Dorset Council
Air quality action plan: Chideock

In fulfilment of Part 4 of the Environment Act 1995 Local Air Quality Management

April 2021

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Executive Summary

This air quality action plan 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 Chideock within Dorset Council between 2021 and 2026. Chideock is a village which spans the A35, on the strategic road network which is managed by Highways England.

This action plan replaces the previous action plan which ran from December 2008. Projects delivered through the past action plan include a number of feasibility studies, in conjunction with Highways England, largely focussing on heavy goods vehicles' (HGV) movements which have included the modelling of the removal of larger Heavy goods vehicles and the use of alternative routes (such as the M3/ A303 and the A31/ A35). Work has shown that most of the Heavy good vehicles driving through the village were local, however 27 percent were trans-regional. More recently, studies relating to the impacts of other specific traffic management measures have been carried out, such as putting in place alternate direction single lane traffic flows. Most recently a temporary speed restriction has been in operational since September 2019, extending the 30 miles per hour speed limit about 200 meters to the west of the air quality management area boundary and changing the existing national speed limit between Chideock and Morcombelake to a 50 miles per hour speed limit. The proposal was to trial the impact on air quality, with the aim of smoothing the speed of traffic and reduction of the acceleration phase close to the properties/receptors in the village. There is also ongoing engagement with residents, the local MP and parish council. This engagement will continue. The length of time which feasibility work has been ongoing for illustrates that there is not a clear solution to this complex issue.

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].

[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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3]. Dorset Council is committed to reducing the exposure of people in Chideock, and across Dorset, to poor air quality in order to improve health.

Actions have been developed that address Nitrogen Dioxide that exceeds the air quality objective in Chideock, and but also more strategic issues to try and reduce emissions of both Nitrogen Dioxide and particulate matter with a size of 2.5 microns or less across the district in order to improve health in a more even way. The measures can be considered under five broad topics:

- Continue collaborative work with Highways England to investigate, and where appropriate, apply direct measures to improve air quality on the A35 in Chideock,
- Promotion of behaviour change away from single occupancy private vehicle use,
- Promotion of the use of alternatively fuelled vehicles,
- Developing policies to support better air quality,
- Controlling domestic emissions.

Our priorities make sure the council, in collaboration with others, work to achieve the air quality objectives in Chideock, and to reduce emissions more generally across the area. This will be achieved through collaborative working with other policy areas such as transport, public health, planning and work underway to tackle the climate emergency declared in Dorset. Air quality will be considered within the review of the Dorset Council Local Plan, transport schemes and other policy areas which are looking to reduce vehicle use, either by encouraging active travel, by reducing travel demand, or increase the use of non-diesel and petrol vehicles. By taking this more strategic approach, air quality and the associated health outcomes should improve more generally across Dorset.

In this air quality action plan, we outline how we will tackle air quality issues within our control. However, we recognise that there are a large number of 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 Dorset Council's direct influence.

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

Responsibilities and Commitment

This air quality action plan was prepared by the Environmental Protection Team of Dorset Council, in association with Air Quality Consultants Ltd, with the support and agreement of the following officers and departments:

Team Leader Environmental Protection, Dorset Council

Spatial Planning Manager, Dorset Council

Route Manager, Highways England

Technical Lead for Air Quality, Highways England

Healthy Places Project Coordinator, Public Health Dorset

Transport Planning Team Manager, Dorset Council

Transport Planning Officer, Dorset Council

This air quality action plan will be taken to relevant Committees for approval once the consultation has been completed.

This air quality action plan will be subject to an annual review, and appraisal of progress. Progress each year will be reported in the Annual Status Reports (ASRs) produced by Dorset Council, as part of our statutory Local Air Quality Management duties.

If you have any comments on this air quality action plan please send them to Coralie McGown at:

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Introduction

This report outlines the actions that Dorset Council, in collaboration with Highways England, will deliver between 2021 and 2026 to reduce concentrations of air pollutants and exposure to air pollution in Chideock; in so doing positively impacting on the health and quality of life of residents and visitors to the area.

It has been developed in recognition of the legal requirement on the local authority to work towards air quality strategy objectives under Part 4 of the Environment Act 1995 and relevant regulations made under that part and to meet the requirements of the local air quality management statutory process. The Air Quality Management Area has been declared as a result of exceedances of the annual mean nitrogen dioxide objective and is situated along the A35 in Chideock, which is a road managed by Highways England. Highways England has been fully involved in the update of this air quality action plan.

This plan will be reviewed every five years and progress measures set out within this plan will be reported on annually within Dorset Council's air quality annual status report.

Summary of Current Air Quality in Dorset

Under Part 4 of the Environment Act 1995, local authorities are required to review and assess air quality in their areas and to report annually against air quality objectives for specified pollutants of concern, to Defra. For each air quality objective in the regulations, local authorities have to consider whether the objective is likely to be achieved. Where it appears likely that the air quality objectives are not being met, the authority must declare an air quality management area. Following the declaration of an air quality management area, the authority must then develop an air quality action plan which sets out the local measures to be implemented to work towards achieving the air quality objectives. Prompted by the review and assessment process, air quality management areas have been declared in Chideock in 2007, and High East Street, Dorchester in 2009. In Dorchester, the annual mean objective for nitrogen dioxide has been met at all monitoring locations both within and outside of the Air Quality Management Area since 2015. There are, however, monitoring locations with concentrations within 10 percent of the annual mean objective of 40 microgrammes per cubic meter and to date, although this air quality management area has not been revoked, it is likely to be revoked based on further monitoring. For this reason, Dorchester is not explicitly included in this action plan, but will benefit from wider measures included in this plan.

It should be noted that at present, air pollution policy is mainly driven by exceedances of the nitrogen dioxide annual average objective or limit value, although the greater health impact of particulate matter with a size of 2.5 microns or less is acknowledged. This is because at present the legal limits for particulate matter with a size of 2.5 microns or less are higher than the World Health Organization's (WHO) health-based guideline limit and are met in most places in the UK. However, as the World Health Organisation recognises, the health evidence shows that there is no safe level of particulate matter with a size of 2.5 microns or less, so any concentration-based target for particulate matter with a size of 2.5 microns or less does not fully reflect the health evidence. Measures to reduce nitrogen dioxide will also largely reduce traffic related particulate matter, although measures are likely to be focussed on traffic related sources only.

Air Quality in Chideock

The Air Quality Management Area has been declared along the A35, because the annual mean exceeds the nitrogen dioxide air quality objective. The main source of emissions is from road traffic, which is made worse by the gradient at this location (increasing acceleration), by congestion (increasing stop start traffic) and also to some extent by the canyon-like nature of the road (i.e. properties close to the carriageway resulting in reduced dispersion at the building fronts). Further modelling work was carried out by air quality consultants on behalf of the council in 2018. This concluded that the annual mean nitrogen dioxide objective was being exceeded at approximately 25 out of the 67 properties modelled alongside the A35 in Chideock in 2017. Although concentrations may have changed since 2017, Figure 1 shows the modelled area that exceeds the nitrogen dioxide objective. Concentrations that exceeded this objective were modelled at 11 points as being close to the objective at the time which the modelling was undertaken.

Figure 1: Modelled annual mean nitrogen dioxide concentrations (µg/m^3) in 2017 at ground-floor level

Since the modelling work, further monitoring has been carried out at several locations along the A35. This monitoring suggests that concentrations are reducing, however, there are still concentrations that exceed the objective at properties to the west of the village centre, where the road is on a gradient and there are properties very close to the road.

Table 1 shows the monitored data for diffusion tube sites in Chideock between 2013 and 2020. The current data suggest that exceeding concentrations of the annual mean nitrogen dioxide objective are now confined to diffusion tubes 727 (Whitecroft) and N14 (Hill House). It should be noted that 2020 data should be treated as indicative as they have been adjusted using the 2019 bias adjustment factor. 2020 data will not be representative due to reductions in travel in 2020 because of restrictions put in place for the Covid 19 pandemic.

Table 1: Summary of nitrogen dioxide monitoring (2013-2020), Chideock (µg/m^3)

Figure 2 shows 8 monitoring location. 2 exceed the objective

Figure 2: Location of Dorset Council nitrogen dioxide monitoring in Chideock, showing exceedances in 2019

In addition to these long-term monitoring locations, Highways England have also carried out some monitoring within Chideock, at eight locations, in order to assess the impacts of the speed limit reduction trial. Annual mean nitrogen dioxide concentrations at each of the sites is included in **Table 2** and **Figure 3** show the monitoring locations. Of the eight locations, five exceed the objective

Table 2: Summary of Highways England nitrogen dioxide monitoring in 2019, Chideock (µg/m^3)

Figure 3: Location of Highways England nitrogen dioxide monitoring in Chideock, showing exceedances in 2019

This air quality action plan focuses on Chideock with measures to reduce emissions on the A35. Although the focus of the Local Air Quality Management regime is to achieve the air quality objectives at hotspot locations such as in Chideock, it is also recognised that to improve the health of residents more widely, a reduction in emissions of both nitrogen dioxide and particulate matter[4] more widely across the Dorset Council area would have greater benefit. Exposure to air pollution over a period of years is thought to be the strongest driver of health impacts. However, current legislation and policy do not deal with exposure effectively. Exceedances of targets, such as air quality objectives, provide the clearest means of communication but do not reflect the evidence that there is no “safe” level for air pollutants such as particulate matter with a size of 2.5 microns or less and probably nitrogen dioxide. This air quality action plan therefore not only provides actions specific to Chideock, but also provides more strategic measures to ensure that emissions gradually reduce across Dorset which should ensure that air quality management areas are not required in the future

[4] PM is made up of small airborne particles, with PM_{10} specifically particulate matter less than 10 micrometres in aerodynamic diameter and $PM_{2.5}$ particulate matter less than 2.5 micrometres in aerodynamic diameter. In terms of health effects, the larger fractions of PM_{10} are thought to be able to penetrate into the upper airways, while $PM_{2.5}$ can penetrate deeper into the lungs. Both contain much smaller particles which, although they have very little mass, are far more numerous and can penetrate all areas of the lungs and even pass into the bloodstream

Dorset Council's air quality priorities

Public health context

Air pollution is a major public health risk ranking alongside cancer, heart disease and obesity. A review by the World Health Organisation concluded that long-term exposure to air pollution reduces life expectancy by increasing the incidence of lung, heart and circulatory conditions. The Department of Health and Social Care's advisory Committee on the Medical Effects of Air Pollutants have recently estimated that long-term exposure to man-made air pollution in the UK has an annual impact on shortening lifespans, equivalent to 28,000 to 36,000 deaths (2018). Poor air quality can affect health at all stages of life. Those most affected are the young and old. In the womb, maternal exposure to air pollution can result in low birth weight, premature birth, stillbirth or organ damage. In children there is evidence of reduced lung capacity, while impacts in adulthood can include diabetes, heart disease and stroke. In old age, a lifetime of exposure to air pollution can result in reduced life-expectancy and reduced wellbeing at end of life. There is also emerging evidence for a link between air pollution and an acceleration of the decline in cognitive function (Department for Environment, Food and Rural Affairs, 2019).

Deprived communities are more likely to experience adverse health effects from poor air quality because they are more exposed to air pollution, for example, by being close to major roads (Defra and Department for Transport, 2017). They are less likely to live close to well-maintained green spaces associated with lower levels of air pollution, increased physical activity, and improved mental wellbeing (Public Health England, 2014). However, air quality can also be poor in areas that are generally considered affluent. The majority of health evidence relates to particulate matter (PM), but there is also evidence associating nitrogen dioxide with health effects, including premature deaths (Committee on the Medical Effects of Air Pollutants, 2018).

This action plan complements work underway on public health. Public Health Dorset have drafted a Joint Strategic Needs Assessment which is being used to support Dorset Council and Bournemouth, Christchurch and Poole Health & Wellbeing Boards to identify key issues and develop their joint health and wellbeing strategies in response to these. The data store which supports the joint strategic needs

Assessment is available at https://www.publichealthdorset.org.uk/intelligence/risks/air-quality.aspx with links to online data sources. Dorset Joint Health and Wellbeing Strategy 2016-2019 focuses on three priorities: reducing inequalities; promoting healthy lifestyles and preventing ill health; and working better together to deliver prevention and early intervention.

Planning and policy context

South West Peninsula Route Strategy

Route Strategies are a new approach to investment planning for the strategic road network. They describe the challenges and opportunities, both now and in the future, for each route and take account of local priorities for growth as well as balancing national and local needs on the network.

The south west peninsula route strategy recognises the A35 as an area of congestion especially associated with key tourist destinations. It identifies that planned growth in the Bournemouth, Honiton and Weymouth areas may lead to constraints because of the existing infrastructure's ability to cope with increased demand. Congestion and delay along the A35 including Chideock is expected to increase, in particular on the areas of single carriageway (such as those through Chideock), with the effects being felt more prominently during summer holiday periods which may impact on the tourist industry. The report also says that issues at Chideock will be made worse by increased traffic along the route. The findings of the route strategies have informed Highways England's first strategic road network Initial report which has been consulted on, and in turn will feed into decision making on the next Road Investment Strategy.

Road Investment Strategy 2 (RIS2)

In 2014, the Government reformed the way that England's strategic roads were funded and managed. Highways England was established as the steward of the strategic road network (SRN), with a remit to operate, maintain, renew and enhance motorways and main 'A' roads to the benefit of road users, people who live next to or depend on the network, and the natural, built and historic environment. Government committed to a five-year funding settlement, the first Road Investment Strategy (RIS1), which allowed Highways England and its supply chain to plan their work efficiently and to deliver the scale of improvements planned to the network. RIS1

invested £17 billion in strategic roads – not only in upgrades, but in maintenance and measures to address the effects that old roads have on nearby communities. This second Road Investment Strategy sets a long-term strategic vision for the network. With that vision in mind, it lists planned enhancement schemes; and sets out the funding that will be available during the second road period, covering the financial years 2020/21 to 2024/25. In total, the second Road Investment Strategy commits the Government to spend £27.4 billion during the second road period. Some of this will be used to build new road capacity, but much more will be used to improve the quality and reduce the negative impacts of the existing strategic road network so that every part of the country will benefit. the second Road Investment Strategy has been developed on the back of an extensive round of public engagement and consultation, research and evidence gathering begun in 2016.

The second Road Investment Strategy includes a new study to look at routing from the M4 to Dorset coast. It is recognised that there are few north-south connections across the South West of England. The present strategic road for this area is a mixture of the A36 and A46, via Bath, Warminster and Salisbury. Local authorities in the area have suggested that there is a strategic case for adopting an alternative corridor – the A350 – as the main strategic route for the area; and then beginning a coordinated programme of upgrades to provide a high-quality route linking the M4 to the Dorset Coast including Bournemouth and Poole, with its economically-important port facilities. This raises several related questions, which will be considered together as part of a strategic study. It is anticipated that this study will identify which corridor provides the main strategic route for the area; may recommend the trunking and de-trunking of key routes; and may identify priority investments in the area that can be taken forward. Over the long term, this may affect strategic journeys in this region.

Local transport plan

The third local transport Plan for Bournemouth, Poole and Dorset, (LTP) published in 2011, sets out the long-term goals, strategy and policies for improving transport in the area over the fifteen-year period from 2011 to 2026. The third local transport Plan covers all modes of transport (including walking, cycling, public transport, car based travel and freight), the management and maintenance of the highway network, and the relationships between transport and wider policy issues such as the economy, environment, air quality, climate change, health and social inclusion.

There are a number of policies which are of relevance to air quality, and the document recognises that "*The immediate focus for the third Local Transport Plan strategy will be to reduce levels of pollution in the four currently declared Air Quality Management Areas back to acceptable levels …. And will help to identify potential problem areas at an early stage and reduce the likelihood of further air quality management areas being declared….*"

Policy F-5 states that:

The authorities will work with Environmental Health Officers to monitor, manage, and mitigate the impacts of noise and air pollution from transport, with a focus upon maintaining them within acceptable levels by: Ensuring effective Air Quality Action Plans are maintained for all Air Quality Management Areas

Policy C-1

The authorities will maximise opportunities for collaborative working, including with neighbouring authorities, to ensure that the transport network and associated assets are adequately managed and maintained to an appropriate and safe condition through effective Asset Management, which:

i. focuses on the long-term outcomes of providing a fully sustainable highway network with reduced costs and environmental impacts

ii. ii. incorporates maintenance programmes assessed against their impacts on waste, carbon emissions, noise and air quality….

The Local Transport Plan also recognises, that, where alternative modes of transport are not feasible (including in the more rural areas), the use of alternative fuel vehicles could have a positive contribution to reducing carbon emissions and improving air quality, for example in Policy F-3

The authorities will support the uptake of new low carbon vehicle technology and support its development by local innovative businesses to stimulate the Green Knowledge Economy. Requirements for the installation of charging points and /or the allocation of car parking spaces for electric vehicles in new development will be encouraged in Local Development Documents.

Local planning policy

West Dorset District Council and Weymouth and Portland Borough Council prepared a joint local plan. The adopted local plan forms the main basis for making decisions on planning applications. the local plan sets out a long-term planning strategy for the area and includes detailed policies and site proposals for housing, employment, leisure and infrastructure up to 2031.

Under Policy Env16, Amenity, the local plan recognises that:

Air pollution may be caused by industrial processes (including the use of biomass boilers and combined heat and power plants) or through local traffic generation and may be exacerbated by local microclimatic factors. The councils may ask for an air quality assessment if there is reason to believe that the development would give rise to a significant change in air quality (either individually or cumulatively with other planned development). Particular caution will be exercised in or close to designated Air Quality Management Areas, and due regard had to any air quality action plan. For example, the action plan for Chideock Air Quality Management Area suggests that further development within the designated area should be limited.

Proposals for development should be designed to minimize their impact on the amenity and quiet enjoyment of both existing residents and future residents within the development and close to it. As such, development proposals will only be permitted provided…. They do not generate unacceptable pollution, vibration or detrimental emissions unless it can be demonstrated that the effects on amenity and living conditions, health and the natural environment can be mitigated to the appropriate standard.

The council has begun work on a new Dorset Council Local Plan. The initial evidence gathering and review of former district/borough local plans were consulted on in early 2021 and outlines the strategy for meeting the needs of the area such as housing, employment, and community services including schools, retail, leisure and community facilities. It directs development to the most suitable locations near to existing facilities, and detailed policies promote high quality development that respects and enhances the character of each area. The plans also protect Dorset's natural environment and contributes towards the mitigation and adaptation to climate change. The following timescales for delivery of the Dorset Council Local Plan have been set out; publication of the draft local plan for comment in Autumn/ Winter 2021,

with adoption of the Plan in Spring 2023. Where possible, information and evidence gathered as part of the review of the former district council local plans is being used to inform the new Dorset Council Local Plan. The draft Dorset Council Local Plan has the following policy:

ENV12: Pollution control

Development proposals which will cause unacceptable on- or off-site risk or harm to human health, the natural environment or living conditions, either individually or cumulatively, will not be permitted. Development should:

I avoid harmful environmental impacts and health risks for both new and existing development arising from soil, air, water, or land pollution. In particular, impacts on the National Site Network must be avoided, satisfactorily mitigated and, if necessary, compensated in accordance with policy ENV2;

II where impacting on an Air Quality Management Area, avoid or mitigate its impact through positively contributing towards the implementation of measures to address the air quality issue including through the provision of green infrastructure and through building design and layout;

Climate change

In May 2019, one of the first actions of the newly formed Dorset Council was to declare a Climate Emergency, acknowledging that the Council needs to act on the causes and impacts of climate change. In November 2019, this was updated to a Climate and Ecological Emergency so that the protection and enhancement of Dorset's natural environment and wildlife biodiversity is also considered in the climate emergency mitigation work. To monitor and guide this work, Dorset Council formed the Climate Change and Ecological Emergency Executive Advisory Panel, which is made up of elected members from different political parties. The panel is responsible for gathering information and working with officers to make recommendations to Dorset Council's Cabinet on actions that will help mitigate against climate change. Dorset Council has committed to becoming a carbon-neutral council by 2040, and work with organisations and residents to help Dorset become a carbon-neutral county by 2050.

In July 2020, a draft Climate and Ecological Emergency Strategy was produced. This presents eight key areas for action to ensure that the Council changes the way it

delivers services. The council have placed the Climate and Ecological Emergency at the heart of their Corporate Plan. This strategy document provides a framework for services to integrate the response to the climate emergency into their planning[5]. These actions will help ensure that Dorset Council, adheres to the above commitments to become a carbon neutral council by 2040 and county by 2050.

The strategy document is supported by a number of specific action plans, which include those for transport, renewables and buildings (which are particularly relevant for this air quality action plan), as well as others on waste, food etc. Specific actions are wide ranging and include those to increase the share of electric vehicles in the fleet, provision of infrastructure to facilitate this, making sure that the Dorset Council Local Plan facilitates a move to low carbon transport, sustainable transport and low carbon energy provision, encouraging behaviour change to walking and cycling, and maximising opportunities for renewable energy, including retrofitting existing building stock.

Low Carbon Dorset is a five-year programme of activities to help stimulate growth in Dorset's low carbon economy and reduce the county's footprint. Funded by the European Regional Development Fund (ERDF), the programme is run by Dorset Council and the Dorset Area of Outstanding Natural Beauty (AONB). The programme aims to help improve energy efficiency, increase the use of renewable energy, and aid the development of new low carbon products by providing free technical advice and financial support to local business, community and public sector organisations to deliver carbon reduction projects in Dorset.

1.1 National Policy Context

Air quality strategy

The air quality strategy (Defra, 2007) published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality

[5] Further information is available at https://www.dorsetcouncil.gov.uk/emergencies-severe-weather/climate-emergency/climate-ecological-emergency-strategy/climate-economical-emergency-action-plans/making-it-happen-action-plan.aspx

objectives. Local authorities are seen to play a particularly important role. The strategy describes the local air quality management regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an air quality management area, and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

Clean air strategy 2019

The clean air strategy (Defra, 2019a) sets out a wide range of actions by which the UK Government will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: transport, domestic, farming and industry.

Reducing emissions from road transport: road to zero strategy

The Office for Low Emission Vehicles and Department for Transport published a Policy Paper (Department for Transport, 2018) in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government's pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100percent zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50percent, and as many as 70percent, of new car sales, and up to 40percent of new van sales, being ultra-low emission by 2030.

The paper sets out several measures by which Government will support this transition but is clear that Government expects this transition to be industry and consumer led. The Government has since announced that the phase-out date for the sale of new petrol and diesel cars and vans will be brought forward to 2030 and that all new cars and vans must be fully zero emission at the tailpipe from 2035. If these ambitions are realised, then road traffic-related nitrogen oxides emissions can be expected to reduce significantly over the coming decades.

Source Apportionment

A source apportionment exercise was carried out by the former West Dorset District Council in 2019 as part of the previous modelling study. The total concentration of a pollutant comprises contributions from explicit local emission sources such as roads, and elements that are transported into an area by the wind from further away. If all the local sources were removed, all that would remain is that which comes in from further away; it is this component that is called 'background'. The overall contribution made by emissions of nitrogen oxides from vehicles, which includes both nitric oxide and nitrogen dioxide, to measured nitrogen dioxide concentrations depends on a number of factors, including; how the different species react in the atmosphere, in particular the reaction of nitric oxide with ozone, and the amount that is emitted directly as nitrogen dioxide (primary nitrogen dioxide). Figure 4 shows the contribution from different vehicle types to nitrogen dioxide concentrations including background at modelled receptors. At all locations in Chideock, the largest proportion of emissions is from cars, followed by Light Goods Vehicles. Although it is acknowledged that this modelling is based on information from 2017, the same overall picture is still relevant.

Figure 4: Contributions of different sources to total predicted annual mean nitrogen dioxide concentration (µg/m^3) at each receptor in 2017

Required reduction in emissions

The degree of improvement needed for the annual mean nitrogen dioxide objective to be achieved is defined by the difference between the highest measured or predicted concentration and the objective level (40 Micrograms per Cubic Meter of air).

In terms of describing the reduction in emissions required, it is more useful to consider nitrogen oxides. The required reduction in local nitrogen oxides emission has been calculated in line with guidance presented in LAQM.TG16 (Defra, 2018). Table 3 sets out the required reduction in road emissions of nitrogen oxides that would be required at each of the receptor locations where an exceedance is predicted, for the annual mean objective to be achieved.

The highest nitrogen dioxide concentration has been predicted at Receptor 26 (61.9 Micrograms per Cubic Meter of air), requiring a reduction of 21.9 Micrograms per Cubic Meter of air for the objective to be achieved. Table 3 shows that at this

receptor a reduction of 57.8 micrograms per cubic metre of air in NOx emissions would be required to achieve the objective. This equates to a reduction of 44.4 percent in local road traffic emissions at this receptor location.

Table 3: Improvement in annual mean nitrogen dioxide concentrations and nitrogen oxides concentrations required in 2017 to meet the objective

Key priorities

Based on the evidence provided above, the following issues need to be considered when deciding on which measures are likely to be effective:

- Most emissions arise from cars and light goods vehicles,
- There is no decipherable contribution from point sources or industry,
- There is a small contribution from buses and heavy goods vehicles,
- Congestion and delay are expected to increase (according to the South West Peninsula Route Strategy and in the short term as the restrictions on foreign travel mean more people will be holidaying in the United Kingdom),
- At some isolated locations (for example, at N14), excesses are considerable and are unlikely to be resolved in the next few years.

Because of the above points it is going to be very difficult to implement a measure which will have a large enough impact to improve the situation sufficiently to achieve the objective within the timescale of this plan. A number of measures have been discussed within the action planning process, anything implemented will need to be proportionate to the issue which has been identified, which is a very localised issue in relation to a handful of properties in Chideock, located close to the road on the steeper part of the hill west of the village. It is recognised that a general reduction in emissions of air pollutants will benefit the health of the population. The following sections outline measures which will be implemented, and those which require further investigation. Appendix B includes measures which have been discussed and discounted (and the reasons for being discounted).

Development and implementation of Dorset Council air quality action plan

Consultation and stakeholder engagement

We have worked with other local authorities, agencies, businesses, and the local community to update this air quality action plan, and to improve local air quality. Schedule 11 of the Environment Act 1995 requires local authorities to consult the bodies listed in **Table 4**. There is ongoing engagement with Highways England, the parish Council and with the local Member of Parliament. This document has been consulted on as per Chapter 6 of the Local Air Quality Management Policy Guidance 16.

The response to our consultation stakeholder engagement is given in Appendix A.

Table 4: Consultation Undertaken

Table 4 shows that the following will have been consulted with as per Schedule 11 of the Environment Act 1995 The secretary of State, the Environment Agency, the Highways Authority (both Dorset Council and Highways England) all neighbouring local authorities, other public bodies as appropriate such as Public Health officials, bodies representing local business interests and other organisations as appropriate

Steering group

Although a formal steering group was not set up specifically to take this action plan revision forward, a number of meetings have been held which have included Highways England (both the route manager covering the A35 and the air quality technical lead), Public Health Dorset colleagues, planning team, and Dorset Council transport planners. The meetings have involved setting out the background to the air quality issue in Dorset, the process of the action plan, work carried out on air quality (modelling work completed for Chideock in 2019) and gaining input and insight into existing and future policy measures within Dorset and how these may assist in the implementation of measures within this plan (and the other way around). Some discussions around the evaluation of the measures included were also held. Highways England are key to the implementation of the transport measures for the A35 within the plan, and their input is paramount to the success of this plan.

However, as the aim is for wider collaboration and reductions in emissions more generally across the county, public health, transport, planning and climate change colleagues have also been invaluable in the drafting of the plan. Participating officers will continue to be fully involved, and consulted on as the process continues, through comment on this draft report, and following a wider consultation.

Air quality action plan measures

Highways England

Chideock has a long running air quality issue which has been given attention in recent years by both the council and by Highways England, both of which have engaged with communities and elected leaders to explore air quality mitigation options. Several measures have been investigated as discussed below.

Initially, alternative routes for heavy goods vehicles traffic from ports to the south west was considered in 2013/14. Highways England commissioned a comparison of advantages/ disadvantages to travelling between Southampton and Honiton using the A303 against the A35. The trial showed that while the A303 route was longer, the journey times were very similar and there were potential reliability benefits and fuel cost savings to heavy goods vehicles using the A303. This was presented in the format of an article published in the Road Haulage Association and Freight Transport Association e-newsletters. It is not known if or how many hauliers changed routes. It should also be noted that the heavy goods vehicles fleet is now significantly cleaner than in 2014 and a very significant proportion of the heavy goods vehicles fleet is now Euro 4 compliant and so the emissions from such vehicles will represent a smaller proportion of nitrogen dioxide emissions at Chideock as demonstrated in section 0.

In 2018 Highways England investigated an approach for alternate direction single lane traffic flows, which have the potential to smooth traffic flow and by changing the carriageway to a single lane moves the source of pollutants a greater distance away from the properties. The modelling showed that this proposed scheme would lead to unacceptable levels of congestion. Average queue lengths were estimated to be over 4km in both the eastbound and westbound directions with associated increases in travel times of 467percent in the eastbound and 373percent in the westbound direction.

Closed-circuit television footage was collected from 20th to 30th August 2018 (peak holiday season) for the section of the A35 with highest concentrations of nitrogen dioxide. Key observations from this closed-circuit television survey were that heavy goods vehicles do not appear to be causing significant delay when travelling up hill, and vehicles turning right into Duck Street did not cause significant congestion.

Buses stopping at the bus stop were seen to cause significant delay on a regular basis (they were stopping for approximately 1 minute on average). However, the causes of the most significant traffic were not captured by the closed-circuit television cameras as they were not visible within the study area.

A trial speed reduction scheme has been implemented. The 30 miles per hour section in Chideock was extended in September 2019 (to try and reduce acceleration between different speed limit areas). Baseline monitoring (i.e. monitoring in the air quality management area before the trial of the 30 miles per hour limit) was undertaken using a network of diffusion tubes, although this would have limited ability to demonstrate outcomes, particularly as traffic has been influenced by restrictions on travel due to the Covid pandemic. Surveys were also undertaken looking directly at emissions from vehicles before and after the change.

Installation of mechanical ventilation on affected properties has also been investigated in terms of its feasibility and efficacy to improve exposure to pollutants for residents. The cost would be significant, and the measure was also not deliverable in existing properties.

There have been calls for a bypass in Chideock for many years. This measure would need to be a Government decision through the Road Investment Strategy. The second Road Investment Strategy does not include a bypass in this location, meaning that this option would not be funded in the next five years. A bypass would have the greatest impact in terms of reducing air quality concentrations, but it is unlikely that it could be implemented in a time frame which would bring forward achievement of the objectives, and could be argued that it is not proportionate to an air quality issue which is now affecting only a handful of properties.

Charging zones have also been investigated. Highways England have not been given an option to implement charging zones on the Strategic road network and as such this measure has been discounted at this stage.

Eco barriers (green screens etc.) have also been considered, but properties are too close to the road for them to physically fit them in on the pavement. In addition, a report published by Air Quality Expert Group in 2018[6] concluded that *for dispersion,*

[6] Report can be found at https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1807251306_180509_Effects_of_vegetation_on_urban_air_pollution_v12_final.pdf

locally (tens to hundreds of square metres) the planting of trees may enhance or reduce dispersion; this redistributes pollution but does not remove it. Where vegetation acts as a barrier close to a source, concentrations immediately behind the barrier owing to that source are reduced typically by a factor of about 2 relative to those which would occur without the barrier, whereas on the source side of the barrier concentrations are increased.

Dorset County Council

Through the local transport planning process, over the time period of the previous air quality action plan, the former Dorset County Council, in partnership with the former West Dorset District Council delivered the following large-scale schemes:

- LSTF large joint project (£12.1m) – This project provided an integrated package of sustainable transport measures, along the main east-west corridor (incorporating the A35) through the three local authority areas. The package was implemented and marketed as “Three Towns Travel” (3TT), and has delivered enhanced local bus, rail, walking and cycling improvements, through a combination of targeted infrastructure, service and operational improvements. Delivery was completed in March 2015.
- Better Bus Area Fund (£3.4m) – This south east Dorset-wide initiative delivered a package of targeted measures to build upon the momentum of significant patronage growth in the conurbation (the UK-highest outside of London).
- LSTF Sustainable Access to Employment (£570,000) – In 2015, Dorset County Council secured LSTF revenue to improve access to jobs through facilitating and promoting sustainable travel at Dorset's three major employment centres; the Portland-Weymouth-Dorchester area, Ferndown Industrial Estate and the Aviation Business Park.
- Office for Low Emission Vehicles (£850,000) – Following competitive bidding in April 2015, the three authorities received a grant from the Government Office for Low Emission Vehicles to install a network of 17 rapid electric vehicle charging points across the Dorset region. The chargers are now operational and are managed by a partnership under the ‘ChargerNet’ brand. The ‘ChargerNet’ rapid charger network ‘plugs the gap’ on the strategic road

network between Southampton and Exeter enabling longer distance journeys and a network of rapid chargers in towns allows motorists to recharge their Electric Vehicles once they are in Dorset. The rapid chargers also reassure local businesses that they can purchase and operate Electric Vehicles for intensive use within Dorset.

- Sustainable travel marketing campaigns – Marketing and promotional campaigns have been carried out utilising the established “Getting About” and “TravelDorset” travel brand to promote sustainable travel options, with a particular focus on active travel choices for shorter commuter trips.
- The Business Travel Network for Bournemouth, Poole and Christchurch, and Dorchester and Weymouth launched in September 2014. Members include the three main local Hospitals, Royal National Lifeboat Institution, JP Morgan and Bournemouth University. This network promotes sustainable travel choices at workplaces this being complimented by employee-based offers, such as, urban cycle skills training, led cycle rides, Dr Bike sessions and cycle tagging.
- Complimentary to the Business Travel Network the Business Travel Grant funding was awarded to local businesses through the Network to encourage employees to switch commuting modes of transport. These grants resulted in workplace infrastructure such as cycle storage, shower facilities and charge points being provided.
- Workplace cycle challenge –the authorities have delivered six workplace cycle challenges including National Cycle Challenges and localised Ride to Work Week promotions. Over the course of six challenges and promotions so far, 1,204 organisations have been represented with 4,400 individual people taking part, including 1,252 new riders.
- Sustrans Bike It Plus was delivered at a number of Bournemouth and wider Dorset schools, this project proved to be very popular with participating schools and has resulted in a measurable increase in the take up of active travel options, such as, walking, cycling and scooting.
- In partnership with British Cycling, an annual programme of led rides was delivered through the Skyride Local, Breeze Rides and Social Cycle Group

rides. This partnership arrangement also delivered a number of “City” Skyrides which delivered a number of mass participation Skyrides, Criterium race and innovative family cycling “Nightglow” events.

- A cycle safety “Look Out” campaign was delivered to raise awareness encourage respect between road users. This campaign was delivered utilising a range of media including social media, a variety of on street advertising, bus backs, cycle tags, billboards and radio.
- Co-wheels and Co-cars car clubs were launched in Bournemouth, Dorchester and Weymouth, available to the community, local businesses and visitors. Members of the car clubs have access to cars across the town and local district centres.

Table 5 shows the Dorset Council air quality action plan measures which includes Action 1 specifically for Chideock and a range of more collaborative measures to reduce emissions across Dorset. It contains:

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

Note: Please see future annual status reports for regular annual updates on implementation of these measures.

The following overriding measures are included in this action plan, with specific actions included in each one:

Action 1: Continue collaborative work with Highways England to investigate, and where appropriate implement, direct measures to improve air quality on the A35 in Chideock

As outlined above, a range of measures have been investigated over the last few years by both Highways England and the council to improve emissions within Chideock. Most recently, a temporary speed limit extension has been implemented (extending the 30 miles per hour speed limit up to the start of the pre-existing National Speed Limit about 200 meters to the west of the air quality management

area boundary and changing the existing National Speed Limit between Chideock and Morcombelake to a 50miles per hour speed limit). The proposal was to trial the impact on air quality through a temporary reduction of the 40miles per hour zone to 30miles per hour, with the aim of smoothing the speed of traffic and reduction of the acceleration phase close to the properties/receptors in the village. The analysis has shown that while highway gradient and traffic volumes are dominant factors in causing high pollutant emissions within the Chideock air quality management area, traffic speed can be a contributory factor. To inform the analysis of the impact of the temporary speed limit changes, 'Smogmobile' surveys[7] were undertaken to provide a snapshot of nitrogen dioxide concentrations on the A35 up Chideock Hill, both before and after the introduction of the temporary extended 30miles per hour speed limit. The analysis was complicated by the differences in traffic volumes during the two phases of the surveys. The first survey (before the temporary traffic order was implemented) was carried out in July/August 2019 during the tourist season, whereas the second survey was carried out in October 2019 when traffic flows were approximately 30percent lower. However, after making adjustments for the differences in traffic flow, the analysis did indicate that there was some modest and localised air quality benefit in retaining the extended 30miles per hour zone, due to the discouragement of westbound vehicle acceleration (where previously vehicles would accelerate from 30miles per hour to 40miles per hour). This served to reduce nitrogen dioxide concentrations within this 'acceleration zone', particularly if the 30miles per hour speed limit on Chideock Hill included appropriate measures for compliance. It was noted during the second 'Smogmobile' survey that significant numbers of drivers were ignoring the extended 30miles per hour speed limit, providing evidence that appropriate measures to increase compliance should be implemented.

There is evidence from a closed-circuit television survey undertaken on behalf of Highways England that buses are the cause of some of the congestion, which may cause a greater acceleration as vehicles leave the village. It was noticed that buses stopping at the Chideock Bridge eastbound stop, were causing long queues

[7] The Enviro Technology 'Smogmobile' is a mobile air quality laboratory in an all-electric van, fitted with a range of sensors and monitors. It is capable of measuring key pollutants and greenhouse gases, either parked at a static location next to the road, or sampling traffic related emissions whilst being driven on the road. It therefore has the capability of measuring air pollution within the moving traffic stream, and over a predetermined section of highway of interest, at a high temporal resolution.

regularly. This seemed to be due to buses stopping for a long time at the stop, consistently around one minute, and due to the carriageway not being wide enough for other vehicles to overtake the stopped bus when there are vehicles travelling in the opposite direction. It could be possible that this stop is a timing point, a stop where the bus waits in order to stay on schedule, hence why it waits there for an extended period of time. Less frequently, buses stopping at the Village Hall westbound bus stop were seen to cause a similar problem. Although this is likely to be a relatively small contributor to overall emissions. Moving the timing point to one of the other village stops could be an option, however it is likely that as the same issues would arise elsewhere and no benefit would be achieved.

Funding Sources: Highways England, Dorset Council.

Cost: n/a

Action 2: Promote behaviour change away from single occupancy private vehicle use

When considering solutions to reduce the environmental impacts of transport, it is important to first establish what drives transport demand. Access to efficient public transport will be of high importance in reducing demand for cars, including the provision of buses and bus priority measures in urban areas. Achieving change in travel mode choice to active travel can be an effective strategy to manage transport demand and so reduce NOx (and particulate matter) emissions. Changes in travel mode may come about through incentivisation, public engagement or a regulatory scheme. Measures to provide information on alternative ways of travelling or encouraging lift sharing can be implemented relatively quickly compared to provision of transport infrastructure or the development and introduction of cleaner vehicles, and in many cases can be a more cost-effective approach.

Dorset Council has several strategies and projects aimed at promoting active travel (cycling and walking) and public transport which are largely being implemented through the local transport plan. The largest of these was an award from Department of Transport of £79m through its Transforming Cities Fund scheme (jointly awarded with Bournemouth, Christchurch and Poole Council) for a programme of investment across the south east Dorset city region. This grant, plus further money from the councils, local business groups and transport companies has given a total programme budget of £102m. The multi-million-pound Transforming Cities Fund

investment will fund 78 kms of new cycling and walking routes and use smart technology to provide improved bus travel options and create green travel hubs in south east Dorset, all aimed at offering environmentally friendly, safer and quicker journeys to work, education and leisure. The projects include bus priority at key traffic signal locations and heavy goods vehicles traffic management system at Longham Bridge (to avoid heavy goods vehicles becoming stuck on this key freight route into/out of the conurbation), the expansion of the current bike share scheme and the introduction of e-bikes across the region (locally and partner funded), improvements to workplace/education sites 'end of trip' facilities, smart ticketing via app, safer routes to schools and bus infrastructure improvements. Although this will not directly impact on A35, this should encourage a significant model shift to active modes of travel, hence reduce emissions of both nitrogen dioxide and particulate matter with a size of 2.5 microns or less across the south east of Dorset, and influence the wider area.

The carbon action plan for transport[8] also contains a number of measures to encourage and enable more walking and cycling through the production of local cycling and walking investment plans, related bids and initiating infrastructure delivery, along with behaviour change through communications, expansion of cycle training and an investigation of the feasibility of bike share schemes in larger settlements, some of which is being delivered through the Transforming Cities Fund scheme.

Chideock Parish Council have raised the possibility of an off-road pedestrian/ cycle link between Chideock and Bridport, which may have the potential to take some traffic off the road network. The feasibility of this option will be investigated, initially by Dorset Council.

Funding Source: Transforming Cities Fund, Dorset Council, BCP Council, local business groups and transport companies.

Cost: £100 million +

Action 3: Promote the use of alternatively fuelled vehicles

[8] Available at https://www.dorsetcouncil.gov.uk/emergencies-severe-weather/climate-emergency/documents/action-plans/action-plan-transport.pdf

The primary objective of promoting a switch to low emission vehicles is the reduction of carbon and local pollutant emissions from transport. However, this measure does not have additional benefits such as congestion reduction, or increased levels of physical activity that are generated by measures to encourage active travel modes. Provision of suitable infrastructure to support low emission vehicles is critical to their introduction. For commercial vehicle operators, the financial case for investing in electric vehicles is strongly dependent on ensuring high vehicle usage.

Lower emissions from diesel heavy goods vehicles or buses can also be realised through vehicle retrofit, which usually consists of the installation of an on-board device that allows vehicles to comply with more stringent standards by reducing the emission of pollutants through technical measures. Retrofit measures are usually either exhaust gas recirculation (EGR) or selective catalytic reduction and urea technology (SCR).

In relation to non-diesel or petrol vehicles, the priority will be a switch to electric, which is being taken forward in several ways. Charging will be required at destinations (for example, town centres), workplaces and residential locations for those without off-street parking and at rapid charging hub facilities. Where possible, the private sector will be used to install and maintain charging facilities, but there is a role for local authorities to ensure equitable distribution. In December 2020 the council placed an order to replace five rapid charge points with new 50 kW units (Bridport, Dorchester, Lyme Regis, Weymouth and Wimborne Minster) and in January 2021 started the installation of fast (22 kilowatt charge points within 18 public car parks (a total of 44 new charging sockets). These will all be privately funded. The charge points, using energy supplied by Statkraft on a 100percent renewable energy tariff, will enable drivers to charge their electric vehicles whilst visiting the county's towns.

An electric vehicle charging strategy is currently being drafted which will outline sites for expansion that are likely to include country parks, leisure centres and other council owned land and assets. For the strategic road network, rapid chargers are more relevant, with Highways England being responsible for developing charging infrastructure. For residential charge points, Dorset Council will submit an office for low emission vehicles grant application through Energy Savings Trust. It is recognised that light goods vehicles are seeing a slower uptake in electrification than

for cars, and therefore are a sector which are covered in the emerging electric vehicle charging strategy, through a number of practical actions to support businesses to install workplace charge points for fleet charging, staff use and community charging.

the carbon action plan for transport[9] contains longer term actions (2023 onwards) to encourage the use of ultra-low emission public transport vehicles (including taxis), particularly smaller buses and to encourage low carbon freight and logistics (freight strategy to be reviewed and amended by 2022). These longer-term actions are supported.

In terms of the council fleet, we are aiming to:

- Maximise ultra-low carbon vehicle replacement within the Dorset Council fleet and to replace all fleet cars and small vans with battery electric or best possible zero and ultra-low emission vehicles alternative by 2025/26,
- Replace all remaining classes of fleet vehicles other than cars or light vans with electric or best possible zero and ultra-low emission vehicles alternative by 2030,
- Expand electric vehicle charging points and other ultra-low emission fuel alternatives across the Council property estate,
- Minimise personal vehicle use for business travel through the introduction of zero and ultra-low emission vehicles pool fleet.

Funding sources and partners: Department for Transport, Office for Low Emission Vehicles, Energy Savings Trust, Section 106 and Community Infrastructure Levy funding for some EV charging; Dorset Council

Cost: The total cost of providing EV charging infrastructure and greening the Council's operational fleet are hard to estimate. Estimates of the number of charge points required vary and installation costs can range from a few thousand to tens of thousands depending on the costs of connecting to the electrical network and reinforcing the electrical supply if its required. Dorset Council will maximise private investment and use public capital funding to ensure geographical spread of charging

[9] Available at https://www.dorsetcouncil.gov.uk/emergencies-severe-weather/climate-emergency/documents/action-plans/action-plan-transport.pdf

infrastructure and the roll out of charge points in areas that are less commercially attractive to private investors.

Action 4: Develop policies to support better air quality

There are several policies already in place which will help support air quality, which have been outlined in section 1.2. Most of these polices cannot be quantified in terms of the impact on pollutant concentrations at specific locations (which is the aim of this action plan), but they will lead to an overall reduction in emissions across Dorset, which in turn will reduce concentrations of both nitrogen dioxide, particulate matter with a size of 10 microns or less and particulate matter with a size of 2.5 microns or less and improve health.

In relation to the planning process, the appropriate regulatory framework is in place to guide new and existing developments to minimise emissions. All new developments are required to implement or support actions that make a positive contribution to improving air quality, for example by reducing travel demand and creating possibilities for increasing cycling and walking. Air quality assessments for applications are undertaken where air quality is of specific concern.

It is recognised that, although current policy is designed to ensure that air quality is considered across Dorset, the policy wording focusses on those applications which impact on air quality management areas. This action is therefore to review of current wording of policy ENV12 in the new Dorset Council Local Plan, to ensure that air quality gains the highest prominence.

Consideration should also be given to a guidance document for developers on air quality, which could take the form of a supplementary planning document (SPD). The aim of the guidance would be to ensure that air quality is considered fully and consistently within the development management process, that developers know what is required of them, and that mitigation, proportionate to the impacts of the development is routinely implemented. Good design principles that will reduce emissions (or exposure) can also be included within the supplementary planning document. the planning system could also be used to obtain contributions to air quality mitigation measures. The guidance would cover both the operational effects of development and construction impacts. Emission limits for non-road mobile

machinery (NRMM)[10] could also be explicitly included. The scope of the guidance could potentially be broadened to incorporate climate change gas emissions, which is also being dealt with more fully within the updated Dorset Council Local Plan.

In order to support increased knowledge of air quality among planners in advance of the new Dorset Council Local Plan, a workshop will take place with planning officers (development management and planning policy) to increase collective knowledge of the air quality process and discuss how the process of assessing air quality within the planning process is undertaken.

Any actions being implemented to achieve the aim of the council being carbon neutral by 2040 will also be supported, either in relation to transport, including EV infrastructure implementation, projects to increase the use of renewable energy within homes and council buildings and projects to increase levels of active travel. These are set out within the specific action plans for transport, renewables, and buildings[11] and to a lesser extent on other strategies around waste and food which also support the climate and ecological emergency strategy. These action plans contain specific actions on supporting the change to electric vehicles, including cars, public transport and freight, and also ensuring that emissions from fossil fuels used within buildings is reduced, through reducing energy demand and increasing the proportion of renewable energy.

Joint working with public health colleagues will be an ongoing action. Although public health priorities have been redirected to the Covid 19 pandemic in 2020, there are aspirations to work more closely in order to further develop the strategic position on air quality. Within the timeframe of this action plan there are likely to be future opportunities for specific projects, for example with schools, or for county wide monitoring. These opportunities will be identified through the current collaborative working arrangements, and where possible, using external funding. Regular meetings with Public Health Dorset will be convened.

[10] Non-Road Mobile Machinery (NRMM) is a broad category which includes mobile machines, and transportable industrial equipment or vehicles which are fitted with an internal combustion engine and not intended for transporting goods or passengers on roads. NRMM, particularly from the construction sector, can be a significant contributor to air pollution in some locations.

[11] These are all available at https://www.dorsetcouncil.gov.uk/emergencies-severe-weather/climate-emergency/climate-ecological-emergency-strategy/the-climate-and-ecological-emergency-strategy.aspx

Funding Source: Mainly from existing budgets. Planning system could generate funding for measures within this action plan through section106 contributions from developers.

Cost: no specific budget, as ongoing collaborative work

Action 5: Control domestic emissions

Open fires and wood-burning stoves have risen in popularity over recent years. They are now an additional form of heating for many households in both urban and rural areas; for a minority they may be the sole heat source. In addition, there has been a growth of biomass boilers for home heating. This increase in burning solid fuels in our homes is having an impact on our air quality and now makes up the single largest contributor to UK wide particulate matter emissions at 38percent[12]. This compares with industrial combustion (16percent) and road transport (12percent). What people burn and the appliance they use will have a significant impact on emissions. A recent report by King's College London[13], measuring local concentrations, found that wood burning accounts for up to 31percent of the urban derived particulate matter with a size of 2.5 microns or less in London. Not all forms of domestic burning are equally polluting. The appliance (for example, stove or fireplace), how well it is used and maintained, and what fuels are burnt in it, all make a big difference to how much pollution is produced. Significant air quality benefits can be realised through a new efficient appliance as compared with an old stove or open fire. There are simple steps that households can take to limit emissions both indoors and out. Using cleaner fuels, in a cleaner appliance which is installed by a competent person, knowing how to operate it efficiently, and ensuring that chimneys are regularly swept, will all reduce emissions. However, a reduction in solid fuel burning towards non-polluting renewable sources of heat and power, will also reduce the overall emissions of this sector. Work being undertaken through the action plan on renewable energy, and that for buildings will be supported, to reduce emissions of particulate matter with a size of 2.5 microns or less from the domestic, and commercial, sector across the Dorset area. These include projects to both maximise energy efficiency and increase renewable energy in these sectors. Projects being undertaken by Low Carbon Dorset are assisting in delivery of these aims.

[12] Clean Air Strategy 2019 https://www.gov.uk/government/publications/clean-air-strategy-2019
[13] Font, Fuller et al, 'Airborne particles from wood-burning in UK cities' (2017), https://uk-air.defra.gov.uk/assets/documents/reports/cat05/1801301017_KCL_WoodBurningReport_2017_FINAL.pdf

The UK air quality strategy provides a number of actions around solid fuel burning, including encouraging the uptake of cleaner stoves, working with business and industry to support educational schemes, taking forward potential measures to control the supply of the most polluting domestic fuels – including a ban on house coal, and restricting the sulphur content of smokeless fuels to 2 percent and prohibiting the sale of wet wood. Dorset Council will support work being undertaken by the UK Government in reducing emissions from this source, and where necessary undertake local information campaigns to support the national message.

Funding Source: Dorset Council

Cost: Already within budgets outlined above.

Table 5: Air Quality Action Plan Measures

Measure One. Continue collaborative work with HE to investigate, and where appropriate implement, direct measures to improve air quality on the A35 in Chideock. This falls into EU Category of Traffic Management. Its EU Classification is Reduction in Speed limits. The Lead Authority's are Highways England and Dorset Council. The planning phase has been from 2018 onwards and the implementation phase will be from 2021 onwards. The Key Performance Indicator is Traffic flows on the A35, average speeds, and resulting nitrogen dioxide concentrations. The Target Pollution Reduction in the Air Quality Management Area is 1-3 ug/m3 (difficult to assess as change in fleet likely to have a greater effect). The progress to date can be shown within Implementation of temporary change in speed limits, feasibility work undertaken for other measures. The estimated completion date is 2022 for speed limit, but ongoing collaborative work to achieve objective. Looking to make the temporary change in speed limit permanent.

Measure Two. Promote Behaviour Change away from Single Occupancy Private Vehicle Use. This falls into EU category of Promoting Travel Alternatives and the EU Classification is Encourage/ facilitate home working, intensive active travel campaign & infrastructure, Personalised Travel Planning, Promotion of Cycling, Promotion of Walking, School Travel Plans, Workplace Travel Planning. The Lead Authority is Dorset Council. The planning phase is ongoing, with the implementation phase being 2021 onwards. The relevant Key Performance Indicator is Traffic Flows on major routes in Dorset. The Target Pollution Reduction in the Air Quality Management Area is not applicable – strategic measure which will also assist in achievement of air quality objective in Air Quality Management Area. The progress to date is a Successful bid to the Transforming Cities Fund, which is now in implementation phase. The estimated completion date is ongoing for this measure as a whole.

Measure Three. Promote the use of Alternatively Fuelled Vehicles. This falls into EU category of Promoting Low Emission Transport and the EU classification of Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, taxi emission incentives, taxi licensing conditions. The lead authority is Dorset Council The planning phase is ongoing, with the implementation phase being 2021 onwards. The relevant Key Performance Indicator is Proportion of alternatively fuelled vehicles in the fleet on Dorset's roads The Target Pollution Reduction in the Air Quality Management Area is not applicable – strategic measure which will also assist in achievement of air quality objective in Air Quality Management Area. The progress to date is EV charging points increasing across Dorset, Electric Vehicle Strategy is currently being drafted. Estimated Completion Date is Ongoing with Climate and Ecological Emergency Strategy and aim to become carbon neutral by 2040

Measure Four. Develop Policies to Support Better Air Quality This falls into EU category of Policy Guidance and Development Control and the EU classification Air Quality Planning and Policy Guidance, other policy. The lead authority is Dorset Council. The planning phase is The planning phase is ongoing, with the implementation phase being 2021 onwards. The relevant Key Performance Indicator is Robust policy in new Local Plan, specific projects related to health and air quality The Target Pollution Reduction in the Air Quality Management Area is not applicable – strategic measure which will also assist in achievement of air quality objective in Air Quality Management Area. The progress to date is Collaborative working with planning and public health professionals. The completions date is not applicable as this is ongoing collaborative working. Non statutory functions may require additional resources to implement, Review policy in Local Plan update,

Measure Five. Control Domestic Emissions This falls to the EU category of Promoting Low Emission Plant and EU classification of Regulations for fuel quality for stationary and mobile sources. The lead authority is Dorset Council, with the planning phase to be carried out in 2021 and implemented in 2022. The Key Performance Indicator is Level of solid fuel burning. The Target Pollution Reduction in the Air Quality Management Area is not applicable, this is a strategic measure which will also assist in achievement of air

quality objective in air quality management area – aimed at particulate matter with a size of 2.5 microns or less rather than nitrogen dioxide. Progress to date is that actions are within the Climate and Ecological Emergency Strategy, Action Plans on Buildings and Renewables. There is no estimated completion date. This would be Very difficult to quantify any change without detailed survey work.

Appendix A: Response to Consultation

Table A.1 – Summary of Responses to Consultation and Stakeholder Engagement on the AIR QUALITY ACTION PLAN

This table will be completed after the consultation and stakeholder responses are received. It will be sent in the Draft document to for initial approval by Defra.

Appendix B: Reasons for not pursuing action plan measures

Table B.1 – Action plan measures not pursued and the reasons for that decision

Bypass.

Has been discussed for many years, Chideock Bypass Working Group set up to explore routes etc

Requires government decision through Road Investment Strategy.

Excluded from action plan because could not be implemented in a time frame which would bring forward achievement of objectives. Also, from a funding perspective, it is not proportionate to the number of properties affected.

Charging zone (clean air zone)/ toll road.

Measure to charge vehicles which do not achieve a specific emissions limit.

Could include either just heavy goods vehicles, heavy goods vehicles and buses, heavy goods vehicles, buses and light goods vehicles or all vehicles.

Highways England is not currently able to introduce a clean air zone on any part of the Strategic road network.

Platooning.

Alternate single lane traffic flows in different directions (with traffic held at traffic lights)

Modelling showed that the proposed scheme would lead to unacceptable levels of congestion.

Average queue lengths were estimated to be over 4km in both the eastbound and westbound directions with associated increases in travel times of 467 percent in the eastbound and 373 percent in the westbound direction.

Eco Barriers.

Use of vegetation or manmade barriers to act as a barrier to pollution at property facades

Not enough space on the pavement to fit barriers.

Recent report by air quality expert group suggest mixed results in relation to air quality improvements.

Reduction of Exposure.

Provide double/ triple glazing and ventilation to houses within Air Quality Management Area

In some cases, not feasible due to properties being listed. An expensive action which does not tackle the source of pollution.

Land use planning.

No further development in air quality management area until pollution returns to acceptable levels.

This does not align with any planning policy (local or national) and hence would be unlawful.

Anti-idling.

Introduce signs to asking motorists to turn their engine off when stationary Although it is acknowledged that for carbon dioxide emissions turning off the engine is beneficial, for nitrogen oxides the balance between eliminating emissions that would have been released during idling and the possibility of increased emissions on restart will depend on the aftertreatment technology and engine

management system of each individual vehicle, but it is thought that the times spent stationary in Chideock will generally not be long enough ensure a benefit for nitrogen oxides emissions of turning off engines.

This will be reviewed as more information on the benefits of turning off engines emerges.

Demolition of properties.

Remove exposure by demolishing relevant properties in Chideock

In some cases, , not feasible due to properties being listed. An expensive action which does not tackle the source of pollution.

Appendix C: Modelling Report

Glossary of Terms

AONB Area of Outstanding Natural Beauty

AIR QUALITY ACTION PLAN 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'

AQC Air Quality Consultants

AQEG Air Quality Expert Group

AIR QUALITY MANAGEMENT AREA Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AIR QUALITY MANAGEMENT AREAs are declared for specific pollutants and objectives

AQS Air Quality Strategy

ASR Annual Status Report – annual report on air quality

BCP Bournemouth, Christchurch and Poole Council

COMEAP Committee On the Medical Effects of Air Pollution

Defra Department for Environment, Food and Rural Affairs

DfT Department for Transport

EFT Emission Factor Toolkit

EGR Exhaust Gas Recirculation

EU European Union

FTA Freight Transport Association

HE Highways England

HEAVY GOODS VEHICLES Heavy Goods Vehicle

ICCT International Council on Clean Transportation

JSNA Joint Strategic Needs Assessment

LAQM Local Air Quality Management

LGV Light Goods Vehicle

LSTF Local Sustainable Transport Fund

LTP Local Transport Plan

NITROGEN DIOXIDE Nitrogen dioxide

NOx Nitrogen Oxides

NRMM Non Road Mobile Machinery

OLEV Office for Low Emission Vehicles

PM10 Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less

PARTICULATE MATTER WITH A SIZE OF 2.5 MICRONS OR LESS Airborne particulate matter with an aerodynamic diameter of 2.5µm or less

PSV Public Service Vehicle

RDE Real Driving Emissions

RIS Road Investment Strategy

RP Road Period

SPD Supplementary Planning Document

SRN Strategic road network

TCF Transforming Cities Fund

ULEV Ultra Low Emission Vehicle

References