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Methodology Annex:

The development of a mixed methods approach for the social assessment of transport projects

Section 3 of the A465 Heads of the Valleys Road: Brynmawr to Tredegar

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1 Introduction

1.1 Aims

The aim of this report is to present a new mixed methods approach for the assessment of social and distributional impacts. It builds on and adapts the current UK WebTAG appraisal guidance units 4.1 and 4.2 https://www.gov.uk/guidance/transport-analysis-guidance-webtag. This new methodology makes social assessment more applicable and accessible for local transport authorities in Wales. This could be adopted as a central part of the WelTAG. WelTAG is guidance provided by the Welsh Government on the appraisal of transport schemes in Wales. The methodology presented here aims to demonstrate how ***social assessment*** can be more fully integrated into decision making processes to support the development of new transport initiatives.

The recommended approach in this document is applicable to both appraisal and evaluation and is compatible with the WelTAG process of transport appraisal, evaluation and learning. It has been developed through application to a *social assessment* of the social and distributional impacts of Section 3 of the A465 Heads of the Valleys Road: Brynmawr to Tredegar, in South Wales. A separate report documents the findings of the case study. It is hoped that this will lead to a better understanding of the wider social effects of transport projects and inform future assessments of how wellbeing is affected by transport schemes.

1.2 The purpose of social assessment

Social assessment is far less developed than the economic and environmental appraisal and evaluation of transport schemes (Lucas, 2012). Social impacts may be defined as: *"changes in transport sources that (might) positively or negatively influence the preferences, wellbeing, behaviour or perception of individuals, groups, social categories and society in general (in the future)*" (Geurs et al., 2009 p71).

However, there is widespread academic criticism of how social assessment is currently incorporated into the policy decision process within the transport sector [ibid]. The development of the methodology and consideration of how it may fit into a

guidance framework such as WelTAG represents a significant opportunity to improve the practice of social and distributional impact appraisal.

1.3 Accompanying documents

This report has the following accompanying sister documents

- Social Assessment report – The main findings of the social impacts of Section 3 of the A465 corridor. This formed the case study used during the development of the methodology.
- Summary – a short overview of the A465 Social Assessment case study report focusing on its main findings.
- Technical Annex – further technical data, maps and detailed assessment tables relating to the quantitative analyses which inform this assessment report.
- Focus Group Report – detailed narrative commentary of the qualitative data gathered in this study.

2 Rationale for a mixed methods approach

For the current study a mixed methods approach has been adopted, involving both desk-based quantitative analysis and qualitative methodologies.

2.1 Existing appraisal methods

During the WelTAG appraisal of a proposed transport intervention, the anticipated impacts are considered under three headings: economic, environmental and social. These are currently (2015) evaluated using the methodologies set out in the UK Department for Transport's WebTAG guidance.

Table 1 shows how the impacts of a scheme are categorised in WelTAG/ WebTAG under these three headings. The impacts are considered and presented under these headings in the appraisal process in order to avoid any double counting. There is however a natural overlap between these categories and for the evaluation of the social impacts of a transport scheme it is necessary to consider the whole range of social impacts regardless of the category to which they are assigned in the appraisal documents.

The impacts that are relevant to the appraisal and evaluation of the social impacts of a specific scheme will vary from case to case. An upfront scoping process is, thus, recommended to identify the impacts that will be of most significance, both beneficial and adverse. It is also advisable to scope the likely *catchment areas* for each of the relevant impacts at this scoping stage, as well as to identify the population profile of these areas. This is in order to identify exactly which groups of people are most likely to experience these identified impacts within the study catchment areas, i.e. the distribution of these impacts. It is frequently the case in transport schemes that the impacts vary across different groups of people and different areas.

Table 1 Classification of impacts considered during a WelTAG appraisal

Economic impacts
Journey time changes
Journey time reliability changes
Transport costs
Productivity (availability of labour, agglomeration, imperfect competition)
Local economy (regeneration / deprived area)
Land (agricultural)
Capital and revenue scheme costs
Environmental impacts
Noise
Air quality
Greenhouse gases
Landscape
Townscape
Historic environment
Biodiversity
Water environment
Social impacts
Physical activity
Journey quality
Accidents
Security
Access to employment
Access to services
Affordability
Severance
Option and non-use values

The key aim is to allow politicians and other decision makers to fully assess and compare the different impacts of various projects, in order to decide whether to recommend that a particular transport scheme should be implemented or not.

Our recommendation is that social considerations should be given equal weight in the decision making process as is given to economic and environmental considerations. Ultimately, it may be that the social benefits or costs of a project outweigh its economic or environmental costs or benefits and this may be used as the justification for taking it forward or abandoning it.

During the appraisal process monetary valuations can sometimes be given to some social impacts, and in this way they can be included as part of a separate value for money assessment of the scheme. However, many social impacts cannot be accorded a monetary value, nevertheless a better understanding of the social contribution of the scheme can inform its design. It can also help to identify ways in which the beneficial social impacts can be maximised and any adverse impacts mitigated or minimised.

The appraisal of the social impacts should consider all those impacts that affect the *well-being of the local population*; both users and non-users of the proposed intervention. This includes whether the scheme improves local access to employment and other key activities, as this will directly affect people's well-being.

Noise and air-quality are considered during the environmental appraisal of a scheme but they should also be considered in a social impacts appraisal for their health impacts on the local population. Other environmental impacts may also be relevant given the nature and location of the proposed scheme, such as landscaping and biodiversity.

The value of accidents are included in the economic appraisal of a scheme but given the impacts of accidents on a person's well-being they should also be considered in a social appraisal. It is particularly important to consider not only road traffic accidents but also the issue of pedestrian safety, particularly for vulnerable groups like older, disabled and younger people and for non-car owning households.

The evaluation of the social impacts is of particular relevance when considering the impact of a transport scheme on the EU's cross cutting themes:

- **Equal opportunities and gender mainstreaming** – reducing injustice and promoting social cohesion, while providing opportunities to increase prosperity and address imbalances in earnings in Wales.
- **Sustainable development** – ensuring projects meet social, economic and environmental objectives simultaneously. Preserving, protecting and improving the environment, providing a high quality, attractive place for people to live and work in Wales.
- **Tackling poverty and social exclusion** – helping those most in need and preventing future generations from experiencing poverty. The commitments focus on actions to create sustainable employment and progression opportunities and will help people to access those opportunities.

2.2 Problems with the current methodology

The rationale for developing this new approach to the social assessment of transport projects and programmes is to bring the wider social benefits and the social equity implications of transport projects to the fore. This is currently insufficiently considered within the available appraisal methodologies.

Current social and distributional appraisal methods in the UK (as contained in WebTAG A4.1 and A4.2) are based on desk-based quantitative analysis of publicly available datasets. These have the capacity to record large-scale impacts through to Census LSOA[1] – level resolution impacts. This can lead to over emphasis on 'Strategic' benefits to the detriment of local considerations.

Analysis of this data is insufficiently fine-grained to identify more micro-scale (individual and community scale) impacts, as well as people's perceptions of risk/safety or their personal circumstances and/or attitudes towards the scheme. Moreover, desk-based analysis is unable to precisely indicate exactly who will be affected by the project, or by how much or where or when. It will also not identify the amplified and cumulative negative impacts of a project on the already most vulnerable and at risk groups. These groups are indeed often under-represented in

[1] LSOA – Lower Super Output Area. A Census dissemination zone for UK census data, with a population between 1000 and 3000. http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/census/super-output-areas--soas-/index.html

the quantitative data and can also be overlooked by the standard consultation processes.

A further important caveat regarding the use of data mapped by administrative zone is that these zones are arbitrarily allocated. The size and shape of administrative zones can be modified and this can affect the results of zone based analyses. This problem is called the Modifiable Unit Areal Problem (see for example Miller et al., 2013; Openshaw, 1984).

2.3 Mixed methods approach to address problems

To address many of these concerns, researchers at the Institute of Transport Studies at Leeds University have developed a new mixed methods approach to social assessment, which involves both desk-based quantitative analysis and qualitative methodologies to engage with local communities. This approach addresses the problems identified above as follows:

- Different quantitative and qualitative methods are better suited to identifying, measuring and understanding social and distributional impacts. A toolbox of methods allows a more comprehensive assessment.
- Employing a toolbox of techniques also allows triangulation – comparison of data on the same issue from multiple sources, which allows more thorough analysis. This makes progress towards accounting for the social equity implications of transport projects, currently not grasped by available appraisal methodologies.
- The different methods also work at different spatial resolutions. This means that this approach is better able to explain where impacts occur. The qualitative data in conjunction with fine resolution GIS analysis is more effective at identifying micro-scale impacts, which would have been missed by traditional more spatially aggregate measures.
- This approach is more effective at engaging hard to reach groups particularly through qualitative data collection and fieldwork. This is particularly valuable in social assessment because hard to reach groups are often the most deprived and vulnerable groups who are most likely to suffer negative impacts.
- A mixed methods approach makes progress towards separating out the strategic benefits of projects from the micro-scale impacts they have on local

communities. Mixed methods also move beyond the **solely** qualitative studies of micro-scale impacts such as Equality Impact Assessments (see for example Walker, 2010, Equality and Human Rights Commission, 2010) which are prevalent in the UK at present.

2.3.1 The counterfactual approach

In transport appraisal and evaluation it is common to compare the impacts of a scheme to the estimated impacts had the scheme not taken place (often referred to as the "do-something" and "do minimum" case). The A465 case study presented in this work is a cross sectional study as specified in the brief. In terms of the Scientific Maryland Scale (http://www.whatworksgrowth.org/resources/the-scientific-maryland-scale/) this study would operate at level 1: as comparison is being made before and after the scheme opens. There is no untreated comparison group. However it is worth pointing out that the post-opening part of the assessment is occurring immediately after the intervention and effectively, for the focus groups, the respondents have a counterfactual in their heads. For the statistical data there are minimal background changes going on between the two scenarios being compared (as there is very little elapsed time).

2.4 Overview of methods

Stage 1 involves an initial scoping stage to briefly consider what the potential impacts of a project might be and to identify exactly who and where might be most affected locally. The table in WebTAG A4.2 (https://www.gov.uk/government/publications/webtag-tag-unit-a4-2-distributional-impact-appraisal-december-2015) has been adapted for this purpose. The table used in this approach (shown in Table 2) is an iterative table so that emerging issues can be taken on board, rather than the static elimination based system that is inferred in WebTAG.

Stage 2 begins by defining the scope in terms of geographical extent and the particular population groups and issues where social and distributional impacts are likely to occur. Note that Table 2 lists the proportion of the case study population in each population group and the initial colour coding of expected areas of impact for illustration.

Stage 3 is the detailed assessment of each issue of interest (called domains e.g. accessibility, accidents, air quality shown as the column headings in Table 2). This involves desk-based GIS quantitative analysis of publicly available datasets to provide background information on the specific demographic, economic, social and geographic characteristics of the area. This analysis can also be used to identify large-scale economic and environmental impacts of the scheme in order to validate the subjective observations of local people.

Stage 4 uses community level qualitative fieldwork exercises, specifically targeting at risk groups and hard to reach individuals to complement the desk-based quantitative analysis. The qualitative evidence adds nuances to the desk-based study and also helps to validate the quantitative analysis. The fieldwork with local communities also offers opportunities for critical analysis, challenging the assumptions of transport professionals and offering more 'evidence-based and local perspectives'.

An overview of the work plan is shown in Figure 1.

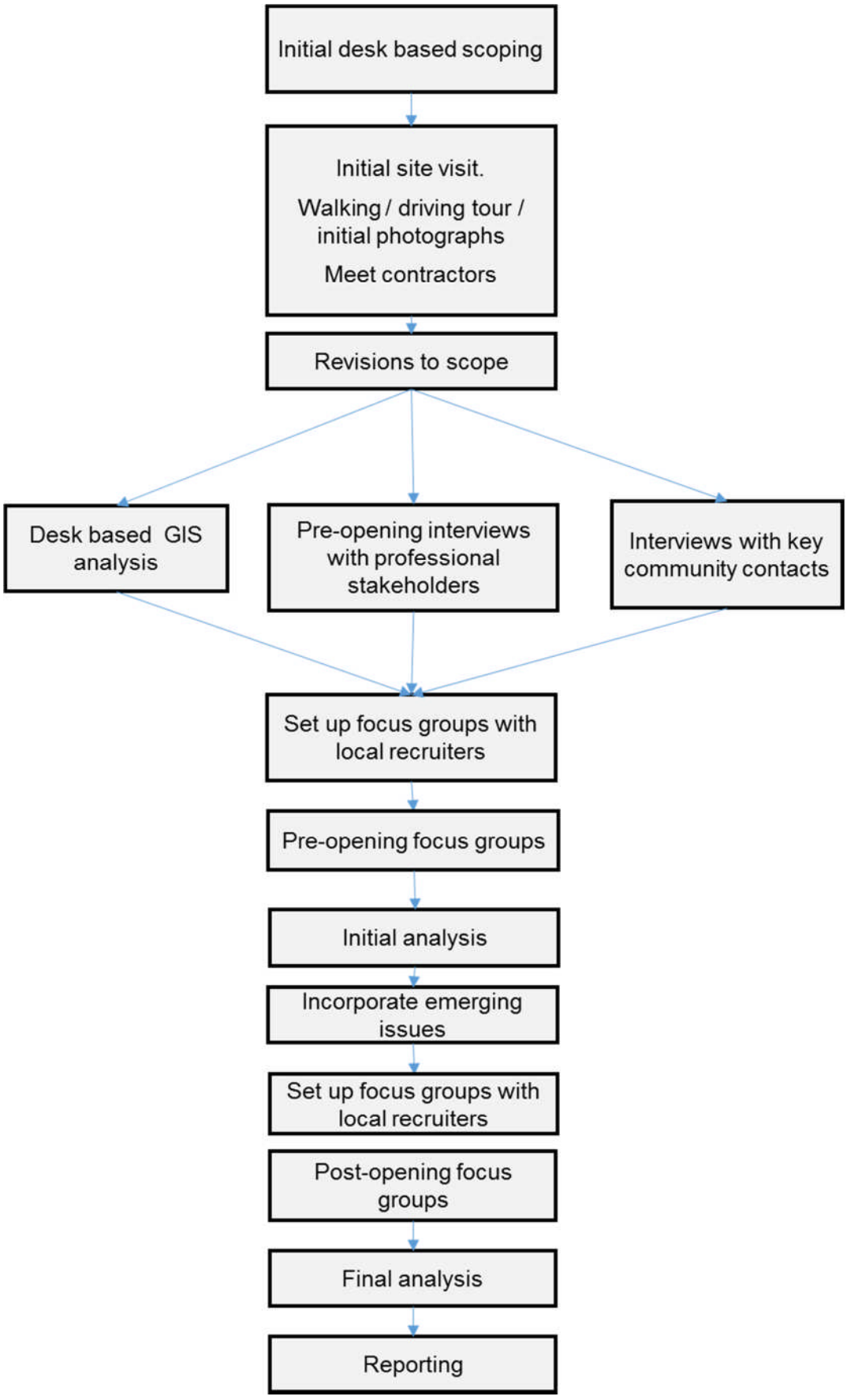

Figure 1 Key stages of the social assessment approach

Table 2 Scoping the impacts on resident population groups in the A465 case study.

Special interest person groups vs impact domains			% of Population	Local user Benefits	Noise	Air quality	Accidents and Security	Severance	Accessibility	Affordability
Resident population in the impact area	WIMD quintiles	1	45%							
		2	20%							
		3	21%							
		4	13%							
		5	0							
	Children (<16)		18%							
	Young people (16-24)		12%							
	Older people (>65)		19%							
	People with a disability		16%							
	Black Minority Ethnic		0%							
	No car households		28%							
	Households with dependent children		29%							

Colour Key: Grey; not applicable, red expected disbenefit, green expected benefits, amber benefits unclear. Note that impacts are not eliminated at this stage, emerging issues can be included if evidence of local impacts are observed during fieldwork and further analysis. N.B. Children are those under 16.

2.5 Embedding the approach in WelTAG

Some of the data collected for environmental and economic appraisal documents is also relevant for assessing the distribution of these impacts on users and non-users of the scheme and the local community. The analysis of the environmental and economic appraisal documents, along with the additional analysis carried out in the social assessment, should be fully developed by the Full Business Case in WelTAG Stage Three. The stage 1 scoping of the social impacts should be part of the Strategic Outline Business Case, WelTAG Stage One.

The data gathering and analysis techniques used in this mixed methods approach are also relevant to the ex post evaluation of WelTAG projects. This can take place at several points in time after the project completion, e.g. immediately after implementation, one year post opening and five years post opening.

3 Applying the methodology – A465 pilot case study

This chapter describes the application of this new approach to social assessment in the case of Section 3 of the A465 study.

3.1 Case study context

It needs to be clear from the outset of this social assessment that the A465 (commonly known as the Heads of the Valleys road), is a European *strategic transport corridor* and an international gateway for the South Wales economy. As such, any local social benefits or dis-benefits of the scheme may be said to be a secondary consideration compared to this strategic function.

The A465 connects the M4 at Neath to Abergavenny and Hereford. It provides links between West Wales and the Midlands. It also links up the northern heads of the South Wales Valleys with the intention to support regeneration in the communities it serves. The Welsh Government construction Section 3 of the A465 is part of the on-going work to widen the entire road to dual carriageway standard.

Figure 2 shows the route of the A465 across South Wales. Section 3 is 7.8km in length and lies in the northern part of Blaenau Gwent district, north of Ebbw Vale between Brynmawr and Tredegar.

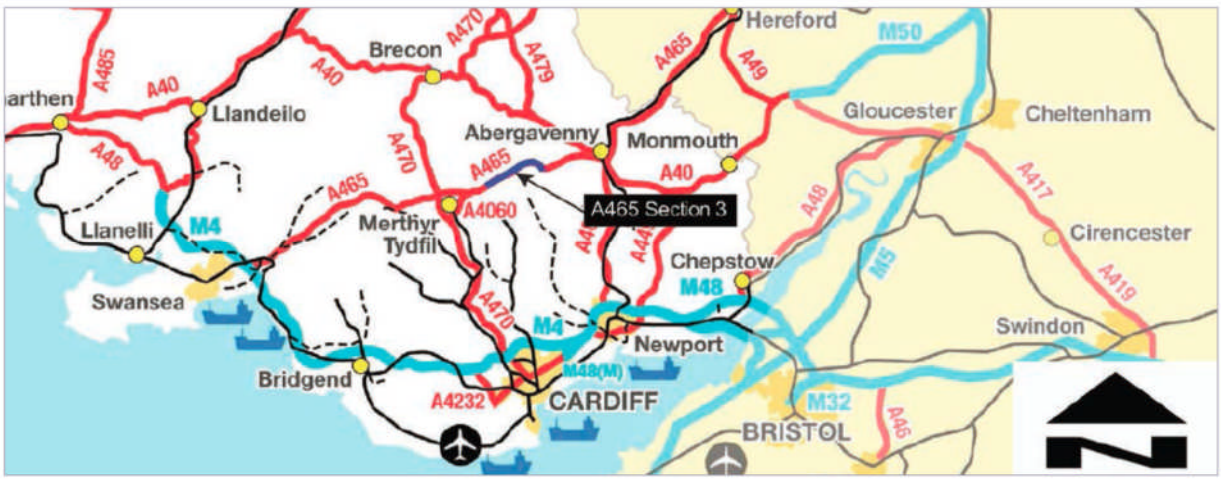

Figure 2 South Wales showing the A465 and other major routes.

Source: http://gov.wales/docs/det/report/150825-a465-s3-stage3-sar.pdf

The Section 3 scheme runs through an open upland landscape and includes the highest point of the A465 corridor (1350 feet). It covers 7.8km from Brynmawr to Tredegar, of which nearly 5km is a new road from the north of Brynmawr to Dukestown Cemetery at Tredegar. The new route goes through the Rassau Industrial Estate, and to the north of residential areas of Rassau and Garnlydan.

Work started on site in January 2013 and was completed in 2015. The Scheme was officially opened in September 2015. There were however some continuing road works and lane closures along parts of Section 3, as well as those associated with the detrunking works on parts of the old A465, when the post-opening field work was undertaken between 19th – 23rd October. There were also road works on the adjacent Section 2 as work had started on upgrading this section of the A465.

The aim of this case study was to provide a social assessment of Section 3 of the A465 Heads of the Valleys Road: Brynmawr to Tredegar, using a mixed methods approach which adapts and builds on the UK WebTAG appraisal guidance units A4.1 and A4.2. The results of this assessment are presented in the Social Assessment report.

3.2 Determining the geographic scope of the case study

The key question for determining the geographical scope of this study is:

Do strategic road improvements (which have been justified on ex ante models of user benefits e.g. travel time savings) have local social benefits?

It is understood that the social impacts in any one locality may be small in terms of overall project size but large for the individuals who are affected.

This means we have to carefully define the geographical scales of analysis.

Table 3 summarises the different scales of analysis one may consider in a social assessment.

Table 3 Setting the scales of analysis for social assessment. Example using the A465 Section 3 study

Large scale Journeys longer than average everyday commute trips.	**Medium scale:** Everything in between the large and local scale	**Local scale:** Communities within 2km of Section 3 or the Old A465. We use the UK Census LSOA[2] to represent communities.
Spatial extent		
Wales	A polygon bounded by Cardiff city centre, Port Talbot steel works, Swansea, Abergavenny	All LSOAs intersecting a polygon bounded by 2km North of the A465 along the length of the Scheme, and 2km south of the centres of Tredegar, Ebbw Vale and Brynmawr
Examples of impacts which may be assessed at each scale		
User benefits calculated in the ex-ante appraisal include travel time and cost savings to all traffic using the whole length of the A465. This includes benefits to business and industry (including freight transport) as well as passenger travel. The spatial granularity of the benefits depends on the coarseness of zoning in the forecasting model. It is usually not possible to disaggregate all of these benefits to a spatially fine resolution – street-by-street (OA[2]), or neighbourhood-by-neighbourhood (LSOA) in the areas close to the improved road, for example.	**User benefits** are also usually calculated at the medium scale as defined above, between zones in the transport model.	It is unlikely that meaningful **user benefit** results will be available from the ex-ante appraisal at this scale. Trips will be aggregated into 'intrazonal' trips within a wider model zone; there is usually little work done to measure the changes here to walking and cycling trips; and the results will contribute little to a clear assessment of user benefits at this scale. In the case of the A465 Section 3 project, we have identified that no walking or cycling modelling took place focusing on trips at this scale [<2km].
		Noise is assessed primarily at this scale. Standard methods focus on residential noise (i.e. noise experienced at home), although noise levels on street are also relevant to the ambience of the pedestrian environment.
	Regional air quality is based on emissions factors applied to all traffic in the forecasting model. The effects would	**Local air quality** is assessed at this scale. Pollutants are measured up to 200m from the link centre. This should be

[2] Output Areas (OA) are an Office for National Statistics census reporting zone with a mean population of 309 residents. Several Output Areas, nest within a Lower Super Output Area (LSOA) which have populations of 1000 – 3000 and 400-1200 households, A Middle Layer Super Output Area (MSOA) contains several LSOAS and has a population of approximately 5000 - 15000 residents and 2000 to 6000 households http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/index.html

	usually be minimal, however, beyond the medium scale.	done for links experiencing a significant change in traffic as a result of the project.
		Security may be affected if any walking or cycling routes (including access to or from bus stops) are made more or less safe from a personal security perspective, by the project.
		Severance is specifically a local-scale impact.
Accessibility has impact at all spatial scales. At the large spatial scale, the evidence suggests it is mainly longer distance business, delivery and freight traffic that is impacted.	At the medium spatial scale, a large number of commute trips are impacted, as well as various leisure and other non-business purposes. Changes in **accessibility** on this scale would be measured in terms of fuel/fare costs, and fatigue costs (which may have a bearing on accidents). Indicators may include total change in accessibility for MSOA[2] populations, broad level of service for public transport.	At the local scale, there may be **accessibility** impacts on a large number of trips by a wide range of modes. The new road itself provides improved accessibility for residents who will use it by car or bus. The changes in traffic flows and speeds on the local network have further accessibility impacts for a diverse group of users, including pedestrians, cyclists, bus and car users.
	Affordability may be affected for car travel at the medium spatial scale (fuel costs).	**Affordability** may be affected for car travel at the local spatial scale (fuel costs).

In the A465 case study the scales of analysis were determined as follows:

- The first step was to envisage broad spatial scales; large, medium and local by visually inspecting maps, applying basic geographical knowledge of the UK and estimates of travel times using route planning websites. The large scale extends to the whole region / country in which the scheme is constructed and aims to include the vast majority of the trips using the scheme in the Do-Something scenario – including business and freight movements.
- The medium scale was delimited first. The Datashine commute tool was used http://commute.datashine.org.uk/ to determine the boundary between the large and medium scale. This free on-line tool provides a visualisation of commuter flows based on 2011 UK census data

(http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-prospectus/release-plans-for-2011-census-statistics/subsequent-releases-of-specialist-products/flow-data/index.html).

Figure 3 is an example showing car commutes from Brynmawr. Off line flow maps can also be created in GIS by downloading the ONS data.

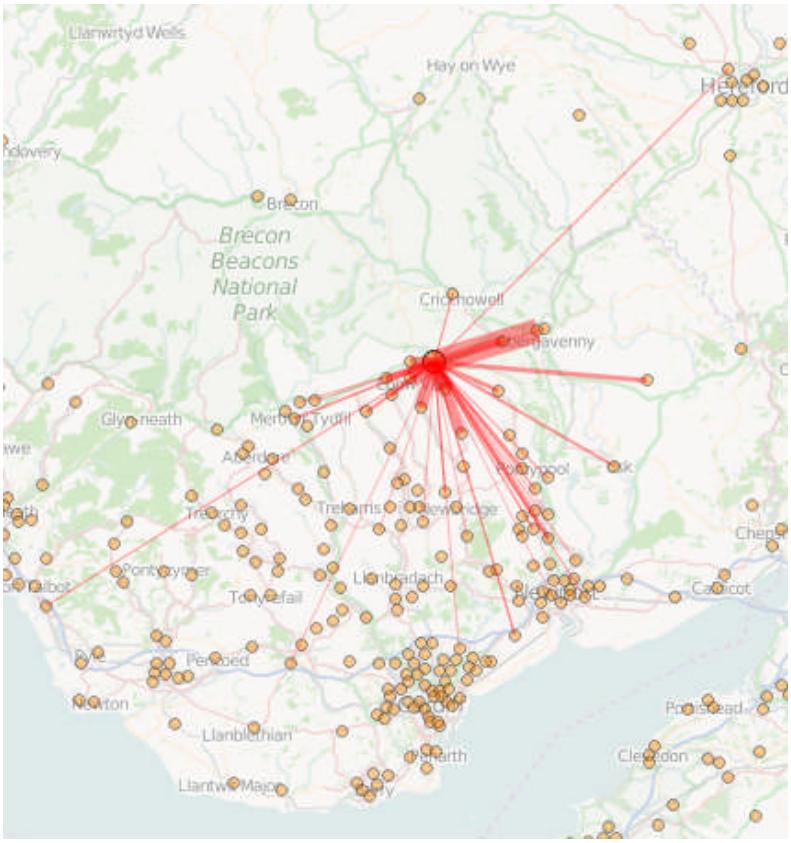

Figure 3 Car commutes from Brynmawr used to define the medium scale (Source http://commute.datashine.org.uk/).

The local scale aims to capture regular local trips. Table 4 below shows the un-weighted mean trip distance of non-work trips taken from the DfT's National Travel Survey data collected in 2009 (DfT National Travel Survey 2010). We used 2009 as it is the appraisal base year and represents a pre-construction level of accessibility. Also at the time of writing the 2015 data were not available.

We suggest a local scale no larger than indicated by these distances but expect most local scale impacts to be found closer to the scheme than this.

Severance is associated with walking and so falls well within the upper bound for local trips. 67% of UK walking trips are under 2 miles (NTS 2010). A local area of 2km would capture walk trips which may directly use the scheme, and trips which may be affected positively or adversely by changes in local accessibility arising out of the scheme, including changes in local traffic levels and speeds.

Environmental impacts; which have knock on social impacts (such as noise and air quality) affect an even smaller scale; typically these impacts are found within 1km of road schemes.

Table 4 mean trip distance. Source (DfT National Travel Survey 2009 https://www.gov.uk/government/collections/national-travel-survey-statistics)

Purpose	**Km**
Education	5.1
Escort education	3.5
Shopping	6.9
Other escort	8.3
Personal business	7.8
Visiting friends at private home	16.3
Visiting friends elsewhere	9.1
Entertainment/public activity	13.4
Sport: participate	9.4
Other including just walk	1.8

Figure 4 helps determine the local scale. Interrogating route planning software such as Google Maps helps us to hypothesise the type of journeys that may constitute shorter local trips. The topographic map shows Ebbw Vale is less than 5km from Brynmawr so we would expect local journeys here. The routing advice however shows that the quickest route (Google Maps directions uses a source of travel time data) is to use the Old A465. This helps us define a local scale, which allows us to show local trips which use the scheme being appraised. This is consistent with other initial indicators of local travel; the mean travel distance for cycle trips and journeys to school also being under 5km in the UK. https://www.gov.uk/government/statistics/national-travel-survey-2014 . In addition local level impacts considered in the environmental assessment such as air quality and noise focussed on the area within 2km of Section 3 and the Old A465.

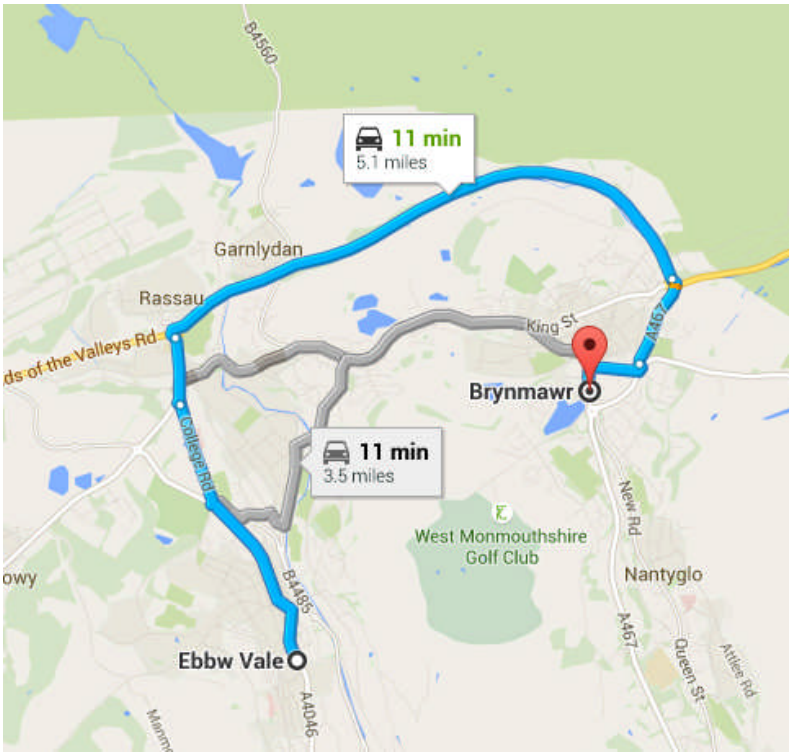

Figure 4 Scanning to determine the local scale, approximated with Google Maps directions. Source: Google Maps accessed May 2015

The resulting local scale of analysis adopted for the A465 study is shown in Figure 5, with the study area shown in orange.

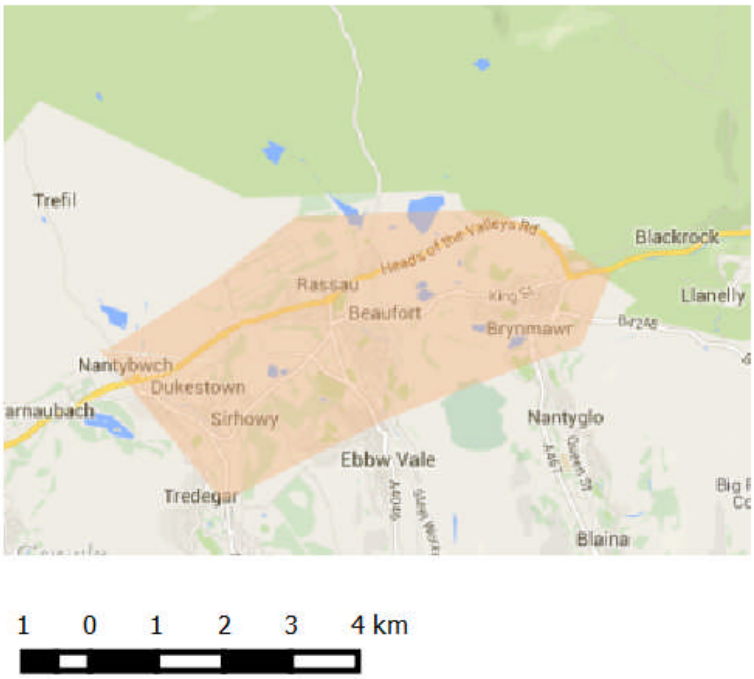

Figure 5 Map showing the maximum extent of the local scale of analysis for the A465 Section 3 study.

3.3 Population profile of the study areas

Having defined the geographical scope of the study area, the population of the study area is disaggregated by social and demographic group. This is shown in Table 5.

Table 5 Population profile of the overall study area

Social groups			% of Population
Resident population in the study area	Welsh Index of Multiple Deprivation (WMID) quintiles	1 (most deprived)	45%
		2	20%
		3	21%
		4	13%
		5 (least deprived)	0
	Children (<16)		18%
	Young people		12%
	Older people		19%
	People with a disability		16%
	Black Minority Ethnic		0%
	No car households		28%
	Households with dependent children		29%

The total population of the study area is 29871 (ONS 2011 census).

3.4 Scoping the impact domains

Our approach to scoping impacts goes beyond the desk based highly aggregate approach used by WebTAG. (https://www.gov.uk/government/publications/webtag-tag-unit-a4-2-distributional-impact-appraisal-december-2015). The WebTAG A4.2 Stage1 guidance, suggests that a remote and brief overview of the area and the scheme should be used to identify the domains where the largest impacts may occur and also as a means of eliminating from the assessment domains which are not immediately associated with large scale impacts (i.e. affecting large numbers of people over a wide area).

One concern with this approach, is that although the aggregate net local impacts of a scheme may not be large, they maybe unevenly distributed across the local population, e.g. the local user benefits may be only realised by higher income car-owning households, and so all the relevant impacts of the project will need to be considered from a distributional perspective at this scoping stage of the social assessment. This is particularly important for road projects in areas of higher deprivation, where car ownership will be particularly low and so there will be a large number of non-users of the scheme who may be adversely affected by negative environmental and social impacts.

For this reason our recommended approach is as follows: *consider the possibility of the full range of potential impacts at the outset.*

Where the scoping suggests a larger impact, then attempt to unpick this issue and understand if there are connections to other impacts which may be 'hidden' by coarse scale aggregate desk based study. The methods for doing this are described below and consist of fine resolution GIS analysis and qualitative fieldwork.

3.5 Determining the disaggregation for distributional analysis

The impact domains we identified in Table 6 were cross tabulated against the population groups in Table 5. The cross tabulation is shown in Table 2Table 2.

The disaggregation shown in the cross tabulation in Table 2 draws on both existing guidance (WelTAG/ WebTAG) and from the growing body of academic studies relating to measurement of the social impacts of road schemes[3] which were also considered by the study team in the development of this methodology.

Table 6 Summary of initial scoping of domains used in the assessment.

Indicator	**Potential impact (yes / no, positive/negative if known)**
Local user benefits	Minor travel time savings for relatively small numbers of users appears likely, but detailed investigation is needed to assess different facets of potential user (dis)benefits and links between the scheme and regeneration
Noise	Yes: positive and negative depending on location
Air quality	Yes: positive and negative depending on location
Safety and personal security	Yes: positive on Section 3 for road users. Pedestrians and cyclists potential for positive impact from cycle infrastructure, possible negative impact at Section 3 and Old A465 crossing points. Possible increase in exposure to accidents for users who use parallel links such as A4047 rather than Section 3. No significant personal security issues seem apparent in the scoping exercise, however there may be issues allied to road safety.
Severance	Changes in junctions, road crossing points and traffic flow have potential for impacts on walkers and cyclists. Whether impacts are positive or negative depends on the location and design solution implemented.

[3] See for example Anciaes et al., 2015; Peden and World Health Organization, 2004; Rajé, 2004; Stoker et al., 2015 and other literature referenced elsewhere in this annex

Accessibility	Increased accessibility for car users. Impact to Public Transport users positive or negative depending upon changes to services, or attractiveness of services relative to car caused by scheme
Affordability	At the scoping stage there may appear to be only minor cost savings to some car-based trips. Local affordability issues may be present but also linked to accessibility or regeneration.

3.6 Approach to assessing each domain in this methodology

Based on a review of the relevant academic literatures, the most negative conditions arise where local communities derive zero benefit from a transport investment (e.g. freeway/motorway or a high speed railway) but suffer the worst and disproportionate negative impacts from increased air pollution (see for example Mitchell and Dorling, 2003), noise and severance effects. This phenomenon is commonly referred to within the transport literature as transport-related environmental (in)justice (Kennedy, 2004).

The South East Wales Transport Plan recognises this and states that it would expect road schemes to have a number of negative social impacts. Since new road infrastructures are by definition located along particular spatial corridors, it is inevitable that some residential areas will be in much closer proximity to them than others. This may have both positive and negative effects in that proximal residents can benefit from the accessibility enhancements of the scheme enabling them to reach more destinations (e.g. potential workplaces) within a given time period.

Conversely, close proximity to a busy road can expose populations to high concentrations of air pollutants and noise, and increase accident risks, particularly for those cycling or on foot – both from traffic on the road itself and on the feeder routes. There may also be severance effects, which can reduce accessibility and spatial opportunities.

However, disbenefits which may lead to transport related social exclusion or have negative impacts on wellbeing, may not be spatially concentrated (Preston and Rajé, 2007). This means that there is a need to investigate not only areas where spatially concentrated effects are expected, but at the micro-scale paying attention to variation within the study area or the small spatial zones within it. Further issues

relating to appraising spatially local effects of schemes are discussed in Van Börjesson, (2015). European variations in approaches to examining social impacts of transport schemes are discussed in Bristow and Nellthorp, (2000).

3.6.1 Local user benefits

Quantitative assessment of the user benefits from the Section 3 strategic road scheme itself are beyond the scope of the assessment carried out in this study, but would ideally be disaggregated to identify who is benefiting and who is not.

User benefits of transport schemes form the main part of the economic appraisal of transport schemes. WebTAG recommends use of the Transport User Benefits Appraisal (TUBA) tool to estimate the user benefits, but these were only available for this analysis for the aggregate population: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/492792/tuba-general-guidance-and-advice.pdf

There are also wider local economic benefits that should form a part of the social assessment such as 'economic and regeneration impacts', which also fall outside of the scope of quantitative analysis. This is because even at the fine scale, some of the benefits such as changes in employment and investment cannot be assessed quantitatively in this assessment. (This may be possible as part of an ex-post evaluation process in the years following the opening of Section 3).

In these cases, a qualitative assessment of who might benefit from these impacts at the local level can be very useful. Additionally, we assess some of the contributing factors of economic and regeneration benefits within other domains (accessibility, accidents, noise, air quality and severance) to avoid double counting.

3.6.2 Accessibility

The approach was to calculate accessibility to key services and local facilities by public transport using a combination of qualitative exercises with local residents and quantitative techniques. This includes primary data analysis as well as reviewing evidence from the appraisal documentation. Ideally, before and after calculations would be made using GIS software but the raw data on public transport services was not available to the study team to do this at the time of the analysis.

3.6.3 Affordability

Affordability was not quantitatively assessed. The findings are derived from focus group exercises.

3.6.4 Safety and personal security

The approach is to assess using both qualitative fieldwork and quantitative techniques. This includes primary data analysis as well as reviewing evidence from the appraisal documentation. Within this domain safety is assessed relating to perceived risks from motorised traffic, secondary data of road accident data and summaries of forecasts based on the traffic model used in the appraisal. Personal security (relating to perception of crime) is assessed qualitatively. This was appropriate in the case study, but in other studies it may be useful to assess reported crime statistics to compliment fieldwork.

3.6.5 Air quality

Unless particularly poor it can be difficult to perceive changes in air quality so this is assessed principally using quantitative data and reviewing evidence from the ex-ante appraisal documentation.

3.6.6 Noise

The approach is to assess using both qualitative fieldwork and quantitative techniques. This includes primary data analysis as well as reviewing evidence from the ex ante appraisal documentation.

3.6.7 Severance

The approach is to assess severance using both qualitative fieldwork and quantitative GIS-based techniques to measure any changes in the walkability of the area. This includes primary data analysis as well as reviewing evidence from the appraisal documentation. As severance is a micro-level issue primarily affecting pedestrians, it is particularly important to validate quantitative GIS analysis with local fieldwork exercises, as this can reveal concerns about walking safety that the desk-based analysis will not be able to pick up.

3.6.8 Additional issues which emerge during study

The fieldwork phase gathers information on issues which may affect the impacts across domains. In the case study the following issues were relevant:

1. Once the entire A465 corridor is complete, there may be further impacts / benefits in the Section 3 study area relating to local user benefits and local regeneration effects.
2. Focus group participants' personal experience of the consultants' engagement process that accompanied the design and construction stage of the project may influence their view of the scheme, their satisfaction with their locality and their subjective wellbeing.
3. Construction disruption may occur over different time scales for different projects. Long construction periods may have long term social impacts.

3.7 Quantitative techniques

The quantitative analysis has been used to produce maps based on a number of GIS techniques (see Technical Annex). Whilst we have used some analysis techniques as recommended by WebTAG, we have also adapted and developed analyses to be better suited to the case study (and more generally to local social assessment). A range of predominantly GIS-based data analytical techniques was applied, as summarised in Table 7. Further description is given below.

Some data sets and methods described in WebTAG guidance were used. However not all techniques were relevant in this case. Additionally, it was difficult to access some of the data used in the appraisal to carry out WebTAG methods. In addition to WebTAG methods, specific analyses were applied which examined the data from a social impacts perspective. This required analysing data at a fine spatial resolution, focussing on the communities more than the infrastructure.

Table 7 Summary of quantitative techniques used,

Domain	Analysis type	Technique
Accessibility	WT	Analysis of consultancy accessibility forecasts based on traffic forecasting report
Accessibility	OSA	Accessibility by public transport: GIS analysis using 'R' and Google Maps API
Accessibility	OSA	Accessibility analysis comparing commuter flow data from 2011 census and revealed activity data
Accessibility	OSA	Accessibility analysis using participatory mapping exercise
Accessibility	OSA	Analysis of cycle accessibility using Sustrans online mapping tool
Accidents	WT	Reference to accident analysis in consultancy reports and appraisal documents
Accidents	WT	STATS 19 accident mapping
Accidents	OSA	Comparing Section 3 accident rates with local A road accident rates
Accidents	OSA	Participative mapping examining perceived risk
Air Quality	OSA	Mapping local displacement of emissions
Air Quality	OSA	Flow speed data analysis
Noise	WT	Noise forecasts
Severance	WT	Traffic forecasting report
Severance	WT	Environmental statement
Severance	OSA	Overview severance map

Key: WT = based on WebTAG guidance, OSA = original spatial analysis

3.7.1 Secondary quantitative data acquisition

Table 8 identifies the population data sources that were used for the disaggregate analysis. A number of freely available data sets were accessed from the Office for National Statistics ONS (http://www.ons.gov.uk/ons/index.html) and Nomis (https://www.nomisweb.co.uk/). A number of spatial datasets and Ordnance Survey mapping products were accessed from www.edina.ac.uk/digimap. Some of these have been accessed under a university licence agreement http://digimap.edina.ac.uk/ .

Table 8 Secondary data on population segments

Population segments and places of interest	Secondary spatial data for more detailed analysis	
Income groups	WIMD income domain	https://statswales.wales.gov.uk/Download/File?fileId=422
Children (<16)	UK census 2011 Key Statistics	https://www.nomisweb.co.uk/census/2011/key_statistics
Young people	UK census 2011 Key Statistics	https://www.nomisweb.co.uk/census/2011/key_statistics
Older people	UK census 2011 Key Statistics	https://www.nomisweb.co.uk/census/2011/key_statistics
People with a disability	UK census 2011 Key Statistics	https://www.nomisweb.co.uk/census/2011/key_statistics
Black Minority Ethnic	UK census 2011 Key Statistics	https://www.nomisweb.co.uk/census/2011/key_statistics

No car households	UK census 2011 Key Statistics	https://www.nomisweb.co.uk/census/2011/key_statistics
Households with dependent children	UK census 2011 Key Statistics	https://www.nomisweb.co.uk/census/2011/key_statistics

3.7.2 Consultant generated appraisal data collection issues

In addition to freely available secondary data mentioned above, other beneficial sources of data for the social assessment are held in a variety of places. A large amount of data was gathered by consultants and processed to conduct the ex-ante appraisal. However, accessing this data several years later can be extremely problematic and time consuming, particularly where there is no central repository of data and associated metadata.

This can impact the range of quantitative techniques which can be applied. In the A465 project for example, difficulties accessing STATS19 data by residential location hindered the accident analysis. It took a disproportionate length of time and effort to get the data from the consultants who conducted the initial (economic and environmental) appraisal of the scheme, which slowed down the analytical process. In some cases, only hard copy maps were made available and therefore the data could not be re-analysed.

3.7.3 Developing open source methods

The A465 study used quick to use open tools to generate data. These tools have the advantage of no software cost overhead. Repeating their application on another project would also have a relatively low skills overhead as they are easy to use

Using the open source ‘R’ programming language we constructed a summary of trips from each of the focus group communities (origins) to potential destinations identified in the pre-opening fieldwork. The analysis undertaken gives a snapshot within 3 months of Section 3 opening. The use of this tool at the strategic outline stage, immediately after scheme opening and again at suitable time points post opening, provides a cheap, open source and quick means of gathering data which could be used in outlining ex-post evaluation. This quick open access tool can be implemented without the need for expensive proprietary software, so it is accessible to a range of stakeholders. R was used to interrogate the Google Maps API transport routing using R packages including ggmap. Table 9 shows that

employment has the shortest minimum access times. Further information is given in the Technical Annex.

Table 9 Minimum travel times by walking / public transport to key destinations.

	Focus group location : origins				
Destination type	Garnlydan	Rassau	Waundeg	Brynbach Primary School	Beaufort
Minimum time to nearest employment centre[4]	18.1	19.1	21.9	18.6	19.7
Minimum time to nearest secondary school	42.1	34.9	26.5	18.6	29.9
Minimum time to nearest town centre	38.8	30.8	28.0	20.1	29.3
Minimum time to nearest hospital	48.9	38.8	38.3	30.4	36.1

Source: Google Maps API returns journey times which include entry and egress times and wait times.

3.7.3.1 Analysis of cycle accessibility using Sustrans' online mapping tool

Figure 6 uses as its source the Sustrans online mapping tool of cycle infrastructure. Taking a screen grab and annotating it is a quick low-tech way of accessing information. The route along Section 3 appears to encourage recreational cycling linking to other National Cycle Network trails. For example, there is potential to make the journey by bike between Rassau and Garnlydan easier because the route has a shallower gradient than Prince Philip road, which descends with steep switch-backs to cross the River Ebwy. Figure 6 also shows that the focus group communities are not all connected to the cycle network and some local journeys would require a dogleg route.

[4] In this exercise employment centres were town centres, Rassau Industrial estate, hospitals and Secondary schools.

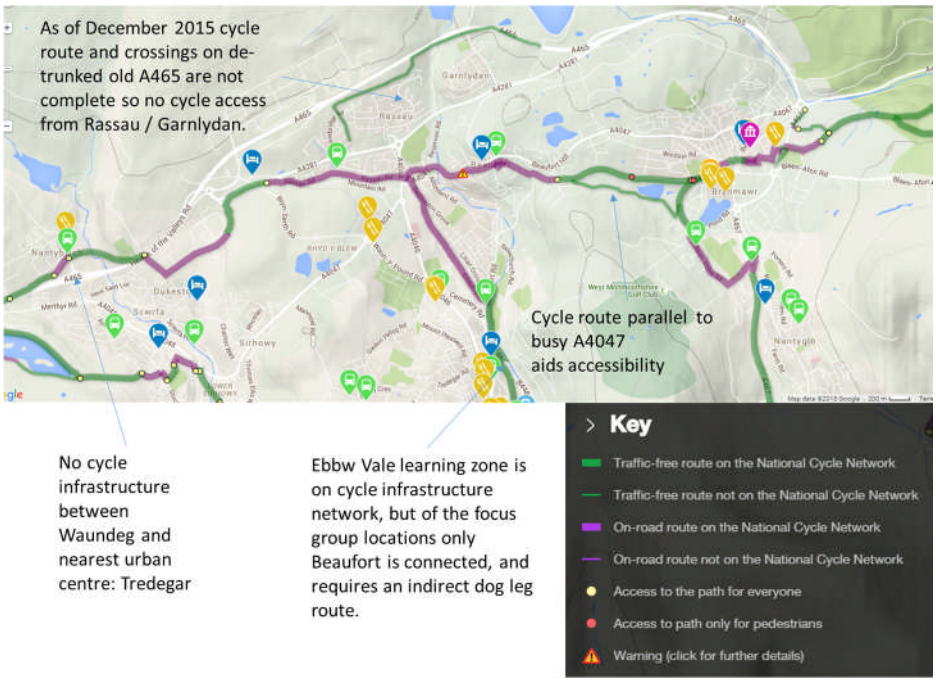

Figure 6 Cycle network mapping tool provided by Sustrans. Source: http://www.sustrans.org.uk/ncn/map?gclid=CL_sn6b_vcoCFQ26GwodCK8InQ

This low-tech cycle mapping method could be easily applied in the strategic outline stage of the WelTAG approach. A more refined tool may be developed using APIs such as cycle street.net, Google Maps API or the cycle route classification being developed by the Welsh Government based on Open Street Map data. Accessing and processing data directly may provide opportunities to apply specific spatial analysis techniques to gain a greater understanding of the accessibility derived from cycle infrastructure.

3.7.4 Further spatial analysis developed for this mixed methods approach

3.7.4.1 Air quality mapping from point data

The difference in emissions between the base year 2009 and 2015 with scheme (do something) was estimated. This was used to estimate the spatial pattern of air quality displacement mentioned in the conclusions of the Environmental Statement Volume 1 Technical Assessment Report[5]. Changes in NO_2 and PM_{10} levels were modelled based on monitoring data (point sampling data in .csv format) supplied by ARUP. Neither pollution isolines nor the specification of the original dispersal model

[5] Welsh Government, 2012, A465 Dualling Section 3 Brynmawr to Tredegar Environmental Statement Volume 1

were supplied so a simple model was constructed using the default Kriging settings in ARCGIS10.2.2.

Kriging is a method used to generate a surface based on point data. This is an initial method of examining pollution displacement which could be further refined. This data when overlain on an LSOA map showing social characteristics such as deprivation may not show significant change. However combined with fieldwork which identifies within zone variation the effects of local level displacement may be considered. In the case study, the size of zones used to represent deprivation has grouped together housing estates which on the ground appear quite different.

3.7.4.2 Speed data analysis

Speed data was gathered for road network links using Highways Analyst software (http://www.basemap.co.uk/highwaysanalyst/). Figure 7 shows links where congestion was likely to be occurring in the three months prior to the opening of Section 3 (yhe data was accessed in October 2015). Visual inspection shows that there are a number of links in LSOAs which fall into the most deprived quintile in the Welsh Index of Multiple Deprivation. We could hypothesise from this data that congestion is one potential source of increased localised emissions. Congestion acts as a proxy for poor air quality suggesting sites where localised increases in emissions may occur. Collection of flow data at regular intervals following the opening of the project may usefully feed into project evaluation. Figure 7 shows areas of change in pollution levels. The rectangle shows an example of where displacement occurs from south to north.

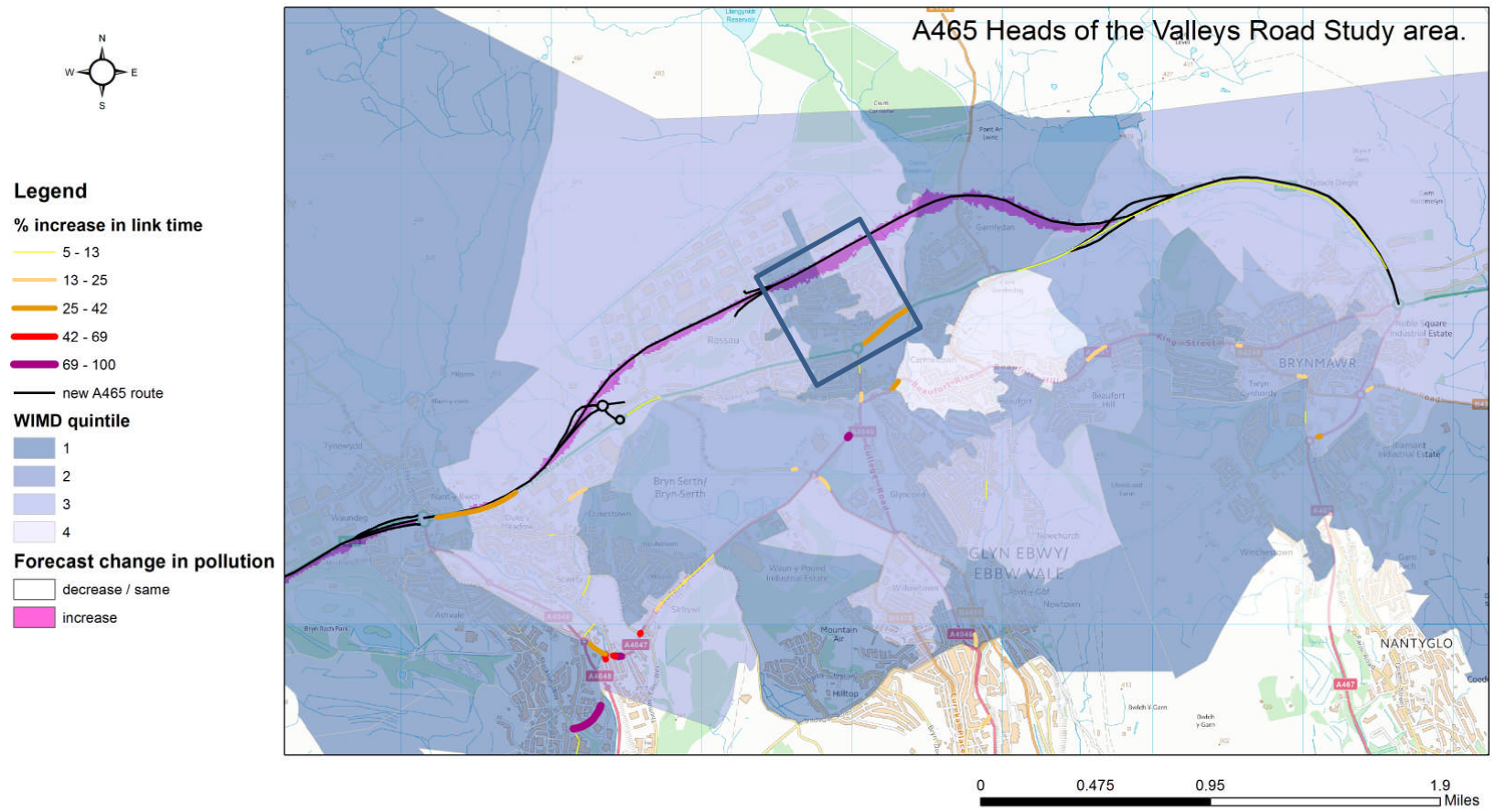

Figure 7 Change in emissions and areas of potential congestion overlain on LSOA deprivation (Quintile 1 is the most deprived).

3.8 Qualitative techniques

3.8.1 Local area field visits

Field visits allow the research team to build familiarity with the research area in preparation for the interviews and focus groups. They facilitate experience-grounded assessment of impacts and build contacts which lead to meaningful conversations with the communities and people involved in the study. Pre-opening fieldwork was carried out in two blocks of 4 days each (23rd -26th June / 30th June-3rd July). Post-opening fieldwork was carried out in one block (19th -23rd October). Four members of staff were employed for this. Two interviewers were used per fieldwork activity for safety reasons, but also for practicality: it allowed for separation of tasks in the focus groups and enabled overlaps in schedule. A car was required in order to get to interviews and meetings due to the lack of public transport in the area, and the time needed to get between research sites.

3.8.2 Interviews with local stakeholders

Semi-structured interviews (guiding questions are provided in the Focus Group Report) were carried out with professional stakeholders from the area and with key community contacts during the before-opening phase of the study. A group interview also took place at the Welsh Government. The interviews were not transcribed as their purpose was for information gathering rather than in depth analysis, but notes were taken.

The interviews with professional stakeholders focused on gathering contextual information about the district, the road scheme, transport in the area and the domains included (see domains listed in Table 2). In total, 6 professional stakeholders were interviewed individually as well as group interviews with Blaenau Gwent council and the Welsh Government.

The key community contacts were interviewed prior to the focus groups in order to get background information on the types of issues the areas face, and more general information about the area in order to prepare topics and references for use in the focus groups. The interviewees were asked to describe their community and were also asked questions relating to each of the potential social impacts and distributional domains within the study area that we had identified prior to the fieldwork. In total, 6 community contacts were interviewed.

The purpose of the Welsh Government group interview (which included officers from across different policy areas, such as health and education) was to gain information on the types of methods currently used in decision-making and project appraisal and the processes of assessing social and distributional impacts. Moreover, the interview aimed to gather more information about the provision and sharing of information and data between national and local level professionals in order to get a better sense of the context within which this study was being carried out, and how it could be most beneficial within that context.

3.8.3 Focus group exercises with local residents

A focus group is a qualitative data collection method involving a group discussion on a specific issue of interest. A focus group leader facilitates the discussion. Questioning may be used as a prompt method, but it is less direct than a structured interview: the focus is less on individual answers and more on the collective discussion and interaction. Focus groups may also involve group exercises such as responding to maps and other resources.

In the case study five areas were identified on the map as the closest communities to the new road: Waundeg, Nant-y-Bwch, Rassau, Garnlydan and Beaufort. Prior to the focus groups an interview with the Public Liaison Officer from Carillion (the contractor), who had regular contact with community members, helped identify key community stakeholders. These contacts were used to recruit the community focus group participants. Two focus groups were conducted within each of these communities, before and after the opening. Also one focus group was carried out at the Brynmawr secondary before the opening. In total, 32 adults took part in the five community focus groups and 18 Year 10 students at the school.

3.8.4 Qualitative data analysis

An external company transcribed the focus group fieldwork data; notes were also written up by the researchers. The initial analysis involved extracting quotations and comments from the interviews and focus groups. These extracts were classified as follows, according to Welsh European Funding Office (WEFO) themes. The categories are:

- The process of engagement with communities

- Usability of the infrastructure to support regeneration; with sub-groups of comments relating to the road and cycle infrastructure.
- Expectations; with sub-groups relating to the WebTAG Social and Distributional Impact domains and local authority regeneration.

3.8.5 Further qualitative data collection: Audio-visual methodologies

The use of audio-visual methodologies (videos, photos, sound recording) adds context and understanding to GIS data. Likewise photos add further context to the interview and focus group data.

3.9 Mixed methods analysis

3.9.1 Severance assessment

Figure 8 highlights the value of verifying desk-based GIS analysis with the local qualitative fieldwork exercises. This identifies that the new route to school (purple) is shorter than via the old route. This would be translated into a benefit and so the design solution is deemed an improvement over the old subway.

However, the focus group exercises and supporting photographic evidence identifies that the crossing is dangerous and worries the parents of the children who have to use it to get to school. It is also a barrier to access for all residents who walk to the nearest local shopping centre in Tredegar. This is a negative impact on the mobility and wellbeing of the community.

3.9.2 Combining collision data with perceived accident risk

By also mapping these local perceptions, the mixed methods approach adds value to the data analysis. A map is presented in Figure 9 to illustrate the combination of quantitative and qualitative data, underlining how these data complement each other in order to produce an in-depth analysis of the impacts. Moreover, quantitative data have been used to inform and support the qualitative data collection: they have not only permitted the appropriate selection of research participants, but also functioned as tools in the interviews and focus group, permitting a meaningful data collection.

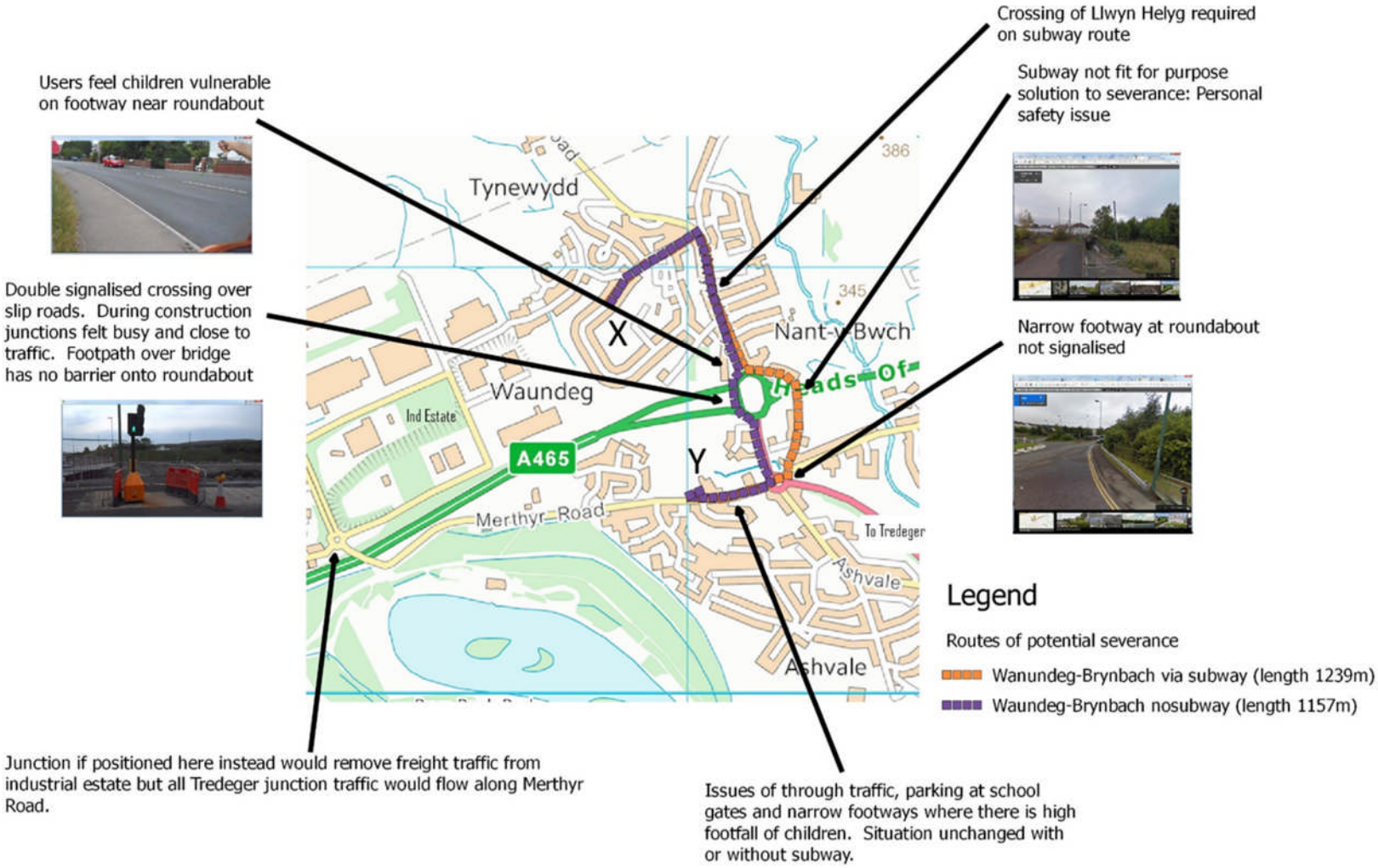

Figure 8 Mixed methods severance analysis

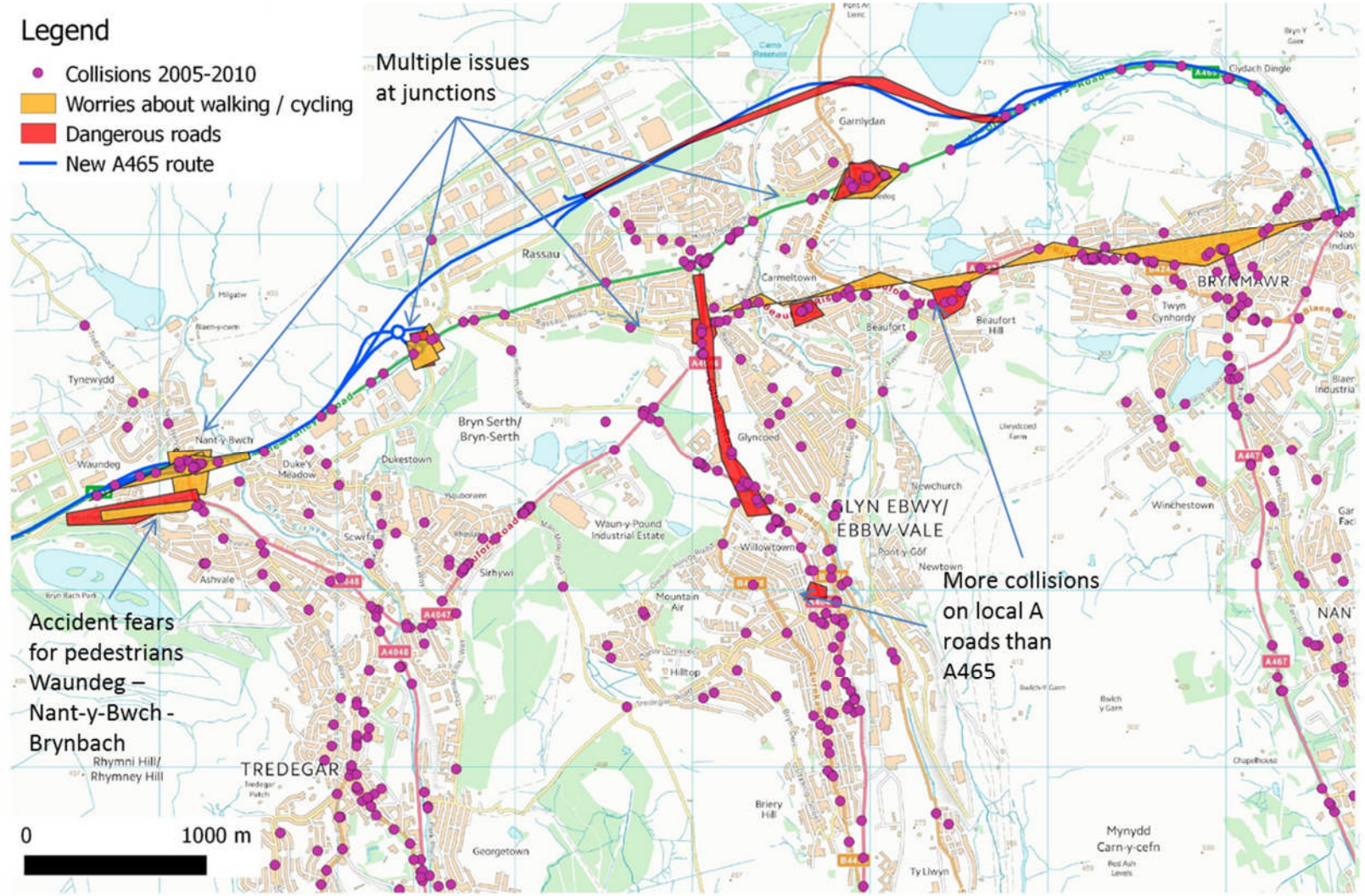

Figure 9 Collisions, places perceived as worrying for pedestrians / cyclists and roads perceived as dangerous.

4 Lessons learnt from the pilot study and opportunities for further development of the methodology

During field work the study team held debriefs each day. Notes were made reflecting upon the methods being used and the case study findings which helped in the development of both the methodology and the case study.

“You have to be in it to get it”. Physically visiting the area greatly improves the ability to understand the issues – visually it is much easier to comprehend.

4.1 GIS and mapping

There are many ways data can be presented within GIS maps, but this is time consuming, so it is useful to reflect on the most useful maps and consider ways to automate / make their production easier.

Linking maps to images, videos and other information is not a new technique. This project, has allowed us to highlight local sites of social significance. Discussion with Welsh Government suggested a need for and a willingness to engage with any information which can help “office bound” policy makers gain greater contextual understanding of the local area.

The participatory mapping exercises carried out in the focus groups were engaging and provided useful data. However the data is time consuming to transfer to GIS and there is always the possibility of digitisation error. Automation may be considered through tools such as the PPGIS Spraycan mapper tool (http://map-me.org/) as an alternative data gathering tool. The data gathered would still require some processing, but it will allow comparison of the effectiveness of different participatory mapping tools for this type of study.

The mapping of population affected by social impacts in WebTAG appraisal work is necessarily based on LSOA geographies as this is the unit of analysis in the Welsh Index of Multiple Deprivation. Analysis at a finer spatial resolution would require alternative measures of deprivation at Output Area resolution (e.g. the Townsend classification) or a microsimulation approach. (For an introduction see for example; Hermes and Poulsen, 2012; Tanton and Edwards, 2013)

4.2 Disaggregation of impacts on the population

In this study the Welsh Index of Multiple Deprivation was disaggregated by quintiles. Arguably a coarser disaggregation (quintiles 1 and 2 versus quintiles 3 and 4 as there were no LSOAs in quintile 5 in the study area) may have been acceptable in this case. Parsimonious disaggregation can help make the study more efficient. However it comes with the caveat that disaggregation should be meaningful.

Further work would be relevant to determine appropriate disaggregation by age for the purpose of social assessment. For example, classifying children by the legal definition of those under 16 is quite arbitrary and may not reflect differences in travel behaviours, perceptions and capabilities relevant to travel. Other groupings such as "young people" should also be critically evaluated to ensure the disaggregation contributes to meaningful analysis.

4.3 Scoping impacts by community

In this study there were a small number of communities in the study area. It was possible to carry out scoping, quantitative analysis and qualitative fieldwork in each community.

In a larger study, for example a long stretch of motorway, or a rail scheme it may not be practicable to carry out fieldwork in every community (which is optimal). One area for further work is to develop the scanning process and augment it by correlating findings with fine resolution spatial classifications such as the Output Area Classification (Vickers and Rees, 2007). Fieldwork is then carried out in each group of communities. Other spatial analysis methods such as on-line participatory GIS activities may also augment scoping of large scale studies where not all communities can be investigated through fieldwork.

4.4 Focus group exercises

One of the key advantages of conducting focus group exercises with residents of the local community is that iti is possible to engage with so called 'hard to reach' groups. Face to face recruitment and the informal conversations around the recruitment can often give useful information.

However, the time needed to organise and deliver focus groups can easily be underestimated. If this method is used as part of a low cost methodology then it is

unlikely that it will be possible to extensively control for particular population groups. For example it is unlikely that resource will be available to run focus groups split by age / gender / other segments relating to particular perspectives.

In this case study, we recruited focus groups which broadly covered the different parts of the study area. Focus groups were held in different communities and were not all held at the same time of day. Additionally we expected most participants during daytime hours to be women so the focus group at the football club was a simple means of trying to address that gap. This basic selection of focus groups was not as extensive as a systematic stratified research design but where the latter might require 20+ focus groups in a study area of this size we were able to identify a range of issues with 6.

There is justification in literature for young person's focus groups (see for example (Percy-Smith and Burns, 2013). During the field work a trial focus group was organised with secondary school pupils (14-15 year olds). The format was shorter, was carousel led and built around a mapping activity. Focus and pace kept students engaged. There is scope to develop this form of data gathering further and integrate it into the assessment in future applications.

The following of simple protocols for recruitment interviews and focus groups keeps the methods simple and ensures that answers to the same questions are available from all respondents. The simple protocols also help to control costs.

- It is important to give plenty of guidance to the key local contacts concerning the type of participants you want to engage with to ensure you get a range of people invited and attending directly from the community and not just community representatives such as local councillors.
- In the case study, being very definite outsiders i.e. from Leeds not the nearest Welsh universities it was easier to make the participants the experts and to explain that we were not partisan or tied to any Welsh Government or Carillion agenda.

4.5 Meaningful analysis of qualitative data

Meaningful and robust analysis of qualitative data is often considered challenging. For example, it is often used to simply repeat what was said, with little attempt to

delve for deeper meanings and hidden agendas. The framework of analysis adopted in this study was kept as simple as possible for practical reasons but development of this framework is an area for further work. The use of a summary social assessment grid as used in WebTAG A4.1 / A4.2 (see appendix of scoping report) is straightforward. A criticism of using a simple grid is that not all findings fit neatly into the predefined domains and population segments. For this reason, the main Social Assessment Report presents the key findings as bullet points and gives a narrative around the different analyses.

A key challenge in presenting results to policy-makers, civil servants and politicians is to interpret the data analysis into the working terminology of the day. For example at one time work such as this may have been described using the language and terminology of the Social Exclusion Unit whereas now it is more relevant and potentially impactful to present findings in line with (and highlighting findings counter to) the Welsh Government's Wellbeing Agenda. Considering the politics and governance issues of dissemination or findings is an area for further work.

4.6 Consideration of the counterfactual

In the main this report represents a cross sectional analysis, as per the case study brief. The scope of the A465 case study was to assess the observed and perceived impacts of a scheme during and immediately after implementation. In considering the further development of the methodology however, if social assessment were to be integrated into the entire appraisal process, one or more alternative situations may be considered. A do-minimum alternative could be considered in which Section 3 is not constructed.

Expanding consideration of the counterfactual would include establishing control areas (places which are similar demographically, but which are not subject to a transport infrastructure scheme). Ifthis social assessment approach forms part of a longer term evaluation, it would be possible to investigate the changes occurring in the A465 study area, and compare them to changes occurring in control areas.

Were social assessment to be integrated into the appraisal framework, and social goals given greater prominence, it would also raise the question of key impact thresholds, a minimum level of positive impact or maximum acceptable negative impact for a scheme to be given the go ahead.

In the absence of a full ex-ante social and distributional impacts appraisal, the following question was posed to the project team: if an ex-ante appraisal had monetised compensation to the residents of Waundeg for severance impacts (e.g. school absenteeism, accidents, lost accessibility and reduced subjective wellbeing) would it have influenced the design solution?

The methodological approach developed in this work has, with further refinement, the potential to be applied to study designs operating at the Maryland Scale level 3. (http://www.whatworksgrowth.org/resources/the-scientific-maryland-scale/)

4.7 Positioning social assessment within WelTAG guidance

This report recommends that social assessment should be fully integrated into the appraisal process. In this methodology we have illustrated a wide range of techniques. Specific techniques will be most appropriate at different points within the appraisal process. An iterative process of development of social assessment methods and appraisal frameworks may provide useful further work and the new methods described in this report may contribute to the continued development of the WelTAG framework.

5 Methodological conclusions

- Fieldwork increases the chance of engaging with hard to reach groups who are most likely to experience social impacts.
- The use of simple recruitment protocols and the design of focus group activities makes the fieldwork for SDIs practicable.
- Combining fieldwork results with GIS analysis allows quantified results to be checked against other evidence, verifying results and highlighting particular locations where trusting aggregate quantitative data alone would provide misleading conclusions.
- Addressing SDIs, using this study's methodology, early in the project cycle would allow for a much greater influence of SDI analysis on option development, option selection and project design.
- Addressing SDIs, using this study's methodology, could avoid the broken feedback loops that can result in a project outcome which is clearly negative for certain vulnerable or already disadvantaged groups.
- Had a data archive of all assessment, appraisal, engagement and planning documentation data and models been established and maintained, it would have been possible to carry out the quantitative analysis of accident benefits and changes in accessibility in greater depth.
- Community engagement should be carried out in a manner and at such times as it feeds into the appraisal and evaluation process. If done well it has the potential to identify potential negative social outcomes during the design process, and can also be used to maximise the benefits of the scheme for local people.

6 Recommendations for further application of the new approach to social assessment

1. In future, a full social assessment of a transport scheme should be undertaken as an integral part of the scheme appraisal. Local policymakers can then consider the social impacts of projects in equal balance with environmental and economic considerations.

2. A social assessment should be conducted during both the ex-ante appraisal and ex-post evaluation of schemes and feedback loops developed to improve the overall design of schemes.

3. Assessment and ex-post evaluation should be staged to consider the effects of each phase of a multi-part scheme (such as the A465 corridor). Assessment should also be carried out following full completion of any ancillary works, which may be sometime after the official opening of the new scheme. Social impacts often do not become apparent until after this settling in period.

4. In a similar way to which a 5-year after care arrangement is in place to consider environmental issues, a similar arrangement could be put in place to consider the longer-term effects of negative social impacts, such as accidents and severance.

5. Combining fieldwork results with GIS analysis allows quantified results to be checked against other evidence, verifying results and highlighting particular locations where trusting aggregate quantitative data alone could produce misleading conclusions. The desktop mapping exercise should be supplemented by field visits to uncover any particular local variations within these areas that could be relevant.

6. For social impact analysis, data is needed for the trips made by affected groups, regardless of mode, and for active travel trips. The analysis of bus ticket data including concessionary bus travel and household travel diaries would provide information on the full range of trips undertaken in an area. Accessibility analyses should consider the impact of a scheme on *short as well as longer distance* trips.

7. A data archive protocol and storage facility should be set up for all transport appraisal and evaluation projects. Local fieldwork exercises with communities can

increase the chance of engaging with hard to reach groups who are most likely to experience social impacts but least likely to engage with even the most sensitively designed and responsive public engagement exercises. The use of simple recruitment protocols with local stakeholders and the design of focus group activities can make the fieldwork more practicable.

8. Qualitative work, based on interviews with community workers, may also assist in the identification of particular vulnerable groups. Focus groups would assist in understanding the local context, akin to field studies, undertaken for environmental assessment.

9. It is a recommendation that social assessments are incorporated into WelTAG guidance on the design of all such future projects.

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