



Update on Clean Air Feasibility Study –  
Development of a Preferred Option for  
Outline Business Case  
Environmental Scrutiny Meeting 19 March 2019



Gweithio dros Gaerdydd, gweithio gyda'n gilydd  
Working for Cardiff, working together



# Content

- **Background**
- **Initial Baseline Results**
- **Results of Measures – context in terms of legal ruling**
- **CAZ Benchmarking -**
- **Refined Options for Full Business Case**
- **Engagement Process**
- **Timeline for Full Business Case**



# Background

- The 2017 UK Action Plan further challenged by Client Earth and in January 2018 Welsh Government agreed to a legally-binding ‘consent order’ with Client Earth.
- This resulted in a Legal direction being served on Cardiff Council under Part IV of the Environment Act 1995, Section 85(7).
- Came into force, on **15<sup>th</sup> February 2018**, and was delivered to Cardiff Council on **09<sup>th</sup> March 2018** instructing Cardiff to:

***“Undertake a feasibility study, to identify the option which will deliver compliance with legal limits for nitrogen dioxide in the area for which the authority is responsible, in the shortest possible time.”***

- Cardiff Council are therefore **legally obliged** to introduce measures to mitigate against noncompliance in the **shortest possible time** – it is not a matter of discretion or choice.
- The Council is **obliged to follow a legal process with set deadlines**



# The Legal Requirement

Cardiff Council have a legal requirement to complete the following activities by the dates specified:

- **31<sup>st</sup> March 2018** at the latest submit the **initial scoping proposals** to set out how Cardiff Council would undertake a feasibility study - **Achieved**
- **30<sup>th</sup> September 2018** at the latest submit the **Initial Plan** to set out the case for change and develop options for measures that the local authority will implement to deliver compliance in the shortest possible time. – **Achieved**
- **30<sup>th</sup> June 2019** at the latest submit the **Final Plan** to identify in detail the preferred option for delivering compliance in the shortest possible time, including a full business case.
- No date set within the Direction for submission of **Outline Business Case**
- **However**, OBC is crucial step in developing Final Business Case for Final Plan

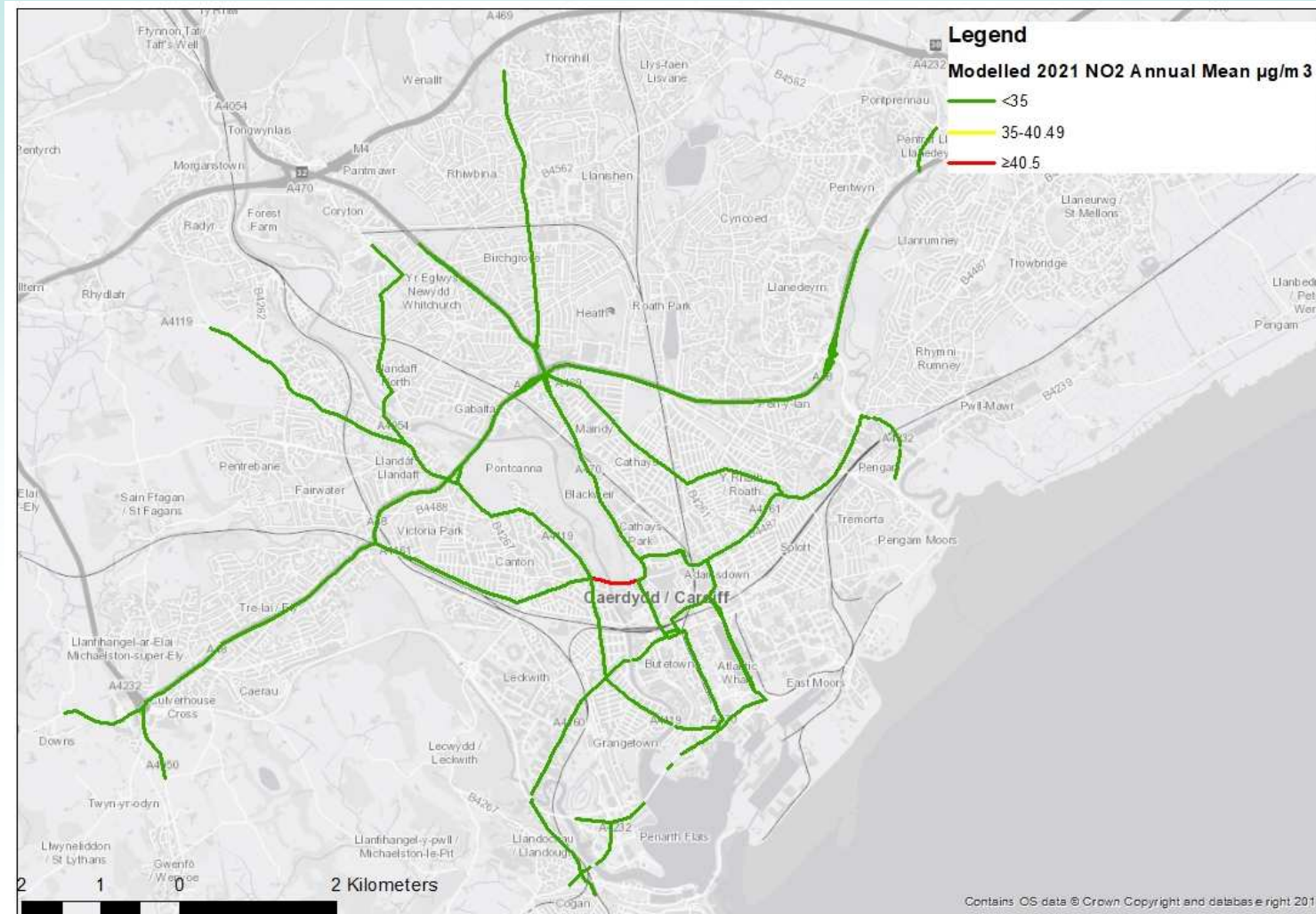


# Initial Plan Results

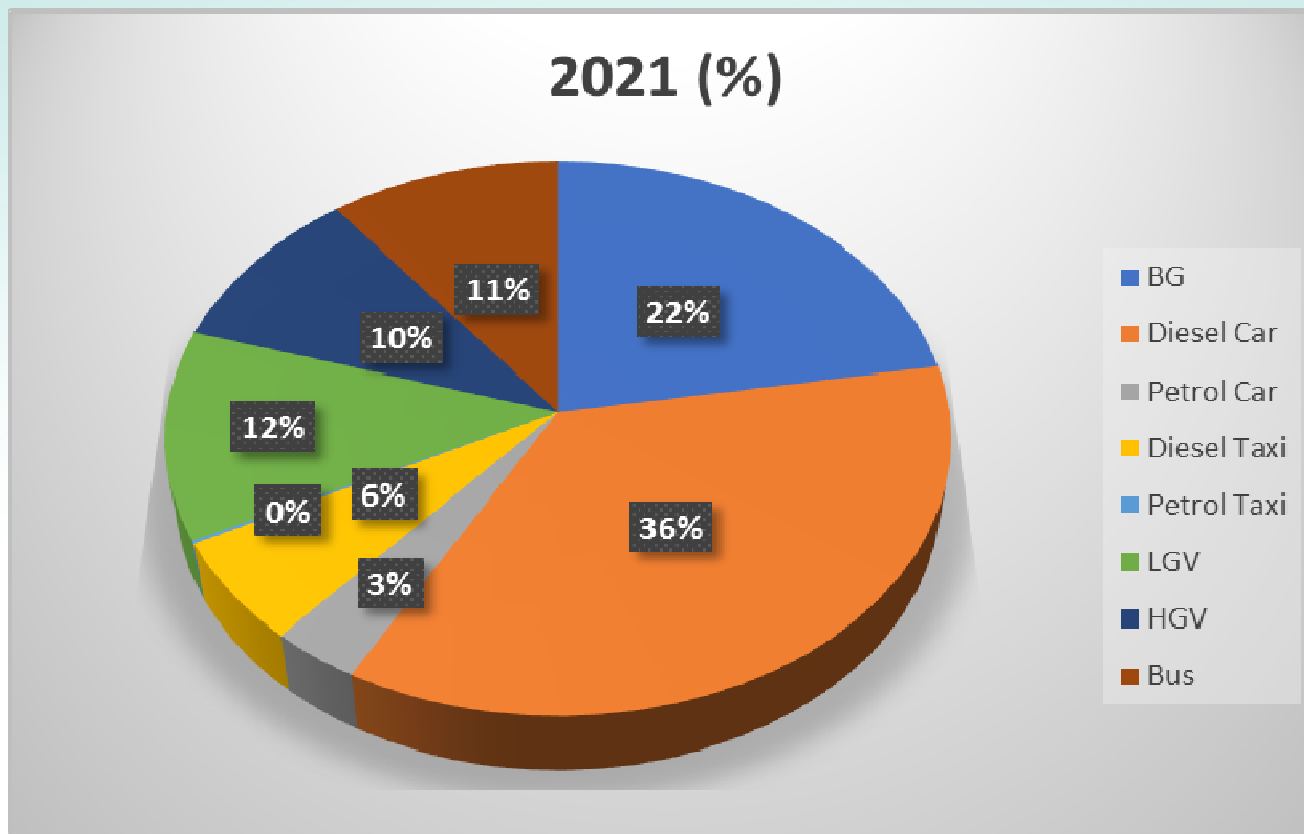
- Local modelling results significantly different to those produced by Defra using National PCM Model
- The results have been through a **quality audit and are considered robust.**
- **One Non Compliant Road Link - A4161(Castle Street) – City Centre AQMA on Westgate still a concern up to 2021**
- This reveals a “Central Issue” rather than a “East-West” issue
- **The results are baseline i.e. they are the ‘do nothing’ scenario.**
- **Diesel Cars are and will remain primary source of NOx**



# Initial Plan Results



# What the Modelling has told us: Source Apportionment



## Shortlist of Measures Modelled to Assess Impacts

- A **shortlist of Transport and Clean Air measures** were been developed to address the identified issue. Some initial measures were chosen owing to the National Modelling showing non compliance on A48 and A4232 only.
- **These have now been modelled** in detail by Consultants to assess if they will deliver compliance and/or if compliance will be accelerated if implemented
- Following Results of Local Modelling Results additional measures Identified namely Clean Bus Technology Programme -Bus Retrofit Scheme and other highway improvements and A470 P&R





# Shortlist of Measures Modelled to Assess Impacts

<b>'Shortlist' of Measures in Initial Plan</b>
<b>CASAP 1 Measures</b>
Active Travel Enhancements - Implement further 20mph zones and enhance a existing Zones.
Development of Cycling Superhighways infrastructure and Expansion of NextBike Scheme
Implement Zero Emission Buses on Cardiff Network
Revision to Taxi Licensing Policy to include emissions standards.
50 MPH on A4232 from Culverhouse to Bute Tunnels
<b>CASAP 2</b>
Bus Network Programme- Strategic Bus Network to improve bus networks and efficiency of the services via increased and improved bus lanes
Accelerate Park and Ride programme.
<ul style="list-style-type: none"> <li>•North West: Implement new Park and Ride facilities at Junction 33 (750 Spaces) and Llantrisant Road (250 Spaces).</li> <li>•North East: Expansion of P &amp; R on the A48.</li> </ul>
City Centre West and City Centre Eastside Schemes (City Centre North was not included)
Improve and promote the uptake of low emission vehicles by enhancing Cardiff's EV infrastructure
Review car parking charges for Council On Street Parking -additional daily parking charge to polluting vehicles

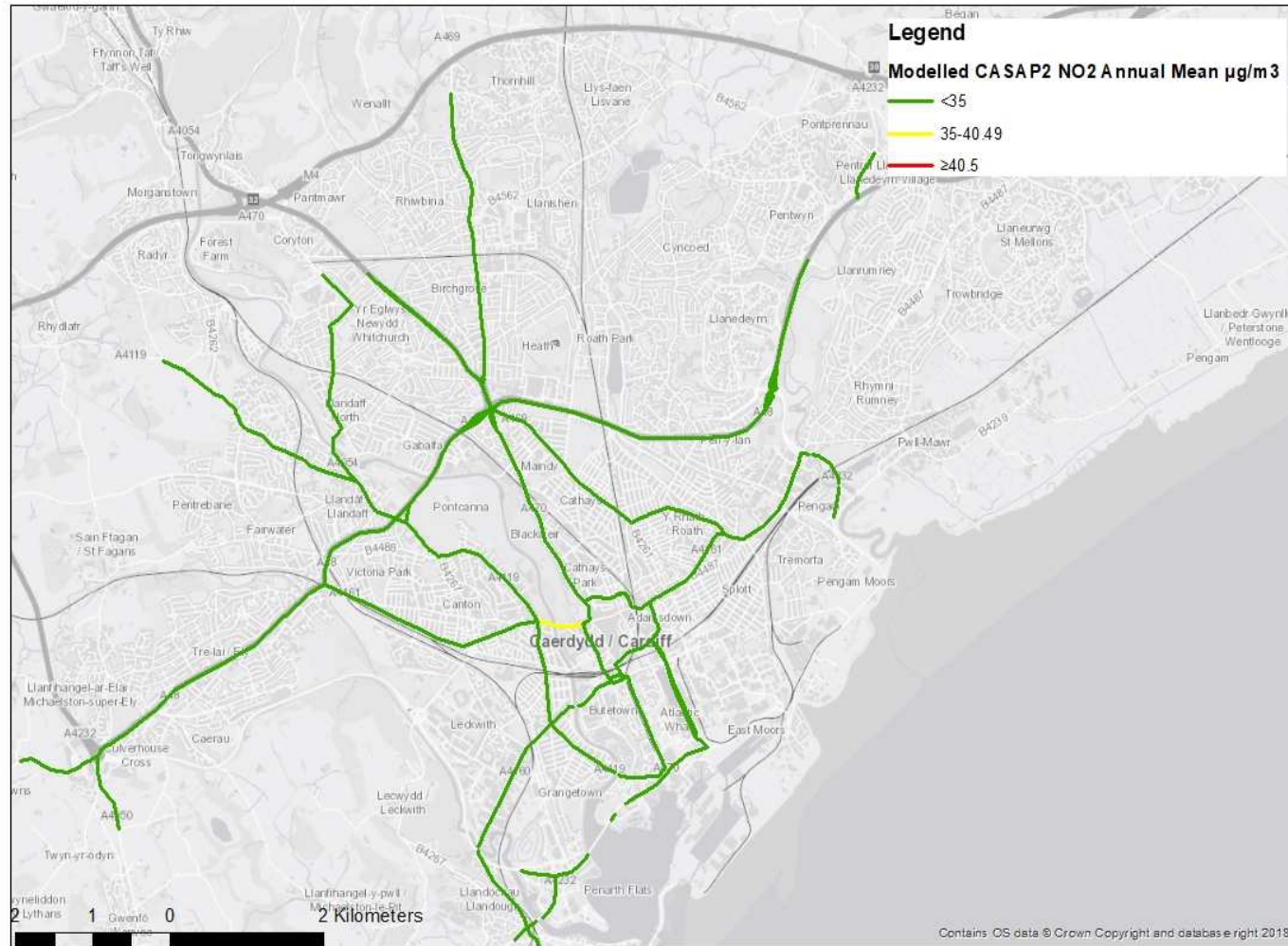


## Results of Measures -

- Measures have been modelled as 3 cumulative packages –with three sets of Results -
- CASAP 1
  - 1. Electric Buses
  - 2. Impact of revised Taxi Licensing Policy
  - 3. Active travel package
  - 4. Cycling programme to end of 2020
  - 5. 50mph on A4232
- NO2 Reduction on Castle Street **4  $\mu\text{g}\text{m}^{-3}$**
- Compliance is achieved reduction from **41.1  $\mu\text{g}\text{m}^{-3}$**  to **37  $\mu\text{g}\text{m}^{-3}$**



# Results of Measures -

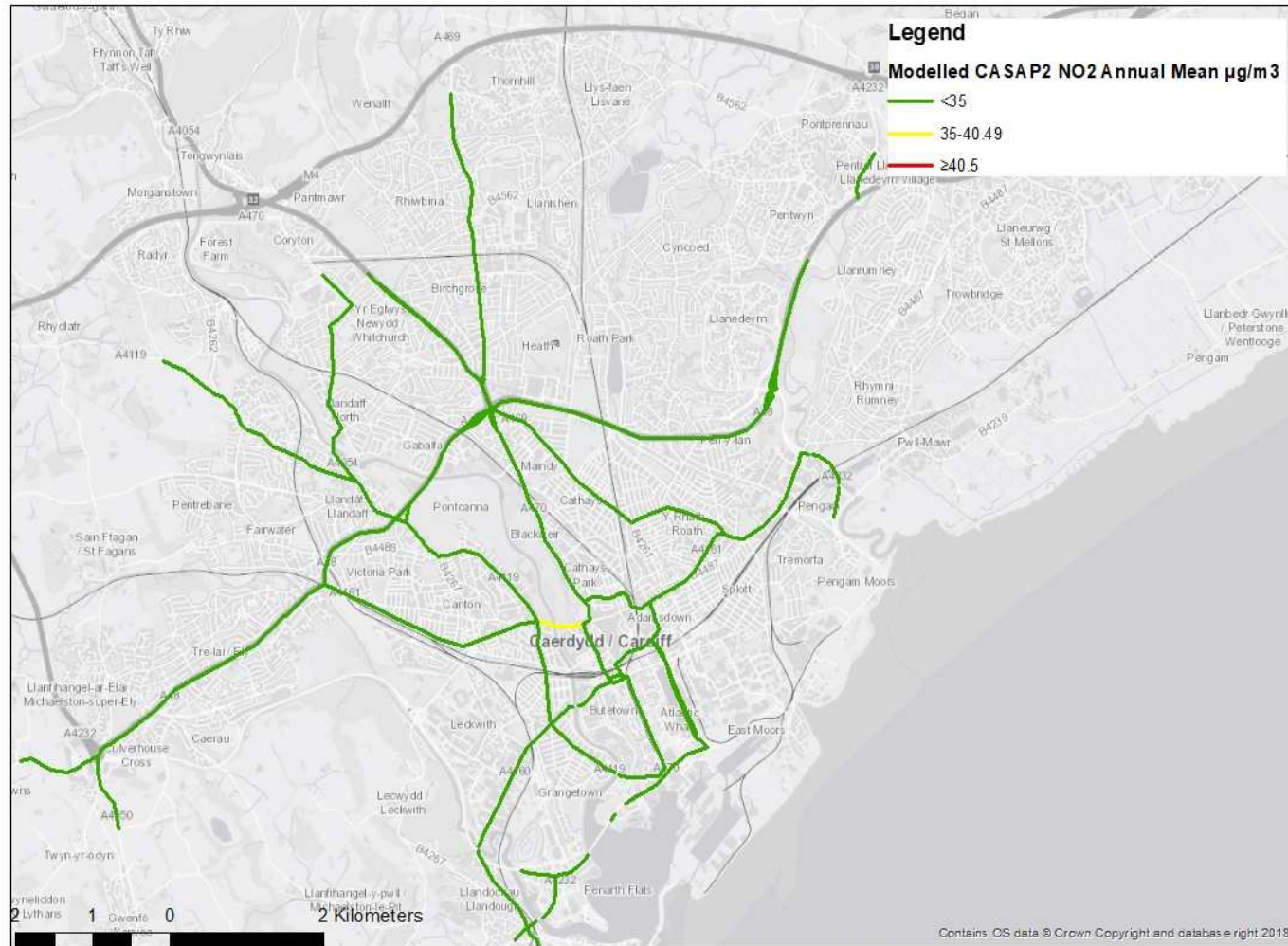


## Results of Measures -

- CASAP 2 – all of CASAP 1 +
  - 1. Westgate St and Station Terrace Schemes (excludes Castle St)
  - 2. A48 P&R
  - 3. J33 P&R
  - 4. Revised Parking Charges at Council Car Parking Spaces
- NO2 Reduction on Castle Street of **5  $\mu\text{g}\text{m}^{-3}$**
- Compliance is achieved reduction from **41.1  $\mu\text{g}\text{m}^{-3}$**  to **36  $\mu\text{g}\text{m}^{-3}$**



# Results of Measures -

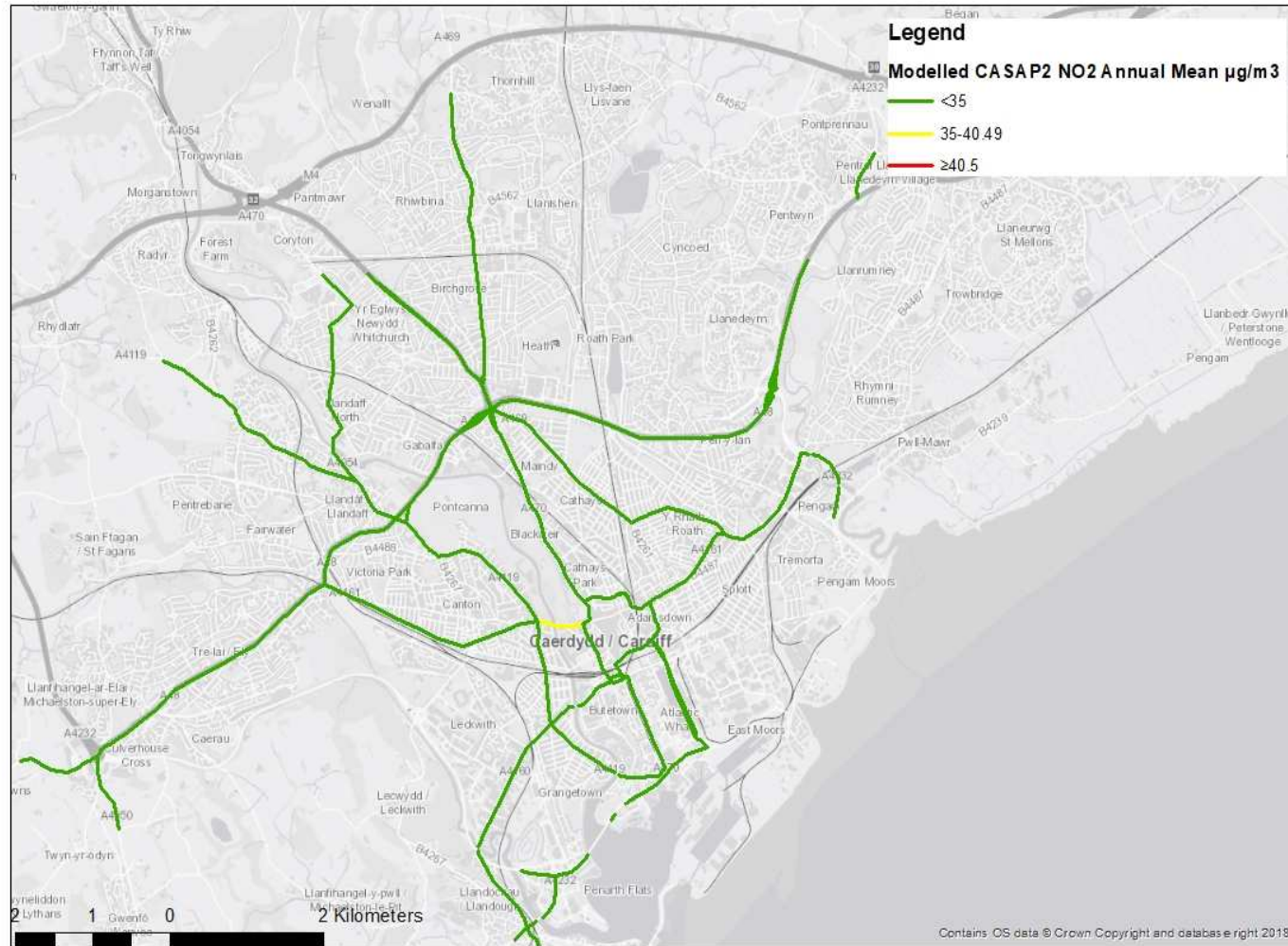


## Results of Measures -

- CASAP 3 – all of CASAP 1 +2
  - 1. Retrofit Programme for Buses
  - 2. A470 additional southbound traffic lane
  - 3. Nantgarw P&R
- NO2 Reduction on Castle Street **6  $\mu\text{g}\text{m}^{-3}$**
- Compliance is achieved reduction from **41.1  $\mu\text{g}\text{m}^{-3}$**  to **35  $\mu\text{g}\text{m}^{-3}$**



# Results of Measures -



## Results of Measures

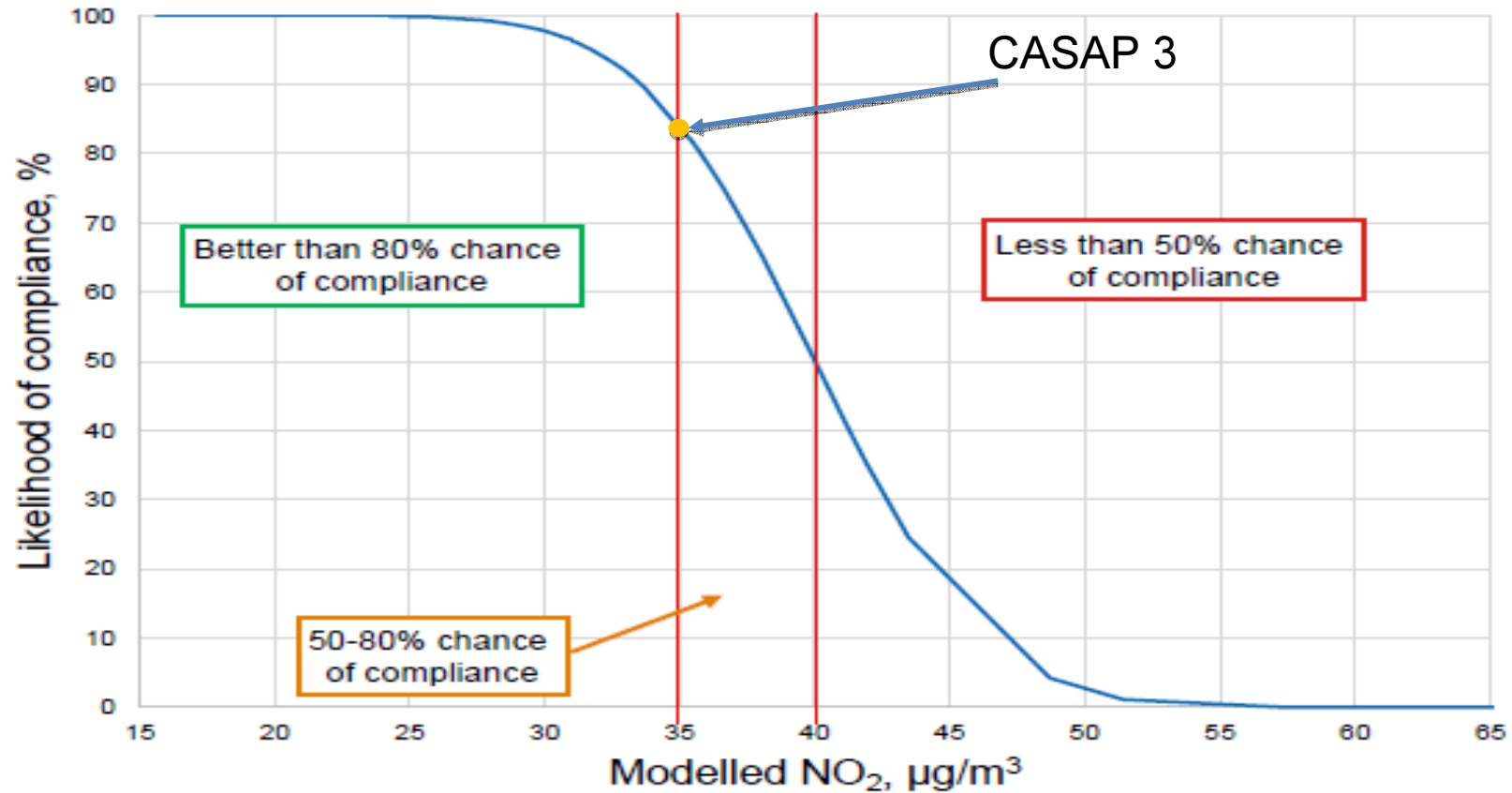
- Owing to Margin of Error in Modelling  $\sim \pm 5 \mu\text{g m}^{-3}$  the Council needs to have as much confidence in results achieving compliance
- By achieving  $35 \mu\text{g m}^{-3}$  have greater than 80% chance that compliance will be achieved. This is a key point in terms of the High Court Ruling
- Results to date do not include Castle St Scheme Proposals – given the likely reduction in traffic, this should have significant positive impact on further reducing  $\text{NO}_2$  concentrations





# Results of Measures

Model error is an RMSE (root mean square error) of  $5 \mu\text{g}/\text{m}^3$  which gives the following probability distribution



# Results of Measures

- Legal test as set out in ruling of CE 2 states that in order to comply with Article 23 of EU Directive that plans must ensure that compliance with the limit values is not just possible **but likely**<sup>1</sup>.
- Is >80% chance of compliance being achieved sufficient to comply with the legal test of ensuring that compliance is likely?

<sup>1</sup> ClientEarth (No. 2), Paragraph 95. <https://www.judiciary.gov.uk/wp-content/uploads/2016/11/clientearth-v-sseviron-food-rural-affairs-judgment-021116.pdf>

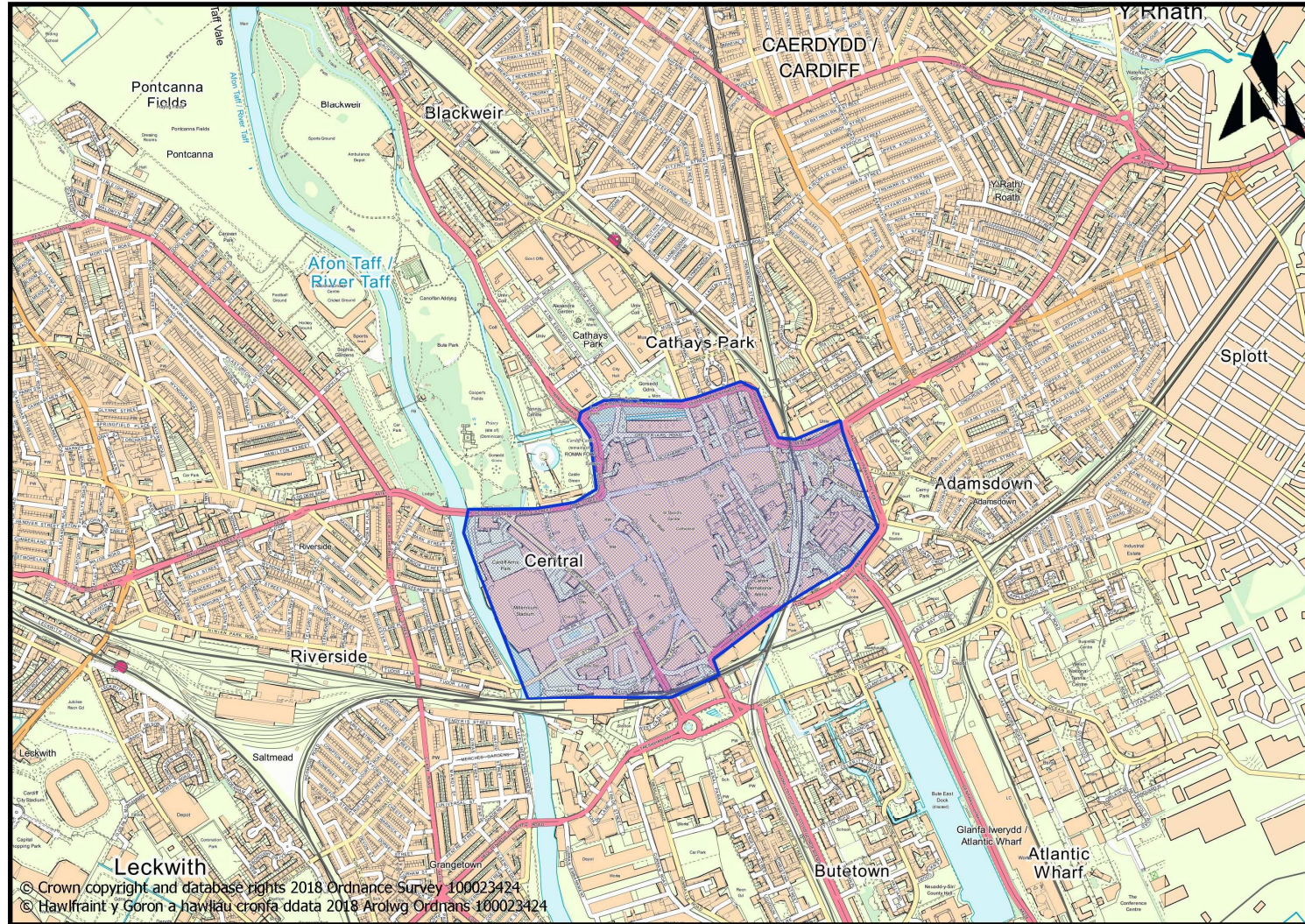


# Modelling Clean Air Zones

- As per legal direction the Council has to demonstrate compliance in the shortest possible time, **a Clean Air Zone (CAZ) must be analysed as a compliance benchmark against the short list of measures in terms of it achieves compliance sooner than measures**
- Whilst a CAZ will be the benchmark against which other measures are assessed for achieving compliance it **does not imply that the CAZ will become the preferred option**
- **Based on results of baseline assessment and source apportionment a small city centre CAZ, with only private cars Euro 6/4 was initially modelled**
- **A comparative CAZ for HGVs,LGVs, also modelled**



# Modelling Clean Air Zones



## CAZ Results

- **CAZ1 –Private Cars** achieves compliance on Castle Street – **32.8  $\mu\text{gm}^{-3}$**
- **CAZ2 - Commercial Vehicles-** achieves compliance on Castle Street **35.3  $\mu\text{gm}^{-3}$**
- However, overall when compared to CASAP results more road links have NO2 concentrations which are higher (although still within compliance)
- The modelling assumes CAZ is place by end of **2020 – Highly Unlikely**



## Measures as the Preferred Option

- Government guidance is quite clear that a CAZ should only be implemented if **non-charging alternatives have been found to be insufficient to bring compliance in the shortest possible time.**
- Current Assessment shows compliance is achieved – CASAP 3 provides >80% assurance on this which should be sufficient to satisfy legal test.
- CASAP measures appear to give wider overall air quality improvements than a charging scheme focused on the city centre
- The measures should be refined to develop the Full Business Case, for Final Plan by **June 30<sup>th</sup> 2019**
- Number of measures have already been excluded from further analysis owing to further qualitative assessment in terms of timescales of implementation and impact on Castle Street.



# Proposed Final Packaged of Measures for FBC

- **Electric Buses** – 36 Buses to be implemented **ULEB Bid Granted**
- **Retro Fitting** - **Current Assessment based on 94** Cardiff Buses that are not Euro 6, scheme will be open all operators
- **Above measures could be enhanced by designation of a Bus LEZ on Castle Street/ Westgate St** creating Bus Quality Partnership
- **Taxi Licensing Policy** – no direct cost to Council on policy change but support through **grant scheme in conjunction with WG** as a mitigation measure for Taxi Trade could
- **City Centre Loop including Castle Street**
- **Active Travel and Cycling Measures**
- **The above measures will be modelled as a Final Package**



# Taxi Mitigation Through Grant Scheme

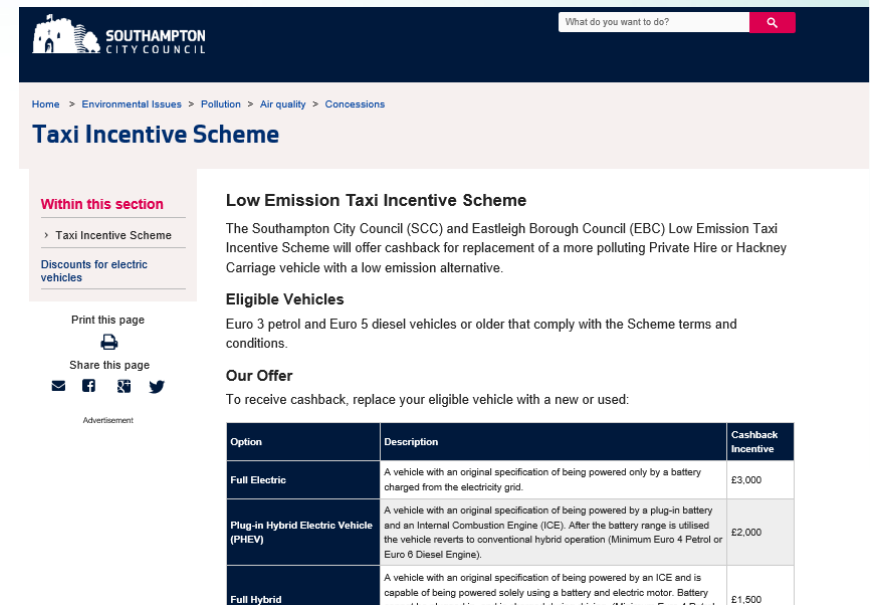
Taxi Policy - Council/ WG could consider grant scheme to assist taxi operators/ drivers upgrading similar scheme in Southampton

<https://www.southampton.gov.uk/environmental-issues/pollution/air-quality/concessions/>

Currently ~ 1800 non compliant HC/PHVs based on Southampton Scheme costs=

£3k for electric = **£5.5M**

£2k for Plugin Hybrid - **£3.6M**



The screenshot shows the Southampton City Council website page for the Taxi Incentive Scheme. The page includes a search bar, a breadcrumb trail (Home > Environmental Issues > Pollution > Air quality > Concessions), and a main heading 'Taxi Incentive Scheme'. On the left, there is a sidebar with 'Within this section' containing links to 'Taxi Incentive Scheme' and 'Discounts for electric vehicles'. The main content area is titled 'Low Emission Taxi Incentive Scheme' and explains that the Southampton City Council (SCC) and Eastleigh Borough Council (EBC) offer cashback for replacing a more polluting Private Hire or Hackney Carriage vehicle with a low emission alternative. It lists 'Eligible Vehicles' as Euro 3 petrol and Euro 5 diesel vehicles or older that comply with the Scheme terms and conditions. Under 'Our Offer', it states that to receive cashback, users must replace their eligible vehicle with a new or used one. A table below details the cashback incentives for three vehicle options: Full Electric (£3,000), Plug-in Hybrid Electric Vehicle (PHEV) (£2,000), and Full Hybrid (£1,500).

Option	Description	Cashback Incentive
Full Electric	A vehicle with an original specification of being powered only by a battery charged from the electricity grid.	£3,000
Plug-in Hybrid Electric Vehicle (PHEV)	A vehicle with an original specification of being powered by a plug-in battery and an Internal Combustion Engine (ICE). After the battery range is utilised the vehicle reverts to conventional hybrid operation (Minimum Euro 4 Petrol or Euro 6 Diesel Engine).	£2,000
Full Hybrid	A vehicle with an original specification of being powered by an ICE and is capable of being powered solely using a battery and electric motor. Battery cannot be plugged in, and is charged during driving. (Minimum Euro 4 Petrol	£1,500





# Estimated Costs for Measures

Measure	Total Est Cost	Funding Secured	Possible Funding Required from WG Air Quality Fund
Electric Buses	£13.5M	ULEB Grant £5.69M	£1.8M
Bus Retrofit	£1.4M	-	£1.4M
Taxi Incentive Scheme *	£5.5M*		£5.5M
City Centre Loop Schemes up to end of 2021	~£18.9M	-	CCW(Westgate St £7.6M CCN (Castle St/Blvd de Nantes) £7.1M Eastside Phs 1 £4.2M
Active Travel and CS1 completion	£7M	-£3M	£4.5M
			<b>Total: £32.1M*</b>
			*excludes funding bids made to LtF and City Deal



## Economic Appraisal of Options

- Full detailed socio-economic distribution of the measures and a distributional analysis to understand the extent to which these measures may impact on the residents of Cardiff and those that travel in to the city.
- Final business Case will include detailed health impact assessment and a distributional impact assessment.



# Further Measures

- **Overarching Clean Air Strategy and Action Plan sets out longer term measures intended to further improve AQ and satisfy LAQM requirements.**
- **Includes Measures that unlikely to have immediate impact on area of non compliance, but likely to provide further AQ improvements including AQMAs such as:**
  - **Implementation of Non Idling Zones**
  - **Living Walls and other Green Infrastructure**
  - **EV Infrastructure and Council Fleet Measures**
  - **Car Clubs with Low Emission/ Zero Emission Vehicles**
  - **Air Quality Planning Guidance**
  - **Schools Active Travel**
- **CASAP will be included in OBC as Appendix**



# Engagement



- Cabinet Approval of OBC scheduled for 21<sup>st</sup> March, with engagement launched following approval
- Comms strategy has been developed
- Aim is to educate stakeholders that Councils preferred option is package of measures which demonstrate compliance.
- Will detail that CAZ has been considered, but is not preferred option, owing to impacts to individuals and businesses, and increase in NO2 levels away from City Centre compared to measures.



# Timeline Going Forward

