Agenda Item

MANAGING THE ENVIRONMENT PDG
4 August 2015

Crediton Link Road and Air Quality

Cabinet Member: Cllr Neal Davey
Responsible Officer Public Health and Professional Services Manager

Reason for report: As requested by the PDG, to inform members of changes to air quality in Exeter Road, Crediton (within the Crediton Air Quality Management Area) since the opening of the Lords Meadow Link Road.

RECOMMENDATION: It is recommended that members note the content of the report and that a more complete analysis of the air quality impact of the Crediton Link Road is provided in 2016 when more data is available.

Relationship to Corporate Plan: None

Financial Implications and Risk Assessment: None.

Legal Implications: The opening of a Lords Meadow Link Road was a specific measure within the formal Air Quality Action Plan (June 2006) produced by this authority in response to its designation of the wider Crediton Air Quality Management Area (AQMA). In turn these are obligations under the Local Air Quality Management regime introduced by the Environment Act 1995.

1.0 Background

1.1 The Crediton Air Quality Management Area (AQMA) was designated in 2004 for exceedances of the statutory UK Nitrogen Dioxide (NO_2) objective in the High Street and Exeter Road (A377). It was also designated for exceedances of the statutory objective for Particulate Matter (PM_{10}) in Exeter Road only. Road transport, including cars, light commercial and heavy goods vehicles (HGVs) are a major source of this air pollution.

1.2 In response to the AQMA designation an Action Plan was adopted in 2006. This plan contains 32 measures to reduce air pollution across Crediton. Within this, a number of key transport plan actions were agreed jointly with Devon County Council including the provision of a major £8.5m link road to Lords Meadow Industrial Estate (see Figure below). This road is designed to relieve the south-eastern end of Exeter Road within the town of a proportion of light and heavy commercial vehicles that use the confined historic route to access the industrial estate. It was also conceived to manage road network resilience and provide for economic growth locally. Consequently, it is intended reduce congestion and remove a large number of the most polluting vehicles from affected section of the A377 improving air quality at residential properties within the narrow canyon ‘pinch point’.

Devon County Council – Extract of plan A07001/25G (Planning Application DCC/3272/2011)

1.3 Following a lengthy design, consultation and planning period, construction of the road along the approved hillside route (see figure above) commenced in July 2013 and the road was formally opened on the 1 October 2014. The completed road now provides a direct route to the Lords Meadow industrial estate from the Wellparks roundabout on the A377 near the Tesco store, and also includes a shared cycleway and footway.

1.4 As with any new road, it will take a period of time for usage to settle and the maximum benefits be seen. In particular, there is an initial lack of awareness of the new route and ingrained behaviour in respect of network users. Also, commercial and/or heavy duty vehicles are often reliant upon satellite navigation mapping with a lengthy lead-in period for electronic mapping to be updated to include the new route.

1.5 The benchmark relevant UK air quality objectives are measured as annual means (reported in calendar years) and therefore given that the road has been open for only approximately 9-months straddling 2014/15 we are unable to provide a full and unequivocal comparison at this stage. Seasonal and regional/local factors can also influence road and weather conditions on a

daily to monthly basis, temporarily off-setting or artificially inflating gains made as a result of the road being in operation.

1.6 Examining short-term 'snap-shot' road usage and traffic data at this stage should therefore be done with much caution and the acknowledgment that medium-long term traffic and air quality data is required to fully assess the impact of the Link Road against forecast and modelled assumptions.

2.0 Preliminary traffic flows

2.1 The following traffic data and comments have been provided by Devon County Council's Highways Department.

2.2 The traffic flows shown in the table below relate to the period 15th October 2014 to 27th November 2014 inclusive (43 days).

Timeframe	Northbound	Southbound	2-way
5 day 24hr average flow	2,390	2,407	4,797
7 day 24hr average flow	2,189	2,185	4,374
Weekday AM Peak Hour (08.00-09.00)	102	264	366
Weekday PM Peak Hour (17.00-18.00)	281	193	474

2.3 The average number of HGVs using the Link Road is 122 per day. This equates to nearly 3% of the total traffic and is very similar to the overall average for Devon's principal rural road network.

2.4 It is possible the overall level of usage will increase over the coming months, although January and February may well have been typically relatively quiet months. It is estimated that flows might not settle down completely until summer 2015.

2.5 A number of traffic counts around the town are programmed for spring/summer 2015 to compare with the pre-scheme counts undertaken in 2010. These will provide an indication of the changes around the town and particularly in the Exeter Road part of the Air Quality Management Area. This data is not currently available.

2.6 For reassurance, the table below compares the observed traffic flows with those predicted by our modelling exercise. The difference is quite small and we can expect that the gap will reduce once we get to compare using full year data.

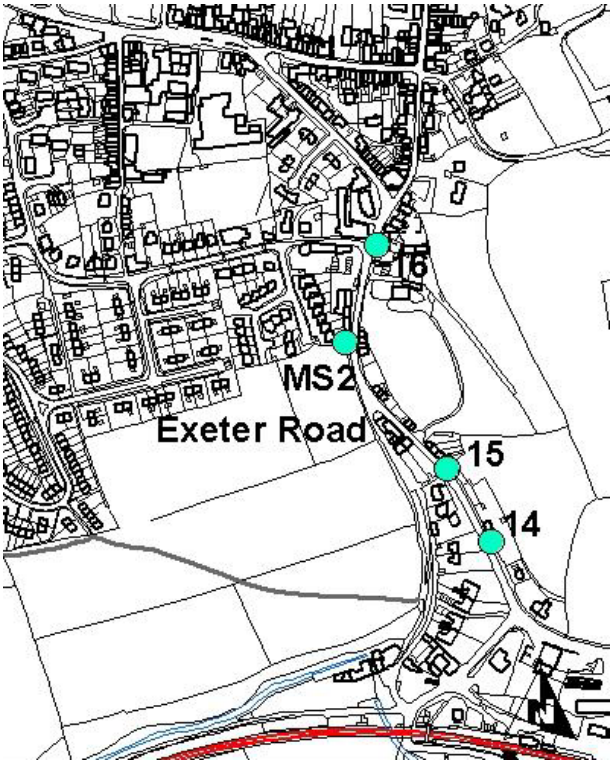
Timeframe	2-way	
	2014 Observed	2014 Modelled
5 day 24hr average flow	4797	
7 day 24hr average flow	4374	
Weekday AM Peak Hour (08.00-09.00)	366	522
Weekday PM Peak Hour (17.00-18.00)	474	529
Inter peak hour		440
12 hours (0700 to 1900)		5334

3.0 Preliminary air quality data and context

3.1 The relevant UK air quality objectives are:

Pollutant	UK air quality objective
Nitrogen dioxide (NO_2)	40 ug.m^3 measured as an annual mean
Particulate Matter (PM_{10})	40 ug.m^3 measured as an annual mean; *and* Less than 35 days per year greater than 50 ug.m^3

3.2 The Council currently undertake monitoring at a number of points across Crediton in fulfilment of our local air quality management duties. This includes a real-time continuous air quality monitoring station measuring NO_2 and PM_{10} (MS2) and three NOx tubes (14-16) providing monthly NO_2 averages all of which have been in place for a number of years. The location of these monitoring points is shown in the figure below.



Mid Devon District Council – Extract of Figure 2.6 Air Quality Progress Report 2014

3.3 For the purposes of this report, an analysis has been completed providing a comparison of the Nitrogen Dioxide and Particular Matter monitoring results for the following periods:

- **2009-2013** (five years average before the Link Road was open)
- **2014** (one year average including the Link Road being open for three-months October – December)
- **October 2014-June 2015** (average for the first nine months of Link Road being open)

Nitrogen Dioxide (NO_2)

Monitoring Location	Road not open **Average 2009-2013** Annual mean ug.m^3	Road open for 3-months **2014** Annual mean ug.m^3	Road open wholly **Oct 2014–June 2015** Annual mean ug.m^3
NOx tube 14	44	36	33
NOx tube 15	40	38	33
NOx tube 15	44	38	30
Monitoring station MS2	60	67	65

Particulate Matter (PM_{10})

Monitoring Location	Road not open **Average 2009-2013** Annual mean ug.m^3	Road open for 3-months **2014** Annual mean ug.m^3	Road open wholly **Oct 2014–June 2015** Annual mean ug.m^3
Monitoring station MS2	35	29	29

Monitoring Location	Road not open **Average 2009-2013** No. of days >50 ug.m^3	Road open for 3-months **2014** No. of days >50 ug.m^3	Road open wholly **Oct 2014–June 2015** No. of days >50 ug.m^3
Monitoring station MS2	54	18	14

3.4 In respect of NO_2, the data above indicates that concentrations have fallen at three out of the four monitoring locations since the Link Road has opened. Notwithstanding that caution should be exercised when interpreting the preliminary short-term results, for reasons outlined in section 1, this equates to a reduction of between 17-32% for the most recent data against the preceding five-year average. These reductions have been recorded along the length of Exeter Road and correspond to monitoring locations which are the most representative of actual exposure by residents living at this location.

3.5 No specific reasons have been identified as to why NO_2 should have increased at the continuous monitoring station. It is noted that the concentrations recorded at this location are only relatively higher than the preceding five-year average and have fallen most recently to approximately 10% above the norm. Further improvements have been noted in recent weeks however this data is currently not ratified.

3.6 In respect of PM_{10}, the data above indicates that concentrations have fallen at all the monitoring locations since the Link Road has opened. Again, notwithstanding that caution should be exercised when interpreting preliminary short-term results, for reasons outlined in section 1, this equates to a reduction of between 17% on average and a much larger reduction of around 70% for the number of days greater than 50 $ug.m^3$ for the most recent data against the preceding five-year average.

3.7 The comparatively better results for PM_{10} may be indicative of the fact that HGV vehicles are proportionally higher emitters of this pollutant and the sharp fall in high average peak days (compared to the average overall) could also be attributed a combination of reduced numbers, improved traffic flows and reduced congestion/idling.

3.8 Should the preliminary trend continue to be observed then PM_{10} concentrations would no longer exceed the air quality objectives and an AQMA would cease to be required for this pollutant. For NO_2 then the boundary of the AQMA could potentially be changed to reflect that the majority of the monitoring locations have also improved to the extent that the air quality objective is also not exceeded at those locations. Concentrations of NO_2 remain above the objective in the High Street (largely unaffected by the opening Link Road) and the monitoring station on the western side of Exeter Road, though there is no direct relevant exposure to residents at that specific location. Furthermore, the exceedances of NO_2 observed in the High Street continue to decline both spatially and in concentration following a relative spike in 2013 with only the western-end of the High Street (Duke of York public house/the Green) being elevated marginally above the objective at 41 $ug.m^3$ during 2014. The next highest High Street concentration was 34 $ug.m^3$.

3.9 A further update on the wider air quality picture across the district including the High Street results will be published in full later in the summer following Defra ratification of our data and will be included in the formal Updating and Screening Assessment (USA) report available in due course on the Mid Devon website.

4.0 **Summary**

4.1 Early results show traffic flows using the road are close to modelled predictions and a significant proportion of HGVs and other traffic previously using Exeter Road to access the Lords Meadow Industrial Estate is now using the Link Road. Further traffic counts planned (or recently completed) by

Devon County Council during 2015 will further establish the trend and likely annualised flows.

4.2 In accordance with a reduction in key polluting traffic flows and congestion in Exeter Road, both Nitrogen Dioxide (NO_2) and Particular Matter (PM_{10}) concentrations have fallen significantly. However, for reasons outlined in the report, caution should nonetheless be exercised when interpreting such relatively short-term data.

4.3 The improvement and protection of air quality in Crediton continues to be work in progress with further measures remaining to be implemented including those in respect of new development and other non-highways interventions. Therefore further reductions and benefits should be realised.

4.4 It is proposed that air quality monitoring will continue at all current locations in Exeter Road for the remainder of 2015 and analysed together with more traffic data so that the effect of the Link Road can be established with greater certainty. This can be reported to the PDG in 2016. Further monitoring will then be reviewed. Early results are encouraging however and there are indications that the Link Road may have made a step-change improvement in air quality at this location, contributing to potential review of the AQMA in due course.

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Background Papers:	Crediton AQMA Action Plan and Mid Devon Air Quality Progress Report 2014 https://new.middevon.gov.uk/environment/air-quality/local-air-quality-management/ Draft Mid Devon Air Quality Updating and Screening Report 2015 (currently within Defra for appraisal) Devon County Council Planning Application reference DCC/3272/2011 (numerous documents available at http://www.devon.gov.uk/planpage_1_3943)
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