane
Northumberland Road
Melville Road
Minster Road
Waverley Road
Norfolk Street
Meadow Street
Market Way
Cox Street
Harnall Row
Short Street
Parkside
Park Road
Stoney Road
Mile Lane
Puma Way
Albany Road
Spencer Avenue
Broadway
Spencer Road
Westwood Road
Winifred Avenue
Sky Blue Way
Oxford Street
All Saints Lane
Binley Road
Grafton Street
Gulson Road
Northfield Road
Humber Avenue
Irving Road
Orwell Road
Terry Road
Harper Road
Strathmore Avenue
Quarryfield Lane
Gilquart Way
Michaelmas Road
Herford Place
Queens Road
Regent Street
Butts
Sovereign Road
Melbourne Road
Hood Street
Read Street
Lower Ford Street
Alma Street
Raglan Street
South Street
East Street
Thackhall Street
Swan Lane
Jimmy Hill Way
Brighton Street
Ranby Road
Clifton Road
Howard Street
Draper's Field
Leicester Row
Chester Street
Victoria Street
Vecqueray Street
Bramble Street
Monks Road
Botoner Road
St Margaret Road
David Road
St George's Road
Richard II Loop
Ribble Road
Humber Road
Severn Road
Berkeley Road North
Mayfield Road
Huntingdon Road
Earlsdon
Kensington Road
Wycombe Road
Omfield Road
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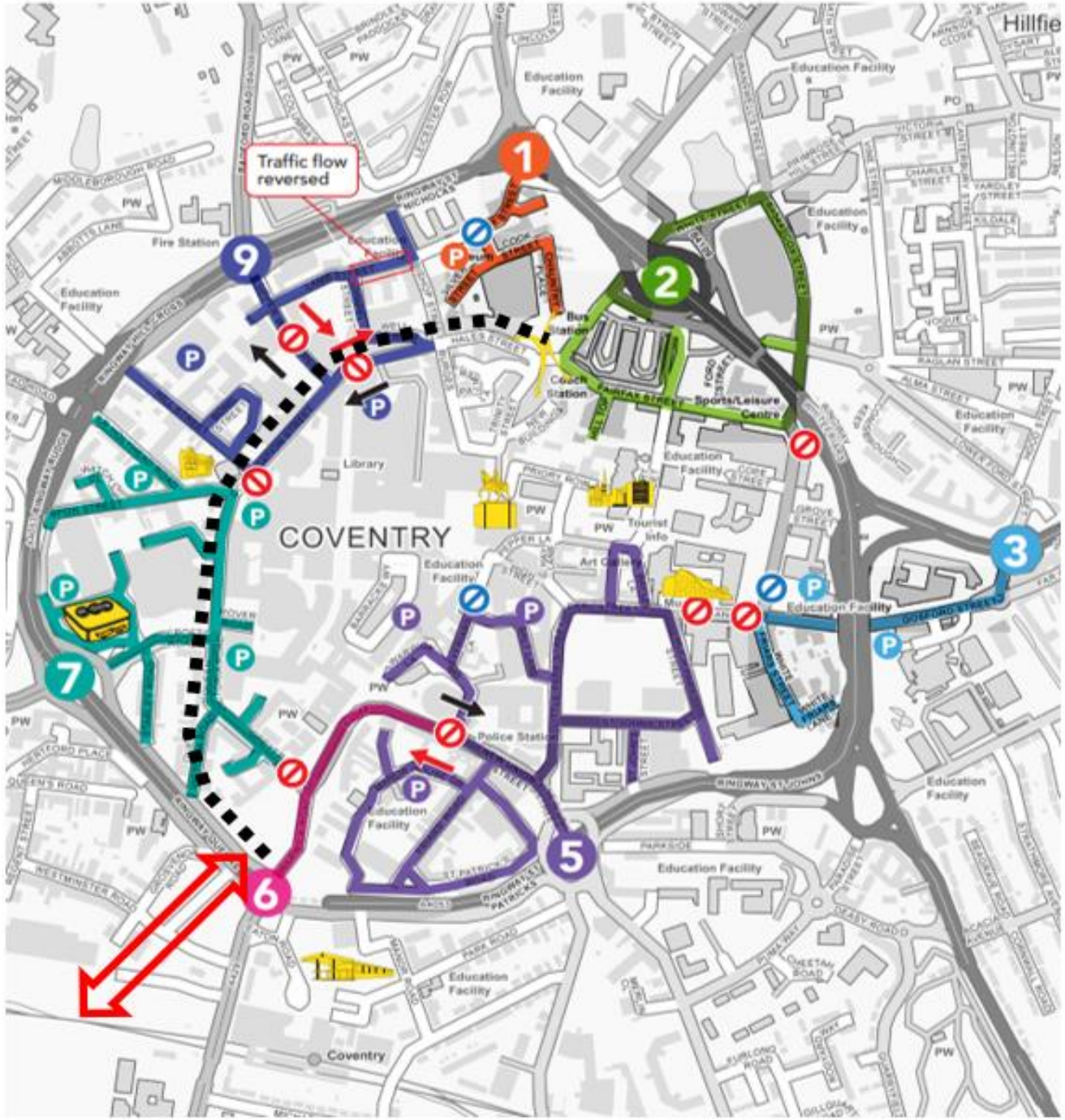
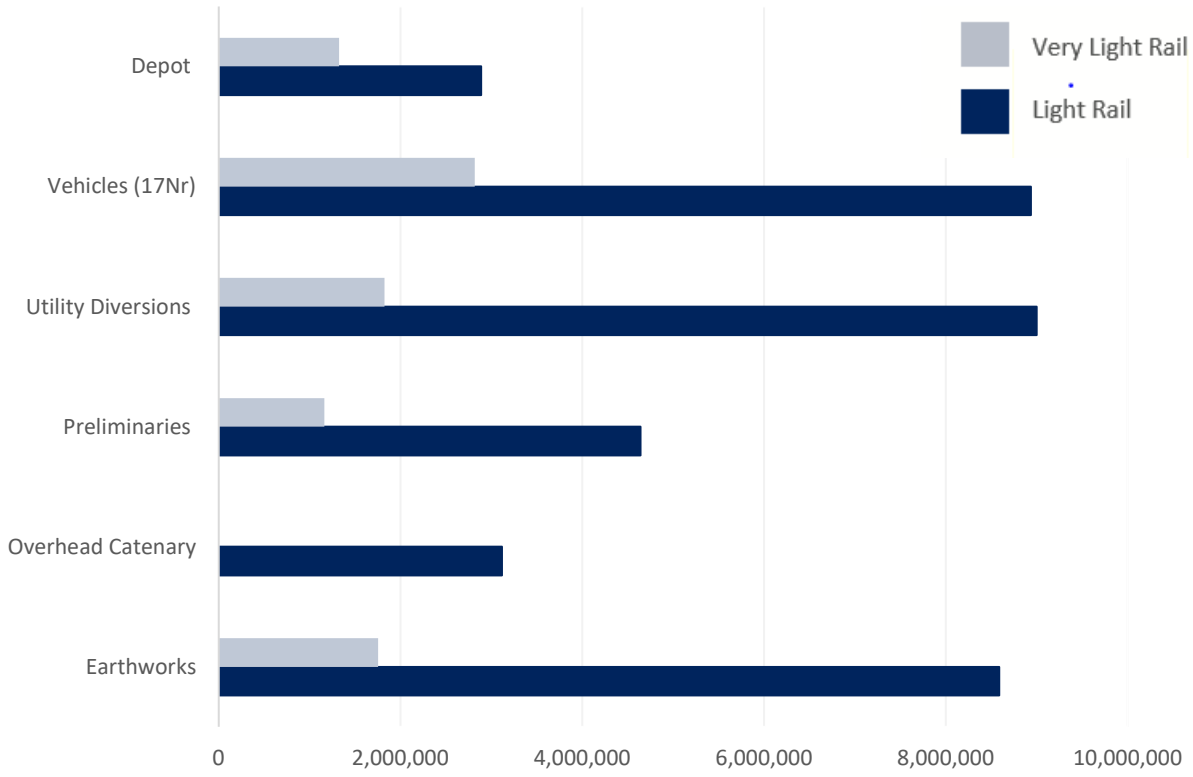


Completed City Centre Traffic Management Plan

- Pedestrianised zones – Orange
- Other colours show discreet traffic cells accessed from each ring road junction
- Central Six Link Rd [red arrow]
- City Centre Cycleway [black dashed line]
- Bus gates [red circles]
- Pedestrian gates [blue circles]

Cost benefits of CVLR vs Light Rail



- ✓ Simplified depot
- ✓ Low cost vehicle & charging infrastructure
- ✓ No overhead catenary
- ✓ Minimal utility diversions
- ✓ Reduced preliminaries
- ✓ Reduced earthworks
- ✓ Target construction cost: **£10m/km**

Coventry Very Light Rail: Opportunities

- Autonomy – CVLR could be used to accelerating autonomy in urban rail. This would reduce OPEX in parallel to driving down CAPEX through the track form

- Development of trackform – to support heavier vehicles such as CAF trams. This could drive down the cost of traditional light rail schemes that are currently over budget

- Decarbonisation – continue R&D to assess and incorporate materials and components that can be used in both the vehicle and track to decarbonise the system further

- Global and national exploitation – create jobs and export opportunities for a UK product

Next Steps

- Prove the new track form can be installed with minimal disruption to the city and utilities at circa £10m/km
- Operate the CVLR vehicle as a working showcase of the technology for both national and global customers and investors
- Continue to engage with Stakeholders to build the market for the vehicle, track and integrated system at regional and national events
- Develop and implement a commercialisation strategy
- Use the evidence from City Centre Demonstrator to support future business case submissions
- Seek to secure funding to support the installation of a first commercial route in Coventry