6. Environmental Impact Assessment Methodology

6.1. Introduction

6.1.1. At a joint meeting held with the LPAs, BCC and NSC determined the Scheme to be EIA development requiring the planning application to be accompanied by an Environmental Statement (ES). The Scheme falls under Schedule 2, Column 1, Item 10(f) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, as an infrastructure project involving the construction of a road where the area of works exceeds 1 hectare.

6.2. Objectives and Stages of Environmental Impact Assessment

6.2.1. The main objectives of an EIA are to:

- describe the development in sufficient detail to allow any interactions between the development and the environment to be determined;
- identify environmental constraints and opportunities within the study area, taking account of the characteristics of the development and the sensitivities of the local environment;
- identify potential impacts and interpret the nature and significance of these impacts;
- describe the mitigation measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment; and
- determine the significance of any residual environmental effects following mitigation measures.

6.2.2. The EIA process typically follows a number of stages:

- development initiation;
- screening (decision as to whether an EIA is required);
- pre-application discussions;
- scoping (consultation on proposed scope and methodology of the EIA, including preparation of a Scoping Report, submission to the IPC and a request for a Scoping Opinion);
- data collection and the undertaking of environmental baseline studies;
- assessment of potential environmental effects;
- modification of proposals to incorporate mitigation measures;
- re-assessment to determine residual impact significance;
- production of an ES;
- determination of the application by the LPAs;
- decision to refuse or grant consent (with or without conditions); and
- implementation and monitoring.

6.2.3. EIA should be considered as an iterative process rather than a one off, ‘static’ environmental appraisal. The findings of the EIA are fed into the design process. Where potential adverse effects are identified, the design of the development can be adjusted and / or appropriate mitigation measures proposed. Early consultation is a crucial component throughout the EIA process, and one which contributes to both the identification of potential effects and the requirement for, and design of, mitigation measures.
6.3. **Scope and Assessment Methods**

**General Approach**

6.3.1. Environmental impact assessment is the process of compiling, evaluating and presenting all the significant environmental effects of a proposed development. The assessment process is designed to help produce an environmentally sensitive project. This can be achieved by early detection of potentially significant adverse environmental effects which can enable the project to be amended or appropriate mitigation measures to be built into the final design.

6.3.2. The EIA has been carried out having regard to the Scoping Opinions and responses from non-statutory consultees. The approach to the EIA has taken into account relevant regulations and general advice / guidance relating to good practice, including:

- The Town and Country Planning (Environmental Impact Assessment) Regulations 2011;
- The Design Manual for Roads and Bridges (DMRB) Volume 11, Environmental Assessment;
- Interim Advice Note (IAN) 125/09 Supplementary Guidance for users of DMRB Volume 11, Environmental Assessment;
- The Conservation (Natural Habitats &C.) Regulations 1994 as subsequently amended and consolidated;
- Preparation of Environmental Statements for Planning Projects that require Environmental Assessment, A Good Practice Guide (Department of the Environment, 1995); and

6.3.3. Wherever possible, accepted impact assessment standards and guidelines have been followed. The specific methodologies proposed for use in the assessment process are provided in detail for each of the environmental topic areas (8 to 19).

6.3.4. The 2011 Regulations indicate that the assessment of environmental impacts should include: “A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from:

i. the existence of the development;

ii. the use of natural resources;

iii. the emission of pollutants, the creation of nuisances and the elimination of waste, and the description by the applicant of the forecasting methods used to assess the effects on the environment” (Reference 6.1, Schedule 4 Part I, para 4).

6.3.5. For each environmental topic reporting of the assessment follows a consistent structure:

- **Introduction** – to the topic under consideration;
- **Scoping** – Reiteration of the potential impacts identified from the scoping exercise;
- **Policy Context** – Outline of relevant policies and guidelines of greatest relevance;
- **Assessment methodology and significance criteria** – Description of the approach to assessment and criteria used for evaluating the significance of impacts, including the results of consultation;
- **Baseline information** – Description of existing (baseline) conditions pertinent to the topic under consideration, against which the proposed development are assessed. This includes changes to baseline between assessment periods, identification of relevant sensitive receptors and a summary of any modelling, measurements or surveys undertaken;
- **Key aspects of the project material** – relevant to the topic assessment. These could include design elements, construction methods and environmental management procedures intended to avoid or limit adverse effects or enhance beneficial effects, along with any proposed monitoring;
Predicted effects of the scheme – Identification of the magnitude of impacts and assessment of the significance of effects, described according to whether they would be temporary or permanent – many changes resulting from construction are permanent effects;

Mitigation and enhancement measures – Identification of non-embedded ‘design’ measures which may be appropriate to reduce, control or manage identified likely significant effects;

Assessment of residual significant effects – An assessment of any likely significant effects remaining after non-embedded mitigation measures have been employed;

Interactive and Cumulative Effects – Consideration of potential interactive effects with other topics and potential cumulative effects with other developments; and

Summary and Conclusions of the assessment, including any recommendations that have been identified within the assessment process.

Study Area

6.3.6. The study area for the Environmental Assessment is defined for each topic in the appropriate chapters and varies according to the environmental resource potentially affected. Some relate to the spread of the effect from the new works proposed and some include effects from the changes in the traffic pattern of the area as a result of the scheme proposals.

Timescale

6.3.7. With a project of this scale there is an inevitable lag in time between baseline survey work and the subsequent construction and opening of the road. Depending on the nature of the key impacts of individual elements of the assessment process, there are two distinct dates for which baseline data is required:

1. The start of construction. This is an important date for assessments such as ecology, heritage, ground conditions and landscape as this is the key time for assessing impacts and ensuring mitigation is agreed.

2. The opening date of the road. For assessment purposes this is set for 2016 and is important for traffic, air quality and noise assessments amongst others.

6.3.8. Time constraints of surveying, i.e. time of year for certain species, and review periods mean that baseline survey work for (1) above has generally been undertaken in 2012 and forms the basis of the EIA.

6.3.9. For (2) above, the baseline or ‘do nothing’ set in 2012, using the assumed date of assessment as the opening year of 2016, is identified as the ‘do minimum’ data. The ‘do minimum’ data will be assessed as the baseline opening date for the development. The impact of the new road added to the ‘do minimum’ will be critical for establishing the impact of the new road, known as the ‘do something’ scenario.

6.3.10. Individual chapters will then identify any further dates/timelines to consider the assessment against. These may be to identify the effectiveness of mitigation over time, i.e. landscape will assess the impact of planting as it establishes or ecology the establishment of habitat. Further assessments allowing for cumulative impact will also be identified and set out in each of the technical chapters and summarised in a cumulative impact chapter within the ES.
6.4. **Baseline Conditions**

6.4.1. The environmental features and conditions of importance along the route corridor and surrounding areas are set out in detail within chapters 8 to 19 of the ES.

**Receptors and their Sensitivity**

6.4.2. Receptors are defined as the physical resource or user group that is likely to experience an impact. The effect of an environmental impact depends on the spatial relationship between the source and the receptor, with some receptors likely to be more sensitive to certain environmental impacts than others.

6.4.3. The assessment will identify the potential impacts that might occur due to the construction and operation of the road. Impacts may be adverse/negative or beneficial/positive, direct, indirect, secondary or cumulative, temporary or permanent, short, medium or long term. Impacts can affect the environment in a variety of ways.

6.4.4. The differing parts of the environment affected by a scheme are known as receptors i.e. those things that receive an impact from a scheme. Receptors can range from individual plants, animals or human beings living in or passing through the area, through to the landscape as a whole and the physical and cultural elements within it.

6.4.5. The techniques for weighting and balancing the relative influence of impact magnitude and sensitivity on significance will vary from topic to topic. The evaluation of significance for any specific impact may be based upon one or more of the following:

1. Comparison with Regulations or standards.
2. Reference to criteria such as protected species, protected sites, landscapes etc.
3. Consultation with consultees and decision makers.
4. Compliance with policy (or plan) objectives.
5. Comparison with experience on similar projects elsewhere.
6. Experience and professional judgement of the specialist assessor.

6.4.6. The assessment of the effects of the scheme will be based on the scheme with all the agreed mitigation measures incorporated, taking account of any change in effectiveness over time, such as growth of planting and establishment of new habitats. The detail of the assessment under each topic will in part reflect the relative importance of the effects.

**Determining Significance**

6.4.7. In general terms the significance of effect is determined by balancing the value and sensitivity of the resource against the magnitude of the impact, or change, and the significance of the resultant effects. Specific methodologies for assessment are described in each topic chapter.
6.4.8. The overall methodology can be summarised generally, as a three-step process:
- The evaluation of the value or importance of a resource and the sensitivity of the receptors;
- Assessment of the magnitude of the impact of the proposed scheme on the resource or receptor, be it adverse or beneficial; and
- Determination of the significance of the effect resulting from impact (of a certain magnitude) on a resource (of a particular value).

Unless otherwise specified, the significance of the effects identified in the assessments is on a seven-point scale – ranging from major adverse to major beneficial, defined in terms appropriate to each environmental topic:
- Major adverse;
- Moderate adverse;
- Minor adverse;
- Neutral;
- Minor beneficial;
- Moderate beneficial;
- Major beneficial.

6.4.9. Of these, major and moderate adverse effects are considered ‘significant’ for the purposes of the EIA regulations.

6.5. Cumulative Effects

6.5.1. EIA legislation seeks that a project assessment should have regard to the accumulation of effects with other projects. For the scheme set out here the cumulative effects are assessed quantitatively / qualitatively against the following criteria:
- They are caused by the sum of past, present and reasonably foreseeable future actions;
- They are the total effect, including direct and indirect effects, upon a given environmental resource, ecosystem or human system of all actions taken regardless of the organisation responsible for the action;
- They may arise from the accumulation of similar effects or the synergistic interaction of different effects; or
- They may arise over a longer timescale than individual project impacts.

6.5.2. Cumulative effects can result from incremental changes caused by the interactions between effects within a project and/or the interaction with the effects from other developments. In relation to road projects, cumulative effects should be considered in the following ways:
- Multiple effects from the project, and from different projects of the same or similar type, upon the same resource; such as the effect on a single community of noise from several transport sources.
- Different multiple effects from the project, and from other projects, upon the same resource; such as land take and damage due to hydrological change, affecting several sites of the same habitat.
- Incremental effects arising from a number of small actions, including ongoing maintenance operations, having developed or developing over time.

6.5.3. The assessment of the ‘cumulative scenario’ relates to the impacts of the proposed SBL as part of the wider Rapid Transit network, based on the assumption that the SBL will be operated in conjunction with the AVTM and (subject to consent being secured) the NFH schemes.

6.5.4. The full operational effects and benefits of SBL will be fulfilled following completion of the wider rapid transit network. The impacts arising from the addition of AVTM and NFH primarily relate to the bus services that will use both these routes to access the city centre (including associated
changes in modal choice) and changes to the pattern of highway movements as a result of the traffic management measures required to facilitate both schemes.

6.5.5. Other cumulative effects, due to the interaction of one or more developments are addressed within each topic assessment as appropriate and relevant – some cumulative impacts arise from changes in traffic flows, others from the combined physical impact of neighbouring developments. Not all receptors will experience impacts from developments acting together and only those that are relevant from the developments in Table 6.1 are referred to. If a chapter does not contain information on potential cumulative impacts, it has been assessed that none are likely to be present.

Table 6–1 Known Future Development

<table>
<thead>
<tr>
<th>Site Allocation / Planning Reference</th>
<th>Location</th>
<th>Nature and scale of development</th>
<th>Status of application</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSA1109</td>
<td>Land adjoining Hartcliffe Way and Hengrove Way, Inns Court</td>
<td>430 residential dwellings</td>
<td>No planning application submitted</td>
</tr>
<tr>
<td>BSA1301</td>
<td>Site of former City of Bristol College (Hartcliffe Campus), Hawkfield Road, Hartcliffe</td>
<td>300 residential dwellings</td>
<td>No planning application submitted</td>
</tr>
<tr>
<td>BSA1401</td>
<td>Land at Hengrove Park</td>
<td>Housing, offices and open space in the form of a large high quality park, with an estimated 1000 residential dwellings.</td>
<td>No planning application submitted</td>
</tr>
<tr>
<td>BSA1402</td>
<td>Former New Fosseway School, Hengrove.</td>
<td>175 residential dwellings</td>
<td>No planning application submitted</td>
</tr>
<tr>
<td>BSA1411 09/02242/P 09/P/1061/F2</td>
<td>Ashton Vale and former Alderman Moore Allotments Off Ashton Road Bristol. Note: This does not include the wider hybrid application of which the residential element forms part – planning application reference 09/02242/P. Access would be gained from North Somerset via extant NS planning application reference: 09/P/1061/F2.</td>
<td>116 dwellings. The residential element forms part of a wider hybrid planning application for the new Bristol City Stadium, which provides, in addition, for the erection of a 30,000 seat stadium incorporating other uses (conferencing and hospitality 5,574 m², retail unit 382 m² and community facilities), relocation of a young persons’ home, construction of a hotel (3,500 sqm), restaurants/bars (A3/A4 – 1599 sqm), and a drive-thru restaurant (5,336 sqm).</td>
<td>Planning permission granted, works not yet commenced</td>
</tr>
<tr>
<td>07/04030/F</td>
<td>Former Office Block To Wills Factory, Hengrove Way, Bristol</td>
<td>Alterations to and refurbishment of existing building and construction of a new building to comprise a mixed use development totalling 422 residential apartments.</td>
<td>Planning permission granted, work did commence but is not currently active</td>
</tr>
<tr>
<td>10/05279/F</td>
<td>Imperial Tobacco Ltd, Winterstoke Road, Bristol BS3 2LJ</td>
<td>Demolition of existing factory buildings (Use Classes B1 and B2) and the erection of new office</td>
<td>Works complete</td>
</tr>
</tbody>
</table>
6.6. **Assessment Scenarios**

**6.6.1.** The SBL forms part of the West of England rapid transit network, together with the Ashton Vale to Temple Meads (AVTM) guided bus scheme and the North Fringe to Hengrove (NFH) rapid transit scheme. The SBL will be operated in conjunction with the AVTM and (subject to consent being secured) the NFH schemes.

**Do-minimum Scenario (“no SBL”)**

**6.6.2.** The environmental assessment process considers both the effects of the proposed scheme against the conditions as they are now and makes a detailed assessment against what is described as the ‘do-minimum scenario’; that is, what could be reasonably expected to have occurred over the same timescale if the scheme did not go ahead. The do-minimum baseline is, therefore, what could be reasonably expected to have occurred if the SBL was not developed.

**6.6.3.** The baseline transport model is based on an assessment of current traffic levels (2012), and future traffic levels in 2016 and 2031, without the proposed scheme (or AVTM and NFH). This in turn informs the baseline for the air quality and noise assessments in order to gauge the impact of the scheme as part of the ‘do-something’ scenario, i.e. the proposed development of SBL. Similarly, the baseline survey work and gathering of the evidence base for the EIA has generally been undertaken in 2012.

**Do-something Scenario (“with SBL” – the proposed scheme)**

**6.6.4.** This is the basis of the environmental assessment of the SBL scheme as set out in the ES. The ‘do-something scenario’ treats the proposed development as a stand-alone scheme, to understand the construction impacts and operational effects of SBL prior to the operation of the AVTM guided bus scheme and NFH.

**6.6.5.** At the western end of the scheme, SBL splits into two links. An all-vehicle link from Brookgate junction to the A370 and a bus-only link between Brookgate junction and AVTM located to the south east of the Long Ashton Park and Ride site. Both links have been incorporated into the assessment.

**Cumulative Scenario (“SBL with AVTM”)**

**6.6.6.** This is an assessment of the cumulative impacts of the proposed SBL in combination with the AVTM scheme, based on the assumption that the operation of SBL will only take place with AVTM. In other words, the full operational effects and benefits of SBL will only be fulfilled once AVTM is operational.

**6.6.7.** The impacts arising from the addition of AVTM primarily relate to the bus services that will use SBL and AVTM to access the city centre, changes in modal choice and the pattern of highway movements as a result of the traffic management measures required to facilitate AVTM. The...
transport model, air quality and noise assessments provide an assessment of the cumulative impacts of the two schemes operating together, reflected in other assessments as appropriate.

6.6.8. As outlined above, the SBL will only be operated in conjunction with the AVTM and (subject to consent being secured) the NFH schemes. Therefore the Transport Assessment considers the impact of SBL assuming AVTM is operational.

6.6.9. In addition, in order to assess the SBL scheme in the context of the West of England rapid transit network, the cumulative impacts of the proposed SBL in combination with AVTM and the NFH rapid transit schemes has also been considered, taking into account the operation of bus services connecting at Hengrove Park. However, as the design of the NFH scheme has not been progressed to the same level of detail as SBL or AVTM, the NFH scheme has not been coded in the SBL modelling system. A qualitative assessment of the additional impacts associated with the NFH scheme has therefore been undertaken.

6.6.10. The above cumulative impacts are then reflected in the remaining assessments as appropriate, which include an appraisal of the cumulative effects of future development in the vicinity of the proposed route such as current site allocations and development commitments.