

Technical Note

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Author:	[REDACTED]		
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Client signoff

Client	Coventry City Council
Project	Coventry Clean Air Zone OBC addendum 2
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1. Distributional Impact Analysis

1.1. Overview

This note provides an overview of the distribution of impacts on vulnerable groups as a result of the revised option, DS13I. It does not provide a full distributional impact appraisal and only provides detail of where the likely impacts are. The analysis could be followed by a full distributional impact appraisal of the scheme option if required. This is the second addendum to the E3 distributional impact appraisal which was produced for the earlier options at OBC stage, this report contains the relevant mapping and the assessment of how different social and business groups are distributed within the geographical area.

Option DS13I is an iteration of option DS13c, considered in the previous addendum and consists of the following package of measures;

- Peak time restrictions on Holyhead Road (inbound AM, outbound PM);
- Interpeak restrictions on Holyhead Road (3 hours inbound and 3 hours outbound);
- High quality cycle infrastructure along Coundon Road;
- Capacity improvements at Hearsall Lane;
- Redesign of Ring Road Junction 7;
- Closure of Barras Lane between Coundon Road and Holyhead Road;
- Opening of Upper Hill Street allowing a left in / left out movement with the Inner Ring Road clockwise; and
- Restricting the right-hand turn movement from Cash's Lane to Foleshill Road southbound.
- HGV ban on part of Foleshill Road.

Note – there are a couple of elements included in this scenario which are funded from outside of AQ, but have been included in this assessment as may impact DI outcomes.

- Queen Victoria Road Public Realm Scheme;
- Replacement of two thirds of the bus movements on Foleshill Road with electric buses;

A screening has been undertaken which shows the potential impacts (as shown in Appendix B) of option DS13I and whether they need to be assessed further. This screening considers whether there is likely to be an impact to an indicator due to the scheme, as required by JAQU guidance. JAQU guidance also requires that air quality, accessibility and affordability be screened in, at a minimum. In addition, the screening proforma determined that user benefits, noise, accidents and severance should be assessed in further detail.

However, a full DI appraisal is not being undertaken at this stage due to time constraints. This technical note is provided to give an overview of potential impacts of option DS13I. Therefore, assessment of the impact area (step 2) has not been completed in detail at this stage as well as appraisals of noise, accidents and severance. It should be noted however that large parts of the option do not differ from that of previous preferred options and hence impacts remain similar.

A mapping of the percentage change in AADT caused by the scheme, as well as LSOAs with high proportions of children, elderly and income deprived residents is included in Appendix A for reference. However, due to time constraints a full assessment of the change in AADT has not been carried out at this stage.

1.1.1. Distributional Impact Appraisal of Air Quality

Approach to appraising air quality

For this addendum, the distributional impact of air quality has been assessed by mapping the percentage change in NO_x emissions by link as provided by the Air Quality team. This has been mapped with the Lower Super Output Areas (LSOAs) in the most income deprived quintile as well as where there are a high proportion of children compared to the average in England. The location of schools present in the area has also been assessed to understand any changes in emissions on roads which contain facilities which may have a high proportion of children.

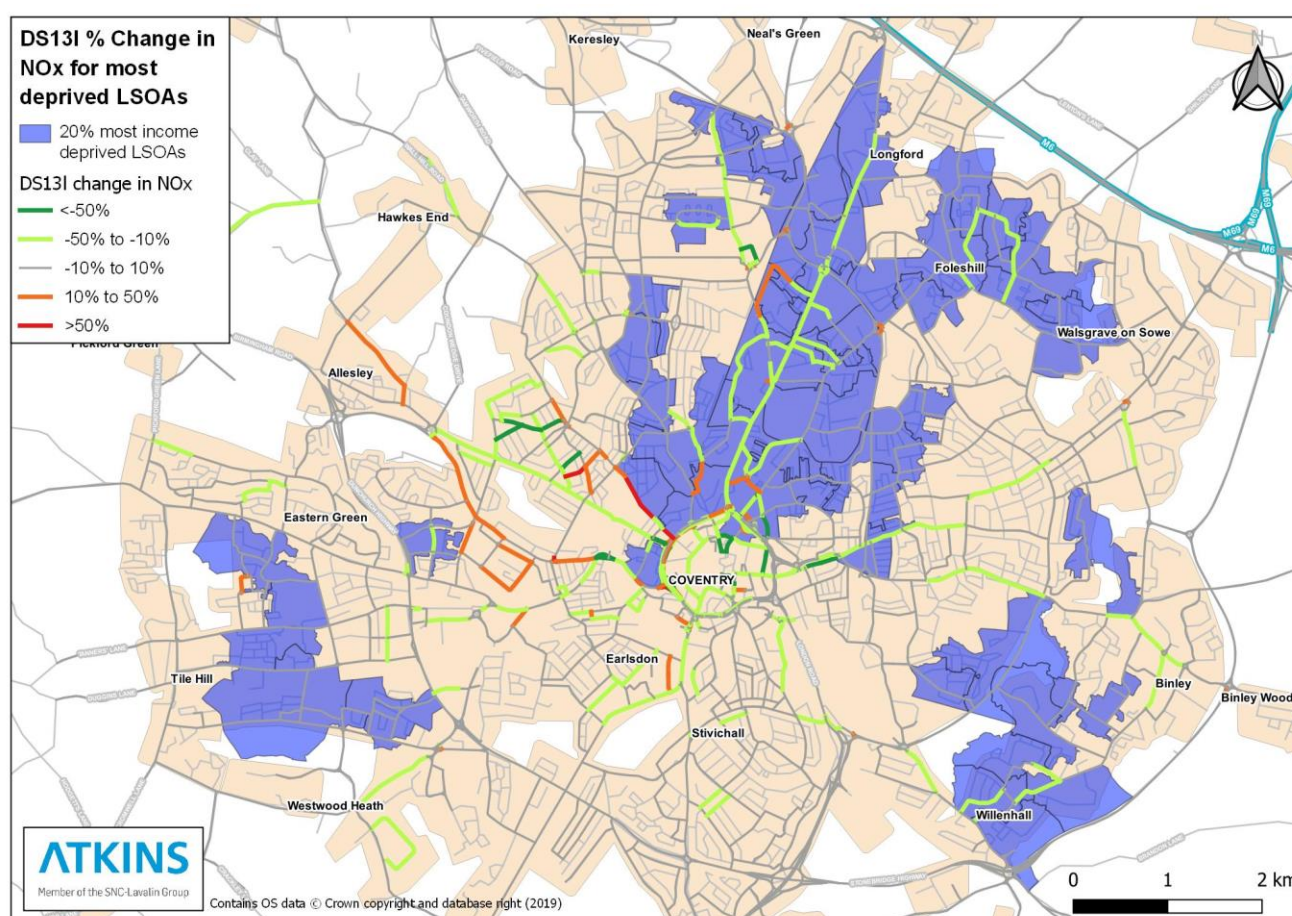
DS13I Impacts

Restrictions on Holyhead Road and right-turn restrictions from Cash's Lane to Foleshill Road may cause traffic to re-route. Consequently, while reducing the NO_x emissions on Holyhead Road and Foleshill Road, there may be increased emissions on other roads which people choose to re-route onto.

Impacts on Low Income Households

Figure 1-1 shows the percentage change in NO_x emissions and the 20% most income deprived LSOAs in England. There are increased emissions on some roads, including Coundon Road, Allesley Old Road and Butts Road. This is likely as a result of vehicles rerouting away from Holyhead Road due to the restrictions in the peak hours and interpeak. Routes with decreased emissions include Holyhead Road, Queen Victoria Road, Foleshill Road and Far Gosford Street. The reduced emissions on Holyhead Road are likely caused by the restrictions outside the off-peak reducing traffic flow along the road. The restrictions on Foleshill Road and buses being replaced by electric buses on the route are likely the cause of reductions in this area. The additional cycle infrastructure on Queen Victorian Road may encourage mode shift from private car to cycle mode of travel, hence reducing emissions on the route.

Figure 1-1 – Percentage change in NO_x emissions and LSOAs within the 20% most income deprived LSOAs in England



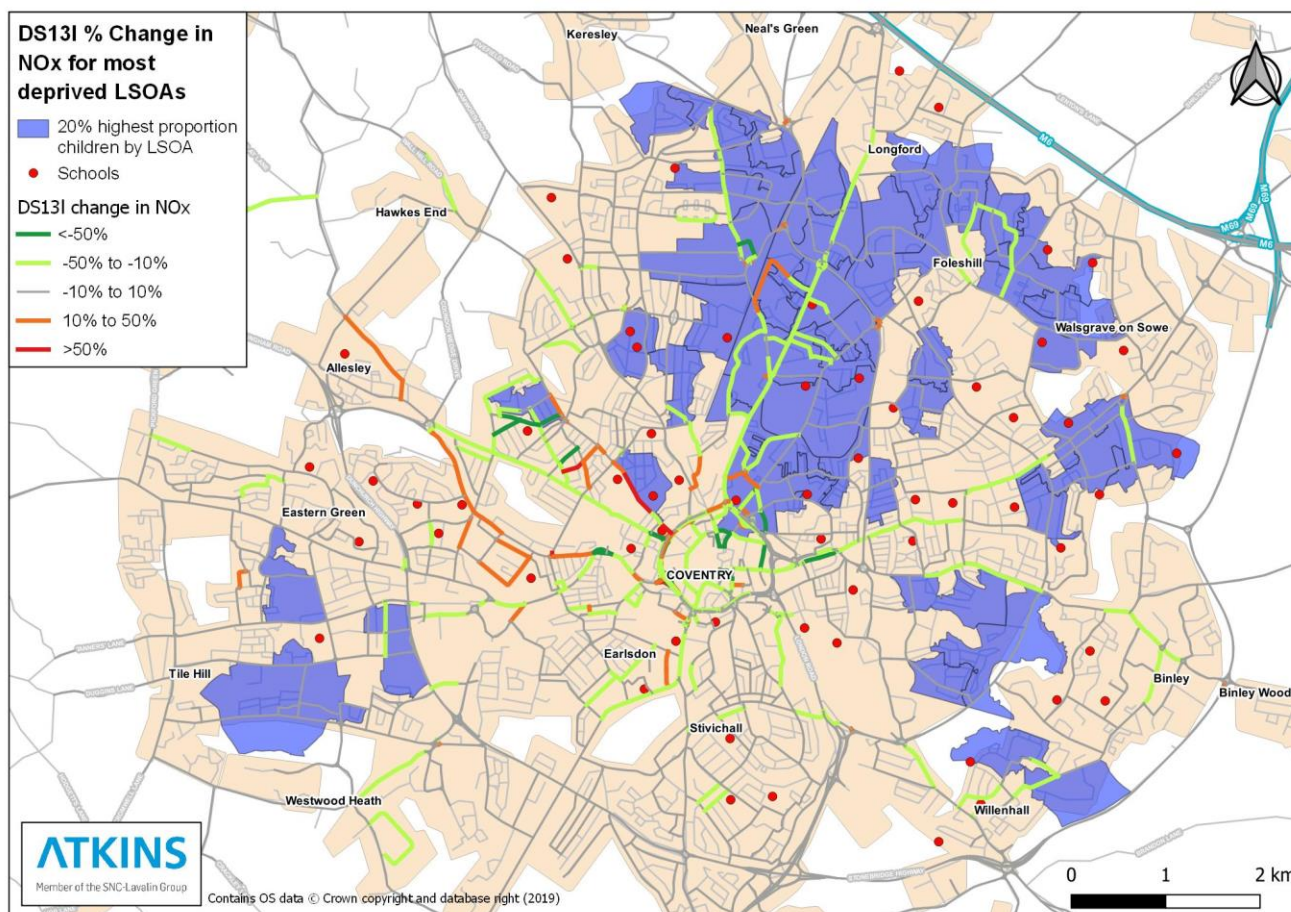
Within LSOAs belonging to income quintile one there are a significant number of roads with greater than 10% reduction in NO_x emissions. This includes Foleshill Road, routes joining Foleshill Road and Walsgrave Road. There are few routes with greater than 10% increase in emissions which are within the 20% most income deprived LSOAs. These include Sandy Lane, Howard Street and Durbar Avenue.

Overall, there are significantly more links with greater than 10% decrease in emissions than increased emissions within the 20% most income deprived LSOAs in England. Therefore, **there is a moderate beneficial impact to air quality for income deprived residents as a result of option DS13I.**

Impacts on Children

Figure 1-2 shows the percentage change in NO_x emissions overlaid with areas with a high proportion of children and the location of schools. Children are more likely to be susceptible to changes in air quality levels and therefore, the possible changes in emissions should be examined.

Figure 1-2 – Percentage change in NO_x emissions and LSOAs with the 20% highest proportion of children in England and Wales and schools in the area



There are two schools and an area of a high proportion of Children adjacent to Coundon Road, which has greater than 50% increase in NO_x emissions. Durbar Avenue and Sandy Lane also have increased emissions and are within LSOAs with high proportions of children. However, there are significantly more links with decreased emissions in areas with high proportions of children. For example, Foleshill Road and routes leading to this road. Eden Girls School and Edgwick Community Primary School are also adjacent to Foleshill Road. Overall, there are significantly more links with greater than 10% reduction in NO_x emissions than increase in NO_x emissions in areas with high proportions of children and by schools. Therefore, **there is a moderate beneficial impact to air quality for children.**

Overall impact on Air Quality

Further maps of the impacts are shown in Appendix A.

Table 1-1 - Overall Impact on Vulnerable Groups

Vulnerable Group	DS131
Low Income Groups	✓✓
Children	✓✓
Overall	✓✓

Key:

- large beneficial (✓✓✓)
- moderate beneficial (✓✓)
- slight beneficial (✓)
- neutral (0)
- slight adverse (✗)

moderate adverse (**)

large adverse (***)

1.1.2. Distributional Impact Appraisal of Accessibility

Approach to appraising accessibility

This appraisal will be based on the qualitative assessment of the impacts on accessibility in the area, including access to public transport services, private hire and community vehicles. The proposed area of impact is Coventry and the wider area to capture any vulnerable groups likely to be impacted when travelling into or out of the CAZ.

DS13I Impacts

The proposed scheme includes restrictions on Holyhead Road outside of the off-peak which could impact on bus services, especially 7, 83 and X1 services which operate along Holyhead Road. It is assumed that this restriction will not impact buses travelling on Holyhead Road. There are no bus services which travel along Cash's Lane, so the right-turn restriction onto Foleshill Road won't impact on bus services. Therefore, it is currently assumed that there will be no effect to bus services as a result of the scheme. However, private hire and community transport vehicles may have to reroute, causing a slight increase in travel times and vehicle operating costs, due to the restrictions on Holyhead Road and Foleshill Road.

Impact on Disabled People

There is not likely to be any significant adverse impacts on people with a disability. Community transport services and private hire vehicles may need to re-route as a result of the restrictions on Holyhead Road and Foleshill Road right turn to travel to their onward destination. This may have some journey time disbenefits and may cause a slight increase in vehicle operating costs. However, it is not expected to significantly affect the availability or cost of travel for people with a disability and it is expected to be a small proportion of vehicles which need to re-route.

The analysis shown in the report (E3 – Distributional Impact Report) shows that there are LSOAs with high proportions of those unable to work through ill health or disability within the north of the city centre.

Impact on Older People

The impact of DS13I on older people needs to be taken into consideration. There may be a slight increase in journey times due to the peak hour and interpeak restrictions on Holyhead Road causing vehicles to re-route. This might have a slight impact on accessibility for older people who may be reliant on private hire, taxi or community services due to mobility issues. However, there are not many facilities, such as health care on Holyhead Road, Foleshill Road or Cash's Lane therefore, the services will still be accessible with a small re-route option if required. This is not expected to increase the cost or availability of travel for older people.

Impact on Children

The Holyhead Road restrictions outside of the off-peak and the Foleshill Road right-turn restriction are unlikely to have a significant effect on accessibility. There are a number of schools and open spaces within the vicinity of Holyhead Road and Foleshill Road. However, there are opportunities to re-route and therefore, should not impact on accessibility to schools and community services. There are not expected to be any impacts to regular bus services and there are no community centres or schools directly on Holyhead Road, Foleshill Road or Cash's Lane. Therefore, these groups should be able to access the services with a small re-routed journey if they normally travel along these routes. Hence, there is unlikely to be any significant accessibility impact to children as a result of option DS13I.

Impact on Women

There is unlikely to be an adverse accessibility impact to women. If they use private hire, community or transport services to travel down Holyhead Road or turn right from Cash's Lane to Foleshill Road there may be a slight re-route. While this may cause a slight increase to journey times, this is not expected to impact the cost or availability of travel for women.

Impact on Black and Minority Ethnic Groups (BME)

There are a small number church's close to Holyhead Road and Foleshill Road, which can still be accessed by rerouting a small distance to avoid restricted routes. There is a Gurdwara on Foleshill Road, opposite Cash's

Lane. People wishing to access this temple from Cash's Lane may need to reroute a small distance. However, this isn't likely to significantly impact costs or availability of travel to the temple. There are no other places of worship such as a synagogue, temple or mosque directly on Holyhead Road, Foleshill Road or Cash's Lane. Therefore, people should be able to access places of worship, with small increases to journey times in some cases. This is unlikely to impact upon the cost or availability to access services, such as buses, private hire or community transport.

Impact on Low Income Groups

There are a low number of services such as health care and places of worship on Holyhead Road, Foleshill Road or Cash's Lane. Therefore, the impact of DS13I on the availability of services for low income groups is likely to be negligible. As community and private hire transport services should be able to re-route to avoid a charge and the route is unlikely to have significant additional time or cost implications for low income groups. Bus services are anticipated to remain the same.

Overall Impact on Accessibility

Table 1-2 - Overall Accessibility Impact on Vulnerable Groups

Vulnerable Group	DS13I
Disabled People	0
BME	0
Older People	0
Children	0
Low income groups	0
Overall	0

1.1.3. Distributional Impact Appraisal of User Benefits

Approach to appraising user benefits

This section uses WebTAG A4.2 guidance based on the 10-year appraisal of TUBA outputs for the charges (public transport and tolls) and the fuel and non-fuel vehicle operating costs (VOC), as well as any changes in time. Only internal to internal trips within a 'core' assessment area (Appendix C) are used, not including any zones which do not have monetised impacts in the TUBA outputs. This is also combined with a qualitative description of the impacts the scheme option will have on vulnerable populations. Businesses will be assessed qualitatively at a high level.

DS13I Impacts

Option DS13I includes a peak hour and interpeak restriction on Holyhead Road, a right turn restriction from Cash's Lane to Foleshill Road and the closure of Barras Lane between Coundon Road and Holyhead Road. There may be increased journey times and VOC for vehicles having to reroute onto longer routes due to the restrictions and road closures. Therefore, there will be cost and time adverse impacts for those who currently travel on the restricted routes.

The scheme also includes capacity improvements at Spon End (funded via TCF), and improvements at Hearsall Lane junction which will likely reduce travel times and VOC due to reduced braking and accelerating for vehicles travelling along Allesley Old Road. In addition, the opening of Upper Hill Street to allow left in/left out may reduce travel distances for vehicles who reroute onto this road. These measures are likely to have beneficial cost and time impacts.

Impact on Low Income Households

As a result of option DS13I motorists travelling on Holyhead Road outside of the off-peak may have to reroute onto routes with longer travel times and distances. Vehicles who wish to travel on Barras Lane between Coundon Road and Holyhead Road or turn right from Cash's Lane to Foleshill Road will also have to reroute, causing travel times and VOC to increase for some users. Both of these measures are within the 20% most income deprived LSOAs, so may particularly impact income deprived households in the area.

There is likely to be beneficial impacts for vehicles travelling along Allesley Old Road, due to the capacity improvements leading to reduced travel times. Also, journey distances may be reduced for vehicles rerouting onto Upper Hill Street, due to the additional junction. Both these measures are within the 20% most income deprived LSOAs in England, so may particularly benefit income deprived residents in the area.

Table 1-5 shows that there are large beneficial impacts for income quintiles 1 and 2. This is likely caused by increased capacity through Spon End, opening of Upper Hill Street and mode shift from private car to active modes reducing travel times and distances in the area. However, there is a large adverse impact for income quintiles 3 and 4 and a slight adverse impact for income quintile 5. The restrictions on Holyhead Road may cause vehicles to reroute onto longer routes, causing travel times and VOC to increase. The LSOAs covering Holyhead Road and the surrounding area mostly belong to income quintiles 3 and 4, hence leading to the adverse user benefits impacting these income groups more.

Table 1-3 – User benefits for option DS13I

	Income Quintile					Total
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	
Total population in the assessment area	95,323	84,812	100,771	68,819	61,131	410,856
Proportion of total population in each group in the assessment area	23.2%	20.6%	24.5%	16.8%	14.9%	-
Sum of benefits	£1,988,704	£1,255,716	£1,423,518	£200,679	£10,756	£4,879,372
Proportion of benefits for each income quintile	40.8%	25.7%	29.2%	4.1%	0.2%	-
Sum of disbenefits	-£980,019	-£657,348	-£3,306,222	-£1,554,401	-£638,251	-£7,136,241
Proportion of disbenefits for each income quintile	13.7%	9.2%	46.3%	21.8%	8.9%	-
Overall sum of benefits and disbenefits for leisure and commuting users	£1,008,685	£598,368	-£1,882,704	-£1,353,722	-£627,495	-£2,256,869
Assessment	Large Beneficial	Large Beneficial	Large Adverse	Large Adverse	Slight Adverse	

Overall, as a result of option DS13I, there is a **large beneficial impact to low income groups**. This is due to the majority of beneficial user benefits (over 65%) being concentrated in the 40% most income deprived LSOAs.

Impact on SMEs/LGVs

This will be assessed qualitatively where the high proportion of SMEs and LGVs are within Coventry and the surrounding area. There are high proportions of SMEs and LGVs within Coventry City Centre itself and to the west of the city centre. Businesses may have to reroute due to the restrictions and road closures, leading to increased journey times and VOC for businesses.

DS13I Impacts

The scheme includes capacity improvements at Hearsall Road/Spon End, which will likely reduce fuel costs due to reduced braking and accelerating for vehicles travelling through Spon End. In addition, the opening of Upper Hill Street to allow left in/left out may provide a shorter route for some vehicles. This will lead to reduced VOC as vehicles don't have to travel as far. These measures will lead to beneficial affordability impacts for some users.

Option DS13I includes a peak hour and interpeak restriction on Holyhead Road as well as a right turn restriction from Cash's Lane to Foleshill Road. Barras Lane is also closed between Coundon Road and Holyhead Road. There may be increased VOC for vehicles having to reroute onto longer routes due to the restrictions and road closures. Therefore, there will be affordability impacts to fuel and non-fuel VOC for those who currently travel on these routes.

Impact on Low Income Households

As a result of option DS13I motorists travelling on Holyhead Road outside of the off-peak may have to reroute onto routes with longer travel times and distances. Vehicles who wish to turn right from Cash's Lane to Foleshill Road will also have to reroute, causing VOC to increase for some users.

Table 1-5 shows that there are adverse impacts for all income quintiles. This indicates that any adverse impacts due to re-routing vehicle operating costs outweigh any benefits due to decongestion in other areas. Decongestion is likely to occur around Spon End and Upper Hill Street due to the capacity measures and opening of Upper Hill Street. These measures are within the 20% most income deprived LSOAs, likely leading to some affordability benefits for income deprived users. However, there are slight adverse impacts for income quintiles 1 and 2 likely caused by the Holyhead Road restrictions, which outweigh the affordability benefits of the scheme to low income groups resulting in a slight adverse impact.

There is a large adverse impact for income quintile 3 and moderate adverse for income quintiles 4 and 5. The LSOAs covering Holyhead Road and the surrounding area mostly belong to income quintiles 3 and 4, which will likely lead to adverse affordability impacts for these income groups due to the Holyhead Road restrictions.

Table 1-5 - Affordability impacts for option DS13I

	Income Quintile					Total
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	
Total population in the assessment area	95,323	84,812	100,771	68,819	61,131	410,856
Proportion of total population in each group in the assessment area	23.2%	20.6%	24.5%	16.8%	14.9%	-
Sum of benefits	£112,559	£76,997	£65,545	£75,263	£8,779	£339,143
Proportion of benefits for each income quintile	33.2%	22.7%	19.3%	22.2%	2.6%	-
Sum of disbenefits	-£146,728	-£107,486	-£419,945	-£185,157	-£116,731	-£976,046
Proportion of disbenefits for each income quintile	15.0%	11.0%	43.0%	19.0%	12.0%	-

Overall sum of benefits and disbenefits for leisure and commuting users	-£34,169	-£30,489	-£354,400	-£109,894	-£107,952	-£636,903
Assessment	Slight Adverse	Slight Adverse	Large Adverse	Moderate Adverse	Moderate Adverse	

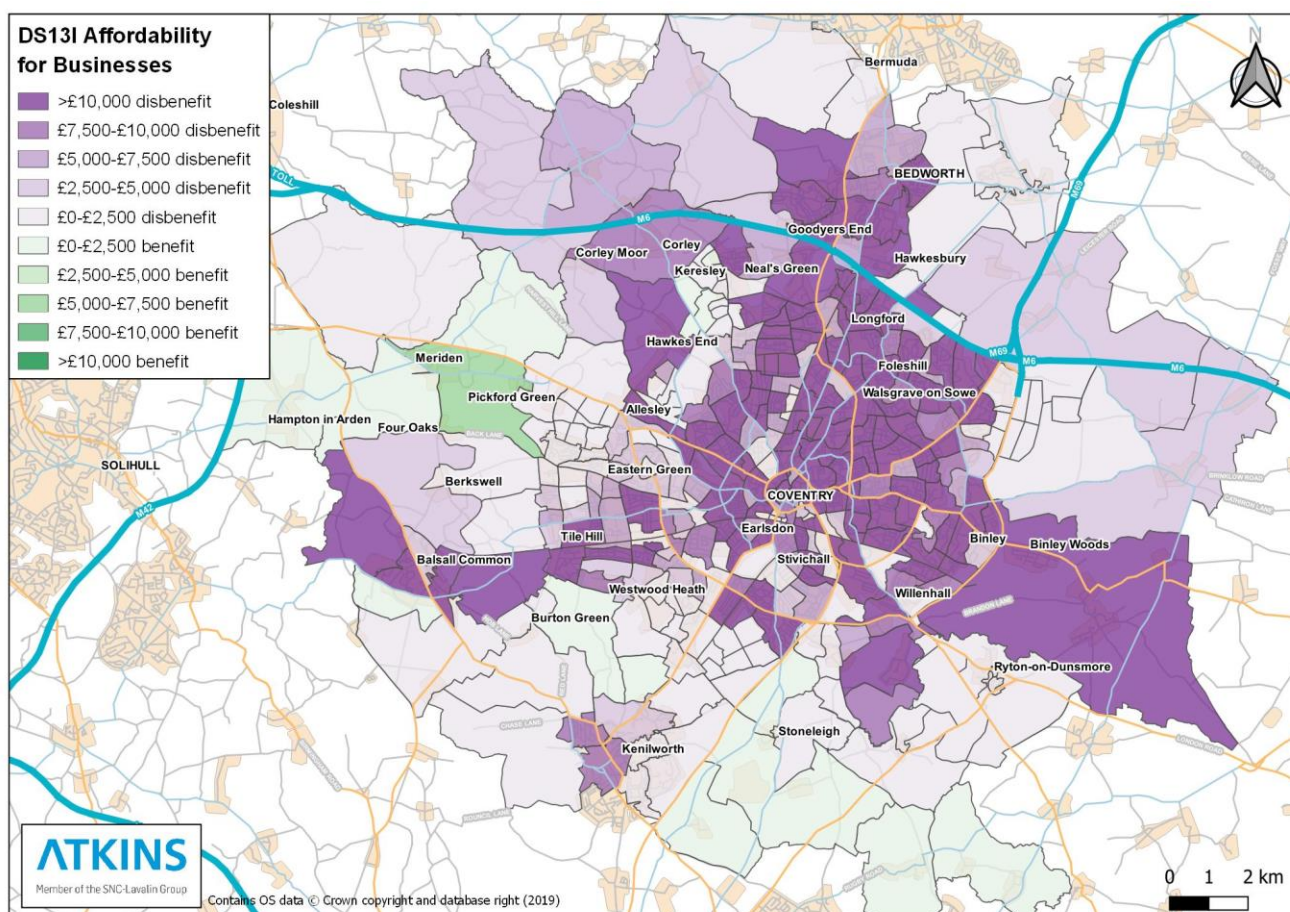
Overall, as a result of option DS13I there is a **slight adverse impact to affordability**. This is due to a small proportion (26%) of disbenefits being concentrated in the 40% most income deprived areas.

Impact on SMEs/LGVs

This will be assessed qualitatively where the high proportion of SMEs and LGVs are within Coventry and the surrounding area. There are high proportions of SMEs and LGVs within Coventry City Centre itself and to the west of the city centre. Businesses may have to reroute due to the restrictions and road closures, leading to increased journey times and VOC for businesses.

Figure 1-3 shows the cost impact by origin zone for business purposes. There is greater than £10,000 disbenefit for a high proportion of zones in and around Coventry Centre. There are few zones with an affordability benefit, with some to the west and south of Coventry.

Figure 1-4 – Business affordability impacts by origin zones across the impact area



Since there are adverse affordability impacts for business purpose trips for the majority of zones over the impact area, there is a moderate adverse affordability impact overall for SMEs and LGVs.

[Further time for analysis - collection and analysis of additional data – is required before an accurate conclusion can be sought for the impact on businesses. A detailed methodology is currently being developed by Atkins to undertake a detailed assessment of business impacts.]

Table 1-6 - Overall Impact on Vulnerable Groups

Vulnerable Group	DS13I
Low Income Groups	x
SMEs/LGVs	x x
Overall	x x

Appendices



Appendix A. Mapping

A.1. Air Quality Mapping

Figure A-1 - Percentage change in NOx emissions and most deprived LSOAs

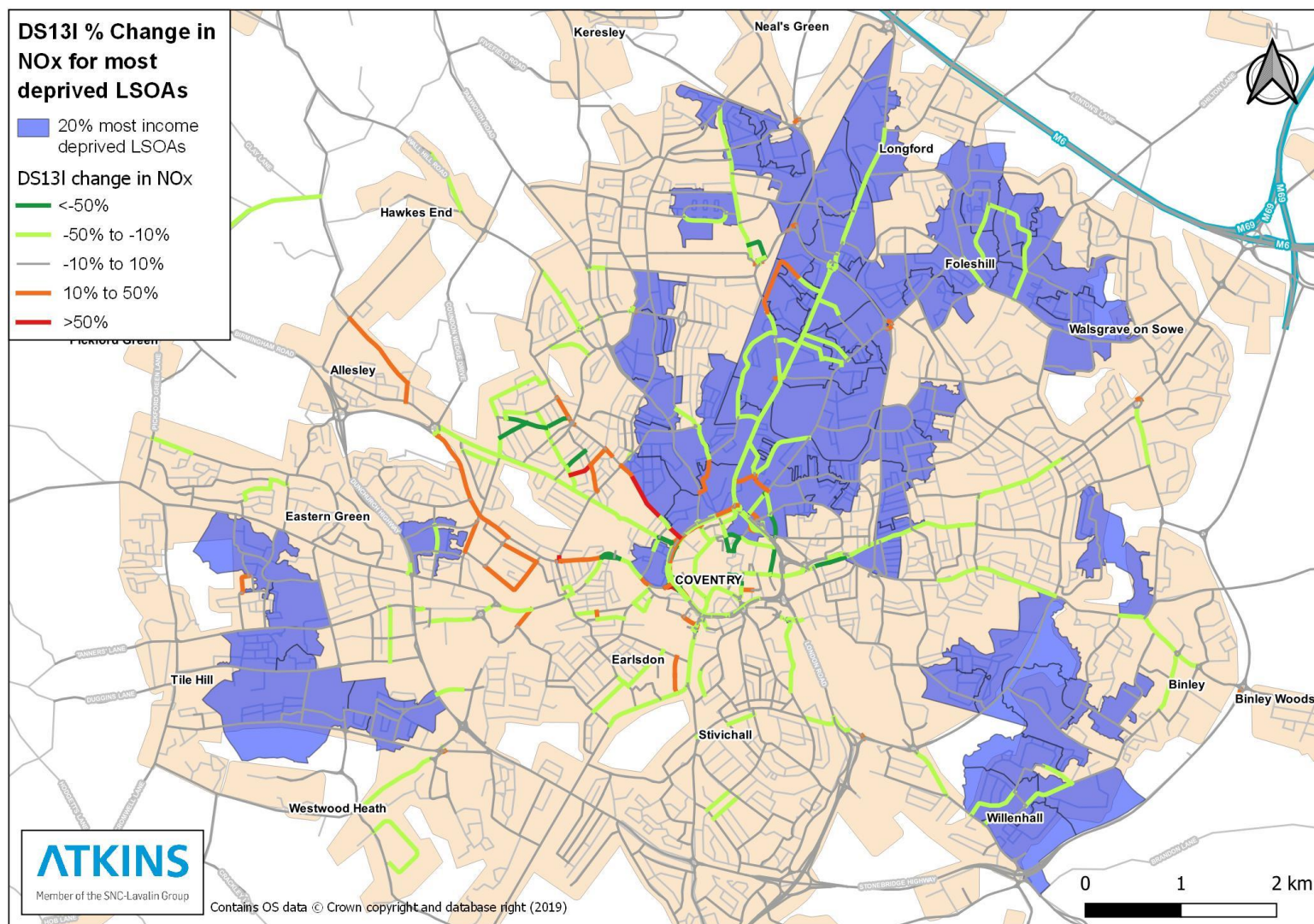


Figure A-2 - Percentage Change in NOx emissions and LSOAs with a high proportion of children and school locations

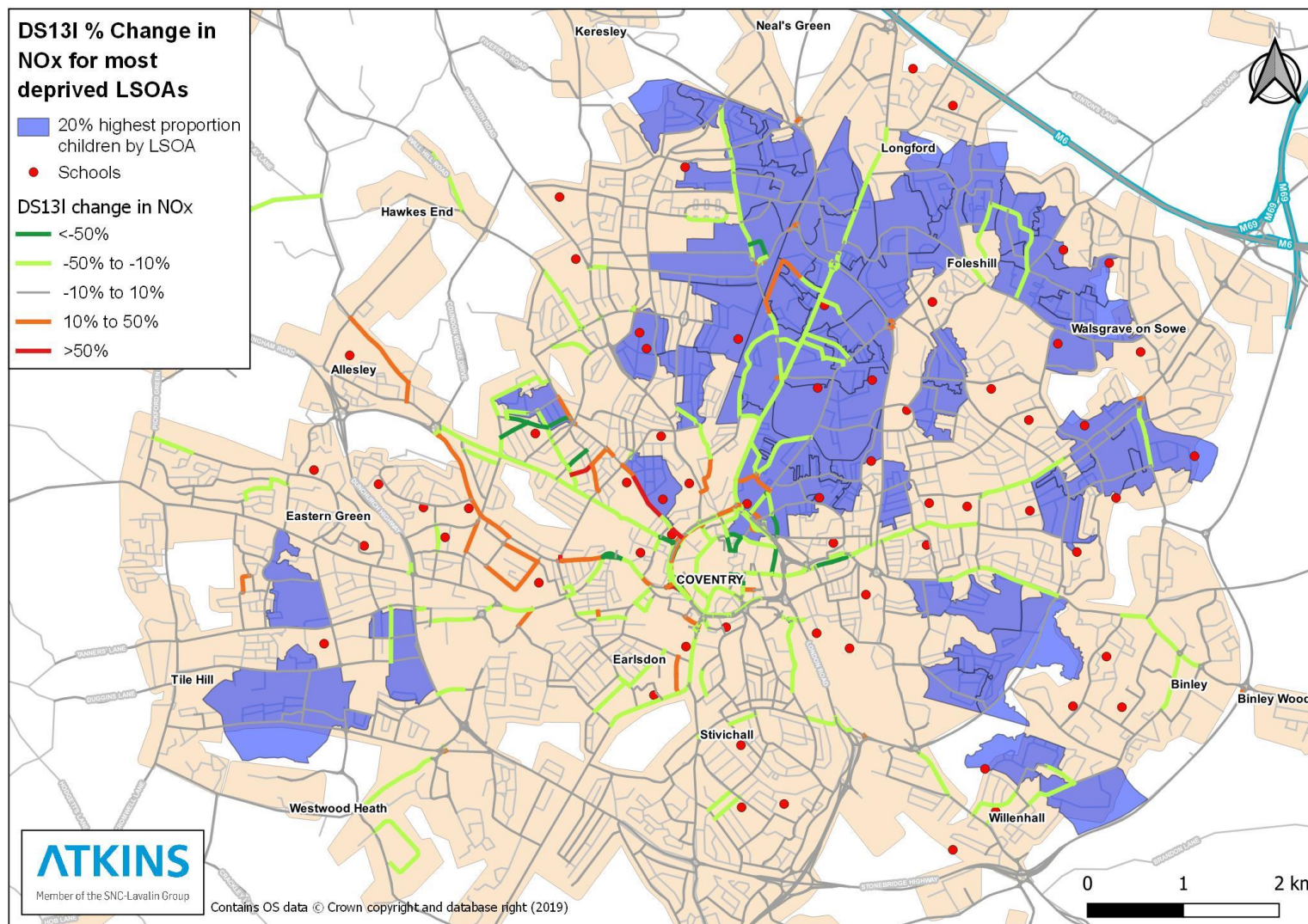


Figure A-3 – DS131 percentage change in AADT and the most income deprived LSOAs

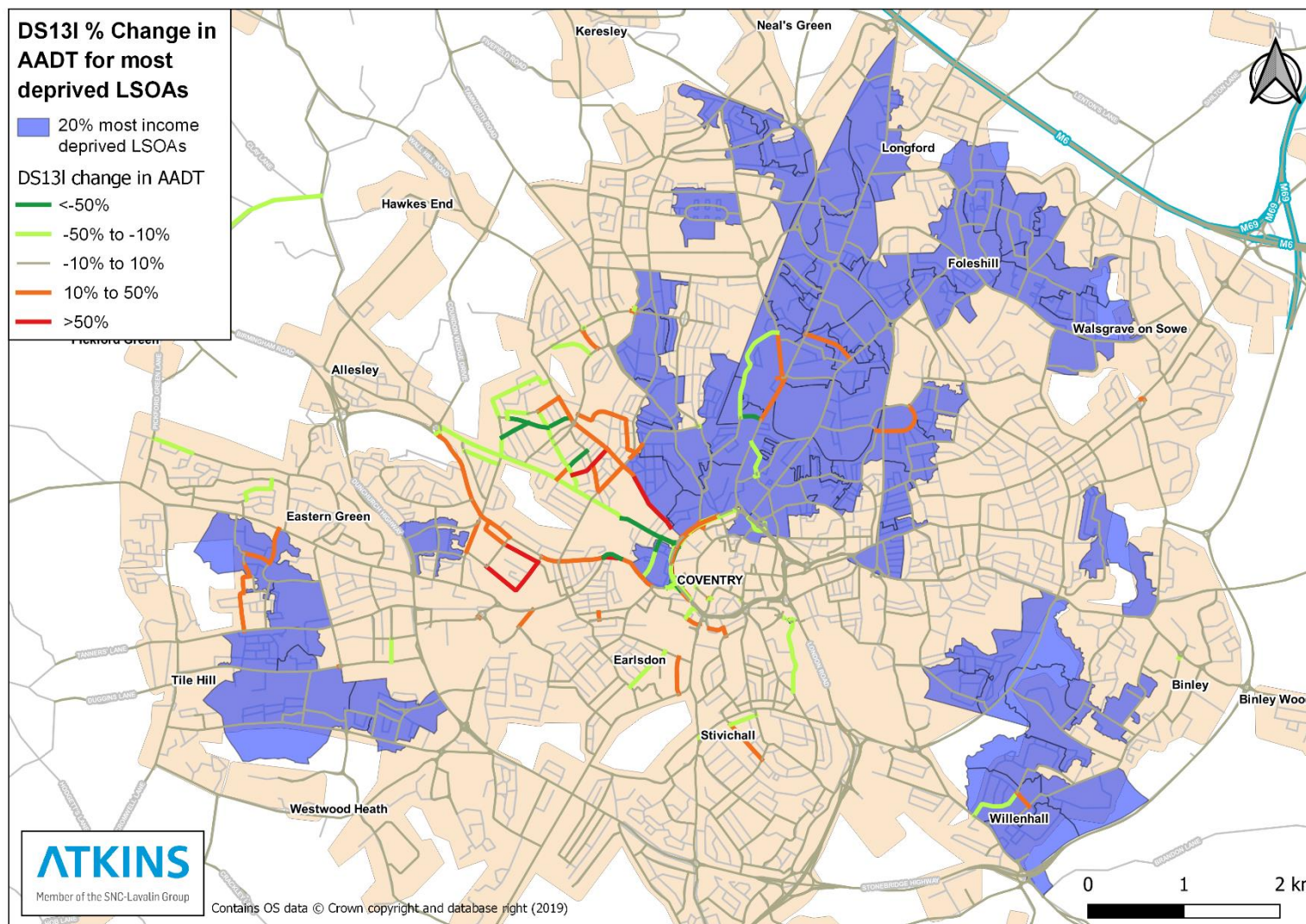


Figure A-4 - DS13I Percentage change in AADT and LSOAs with a high proportion of children and school locations

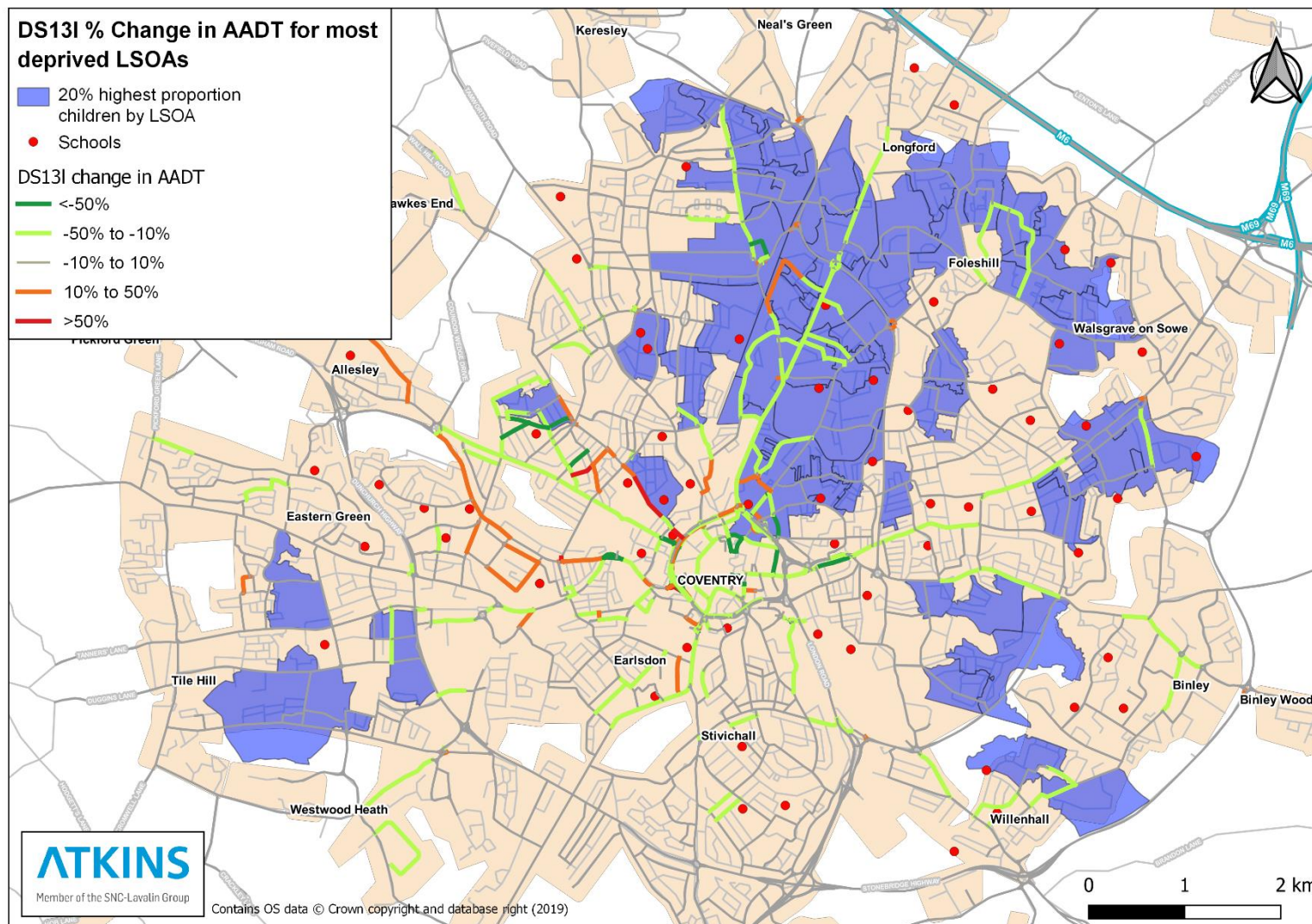
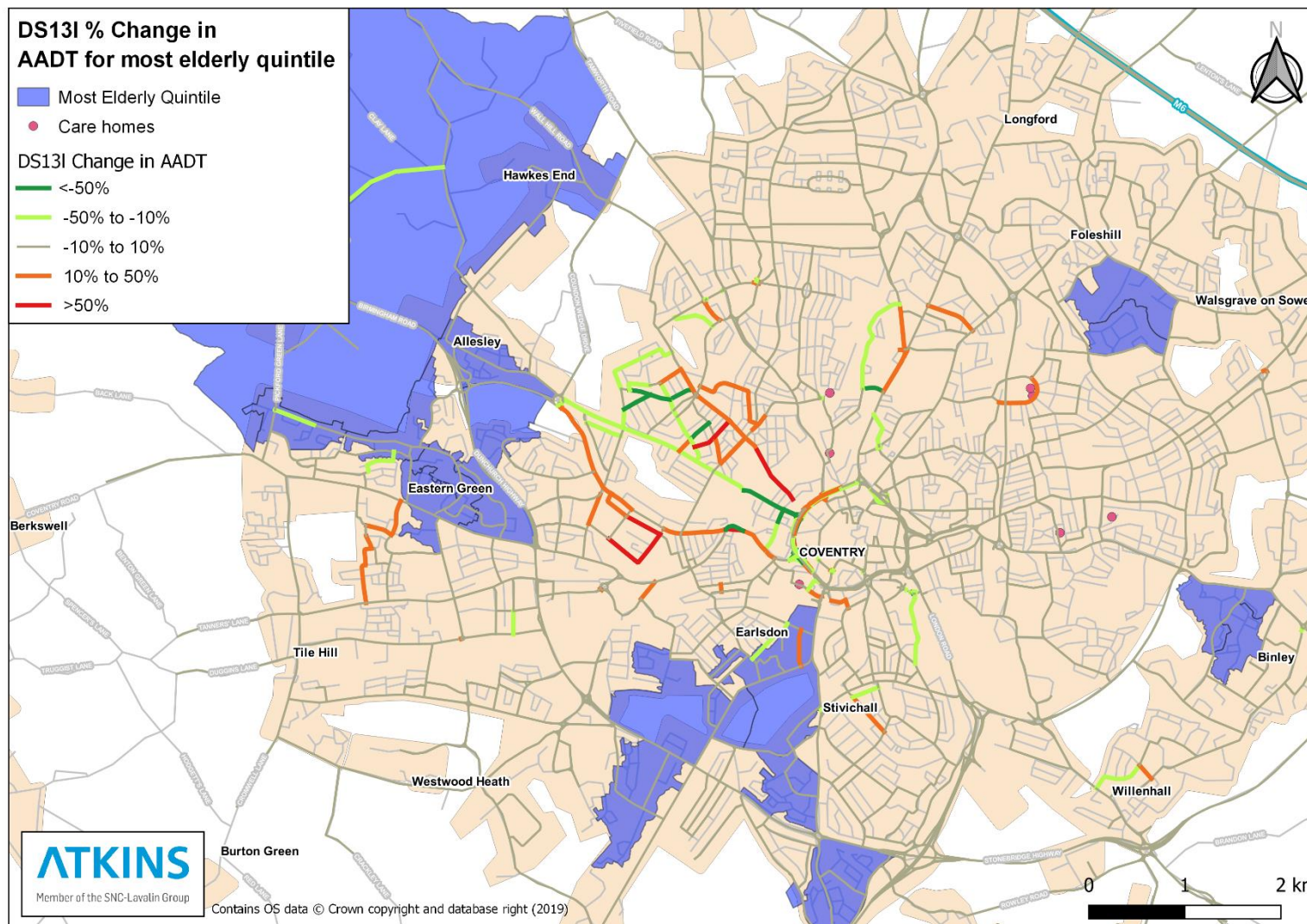


Figure A-5 - DS13I Percentage change in AADT and LSOAs with a high proportion of elderly



Appendix B. Screening Proforma

ASSESSMENT OF DISTRIBUTIONAL IMPACTS (DIs) OF TRANSPORT INTERVENTIONS

Proforma for reporting conclusions of first screening stage (Step 1)

This form is intended for use by scheme promoters to capture the considerations, assessment and conclusions of the first screening stage of the DI analysis (Step 1). For a full description of Step 1 please see WebTAG guidance units A4.1 and A4.2. These initial screening tests are not intended to be onerous and should require no additional data collection or analysis. At this stage promoters are only expected to carry out a qualitative assessment, based on their professional judgement and that of the technical specialists responsible for undertaking assessment of noise, air quality, safety, security, severance, accessibility, personal affordability and user benefits.

Scheme name: Coventry Air Quality Local Plan Outline Business Case

Brief description of scheme:

In July 2017, the Government published the 'UK plan for tackling roadside NO₂ concentrations and Coventry was named as one of the 22 towns and cities in the UK where the NO₂ levels are forecast to exceed legal limits in 2020. The High Court has ordered the Government to achieve the legal limits in the shortest possible time.

A revised scheme option, DS13I, has been shortlisted to be considered at the OBC stage. This option has been revised from option DS13c which was proposed in the previous addendum of the OBC. Therefore, any impacts of option DS13I as compared to option DS13c have been used to determine whether further appraisal of each impact is required. If required, a full DI appraisal, including screening, of the options can follow.

As in option DS13c, option DS13I is comprised of the following measures;

- Peak time restrictions on Holyhead Road (inbound AM, outbound PM);
- High quality cycle infrastructure along Coundon Road;
- Capacity improvements at Spon End;
- Redesign of Ring Road Junction 7; and
- Opening of Upper Hill Street allowing a left in / left out movement with the Inner Ring Road clockwise.

The following additional measures are included in option DS13I;

- Closure of Barras Lane between Coundon Road and Holyhead Road;
- Interpeak restrictions on Holyhead Road (3 hours inbound and 3 hours outbound);

- Queen Victoria Road Public Realm Scheme;
- Replacement of two thirds of the bus movements on Foleshill Road with electric buses; and
- Restricting the right-hand turn movement from Cash's Lane to Foleshill Road southbound.

This screening proforma will consider the impact of the additional measures of the scheme, not already assessed under option DS13c.

When undertaking screening for this project, it was decided to screen each potential intervention measure to understand the individual impacts caused by the separate measures included within each scheme option.

Indicator	(a) Appraisal output criteria	Potential Intervention	(b) Potential impact (yes / no, positive/negative if known)	(c) Qualitative Comments	(d) Proceed to Step 2
User benefits	<ul style="list-style-type: none"> • Changes in travel time • Changes in user charges, including fares, tariffs and tolls • Changes in vehicle operating costs met by the user (i.e. for private transport) 	Peak and interpeak restrictions on Holyhead Road	Yes	<i>Vehicles rerouting due to the peak and interpeak restriction may have an impact to vehicle operating costs.</i>	Yes
		Queen Victoria Road Public Realm Scheme	No	The public realm scheme doesn't include any changes that might impact travel times or charges. Capacity through Queen Victoria Road isn't expected to change.	No
		Replacement of buses with electric buses on Foleshill Road	No	This intervention won't change the number of buses or bus fares on Foleshill Road, so there won't be an impact to user benefits.	No
		Right-turn restriction from Cash's Lane to Foleshill Road southbound	Yes	There may be some rerouting of traffic as a result of the right-turn restriction.	Yes
		Capacity improvements at Spon End	Yes	Likely to reduce waiting time and congestion and as result improve user benefits.	Yes

		Redesign of Ring Road Junction 7	Yes	Likely to reduce waiting time and congestion and as result improve user benefits.	Yes
		Closure of Barras Lane between Coundon Road and Holyhead Road	Yes	<i>Vehicles rerouting due to the road closure may have an impact to travel times and vehicle operating costs.</i>	Yes
		Opening of Upper Hill Street	Yes	May reduce travel distance and times as vehicles reroute onto this road.	Yes
Noise	Changes in noise levels – move in line with traffic on roads	Peak and interpeak restrictions on Holyhead Road	Yes	<i>Vehicles rerouting due to the peak and interpeak restriction may have an impact to noise in the area.</i>	No
		Queen Victoria Road Public Realm Scheme	Yes	The public realm scheme includes the addition of a cycle way, which will move traffic further from the walkway at Ikea. This could also move traffic further from or closer to properties in the area, hence affecting noise levels.	Yes
		Replacement of buses with electric buses on Foleshill Road	Yes	Electric buses may make less noise. The impact of this may be small but will need further assessment.	Yes
		Right-turn restriction from Cash's Lane to Foleshill Road southbound	Yes	There may be some rerouting of traffic as a result of the right-turn restriction. Hence, impacting on noise levels in the area.	Yes
		High quality cycle infrastructure along Coundon Road	Yes	Potential for modal shift if cycling conditions are improved across the city. Any modal shift will have to be from private vehicles if noise levels are to be affected. Th modal shift may not be large enough to have a major effect.	No
		Capacity improvements at Spon End	Yes	Noise may be increased due to improvement in traffic flow meaning that vehicles area travelling at a faster speed through the area.	Yes

		Redesign of Ring Road Junction 7	Yes	Noise may be increased due to improvement in traffic flow meaning that vehicles are travelling at a faster speed through the area.	Yes
		Closure of Barras Lane between Coundon Road and Holyhead Road	Yes	<i>There is likely to be reduced noise along the section of Barras Lane, but noise levels may increase elsewhere as vehicles reroute.</i>	Yes
		Opening of Upper Hill Street	Yes	Vehicles rerouting to use the new link will have an impact on noise.	Yes
Air quality	Change in emissions	Peak and interpeak restrictions on Holyhead Road	Yes	<i>Vehicles rerouting due to the peak and interpeak restriction may have an impact to air quality.</i>	Yes (required)
		Queen Victoria Road Public Realm Scheme	No	The public realm scheme includes the addition of a cycle way, which will move traffic further from the pedestrians in the area, hence there is likely to be an impact to air quality.	Yes
		Replacement of buses with electric buses on Foleshill Road	Yes (positive)	<i>Electric vehicles will produce less emissions than petrol/diesel, so air quality is likely to improve.</i>	Yes
		Right-turn restriction from Cash's Lane to Foleshill Road southbound	Yes	<i>Vehicles rerouting due to the right-turn restriction may have an impact to air quality.</i>	Yes (required)
		High quality cycle infrastructure along Coundon Road	Yes	Potential for modal shift if cycling conditions are improved across the city. Any modal shift will have to be from private vehicles if noise levels are to be affected. The modal shift may not be large enough to have a major effect.	No
		Capacity improvements at Spon End	Yes (positive)	<i>Potentially reduced idling of engines and reduced acceleration which will lead to reduced emissions if scheme reduces congestion</i>	Yes

		Redesign of Ring Road Junction 7	Yes (positive)	<i>Potentially reduced idling of engines and reduced acceleration which will lead to reduced emissions if scheme reduces congestion</i>	Yes
		Closure of Barras Lane between Coundon Road and Holyhead Road	Yes	<i>There is likely to be reduced emissions along the section of Barras Lane, but emissions may increase elsewhere as vehicles reroute.</i>	Yes
		Opening of Upper Hill Street	Yes	<i>Emissions may increase on Upper Hill Street as vehicles reroute onto this road and decrease elsewhere. Hence, there is likely to be an impact to air quality.</i>	Yes
Accidents	Changes in accident rates – move in line with traffic/speed on roads	Peak and interpeak restrictions on Holyhead Road	Yes	<i>Vehicles rerouting due to the peak and interpeak restriction may have an impact to accidents in the area.</i>	Yes
		Queen Victoria Road Public Realm Scheme	No	The public realm scheme is unlikely to impact traffic flow, so further appraisal of accidents is not required.	No
		Replacement of buses with electric buses on Foleshill Road	No	This intervention won't change the number of buses on Foleshill Road, so there won't be an impact to accidents.	No
		Right-turn restriction from Cash's Lane to Foleshill Road southbound	Yes	There may be some rerouting of traffic as a result of the right-turn restriction. Hence, impacting on accidents in the area.	Yes
		High quality cycle infrastructure along Coundon Road	Yes	Potential increase in cycling traffic could lead to increased accidents involving cyclists.	Yes

		Capacity improvements at Spon End	No	Intervention targeting air quality so unlikely to have a significant impact on accidents	No
		Redesign of Ring Road Junction 7	No	Intervention targeting air quality so unlikely to have a significant impact on accidents	No
		Closure of Barras Lane between Coundon Road and Holyhead Road	Yes	The closure of Barras Lane between Coundon Road and Holyhead Road will reduce accidents on the route. However, accidents may increase in other areas as vehicles reroute and traffic flow is increased on alternative routes.	Yes
		Opening of Upper Hill Street	Yes	This measure requires changes to the road alignment, which may impact accidents as there is a junction where there wasn't previously.	Yes
Security	Any change in public transport waiting/interchange facilities including pedestrian access expected to affect user perceptions of personal security.	Peak and interpeak restrictions on Holyhead Road	No	This intervention doesn't include any changes to public transport facilities, hence further assessment is not required.	No
		Queen Victoria Road Public Realm Scheme	No	The public realm scheme doesn't include any changes to public transport waiting/interchange facilities or pedestrian access. Therefore, there is unlikely to be an impact to user perceptions of security.	No
		Replacement of buses with electric buses on Foleshill Road	No	Changing buses to electric buses doesn't impact waiting or interchange facilities, hence there won't be any impact to security as a result of this intervention.	No
		Right-turn restriction from Cash's Lane to Foleshill Road southbound	No	This intervention doesn't include any changes to public transport or pedestrian facilities, hence further assessment is not required.	No

		High quality cycle infrastructure along Coundon Road	Yes	Potentially could lead to reduced security if more people cycle. Will not be assessed due to lack of detailed information on the scheme.	No
		Capacity improvements at Spon End	No	Improvements mainly focused on highway improvements for vehicles and therefore changes for pedestrians and cyclists is likely to be minimal.	No
		Redesign of Ring Road Junction 7	No	Improvements mainly focused on highway improvements for vehicles and therefore changes for pedestrians and cyclists is likely to be minimal.	No
		Closure of Barras Lane between Coundon Road and Holyhead Road	No	This intervention doesn't include any changes to public transport or pedestrian facilities, hence further assessment is not required.	No
		Opening of Upper Hill Street	No	This measure doesn't include any changes to public transport, so is unlikely to have a security impact.	No
Severance	Introduction or removal of barriers to pedestrian movement, either through changes to road crossing provision, or through introduction of new public transport or road corridors.	Peak and interpeak restrictions on Holyhead Road	Yes	<i>Vehicles rerouting due to the peak and interpeak restriction may have an impact to severance in the area.</i>	Yes
		Queen Victoria Road Public Realm Scheme	Yes	The addition of a cycle lane on Queen Victoria Road may impact users' perception of severance as they have to travel further to cross the road.	Yes
		Replacement of buses with electric buses on Foleshill Road	No	This intervention won't change the number of buses on Foleshill Road, so there won't be an impact to severance.	No

		Right-turn restriction from Cash's Lane to Foleshill Road southbound	Yes	There may be some rerouting of traffic as a result of the right-turn restriction. Hence, impacting on severance in the area.	Yes
		High quality cycle infrastructure along Coundon Road	No	Cycle infrastructure will not cause additional severance	No
		Capacity improvements at Spon End	Yes	May make changes to traffic levels. Extra capacity may encourage more people to use the route	Yes
		Redesign of Ring Road Junction 7	Yes	Upgrade could encourage more or less traffic to use the junction	Yes
		Closure of Barras Lane between Coundon Road and Holyhead Road	Yes	The closure of Barras Lane between Coundon Road and Holyhead Road may make pedestrian movement easier in the area. Severance may be increased in other areas as vehicles reroute and traffic flow is increased on alternative routes.	Yes
		Opening of Upper Hill Street	No	The opening of Upper Hill Street to the A4053 doesn't impact on pedestrian movements. There is a footbridge over the A4053 by the location of the proposed junction.	No
Accessibility	<ul style="list-style-type: none"> Changes in routings or timings of current public transport services, any changes to public transport provision, including routing, frequencies, waiting facilities (bus stops / rail stations) and rolling stock, or any indirect impacts on accessibility to services (e.g. 	Peak and interpeak restrictions on Holyhead Road	No	This intervention will not affect public transport.	Yes (required)
		Queen Victoria Road Public Realm Scheme	No	The public realm scheme won't impact public transport routing or timings.	Yes (required)
		Replacement of buses with electric buses on Foleshill Road	No	The replacement of buses with electric buses won't impact public transport routing or timings.	Yes (required)

	<p>demolition & re-location of a school).</p> <ul style="list-style-type: none"> Accessibility impacts should consider changes in services, routings or timings of current public transport services within the impact area 	Right-turn restriction from Cash's Lane to Foleshill Road southbound	No	This intervention will not affect public transport.	Yes (required)
		High quality cycle infrastructure along Coundon Road	No	This intervention will not affect public transportation	Yes (Required)
		Capacity improvements at Spon End	Yes	Potential to improve journey times and hence slight improved accessibility to key amenities and areas.	Yes
		Redesign of Ring Road Junction 7	Yes	Potential to improve journey times and hence improve accessibility to key amenities and areas	Yes
		Closure of Barras Lane between Coundon Road and Holyhead Road	No	There are no bus services which travel along the section of Barras Lane, hence public transport timings or routings won't be impacted.	Yes (Required)
		Opening of Upper Hill Street	No	No buses will use this route; hence accessibility impacts are unlikely.	Yes (Required)
		Affordability	<p>In cases where the following charges would occur; Parking charges (including where changes in the allocation of free or reduced fee spaces may occur); Car fuel and non-fuel operating costs (where, for example, rerouting or changes in journey speeds and congestion occur resulting in changes in costs); Road user charges (including</p>	Peak and interpeak restrictions on Holyhead Road	Yes
Queen Victoria Road Public Realm Scheme	No			It is assumed that there will be no significant changes to affordability as a result of a public realm scheme.	Yes (required)
Replacement of buses with electric buses on Foleshill Road	No			This intervention won't change the number of buses or bus fares on Foleshill Road, so there won't be an impact to affordability.	Yes (required)

discounts and exemptions for different groups of travellers); Public transport fare changes (where, for example premium fares are set on new or existing modes or where multi-modal discounted travel tickets become available due to new ticketing technologies); or Public transport concession availability (where, for example concession arrangements vary as a result of a move in service provision from bus to light rail or heavy rail, where such concession entitlement is not maintained by the local authority).	Right-turn restriction from Cash's Lane to Foleshill Road southbound	Yes	Possibility of increased journey distances and times for vehicles rerouting due to the right turn restriction.	Yes
	High quality cycle infrastructure along Coundon Road	Yes	Cost of bike may be prohibitive to people with lower income, however once a bike is purchased the marginal cost of a journey is close to zero (low maintenance costs) and hence may make travel more affordable.	Yes
	Capacity improvements at Spon End	Yes	Potential reduction in fuel costs due to less need to stop and accelerate. Any reduction is likely to be extremely small for each user.	Yes
	Redesign of Ring Road Junction 7	Yes	Potential reduction in fuel costs due to less need to stop and accelerate. Any reduction is likely to be extremely small for each user.	Yes
	Closure of Barras Lane between Coundon Road and Holyhead Road	Yes	<i>Vehicles rerouting due to the road closure may have an impact to vehicle operating costs.</i>	Yes
	Opening of Upper Hill Street	Yes	Reduced journey distances as vehicles route onto the new road will lead to reduced fuel consumption. Hence, there will be an affordability impact.	Yes

Appendix C. Core Modelled Area

Figure C-1 - Core Modelled Area for Assessment of DS13I

