Appendix 3 – Connected and Autonomous Vehicle (CAV) Developments

CAV Testbed

The proposed facility will operate over Coventry, Solihull and Birmingham's highway network and will integrate with virtual (lab based) testing and testing in a controlled off-road environments (such as that provided at Horiba Mira's global test facility off the A5 in Nuneaton) in order to provide a real-world robustness check of the technology developed by vehicle manufactures, their Teir1 supply chain and developers of connected infrastructure technology.

The primary purpose of the test facility is to provide industry users and technology developers with an environment which:

- Can connect to and communicate with test vehicles;
- Has a rich base level of data (test and operational) to enable vehicle performance to be bench marked and assessed;
- Collects fresh data and allows it to be fed back into virtual and earlier development lifecycle stages (to reduce the costs and risks of development);
- Offers a board mix of technical 'use cases' and challenges, covering all those scenarios which a vehicle in wider deployment is likely to encounter (including all junction and road types and mixes of signage and road condition);
- Enables test vehicles to mix 'in-the-wild' with a representative mix of other road users;
- Provides a graduated testing environment prior to wider testing and deployment;
- Provides a place and opportunity for vehicle and technology developers to interact with each other in a facilitated environment;
- Has a strong network of monitoring, evaluation and observational capacity to allow test vehicles to be monitored and their interaction with the environment assessed; and
- Has elements of the road network that can be in operated under restricted conditions (for example limited short night closures of non-critical elements of the network, or allowing specific vehicles in otherwise restricted environments).

It should be noted that there is nothing stopping vehicle developers undertaking testing activity on UK roads anyway without the engagement of highway authorities or connection to the infrastructure (Volvo have been doing this in London). However, this only addresses some aspects of the technology development and does not allow easy testing of features such as interaction with traffic signals, or replacement/replication of road side variable message signs in-vehicle. In isolated testing the ability to monitor and make an assessment the vehicle interaction with its surrounding environment is also limited and a connected test environment provides added value to technology developers.

The design and construction of the facility would be undertaken in detailed liaison with the relevant Highway Authority with full consideration of the technical integration with operational Urban Traffic Management systems. There is good experience of delivering this type of activity already in the testbed area and physical changes on-street will be largely unnoticeable, with the majority of infrastructure investment being in technology in roadside cabinets and in digital infrastructure.

The operation of the test facility would be managed without prejudice to the efficient and effective operation of the highway network. Many of the likely test scenarios would not materially impact normal traffic flow or operation, although occasional temporary road closures in off-peak periods could be of benefit to users if these can be managed without undue disruption (with full costs to be met by the testbed users).

All vehicles using the test facilities will be required to undertake safety testing and checking first in safe off-road test facilities, and any testing undertaken would be required to be undertaken in-line with national guidance established by Government in 2015. Under this companies testing vehicles are required to have full liability cover to their testing and a safety supervisor able to take control of the vehicle at any point.

Local Authorities and Research Organisations, including WMCA / Transport for West Midlands, are funded at 100% meaning there is no match funding required by the Authority and all costs are met.

The detailed feasibility and design work will be undertaken as part of the first funded phase of the project. This will include developing and obtaining all normal approvals for construction activity any necessary traffic regulation orders and safety audits. It is anticipated the design and construction phase would last approximately 2 years from award, which is expected to be in late 2017, with the bulk of construction being in the second year of the programme.

The operational phase would be managed in-line with existing street works and road space booking mechanisms through the consortium acting under a common organisational structure with the other West Midlands test environments. The operational period is expected to be up to 8 years and during this period the test facility will be promoted to prospective users. This will generate usage fees which must be ring-fenced back to the operation, renewal and upgrade of the asset.

Other key CAV projects live in Coventry

UK Autodrive: A large project testing connected and autonomous vehicles on city centre roads. Off-road trials at Mira were completed in mid 2017 and trials through Gosford St and the city centre were undertaken in November 2017 (see video and website: http://www.ukautodrive.com/uk-autodrive-begins-public-road-trialling-in-coventry/). The project will undertake further demonstration trials with the small low speed pods and conventional cars in Autumn 2018 before completing.

UK Cite: A large project with Highways England focused on connected vehicle technologies which is testing all emerging Vehicle to Vehicle and Vehicle to Infrastructure technology and developing a clear view of the business case for the eventual exploitation and wider roll-out (see: https://www.ukcite.co.uk/). On road testing will be undertaken in Spring 2018 with completion of the project in 2019.

iVMS (intelligent Vehicle Message System): A locally funded CW LEP funded project which is due to complete in March 2018 and which has been developing and testing improved technology over 3 corridors in Coventry to improve the interaction between traffic management systems, vehicles on the corridor and traveller information and travel decisions.