M42 Junction 6 Improvement
Scheme Number TR010027
Volume 6
6.1 Environmental Statement
Chapter 16 – Assessment of Cumulative Effects

Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

January 2019

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M42 Junction 6 Improvement Development Consent Order 202[ ]

6.1 Environmental Statement
Chapter 16 Assessment of Cumulative Effects

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16.1 Competent expert evidence

16.1.1 This chapter presents the results of an assessment of the likely significant cumulative effects of the Scheme.

16.1.2 This assessment has been undertaken by a competent expert within AECOM, the quality and completeness of which has been approved by an Associate Director who holds the qualification of MLPM (Hons) in Landscape Planning and Management, and is a Chartered Environmentalist (CEnv) and Chartered Scientist (CSci). They are also full members of the Institute of Environmental Management and Assessment, and the Institution of Environmental Sciences.

16.1.3 They have over eighteen years of experience in the co-ordination, management, direction and technical review of environmental impact assessments (EIA) and Environmental Statements. They frequently lead on complex linear development projects across the UK, and possess wide ranging experience in the transportation sector.

16.2 Cumulative assessment methodology

Study area

16.2.1 Two study areas have been adopted in the assessment to enable all developments which could potentially cause cumulative effects with the Scheme to be identified:

a. a 3km study area for all planning applications determined to be major developments. This is based on the maximum Zone of Influence (ZoI) for the Scheme (2km) plus a 1km buffer zone, creating a 3km radius around the Scheme's Order Limits; and

b. a 5km study area for Nationally Significant Infrastructure Projects (NSIPs) and major road projects.

16.2.2 In accordance with the Planning Inspectorate's Advice Note 17: Cumulative effects assessment relevant to nationally significant infrastructure projects [REF 16-1], developments which were outside, but close to the study area, were included in the assessment.

Scope of the assessment

16.2.3 Scoping was undertaken in late 2017 to identify the matters to be covered by the cumulative assessment.

16.2.4 The outcomes of scoping were recorded in a scoping report [REF 16-1], which was consulted upon as part of a formal request to the Inspectorate for a scoping opinion. The scoping report [REF 16-2] included a summary of all assessment work undertaken as part of the design-development of the Scheme up to the point of its publication.

16.2.5 The Inspectorate's scoping opinion [REF 16-3] requested that the following matters should be provided as part of the cumulative effects assessment:

a. information on the criteria used to determine receptor value and impact magnitude; and

b. information regarding the level of effect that would constitute a significant effect.

16.2.6 Based on the outcomes of the scoping process, the cumulative effects assessment considers two forms of impact:

a. **combined impacts** - combinations of impacts that have been identified in Chapters 6 to 15 of the Environmental Statement, which, when acting together, are considered likely to result in a new or different likely significant effect, or an effect of greater significance, than any one of the impacts on their own; or

b. **cumulative impacts** - impacts which, when considered together with the impacts associated with other planned developments, could result in a new or different likely significant effect or an effect of greater significance than the Scheme in isolation.

Assessment guidance

16.2.7 In conjunction with professional judgement, the following guidance has been used to inform the scope and content of the combined and cumulative effects assessments, and to assist the identification and mitigation of likely significant effects. This builds upon the overarching EIA methodology and guidance presented in Chapter 5 EIA methodology and consultation.

Design Manual for Roads and Bridges: Volume 11, Section 2, Part 5 – Assessment and Management of Environmental Effects

16.2.8 Guidance contained within Volume 11 of the Design Manual for Roads and Bridges (DMRB) [REF 16-4] has been used to inform the development of the criteria applied within the assessment of combined and cumulative effects.

Cumulative Effects Assessment – Advice Note 17: Cumulative effects assessment relevant to nationally significant infrastructure projects

16.2.9 Guidance contained within Advice Note 17 [REF 16-1] relating to the staged identification and assessment of developments has been applied within the assessment of cumulative effects.

Combined effects methodology

16.2.10 The assessment of combined effects has considered whether an individual receptor or resource would likely be affected by more than one type of impact as a result of the Scheme. For example, a residential occupant could be exposed to noise and air quality impacts at the same time as a result of earth moving activities during the construction phase.

16.2.11 The assessment methodology has involved the identification of impact interactions associated with the Scheme upon separate environmental resources and receptors, in order to understand the overall environmental effect of the Scheme.

16.2.12 Potential interactions were identified by reviewing the topic conclusions within Chapters 6 – 15, in order to establish where individual impacts would combine and result in likely significant combined effects.

16.2.13 The significance of combined effects upon environmental resources and receptors was determined using professional judgement, with input provided by from the competent experts responsible for the production of the individual assessments reported within Chapters 6 – 15.

Cumulative effects

16.2.14 The assessment of cumulative effects has considered the effects on environmental resources and receptors that would likely occur from the incremental changes arising from the Scheme in conjunction with other planned developments.

16.2.15 The assessment of cumulative effects has been guided by the following considerations:

a. understanding the temporal and spatial limits of the effects associated with the Scheme and those of other planned developments;

b. the sensitivity, value or importance of environmental resources or receptors, and their susceptibility to effects;

c. whether different types of effect would occur and interact in a way that alters their significance;

d. whether effects would be temporary or permanent in duration, what their timescales would be, and whether the frequency of such effects would be intermittent or constant; and

e. the degree of certainty and confidence relating to the effects.

16.2.16 In accordance with the approach contained within Advice note seventeen [REF 16-1], the following tasks were undertaken within the cumulative assessment, the full details of which are presented in Appendix 16.1 [**TR010027/APP/6.3**].

Stage 1

16.2.17 This stage involved establishing the Scheme's Zones of Influence (ZoI) and the identification of a long list of other planned developments and development allocations within the ZoI.

16.2.18 Each development within the long list was assigned a status (or tier), informed by feedback from Solihull Metropolitan Borough Council (SMBC) and information freely available on their planning portal, which indicated the level of certainty and provided an indication of the likely level of detail available.

16.2.19 The long list of developments is presented in Appendix 16.2 [**TR010027/APP/6.3**] and comprises a total of 26 developments and 19 development allocations, the locations of which are illustrated in **Figure 16.1** [**TR010027/APP/6.2**].

Stage 2

16.2.20 This stage involved reviewing the long list of planned developments, in order to identify those to be taken forward into the cumulative assessment.

16.2.21 The result of this process was a definition of a shortlist of developments, for which more detailed information gathering was subsequently undertaken during Stage 3 to assist the identification of cumulative effects.

16.2.22 The shortlist of developments is presented in Appendix 16.3 [**TR010027/APP/6.3**] and comprises a total of 9 developments, the locations of which are illustrated in **Figure 16.2** [**TR010027/APP/6.2**].

Stage 3

16.2.23 This stage involved sourcing information relating to the shortlisted developments, in order to establish the details of their likely environmental effects.

Stage 4

16.2.24 This stage involved identifying where cumulative effects are likely to occur, and assessing the significance of these effects on environmental resources and receptors.

Traffic related effects

16.2.25 A traffic model covering the locality associated with the strategic and local road network has been developed by Highways England to accurately forecast future traffic flows, both with and without the Scheme.

16.2.26 Chapter 5. EIA Methodology and Consultation summarises the approach undertaken as part of the traffic modelling process to:

a. predict the changes that the operation of the Scheme would have on future traffic flows;

b. predict the amount of traffic growth likely to occur in the future, in the absence of the Scheme; and

c. account for the influence that the operation of other development projects in the region (classified as being “near certain” or “more than likely” to be implemented) would have on future traffic flows.

16.2.27 Full details of the other development projects included within the traffic model, and the factors applied during the modelling process, are presented within the Transport Assessment Report [**TR010027/APP/7.2**].

16.2.28 The following assessments have relied wholly, or in part, on the forecasts derived from the traffic model for the do minimum scenario (representative of the conditions that would exist at a given point in the future without the Scheme in place, but accounting for other development projects) and the do something scenario (as above, but with the Scheme in place).

a. Chapter 6 Air quality;

b. Chapter 12 Noise and vibration;

c. Chapter 13 Population and health (as part of the calculations of driver stress and traffic related severance); and

d. Chapter 14 Road drainage and the water environment (as part of the calculations for road runoff and accidental spillages).

16.2.29 As the influence of other development projects already forms an inherent part of the traffic forecasts upon which the assessments of the Scheme's effects within these topics have been based, by default the cumulative effects are included and reported within their operational assessments. This also applies to the conclusions drawn where other topics have relied on the results of these assessments, for example Chapter 9 Biodiversity.

Identification of likely significant effects

16.2.30 The significance of both combined and cumulative effects has been determined in accordance with the criteria set out in

16.2.31 **Table** 16.1, which draws upon the guidance presented within DMRB Volume 11 [REF 16-4].

Table 16.1: Combined and cumulative effects significance criteria

Significance category	Typical descriptors of effect
Very large (typically adverse only)	Where the combined impacts of the Scheme or cumulative impacts of the Scheme in association with other development upon an individual or collection of environmental receptors would be very highly significant (positive or negative). Effects would be permanent for receptors of very high value.
Large (adverse or beneficial)	Where the combined impacts of the Scheme or cumulative impacts of the Scheme in association with other development upon an individual or collection of environmental receptors would be highly significant (positive or negative). Effects would be: - widespread/large scale for a receptor of high value - permanent for a receptor or receptors of high value[1]; - localised for a receptor or receptors of very high value; or - temporary for a receptor or receptors of very high value.
Moderate (adverse or beneficial)	Where the combined impacts of the Scheme or cumulative impacts of the Scheme in association with other development upon an individual or collection of environmental receptors would be significant (positive or negative). Effects would be: - permanent for a receptor or receptors of medium value; - localised for a receptor or receptors of high value; or - temporary for a receptor or receptors of high value.

[1] Note that the term 'value' refers here to both intrinsic value and sensitivity.

Significance category	Typical descriptors of effect
Slight (adverse or beneficial)	Where the combined impacts of the Scheme or cumulative impacts of the Scheme in association with other development upon an individual or collection of environmental receptors would be noteworthy but not significant (positive or negative). Effects would be: - permanent for receptors of low value; - localised for a receptor or receptors of medium value; or - temporary for a receptor or receptors of medium value.
Neutral	Where the combined impacts of the Scheme or cumulative impacts of the Scheme in association with other development upon an individual or collection of environmental receptors would be negligible and not significant (positive or negative).

16.2.32 Within the assessment, the value (or sensitivity) of receptors has been based on the highest rating within the relevant environmental topic assessments. For example, if a receptor is high value for landscape and moderate value for noise, the assessment has deemed this to be of high value for the purposes of combined effects assessments.

16.2.33 Combined and cumulative effects that are of moderate, large or very large significance are deemed to be significant.

16.3 Assessment assumptions and limitations

16.3.1 The combined and cumulative assessments have been constrained by the limitations, assumptions and uncertainties presented within the individual assessments reported within Chapters 6 – 15.

16.3.2 The cumulative assessment has been undertaken using available third-party information relating to the predicted environmental effects of the shortlisted development projects (Appendix 16.3 [**TR010027/APP/6.3**]). Where a planning application for a development has not been formally submitted for determination, the assessment has been constrained by the limited environmental information available within the public domain.

16.3.3 For the shortlisted development projects that do not comprise development requiring EIA, the cumulative assessment has identified that these developments would not give rise to significant effects. Accordingly, it has been assumed that these developments would also be unlikely to contribute to the effects of the Scheme and result in significant cumulative effects.

16.3.4 The SMBC planning portal, the Planning Inspectorate's website and the Highways England Improvements and major road projects website were last checked for new developments to add to the long list on the 26 November 2018.

16.4 Assessment of combined effects

16.4.1 This section provides a summary of the potential combinations of impacts that have been identified as part of the assessments reported within Chapters 6 – 15, and which are considered likely to affect a single receptor as shown in **Table 16.2**.

16.4.2 Chapter 3 The project and Chapters 6 – 15 describe the mitigation that has been embedded in the design and standard mitigation.

16.4.3 Given the nature of the identified combined effects, where a range of activities would affect identified receptors in differing ways (such as visual and noise effects), no additional in combination mitigation measures are considered appropriate to alleviate the temporary construction related combined effects.

Table 16.2: Summary of potential combined construction impacts and effects upon single environmental receptors

Receptor	Value	Potential in-combination impact	Duration	Scale	Mitigation	Combined effect
Bickenhill North - residential properties	Medium	*Visual* (large adverse) *Noise* (some non-significant exceedances of construction noise limits predicted)	Temporary	Local	None considered practical above the measures outlined within the OEMP	Slight adverse
St Peters Lane, Bickenhill conservation area - residential properties	High	*Visual* (large adverse) *Noise* (short term significant effects due to construction noise) *Cultural Heritage* (moderate adverse) *Vibration* (exceedance of construction vibration limits predicted at some receptors)	Temporary	Local	None considered practical above the measures outlined within the OEMP.	Moderate adverse

Receptor	Value	Potential in-combination impact	Duration	Scale	Mitigation	Combined effect
Users of Public Right of Way (M109) west of Bickenhill - recreation	High	*Visual* (large adverse) *Noise* (short term significant effects due to construction noise) Non-Motorised Users (minor adverse)	Temporary	Local	None considered practical above the measures outlined within the OEMP	Moderate adverse
Users of Public Right of Way (M112) west of Bickenhill - recreation	High	*Visual* (large adverse) *Noise* (short term significant effects due to construction noise) Non-Motorised Users (negligible)	Temporary	Local	None considered practical above the measures outlined within the OEMP	Moderate adverse
Warwickshire Gaelic Athletic Association (WGAA) - recreation	Moderate	*Visual* (large adverse) *Noise* (short term significant effects due to construction noise)	Temporary	Local	None considered practical above the measures outlined within the OEMP	Moderate adverse

Receptor	Value	Potential in-combination impact	Duration	Scale	Mitigation	Combined effect
Four winds farm and nearby residential properties	Moderate	*Visual* (large adverse) *Noise* (short term significant effects due to construction noise)	Temporary	Local	None considered practical above the measures outlined within the OEMP	Moderate adverse
St Peters Lane/Garden Centre - residential properties	Moderate	*Visual* (large adverse) *Noise* (short term significant effects due to construction noise)	Temporary	Local	None considered practical above the measures outlined within the OEMP	Moderate adverse

Table 16.3: Summary of potential combined operational impacts and effects upon environmental receptors

Receptor	Value	Potential in-combination impact	Duration	Scale	Mitigation	Effect
St Peters Lane, Bickenhill conservation area - residential properties	High	*Visual* (large adverse) *Noise* (minor adverse)	Permanent	Local	None considered practical	Large adverse
Warwickshire Gaelic Athletic Association (WGAA)	Moderate	*Visual* (large adverse) *Noise* (minor adverse)	Permanent	Local	None considered practical	Large adverse

16.4.4 The assessment has identified a number of receptors where combined effects are predicted, particularly those arising from construction activities where works would be in close proximity to receptors such as residential properties. Due to the nature of the works, there are limited opportunities for further mitigation measures to reduce these potentially significant adverse effects during construction.

Construction

16.4.5 In summary, the potential temporary combined effects as a result of the Scheme are anticipated to be on balance moderate adverse as presented within **Table 16.2**. Effects of this nature are considered significant; however, these effects would be generated as a result of construction activities (i.e. short term and temporary in nature). Large adverse effects to the landscape and noise environment are the main contributors to the combined effect ratings. However, the Scheme's competent experts for these disciplines have worked closely throughout the EIA process to ensure appropriate and proportionate mitigation has been included to reduce construction related impacts as far as practicable.

Operation

16.4.6 During operation the combined effects as a result of the Scheme are anticipated to be no worse than large adverse, however these are solely attributable to the changes to the landscape with the introduction of the Scheme. Due to the requirements of the Scheme to consider the operational safeguarding zones of Birmingham Airport no landscape planting is considered available to provide further mitigation for operation related combined effects.

16.5 Assessment of cumulative effects with other development

16.5.1 The shortlisted developments included in the cumulative effects assessment matrix were considered against the adverse effects of the Scheme by each of the environmental topics in isolation, taking into account the overlap of the respective ZoI.

16.5.2 Of the nine developments identified three have been identified as having the potential to generate significant cumulative effects (Appendix 16.4 [**TR010027/APP/6.3**]). A summary of these effects and the environmental topic and receptor that are applicable been presented below.

Motorway Service Area (MSA) (PL/2015/51409/PPOL)

16.5.3 The Scheme would comprise of a MSA and associated facilities located to the south of the existing Solihull Road, and to the west of the existing western parcel of Aspbury's Copse ancient woodland. Access and egress to the MSA would be provided by the construction of on slip and off slips to a newly construction junction in a similar location to that proposed by the Scheme.

16.5.4 There is a large overlap between the Order Limits of the Scheme and the development boundary of the proposed MSA. As such, the development falls within all the ZoI for the Scheme. An EIA was required for this development. Although the application was originally submitted in 2015, the environmental information has been subject to several reviews and updates, and currently a decision has not been made. No up-to-date construction programme has been submitted with the MSA application. Consequently, there is a small possibility that the construction phases of the southern elements of the Scheme (works on and around the proposed Junction 5A) and the construction of the MSA, could coincide.

Landscape and Visual Amenity

Construction

16.5.5 The Landscape and Visual Amenity impact assessment (LVIA) submitted with the MSA environmental statement concludes that construction of the MSA would result in a temporary major (large) adverse effect on landscape character and a temporary major (large) adverse effect on visual amenity on identified receptors.

16.5.6 The M42 Junction 6 LVIA (Chapter 8 Landscape) concludes that Landscape Character Area (LCA) 2 (containing the MSA) and viewpoint T would be subject to a temporary large adverse effect during construction of the Scheme.

16.5.7 Based upon the unlikely worst case scenario of construction of the MSA overlapping with the construction of the southern extent of the Scheme, the high value (sensitivity) of the receptor, and the temporary duration of the effect. The effects of the Scheme and the MSA on LCA 2 would result in a cumulative effect of moderate adverse.

Operation – Landscape

16.5.8 The LVIA assessment submitted with the MSA environmental statement concludes that operation of the MSA would result in a moderate adverse effect on the landscape character.

16.5.9 The LVIA of the Scheme (Chapter 8 Landscape) concludes that a large adverse effect is anticipated in LCA 2 during year 1 operation of the Scheme, this would reduce to a moderate adverse effect in year 15 as compensation planting matures.

16.5.10 Due to the high value (sensitivity) of the receptor and the permanent duration of the effect, this would result in a cumulative effect on LCA 2 of moderate adverse.

Operation – Visual Amenity

16.5.11 The Visual Amenity assessment of the Scheme (Chapter 8 Landscape) concludes that – the following adverse effects are anticipated at viewpoint locations; BB moderate adverse, U slight adverse and T large adverse) these are all located around the southern element of the scheme during year 1 operation of the Scheme, this would reduce to a BB slight adverse, U Neutral and T moderate adverse in year 15 as compensation planting matures.

16.5.12 Due to the medium value (sensitivity) of the receptors and the permanent duration of the effect, this would result in a cumulative effect of moderate adverse.

Cumulative Effect

16.5.13 The cumulative landscape and visual effect is considered to be moderate adverse during construction and large adverse during operation.

Biodiversity

Construction

16.5.14 Given the nature of the affected receptor (Aspbury's Copse) as an irreplaceable habitat, the potential impact and subsequent effects are considered as part of construction phase only. The MSA and the Scheme are both expected to cause loss of ancient woodland in the Aspbury's Copse potential local wildlife site, a site of medium value, which is bisected by the M42. The Scheme's would result in the loss of approximately 0.46ha during construction, which is equivalent to approximately 20.3% of the current area (2.27ha) of ancient woodland habitat. This effect is assessed to be moderate adverse in the short term, reducing to slight adverse by the design year, following the proposed mitigation and compensation.

16.5.15 The updated Ecology Impact Assessment submitted with the MSA application reports that approximately 0.05ha of ancient woodland would be lost at the Aspbury's Copse site as a result of the development. This is reported to be a moderate adverse effect.

Cumulative effect

16.5.16 When combined with the Scheme, the total ancient woodland lost would be approximately 0.51ha, or 22.5% of the current area (2.27ha). The medium value of the Aspbury's Copse site, and the relatively minor additional loss caused by the MSA (2.4% of the current area) are not anticipated to be greater in magnitude than the individual effects reported. Consequently, the cumulative effect on the site would be moderate adverse.

The extraction and processing of sand and gravel (Land adjacent to and to the South of Common Farm) (PL/2015/52804/MWMAJ)

16.5.17 The development is located to the north east of Junction 6 of the M42, in the land currently determined for the long term use of HS2, and involves the extraction of materials from earth workings. The development is approximately 52.4ha in size and an EIA was required.

16.5.18 There is some overlap between the Order Limits of the Scheme and the boundary of the development. As such, the development falls within all the ZoI for the Scheme. Due to the nature of the development there is no construction phase. The operation of the processing and extraction site is planned to be completed in phases over a period of 4.5 years around the construction of the HS2 Birmingham Interchange Station, with plant equipment moving location during the different phases. Subsequently, the assessments within the development ES have been based upon a worst case scenario of plant location.

Landscape

Construction

16.5.19 The LVIA of the Scheme (Chapter 8 Landscape) concludes that LCA 2 (which contains the development) would be subject to a temporary large adverse effect during construction of the Scheme, and a large adverse effect in year 1 of operation.

16.5.20 Due to the temporary duration of the landscape effects caused by the development on LCA 2, and the high value (sensitivity) of the receptor, the cumulative effects of the Scheme and the development would result in a worst case temporary cumulative effect of moderate adverse.

Operation

16.5.21 The Landscape and Visual Amenity assessment submitted as part of the development's ES concludes that a temporary moderate adverse effect is anticipated on the Rural Heartland Landscape Character Area (LCA) (corresponds to M42 LCA 2, see Chapter 8 Landscape) during the operational phase of the development. It also concludes that following mitigation measures, no adverse visual effects are expected to occur to the residential properties on Middle Bickenhill Lane.

High Speed 2 Railway (HS2) Main Line and Birmingham Interchange Station

16.5.22 The HS2 scheme through this area is approximately 4.35km in length. The route commences south of the A45 Coventry Road (A45) in Hampton in Arden and proceeds north-west into a triangular site with the A452 Chester Road to the east; the M42, National Exhibition Centre (NEC) and Birmingham Airport to the west and the A45 to the south. Within the triangular site, a new HS2 station and associated infrastructure, known as Birmingham Interchange station, will be constructed together with a people mover and people mover depot. The people mover will provide connectivity between this new station, the NEC, Birmingham International Railway Station and Birmingham Airport.

16.5.23 There is some overlap between the Order Limits of the Scheme and the HS2 development boundary. As such, the development falls within all the ZoI for the Scheme. The Birmingham Interchange Station and ancillary developments cover an area of approximately 350ha. An EIA was required for this development.

Cultural heritage

16.5.24 There is a possibility of direct, permanent, physical impact on archaeological deposits during construction of both the Scheme and HS2.

16.5.25 Due to the permanent duration of the effect and the maximum medium value assigned to unrecorded archaeological assets (Chapter 7 Cultural heritage). There is potential for a cumulative effect of large adverse.

16.5.26 This represents a potential worst case effect on unrecorded archaeological deposits and the significance of this effect shall be re-evaluated upon completion of the archaeological evaluation trenching (Chapter 7 Cultural heritage).

Landscape and visual amenity

Landscape and visual amenity – construction

16.5.27 The Landscape and Visual Amenity assessment submitted with HS2 phase 1 concludes that construction of HS2 would result in a temporary moderate adverse effect on M42 corridor LCA and a temporary moderate adverse effect on the viewpoints around Junction 6 to the north and east of the M42 (299.04.004, 299.4.003 and 299.4.002) and non-significant for a viewpoint to the west of the M42 on Church Lane, Bickenhill (299.3.01).

16.5.28 The Landscape and Visual Amenity assessment of the Scheme (Chapter 8 Landscape) concludes that Landscape Character Area (LCA) 2 (containing HS2) would be subject to a temporary large adverse effect during construction of the Scheme but that Viewpoints, B, C and D would experience a worst case of slight adverse.

16.5.29 Based upon the worst case scenario of construction of the HS2 overlapping with the construction of the northern extent of the Scheme, the high value (sensitivity) of the receptor, and the temporary duration of the effect. The effects of the Scheme and HS2 would result in a cumulative landscape effect of moderate adverse and cumulative visual effect of slight adverse.

Landscape - operation

16.5.30 The Landscape assessment submitted with the HS2 ES concludes that operation of the HS2 would result in a moderate adverse effect on the M42 corridor LCA (corresponds to LCA 2).

16.5.31 The Landscape assessment of the Scheme (Chapter 8 Landscape) concludes that a large adverse effect is anticipated in LCA 2 during year 1 operation of the Scheme, this would reduce to a moderate adverse effect in year 15 as compensation planting matures.

16.5.32 Due to the high value (sensitivity) of the receptor and the permanent duration of the effect, this would result in a cumulative effect of moderate adverse.

Visual amenity – operation

16.5.33 The Landscape assessment submitted with the HS2 ES concludes that operation of the HS2 would result in a moderate adverse effect on the viewpoints around Junction 6 to the north and east of the M42 (299.04.004, 299.4.003 and 299.4.002) and non-significant for a viewpoint to the west of the M42 on Church Lane Bickenhill (299.3.01).

16.5.34 The Visual Amenity assessment of the Scheme (Chapter 8 Landscape) concludes that at worst case sight adverse effects are anticipated at viewpoint locations B, C D these are all located around the northern element of the scheme during year 1 operation of the Scheme, this would reduce neutral in year 15 as compensation planting matures.

16.5.35 Due to the low value (sensitivity) of the receptors and the permanent duration of the effect, this would result in a cumulative effect of slight adverse.

16.6 Monitoring

16.6.1 For construction related cumulative effects, no further mitigation measures above those presented within the OEMP [**TR010027/APP/6.11]** are considered applicable or proportionate for short term temporary cumulative effects. However, Highways England will (if construction phases between the MSA and the M42 Junction 6 works overlap) make all reasonable efforts to work with the developer of the MSA to reduce construction related cumulative impacts and subsequent effects. If necessary, this could include:

a. monitoring of noise and dust levels at nearby sensitive receptors;

b. co-ordination of construction schedules to reduce noise and visual impact caused by construction plant; and

c. using alternate routes for construction traffic.

16.6.2 During operation, no further mitigation measures specific to the identified effects are considered appropriate or proportionate to reduce the significant adverse cumulative effects.

16.7 References

REF 16-1	Advice Note 17– Cumulative Effects Assessment. The Planning Inspectorate (2015). https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf
REF 16-2	M42 Junction 6 Improvement Scheme: Environmental Impact Assessment Scoping Report. Highways England (2017). https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010027/TR010027-000013-42J6%20-%20Scoping%20Opinion.pdf
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REF 16-4	Design Manual for Roads and Bridges, Volume 11. Highways England (1993 to date). http://www.standardsforhighways.co.uk/ha/standards/dmrb/