



Carmarthenshire County Council's Carmarthen and Llanelli Air Quality Action Plan

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management

November 2019

Carmarthenshire County Council

Local Authority Officer	Lisa Jones
Department	Environmental Protection
Address	Town Hall, Iscennen Road, Ammanford, SA18 3BE
Telephone	01269 598255
E-mail	lisajjones@carmarthenshire.gov.uk
Report Reference number	Llanelli & Carmarthen AQAP
Date	November 2019

Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the action we will take to improve air quality in the Towns of Llanelli and Carmarthen, in Carmarthenshire between 2018 – 2023.

Air pollution is associated with several adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas^{1,2}.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³. Carmarthenshire County Council is committed to reducing the exposure of people in Carmarthenshire to poor air quality in order to improve health.

We have developed actions that can be considered under 9 broad topics:

- Alternatives to private vehicle use
- Freight and delivery management
- Policy guidance and development control
- Promoting low emission transport
- Promoting travel alternatives
- Public information
- Transport planning and infrastructure
- Traffic management
- Vehicle fleet efficiency

Our priorities are to improve traffic management and infrastructure in order to reduce congestion and emissions. Improve cycle routes and pedestrianised footways in order to promote travel alternatives and we aim to investigate methods to raise public awareness to help encourage behavioural change. We want to promote the uptake of electric vehicles and therefore it will be a priority to provide additional electric vehicle

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

² Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

charging points within Carmarthen and Llanelli alongside other main towns across the County.

We also recognise the importance that new developments bring to a strong economy and the balance that needs to be addressed, between measures to reduce traffic without discouraging visitors into the Town centres. Therefore, every effort will be taken to improve air quality wherever possible, through the development process using planning policy and guidance.

In this AQAP we outline how we plan to effectively tackle air quality issues within our control. However, we recognise that there are many air quality policy areas that are outside of our influence (such as vehicle emissions standards agreed in Europe), but for which we may have useful evidence, and so we will continue to work with regional and central government on policies and issues beyond Carmarthenshire's direct influence.

Responsibilities and Commitment

This AQAP was prepared by the Environmental Protection Division of Carmarthenshire County Council with the support and agreement with the following Officers and departments:

- Pollution and Well-being Lead, Environmental Protection
- Transport Strategy and Infrastructure Manager, Environment
- Highways and Transportation Manager, Environment
- Planning Officers, Developmental Control
- Forward Planning Officers, Environment
- Road Safety and Traffic Manager, Transport and Engineering
- Assistant Area Engineer West, South Wales Trunk Road Agent

This AQAP has been adopted by Members of Carmarthenshire's County Council's Environment and Public Protection Scrutiny Committee.

This AQAP will be subject to an annual review, appraisal of progress and reporting to the Environmental and Public Protection Scrutiny Committee. Progress each year will be reported to Welsh Government in the Annual Progress Reports (APRs) produced

Carmarthenshire County Council

by Carmarthenshire County Council, as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to Lisa Jones at:

Telephone: 01269 598255

Email: lisajjones@carmarthenshire.gov.uk

Table of Contents

Executive Summary	i
Responsibilities and Commitment	ii
1 Introduction	1
2 Summary of Current Air Quality in Carmarthenshire County Council	2
3 Carmarthenshire County Council’s Air Quality Priorities	7
3.1 Public Health Context.....	7
3.2 Planning and Policy Context.....	7
3.3 Source Apportionment.....	7
3.4 Required Reduction in Emissions.....	8
3.5 Key Priorities	9
4 Development and Implementation of Carmarthenshire’s AQAP.....	10
4.1 Consultation and Stakeholder Engagement.....	10
4.2 Steering Group.....	11
5 AQAP Measures	12
Appendix A: Responses to Consultation	25
Appendix B: Reasons for Not Pursuing Action Plan Measures	38
Appendix C: Source Apportionment Exercises for Carmarthen and Llanelli....	39
Glossary of Terms	44
References	45

List of Tables

Table 4.1 – Consultation Undertaken	10
Table 5.1 – Air Quality Action Plan Measures	13

List of Figures

Figure 1 - Carmarthen AQMA Area of Exceedance (East)	3
Figure 2 - Carmarthen AQMA Area of Exceedance (West)	4
Figure 3 - Llanelli AQMA Area of Exceedance	6

1 Introduction

This report outlines the actions that Carmarthenshire County Council will deliver between 2018-2023 in order to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors to the Town's of Carmarthen and Llanelli in Carmarthenshire.

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995 and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

This Plan will be reviewed every five years at the latest and progress on measures set out within this Plan will be reported on annually within Carmarthenshire's air quality APR.

2 Summary of Current Air Quality in Carmarthenshire County Council

Please refer to the latest Annual Progress Report from Carmarthenshire County Council to observe the NO₂ trends.

The main air quality pollutant relevant to Carmarthenshire is Nitrogen Dioxide (NO₂) and the main source of NO₂ emissions in the County is road traffic. We have developed a monitoring network that follows some of our busiest roads and most congested streets to enable us observe trends in NO₂ concentrations and assess the effectiveness of any changes made in attempt to improve air quality in those areas.

Carmarthenshire currently has three Air Quality Management Areas in Llandeilo, Carmarthen and Llanelli. Further details can be found on our website: <https://www.carmarthenshire.gov.wales/home/council-services/environmental-health/air-quality/#.W46Mg-mQzIU>

Llandeilo has its own separate action plan and has not been combined into this version because the air quality concerns in Llandeilo along with the prospective solutions under consideration are significantly different in nature to the similar issues experienced between the Carmarthen and Llanelli Towns.

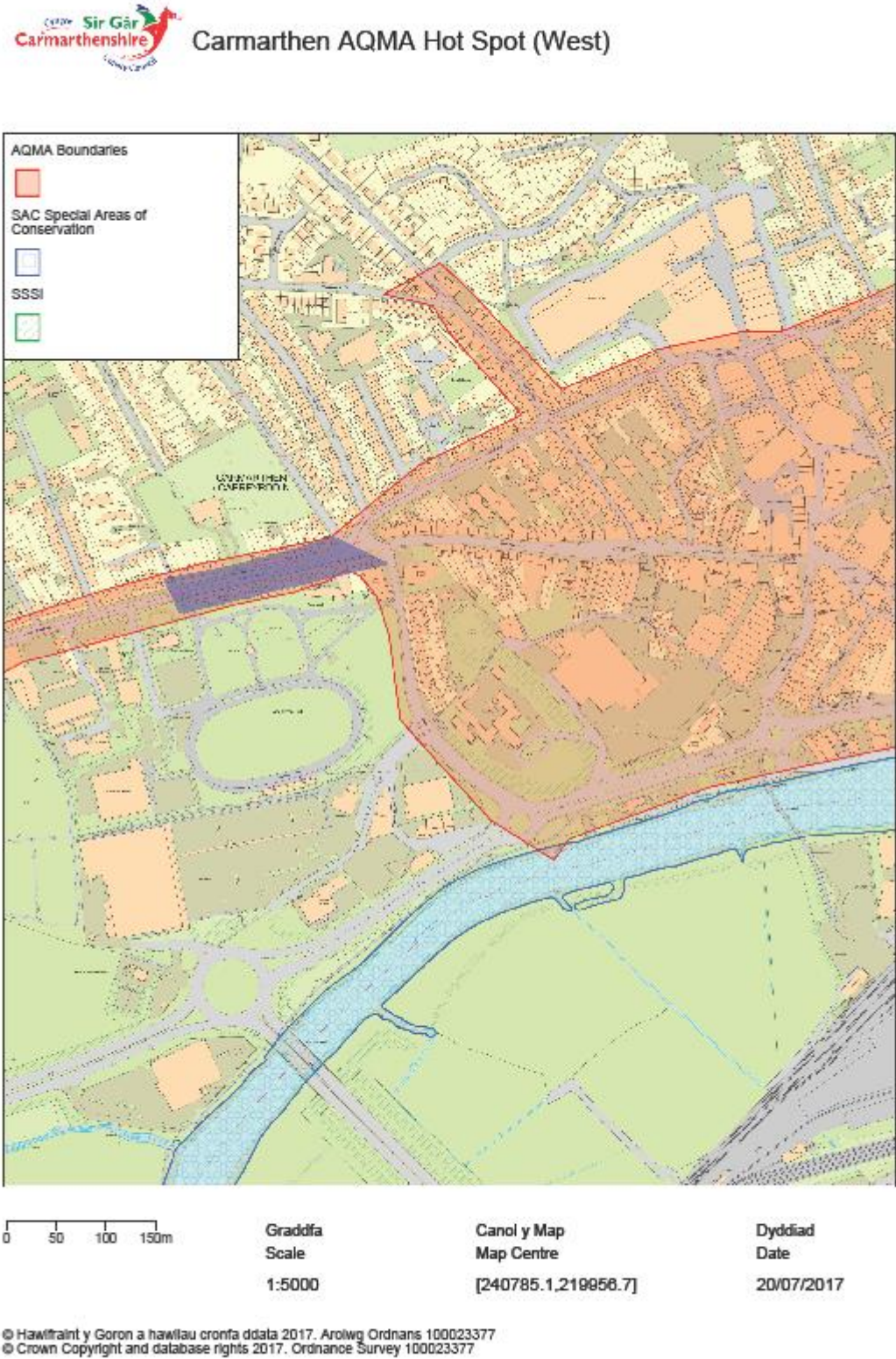
The AQMA boundary map areas for Carmarthen and Llanelli cover a much wider area than the actual areas of exceedance. This is because any interventions aimed at improving the area of exceedance may simply move the problem, or the means to make any improvement requires action over a far greater area than the actual area of exceedance itself.

Figures 1, 2 and 3 below identify (in blue shading) the actual areas of exceedance for both towns.

Figure 1 - Carmarthen AQMA Area of Exceedance (East)



Figure 2 - Carmarthen AQMA Area of Exceedance (West)



The hot spot areas identified by the blue shaded sections on the maps in Figures 1 and 2 above are small geographical areas with various constraints

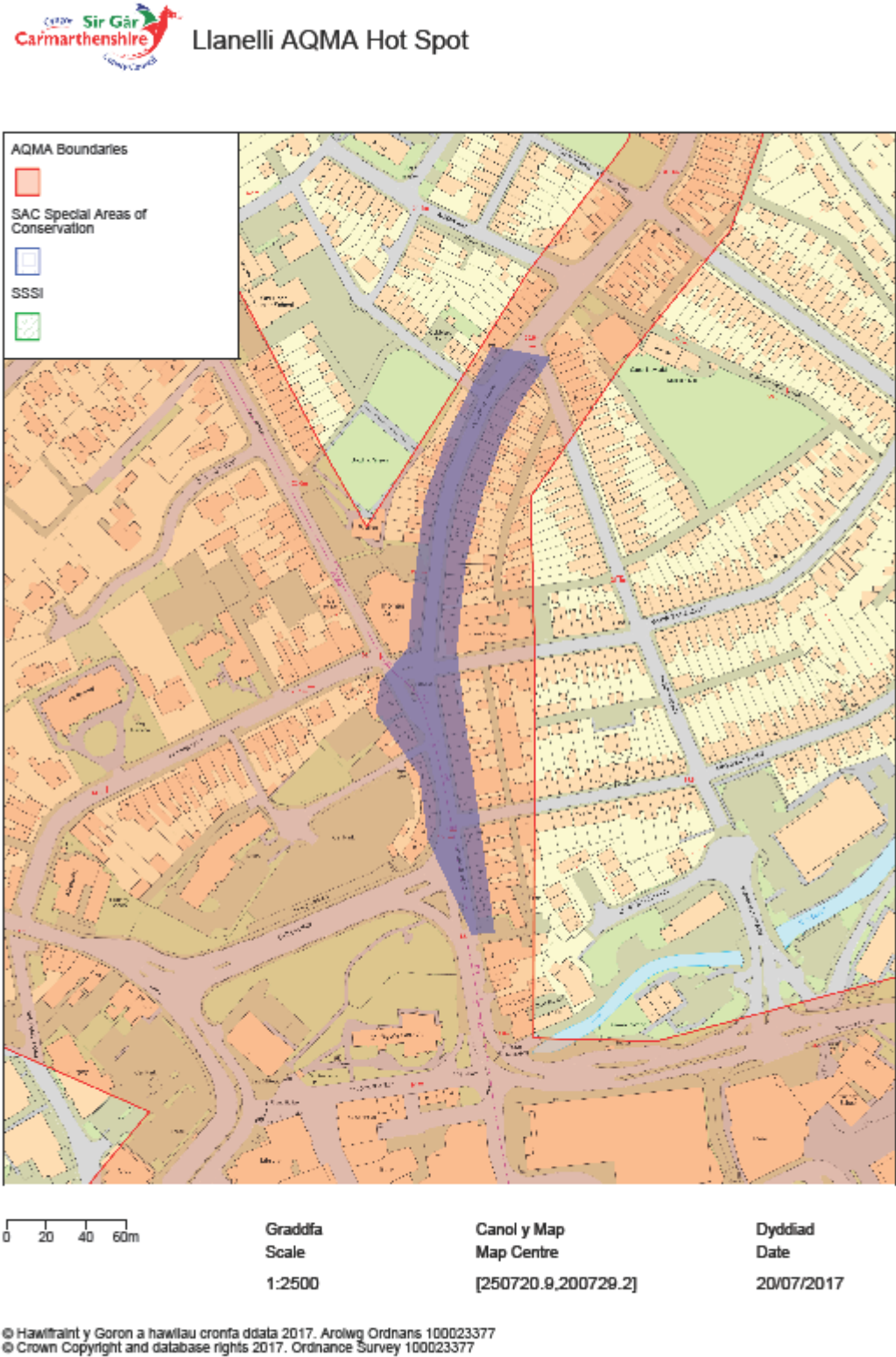
Carmarthenshire County Council

(such as narrow pavements and buildings close to the highway) that greatly restrict any significant interventions that would contribute towards achieving NO₂ reductions of the scale required. Both lengths of road are gradients that have roundabouts at their lower section and pedestrian crossings at the higher end of road section. The use of alternative routes for several of the journeys made along these road sections would help improve the situation.

The hot spot area identified by the blue shaded area on the map in Figure 3 below encompasses the bottom of Felinfoel Road meeting Thomas Street and the junction at Gelli Onn. This is a small geographical area with various constraints (such as narrow pavements and buildings close to the highway) along with being the main intersection junction for routes that cross the town from east to west and north to south. The use of alternative routes for many of the journeys made along these road sections would also help improve the situation, along with potentially altering the traffic light sequencing.

Sandy Road, Llanelli is also included within the AQMA boundary for Llanelli, this length of road is not only the main trunk road leading from Pembrey and Burry Port into Llanelli, it comprises of a length of terraced houses with a set of traffic lights located in the centre. Some NO₂ measurements have increased slightly over the last few years, resulting in levels that are close to the objective. An alternative route or reduced traffic would benefit this area, along with careful considerations given to new developments that may result in increased trips travelling down this road.

Figure 3 - Llanelli AQMA Area of Exceedance



3 Carmarthenshire County Council's Air Quality Priorities

3.1 Public Health Context

Collaboration between various Local Authority and Public Health departments is critical in the delivery of air quality improvements. The Well-being of Future Generations (Wales) Act 2015 places a statutory footing to improve joint working between Public Services, through Public Service Boards (PSB). This is made up of Local Authorities, Local Health Boards (LHB), Fire and Rescue services and Natural Resources Wales. PSB's must carry out a local well-being assessment, setting well-being objectives to implement through a well-being plan. The assessment must include reference to the national indicators set by Welsh Government, which includes the average NO₂ concentration outside people's homes. The quality of air we breathe is also an indicator for Wales' Public Health Outcomes Framework.

3.2 Planning and Policy Context

Carmarthenshire County Council will take every opportunity to improve air quality wherever possible through the development process and make every effort to prevent significant impacts on air quality arising from new development. This will be delivered in support of Welsh Government Policy guidance 'Local Air Quality Management in Wales' June 2017, Planning Policy Wales (10th Edition) and Carmarthenshire's Local Development Plan (LDP), of which the most notable LDP policy in relation to Air Quality is EP2: Pollution.

Actions will also be taken to ensure that new developments proposed within the Air Quality Management Area's do not contravene this action plan or render any of the measures unworkable.

3.3 Source Apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within Carmarthenshire County Council's area, namely Transport. Source apportionment is where the contribution of each polluting source (e.g. class of vehicle) is estimated.

Carmarthenshire County Council

Traffic source apportionment exercises have been carried out by Carmarthenshire County Council, in line with LAQM.TG (16). This identified that within the worst-case scenario receptor locations of Carmarthen and Llanelli AQMA's, the relative contributions of traffic emissions were as follows:

		Carmarthen		Llanelli	
Regional Background		3.0 µg/m ³	(5.1%)	2.8 µg/m ³	(6%)
Local Background		7.9 µg/m ³	(13.3%)	8.4 µg/m ³	(18.1%)
Local Traffic	Cars	29 µg/m ³	(48.9%)	18.2 µg/m ³	(39.2%)
	LGV	16 µg/m ³	(27%)	9.1 µg/m ³	(19.6%)
	HGV	1.8 µg/m ³	(3%)	4.1 µg/m ³	(8.8%)
	Buses	1.6 µg/m ³	(2.7%)	5.5 µg/m ³	(8.2%)

3.4 Required Reduction in Emissions

Historically there has been a requirement to identify the reduction needed in NO₂ to achieve the objective level of 40µg/m³, as an annual mean. However, latest policy guidance issued by Welsh Government in 2017 goes further and places a requirement for us to look at reducing pollution levels wherever possible (and not just within designated AQMA's). Rather than just fixating on achievement of the Air Quality Objective, the source apportionment work will also be used to help inform potential interventions that may result in improvement across the AQMA's and beyond. Additional traffic counts have already begun that which will assist with further source apportionment work, the results of which will feed into the assessment of the proposed interventions.

The required reduction in emissions in order to meet the NO₂ National Air Quality Objective of 40µg/m³ within our hotspot areas has been calculated in line with Chapter 7 of Technical Guidance LAQM.TG16. A 40% reduction of NO_x will be required in Priory Street, Carmarthen and a 13% reduction of NO_x in Felinfoel Road, Llanelli.

Further details of these for these source apportionment exercises for Carmarthen and Llanelli and the calculation of NO_x reductions required can be found in Appendix C.

3.5 Key Priorities

The following areas of focus will be prioritised for action to deliver in order to deliver the largest reduction in NO₂.

- Priority 1 – Traffic Management – to reduce congestion and build-up of emissions.
- Priority 2 – Traffic Planning and Infrastructure to improve the cycle network and build on the Council’s vision for Carmarthenshire to be the cycling hub of Wales.
- Priority 3 – Alternatives to private vehicle use, to promote the use of active travel and sustainable modes of travel.
- Priority 4 – Policy guidance and development control to prevent and minimise impacts on air quality from new developments.
- Priority 5 - Public Information to raise awareness about air quality and encourage behavioural change.

4 Development and Implementation of Carmarthenshire's AQAP

4.1 Consultation and Stakeholder Engagement

In developing this AQAP, we have worked with other local authorities, agencies, businesses and the local community to improve local air quality. Schedule 11 of the Environment Act 1995 requires local authorities to consult the bodies listed in Table 4.1. In addition, we have undertaken the following stakeholder engagement:

- Advertised on Council Website
- Notifications on Social Media
- Articles in local newspaper
- Notification distributed directly to members of the public who have raised air quality concerns or shown interest in air quality matters.

The responses to our consultation stakeholder engagement is given in Appendix A. There was a total of eleven formal responses to the consultation.

Table 4.1 – Consultation Undertaken

Yes/No	Consultee
Yes	Welsh Government (Air Section)
Yes	Natural Resources Wales
Yes	the highways authority
Yes	South Wales Trunk Road Agents
Yes	all neighbouring local authorities
Yes	Public Health Wales
Yes	bodies representing local business interests and other organisations as appropriate
Yes	Town Councils
Yes	Carmarthen and Llanelli local Councillors

4.2 Steering Group

The Action Plan Steering Group was formulated following the declaration of the AQMA's. It consists of members from Transport Strategy and Infrastructure Manager, Highways and Transportation, Transport and Engineering, Developmental Control, South Wales Trunk Road Agent along with colleagues from Forward Planning and Regeneration.

The Group agreed that some of the Llandeilo Action Plan work could be progressed by the Group along with dealing with the Carmarthen and Llanelli work. However, as the nature of the three AQMA's were slightly different it was acknowledged that membership of the Group may need to include other partners depending on Action Planning in each town and so it was agreed that co-opting members would remain flexible and could be initiated when required.

The AP Group performed a 'brain-storming' session to generate a list of potential interventions that may help improve air quality. The list was organised in those that were relevant for Carmarthen and those for Llanelli, and then a list that would be applicable for anywhere. Certain interventions were relevant for both towns. No form of screening was initially performed in respect of the proposed interventions, irrespective of how feasible or practicable they may be, to ensure nothing is discounted without a documented assessment having been performed to determine the feasibility of any proposed intervention.

The comments and suggestions received through the consultation were assessed and, where possible, incorporated in to the Action Plan. The consultation exercise was valuable in teasing out suggestions that had not previously been considered and the Action Planning Steering group is very grateful to those who participated in the consultation.

The list of proposals within the action plan should not be considered as interventions that will be implemented. All proposals will be subject to careful consideration and investigation to ascertain whether it is feasible to implement. The outcome may mean that some will not be deliverable.

The Action Planning Steering Group will remain as an active working group that coordinates and oversees the implementation of the various Action Plan proposals. Key partners of the group have been identified for delivering or assessing actions corresponding to their role. The data gathered from implementation will be documented and reviewed by the Group to ascertain the benefits gained from each proposal, along with assessing whether there have been negative impacts.

The Action Plans are deemed as 'live' documents, which are likely to evolve over time and therefore will be reviewed on a regular basis. It is proposed that the review will be carried out as part of the annual reporting requirements to Welsh Government under the LAQM process.

5 AQAP Measures

Table 5.1 shows the Carmarthen and Llanelli AQAP measures. It contains:

- a list of the actions that form part of the plan
- the responsible individual and departments/organisations who will deliver this action
- the EU classification and category of each measure
- expected benefit in terms of pollutant emission and/or concentration reduction
- the estimated timescale for planning and implementation
- how progress will be monitored

NB: Please see future Annual Progress Reports for regular annual updates on the implementation of these measures.

The specific actions for each town have been prioritised in order of achieving the most beneficial outcome relating to the reduction of NO₂.

Table 5.1 – Air Quality Action Plan Measures

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
	CARMARTHEN - High Priority										
C1	Improve cycle routes in and around the town.	Transport Planning and Infrastructure	Cycle Network	County Council	2018	2018-2022	Usage of cycle routes by counter	0.1%	Safer routes in Communities and Tywi Valley Cycle Path in progress		Impossible to identify reduction in emissions
C3	Improve car parking issues at Glangwili Hospital.	Traffic Management	Parking Enforcement	Local Health Board/ County Council	2017	2018	Reduced congestion / traffic counts	1%	Cycle space compound, Additional parking spaces and promotes use of park and ride scheme	Car park Management contract started September 2018.	Impossible to identify reduction in emissions
C6	Review the Park & Ride provision for the town.	Alternatives to private vehicle use	Bus based Park& Ride	County Council	2019-2020	2020-2022	Usage data / monitoring data	0.5%	Review of timings to support hospital staff		Impossible to identify reduction in emissions
C7	Introduce a 20mph speed limit in the town (possibly part time)	Traffic Management	Reduction of speed limits, 20mph zones	County Council	2018	2018-2019	Monitoring data	1%	20mph zones introduced around schools and shopping areas		Too early to identify reduction in emissions
C13	Review pedestrianisation across town, and extend it.	Traffic Management	Re-prioritising road space away from cars	County Council	2016	2020-2022	Area coverage	?	Consultation carried out for King Street		

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
C14	Assess extended use of the Tesco Shoppers bus.	Alternatives to private vehicle use	Other	County Council / Tesco	2018	No further action	Number of trips/Uptake	0.1%	Liaison with Tesco to identify whether trips are monitored and any scope for extending service.	2019	Impossible to identify reduction in emissions
High -Medium Priority											
C2	Promote use of Carmarthen by-pass through media resources.	Public Information	Via the internet and other mechanisms	County Council	2019	TBC	Traffic Counts	0.5%	None	TBC	
C4	Install AQMA signage (suggest alternative routes?).	Public Information	Via other mechanisms	County Council	2019	TBC	Traffic Counts/ improvements in monitoring results	1%	None	TBC	Reduce number of vehicles travelling through AQMA unnecessarily
C5	Assess positive / negative impacts of Western Link once opened.	Traffic Management	Strategic Highway Improvements	County Council/ SWTRA/ WG	2018	2019	Traffic Counts / Monitoring data	3%	Western Link Road completed 8 th March 2019	2020	
Medium Priority											
C8	Promote more car sharing / dedicated car parks (involve supermarkets?)	Public Information Alternatives to private vehicle use	Via internet Car and Lift sharing schemes	County Council/ Partners	2018	2019	Use of car sharing	0.1%	Promotion of car share website. Dedicated parking through planning	Ongoing	

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
C12	Assess use of 'dummy' speed bumps painted on roads.	Traffic management	Other (Speed reduction)	County Council	2018	2019	Reduction in speed	?	Assessed economical effectiveness of using dummy bumps over real bumps.	2019	Impossible to identify reduction in emissions
C11	Investigate bike hire scheme for the town.	Transport Planning and Infrastructure Promoting travel alternatives	Public cycle hire scheme Promotion of cycling	County Council/ Partners	2018-2019	2020	Uptake of bike hire	0.1%	Bike Hire in Carmarthen Park	In progress	Impossible to identify reduction in emissions
	Medium - Low Priority										
C10	Introduce electric/low emission buses, and introduce smaller buses at off-peak times.	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	County Council / Bus Operators	2019	TBC	Change in bus fleet	1%	Unsuccessful application for electric bus bid for the park and Ride scheme.	On going	Difficult to identify reduction in emissions
C9	Johnstown bridge scheme feasibility study.	Traffic Management	UTC, congestion management. traffic reduction	County Council/ SWTRA/ WG	2019	2020	Monitoring data	2%	Scheme planned to improve traffic flows on Llansteffan Rd.	2021	Reducing congestion on Llansteffan Road, should relieve congestion on connecting routes.
	LLANELLI - High Priority										

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
L1	Assess traffic light sequencing for Thomas Street/Gelli Onn junction.	Traffic Management	UTC, congestion management, traffic reduction	County Council	2017	2019	Reduced congestion/ Monitoring data	5%	Source Apportionment considered.	2020	
L5	Introduce a 20mph speed limit in the town (possibly part time)	Traffic Management	Reduction of speed limits, 20mph zones	County Council	2018	2019-2020	Monitoring data	1%	20mph zones introduced around schools and some other areas	2021	
L9	Improve footpath / cycle route connectivity for the Sandy Road area.	Transport Planning and Infrastructure	Cycle Network	County Council	2018	2019-2021	Usage of cycle routes by counters	0.1%	Safer routes in Communities grant awarded	2021	Impossible to identify reduction in emissions
L10	Determine impacts / opportunities from the Graig College development.	Traffic Management	UTC, congestion management, traffic reduction	County Council/ Graig Campus	2019	2020	Changes in traffic flow, congestion	?	Planned as part of a traffic modelling study for the Town	2021	
L11	Determine opportunities from the Wellbeing Village development.	Policy Guidance and Development Control	Air Quality planning and policy guidance	County Council / Partners	2018	2019	Implementation of alternative travel options		Outline planning consent granted	2023	Use of policy guidance to reduce pollution impact from development.
L12	Assess potential impact from the development of Parc Howard.	Policy Guidance and Development Control	Air Quality planning and policy guidance	County Council	2017	2017/18	Monitoring results	N/A	AQA performed identifying negligible impact.	2018	Planning application withdrawn
	High - Medium Priority										

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
L3	Install AQMA signage (suggest alternative routes?).	Public Information	Via other mechanisms	County Council	2019	2020	Traffic counts / possibly monitoring data	1%	None	2022	
L4	Promote use of Coast road through media resources.	Public Information	Via other mechanisms	County Council	2018-19	2020-22	Traffic counts	0.5%	Signage Strategy planned as part of Traffic modelling study for the Town	2023	Improvements to Sandy Road corridor need implementing first to remove pinch points.
L6	Review the Park & Ride provision for the town.	Alternatives to private vehicle use	Bus based park and ride	County Council	2019	2020-21	Usage data/ monitoring data	0.5%	Investigating options	ongoing	
L7	Feasibility study for re-opening Bridge Street.	Traffic Management	UTC, congestion management, traffic reduction	County Council	2018	2018	N/A	?	Option considered unfeasible to deliver reduced emissions	2018	Closing Bridge Street reduced emissions near relevant receptor where previously exceeded national objective.
L8	Feasibility study for a by-pass for Sandy Road.	Traffic Management	UTC, congestion management, traffic reduction	County Council	2019	2020-2021	N/A	2%	Options under consideration.	None	Significant constraints and high costs
L16	Assess parking in and around Pentip School.	Traffic Management	UTC, congestion management, traffic reduction	County Council	2018	2019	Options to promote active travel	0.5%	Limited parking for permit holders only in vicinity	2021	
L17	Feasibility study for weight and speed restrictions on Pembrey Road.	Traffic Management	Other Reduction in speed limits	County Council	2019	TBC	Monitoring data	0.5%	Monitoring started in conjunction with school project		

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
L 18	Feasibility study for creating a roundabout at Felinfoel/Thomas Street/Old Road junction.	Traffic Management	Strategic highway improvements UTC, congestion management, traffic reduction	County Council	2019-2020	2021-2022	Monitoring results	0.5%	Traffic modelling study planned	2022	
L21	Feasibility study for creating a one-way system for Sandy Road with traffic flow from the west only along Sandy Road and traffic flow east using Sandpiper Road off Sandy Roundabout and re-join at Sandy Water Park roundabout.	Traffic Management	Strategic highway improvements UTC, congestion management, traffic reduction	County Council	2019	2020	Traffic Counts and monitoring results	1%	No through traffic currently available on Sandpiper Road. Traffic modelling study planned for Llanelli Town.	2021	Additional consideration to be given to a bus only link between Sandpiper Rd and Sandy Road.
	Medium Priority										
L2	Implement traffic survey for Llangennech / Dafen / Thomas Street to establish why that route is used.	Promoting Travel alternatives	Other	County Council	2019	2020	Survey results	0%	Traffic modelling study planned	2021	Information gathering to help understand driver habit/route choice to help inform other potential inventions

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
L13	Feasibility study of closing the turning junction from Felinfoel Road to Old Road.	Traffic Management	Strategic highway improvements UTC, congestion management, traffic reduction	County Council	2019	2020	Monitoring results	1 -2%	Traffic modelling study planned		
L14	Identify and review HGV delivery timings to businesses in and around the town centre.	Freight and Delivery Management	Delivery and service plans Quiet and out of hours delivery	County Council / Partners	2020	2021	Possibly traffic counts / monitoring results	0.5%	None	2021	
L19	Feasibility study for creating a one-way section of Old Road between Thomas Arms and Bowls Club. (Link to L13)	Traffic Management	Strategic highway improvements UTC, congestion management, traffic reduction	County Council	2019	2020-21	Monitoring results and traffic counts	1%	Traffic Counts conducted	2021	
L20	Feasibility study for using Stradey Park Avenue for school start and finish times only.	Traffic Management	UTC, congestion management, traffic reduction	County Council	2021	TBC	Traffic counts and monitoring results	0.5%	None		Link to L9
	Medium - Low Priority										

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
L15	Review/improve signage to M4 (link to L3), identify preferred routes through town.	Public Information	Via other mechanisms	County Council / SWTRA / WG	2019	2020	Traffic counts	?	Signage Strategy planned	2022	
GENERAL ACTIONS											
A	Feasibility study for Low Emission Zones.	Promoting Low Emission Transport	Low Emission Zone	County Council / SWTRA	2022	?	Monitoring results	?	None		
B	Feasibility study for Congestion Zones.	Traffic Management	Road User Charging (RUC) / Congestion Charging	County Council	2022	?	Monitoring results	?	None	?	
C	Introduce Taxi Idling Ban.	Traffic management	Anti-Idling Enforcement	County Council	2021	?	?	0.5%	None	?	
D	Implement Idling Ban outside of schools etc.	Traffic management	Anti-Idling Enforcement	County Council	2019	2020-2021	Monitoring results	0.5%	Enquiries being made (suggested as an All-Wales approach through WG)	?	
E	Introduce Supplementary Planning Guidance (e.g. provision of EV Charging points – what criteria?).	Policy Guidance and Development Control	Low Emissions Strategy	County Council	2019	2020-21	Number of EV charging points	?	Electric vehicle Strategy and SPG under development	?	

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
F	Engagement with SAT NAV providers to highlight AQMA's	Public Information	Via other mechanisms	County Council / WG	2016	WG included in Consultation document	?	?	Working with WG/WAQF Introduced in WG AQ policy	?	
G	Feasibility study for messaging system that alerts of road works that may increase pollution levels over short periods.	Public Information	Other	County Council / Partners	2019	?	Number of users on system	?	Investigating options	?	
H	Introduce dummy speed cameras to aid traffic calming. (Possibly part time live on rotational basis?)	Traffic management	Other (Speed reduction)	County Council / Partners	2020	?	?	?	None	?	
I	Feasibility study for shared use footpaths. (with markings?)	Transport Planning and Infrastructure	Cycle Network	County Council	2018	2020	?	?	Funding secured for design. Bid submitted for funding the construction.	2022	
J	Advertise cycle paths.	Public Information	Via the internet and other	County Council	Ongoing	Already being done	Cycle path counters	?	Cycle routes advertised on internet. Funding bid submitted to further promotion.		Impossible to identify reduction in emissions

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
K	Advertise offices that have facilities for cyclists. (Increase number of offices/buildings providing cycle safe storage)	Promoting Travel Alternatives	Promotion of Cycling	County Council	2019	?	Use of facilities	?	Pool bicycles available to Council staff in Carmarthen		
L	Produce and distribute car stickers with messages (e.g. – turn engine off when parked/idling, slow down, consider air quality, stay back from car in front).	Public Information	Other	County Council	2021	?	?	?	None		
M	Check tourist route maps / websites for advised routes (avoid AQMA's where relevant)	Public Information	Via the Internet	County Council / SWTRA	2022	?	?	?	None		
N	Review & improve timings of bin collections & road sweeping	Freight and Delivery Management	Route Management Plans	County Council	2022	?	?	?	None		
O	Feasibility study of making towns and villages vehicle free.	Promoting Low Emission Transport	Clean Air Zone	County Council	2022	?	Monitoring	?	None		

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
P	Establish communications network with haulage contractors to improve service delivery.	Freight and Delivery Management	Delivery and service plans	County Council / Partners	?	?	?	?	None		Link with G
Q	Assess reward scheme for people who rarely use cars or for those that walk/cycle frequently.	Promoting Travel Alternatives	Promotion of Walking and Cycling Other	County Council	?	?	Uptake	?	None		
R	Facilitate retrofitting buses / coaches to gas fuel.	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	County Council / Partners	?	?	Uptake	?	None		
S	Diesel engine vehicle ban.	Promoting Low Emission Transport	Low Emission Zone or Clean Air Zone	County Council / Partners	?	?	?	?	None		
T	Enhance walking routes.	Promoting Travel Alternatives	Promotion of Walking	County Council	2017	On-going	Path counters	?	Improvements to footpaths planned for Llanelli. Pedestrianised routes improved, introduced through planning development.		

Carmarthenshire County Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
U	Improve access to M4 through Llangennech area.	Transport Planning and Infrastructure	UTC, Congestion Management	County Council / SWTRA / WG	When started	?	?	?	Partnership working to improve junction 48		
V	Introduce green infrastructure or urban planting schemes. (possibly through Planning)	Policy guidance and Development Control	Other policy	County Council / Partners	ongoing	?	Number of schemes / Sec. 106 schemes	?	Included through planning developments		
W	Discuss with WG barriers / opportunities to transfer road freight from ferries to rail freight.	Freight Delivery and Management Promoting Travel Alternatives	Freight Delivery Promote Use of Rail	County Council / WG	2021	?	?	?	None		
X	Liaise with 'Car Club' facilitators for opportunities to introduce across the County.	Alternatives to private vehicle use	Car clubs	County Council / Partners	2018	2019	Uptake of lift sharing	?	Lift sharing app for parents under development	?	
Y	Feasibility study of bike hire schemes.	Promoting Travel Alternatives	Promoting Cycling	County Council / Partners	2019	2021-22	Uptake	?	Option under consideration, Currently available in Carmarthen Park and Pembrey Country Park	?	

Appendix A: Responses to Consultation

Summary of Responses to Consultation and Stakeholder Engagement on the AQAP

Response 1)

Carmarthen area

C1 the current cycle routes in and around town are not used by 'serious' cyclists as they cannot maintain their speed compared to remaining on the road-- local folk probably do use them so cost of expanding the network will need to be considered against other CCC priorities

C6 many polluting buses have very few passengers at certain non-peak times and probably cause more pollution than the few cars that may not be driving into town-- electric buses would be a better solution with maybe smaller buses at off peak times.

C7. We walk down a polluted road (Priory St) very often into town. In principle is good but in practice might not improve health. I have recently heard on the news that the elimination of speed bumps because of the almost stop start manner of driving / accelerating away would be an improvement to the Nation's air quality

C9. Not sure what bridge scheme is proposed here?

If the slow moving traffic on Lesneven bridge could be speeded up by some major roadworks to allow those travelling West not to be halted by the B & Q roundabout -- this should reduce pollution.

The Morrison main roundabout is a nightmare for travellers with a roundabout with many lanes to negotiate and also traffic lights-- why do we need a roundabout as well as traffic lights-- improved traffic flow here could ease pollution.

Table 3 Generic

A would this mean lorries or diesel vehicles would not be allowed to travel into certain areas of the town? If so this could help significantly.

B how would this differ from A? Unless there was a congestion charge?

G. How would this work? If one is in a queue caused by road works then nothing much that can be done unless there are diversion signs well ahead warning of roadworks

H 20 mph throughout the town can be very slow when traffic is flowing freely-- might be possible to restrict the 20 mph to certain times of the day Dummy speed cameras could well help in this regard.

I. Cyclists and pedestrians are not always a good mix as we experienced lately walking into town via the Derwen route when a cyclist was right behind us with no warning (he had no bell).

N. Very early morning bin lorries can be a nuisance to householders but I do see that on certain routes it would be beneficial to reduce hold ups in the town -- Priory Street and Spilman street.

Q. How would this be implemented?

S. Does this mean in certain parts of town?

Response 2)

Improve signage.

Possibly improve signage pointing to the M4 at the top of Gelli Onn and anywhere on the ideal route to the M4.

M4 access.

I believe that the main reason cars and lorries still use Felinfoel Road is to access the M4 at Crosshands.

At times access via Llangennech is virtually impossible with queues extending back as far as the old RN buildings to enter the M4.

Personally this morning I travelled along the coast road to access the M4 at Penllergaer (Gorseinon).

I'm aware that this junction is the responsibility of the Highways Agency but perhaps Carmarthenshire Council can change the road markings to form a roundabout?

Extremely dangerous queues also form to exit the M4 here and on the A4138 (and perhaps cause drivers to travel to Crosshands?). This is obviously caused by the first traffic lights on the A4138. Perhaps a roundabout could be formed here?

M4 route changes.

(1) Aldi traffic lights.

I think that junction could be improved. It operates at a very slow speed and generally seems to confuse pedestrians. In particular pedestrians jump out in front of cars travelling towards the Parish Church! I've also seen people knocked over here.

All in all I prefer to avoid this junction.

(2) Dafen roundabout.

A very busy junction that doesn't seem to cause many delays but in this area some drivers seem to take this at high speed apparently to avoid delays. I avoid it for this reason.

Felinfoel Road bypass.

There seems to have been some changes made in the past with the view to constructing a new road from Sandy Bridge up through Pentrepoeth to re-join at Heol Buckley, Felinfoel. At Heol Buckley there seems to be a partially constructed road. I wouldn't really want to switch the pollution to Pentrepoeth valley but I thought I'd mention it.

Response 3)

Apologies for the delay in getting back. Fine from my point of view. One further thing mentioned by a colleague here in relation to encouraging cycling was that there aren't facilities to securely store bikes in a lot of the buildings. The price on bikes these days people will want a secure location inside or outside.

Response 4)

I took the opportunity over a few hours on Saturday to canvass or petition fellow residents along the length of Pembrey Road, those that were at home had no hesitation signing, but the general consensus of opinion was it would be of little use as the Council show little interest in positive change and there was a lack of political will to do something that would improve the quality of life of residents hence I copied in the various political representatives. Other issues which came up on the door step which you may wish to share with colleagues, are the width of pavements on the 'north side' of Pembrey Road pedestrians' are in very close proximity to passing lorries, vehicles travelling at high speed, especially in the evening hence a request for speed cameras and the continuing problem of indiscriminate parking by some in the 'north side' rear lane of Pembrey Road some felt whilst the single yellow lines were effective Mon-Friday the prohibition period does not cover the weekend which some irresponsible drivers take advantage of. It is hard to defend single yellow policy when those on the 'south side' of Pembrey Road enjoy double yellow lines in their rear lane but don't suffer from school run mothers blocking our lane whilst they take their children into Pentip School, or the fact the rear lane is used as a short cut by those living further up in the ward. On a lighter note one resident would like some greenery planted which isn't a bad idea if we could have some of the other issues resolved or the poor plants would struggle to grow! I trust this petition is taken seriously and informs the public consultation.

I live on Pembrey Road and the main pollutant without doubt, is heavy goods vehicles travelling both East and West using Pembrey Road/A 484 as an access route. There is an alternative coastal route these vehicles can use but they do not possibly because their sat nav's say otherwise. If they used the coastal route they would save on diesel and not add to traffic congestion within the town. The road itself suffers from heavy traffic damage and given the camber and poor surface water drainage due to too small diameter pipes running into the gulley's (another issue) dirty road spray hitting windows is another problem. The build-up of small carbon deposits on external window sills indicate heavy pollution. I would recommend a tonnage restriction along Pembrey road be included in the action plan, this is a cheap and very effective solution (with the exception of public transport). A speed restriction should also be considered along with speed cameras, vehicle's travel at great speed especially at night. Where heavy traffic pass outside my house the tarmac footpath is very narrow and pedestrians are in very close proximity to passing lorries - this is dangerous. There is no doubt our quality of life is suffering and I trust you can support my recommendation. It is not only residents and passers-by who would benefit but also the children of Pentip School

Response 5)

I have read the above mentioned consultation document and in particular have a vested interest in the area of Sandy Road. I have lived in this area since 1974 and have now some serious concerns regarding the amount of traffic, the type of vehicles and the high pollution levels that are now attributed to this traffic.

I'm sure that you are aware that there are a number of schools and a college in this area which children and teenagers attend on a daily basis. Many of them walk to these establishments via the A484 others travel via bus or car.

Also from Sandy Road roundabout down to Pwll there are a number of garages selling cars, a petrol garage , a tyre garage and a bus depot, there are a also few others which I could mention. They all contribute to the high volume of traffic in some way or another.

This road is not only dangerous through the fumes and pollution that these vehicles spew out, but also due to the amount of traffic that use this road. The new Stradey Park housing estate is already adding pressure to this vastly congested road and it is only partly occupied. Denham Avenue is being used by bus companies and motorists to convey their clients and children to their respective schools which has made this road very dangerous. At the bottom of this road you have a roundabout which is totally unsuitable leading on to the A484, I have no doubt that sooner or later there will be a serious accident there or even worse, a fatality waiting to happen.

In Wales alone 2,000 deaths a year are believed to be caused by Air Pollution. In England, especially the London area, councils are being taken to court by members of the public regarding their medical conditions caused by this pollution. These include Asthma, Cancer and other respiratory ailments, I'm sure it is only a matter of time that this will also happen in Carmarthenshire unless you act soon to reduce these pollution levels.

I have noticed that whilst housing, schools and businesses have all been extended or increased in the Sandy area, over the years, the council have not put the relevant infrastructure in place to go with it.

I'm sure you are also aware over the last seventeen years or so relevant people have stated that a BY PASS was needed to be built as they could see what the future would bring. I would agree that there is no easy fix to this issue, however, a BY PASS is long overdue for this area, and will go a long way to solving some of these issues .

Can you pass these comments on please to the Action Plan Committee.

Response 6)

The Table 3 has some excellent ideas.

I would like to see added: Ban children from being driven to school in private vehicles. They can walk, cycle or use the buses. (exceptions can be made for children with special needs)

C1. Improving the cycle routes will only work if the cyclists will use them. I notice that they are reluctant to use the cycle paths next to the roads and prefer to hold up the traffic creating more pollution.

C2. Media/advertising is probably not going to be enough to get vehicles onto the Carmarthen bypass. There are too many hold ups.

Is the biggest issue the through traffic on the A40? Why can't all these trucks that travel the length of the UK from ferry to ferry, [do not add to the local economy but do damage and clog up our roads], be obliged to use the railway which runs to most of our ports in Wales to the Chunnel.

Maybe we would not have to build any more expensive roads. It might even be financially worthwhile putting on subsidised trains. My family would love a better train service.

Response 7)

I write in relation to the current consultation you have on the air quality issues in the Llanelli area. As a resident living in Park Howard Avenue, I regularly drive down Thomas Street and West End and experience the traffic jams that probably contribute to poor air quality in the area.

Driving down Thomas Street (less than half a mile) can take up to half an hour at times (such as during school runs etc.), and the main problem appears to be caused by people turning right into Old Road (alongside Thomas Arms). They have to wait to turn as there are cars driving up from town, this then causes a tailback up Thomas Street.

One suggestion could be the introduction of a roundabout where the current bus shelter is outside Jenkins, as this may aid with traffic flow. I think the problem will never be resolved properly as there are too many cars on the road, and whatever methods of control are adopted will only last so long.

An additional problem is caused by cars parking in areas they should not, such as outside the doctor surgery on Old Road alongside the Thomas Arms, whilst there are yellow lines present they are often ignored. This again causes blockages with traffic flow as cars travelling up and down Old Road cannot move freely.

Cars trying to pull out of Old Road onto Thomas Street (outside front of Thomas Arms) can sometimes have to wait long lengths of time given the volume of backed up traffic, all with idling engines contributing to air pollution. A roundabout as mentioned above may help with this situation.

In relation to the road leading from West End into town, I believe a major problem at this point is there is not enough room for traffic to filter left to drive up Gelli On. The traffic lights allowing traffic to drive straight on towards the library only turn green for a short period, and three or four cars later all traffic from West End is blocked again as they cannot filter left. Allowing the lights to stay green longer for traffic going straight could help.

Another problem that adds to the situation is cars parking along the main roads into the town centre. An example being cars parked along the side of New Road, whilst the road has been widened to try and keep 2 lanes, one bus or lorry driving along causes the road to be blocked with cars. This also causes cars to use

side streets to try and avoid the road, such as Stradey Park Avenue and Mansel Street. Another example of this is Station Road, leading up to the Train Station gates from New Dock Road, and after the gates up to town. Cars parked along the road on the approach limits the road to one lane, causing tailbacks, and I have even witnessed cars having to stop on the tracks as cars cannot pass due to other cars parked opposite the Apple Tree Inn (this does have yellow lines but are often ignored).

Not sure if this information is of any help. If you would like any further information please let me know.

Response 8)

The proposals and Action Plan were very much welcomed, please note the below comments/suggestions:

1. Park & Ride - proposals to improve the current situation were welcomed, particularly moving the current facility from Nantyci to a location closer to Carmarthen town and especially Glangwili Hospital. The current site at Dolgwili being used by Balfour Beatty/Western Power for the Brechfa Wind Farm power connection was suggested as appropriate and worthy of further consideration.
2. There is a real need for additional battery car charging points across the town, especially in view of recent national and international statements being made by governments and car manufacturers about reducing the number of petrol and diesel vehicles. This has been reported to the County Council previously by the Town Council's Environmental Working Group but there seems to have been no progress made.
3. Consider street bicycle hiring schemes similar to that operated in London and elsewhere ('Boris's Bikes')
4. Consider introducing free use of bicycles restored by young offenders serving community service sentences.
5. Consider the introduction of 'dummy' speed bumps whereby images are painted on road surfaces to give the appearance that speed bumps are in place.
6. Consider the routine/programmed pedestrianisation of certain designated streets at different days or times of the year to reduce motor vehicular traffic and to encourage people to walk or cycle.
7. Extend the operating hours of the Tesco Shopper's bus - at the moment it ends daily at 3.15pm which is considered to be too early.

C9 in your action plan refers to 'bridge schemes' - what exactly are these?

Response 9)

Thank you for your email regarding the public consultation. I would be grateful if you could clarify a couple of issues for me.

It is stated in the Draft Action Plan Report that this work has taken due regard of the latest (2017) Policy and guidance updates issued by the Welsh Government and the need to reduce air pollution in general and not just concentrating on trying to achieve the Air Quality Objective (AQO) in "hot spot" areas.

Carmarthenshire County Council

The Annex A tables with the new Policy guidance discloses National air quality objectives for Particles (PM10 and PM2.5) (gravimetric). At the beginning of July, the front of our house was painted and it has been alarming to see how quickly a thick layer of what appears to be black soot has formed at the base of the front. Will the council be taking steps in the future to measure and monitor the levels of Particulate matter and will it be a consideration in respect of the Action Plan, since it clearly as well as the levels of nitrogen dioxide has an adverse effect on our health?

In response to a Freedom of Information request, there is a table found on the Welsh Government website issued by the Department of Environment and Sustainable Development, which provides the names and addresses of all primary and secondary schools in Wales located close to or within 150 metres of roads modelled as exceeding the nitrogen dioxide limit using the Pollution Climate Model 2015. It further states that this information has been compiled for Compliance Assessment reporting to the European Commission which does not include the requirement to assess air quality in or around schools. The information includes modelled predicted levels of NO2 at the roadside only. There are no schools within the Carmarthenshire area listed on the table.

Box 4.3 of the new Policy guidance states: "In working towards the well-being of future generations, Local Authorities should give special consideration to the long-term risks posed to babies and children by exposure to air pollution, whether in their homes, in their school or nursery, or travelling between the two." Old Road Community Primary School, as well as running alongside Old Road, is within 150 metres of Felinfoel Road. The children cross both roads on a daily basis during term time. Has any special consideration been given to the location of the school when drafting the Action Plan?

A traffic count has recently been carried out on Old Road and I would be grateful if you could send on to me the results of that count when they become available.

Any information or clarification that you can provide with regard to the above matters will be much appreciated.

Followed by

Thank you for your email. You have previously stated that the data obtained from the traffic count would help towards assessing Action Plan proposals and I was grateful for the opportunity to discuss with you last Friday the results that you were finally able to obtain for Old Road.

The traffic count carried out disclosed that during one week in July a total of 34,120 vehicles used Old Road of which 30,786 (90%) were northbound. The 5 day average is shown as 5343. One of the proposals in the draft Action Plan is that you assess the impact of closing the turning junction from Felinfoel Road to Old Road. As discussed, there is clearly a need for a further traffic count to determine how many vehicles are turning from Gelli Onn to travel northbound up Old Road to be able to assess the overall impact.

As stated in the Plan, the hot spot area encompasses the bottom of Felinfoel Road meeting Thomas Street and the junction at Gelli Onn. Old Road is not an arterial road or high-capacity urban road. It is a residential street, which has been used as a rat run as a direct consequence of the Gelli Onn redevelopment and the closure of Bridge Street in 2008. The figures from the latest traffic count are consistent with the figures disclosed in one that was carried out in May 2012, which showed that 36,963 vehicles used Old Road of which 33,026 (89%) travelled northbound.

The Council would have known, or should have known, that a consequence of the redevelopment of the Gelli Onn junction would have been the use of Old Road as a rat run and have been fully aware of the extent of the problem from the previous traffic counts. Yet no action was ever taken to monitor the levels of NO₂ in Old Road, notwithstanding its proximity to Felinfoel Road, until I requested that a diffusion tube be placed in the street after I met with you and Alun Rees at the start of this year.

The Policy Guidance issued by the Welsh Government in June of this year stated that local authorities should give special consideration to the long-term risks posed to children by exposure to air pollution, whether in their homes, in their school or travelling between the two, and I have previously raised the issue with you about Old Road Community Primary School being less than 150 metres from Felinfoel Road. The school is located alongside Old Road and the monthly readings since February of this year show for a residential street high levels of NO₂. There is an additional risk factor to the children from the failure of the vehicles using Old Road to adhere to speed restrictions, which is also disclosed by the traffic count. In 2015, it was reported in the Llanelli Star that 179 motorists had been caught speeding outside the school. The article appeared on 11 September 2015.

I would therefore ask that as part of the Action Plan that you would consider making the stretch of road from the bottom of Old Road at the Thomas Arms to the turning into the car park of the Llanelli Bowls as one-way to be used only by southbound traffic. That would prevent the continued use of Old Road as a rat run by the traffic turning from Felinfoel Road or coming up from Gelli Onn. Again, I can only stress that Old Road is not an arterial road or thoroughfare. It is a residential street and the benefits from restricting the northbound traffic, particularly from the point of view of the health and safety of the children as well as the residents of the street from the reductions in the levels of NO₂ and particulate matter, are clear.

You did state when we met that a new indicative air quality monitoring pad, an AQ mesh, is to be installed in Felinfoel Road to measure the particulate matter as well as the levels of NO₂. I would be grateful if you could let me know when that equipment is in place.

Response 10)

Joint submission to Carmarthenshire County Council's Air Quality Action Plan Consultation

Llanelli has worryingly high levels of air pollution and, given that this is the cause of over 50,000 premature deaths (across the UK) each year, it is welcome that the Carmarthenshire Council is taking action to address it.

In the long term, exposure to air pollution harms both our heart and lungs and is particularly detrimental to children. In the short term, harmful levels of Nitrogen Dioxide – such as those identified around both Sandy Road and Felinfoel Road – compound breathing issues for those with pre-existing conditions and can trigger increased hospital admissions. On average, air pollution is estimated to cost our National Health Service upwards of £20billion a year.

However, whilst there are some welcome initiatives proposed in the strategy - such as a new 20 mph zone in the town centre, and measures to improve park and ride provision - the strategy as it stands is short-sighted and we ultimately believe the entire approach needs to be revisited.

Aside from the fact that, as an action plan, there are remarkably few actions (instead the strategy outlines areas of exploration needed before actions are taken), the primary issue is that the focus of the vast majority of initiatives set out remains on diverting traffic, rather than reducing it. This will achieve little but to kick the issue into the long grass, delaying the impact perhaps long enough that it becomes a future generation's problems, not ours. The interventions proposed won't tackle the problem, they will simply disseminate it – and whilst they might ensure no one neighbourhood's air breaches regulations, they'll achieve this by making everyone's air that little bit more harmful to breathe.

Promoting modal shift away from car travel is widely acknowledged as one of the most effective ways of reducing emissions and improving air quality. Two thirds of our car trips are less than five miles long, and one in ten car journeys are for distances of under a mile. With a number of small changes, these are journeys that are easily replaced by walking, cycling and public transport. The policy measures that would achieve this, however, are only listed under the section titled 'Generic Draft Air Quality Improvement Proposals', which are specific in neither their location nor their time of implementation.

Air Quality Strategies are intended to encourage local authorities to set out policy options that would improve air quality both today, and into the long term - as a means of not only providing direct benefits to public health, but to improve the quality of life for communities, and to help protect the environment. This action plan won't achieve this.

Specific responses to actions proposed:

Assess traffic light sequencing for Thomas Street /Gelli Onn junction	Assessing traffic light sequencing may help to reduce levels of idling traffic, but it won't reduce overall traffic volume.
Consider traffic survey for Llangennech / Dafen / Thomas Street to establish why that route is used.	A sensible suggestion, but it should be expanded to consider what alternative modes of transport (buses, walking, cycling) could help alleviate the problem, and how modal shift could be encouraged.
Considering using signage to alert drivers they are entering the AQMA (possibly suggest alternative routes).	If alternative modes of transport are not available, this will only (at best) divert traffic.
Utilise media resources to publicise the use of the Coast road to reduce traffic volumes travelling through the town unnecessarily.	Again, this will only divert traffic and will worsen air quality for communities in Glanymor and Llwynhendy. It also contradicts proposals for the Delta Lakes development to be part of a 'clean air zone'.
Assess the impact of introducing a 20mph speed limit in the town (greater use of bypass, improve road safety, less congestion, encourage walking, improve health).	20mph zones have been shown to increase levels of walking and cycling as pedestrians and cyclists feel safer navigating streets – as such, this should be encouraged. However, 20mph zones without other urban design interventions are unlikely to be effective - these interventions must be considered in tandem.

Review the Park and Ride provision for the town. Work with partners to assess delivery of a joint service for multiple sites.	Improving the park and ride provision could help reduce traffic volumes and should therefore be prioritised.
Assess the potential of re-opening Bridge Street.	Whilst this may induce better traffic flows, it will bring traffic pollution to the doorstep of Llanelly House and our library and may make these popular destinations less attractive to visitors.
Assess the potential for creating a bypass for Sandy Road.	Costing in the region of £40-£50m, this is by far the most expensive proposal made. And with a Southerly wind, would potentially have little impact (given that particulates would still be carried towards Sandy Road). More than this, evidence shows that if you build extra road capacity, it only incentivises people to use cars more often, further worsening air quality.
Assess the footpath/cycle path connectivity for the Sandy Road area.	A whole network of walking and cycling routes is needed across the constituency, not just one isolated area. And considerations need to be given to where road space can be reallocated.
Assess any impacts / opportunities from the Graig College development.	Without further detail on what the impacts / opportunities might be, it is difficult to comment on this proposal.
Assess any opportunities from the Wellbeing Village development (e.g. electric vehicle charging points etc).	Electric vehicles may reduce air pollution, but they are not a solution to tackling climate change. The electricity that powers these vehicles still needs to be produced, and all too often this is done through fossil fuels.
Assess potential impact from the development of Parc Howard	The proposals to introduce a two-storey car park must be revisited. Building more capacity to facilitate car use will only encourage more traffic to an area of town already struggling with poor air quality.
Assess impact of closing the turning junction from Felinfoel Road to Old Road.	
Review and assess HGV timings to businesses in and around the town centre.	Again, whilst this might improve air quality during peak journey times, it will do little to reduce overall pollution levels if the same volume of traffic remains.

Response 11)

I have set out various sections that I feel are all equally important and vital to the control and reduction of poor air quality that is constant in Sandy Road and is progressively deteriorating to such an extent that only a By-Pass will effectively eliminate a situation where the Health Safety Standard set at 40 ug/m3 is constantly being breached.

(1) Sandy Road By-Pass

This has been described as the “**Missing Link**” for the A484 and because of the short-sightedness of Carmarthenshire County Council, has created “**a monster**” that even the best pollution prevention people will find impossible to eradicate.

A feasible route has been identified from the B4304 near to the “cycle bridge” to the Eisteddfod Fields Car Park and out onto the A484 at the existing roundabout adjacent to the Stradey Patio Centre at Coleg Sir Gar.

A fallacy has been created that the Millennium Commission would demand a return of its £30 million in grants if this route was adopted, nothing can be further from the truth as an officer for the Commission explained that if the Council presented a bona fide case, then the Commission would not want a penny in compensation. *(Letter available on request)*

Talking to a Professor of Pontypridd University, an eminent expert in the building of infrastructure in Wales estimated the cost at £6.5 million per mile and that is just about the distance needed to complete this improvement to the congestion and pollution sufferings of the people of Sandy Road.

Grants have to be forthcoming from the Welsh Assembly Government to facilitate this as “**Phase 1**” to complete this section of the “**Missing Link**” which inhibits free flow of commercial traffic harming the prospects of enhancing trade and employment over the only route, west out of Llanelli.

A Pwll By-Pass is not as urgent as one for Sandy Road with the only area of pollution concern being Bassett Terrace, the rest of Pwll does not contain a “**double terraced**” row of housing effect, but even this in Bassett Terrace is nowhere near as acute as Sandy Road.

Once the benefits of a Sandy Road By-Pass are realised then a phase 2 grant could in the future be sought.

(2) One way System to immediately reduce pollution buy 50%.

The construction of a 400 metre road extension at the west end of Sandpiper Road running behind Sandy Road and exiting at the Stradey Patio Centre roundabout would immediately reduction the poor air pollution at Sandy Road by 50%.

All westbound traffic would travel along Sandpiper Road and all eastbound traffic along Sandy Road, there would be objections, but when have the Council taken notice when they ignore the massive objections of the residents of Sandy Road.

There seems to be a NIMBY approach that is listened to over such pollution easing schemes as there will be in Section 4 below.

In the interim other measures to consider:-

(3) Impracticality of a Park & Ride System for Sandy Road.

The construction of a “**Park & Ride**” system or even a “**Car Sharing**” scheme to cut down on traffic flows would never work because there is no feasible area for cars to park and the blank refusal for people to get on board with it.

To build a “**Car Park**” between Burry Port and Pwll on sloping private land either side of the A484 would be both impractical and expensive to purchase (more beneficial to build the “**By-Pass**” phase 1)

To develop “**Car Parking**” on the existing Eisteddfod Fields and bus into Llanelli from there would be a total waste of time as motorists would not use it because the distance to town is minimal and the disruptive nature of the system would cause chaos and congestion at the Stradey Patio Centre roundabout and the queuing for the buses would test the “**patience of a saint**”.

Sometime ago an idiotic suggestion coming out of Carmarthenshire County Council’s Highways Department was to cycle into town to reduce the traffic numbers using the then new section of the National Cycle Network from Burry Port to Llanelli.

If we had the reliable good weather of California all year round, people still would not consider it as cycling is a hobby/sport not a means of going to work over this distance, we are NOT Dutch.

How would, “**would be cyclist enthusiasts**” cope with cycling home in the dark (no lighting on the path at all) and pouring down with rain, enough said.

So coming back to the real world, our Summers are poor and other times of the year would be ridiculous to even consider cycling, let alone there are no cycle parking facilities in Llanelli whatsoever, more cost for no rewards.

(4) Stradey Park Avenue / Traveller’s Lane.

With the further development of the Stradey Park Development which will create added pressure to the Maes-y-Coed and Denham Avenue junctions with Sandy Road, it has to be a consideration to open up an entrance into the eastern part of the development site from Stradey Park Avenue or create a route into the development from Sandy Bridge Roundabout by widening the existing lane that runs parallel to the “**Traveller’s Caravan Site**”

Arguments on crossing the NCN (National Cycle Network) in this area must be weight up against the amount of cyclists that use the route (less than 30 an hour) and the easing slightly of the expected added pressure on Sandy Road and the Iscoed Housing Estate with the eastern development being completed.

This network route already has two barriers to stop cyclists from crossing the existing road and allows traffic to traverse into the Llanelli Wanderers Car Park anyway, so common sense must prevail.

It also should be considered to create a road link from the Llanelli Wanderers Car Park to the Llanelli Cricket Club to be used only at school opening and closing times (by school traffic only) as the pressure and danger at these times on Denham Avenue and consequently onto Iscoed Road, Maes-y-Coed and Sandy Road is horrendous.

It should be the responsibility of an employee of Ysgol Cymraig Ffwrnes to open and close the existing barrier promptly.

(5) Abuse of Sandy Road Lane at peak times.

Sandy Road lane (a private lane) is being used extensively as a “**rat run**” by impatient motorists during times of peak pressure and the volume and speeds of these vehicles is causing great concern to residents and their children.

The lane has a very poor surface, but this does not inhibit motorists from using and abusing it.

The last thing the residents, especially children expect is a speeding car coming down the lane at “breakneck speed” as a short cut to Ysgol Gyfun Stradey to avoid the traffic congestion as well as at other times of the day.

(6) Excessive Speeding up and down Maes-y-Coed.

Carmarthenshire County Council

Maes-y-Coed has a “**20 mph**” limit on it, but that does not register with motorists (mainly from the Stradey Park Development) from using it as a “**zero to sixty**” sprint challenge.

The off centre roundabout at its most northern most point causes danger from vehicles travelling in and easterly direction to it from Iscoed Road when many vehicles traverse straight over it as if it does not exist, and the situation will be exasperated even further with the completion of the East Section of the development.

Measures need to be implemented now to avert collisions, which will be added to by the new Co-op Store and the 3 new outlet shops soon to be opened.

Papering over the cracks and introducing a “**Cosmetic Exercise Response**” such as speed bumps to slow traffic down on a “trunk road – A Class” will only prolong a vehicles’ time spent in Sandy Road, increase idling whilst pumping out more pollution, or the introduction of “speed warning signs” which divert motorists concentration of what is happening on the road ahead simply isn’t on.

This is of a serious health concern on a problem that is not going to go away and is only going to get worse.

Please digest my concerns and produce the only feasible and sensible answer of a Sandy Road Phase 1 By-Pass.

Appendix B: Reasons for Not Pursuing Action Plan Measures

Table B.1 – Action Plan Measures Not Pursued and the Reasons for that Decision

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Traffic Management	L7 - Feasibility study for re-opening Bridge Street.	Closing Bridge Street has reduced emissions near relevant receptors where previously they exceeded the national objective. Re-opening would likely raise emission levels in this area and would therefore counteract the purpose of this action plan. It is not perceived that outcome of reducing levels of NO ₂ would be achieved through this action.
Traffic Management	C12 – Assess use of ‘dummy’ speed bumps painted on roads	The economical effectiveness of using dummy bumps over real bumps has been assessed. In the short- term dummy bumps may slow traffic but it’s considered ineffective in the longer term, once drivers recognise them. Where a reduction in speed is necessary for road safety reasons, it is considered more economically effective to use real bumps in conjunction with 20mph limits to prevent severe braking and hard acceleration. This method is considered more effective for areas near schools.

Appendix C: Source Apportionment Exercises for Carmarthen and Llanelli

Source Apportionment for Carmarthen AQMA based on 2017 data

Step 1 – Obtain Background annual mean concentrations

Total measured NO₂

[T-NO₂] = 57µg/m³ - being the highest annual mean NO₂ result in the hot spot.
Represents site DAC/08 (No 85 Priory Street) located at 241876 / 220565.

Total Background NO₂

[TB- NO₂] = 8.3µg/m³ – taken from line 1502 on the 2017 background maps which is located at 241500 / 220500, being nearest to site DAC/08.

Total Background NO_x

[TB- NO_x] = 10.9 µg/m³ – taken from line 1502 on the background maps which is located at 241500 / 220500, being nearest to site DAC/08.

Regional Background NO_x

[RB- NO_x] = 3.0µg/m³ – taken from line 1502 on the background maps (rural) which is located at 241500 / 220500, being nearest to site DAC/08.

Local Background NO_x

$$[\text{LB-NO}_x] = [\text{TB-NO}_x] - [\text{RB-NO}_x]$$

$$[\text{LB-NO}_x] = 10.9 - 3.0 \\ = 7.9\mu\text{g}/\text{m}^3$$

Step 2 – Apportion the total background NO₂

Regional Background NO₂

$$[\text{RB-NO}_2] = [\text{TB- NO}_2] \times ([\text{RB- NO}_x] / [\text{TB- NO}_x]) \\ = 8.3 \times (3.0/10.9) \\ = 8.3 \times 0.3 \\ = 2.3\mu\text{g}/\text{m}^3$$

Local Background NO₂

$$[\text{LB-NO}_2] = [\text{TB-NO}_2] \times ([\text{LB-NO}_x] / [\text{TB-NO}_x]) \\ = 8.3 \times (7.9 / 10.9) \\ = 8.3 \times 0.7 \\ = 6\mu\text{g}/\text{m}^3$$

Step 3 – Calculate the NO₂ Contribution at the worst-case location

(Total measured minus background)

$$[\text{L-NO}_2] = [\text{T-NO}_2] - [\text{TB-NO}_2] \\ = 57 - 8.3 \\ = 48.7\mu\text{g}/\text{m}^3$$

Step 4 – Apportion the local contributions to total NO₂ concentration

EFT v 9.0.1 Inputs

Road Type = Urban (not London)

Carmarthenshire County Council

Traffic Flow = 15,108 AADT (from 2017 Traffic Count survey)
 LDV = 98.7% (combined Cars/LDV/Motorcycles)
 HDV = 1.3% (combined HGV (various)/Buses/Rigid)
 Speed = 48 kph
 No of hours = 24
 Link Length = 0.86km

EFT Outputs (% NOx)

LDV = 93%
 HGV = 7%

Therefore NOx contribution is; **Source % x [L-NO₂] = µg/m³**

Total Cars	59.6% x 48.7 = 29 µg/m ³
<i>Petrol Cars</i>	7% x 48.7 = 3.4 µg/m ³
<i>Diesel Cars</i>	52.6% x 48.7 = 25.6 µg/m ³
Total LGV	32.9% x 48.7 = 16 µg/m ³
<i>Petrol LGV</i>	0.1% x 48.7 = 0.05 µg/m ³
<i>Diesel LGV</i>	32.8% x 48.7 = 16 µg/m ³
Total HGV	3.7% x 48.7 = 1.8 µg/m ³
<i>Rigid HGV</i>	2.9% x 48.7 = 1.4 µg/m ³
<i>Arctic HGV</i>	0.9% x 48.7 = 0.4 µg/m ³
Buses	3.2% x 48.7 = 1.6 µg/m ³
Motorbikes	0.3% x 48.7 = 0.15 µg/m ³
Full hybrid petrol cars	0.1% x 48.7 = 0.05 µg/m ³
Full hybrid diesel cars	0.2% x 48.7 = 0.10 µg/m ³

Final Source apportionment of the worst-case location concentration is:

Regional Background	3.0 µg/m ³	(5.1%)
Local Background	7.9 µg/m ³	(13.3%)
Local traffic – Cars	29 µg/m ³	(48.9%)
LGV	16 µg/m ³	(27%)
HGV	1.8 µg/m ³	(3%)
Buses	1.6 µg/m ³	(2.7%)

Using the NOx to NO2 calculator v7.1 to calculate the oxides of nitrogen concentrations from nitrogen dioxide concentrations measured by diffusion tubes.

Local Authority:		Carmarthenshire		Year:2017	2017
-	-	-	-	Traffic Mix:	All UK traffic
Site ID	Diffusion tube NO ₂ , µg m ⁻³	Background µg m ⁻³		Road NO _x , µg m ⁻³	Notes
	µg m ⁻³	NO _x	NO ₂	□	
DAC/08	57	10.9	8.3	111.8	Total NO ₂ tube result
DAC/08	40	10.9	8.3	66.8	Based on NO ₂ Objective level

Road NOx reduction required is 111.8 – 66.8 = 45 µg/m³ or 40% reduction.

Source Apportionment for Llanelli AQMA based on 2019 data

Step 1 – Obtain Background annual mean concentrations

Total measured NO₂

[T-NO₂] = 43.9µg/m³ - being the highest annual mean NO₂ result in the hot spot.
Represents site DAL/07 (Nr No 13 Felinfoel Road) located at 250717 / 200818.

Total Background NO₂

[TB- NO₂] = 8.5µg/m³ – taken from line 2397 on the 2019 background maps which is located at 250500 / 200500, being nearest to site DAL/07.

Total Background NO_x

[TB- NO_x] = 11.2µg/m³ – taken from line 2397 on the background maps which is located at 250500 / 200500, being nearest to site DAL/07.

Regional Background NO_x

[RB- NO_x] = 2.8µg/m³ – taken from line 2397 on the background maps (rural) which is located at 250500 / 200500, being nearest to site DAL/07.

Local Background NO_x

$$[\text{LB-NO}_x] = [\text{TB-NO}_x] - [\text{RB-NO}_x]$$

$$[\text{LB-NO}_x] = 11.2 - 2.8$$

$$= 8.4\mu\text{g}/\text{m}^3$$

Step 2 – Apportion the total background NO₂

Regional Background NO₂

$$[\text{RB-NO}_2] = [\text{TB- NO}_2] \times ([\text{RB- NO}_x] / [\text{TB- NO}_x])$$

$$= 8.5 \times (2.8/11.2)$$

$$= 8.5 \times 0.3$$

$$= 2.1\mu\text{g}/\text{m}^3$$

Local Background NO₂

$$[\text{LB-NO}_2] = [\text{TB-NO}_2] \times ([\text{LB-NO}_x] / [\text{TB-NO}_x])$$

$$= 8.5 \times (8.4/ 11.2)$$

$$= 8.5 \times 0.8$$

$$= 6.4\mu\text{g}/\text{m}^3$$

Step 3 – Calculate the NO₂ Contribution at the worst-case location

(Total measured minus background)

$$[\text{L-NO}_2] = [\text{T-NO}_2] - [\text{TB-NO}_2]$$

$$= 43.9 - 8.5$$

$$= 35.4\mu\text{g}/\text{m}^3$$

Step 4 – Apportion the local contributions to total NO₂ concentration

EFT v 9.0.1 Inputs

	Both Directions	North	South
Road Type = Urban (not London)			
Traffic Flow (from 2019 Traffic Count survey) =	12138	5230	6907 AADT
LDV (combined Cars/LDV/Motorcycles) =	94%		
HDV (combined HGV (various)/Buses/Rigid) =	6%	6.8%	5.5%

Carmarthenshire County Council

	Both Directions	North	South
Speed =	42.9	46.7	40.2 kph
No of hours =	24	24	24h
Link Length =	0.7	0.7	0.7 km

EFT Outputs (% NO_x)

LDV =	77.7%	76.2%	78.6%
HGV =	22.3%	23.8%	21.4%

Therefore NO_x contribution is; **Source % x [L-NO₂] = µg/m³**

Total Cars	51.5% x 35.4 = 18.2 µg/m ³
<i>Petrol Cars</i>	5.3% x 35.4 = 1.9 µg/m ³
<i>Diesel Cars</i>	46.2% x 35.4 = 16.4 µg/m ³
Total LGV	25.6% x 35.4 = 9.1 µg/m ³
<i>Petrol LGV</i>	0.1% x 35.4 = 0.04 µg/m ³
<i>Diesel LGV</i>	25.5% x 35.4 = 9.0 µg/m ³
Total HGV	11.5% x 35.4 = 4.1 µg/m ³
<i>Rigid HGV</i>	9.2% x 35.4 = 3.3 µg/m ³
<i>Arctic HGV</i>	2.3% x 35.4 = 0.8 µg/m ³
Buses	10.6% x 35.4 = 3.8 µg/m ³
Motorbikes	0.2% x 35.4 = 0.07 µg/m ³
Full Hybrid Petrol Cars	0.1% x 35.4 = 0.04 µg/m ³
Full Hybrid Diesel Cars	0.4% x 35.4 = 0.14 µg/m ³
Hybrid Buses	0.1% x 35.4 = 0.04 µg/m ³

Final Source apportionment of the worst-case location concentration is:

Regional Background	2.8 µg/m ³	(6.0%)
Local Background	8.4 µg/m ³	(18.1%)
Local traffic – Cars	18.2 µg/m ³	(39.2%)
LGV	9.1 µg/m ³	(19.6%)
HGV	4.1 µg/m ³	(8.8%)
Buses	3.8 µg/m ³	(8.2%)

The following table illustrates the findings using the NO_x to NO₂ calculator v7.1 to calculate the oxides of nitrogen concentrations from nitrogen dioxide concentrations measured by diffusion tubes:

Local Authority:		Carmarthenshire		Year:2019	2019	
-	-	-	-	Traffic	All UK traffic	
				Mix:		
Site ID	Diffusion tube NO ₂ , µg m ⁻³	Background		Road NO _x , µg m ⁻³	Fraction emitted as NO ₂ (fNO ₂)	Notes
		NO _x	NO ₂			
DAL/07(Both)	43.9	11.2	8.26	78.3	0.2620	Total NO ₂ tube result
DAL/07 (N)	43.9	11.2	8.26	78.82	0.2586	
DAL/07 (S)	43.9	11.2	8.26	78.3	0.2620	
DAL/07	40	11.2	8.26	68.16	0.2619	Based on NO ₂ Objective level

Carmarthenshire County Council

Road NO_x reduction required for all traffic is 78.3– 68.2 = 10.1 µg/m³ or 13% reduction.

Further source apportionment was carried out to compare the differences in directional traffic:

Northbound

Total Cars	50% x 35.4 = 17.7 µg/m ³
<i>Petrol Cars</i>	5.2% x 35.4 = 1.8 µg/m ³
<i>Diesel Cars</i>	44.8% x 35.4 = 15.9 µg/m ³
Total LGV	25.4% x 35.4 = 9 µg/m ³
<i>Petrol LGV</i>	0.1% x 35.4 = 0.04 µg/m ³
<i>Diesel LGV</i>	25.4% x 35.4 = 9 µg/m ³
Total HGV	12.3% x 35.4 = 4.4µg/m ³
<i>Rigid HGV</i>	9.8% x 35.4 = 3.5 µg/m ³
<i>Arctic HGV</i>	2.5% x 35.4 = 0.9 µg/m ³
Buses	11.4% x 35.4 = 4 µg/m ³
Motor Bikes	0.2% x 35.4 = 0.07 µg/m ³
Full Hybrid Petrol Cars	0.1% x 35.4 = 0.04 µg/m ³
Full Hybrid Diesel Cars	0.3% x 35.4 = 0.11 µg/m ³
Hybrid Buses	0.1% x 35.4 = 0.04 µg/m ³

Southbound

Total Cars	52.4% x 35.4 = 18.6 µg/m ³
<i>Petrol Cars</i>	5.3% x 35.4 = 1.9 µg/m ³
<i>Diesel Cars</i>	47.1% x 35.4 = 16.7 µg/m ³
Total LGV	25.5% x 35.4 = 9 µg/m ³
<i>Petrol LGV</i>	0.1% x 35.4 = 0.04 µg/m ³
<i>Diesel LGV</i>	25.5% x 35.4 = 9 µg/m ³
Total HGV	11.1% x 35.4 = 3.9 µg/m ³
<i>Rigid HGV</i>	8.8% x 35.4 = 3.1 µg/m ³
<i>Arctic HGV</i>	2.3% x 35.4 = 0.8 µg/m ³
Buses	10.2% x 35.4 = 3.6 µg/m ³
Motor Bikes	0.2% x 35.4 = 0.07 µg/m ³
Full Hybrid Petrol Cars	0.1% x 35.4 = 0.04 µg/m ³
Full Hybrid Diesel Cars	0.4% x 35.4 = 0.14 µg/m ³
Hybrid Buses	0.1% x 35.4 = 0.04 µg/m ³

There is a greater contribution of NO_x from HGV's and buses travelling northbound compared to Southbound for two reasons. Although more vehicles overall including more HGV's and buses travel Southbound compared to Northbound, the percentage of HGV's and buses is slightly greater for Northbound traffic and there is a 5% upward gradient travelling northbound which will also increase the fraction of NO₂ emitted from vehicles.

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQS	Air Quality Strategy
AQO	Air Quality Objective
APR	Air quality Annual Progress Report
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
HGV	Heavy Goods Vehicles
LAQM	Local Air Quality Management
LGV	Light Goods Vehicles
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
SWTRA	South Wales Trunk Road Agents
WG	Welsh Government

References

2012 Carmarthen Detailed Assessment Report (December 2012) Carms CC

2012 Llanelli Detailed Assessment Report (December 2012) Carms CC

2014 Carmarthen Extended Detailed Assessment Report (February 2014) Carms CC

2014 Llanelli Extended Detailed Assessment Report (February 2014) Carms CC

2015 Carmarthen AQMA Boundary Consultation Review and Report (December 2015) Carms CC

2015 Llanelli AQMA Boundary Consultation Review and Report (December 2015) Carms CC

2016 Progress Report – Carms CC

2017 Llanelli and Carmarthen Draft Action Plan Report – Carms CC

Local air quality management in Wales Policy Guidance (June 2017) Welsh Government

Technical Guidance LAQM.TG16