AIR QUALITY IMPACTS OF THE EMERGING SOUTH OXFORDSHIRE AND VALE OF THE WHITE HORSE JOINT LOCAL PLAN

Screening assessment

Report for: South Oxfordshire and the Vale of the White Horse District Councils

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1. PROJECT DESCRIPTION

The National Planning Policy Framework (NPPF)[1] requires local authorities in England to have an up to date local plan. South Oxfordshire and the Vale of the White Horse District Councils ("the authorities") are preparing a Joint Local Plan to meet development needs up to 2041.

The authorities have appointed Ricardo to undertake a screening exercise to understand if further work should be undertaken to assess the air quality impacts of development proposed in the emerging Joint Local Plan. The Screening exercise is focused on the air quality impacts associated with traffic growth. This report is structured to provide an overview of current air quality across the authorities and details of the key changes in the emerging Joint Local Plan for context before detailing the approach to, and findings from the screening assessment.

2. AIR QUALITY IN SOUTH OXFORDSHIRE AND THE VALE OF THE WHITE HORSE

The Environment Act (1995, updated 2021)[2] requires local authorities across England to routinely monitor air quality within its authority and compare levels of air pollution against the air quality standard set in current national policy. Local authorities are required to undertake action in areas where the air quality standard is not met to bring air quality in compliance with the objective. Local authorities are required to follow protocols in achieving these goals set out in the Local Air Quality Management (LAQM) Framework[3] technical guidance documents.

Six locations have been identified by the two local authorities as areas where air quality has not met the standard. All six locations were identified as areas where annual mean concentrations of Nitrogen Dioxide (NO_2) have not been compliant with the national standard. In line with LAQM requirements, each of these areas have been declared as an Air Quality Management Area (AQMA).

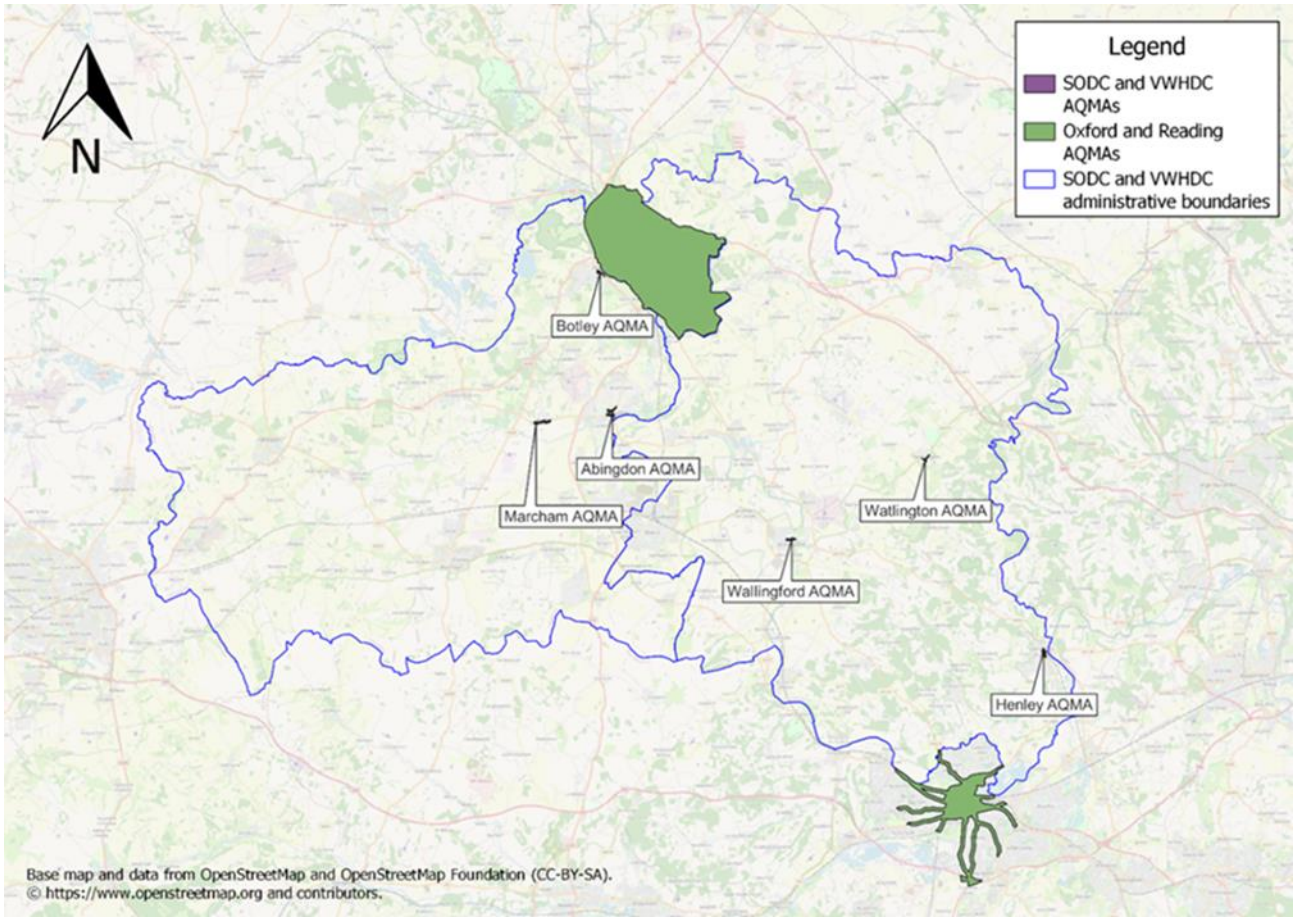
Figure 2-1 show the locations of the AQMAs.

[1] https://www.gov.uk/guidance/national-planning-policy-framework

[2] https://www.legislation.gov.uk/ukpga/2021/30/contents

[3] https://www.gov.uk/government/publications/the-air-quality-strategy-for-england/air-quality-strategy-framework-for-local-authority-delivery

Figure 2-1: Location of Air Quality Management Areas across the authorities



The LAQM framework requires the local authorities to develop and regularly update Air Quality Action Plans (AQAP) which detail the authority's approach to improving air quality in each of the AQMAs. To fulfil this requirement, South Oxfordshire and The Vale of the White Horse district councils have published a joint AQAP.

The actions in the plan are described to fall under eight broad topics:

- Freight and delivery management
- Policy guidance and developer controls
- Promoting low emission transport
- Promoting travel alternatives
- Public information
- Transport and planning infrastructure
- Traffic management; and
- Vehicle fleet efficiency.

The latest Annual Status Report (ASR)[4] reports on measured levels of air pollution. The data within the report shows that air quality has generally improved over the most recent five years.

Table 2-1 provides a summary of the current level of progress towards achieving compliance with the air quality standard in each AQMA declared across the councils.

[4] https://www.whitehorsedc.gov.uk/wp-content/uploads/sites/3/2024/02/SOVOWH-AQAP-2023.pdf

Table 2-1: Summary of air quality trends in AQMAs across the councils

Air Quality Management Area	Summary of current AQ trend
Abingdon	Measurements have been compliant with the air quality standard for the most recent four years at all locations with only one location shown to be non-compliant in the most recent five years.
Botley	Measurements have generally been compliant with the air quality standard. The data shows that concentrations breach the standard at two locations during 2023.
Henley	Measurements have been compliant with the air quality standard for the most recent four years at all locations with only one location shown to be non-compliant in the most recent five years.
Marcham	Measurements have been compliant with the air quality standard for the most recent four years at all locations with only one location shown to be non-compliant in the most recent five years.
Wallingford	Measurements have been compliant with the air quality standard for the most recent five years at all locations.
Watlington	Measurements have been compliant with the air quality standard for the most recent five years at all locations.

3. KEY DIFFERENCES BETWEEN THE CURRENT AND EMERGING LOCAL PLANS

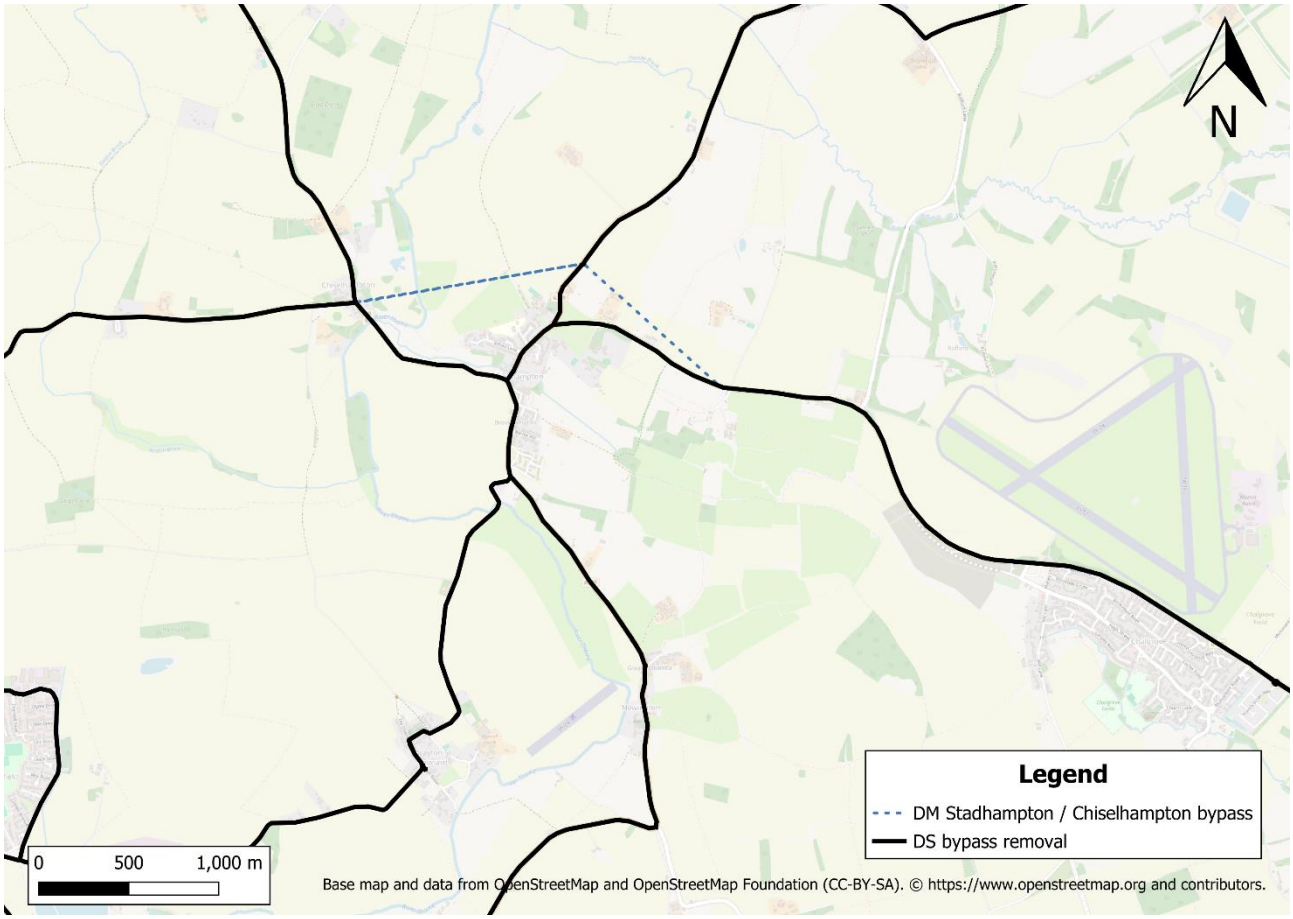
The authorities have advised that the key differences between the current and emerging local plans relate to:

- an increased housing allocation on the Dalton Barracks Strategic Allocation (DBSA).
- a reduction of housing allocation of approximately on the Chalgrove Strategic Allocation (CSA).
- the removal of the planned Stadhampton / Chiselhampton bypass.

Two model scenarios were created through the development of the authorities' local plan updates project. These models intake a wide range of considerations; most relevant to this scope of work are the traffic models which look at the impacts on the road network by the reallocation of housing and the changes to the road network layout. A description of each traffic model is provided in section 4.

Figure 3-1 illustrates the main change to the road network by proposed amendments. All other road links shown are planned to be consistent in both scenarios.

Figure 3-1: Simplified illustration of the changes to the road network surrounding Stadhampton



4. SCREENING METHODOLOGY

A screening assessment was undertaken to evaluate the significance of the impacts.

4.1 THRESHOLDS

The screening approach detailed in the Institution of Air Quality Management's (IAQM) Air Quality Planning guidance[5] was used to evaluate the potential impacts on air quality by the proposed changes to the local plan.

The approach detailed in the IAQM guidance was compared to the scoping approach for impacts on Air Quality provided by Highways England[6]. The IAQM guidance was found to include a lower threshold for assessing impacts and will therefore provide a more conservative assessment.

Table 4-1 shows the screening criteria suggested by the IAQM. Consideration was made to each of the seven-screening metrics with respects to the amendments outlined in section 3. It was identified that points one and two of the screen metrics were most relevant to the proposed changes and taken forward to the assessment. Points three and five were not taken forward as it was noted that the planned amendments will not change any road links within any of the AQMAs or introduce new bus stations. Point three is covered through the assessment of points one and two as speeds given in the traffic model data set are proportional to vehicle volumes.

Table 4-1: IAQM screening assessment thresholds

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight).	A change of LDV flows of: - More than 100 AADT within or adjacent to an AQMA - More than 500 AADT elsewhere.
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - More than 25 AADT within or adjacent to an AQMA. - More than 100 AADT elsewhere.
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g., traffic lights or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: - More than 25 AADT within or adjacent to an AQMA. - More than 100 AADT elsewhere.
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
7. Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.	Typically, any combustion plant where the single or combined NO_2 emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion.

[5] https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf
[6] https://www.standardsforhighways.co.uk/tses/attachments/10191621-07df-44a3-892e-c1d5c7a28d90?inline=true

4.2 INPUT DATA

The authorities have provided data produced by their transport consultant; who have modelled the expected impacts by the changes to the local plan. The data was provided in a GIS shapefile format, that included a database of all roads modelled by the consultants with details of period and daily average traffic flows (AADT). The flows were also proportioned to basic vehicle splits which were then converted to Light Duty Vehicles (LDVs) and Heavy-Duty Vehicles (HDVs). This dataset was provided for two scenarios:

- Do Minimal (DM) 2041 – a scenario where traffic flows are based on the current joint local plan.
- Do Something (DS) 2041 – a scenario where traffic flows are based on the proposed changes detailed in section 3.

The assessment was undertaken for the year 2041 as this year is representative of when the changes by the joint local plan are predicted to be in effect. The data received did not detail traffic flow for road links south of Wallingford or the west of Wantage as the traffic model was not focused on these areas due to the negligible effects of the scenarios. As a result, the impacts the Henley AQMA are not included but are considered to be negligible.

To undertake the screening assessment of metrics one and two, a review of the changes in AADT between the DM and DS scenario was undertaken using the thresholds detailed in Table 4-1.

5. RESULTS

5.1 SUMMARY OF IMPACTS ON AADT FROM THE LOCAL PLAN UPDATE

Figure 5-1 and Figure 5-2 shows the predicted changes in AADT[7] across the authorities, the AADT data is disaggregated by vehicle type. The figures use a scale synced to the IAQM threshold criteria where road links are coloured to represent:

- links with a reduction of vehicles (blue);
- links with an increase of up to 100 vehicles (green);
- links with an increase between 100 and 500 vehicles (orange);
- links with an increase of more than 500 vehicles (red).

Figure 5-1 shows that:

- the majority of road links are expected to either experience a reduction in LDV traffic or an increased flow by up to 100 vehicles across the study area.
- a significant number of road links are expected to increase in LDV traffic by up to 500 vehicles. These changes are shown to mostly occur in areas directly linked to the Chalgrove and Dalton Barracks Strategic Allocation sites.
- a small number of road links are expected to increase in LDV traffic by more than 500 vehicles. These changes are shown to be in the areas surrounding the Chalgrove and Dalton Barracks Strategic Allocation sites.

Figure 5-2 shows that a number of road links changes in HDV traffic will be below the IAQM 100 AADT threshold on all road links outside the AQMAs. The data also shows that the IAQM 25 AADT threshold will be breached in the Abingdon and Wallingford AQMAs.

[7] This is calculated by deducting DM flows from the DS flows on corresponding road links. A positive number represents an increase in traffic volumes by the DS scenario whereas a negative number represents a reduction.

Figure 5-1: Net changes in LDV AADT in the updated Local Plan scenario

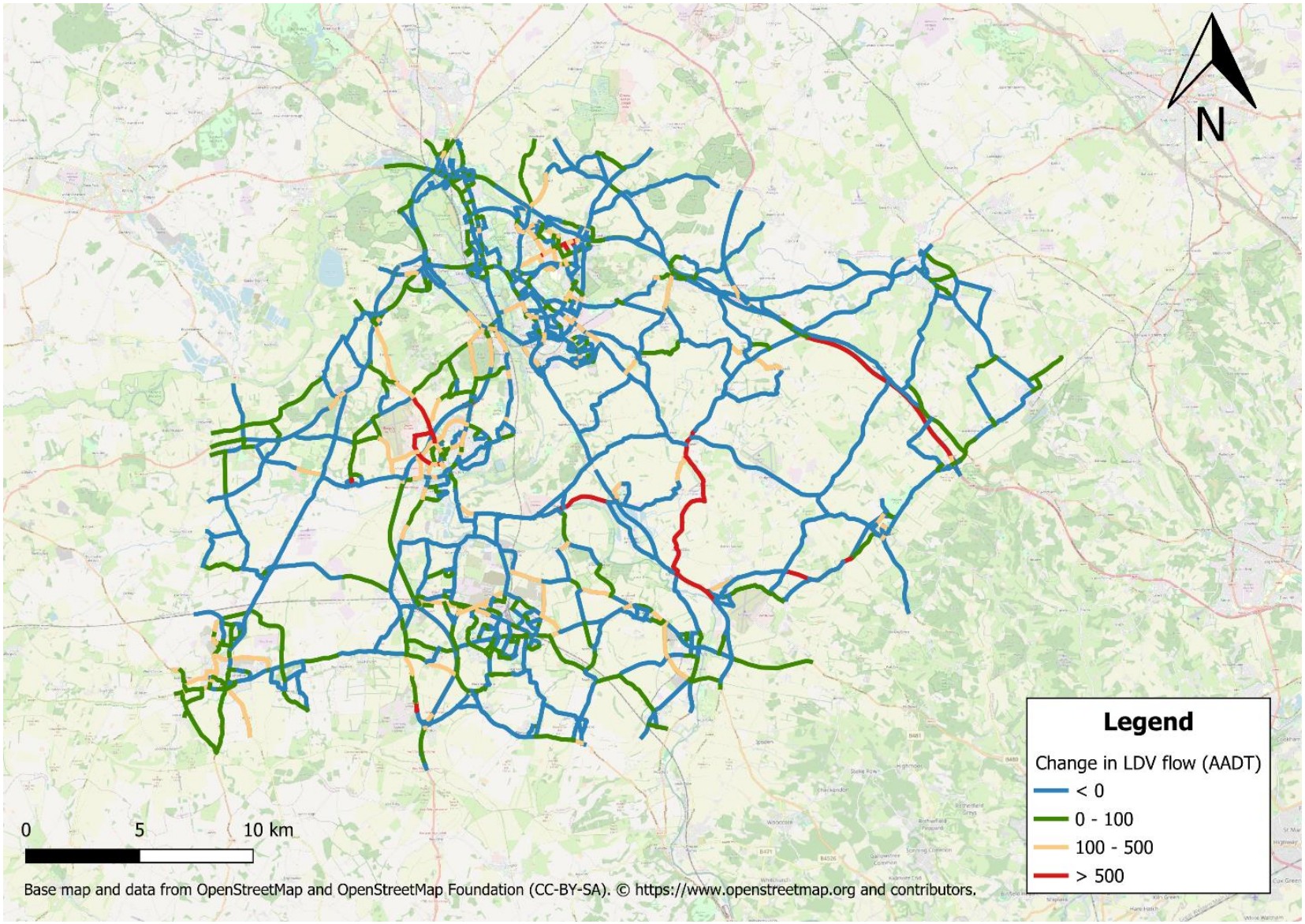
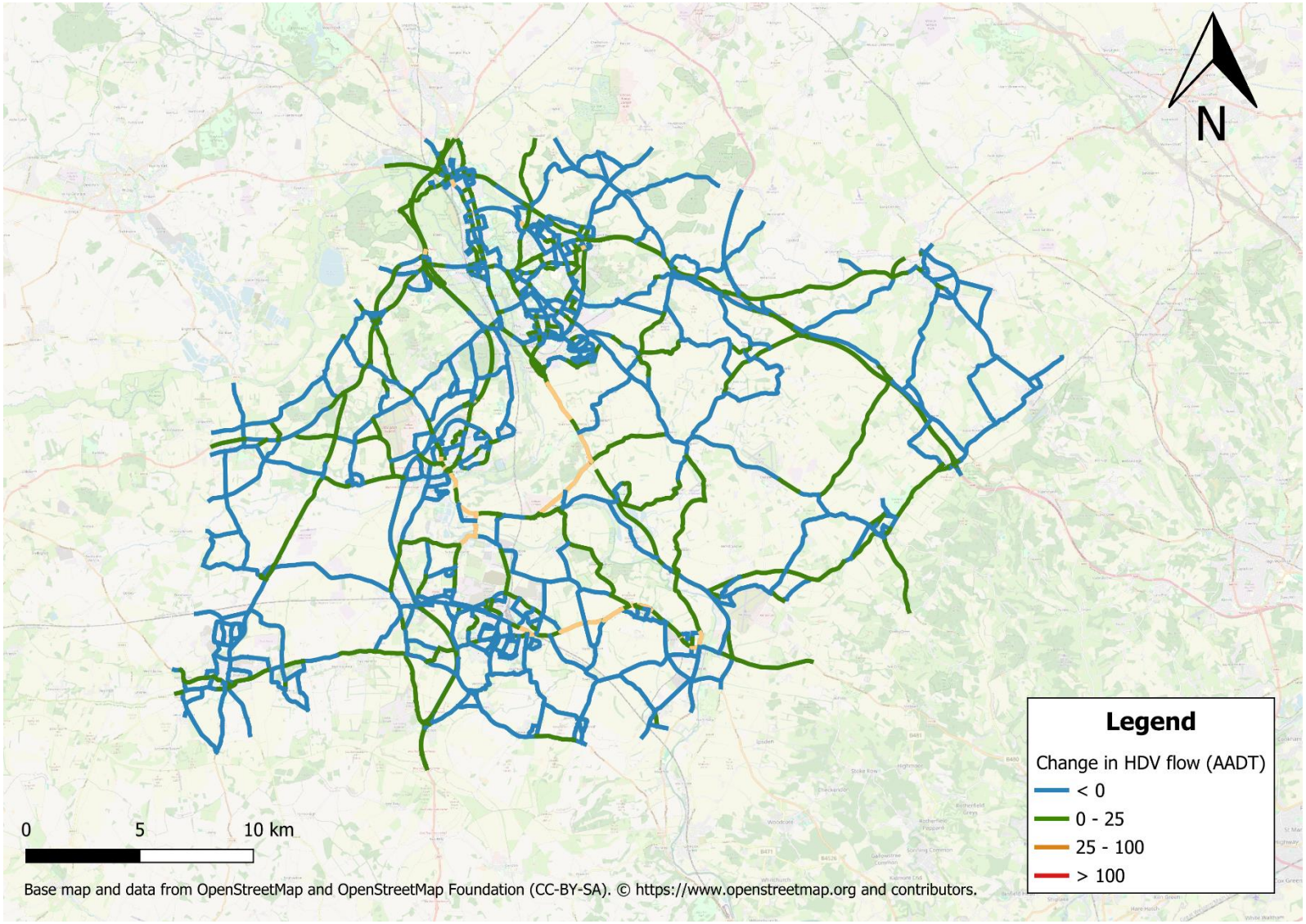


Figure 5-2: Net changes in HDV AADT in the updated Local Plan scenario



5.2 SUMMARY OF IMPACTS ON AADT FLOWS WITHIN EACH AQMA

Visual representation of the impacts on LDV AADT on road links within each AQMA and the surrounding area are presented in Appendix 1. Table 5-1 provides a summary of the observations.

Table 5-1: Summary of impacts on LDV and HDV AADT flows in each AQMA and the surrounding area

AQMA	Finding
Abingdon	The data shows that LDV flows are likely to increase above the threshold of an increase of at least 100 vehicles per day within the AQMA on east and west St Helen Street. The data also shows that AADT traffic is likely to increase on two sections of road which link into the AQMA (Farringdon Road and Bath Street).
Botley	The data shows a change in traffic flow of between 100 - 500 LDVs is expected to occur on the A34 southern bypass within the AQMA.
Marcham	LDV volumes on road links within the AQMA are expected to reduce. However, the LDV flows are expected to change by more than 500 outside the AQMA along North Street.
Wallingford	LDV volumes are generally expected to reduce on road links within and surrounding the AQMA. The data also shows that HDV volumes are expected to increase above the 25 AADT threshold along Wantage Road, Station Road, High Street and Castle Street.
Watlington	LDV volumes are predicted to change between 100 - 500 on Couching Street within the AQMA.

5.3 SUMMARY OF IMPACTS ON AADT FLOWS OUTSIDE AQMAS

Figure 5-1 and Figure 5-2 have present an overview of the net changes in AADT volumes across the transport model domain. Table 5-2 provides further information on the road links outside AQMAs which have been identified to be above the threshold for LDV change from IAQM guidance (500 vehicles/day).

Table 5-2: Summary of impacts on AADT flows outside AQMAs

Road link	Scope	Observation
B4017 Wotton Road, Long Tow and Cholswell Road	In	LDVs are expected to change by more than 500 vehicles on the section of road running between the Faringdon / Bath street roundabout to Long Tow (via Cholswell Road). The level of change is predicted across the entirety of Long Tow and also the section of adjoining Wotton Road running between the Honeybottom Lane junction to the Dunmore Road roundabout. The links are directly associated with the DBSA.
A415 Abingdon Road, A4974 Oxford Road	In	LDV is expected to change by more than 500 vehicles on the section of Abingdon Road between the Main Avenue junction and Oxford Road roundabout, the same level of change continues for approximately 1 km along the northern section of Oxford Road from the roundabout.
A329 Stadhampton to Benson	In	LDV is expected to change by more than 500 vehicles on the section of road that runs along Milton Road in Stadhampton to the junction with Church Road in Benson.
B4009 Grove Lane	In	LDV is expected to change by more than 500 vehicles between the junction with Eyre's lane to Cuxham Road. This length of road links directly into the Watlington AQMA.

Road link	Scope	Observation
M40 junctions 6 - 7	In	LDV is expected to change by more than 500 vehicles between these two junctions.
A4135 Harwell Campus	Out	LDV is expected to change by more than 500 vehicles on the 0.4km stretch of road running north of the roundabout on the southern section serving the campus. Scoped out as adjoining road links do not show the same level of change. Actions in the revised plan do not suggest that AADT flows in this region are likely to be significantly affected.
A4130 North Perimeter Road	Out	LDV is expected to change by more than 500 vehicles. Scoped out as adjoining road links do not show the same level of change. Actions in the revised plan do not suggest that AADT flows in this region are likely to be significantly affected.

6. CONCLUSIONS AND RECOMMENDATIONS

This report has described current air quality across the South Oxfordshire and Vale of the White Horse District councils and presents the results of a screening assessment undertaken to understand whether a detailed assessment should be undertaken to assess the impacts of proposed changes to the current local plan on air quality.

A review of historic measurements collected across the authorities has found that the concentration of NO_2 has been in decline over the most recent five years; and that the air quality standard for the pollutant has been met in five of the six AQMAs declared by the authorities.

Current action to improve air quality by the authorities, combined with the transition of the UK vehicle fleet to zero emission vehicles[8], are expected to further reduce concentrations of NO_2 pollutant over the course of the Joint Local Plan (2041).

The results of the screening exercise have shown that the provisions of the emerging Local Plan are likely to have an effect on AADT within and in the areas surrounding the AQMAs.

Notwithstanding the expected overall improvement in air quality, a further detailed assessment to determine the significance of the impacts at the locations identified in Table 5-1 and Table 5-2 is recommend.

[8] https://www.gov.uk/government/news/pathway-for-zero-emission-vehicle-transition-by-2035-becomes-law

APPENDICES

APPENDIX 1 NET CHANGE FIGURES

Figure 6-1: Changes in LDV AADT in Abingdon

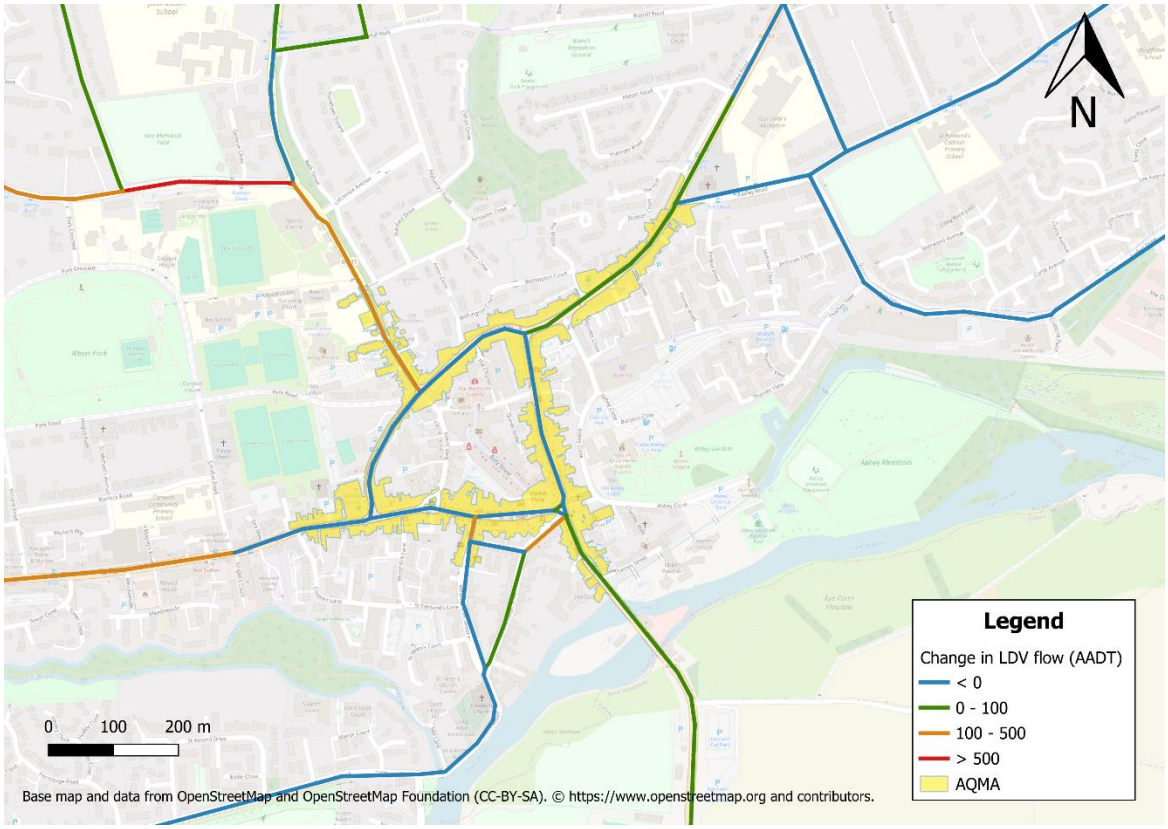


Figure 6-2: Changes in LDV AADT in Botley

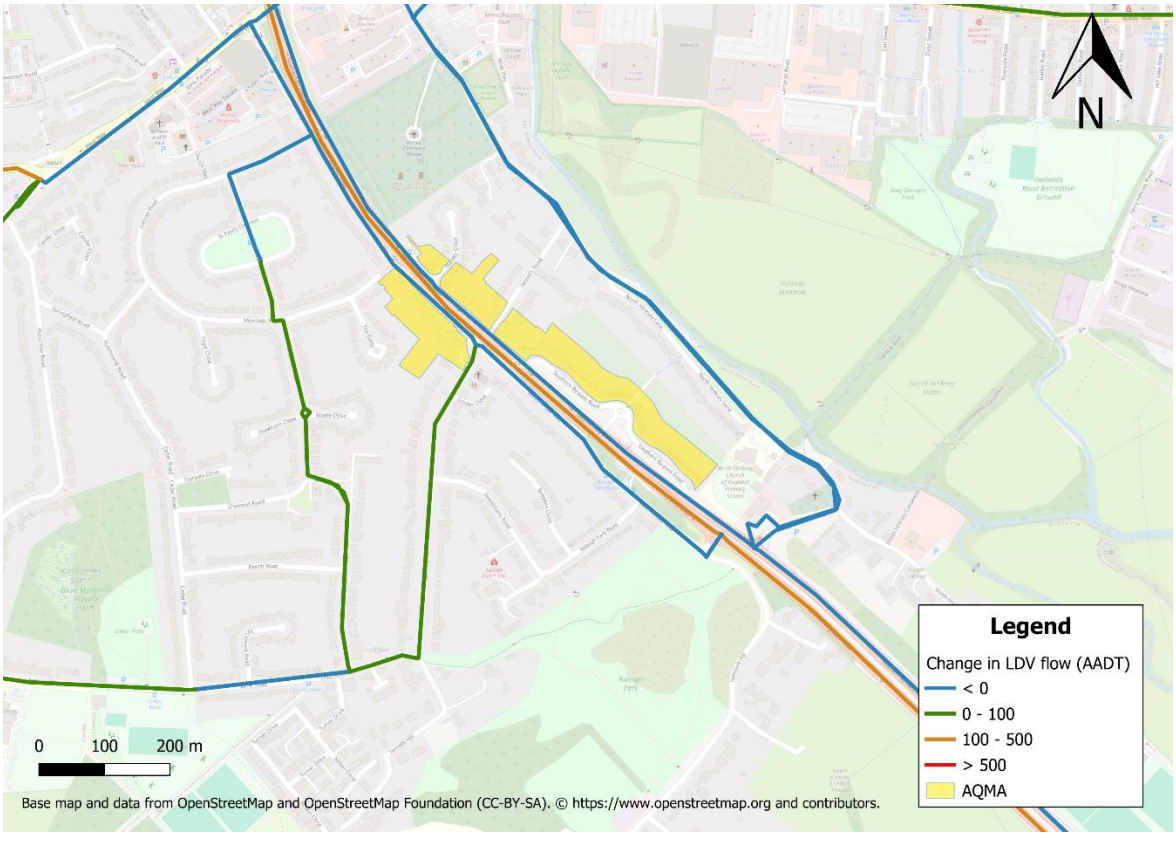


Figure 6-3: Changes in LDV AADT in Marcham

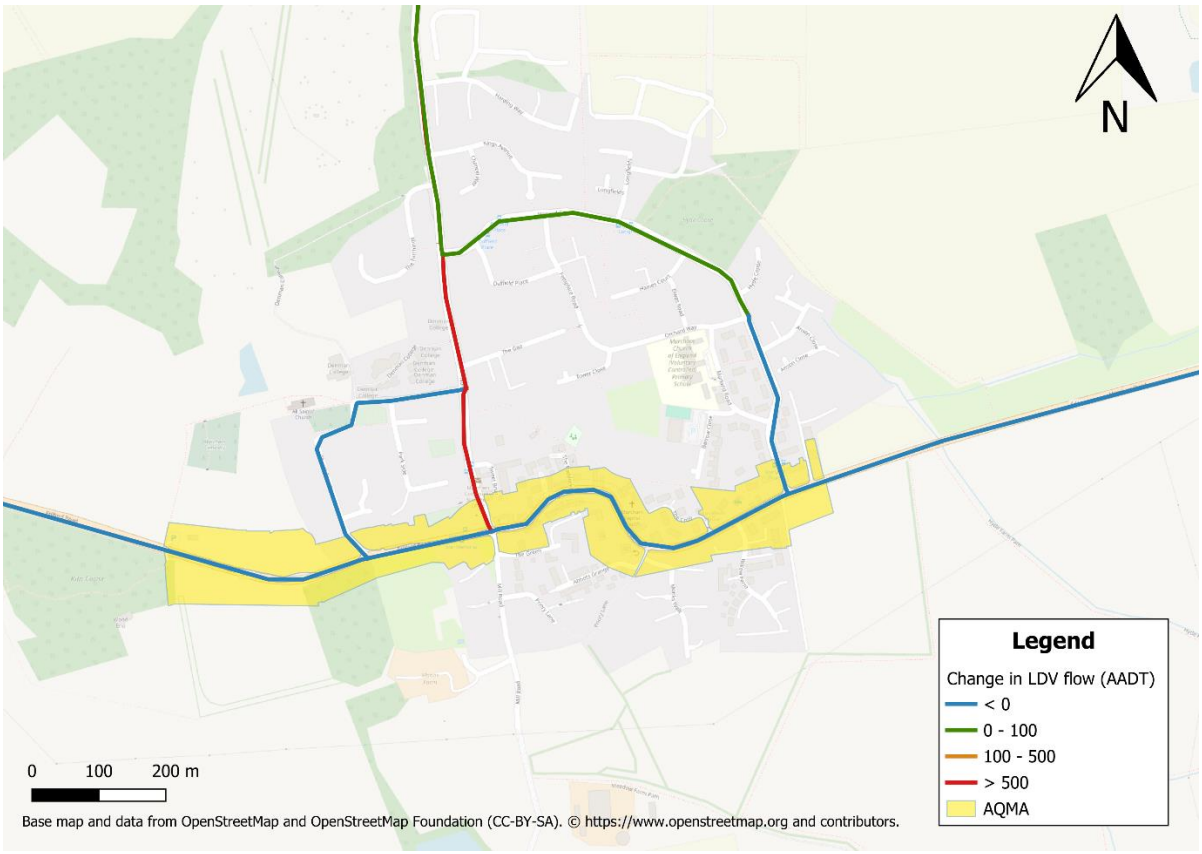


Figure 6-4: Changes in LDV AADT in Wallingford

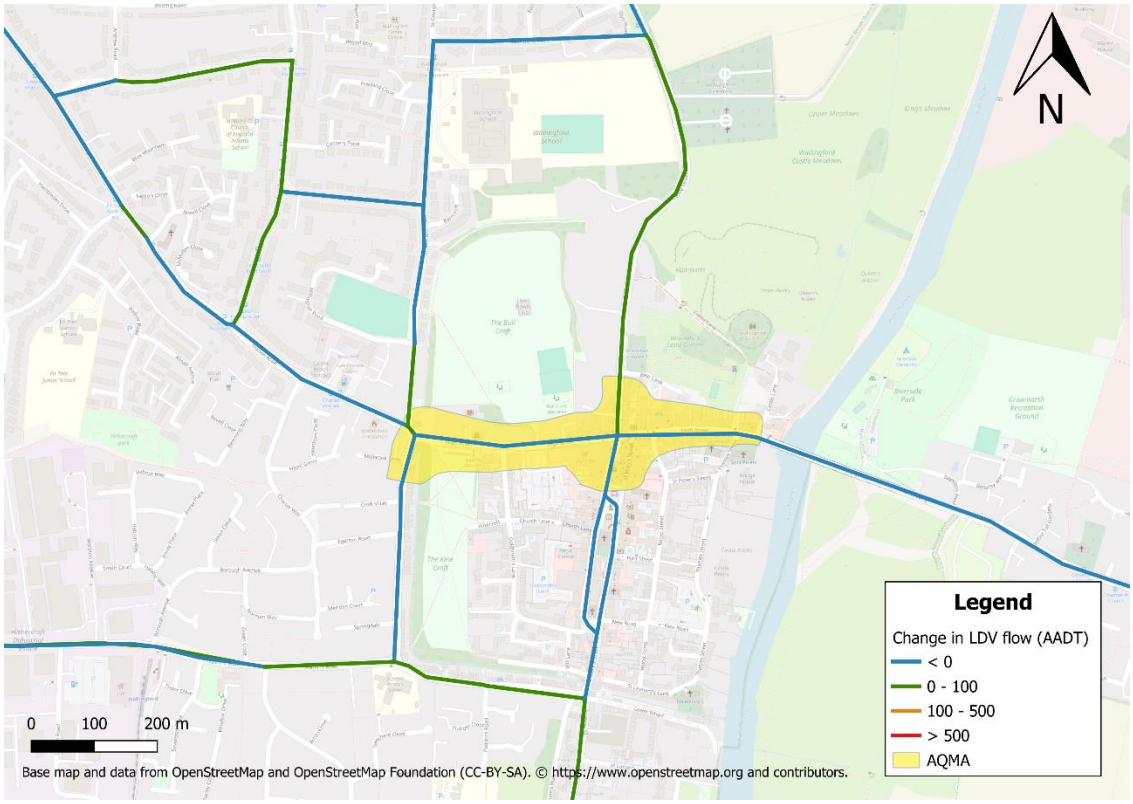


Figure 6-5: Changes in HDV AADT in Wallingford

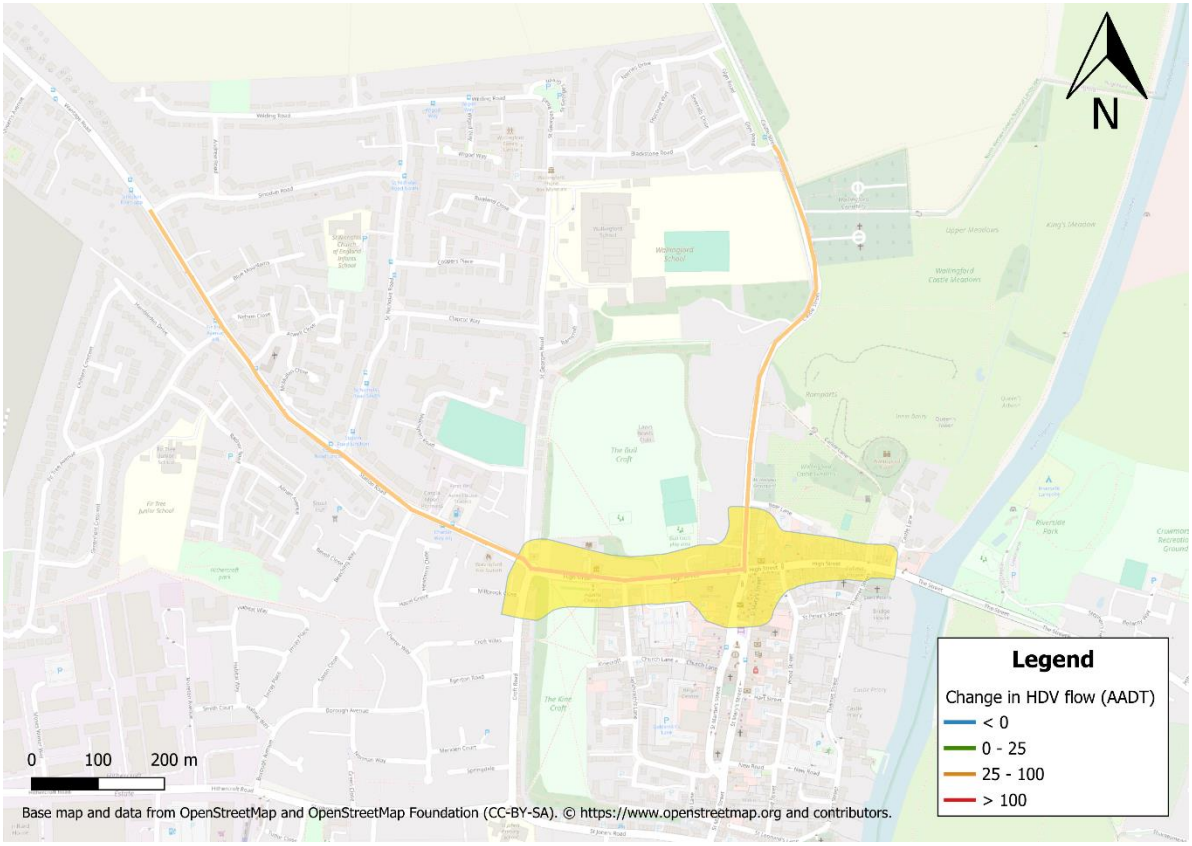
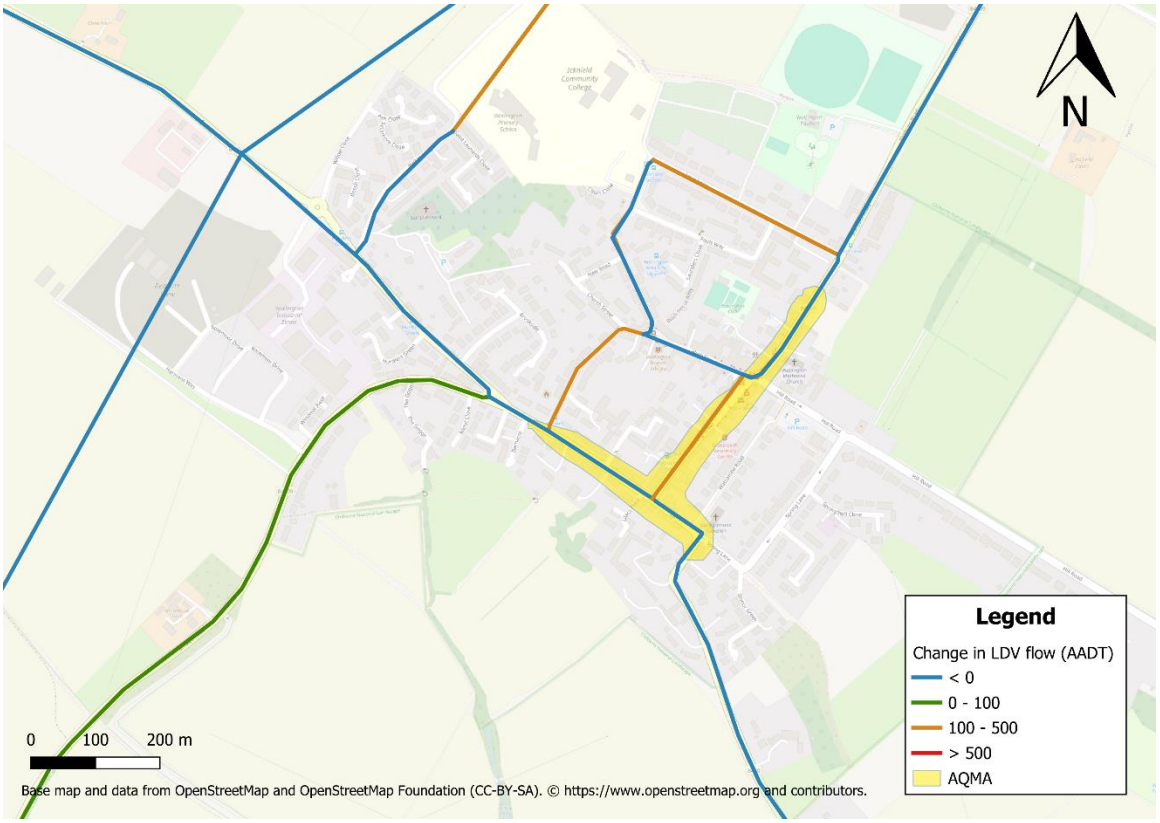


Figure 6-6: Changes in LDV AADT in Watlington



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