

M4 J15 – A419 Junction Scheme, Swindon Full Business Case

Appendix E.7 - Distributional Impact Assessment

June 2020



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1. Introduction

The distributional impact appraisal was prepared to support the M4 J15 – A419 improvement scheme, as part of the Outline/Full Business Case (OBC/FBC) for the scheme in April 2020. It is carried forward to FBC stage with no change. Note therefore that the analysis is based on the Core Scenario, which uses 2022 traffic modelling data with no assumed growth across the 60 year appraisal period.

1.1 Location

M4 J15 is located around 5km south-east of Swindon town centre, being one of two M4 junctions serving Swindon. It is located close to areas allocated for significant housing and employment growth in the adopted Swindon Local Plan. In fact, the adopted Local Plan identifies the Commonhead area, located to the west of the A419, and the New Eastern Villages (NEV) area, located to the east of the A419, as the preferred location for major urban extensions comprising over 9,000 dwellings.

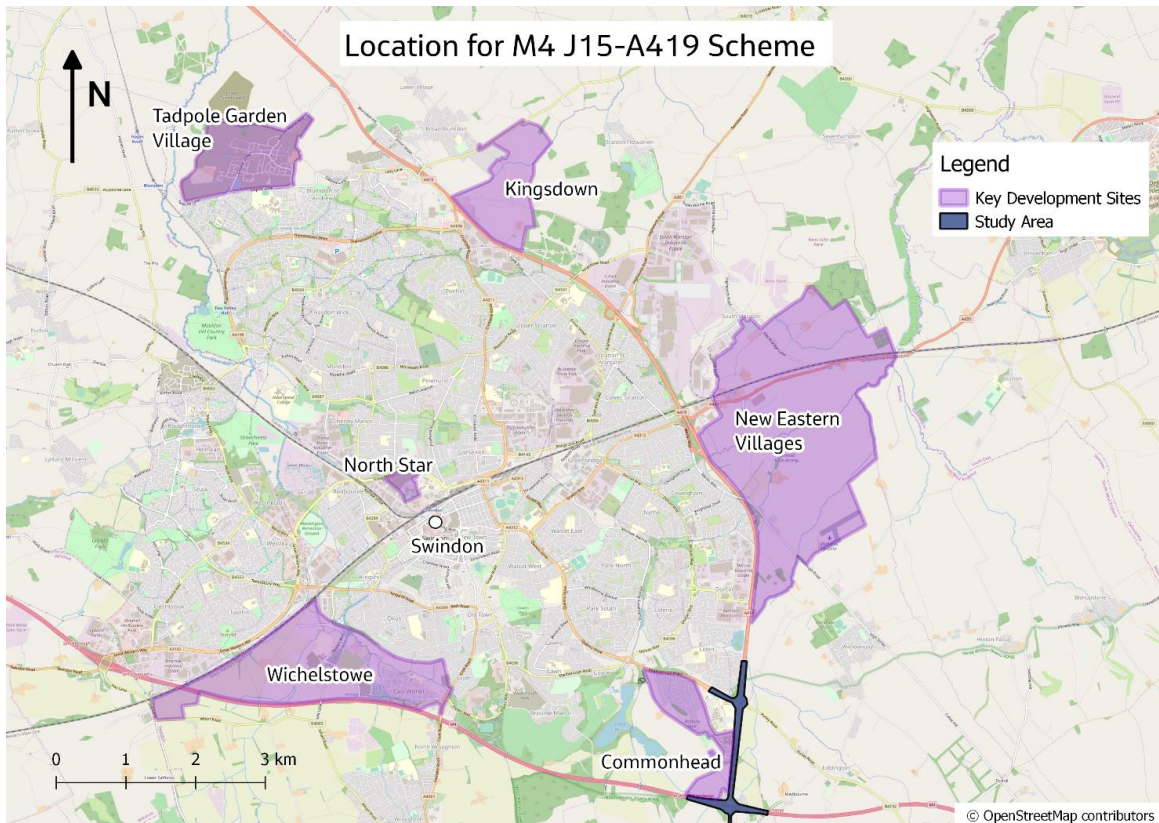
M4 J15 is also the link between the M4 corridor and the A417/A419 corridor linking the M4 to the M5 at Gloucester. The A417/A419 provides a key strategic link between the Midlands and the south east and south coast and more locally access from Gloucestershire to Swindon and Oxfordshire. The A417/A419 link is currently mostly dual-carriageway in standard, and during Highways England RIS2 period, will be upgraded to a continuous dual-carriageway between the M4 and the M5.

M4 J15 and the link between M4 J15 and the A419 Commonhead junction are therefore important to business and commerce located in Swindon providing the mean of access to the significant markets of the south east, as well as serving as a key part of the strategic road network for long distance distribution networks to the north, east and west.

The southern arm of M4 J15 is the A346 providing access between Marlborough and eastern parts of Wiltshire and the M4, A419 and Swindon. The A419 link provides local and strategic access to the A420 (linking to Oxford), A361 (linking to Gloucestershire) and key routes into north, east and central Swindon.

The location of the junction scheme in the context of key developments sites is shown in Figure 1.1.

Figure 1.1 – Scheme location



1.2 Scheme overview

The improvement scheme identified for M4 J15 – A419 will improve the operation and capacity of the motorway junction. The measures include the widening of approach carriageways and slip roads and changes to signal operation. The scheme comprises the following measures:

- The A419 southbound approach to the M4 Junction 15 will be widened from 2 to 3 lanes, from the southbound entry slip road from Commonhead roundabout with a dedicated left turn lane for London bound traffic.
- The A419 northbound exit from M4 Junction 15 will be widened to 3 lanes up to the Highways England compound entrance, and then reduced back to 2 lanes north of the compound exit.
- The A346 to the south of M4 Junction 15 will be widened from 1 to 2 lanes; and from 2 to 3 lanes on the immediate approach to the roundabout.
- The M4 Junction 15 eastbound off-slip will be widened from 2 to 3 lanes and traffic signals will be replaced with new equipment and passively safe poles where required.
- The M4 Junction 15 westbound offslip 3 lane approach length will be extended.
- The M4 Junction 15 southern circulatory carriageway will be widened from 2 to 4 lanes.
- The widening of the roundabout will require remodelling of embankments, which will therefore need to be cleared of vegetation. Replanting on embankments will be restricted in order to provide compliant visibility for traffic.
- The Day House Lane road under the A419 will be closed to vehicular traffic (but will remain open to non-motorised users). Embankment works at the Day House Lane bridge are required to accommodate additional carriageway width on the A419 above.

- Existing footpaths will be realigned and regraded to suit new levels. A new signalised pedestrian crossing will be provided at Junction 15 over the M4 west on-slip. It is proposed that cycling is prohibited on the A419 southbound via implementation of a traffic regulation order.
- Lining works at Commonhead will provide a dedicated left slip from the A4259 onto the A419 northbound and the reintroduction of two lanes on the A4259 onto A419 southbound.

1.3 Distributional impact screening and appraisal process

The evidence base for distributional impacts associated with the M4 J15 – A419 improvement scheme has been accumulated through research originally part of the scheme development process. Analyses have been prepared in accordance with WebTAG Unit A4.2: Distributional Impact Appraisal. In order to appraise whether the scheme will have any significant distributional impacts it is necessary to go through a detailed screening process. The impact areas that have been considered as part of Step 1: Screening are:

- User Benefits;
- Air Quality;
- Security;
- Accessibility; and
- Noise;
- Accidents;
- Severance;
- Affordability.

Initial screening of the above impacts is carried out first (Step 1, as set out in WebTAG A4.2). Once this is done, the impacts judged to be affected, and for which suitable and proportionate analysis can be done, are taken forward through assessment (Step 2) to establish the nature of the geographic area of impact. Subject to these findings, the respective impact is then progressed to appraisal of the impacts (Step 3). Not all impacts are taken through the full process, so where a decision is made not to apply the full distributional appraisal process, evidence was provided to indicate the reason for this.

1.4 Structure of this report

After the introduction, the remainder of this technical note includes:

- Section 2 – Step 1: Screening;
- Section 3 – Step 2: Assessment; and
- Section 4 – Step 3: Appraisal.

2. Step 1: Screening

The first step in the assessment process involves undertaking an initial screening of the key impacts. These are specified in WebTAG Guidance Unit A4.2. This is in order to identify those impacts that could potentially be affected by the proposals and any that are unlikely to be affected. Key outcomes and conclusions of the initial screening are summarised in Table 2.1.

Table 2.1: Initial Screening Outcome

| Impact Area | Conclusion | Next Step |
|---------------|--|---|
| User Benefits | The scheme provides user benefits that will affect a range of road users and social groups (including business users as well as those who are commuting and/or have other trips purposes). | Progress to Step 2 |
| Noise | The scheme has very limited impact on noise levels, and only in the immediate vicinity of the scheme. Assessments indicate that most receptors have a 'negligible beneficial' or 'no change' magnitude of impact, though a small number of receptors closest to the scheme experience minor beneficial changes. The level of anticipated impacts is such that conducting further analysis is considered disproportionate. | AST overall assessment of distributional impact: Neutral: No further screening/analysis required |
| Air Quality | Overall, the scheme will have a slight adverse effect on air quality during both the construction and operational phases. The level of anticipated impacts is such that conducting further analysis is considered disproportionate. | AST overall assessment of distributional impact: Neutral: No further screening/analysis required |
| Accidents | The scheme has very limited impact on traffic flows. Analysis has indicated some benefit in terms of accidents. The level of anticipated impacts is such that conducting further analysis is considered disproportionate. | AST overall assessment of distributional impact: Neutral: No further screening/analysis required |
| Security | There are no significant changes to security anticipated as a result of the scheme. As such, conducting further analysis is considered disproportionate. | AST overall assessment of distributional impact: Neutral: No further screening/analysis required |
| Severance | There are no significant changes to severance anticipated as a result of the scheme. As such, conducting further analysis is considered disproportionate. | AST overall assessment of distributional impact: Neutral: No further screening/analysis required |
| Accessibility | There are no significant changes to accessibility anticipated as a result of the scheme. As such, conducting further analysis is considered disproportionate. | AST overall assessment of distributional impact: Neutral: No further screening/analysis required |
| Affordability | There are no significant changes to affordability anticipated as a result of the scheme. As such, conducting further analysis is considered disproportionate. | AST overall assessment of distributional impact: Neutral: No further screening/analysis required |

3. Step 2: Assessment

3.1 Step 2a: Confirmation of areas impacted by the intervention

Traffic modelling of the scheme has focused on a study area shown in Figure 1.1. This is very tightly drawn around the scheme, as the principal impacts on traffic are detailed interactions between capacity and movements, and as such are being assessed in microsimulation models. Traffic patterns input to the microsimulation models are drawn from wider-area consideration of traffic movements, which are also used in the calculation of transport user benefits using TUBA. This wider-area impact area has also been considered for distributional assessments, as shown in Figure 3.1.

Figure 3.1 – Impact area for user benefits



3.2 Step 2b: Identification of Social Groups in the Impact Area

This section provides an assessment of the social groups affected by the proposals, based on the potential impacts identified in the screening assessment in Step 1 and the 'affected areas' identified in Step 2a. Noting that the only impact taken through screening to assessment is user benefits, social groups considered in relation to each impact follow the guidance provided in WebTAG Unit A4.2, which for ease of reference is shown in Table 3.1. Table 3.2 summarises the identification of social groups in the area, with respect to impacts.

Table 3.1: Impact to Social Groups – user benefits only

| Dataset/Social Group | User Benefits | Noise | Air Quality | Accidents | Security | Severance | Accessibility |
|--|---------------|-------|-------------|-----------|----------|-----------|---------------|
| Income Distribution | ✓ | ✓ | ✓ | | | | ✓ |
| Children: % under 16 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Young Adults: % aged 16-25 | | | | ✓ | | | ✓ |
| Older People: % aged 70+ | | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Disabled People: % of population | | | | | ✓ | ✓ | ✓ |
| Black or Minority Ethnic origin: % of population | | | | | ✓ | | ✓ |
| No Car or Van: % of households | | | | | | ✓ | ✓ |
| Carers: % of households with dependent children | | | | | | | ✓ |

Table 3.2: Step 2b output summary – user benefits only

| | IMD Income Domains | | | | | Total |
|---------------------------|--------------------|--------|--------|----------------|--------|---------|
| | most deprived | ← | → | least deprived | | |
| | 1 | 2 | 3 | 4 | 5 | |
| Population in impact area | 70,677 | 63,804 | 79,411 | 63,644 | 61,902 | 339,437 |
| Proportions | 20.8% | 18.8% | 23.4% | 18.7% | 18.2% | 100% |

3.3 Step 2c: Identification of Amenities in the Impact Area

The only impact being considered in the distributional impact assessment is user benefits. As indicated in the previous section, the only social group to which this is material is the distribution of benefits with respect to income. As such, no specific amenities are considered in the assessment.

