

Air Quality Assessment in accordance with the Design Manual for Roads and Bridges

This an area identified by Bradford's Public Health department through screening and assessment (using Government Guidance TG.09) as requiring further assessment for air quality due to an AADT >10,000 and nearby sensitive receptors (housing). The area was subsequently monitored in 2004 using continuous monitoring for nitrogen dioxide at the bottom of Back Bryl Street adjacent to Hard Ings. An annual mean NO₂ of 33ug/m³ was measured and it was concluded that the area did not require further investigation. Whilst the concentrations were relatively high in comparison to the back ground (approximately 15ug/m³ in Bradford) they did not show potential to exceed the air quality objective of an annual mean of 40ug/m³ for NO₂. This was reported on in the Bradford Air Quality Progress Report 2005.

The proposed development/highways alteration at Hard Ings Road have been looked at by Bradford Environmental Health and it is their conclusion that air quality is not an issue of concern in relation to this scheme for the following reasons;

- Existing concentrations have been identified to be below the objective.
- The scheme will not increase the AADT of 34,000 vehicles, instead the scheme will smooth traffic flows, reducing congestion, stop start driving and vehicle idling, this should improve air quality.
- The highway widening works are not on the side of the road adjacent to residential properties and do not bring residents in closer proximity to transport related pollutants.
- Green infrastructure will be added as part of the scheme, this will screen residents from the vehicles, whilst it is unlikely that this element of the scheme will significantly reduce pollution concentrations it is considered that their are other health benefits associated with health and wellbeing to be gained from the addition of green infrastructure to schemes.

The impact of the scheme with regards air quality has been assessed in accordance with the DMRB Volume 11, Section 3, Part 1, HA 207/07, Air Quality.

The scoping exercise seeks to decide which environmental topics to be examined in environmental assessments and whether it should be a detailed or simple assessment.

Obtain traffic data for the Do-Minimum and Do-Something scenarios for the years to be assessed. For local air quality this is the opening year, 2017, and possibly a further future year. In this case taken as the design year 2026.

Affected roads are those that meet any of the following criteria;

- Road alignment will change by 5m or more.

The road alignment increases by up to 8.0m over a 210m length. Total length of scheme is 700m.

- Daily traffic flows will change by 1,000 AADT or more.

There is no increase in AADT comparing the Do-Something with Do-Nothing since there is no expected re-distribution of vehicles from adjacent roads.

- Heavy Duty Vehicle (HDV) flows will change by 200 AADT or more.

No. This is not how the scheme has been modelled in Aimsun.

- Daily average speed will change by 10km/hr or more.
Scheme has been modelled in peak hours only, therefore daily average speed data not available.

- Peak hour speed will change by 20km/hr or more.
Peak hour speed changes – in 2017 am peak +2km/hr and pm peak +5 km/hr and in 2026 am peak -2km/hr and in pm peak +1km/hr.

There are no relevant designated sites within 200m of the road.

Properties with young and elderly populations located within 200m of the road are properties at Lawkholme Lane, Byrl Street and Caledonia Road. However, in order to protect residential properties adjacent, road widening is restricted to the north eastern side of the carriageway only. In this case it is not residential properties that could be adversely affected by the scheme, but industrial premises such as Fibreline and retail premises such as United Carpets and Hard Ings Motor Company. The affect of the road widening scheme has therefore been assessed for these properties as well.

Assumptions

Data collated from the Bingley Monitoring station in 2014 provides readings of No2 = 22ug/m3 and PM10 = 15ug/m3.

Receptor Location	Distance of receptor from road centreline				
Year	2014	2017		2025	
	Do Nothing	Do Nothing	Do Something	Do Nothing	Do Something
150 Lawkholme Lane	10m	10m	17m	10m	17m
Hard Ings Motor Company	14m	14	10	14	10
United Carpets	12m	12	10	12	10
Traffic Data					
AADT	29640	29514	29514	31790	31790
Annual average speed (km/h)	29	26	34	21	30
Total % LDV	94.84	94.84		94.84	
Total % HGV	5.16	5.16		5.16	

The results are :-

Pollutant concentrations at receptor	2014		2017				2025			
	Do Nothing		Do Nothing		Do Something		Do Nothing		Do Something	
	No2	PM10	No2	PM10	No2	PM10	No2	PM10	No2	PM10
150 Lawkholme Lane (ug/m3)	28.17	17.16	27.83	17.07	26.68	16.49	28.10	17.33	26.78	16.64
Hard Ings Motor Company (ug/m3)	27.65	16.93	27.33	16.85	27.48	16.81	27.58	17.00	27.59	17.00

These concentrations do not exceed the air quality objective of an annual mean of 40ug/m3 for NO2 and PM10.

150 Lawkholme Lane – No2 and PM10 concentrations continue to fall without the scheme in 2017. However, by 2025 without the implementation of the scheme, No2 concentrations are nearing levels of 2014 again and PM10 is exceeding 2014 levels. However, with the implementation of the scheme, both No2 and PM10 concentrations are below 2014 levels.

Hard Ings Motor Company – No2 and PM10 concentrations continue to fall without the scheme in 2017. However, by 2025 with / without the implementation of the scheme, No2 concentrations are nearing levels of 2014 again and PM10 is marginally exceeding 2014 levels. No2 concentrations remain below 2014 levels in 2025 with the implementation of the scheme, although as a consequence of the road widening the receptor has moved closer to the link. However, PM10 is increased by 0.07 ug/m3 in 2025 compared with 2014 levels. This concentration is still well below an annual mean of 40ug/m3.