

## **Wider Impacts and Regeneration**

### **TAG Unit 2.8**

**DRAFT**

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# Contents

<b>1</b>	<b>Wider Impacts and Regeneration</b>	<b>1</b>
1.1	Appraisal of Wider Impacts and Regeneration	1
1.2	The SACTRA Report: Wider Impacts and Regeneration	1
<b>2</b>	<b>Wider Impacts</b>	<b>3</b>
2.1	The 'Wider Impacts'	3
2.2	The Need for a Wider Impacts Assessment	5
2.3	Preparing a Wider Impacts Assessment – Steps In the WIs Appraisal Process	7
2.4	Models and Methodology for Wider Impacts Assessment	9
2.5	Structure of a Wider Impacts Assessment Report	9
<b>3</b>	<b>Wider Impacts Analysis Checklist</b>	<b>10</b>
3.1	Checklist	10
<b>4</b>	<b>Regeneration</b>	<b>13</b>
4.1	The Need for a Regeneration Appraisal – The Regeneration Report	13
4.2	Guidance on Preparing a Regeneration Report	13
4.3	Regeneration Areas	14
4.4	Regional Development and Regeneration	15
4.5	Models and Methodology for Regeneration Appraisal	15
4.6	Structure of a Regeneration Report	15
<b>5</b>	<b>Further Information</b>	<b>16</b>
<b>6</b>	<b>References</b>	<b>17</b>
<b>7</b>	<b>Document Provenance</b>	<b>18</b>
<b>8</b>	<b>Annex A</b>	<b>19</b>
8.1	Defining Functional Urban Regions (FURs)	19
<b>9</b>	<b>Annex B</b>	<b>20</b>
9.1	FURs Map for England	20

# 1 Wider Impacts and Regeneration

## 1.1 Appraisal of Wider Impacts and Regeneration

1.1.1 The Economy Objective has the following five sub-objectives:

- to obtain value for money in relation to impacts on **public accounts**;
- to improve transport economic efficiency for **business users and transport providers**;
- to improve transport economic efficiency for **consumer users**;
- to improve **reliability**;
- to provide beneficial **wider impacts through productivity and wider welfare gains** and to support the **regeneration** of an area.

1.1.2 This Transport Analysis Guidance Unit provides an introduction to the appraisal of the last of these five sub-objectives – wider impacts and regeneration. For information on the appraisal of the other four sub-objectives, reference should be made to **The Public Accounts Sub-Objective** (TAG Unit 3.5.1), **The Transport Economic Efficiency Sub-Objective** (TAG Unit 3.5.2, which deals with the second and third sub-objectives together), and **The Reliability Sub-Objective** (TAG Unit 3.5.7).

## 1.2 The SACTRA Report: Wider Impacts and Regeneration

1.2.1 It is generally accepted that, under conditions of perfect competition<sup>1</sup> for both the transport and transport-using sectors, a properly specified Cost Benefit Analysis (CBA) of a transport scheme would accurately estimate all welfare impacts. In other words, at the national level, the conventional CBA would capture all the economic costs and benefits of the transport scheme.

1.2.2 In its report **Transport and the Economy** (DETR, 1999), SACTRA<sup>2</sup> noted that there could be two circumstances where the CBA might not give an accurate or full estimate of the costs and benefits of a scheme.

1.2.3 First, the SACTRA report recognised that markets are often not perfect, and as such Wider Impacts (WIs), positive and negative, may result via direct user impacts being amplified through the economy. Appraising only the direct user impacts means that some economic impacts would be missing from the appraisal. The **Eddington Transport Study** (DfT, 2006) estimated these impacts and noted that in some cases they can be significant, and are therefore an important part of the overall cost benefit assessment<sup>3</sup>. Such impacts would include productivity and welfare changes associated

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<sup>1</sup> A perfectly competitive market is defined as a market where there are many buyers willing to buy a product at a certain price and many sellers willing to sell the product for a certain price; firms' products are very similar; there are low barriers to entry and exit; there is perfect information for both consumers and producers; and firms maximize profits (they sell at the point where marginal revenue equals marginal cost). Under these conditions, the market price of the product (which is taken as given to the firm) equals the marginal cost of producing the product.

<sup>2</sup> SACTRA is The Standing Advisory Committee on Trunk Road Assessment. It is an independent committee appointed by the Secretary of State for Transport to advise on issues related to the appraisal of trunk roads. From time to time the committee is given specific terms of reference and in 1999 they published a report on Transport and the Economy.

<sup>3</sup> See Eddington Transport Study (DfT, 2006) Chapters 3.1 and 4.1.

with the impact of transport on agglomeration and labour supply. The WIs appraisal aims to capture these effects, positive or negative, that result from market failure<sup>4</sup>.

- 1.2.4 Secondly, SACTRA identified that benefits might not be evenly distributed across the population, and some people might gain while others might lose. Even if there were no overall effect at the national level, benefits such as increased employment might be gained in some areas while an equivalent reduction might occur elsewhere across the country. This latter point is especially relevant in areas classed as 'regeneration areas' (RAs). RAs will usually have a policy objective of increasing local economic activity and employment, and in such cases it may be desirable to introduce measures that bring local benefits even if this leads to costs arising elsewhere.
- 1.2.5 As well as providing introductory level guidance on WIs, this TAG Unit 2.8 provides an introduction to the assessment of the additional value of impacts which accrue in RAs. There are separate TAG units providing detailed appraisal guidance on regeneration and WIs: detailed guidance on the appraisal of regeneration impacts is in TAG Unit 3.5.8 and TAG Unit 3.5.14 provides the detailed guidance for estimating the Wider Impacts (WIs).
- 1.2.6 The focus of WIs and regeneration analyses differ, with the former focussed on appraising the wider welfare impacts associated with market imperfections and the latter focussed on distributional impacts with the emphasis on regeneration. The analyses are therefore not substitutes for one another and may both be required in certain cases.

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<sup>4</sup> Free markets do not give rise to an efficient production and allocation of goods and resources as a result of market failure. Market failures can take a number of forms including market power (due to monopolies, cartels, etc), absence of markets for goods (e.g. no market for clean air) and imperfect information and/or knowledge.

## 2 Wider Impacts

### 2.1 The 'Wider Impacts'

- 2.1.1 The impacts considered under the WIs guidance are as follows<sup>5</sup>:
- 2.1.2 Agglomeration Impacts: The term agglomeration refers to the concentration of economic activity over an area. Transport can act to increase the accessibility of an area to a greater number of firms and workers, thereby impacting on the level of agglomeration. Empirical evidence demonstrates that the level of agglomeration affects the productivity of firms and workers in an area, even after controlling for characteristics specific to firms and workers in that area. The guidance in TAG Unit 3.5.14, chapter 2, provides a methodology for estimating the impact of transport on agglomeration and the resulting impact on UK welfare<sup>6</sup>. Agglomeration has an impact on UK welfare through its impact on productivity and UK Gross Domestic Product (GDP). Higher UK GDP would provide a means to allow for higher UK consumption, thereby impacting on 'welfare' or 'wellbeing'.
- 2.1.3 Output change in imperfectly competitive markets<sup>7</sup>: In most cases, markets are not 'perfectly competitive' and this can lead to lower production and higher prices than would exist in the case of a competitive market, normally to the detriment of consumers and the economy as a whole. A reduction in transport costs (to business and/or freight) allows for an increase in production or output in the goods or service markets that use transport. Better transport provision may result in less congestion and hence enable a firm to carry out more deliveries in a day (i.e. increase output). A transport intervention that leads to an expansion of output will deliver a welfare gain as consumers of the goods and services will value any increases in production by more than the cost of the additional units of production. This constitutes a welfare gain not appraised within other user benefits. The guidance in TAG Unit 3.5.14 chapter 3, sets out an approach for estimating this welfare change.
- 2.1.4 Labour supply impacts: Transport costs are likely to affect the overall costs and benefits to an individual from working. In deciding whether or not to work, an individual will weigh travel costs against the wage rate of the job travelled to. A change in transport costs is therefore likely to affect the incentives of individuals to work and hence the overall level of labour supplied in the economy. The extent to which potential workers are employed in our economy affects the level of UK GDP. The more we can make efficient use of our 'human resource', the more output the UK can potentially produce. Higher UK GDP provides a means to allow for higher UK consumption, again therefore impacting on 'welfare' or 'wellbeing'. The level of labour supply can impact on welfare not just through GDP but also through benefits and dis-benefits to individuals depending upon whether they like or dislike working. However, these (non-GDP) benefits are already captured via appraisal of commuter user benefits. The guidance in TAG Unit 3.5.14, chapter 4

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<sup>5</sup> Impacts not included in the guidance are: international impacts (including the impact of transport on trade, overseas business and foreign direct investment); and changes in producer and consumer surplus as a result of increased competition. The former are not included because further development of the evidence base is needed to produce an appraisal framework for assessment of these impacts. The latter is not included because in a country like the UK, the transport system is already well developed. It is therefore unlikely that transport is a constraint on competition and any impacts of transport on competition are likely to be negligible.

<sup>6</sup> Agglomeration may also have social and environmental impacts and these should be adequately considered in other elements of the overall NATA appraisal. NATA (the New Approach to Appraisal) is DfT's framework for assessing the impacts of transport investments and policies. For further information see **Introduction to Transport Analysis**, TAG Unit 1.1.

<sup>7</sup> The impact appraised here is the difference between the willingness to pay for output change that results from a transport intervention, and the cost of producing this output.

sections 4.1 and 4.3, provides a methodology for estimating the impact of transport on the total amount of UK labour supplied, and the resulting impact on UK welfare for those impacts *not* already captured in current NATA appraisal.

- 2.1.5 Move to more or less productive jobs: Transport can affect the incentives for firms and workers to locate and work in different locations. Employment growth or decline in different areas is likely to have implications for productivity, as workers are often more or less productive in different locations. This may have implications for UK productivity which, in turn, will impact on UK welfare. The extent to which workers are employed in their most productive uses in high productivity jobs affects the level of UK GDP. By impacting on the overall productivity of jobs across the economy, transport has the potential to affect UK GDP and in turn 'welfare' or 'wellbeing'. TAG Unit 3.5.14, Chapter 4 sections 4.2 and 4.3, provides a methodology for estimating the impact of transport on the 'move to more or less productive jobs', and the resulting impact on UK welfare not already captured in appraisal.
- 2.1.6 Table 1 below shows how the Wider Impacts relate to those benefits currently appraised under the existing NATA framework. The impact of transport on agglomeration and output change in imperfectly competitive markets is not captured via direct user benefits such as journey time savings. The labour market impacts ('labour supply' and 'move to more or less productive jobs') are partially, but not wholly, captured through user benefits<sup>8</sup>. The methodology in TAG 3.5.14 will provide for the estimation of WIs that are not appraised elsewhere in NATA.

**Table 1:**

**The relationship between conventional appraisal and wider impacts appraisal**

Appraisal Type	Appraisal Impact	Appraisal Coverage
Conventional Appraisal	Business user benefits (money costs, journey time, etc)	Impacts assessed under NATA – User Impacts
	Other user benefits (commuting, leisure)	Impacts assessed under NATA – User Impacts
	Other impacts (safety, emissions, etc)	Impacts assessed under NATA – Social and Environmental aspects
Wider Impacts Appraisal	Agglomeration	Impacts not assessed under current NATA framework
	Output change in imperfectly competitive markets	Impacts not assessed under current NATA framework

<sup>8</sup> Some of the move to more or less productive jobs and labour supply changes are measured within commuter user benefits. The full impact however is not captured because commuter user benefits are based on willingness to pay benefits which implicitly reflect post-tax wages (i.e. the labour supply gain to the individual). There is a productivity gain to society in excess of the benefit to the individual, equivalent to the difference between pre-tax and post-tax wages.

	Labour supply impacts	Impacts not fully assessed under current NATA framework
	Move to more or less productive jobs	Impacts not fully assessed under current NATA framework

## 2.2 The Need for a Wider Impacts Assessment

2.2.1 DfT appraisal guidance recognises the need for proportionality in appraisal. The requirement for detailed modelling and collection of bespoke evidence will vary with the scale and complexity of the scheme. Promoters of small schemes should seek out and use of the best available information and methods referred to in WebTAG modelling advice. Promoters of larger schemes should consider commissioning bespoke evidence and models in accordance with the guidance and in consultation with the Department. Many schemes costing less than £20 million will generally undertake a lower cost appraisal, unless the scheme is considered to have substantial impacts that warrant further modelling and appraisal. Where it is agreed that a low cost proportional appraisal is appropriate, a Wider Impacts appraisal will not be a mandatory appraisal requirement.

2.2.2 The estimation of WIs is an important part of the overall appraisal of the costs and benefits of a transport scheme. The following WIs should be estimated for all schemes with a scheme cost greater than £20 million:

- Labour supply impacts
- Output change in imperfectly competitive markets

2.2.3 The agglomeration and move to more or less productive jobs WIs should be assessed according to the guidance that follows in sections 2.2.4 to 2.2.11 and 2.2.12 to 2.2.16 below:

### 2.2.4 For which schemes is an appraisal of agglomeration impacts necessary?

2.2.5 A transport scheme is likely to impact on productivity (and welfare) through the impact of the scheme on agglomeration if the transport investment increases accessibility in an area in sufficient proximity to an economic centre or large employment centre. In such cases the appraisal of the agglomeration impact of the scheme and the resulting welfare impact, must be appraised and reported.

2.2.6 If the scheme being appraised is in a rural location and not close to a particular economic or employment centre, the impact of the scheme on agglomeration and the resulting impact on productivity and welfare is likely to be negligible. In such cases an appraisal of the agglomeration impacts would not need to be undertaken or reported. The scheme appraisal should however make clear the basis for the absence of such an appraisal, providing information on the location of the scheme in relation to areas of economic activity (i.e. large urban areas and other employment centres).

2.2.7 DfT has identified areas across England where, if a scheme falls within the area, an agglomeration WIs appraisal should be undertaken. We refer to these areas as 'Functional Urban Regions' or 'FURs', a term that we have taken from work that has been done by the Group for European Metropolitan Areas Comparative Analysis (GEMACA) to identify areas or regions according to economic activity rather than administrative boundaries.

- 2.2.8 The FURs mapping for this TAG unit has been constructed specifically to reflect where agglomeration impacts are most likely to be significant. The FURs map, see section 9 Annex B, is accompanied by a worksheet (“Functional Urban Regions in England.xls”) to be used to identify if the scheme is in an area that is classed as a FUR. This worksheet can be used by the scheme appraiser to check whether the Census Area Statistic (CAS) ward(s) and/or local authority (authorities) (LAs) in which their scheme is located lies within a FUR(s). More detail on how the FURs have been defined and how to carry out a search on CAS wards and LAs is available in section 8, Annex A, of this TAG Unit 2.8.
- 2.2.9 The FURs map in section 9 should be used only as a guide as to where agglomeration impacts are likely to be significant and hence where the agglomeration WIs ought to be assessed for a scheme. If a scheme is located either wholly or partly within a FUR(s), an assessment of agglomeration impacts should be carried out if the scheme cost is estimated to be greater than £20 million. If an investment or scheme does not fall within a FUR, but the appraiser believes that agglomeration impacts may still be significant, the appraiser can still choose to assess agglomeration, along with the other wider impacts. The FURs map does not preclude an appraiser from being able to assess the agglomeration impacts of their scheme.
- 2.2.10 If a scheme falls across a number of FURs some distance apart e.g. an inter-city scheme, the appraiser may choose to assess agglomeration impacts, using appropriate sensitivity tests to reflect that the strength of agglomeration productivity impacts diminishes with distance.
- 2.2.11 In the actual appraisal of the agglomeration impact, the geographic scope of agglomeration is reflected in the analysis through the incorporation of a ‘distance decay’ factor and via the reach of transport users to the scheme as indicated by the transport model. Further information on the geographic scope of agglomeration impacts is provided in TAG Unit 3.5.14, Chapter 6 section 6.7.
- 2.2.12 For which schemes is an appraisal of the move to more or less productive jobs impact necessary?**
- 2.2.13 The analysis of agglomeration as set out above assumes that employment is not relocated within the area that is modelled. More generally, estimating the impact of transport on employment location across areas and over time is challenging and requires use of a Land Use Transport Interaction (LUTI) model.
- 2.2.14 For this reason the assessment of the move to more or less productive jobs WI is not a core requirement of the WIs assessment. The guidance in TAG Unit 3.5.14 chapter 7 does however set out an approach for estimating the move to more or less productive jobs WI. Where a LUTI model is available for the scheme being appraised, it may be used for estimation of job relocation for the move to more or less productive jobs impact. The impact should not be estimated without the use of a LUTI model. Where the impact is estimated, it will provide a sensitivity test to the overall estimate of the WIs, rather than forming part of the central WIs estimate.
- 2.2.15 Likewise, if a LUTI model is available with the capability of estimating employment relocation it would also be possible to estimate the agglomeration impact considering accessibility benefits brought about not only by a reduction in transport costs but also by physical relocation of employment. Where the agglomeration impact is estimated with modelled employment changes, it will provide a further sensitivity analysis to the overall estimate of the WIs, rather than forming part of the central WIs estimate. Agglomeration should still be estimated with no employment relocation across the modelled area, and this estimate should be reported for the main or central assessment case.
- 2.2.16 It is possible that a transport scheme could affect residential location and in doing so affect the accessibility of jobs to workers. Where a LUTI model has the capability to estimate employment relocation, changes in residential location may also form part of

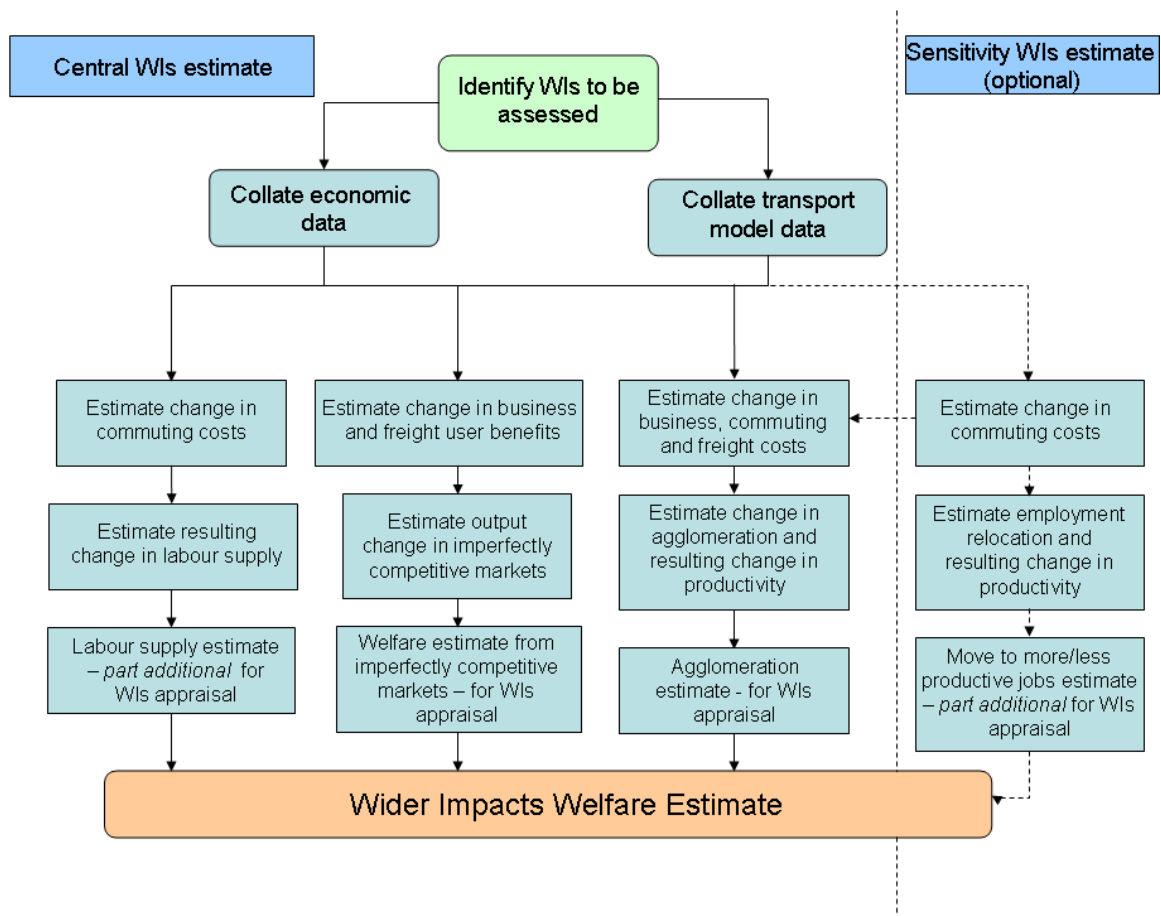
the modelled response to the transport scheme. These changes in residential location will feed into the estimates of commuter user impacts, and would therefore be expected to affect the labour supply impact. The labour supply impact may therefore differ between the 'sensitivity case' and 'central case' when it is estimated with a LUTI model.

## 2.3 Preparing a Wider Impacts Assessment – Steps In the WIs Appraisal Process

2.3.1 This TAG Unit provides high-level guidance on the preparation of a Wider Impacts assessment. More detailed guidance for the expert is provided in TAG Unit 3.5.14.

2.3.2 Diagram 1 below shows some of the key steps in estimating WIs, beginning with collection and assimilation of data. Further detail on the steps set out in this diagram is included below.

**Diagram 1: The process of estimating Wider Impacts**



2.3.3 The first stage in the WIs appraisal requires the analyst to consider which Wider Impacts need to be appraised. The labour supply and output change in imperfectly competitive markets WIs should be assessed for all schemes. The FURs map and table should be used to inform the need for an assessment of agglomeration impacts. Availability or otherwise of a LUTI model will help inform the decision of whether or not to assess the move to more or less productive jobs WI.

2.3.4 The second stage of the analysis requires the preparation of the appropriate data inputs. This requires transport model outputs to be obtained for the relevant modes and journey purposes. The transport model data obtained may need to be aggregated to the level of the economic data necessary for the WIs estimation. This is discussed in more detail in the guidance for the expert in TAG Unit 3.5.14 chapter 6.

- 2.3.5 When collating the data, the project manager should be aware that the transport data requirements (e.g. demand and generalised costs by mode and journey purpose) for WIs analysis (in particular agglomeration analysis) are somewhat greater than the requirements for conventional transport user impacts, Transport Economic Efficiency (TEE) analysis. This is because WIs analysis ideally needs to consider all flows by *all* modes and by *all* key journey purposes, not just the impacts on the elements of travel (time, cost, etc) that are changed as a result of the intervention. These data demands are needed in order to assess the contribution of the scheme to overall existing levels of accessibility and agglomeration across the area considered. This also means the project manager needs to take care that travel data is comparable across the different parts of modelled data, ensuring data is consistent and comparable across modes and between the main study and peripheral area. The need for comparability should be considered when planning the analysis. Further advice on this is available in TAG Unit 3.5.14 chapter 9. In cases where scheme assessors have opted to undertake a Wider Impacts assessment for a scheme assessed with a 'proportional appraisal' it is recognised that not all of these requirements will be met. In such cases the scheme appraiser should discuss with the Department for Transport (DfT) the suitability of the information available, for use in a Wider Impacts appraisal.
- 2.3.6 Once the appropriate data has been collated, the WIs that need to be assessed can be estimated.
- 2.3.7 The **labour supply impact** is estimated in several parts:
- The change in modelled commuting costs resulting from the scheme affects the benefit that individuals obtain from working (i.e. their wage considering other costs such as transport). This provides an estimate of the change in the net benefit from working.
  - The change in the level of labour supplied is based on how the change in the net benefit from working affects overall labour supply. This is calculated by applying an evidence-based elasticity value to the net wage change.
  - The additional productivity that results from the additional labour supplied is determined by multiplying the change in number of people working by the average economic contribution (GDP) of a new worker<sup>9</sup>.
- 2.3.8 The '**output change in imperfectly competitive markets**' impact represents the difference between the (higher) willingness of consumers to pay for increased output and the (lower) cost of the extra production, in imperfectly competitive markets. The impact is estimated in a simplified form – essentially up-lifting the estimate of conventional travel time and travel cost benefits to business users (and to freight where relevant) to account for this missing element.
- 2.3.9 The **agglomeration** estimation is undertaken as follows:
- The change in the level of agglomeration resulting from the transport scheme is estimated on the basis of the impact that the estimated change in user travel time and costs has on the accessibility of firms and workers to each other.
  - For the estimated change in the level of agglomeration, the productivity impact is estimated by applying a value to reflect the likely change in productivity for each fractional change in agglomeration. The output is a welfare estimate of the scheme's agglomeration impact.
- 2.3.10 Where it is estimated as part of the 'sensitivity analysis', the **move to more/less productive jobs** impact is estimated from the modelled impact of the transport

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<sup>9</sup> It is only the 'tax wedge' element of the productivity impact that is isolated and incorporated into the WIs appraisal to avoid double counting impacts already included in the conventional analysis. Further information is provided in TAG Unit 3.5.14, chapter 4 section 4.1.

intervention on employment location using a Land Use Transport Interaction (LUTI) model. Where employment is estimated to increase and/or decline in certain areas, the resulting productivity impact is estimated by applying an index of the difference in productivity between the locations<sup>10</sup>.

- 2.3.11 The 'central case' WIs estimate should assume no change in employment or residential location.
- 2.3.12 Where a LUTI model is used 'sensitivity estimates' can be produced for the move to more or less productive jobs, labour supply impacts, and agglomeration. TAG Unit 3.5.14, chapter 7 provides more information on the sensitivity WIs estimates that should be produced for certain schemes and models.
- 2.3.13 Software is available to automate the estimation of WIs and can be accessed initially by contacting the DfT at [WiderImpacts@dft.gsi.gov.uk](mailto:WiderImpacts@dft.gsi.gov.uk).

## 2.4 Models and Methodology for Wider Impacts Assessment

2.4.1 The Wider Impacts appraisal builds on modelled estimates of travel time and cost savings to different users of a transport scheme. As the WIs appraisal builds on the modelled user benefits, it relies on the transport model having been well specified and having good coverage across modes and geographical areas. Further detailed advice on selecting and specifying a transport model is available in WebTAG in units:

- TAG Unit 3.1.1: **Introduction to Modelling**
- TAG Unit 3.1.2: **Transport Models**
- TAG Units 3.10: **Variable Demand Modelling**
- TAG Units 3.11: **Specification, Development and Use of Models for Major Public Transport Schemes**

2.4.2 As noted, when employment and residential relocation impacts are estimated to provide a sensitivity 'with land use changes' WIs estimate, a Land Use Transport Interaction (LUTI) model is needed. The suitability of the specific model selected for the estimation of employment relocation impacts should be discussed with DfT. Further advice on modelling the sensitivity WIs with a LUTI model is given in chapter 7 of TAG Unit 3.5.14.

## 2.5 Structure of a Wider Impacts Assessment Report

- 2.5.1 The overall structure of the WIs analysis is set out in **The Wider Impacts Sub-Objective** (TAG Unit 3.5.14). The WIs analysis produces a set of monetary estimates for each of the wider impacts and these should be reported separately from the TEE appraisal in the format for results set out in chapter 10 of TAG Unit 3.5.14. Any estimates including employment and residential relocation estimates should be reported separately as a sensitivity analysis. Other necessary sensitivity tests, as discussed in chapter 7 of TAG unit 3.5.14, should also be separately reported.
- 2.5.2 The report should also include a description of the applicability of an agglomeration assessment, drawing on the assessment made of the scheme's alignment with Functional Urban Regions, as described in section 2.2.4 above.
- 2.5.3 The outputs required are described in more detail in TAG Unit 3.5.14, chapter 10.

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<sup>10</sup> Since some of this impact is already measured within user benefits, it is only the 'tax wedge' element of the productivity impact that is isolated and incorporated into the WIs appraisal. Further information is provided in TAG Unit 3.5.14, in chapter 4 section 4.2.

### 3 Wider Impacts Analysis Checklist

#### 3.1 Checklist

- 3.1.1 Table 2 below provides a checklist for appraisal project managers to use in setting up the analysis framework, and for checking back and identifying any potential issues that may affect the robustness of the analysis.
- 3.1.2 It is recommended that the checklist table is followed and reported for each appraisal, providing this as an annex to any WIs analysis report.
- 3.1.3 Note that throughout such a review, it must be kept in mind that some or all of the economic impacts or benefits may be negative (i.e. disbenefits).

**Table 2: Wider Impacts Analysis Checklist**

Topic	Issues	References/notes
Geographical extent: is the geographical coverage sufficient? i.e. is the model system large enough to take account of the majority of interactions to/from the area of interest?	Is there a risk of overstating the WIs case by not considering effective density over a wide enough base due to not considering interactions with places beyond the modelled area?	The agglomeration calculations in particular depend on modelling a large enough region to set the journeys affected by the scheme in context with all other significant journeys that are not affected by the scheme. Considering too small an area will tend to exaggerate the impact of proposals.
Transport modelling issues	Completeness of data (modes, journey purpose, zone pairs)	Note that the transport data requirements (e.g. demand and generalised costs by mode and journey purpose) for WIs analysis are greater than the requirements for analysing conventional transport user impacts (see 2.3.5 of this TAG Unit 2.8).
	Treatment of problem issues (e.g. missing intrazonals)	A number of likely problems arising from the greater transport data requirements of WIs analysis are discussed in chapter 8 of Unit 3.5.14 along with potential solutions.

Topic	Issues	References/notes
Employment data issues	<p>Is the base case employment data taken directly from TEMPRO, or from another forecast?<sup>11</sup></p> <p>The 'central case' WIs assessment should assume <u>no change</u> in employment distribution; if a LUTI model is being used to estimate scheme impacts on employment location, the revised WIs calculations with changing employment should be treated as a sensitivity test.</p>	See discussion in chapter 7 of Unit 3.5.14 on LUTI modelling.
Scale of the various WIs effects	Compared with one another	Experience to date is that agglomeration is usually the largest WI.
	Compared with the TEE benefits	Previous experience is that they are generally in the range of 10% to 30% of total TEE user benefits; see Feldman et al (2008).
	With respect to the transport scheme itself	<p>This calls for a 'commonsense' realism check.</p> <p>First, direction of change: generally improvements in transport provision will create additional benefits, while reductions/restrictions will create disbenefits (though there may be exceptions).</p> <p>Secondly, scale: given the level of transport investment over the past 250 years, most new transport schemes will tend to have relatively modest effects on local economies – though these relatively small effects may be large in absolute terms and an important addition to the appraised benefits. Any appraisal identifying a transport scheme as having dramatic effects will need special justification.</p>

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<sup>11</sup> If taken from another forecast, is that forecast consistent with TEMPRO? If the forecast employment is altogether higher than TEMPRO, it should be considered as a sensitivity test for WIs purposes and a 'central case' compatible with TEMPRO forecast employment (at some level) should be used.

Topic	Issues	References/notes
WIs analysis issues	To what extent are the benefits/disbenefits the result of the present spatial patterns of productivity? Consider this especially for the move to more/less productive jobs WI	Where benefits stem from the fact that present productivity levels are higher in one area than another, some comment should be added on whether these differentials can be expected to persist. If the area with lower productivity is the subject of interventions to increase its productivity, it may not be reasonable to assume that the differential is fixed.
	Sensitivity tests - what has been done and what does it indicate	See TAG Unit 3.5.14 section 7
	Factoring impacts over the appraisal period and discounting over time	What time profiles and assumptions have been used to extrapolate from modelled years across the appraisal period? Are discount and profile rates consistent with WebTAG?

## 4 Regeneration

### 4.1 The Need for a Regeneration Appraisal – The Regeneration Report

- 4.1.1 The assessment of the regeneration impact of a scheme forms a Regeneration Report (RR)<sup>12</sup>. This should be prepared by the promoters of a transport scheme seeking funding from the Department for Transport (DfT) in all cases where the proposal may impact on the economic activity of a regeneration area.
- 4.1.2 The RR has been designed so as to be consistent with the EGRUP (Evaluation Group on Regional and Urban Programmes) Review guidance on regeneration assessment, now referred to as 'The 3Rs Guidance': **“Assessing the Impacts of Spatial Interventions: Regeneration, Renewal and Regional Development”** (2004). It provides guidance on how to measure the economic impact, in the form of employment effects, of transport schemes on regeneration areas.
- 4.1.3 The Government attaches considerable importance to regional economic development. A transport scheme can support the aims of the Government's Public Service Agreement, namely to make sustainable improvements in the economic performance of all the English regions and, over the longer term, reduce the persistent gap in growth rates between regions. The regeneration of under-performing areas is potentially important to promoting regional economic growth because measures which improve the performance of such areas might encourage development at the regional level. Areas which are identified as regeneration areas are characterised by their failure to function as well as other areas. They are likely to be more prevalent in under-performing regions which often exhibit many different sub-regional problems which add up to a below average performance.
- 4.1.4 While the Guidance on the Preparation of a Regeneration Report (RR) introduced in this TAG Unit is mostly concerned with appraising defined schemes, in practice it is often necessary to begin by identifying potential schemes to solve problems in a particular location. It is intended that the Guidance can also be used to guide the design of potential schemes, by describing the ways in which transport schemes may be able to help stimulate economic activity.
- 4.1.5 SACTRA recommended that a Regeneration Report should be prepared by the promoter of all schemes. This recommendation has been accepted by DfT but only for schemes which may impact on regeneration areas. The main intention of preparing a RR, therefore, is to investigate the distribution of the impacts captured by the transport economic efficiency appraisal and the potential manifestation of those impacts in terms of changes in employment levels.

### 4.2 Guidance on Preparing a Regeneration Report

- 4.2.1 This TAG Unit introduces guidance which provides practical advice on the preparation of Regeneration Reports. It is a restricted version of the Guidance envisaged by SACTRA, in the following respects.
- It applies only to identifiable Regeneration Areas (RAs). This restriction has been made on the grounds that RAs are, by definition, places where reductions in unemployment would be given priority by policy makers. However, it also permits some methodological simplifications, as in the following point.
  - The Department's chosen measure of contribution to regeneration objectives is the change in the number of RA residents in employment. An additional measure which may also be useful is the change in the number of jobs in the RA.

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<sup>12</sup> The Regeneration Report was previously known as the Economic Impact Report or EIR.

- It is not concerned with the economic impact at a national level, but only within the RA and the surrounding region. In particular, it is not necessary to demonstrate whether any new jobs generated by a transport scheme would otherwise have gone somewhere else in the country.
  - It provides an indirect measure of regional impacts by focusing on under-performing areas that are themselves more likely to be part of under-performing regions.
- 4.2.2 This focus on economic activity (as measured through employment levels) is deliberate: the guidance is concerned with the economic impact of transport. There are other dimensions under which regeneration objectives might be set, such as quality of the built environment, but they are covered under other NATA headings informed, as necessary, by the 3Rs Guidance.
- 4.2.3 SACTRA recognised the difficulty of attempting to quantify, with confidence, the number of jobs that a proposed transport scheme will generate. However, analysis of the scale of the transport impacts, particularly patterns of accessibility, can be used to indicate feasible ranges for any associated increases in employment. The RR achieves this through analysis of how a RA's economy operates, why it is stagnant or in decline, and how the proposed transport improvements may contribute to reversing the decline, such as by improving access to existing employment opportunities, or reduced transport costs for businesses that allow them to expand their activities.
- 4.2.4 It should be noted that a RR need not always be prepared: **The Wider Economic Impacts Sub-Objective** (TAG Unit 3.5.8) discusses how to decide if a RR is necessary<sup>13</sup>. Furthermore, the impacts may not always be positive, and the RR will have to consider whether, by exposing an RA to increased competition, the scheme might lead to a reduction in employment. **The Wider Economic Impacts Sub-Objective** (TAG Unit 3.5.8) discusses this further.

### 4.3 Regeneration Areas

- 4.3.1 There is no national designation of regeneration areas. However, in the majority of cases the notion of an identifiable RA can be equated with the designation as an area with a specific regeneration priority in achieving the objectives of the relevant Regional Economic Strategy. This is what is primarily meant in the rest of the guidance by the term "Regeneration Area". Other possible definitions (e.g. "Assisted Areas") are much cruder and should not form the definition of a regeneration area.
- 4.3.2 Spatial priorities in terms of regeneration and economic development take a number of forms including:
- Regeneration Zones, where the aim is to reduce deprivation by 10% in those wards in the region that are currently in the bottom 20% of the Indices of Multiple Deprivation;
  - Urban Priority Areas, where the aim is to contribute to the renaissance of towns and cities; and
  - Rural Priority Areas, market towns and their hinterlands, where the aim is to improve productivity and accessibility to services.
- 4.3.3 These areas are defined in the relevant Regional Development Agency (RDA) Corporate Plan.

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<sup>13</sup> Do not confuse the 'The Wider Economic Impacts Sub-Objective', TAG Unit 3.5.8, (with information on economic impact report and regeneration) with 'The Wider Impacts Sub-Objective', TAG Unit 3.5.14 (with information for the expert on Wider Impacts).

- 4.3.4 Where regeneration benefits are considered to accrue to areas not designated in this way, it will be necessary to examine a full range of indicators and build a case for the area to be regarded as an identified RA. Areas which do not currently conform to an identified RA but are felt to be in need of assistance in order to improve their economic position should not be considered in the RR.

#### **4.4 Regional Development and Regeneration**

- 4.4.1 As noted earlier, the regeneration of under-performing areas can assist in the promotion of regional economic growth. However, there are limits on the extent to which the RR can assist in identifying schemes which promote regional development. Regeneration areas and under-performing regions are subject to all types of market failures and not all of these will be addressed by transport measures. Transport investment needs to be complemented by other measures if they are to succeed in contributing to regional growth targets. In addition, regeneration is not the only objective of transport investment. The assessment of transport schemes within NATA is based on several criteria as well as regeneration. While meeting such criteria as the various environmental or road safety objectives can help to contribute to regeneration and hence regional growth targets, the RR focuses on the employment effects of transport schemes.

#### **4.5 Models and Methodology for Regeneration Appraisal**

- 4.5.1 SACTRA took the view that, for individual schemes whose impacts are likely to be limited, land-use/transport interaction models might not be the best tools for estimating new jobs and/or reduced unemployment. **The Wider Economic Impacts Sub-Objective** (TAG Unit 3.5.8) does not require such models.
- 4.5.2 However, for very large schemes with an area-wide impact, SACTRA considered that such models might be able to help. Use of these models should not replace the analysis set out in **The Wider Economic Impacts Sub-Objective** (TAG Unit 3.5.8), but supplement and support it. The underlying rationale for change should still be explained as described here. Information about commercially available land-use models is provided in **Land-Use/Transport Interaction Models** (TAG Unit 3.1.3).

#### **4.6 Structure of a Regeneration Report**

- 4.6.1 Much of **The Wider Economic Impacts Sub-Objective** (TAG Unit 3.5.8) is concerned with the question of how transport interacts with the RA's economy, and the questions that should be asked when preparing a RR. However, the overall structure of the RR is also set out in TAG Unit 3.5.8, and a worksheet that can be used to summarise the key steps and conclusions is given in **Worksheet for the Appraisal of Wider Economic Impacts** (TAG Unit 3.5.10).

## 5 Further Information

5.1.1 The following documents provide further background on the New Approach to Appraisal, NATA.

<b>For information on:</b>	<b>See:</b>	<b>TAG Unit number:</b>
The Appraisal Process	<b>Introduction to Transport Analysis</b>	TAG Unit 1.1
	<b>The Overall Approach: The Steps in the Process</b>	TAG Unit 2.1
	<b>The Appraisal Process</b>	TAG Unit 2.5
	<b>Appraisal</b>	TAG Unit 3.2
The Appraisal Summary Table	<b>Appraisal Summary Table</b>	TAG Unit 2.7.2
Transport Modelling	<b>Introduction to Modelling</b>	TAG Unit 3.1.1
	<b>Transport Models</b>	TAG Unit 3.1.2
	<b>Variable Demand Modelling</b>	Heading: 3.10
	<b>Specification, Development and Use of Models for Major Public Transport Schemes</b>	Heading: 3.11
Land-Use Models	<b>Land-Use / Transport Interaction Models</b>	TAG Unit 3.1.3
Economic Impact Report on Regeneration	<b>The Wider Economic Impacts Sub-Objective</b>	TAG Unit 3.5.8
	<b>Worksheet for the Appraisal of Wider Economic Impacts</b>	TAG Unit 3.5.10
Wider Impacts (for the expert)	<b>The Wider Impacts Sub-Objective</b>	TAG Unit 3.5.14

## 6 References

DETR (1999) **“Transport and the Economy”** SACTRA (Standing Advisory Committee on Trunk Road Assessment).

Department for Transport (2003) **“Guidance on Preparing an Economic Impact Report”**.

Department for Transport (2005) **“Transport, Wider Economic Benefits and Impacts on GDP”**.

Department for Transport (2006) **“The Eddington Transport Study – Main report: Transport’s role in sustaining the UK’s productivity and competitiveness, Sir Rod Eddington”**, December, The Stationary Office.

Feldman O., Nicol J., Simmonds D., Sinclair C., and Skinner A. (2008) **“Use of integrated transport land use models in the wider economic benefits calculations of transport schemes”**. Paper presented at 87th Transportation Research Board Annual Meeting, January 13-17, 2008, Washington, D.C., USA. Forthcoming in Transportation Research Record: Journal of the Transportation Research Board.

Interdepartmental Group on the EGRUP Review (2004) **“Assessing the Impacts of Spatial Interventions: Regeneration, Renewal and Regional Development: The ‘3Rs’ Guidance”**, Office of the Deputy Prime Minister, May, London,  
<http://www.communities.gov.uk/publications/corporate/assessingimpacts>

## 7 Document Provenance

7.1.1 The section of this Transport Analysis Guidance (TAG) Unit focussed on regeneration is partly based on Guidance on Preparing an Economic Impact Report prepared for the Department for Transport in July 2003. The section of this guidance focussed on Wider Impacts has been build up from the Department for Transport 2005 discussion paper with new guidance developed as well for the topic. This revised TAG Unit was released in 'for consultation' form in April 2009.

7.1.2 Technical queries and comments on this TAG Unit should be referred to:

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## 8 Annex A

### 8.1 Defining Functional Urban Regions (FURs)

- 8.1.1 Each FUR is constructed by firstly defining a core and then identifying a corresponding commuting field (or hinterland) for that core. Census Area Statistics or CAS<sup>14</sup> wards are used as building blocks for both the core and commuting field.
- 8.1.2 The core is defined by a minimum working population (of 60,000) together with a minimum job density (of 7 jobs per hectare) for a ward. This is to reflect the fact that agglomeration impacts are most significant for transport schemes located within, or near, large *and* dense employment centres. A core can be made up of one or more wards. The methodology largely follows that of the Group for European Metropolitan Areas Comparative Analysis also known as GEMACA approach.
- 8.1.3 For the commuting field, the wards surrounding a core are examined. If more workers in the ward commute to that core than to any other core *and* a minimum 10% of the working population commutes to that core, then the ward is added to that core's commuting field. The use of a commuting field reflects the fact that agglomeration is influenced by the level of economic interaction between different areas, with stronger interaction delivering greater potential for agglomeration impacts. Wards are examined in a contiguous fashion building outwards from each core, with wards being added to a core's commuting field until a ward does not meet the two commuting thresholds set. Again, the methodology largely follows that of the GEMACA approach.
- 8.1.4 The core plus its commuting field then constitutes a FUR<sup>15</sup>. All cores across England are identified and commuting fields then constructed around these cores. The FURs map in section 9, Annex B below shows the resulting FURs for England. The map is accompanied by a worksheet ("Functional Urban Regions in England.xls") which the scheme appraiser can use to check whether the CAS ward(s) and/or local authority (authorities) in which their scheme is located lie within a FUR or FURs. This can be done by using the look-up worksheet to find the relevant LAs/CAS wards in columns A and C, and then reading across to column E to see whether the LAs/CAS wards lie within a FUR(s) ('yes' in column E) or do not lie within a FUR(s) ('no' in column E). If a LA or CAS ward does lie within a FUR, column F provides additional information on whether the LA/CAS ward is part of a FUR's core or part of a FUR's commuting field. Finally, column G indicates whether LAs/CAS wards lie within the same FUR (same FUR number in column G) or within different FURs (different FUR numbers in column G).

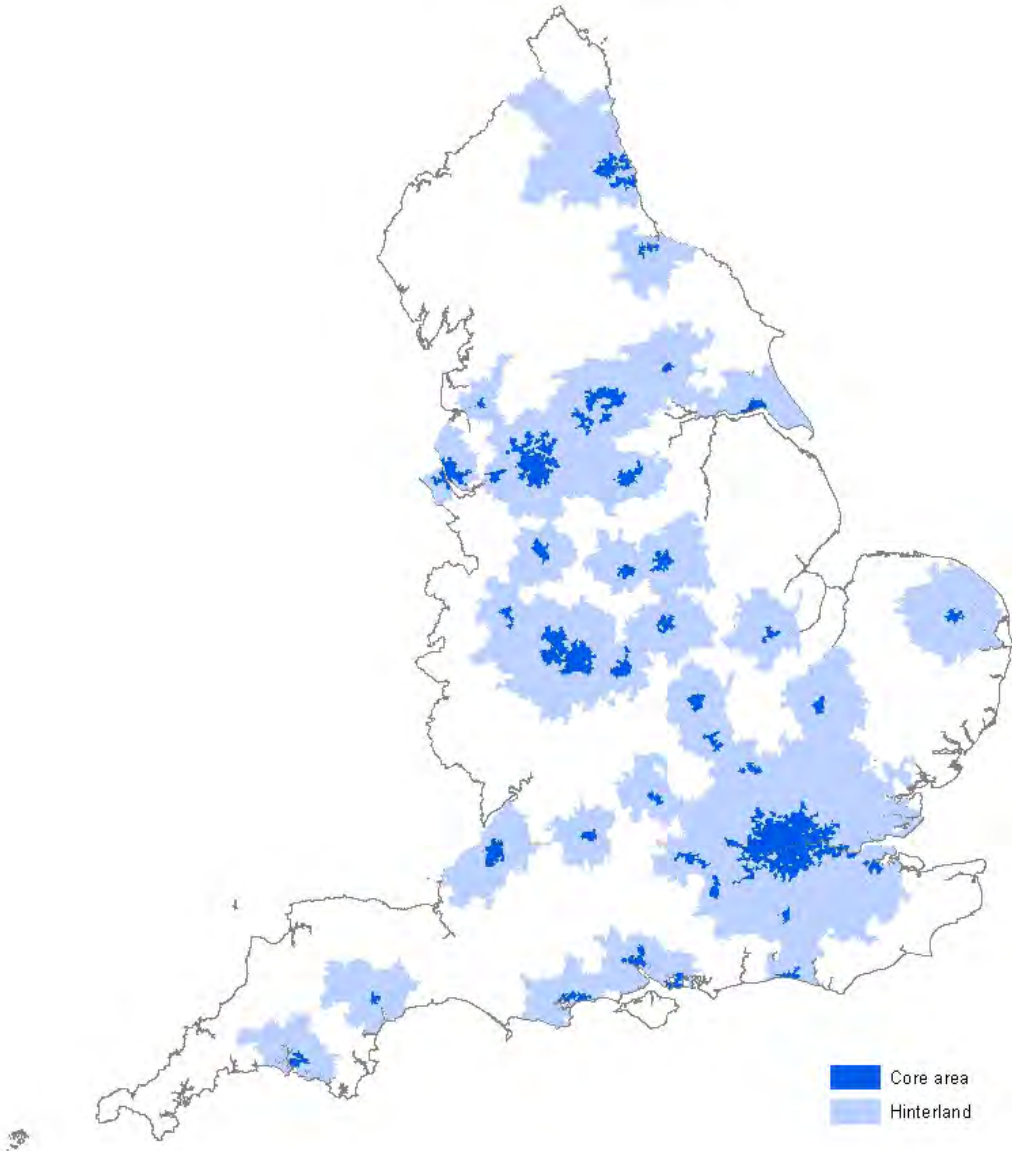
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<sup>14</sup> [http://www.statistics.gov.uk/geography/statistical\\_cas\\_st\\_wards.asp#2](http://www.statistics.gov.uk/geography/statistical_cas_st_wards.asp#2)

<sup>15</sup> Measures of commuting and workplace population at CAS ward level are ONS figures from the 2001 census.

**9 Annex B**  
**9.1 FURs Map for England**

Functional Urban Regions



Source: Office for National Statistics, Super Output Area Boundaries

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