



# **South Wales Metro**

Equality Impact Assessment

8 December 2017



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## Equality Impact Assessment

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# 1 Introduction

## 1.1 South Wales Metro Programme

The Welsh Government (WG) is currently developing the South Wales Metro Programme, which consists of multiple schemes to improve the regional public transport network including new stations, electrification, route realignment, and improvements to the bus network. The project is being delivered by the Welsh Government Transport Company<sup>1</sup>, a not-for-dividend company that is wholly owned by the WG.

This report provides an Equality Impact Assessment (EqIA) of the South Wales Metro Programme covering Phase 2<sup>2</sup> and Future Phases<sup>3</sup>. A long list of potential schemes has been drawn up, but at this stage the schemes are still being subject to refinement and shortlisting. Consequently, this EqIA is a strategic level assessment and a more detailed EqIA will be carried out once the scheme options have been shortlisted.

## 1.2 Structure of this report

The remainder of this report is structured as follows:

- **Chapter 2** provides information on the South Wales Metro Programme, including its vision, phases and objectives.
- **Chapter 3** sets out the policy drivers behind completing an EqIA.
- **Chapter 4** sets out our methodological approach to this EqIA and identifies the specific tasks and research processes that have been undertaken.
- **Chapter 5** presents a review of relevant literature concerning infrastructure, accessibility, propensity to use public transport and the potential impacts on groups with protected characteristics.
- **Chapter 6** sets out the socio-demographic baseline of those groups with protected characteristics that have been scoped in as a result of the literature review in chapter 5.
- **Chapter 7** provides the findings of the assessment and identifies the disproportionate positive and negative impacts on different sections of society, the distribution of those impacts and opportunities to enhance equality and mitigate any negative impacts.
- **Chapter 8** sets out the overall findings of this EqIA and sets out the next steps.
- **Appendix A** provides the full list of proposals that are being considered.
- **Appendix B** provides details of stakeholder engagement undertaken to date.
- **Appendix C** sets out our approach to distributional analysis.
- **Appendix D** sets out the socio-demographic baseline of those groups who were scoped out following the literature review process.

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<sup>1</sup> This will also be known as Transport for Wales.

<sup>2</sup> Metro Phase 2 (2017-2023) will focus on modernising the core Valley Lines and the wider South Wales rail network. This infrastructure work will be integrated with the programme to procure the next Wales and Borders franchise.

<sup>3</sup> Future Phases (beyond 2023): if Phase 2 contains some form of light rail, then a range of rail based extensions will be easier to accommodate. This could form the basis of a long term incremental programme of expansion.

# 2 South Wales Metro Programme

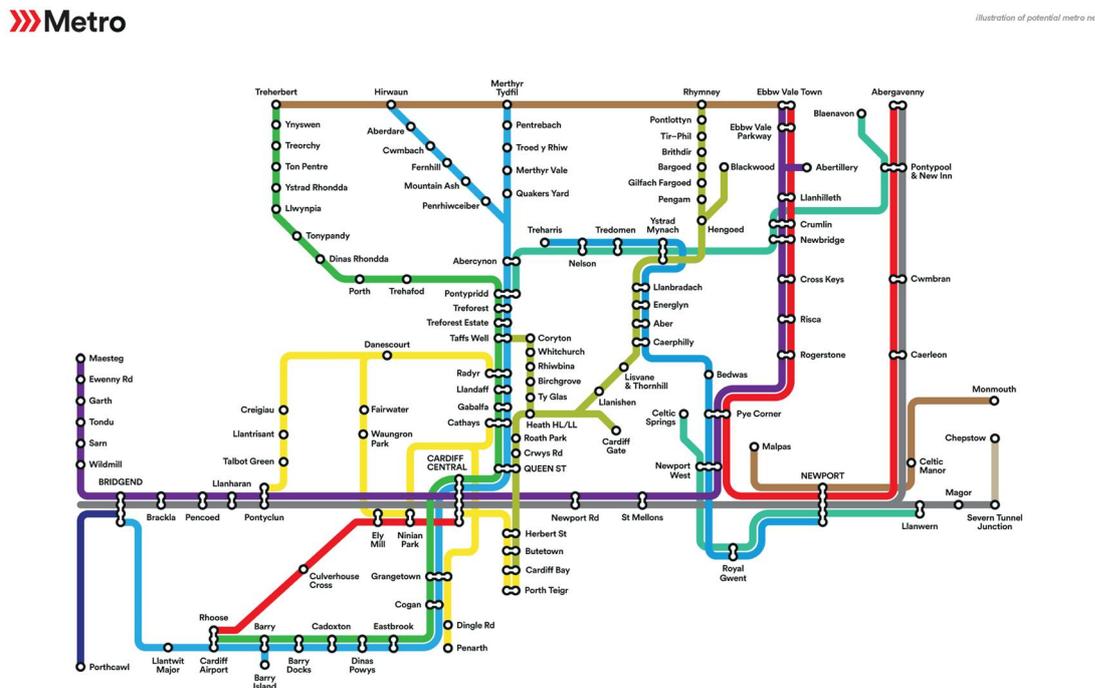
## 2.1 Introduction

The vision for South Wales Metro is to provide:

*“a new transport system that will transform the way we travel around South Wales. It will provide faster, more frequent and joined-up services using trains, buses, and light rail. Metro will bring benefits to passengers, link communities together, and help transform the economy. It will have a positive social, economic, and environmental effect. It will also shape our region’s identity”.*<sup>4</sup>

Figure 1<sup>5</sup> below shows the proposed extent of the South Wales Metro system:

**Figure 1: Proposed extent of the South Wales Metro system**



Source: Welsh Government (date unknown): ‘Metro brochure’

Figure 1 shows that the scope of the Metro proposals includes all of the lines within and north of Cardiff, the Vale of Glamorgan line, the Ebbw Valley and Maesteg branches, the Marches line to Abergavenny, and the South Wales mainline.

<sup>4</sup> Welsh Government (date unknown): ‘Metro brochure’.

<sup>5</sup> The colours on the map are to provide distinction only – no lines / names have been devised to date.

## 2.2 Modes and Technologies

The Metro Programme aims to provide a multi-modal and integrated transport network, with several different modes currently being considered, including<sup>6</sup>:

- Traditional diesel and electric heavy rail
- Light rail
- Bus rapid transit

In addition, the Programme will also look at how:

- the current municipal and private bus operators can be integrated into the wider network;
- ticketing and fare integration across all modes and operators can be improved; and
- station-based development and regeneration schemes can be incorporated into the Programme.

## 2.3 Phases and interventions

The South Wales Metro Programme will be delivered in several phases and is being developed so that it can be incrementally extended.<sup>7</sup> The phases and proposed interventions are listed below. Phase 1 has already been delivered and does not form part of this EqIA. It should also be noted that the interventions are at different stages in their development and, therefore, in most cases specific details are not known. A full list of projects currently being considered is provided in Appendix A.

### 2.3.1 Phase 1 (already delivered):

Phase 1 of the Programme has already been delivered and included construction of new stations (Ebbw Vale Town station and Pye Corner), rail and bus improvements across the region, bus corridor schemes focused on the A470, and active travel and park-and-ride schemes.

### 2.3.2 Phase 2 (2017-2023):

Proposals for Phase 2 are currently being developed with the aim of providing a Metro network that will enable the economic potential of the region to be realised. The following are a selection of the key projects proposed as part of Phase 2:

- Rhymney, Coryton and Bay line infrastructure and operational enhancements to enable more frequent and faster services
- Treherbert, Aberdare and Merthyr line infrastructure and operational enhancements to enable more frequent and faster services
- In addition, on the core Valleys, extra stations and conversion of some sections of freight line are being considered. For example, this could include Hirwaun, Nelson, Crwys Road, Gabalfa, Wedal Road, Treharris and additional stations on the Bay branch
- Enhanced intermodal facilities and associated station improvements at key locations across the network
- Ebbw Valley line improvements and Abertillery spur. In this context, direct services to Newport from the Ebbw Valley will be considered in the franchise procurement process.

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<sup>6</sup> Welsh Government (date unknown): 'Metro brochure'

<sup>7</sup> Welsh Government (date unknown): 'Metro brochure'

- These enhancements could be integrated with potential service improvements on the Marches line to Abergavenny
- Newport Rapid Transit to provide enhanced public transport services across the city, linking with the rail network and key locations such as Celtic Manor, Celtic Springs, etc
- Further enhancements are also anticipated on the Maesteg lines and to services on the Vale of Glamorgan lines to Rhoose/Cardiff Airport<sup>8</sup>

### 2.3.3 Future Phases (beyond 2023):

One of the central features of the Metro Programme is its ability to be extended. The following schemes are an example of projects that have been explored to date:

- Enhancements to Maesteg and Vale of Glamorgan lines
- Extension of the Bay branch
- Direct link between Cardiff Bay and Cardiff Central
- Capacity improvements on the Vale of Glamorgan line
- Road corridor from Central Cardiff to North West Cardiff development areas
- Other schemes resulting from opportunities identified during works on Phase 2 or works to define the Future Phases

## 2.4 Key features of the South Wales Metro Programme

It is anticipated that the South Wales Metro Programme will deliver benefits to passengers through providing new services, routes and stations to connect areas that currently have poor public transport connectivity. It is hoped that this in turn will boost economic development and regeneration across the area. The below outlines the four key features of the Metro Programme<sup>9</sup>.

### 2.4.1 Higher service frequencies

It is anticipated that the Metro will run at least four services an hour across the entire network with additional services at the network core. This has the potential to give a 'turn up and go' experience for passengers. The Metro also aims to deliver a network where interchange is easy, using vehicles designed for speed and capacity.

### 2.4.2 Integration of transport modes

The Metro proposals aim to integrate different modes of transport<sup>10</sup> ensuring that reliable and frequent services are provided across the region. It is hoped that this will ensure sustainability and increased accessibility of the network, resulting in positive social, economic and environmental effects.

The Metro Programme is likely to comprise some, if not all, of these elements:

- An electrified rail system
- Integrated transport hubs
- Park-and-ride facilities
- New (including some on-street) light rail and/or bus rapid transit routes

<sup>8</sup> Welsh Government (2017) Rolling out our metro brochure

<sup>9</sup> Welsh Government (date unknown): 'Metro brochure'

<sup>10</sup> Such as heavy rail, light rail, bus, and active travel (walking and cycling).

- Better integration of services across modes and operators
- Active travel interventions

### 2.4.3 An extendable network

A vital part of the Metro vision is that the network can improve accessibility, through new stations, new routes and greater service frequencies. In the future, it is hoped that the network can be extended to bring better public transport to more communities and economic centres, such as linking with Swansea and its surrounding communities. The WG see the project as one which is truly regional and plays an important part in shaping the region's identity.

### 2.4.4 Enabling development and regeneration

The proposed new Metro stations aim to provide better passenger facilities and become a focal point for local communities. The Metro proposals also present an opportunity for developers and local authorities to work in partnership with transport organisations to adopt a 'transit-oriented development'<sup>11</sup> approach.

## 2.5 Objectives and outcomes

### 2.5.1 Metro transport objectives

The WG has identified the following objectives for the Metro Programme<sup>12</sup>:

- deliver a high-quality, reliable, efficient, economically sustainable transport network;
- improve connectivity, linking communities with all major commercial, social and leisure attractors, enabling the region to function as a single coherent economic entity;
- improve accessibility to public transport within cities and town centres;
- provide comparable journey times across public and private transport modes, offering realistic travel choices;
- cater for increasing demand for public transport;
- reduce the impact of transport on the environment; and
- encourage active travel and social inclusion initiatives.

### 2.5.2 Metro transport outcomes

The WG has identified the following intended outcomes from the delivery of the Metro Programme, including<sup>13</sup>:

- reduced generalised journey times through faster, more frequent services and better interchange;
- increased public transport patronage through provision of more attractive services;
- reduced operating and maintenance costs through greater efficiency and higher demand;
- capacity to meet demand during peak periods and special events;
- accessibility improvements through coordination of services and compliance with relevant accessibility guidelines;

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<sup>11</sup> Transit-orientated development is the creation of compact, walkable, pedestrian-oriented, mixed use communities that are centred around high quality train systems. It is hoped that this will lead to vibrant, liveable and sustainable communities.

<sup>12</sup> Welsh Government (date unknown): 'Metro brochure'.

<sup>13</sup> Welsh Government (date unknown): 'Metro brochure'

- reduced emissions through lower car use and more efficient, cleaner transit vehicles;
- direct services between main residential areas and economic centres to improve connectivity;
- improved quality of service through newer vehicles, better integration, and enhanced services; and
- better reliability in terms of availability and punctuality of services.

## 3 Policy drivers behind EqIA

### 3.1 The Equality Act 2010

The Equality Act 2010<sup>14</sup> established the need to systematically analyse the likely or actual effects of policies and developments on different sections of society. The process must be applied to a number of 'protected characteristics' including:

- **Age**, including children aged under 16, younger people aged 16-25 and older people aged 65 and over.
- **Disability**, including people with sensory impairments, mobility impairments, learning disabilities, mental wellbeing disabilities, and long term medical conditions.
- **Gender reassignment**, including persons who are proposing to undergo, are undergoing, or have undergone gender reassignment.
- **Marriage and civil partnership**, with a focus purely on discrimination on the basis of whether someone is married or in a civil partnership – single people are not covered by this characteristic.
- **Pregnancy and maternity**, including pregnant women and nursing mothers.
- **Race and ethnicity**, including ethnic or national origins, colour, or nationality.
- **Religion or belief**, including all religion, faith, or belief groups, including lack of belief.
- **Sex**, including both women and men.
- **Sexual orientation**, including heterosexuals, lesbians, gay men, and bisexual people.

### 3.2 The Public Sector Equality Duty

The Public Sector Equality Duty (PSED), section 149 of the Equality Act 2010, requires public bodies to consider all individuals when carrying out their day to day work – in shaping policy, in delivering services and in relation to their own employees.

The PSED requires government departments, public authorities, and those responsible for delivering public functions to pay due regard to the following three aims:

- eliminating unlawful discrimination, harassment, and victimisation;
- advancing equality of opportunity between different groups; and
- fostering good relations between different groups.

The PSED is intended to support good decision making, by encouraging public bodies to understand how different groups in society will be affected by their activities, to ensure that their policies and services are appropriate and accessible to all and meet different people's needs.

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<sup>14</sup> Equality Act 2010. See: <http://www.legislation.gov.uk/ukpga/2010/15/contents>

### 3.3 EqIA

The PSED also requires the enactment of specific duties which, as a result of the devolution process, differ in Wales, England, and Scotland.<sup>15</sup> In Wales, the PSED contains express provisions regarding engagement<sup>16</sup> and EqIA, which are not present in the PSED in England.<sup>17</sup>

Within Wales, EqIAs are therefore part of statutory requirements placed on public bodies. Such bodies must undertake the following actions (as they consider appropriate) in order to comply with Regulation 8 (impact and monitoring of policies and practices) of the Equality Act 2010 (Wales) Regulations<sup>18</sup>:

- assessing the likely impact of proposed policies and practices on its ability to comply with the general duty;
- assessing the impact of any:
  - policy or practice that the authority has decided to review; or
  - revision that the authority proposes to make to a policy or practice, on its ability to comply with that duty;
- monitoring the impact of its policies and practices on its ability to comply with the duty;
- publishing reports in respect of any assessment that:
  - is referred to in in the first two above points; and
  - shows that the impact or likely impact on the authority's ability to comply.

The EqIA process is a systematic assessment that is intended to support good decision making and practice, and helps ensure that public bodies understand how different people will be affected by their activities, so that their policies and services are appropriate, accessible to all and meet the needs of different sections of society. By understanding the effect of their activities on different people, and how inclusive delivery can support and open up opportunities, public bodies can be more efficient and effective.

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<sup>15</sup> See: Government Equalities Office (2010): 'Equality Act 2010: specific duties to support the equality duty'.

<sup>16</sup> Regulation 5 states that an authority must comply with engagement provision and involve / consult persons who are considered appropriate, who represent the interests of persons who share one of more of the protected characteristics or who have an interest in the way that the authority carries out its functions.

<sup>17</sup> The Equality Act 2010 (statutory duties) (Wales) Regulations 2011. See: <http://www.legislation.gov.uk/wsi/2011/1064/made>

<sup>18</sup> Regulation 5 states that an authority must comply with engagement provision and involve / consult persons who are considered appropriate, who represent the interests of persons who share one of more of the protected characteristics or who have an interest in the way that the authority carries out its functions.

## 4 Methodology

### 4.1 Our approach to EqIA

#### 4.1.1 Overview of our approach

Mott MacDonald has developed its own approach to EqIA called INCLUDE. This is a bespoke Equality, Diversity, and Inclusion toolkit, which has been developed to ensure that a logical process is undertaken to understand projects and local contexts, gather evidence (both quantitative and qualitative) in relation to protected groups, and assess the potential impacts in an informed manner. Figure 2 below presents this approach, which was applied to this EqIA.

**Figure 2: Using INCLUDE to undertake the EqIA**



Source: Mott MacDonald

#### 4.1.2 Understanding the project

The first stage of the process involved understanding the project and identifying how relevant the proposals might be to protected characteristic groups. Background information was also gathered on the project, which helped identify population groups that may be disproportionately affected. By exploring available information, and identifying which groups were likely to be most affected by the project, we were able to define the scope of the assessment.

#### 4.1.3 Evidence, distribution and proportionality

Evidence was gathered through the preparation of a data-driven baseline and a review of literature on the impacts of transport infrastructure on groups with protected characteristics.

##### 4.1.3.1 Baseline

Demographic data on persons with protected characteristics was mapped to show the density of different groups and to highlight where particular areas have larger than national average proportions of people with protected characteristics for Wales and England combined.

An impact area around the South Wales Metro network was defined.<sup>19</sup> The impact area covers 10 local authorities in South Wales which the metro infrastructure is physically located in. It also includes the South Gloucestershire county which has close connectivity with the metro via the Severn tunnel. Demographic data on the population with protected characteristics within this area was gathered using national statistics, in particular the 2011 Census and the Annual Population Survey. Where possible, data at the MSOA or LSOA<sup>20</sup> level was used. This provided

<sup>19</sup> The study area is defined as the following eleven local authorities: Blaenau Gwent, the Vale of Glamorgan, Caerphilly, Newport, Merthyr Tydfil, Bridgend, Rhondda Cynon Taff, South Gloucestershire, Torfaen, Cardiff, and Monmouthshire.

<sup>20</sup> Middle Layer Super Output Area (MSOA) and Lower Layer Super Output Area (LSOA)

a visual representation of how equality groups are distributed, so as to pinpoint potential impact hotspots.

#### 4.1.3.2 Literature review

A literature review was prepared to gather evidence on potential infrastructure and accessibility impacts on protected characteristic groups, and identify those groups likely to be disproportionately affected. Relevant evidence about service or infrastructure needs and existing good practice was also used to identify which groups are likely to be disproportionately affected, positively or negatively.

#### 4.1.4 Engagement and equality analysis

Engagement has been carried out with representatives from each of the 11<sup>21</sup> local authorities in whose area the project is to be implemented. Local authority representatives included equalities specialists where possible, or officers drawn from the local planning department within the council. The potential impacts of the scheme were discussed and stakeholder view points on the impacts of the scheme gathered. This enabled conclusions to be drawn around positive and negative effects of the project for each of the identified social groups. Full details of stakeholder engagement activities can be found in Appendix B.

This EqIA is a high-level assessment, therefore the views of specific community and equality groups were not sought at this stage. Once proposals for Phase 2 and the Future Phases have been further developed, it will be important to involve these groups in understanding the specific impacts of each set of proposals.

#### 4.1.5 Assessing the impacts and their distribution

Drawing together the information from the baseline, literature review and stakeholder engagement, the impacts, their extent, and the sensitivity of the groups likely to experience them were identified to reach a balanced assessment of impact and distribution. Appendix C provides information on our approach to the distribution of impacts.

The assessment considered both potential positive and negative effects. The following scale has been used to determine the magnitude of both positive and negative impacts on the groups identified.

**Table 1: Impact assessment scale**

000	Major adverse
00	Moderate adverse
0	Minor adverse
0	Neutral
P	Minor beneficial
PP	Moderate beneficial
PPP	Major beneficial

The impacts on protected groups can be categorised into two key groups during both the construction and operational phases. These are disproportionate impacts related to:

- the environment, in particular air quality and noise levels; and

<sup>21</sup> Blaenau Gwent, the Vale of Glamorgan, Caerphilly, Newport, Merthyr Tydfil, Bridgend, Rhondda Cynon Taff, South Gloucestershire, Torfaen, Cardiff, and Monmouthshire,

- access to economic and social opportunities.

#### 4.1.6 Action planning

The final stage drew conclusions on the overall impacts of the scheme and made recommendations on ways to mitigate or eliminate potential negative effects and maximise the potential positive outcomes for equality groups. This stage also included some next steps to incorporate monitoring and review of this EqIA.

## 5 Review of existing evidence

### 5.1 Introduction

This chapter presents a review of relevant published literature concerning infrastructure, accessibility, propensity to use public transport, and potential impacts on groups with protected characteristics. The evidence suggested that impacts were likely to arise from two key factors: the environment, and access to economic and social opportunities. This evidence has been used to identify which groups with protected characteristics are likely to be disproportionately affected by the Programme and which groups can be scoped out of more detailed further consideration.

Table 2, at the end of this chapter, summarises the rationale for the scoping of the groups.

### 5.2 Age: children

#### 5.2.1 Environment

Children (those under the age of 16) can be disproportionately affected by changes in air quality as they tend to spend more time outside, and are more likely to be outside when air pollution levels are at their highest. Research published by UNICEF<sup>22</sup> shows the danger that poor air quality can pose to children, particularly as children's lungs are still developing. And, relative to their size, children breathe in more air compared to adults. Children who are in pushchairs are also closer to the level of vehicle exhausts, thus increasing their exposure.<sup>23</sup>

Raised noise levels can also have a particular impact on children, with the potential for adverse impacts on education. The World Health Organisation (WHO) indicated that high noise levels can negatively affect children's cognitive development and memory.<sup>24</sup>

During the construction period, air and noise pollution levels are likely to reduce due to increased dust and more traffic (both construction and non-construction related) on roads.<sup>25</sup> During the operation period, though, electrification and the likely increase in use of public transport could reduce both air and noise pollution.<sup>26</sup>

#### 5.2.2 Access to economic and social opportunities

Unable to legally drive, children and young people are often reliant on public transport to access leisure and education facilities. As children progress through education and become more independent, use of public transport (and buses in particular) to access education increases. Data from the National Travel Survey (NTS)<sup>27</sup> indicates that 29 per cent of trips to school by children aged 11 to 16 are made by bus, whilst only seven per cent of all trips made in England are by bus. This suggests that children are likely to be reliant upon public transport to access

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<sup>22</sup> UNICEF (2016): 'Clear the air for children'.

<sup>23</sup> British Lung Foundation (2016): 'How air pollution affects your children's lungs'.

<sup>24</sup> World Health Organisation (2011): 'Burden of disease from environmental noise – quantification of healthy life years lost in Europe'.

<sup>25</sup> Sustainable build (2017): 'Pollution from construction'.

<sup>26</sup> DEFRA (2015): 'Draft plans to improve air quality in the UK: tackling nitrogen dioxide in our towns and cities'.

<sup>27</sup> Department for Transport (2017): 'National Travel Survey: England 2016'.

education and social activities, meaning they are likely to be disproportionately impacted by any change in public transport provision in both the construction and operation periods.

## 5.3 Age: Younger people

### 5.3.1 Environment

Although children are disproportionately affected by air quality, there is no evidence to suggest that young people between the ages of 16 to 25 will be disproportionately impacted by changes in either air quality or levels of noise.

### 5.3.2 Access to economic and social opportunities

Research conducted by the Joseph Rowntree Foundation (JRF) highlighted that poor transport links can restrict young people's employment opportunities, and that employers are often reluctant to employ young people who make long or complex journeys. This is particularly the case in rural areas.<sup>28</sup>

The cost of maintaining a car and obtaining insurance can be disproportionately expensive for this group as they are perceived by insurance companies as a higher risk group. This is due to 18-24 year olds being more at risk of being involved in a serious road traffic incident than the average person.<sup>29</sup> This further enhances their reliance on public transport.

Improved public transport links are therefore part of the solution to the above problem. Transport can give young people access to education and training as well as employment, however it must be affordable to be effective. The cost of transport is key in determining whether a young person is able to travel to a job interview or an employment centre.<sup>30</sup>

## 5.4 Age: Older people

### 5.4.1 Environment

Older people can be disproportionately susceptible to the effects of air pollution. A guide published by the Department for Environment, Food and Rural Affairs (DEFRA)<sup>31</sup> highlights that older people are more likely to suffer from heart and lung conditions and therefore be disproportionately negatively impacted by poor air quality.<sup>32</sup> Changes to air quality are therefore likely to impact this group.

Noise can also have a disproportionate impact on older people. Research indicated that road traffic noise can discourage people from activities outside of the home, such as shopping and socialising. This can lead to disproportionate health impacts and increase social isolation (something older people are more likely to experience).<sup>33</sup> During the construction period of the scheme, an increase in construction traffic is therefore likely to negatively impact this group.

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<sup>28</sup> JRF (2010): 'Youth unemployment in rural areas'.

<sup>29</sup> RAC Foundation (2017): 'Motor insurance premiums for young drivers in the UK and Europe'.

<sup>30</sup> Intergenerational Federation (2013): 'No entry! Transport barriers facing young people'.

<sup>31</sup> Department for Environmental Food and Rural Affairs (2013): 'Guide to UK Air Pollution Information Resources'.

<sup>32</sup> DEFRA (2013): 'Short-term effects of air pollution on health'.

<sup>33</sup> European Commission (2015): 'Noise impacts on health'.

### 5.4.2 Access to economic and social opportunities

For older people, public transport can play an important role in maintaining their ability to visit friends and relatives and take part in activities outside of the home.<sup>34</sup> The JRF outlined how a lack of public transport can impact on access to healthcare, leading to missed appointments and delays in medical intervention.<sup>35</sup>

However, other recent research highlighted how older people experience several access barriers with regards to public transport and its supporting infrastructure. Such barriers include:<sup>36</sup>

- long staircases;
- the speed of doors closing;
- the height of steps;
- escalators being present,
- the distance to points of connecting services; and
- lack of accessible information.

Older people are therefore particularly likely to be impacted by any changes to public transport and its accessibility.

Older people are also less likely to have access to the internet, almost 30 per cent of people aged 65 to 74 have never been online.<sup>37</sup> This may mean that they miss out on information about transport projects, including information on services and service changes, consultation activities, and scheduling of works that may affect them.

## 5.5 Disabled people

### 5.5.1 Environment

Disabled people are likely to be disproportionately impacted by any changes in air quality. Evidence from DEFRA<sup>38</sup> shows that people with lung or heart conditions are at an increased risk of becoming ill and needing treatment when levels of air pollutants rise. Those who already have such pre-existing health conditions are therefore likely to be negatively impacted should the scheme cause air quality to reduce.

Noise can also have a disproportionate impact on disabled people. According to Scope, challenging behaviour<sup>39</sup> can be a response to the environment. This means that it can be triggered by changes in noise levels, or extreme levels of noise.<sup>40</sup> Noise created as a result of the construction and/or operation of the scheme is therefore likely to impact this group.

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<sup>34</sup> Transport for London (2015): 'Travel in London: understanding our diverse communities'.

<sup>35</sup> UCL (2014): 'Transport and poverty: a review of the evidence'.

<sup>36</sup> UCL (2014): 'Overcoming the barriers to access for older people'.

<sup>37</sup> Britain thinks (2015): 'Life offline: what life is like for older people who don't use the internet'.

<sup>38</sup> DEFRA (2013): 'Guide to UK Air Pollution Information Resources'.

<sup>39</sup> Scope defines this as behaviours which are challenging to others and may be a sign that something is wrong. It often shows that there is some unfulfilled need or a problem with communication. Scope defines four types of challenging behaviour, including: self-injurious, aggressive, stereotyped, and non-person directed. Scope (date unknown): 'Challenging behaviour'.

<sup>40</sup> Scope (no date): 'Challenging behaviour'.

### 5.5.2 Access to economic and social opportunities

Evidence suggests that 60 per cent of disabled people do not have a car available to their households, compared to 27 per cent of the overall population.<sup>41</sup> In 2015-2016, 192,445 disabled persons railcards were in circulation.<sup>42</sup> Public transport is an important asset for many disabled people as a means of retaining independence.

In addition, 75 per cent of disabled adults experience barriers to using transport compared to 60 per cent of adults who do not have an impairment.<sup>43</sup> Common barriers experienced by disabled people with regards to public transport include accessibility (including lack of ramps and low flooring), cost, comfort (including overcrowding or unavailable seating) and reliability of services.<sup>44</sup> Loss or limited independence can lead to social and economic isolation (and the associated exacerbation of mental and physical health problems that this can, in turn, cause).<sup>45</sup>

Many disabled people can also find it difficult to access information when using public transport. According to data from the Papworth Trust, around 1.5 million people<sup>46</sup> in the UK have a learning disability, which can affect the way in which people understand new or complex information.<sup>47</sup> People who are deaf or blind may also have problems accessing information in traditional formats or on websites.<sup>48</sup> Such barriers to accessing information can greatly impact disabled people when disruptions or changes to transport services occur. This is due to live and reliable information not always being readily available in an accessible format.<sup>49</sup>

## 5.6 Gender reassignment

There is no evidence to suggest that people from this protected characteristic group are likely to be differently or disproportionately impacted by changes to either the environment or the accessibility of social or economic opportunities.

## 5.7 Marriage and civil partnership

There is no evidence to suggest that people from this protected characteristic group are likely to be differently or disproportionately impacted by changes to either the environment or the accessibility of social or economic opportunities.

## 5.8 Pregnancy and maternity

### 5.8.1 Environment

Research by the European Union (EU) indicates that pregnant women living in areas with higher levels of pollution have a higher risk of giving birth to a low birthweight baby. Low birthweight can lead to an increased risk of children developing a chronic disease during childhood or later

<sup>41</sup> The Papworth Trust (2016): 'Disability in the United Kingdom: Facts and figures'.

<sup>42</sup> Office of Rail and Road (2016): 'Disabled persons railcard in circulation and issues 2015-2016'.

<sup>43</sup> The Papworth Trust (2016): 'Disability in the United Kingdom: Facts and figures'.

<sup>44</sup> European Union Commission (date unknown): 'Priorities for the use of bus transport by disabled people, older people and parents with young children in buggies'.

<sup>45</sup> Passenger Transport Executive Group (2011): 'Total Transport'.

<sup>46</sup> Over 1 million adults aged over 20, and over 410,000 children aged up to 19 years old have a learning disability.

<sup>47</sup> Papworth Trust (2016): 'Disability in the UK: 2016 facts and figures'.

<sup>48</sup> Transport Committee (2013): 'Access to transport for disabled people'.

<sup>49</sup> European Union Commission (date unknown): 'Priorities for the use of bus transport by disabled people, older people and parents with young children in buggies'.

in life.<sup>50</sup> Should there be an increase in road traffic during the construction period of the scheme, this group are likely to be impacted.

### 5.8.2 Access to economic and social opportunities

EU research indicates that local public transport is very important for many parents with young children and so plays a key role in support social inclusion for this group.<sup>51</sup> Accessibility of public transport is important in ensuring that all users can realise these benefits. Many issues were highlighted by this research as hindering accessibility for people with pushchairs / prams, and / or young children, including<sup>52</sup>:

- adequate space for pushchairs / prams;
- parked cars and vans preventing people from alighting at bus stops;
- busy and crowded services preventing people from getting on services, particularly at certain times of day;
- lack of storages for pushchairs / prams;
- lack of signage to identify pushchair / priority spaces; and
- poor design of pushchair spaces.

## 5.9 Race and ethnicity

### 5.9.1 Environment

There is no evidence to suggest that people from Black, Asian and minority ethnic (BAME) backgrounds would be disproportionately impacted by the changes in either air quality or noise levels that are likely to arise as a result of the Programme.

### 5.9.2 Access to economic and social opportunities

Transport can be a barrier to employment for people from BAME backgrounds. JRF research into ethnicity and employment highlighted poor transport as a barrier to employment opportunities.<sup>53</sup> A lack of public transport available in the evenings can also impact on the type of employment people are able to access and can, for example, affect shift work. The research also found that this was particularly the case for ethnic minority groups concentrated in more deprived areas.

People from certain BAME communities are also less likely to own a car and rely more heavily on public transport than other ethnic groups. For example, in 2015, 36 per cent of black adults lived in a household without access to a car, compared to 22 per cent of Asian adults and 17 per cent of white adults.<sup>54</sup> This means that the economic and social opportunities of people from BAME groups are likely to be limited, to a greater extent, to places accessible by public transport than those from other ethnic groups.

For those with English as a second language, which may include people from some BAME groups, accessing information is more difficult due to language barriers. Research indicates that

<sup>50</sup> NHS (2013): 'Air pollution associated with low birthweight'.

<sup>51</sup> European Union Commission (date unknown): 'Priorities for the use of bus transport by disabled people, older people and parents with young children in buggies'.

<sup>52</sup> European Union Commission (date unknown): 'Priorities for the use of bus transport by disabled people, older people and parents with young children in buggies'.

<sup>53</sup> JRF (2014): 'How place influences employment outcomes for ethnic minorities'.

<sup>54</sup> Department for Transport (2015): 'Travel by car availability, income, ethnic group, household type and NS-SEC'

older BAME women are much less likely to speak English as a first language than other sections of the population.<sup>55</sup> Language barriers may prevent people from accessing information about unfamiliar transport routes.

## 5.10 Religion and belief

There is no evidence to suggest that people from this protected characteristic group are likely to be disproportionately impacted by changes to either the environment or in the accessibility of economic and social opportunities.

## 5.11 Sex: Women

### 5.11.1 Environment

There is no evidence to suggest that women will be disproportionately impacted by changes in either air quality or levels of noise.

### 5.11.2 Access to economic and social opportunities

Evidence suggests that women make more bus trips than men at all ages. On average, women make 60 trips per year via bus, compared to 44 trips for men. Women are also less likely to hold a full car driving license than men. In 2016, 80 per cent of men held a driving license compared to 67 per cent of women. However, men are more likely to use rail as a form of transport with an average of 24 trips per year compared to 18 for women.<sup>56</sup>

With regards to barriers to accessing public transport, research shows that men and women experience similar issues, however there are some differences. Women are more likely to have concerns over their personal safety when using public transport. For example, 28 per cent of women have a fear of crime on a bus/train compared to 16 per cent of men. This makes women more likely to sit next to other passengers as a precaution. When travelling, women are also more likely than men to be travelling with shopping and/or pushchairs, which can affect the form of transport they choose to use. For example, the NTS showed that in 2017 14 per cent of miles travelled every year by women are for shopping, compared to nine per cent for men.<sup>57</sup>

## 5.12 Sex: Men

There is no evidence to suggest that men are likely to be disproportionately impacted by changes to either the environment or the accessibility of economic and social opportunities.

## 5.13 Sexual orientation

There is no evidence to suggest that people from this protected characteristic group are likely to be disproportionately impacted by changes to either the environment or the accessibility of economic and social opportunities.

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<sup>55</sup> All-Party Parliamentary Group on Dementia (2013): 'The experiences of black, Asian and minority ethnic communities'

<sup>56</sup> Department for Transport (2017): 'National Travel Survey: England 2016'.

<sup>57</sup> Department for Transport (2017): 'National Travel Survey: England 2016'.

## 5.14 Summary: scoped in groups

**Table 2: Scoped in groups**

Protected characteristic group	Summary of evidence	Scoped in / out
Age: Children	<ul style="list-style-type: none"> <li>Children's lungs are still developing so a reduction in air quality could be detrimental.</li> <li>Increase in noise levels can impact the cognitive development of children.</li> </ul>	In
Age: Younger people	<ul style="list-style-type: none"> <li>Poor transport links can impact employment opportunities, whilst good transport can improve access.</li> <li>The cost of driving increases young people's reliance on public transport.</li> </ul>	In
Age: Older people	<ul style="list-style-type: none"> <li>Reduction in air quality will impact older people as they are more likely to have heart and lung conditions.</li> <li>Increase in noise levels can increase levels of social isolation.</li> <li>Public transport is relied upon by older people to maintain independence.</li> <li>Older people experience a number of access barriers to public transport and information.</li> </ul>	In
Disabled people	<ul style="list-style-type: none"> <li>Increase in noise levels can be a trigger for challenging behaviour.</li> <li>Those with heart and lung conditions will be impacted by a reduction in air quality.</li> <li>Disabled people face a number of access barriers when using public transport.</li> <li>Accessing travel information whilst using public transport can be difficult.</li> </ul>	In
Gender reassignment	<ul style="list-style-type: none"> <li>No evidence identified.</li> </ul>	Out
Marriage and civil partnership	<ul style="list-style-type: none"> <li>No evidence identified.</li> </ul>	Out
Pregnancy and maternity	<ul style="list-style-type: none"> <li>Pregnant people in areas with high pollution are at a higher risk of giving birth to a low birthweight baby.</li> </ul>	In
Race and ethnicity	<ul style="list-style-type: none"> <li>A lack of public transport is a barrier to BAME groups accessing employment.</li> <li>BAME groups are less likely to have access to a car.</li> <li>Language barriers often experienced by BAME groups can make accessing travel information more difficult.</li> </ul>	In
Religion and belief	<ul style="list-style-type: none"> <li>No evidence identified.</li> </ul>	Out
Sex: women	<ul style="list-style-type: none"> <li>Women are more likely to use buses than men, and less likely to have a driving license.</li> </ul>	In
Sex: men	<ul style="list-style-type: none"> <li>No evidence identified.</li> </ul>	Out
Sexual orientation	<ul style="list-style-type: none"> <li>No evidence identified.</li> </ul>	Out

Source: Mott MacDonald 2017

# 6 Socio-demographic baseline

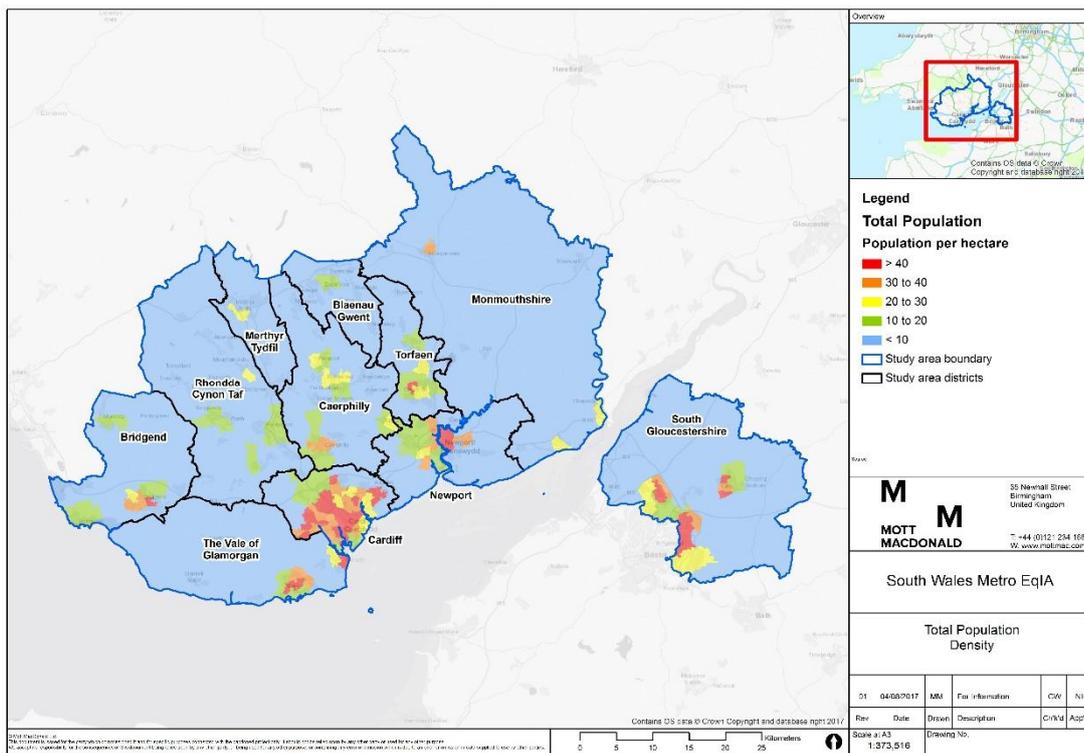
## 6.1 Introduction and population overview

This chapter examines the socio-demographic profile of the scoped in groups (age, disability, pregnancy and maternity, race and ethnicity, and gender) in the study area,<sup>58</sup> across Wales and England and Wales combined. Data on the scoped out groups can be found in Appendix D.

The maps that follow show areas in blue, which indicate low population density, areas in green and yellow, indicating moderate density and areas in orange and red, indicating high density.

The map below shows overall population density across the study area and shows that the majority of the region is rural with a low population density. Cardiff and Newport, though, have a high population density, as do some small areas of the other local authorities – showing the split between urban and rural areas.

Figure 3: Study area population density



Source: ONS Census 2011 – mid-year population estimates 2015

<sup>58</sup> The study area is defined as the following eleven local authorities: Blaenau Gwent, the Vale of Glamorgan, Caerphilly, Newport, Merthyr Tydfil, Bridgend, Rhondda Cynon Taff, South Gloucestershire, Torfaen, Cardiff, and Monmouthshire.

## 6.2 Age

This section explores three key age brackets that may experience disproportionate impacts when compared with the general population:

- Children (aged under 16);
- Young people (aged 16 to 25); and
- Older people (aged 65 and over).

### 6.2.1 Children (under 16s)

The table below indicates that the proportion of people living in the study area who are under 16 is in line with the national figure (19 per cent). None of the local authority areas have proportions that are notably lower or higher than the national<sup>59</sup> figures.

**Table 3: Number and proportion of people under the age of 16**

Study area	Total population	U16	U16%
Blaenau Gwent	69,544	12,140	17%
Bridgend	142,092	25,597	18%
Caerphilly	180,164	34,225	19%
Cardiff	357,160	65,852	18%
Merthyr Tydfil	59,324	11,102	19%
Monmouthshire	92,476	15,490	17%
Newport	147,769	29,677	20%
Rhondda, Cynon, Taff	237,411	44,122	19%
South Gloucestershire	274,661	51,018	19%
the Vale of Glamorgan	127,592	23,623	19%
Torfaen	91,836	16,836	18%
Total Study Area	1,780,029	329,682	19%
Wales	3,099,086	555,289	18%
England and Wales	57,885,413	10,960,403	19%

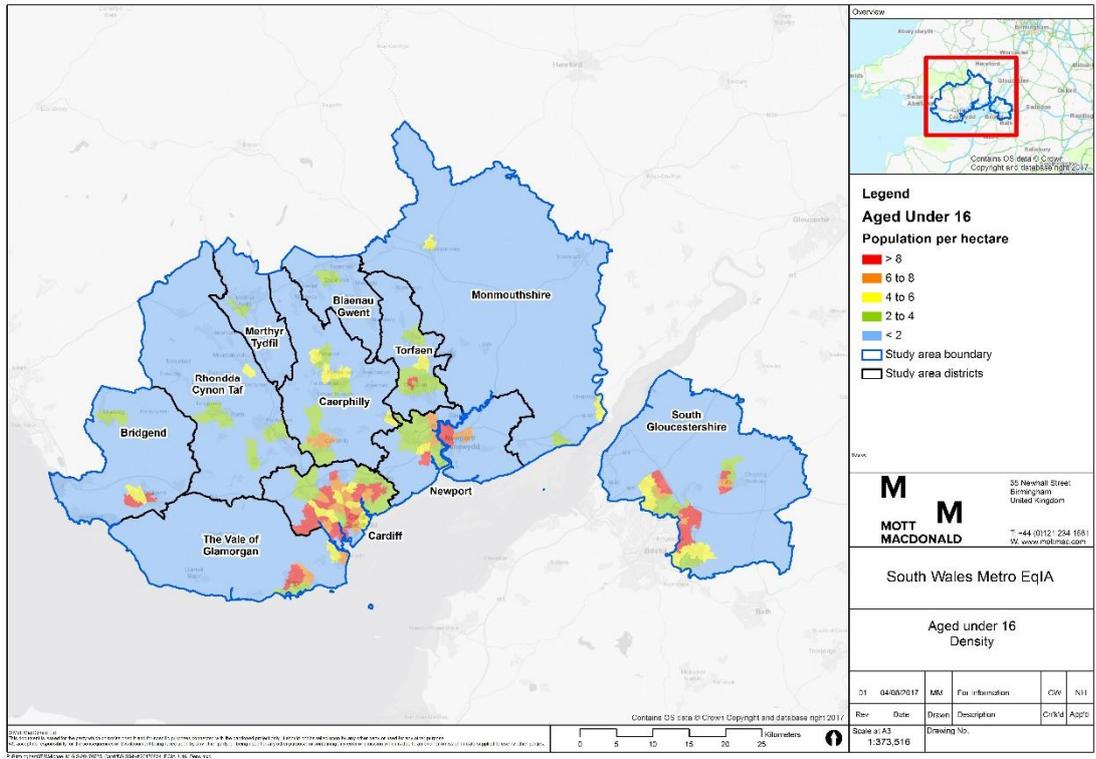
Source: ONS Census 2011 – mid-year population estimates 2015

The map below shows the population densities for children under 16, where areas in blue are low density (0-2 persons per Hecate), areas in green and yellow are moderate density (2-6 persons per hectare, and areas in orange and red are high density (over 6 persons per hectare). It illustrates that:

- The cities of Cardiff and Newport have high densities of people aged under 16. The towns of Barry and Bridgend also have high densities.
- The majority of people under 16 live in urban centres.

<sup>59</sup> Wales and England combined

Figure 4: Under 16 population density per hectare



Source: ONS Census 2011 – mid-year population estimates 2015

## 6.2.2 Young people (aged 16 to 25)

The table below indicates that the proportion of people living in the study area who are aged 16 to 25 is broadly in line with the national figure (13 per cent). Cardiff has a proportion of 19% which is notably lower or higher than this.

**Table 4: Number and proportion of people aged 16 to 25**

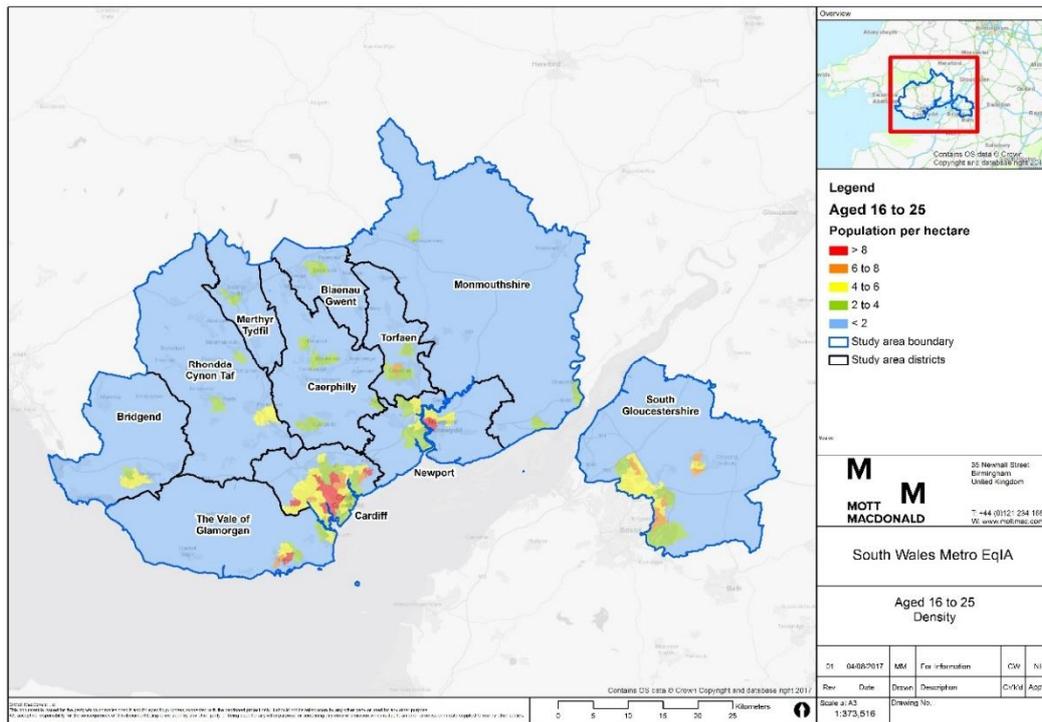
Study area	Total population	16-25	16-25%
Blaenau Gwent	69,544	8,751	13%
Bridgend	142,092	16,113	11%
Caerphilly	180,164	21,634	12%
Cardiff	357,160	68,719	19%
Merthyr Tydfil	59,324	7,405	12%
Monmouthshire	92,476	9,649	10%
Newport	147,769	19,149	13%
Rhondda, Cynon, Taff	237,411	31,430	13%
South Gloucestershire	274,661	33,800	12%
the Vale of Glamorgan	127,592	14,268	11%
Torfaen	91,836	11,409	12%
<b>Total Study Area</b>	<b>1,780,029</b>	<b>242,327</b>	<b>14%</b>
<b>Wales</b>	<b>3,099,086</b>	<b>406,804</b>	<b>13%</b>
<b>England and Wales</b>	<b>57,885,413</b>	<b>7,354,269</b>	<b>13%</b>

Source: ONS Census 2011 – mid-year population estimates 2015

The map below illustrates that:

- The area with highest density of people aged 16 to 25 is in Cardiff, which has high density located around the town centre.
- There are other areas with moderate densities, such as Barry, Bridgend, Newport, and Pontypridd.
- As the majority of the South Wales Metro region is rural, there is a low density of young people aged 16 to 25 overall.

**Figure 5: 16-25 population density per hectare**



Source: ONS Census 2011 – mid-year population estimates 2015

### 6.2.3 Older people (65 and over)

As identified in the table below, the proportion of people living in the study area who are 65 or over (14 per cent) is in line with the national figure (13 per cent). Bridgend (11 per cent), the Vale of Glamorgan (11 per cent) and Monmouthshire (10 per cent) all have a proportion of people who are over 65 slightly lower than the national average. Only one local authority has a considerably higher proportion of people aged 65 and over – 19 per cent of the population of Cardiff are 65 or over.

**Table 5: Number and proportion of people 65 and over**

Study area	Total population	65 and over	65 and over (%)
Blaenau Gwent	69,544	13,552	13%
Bridgend	142,092	27,859	11%
Caerphilly	180,164	33,381	12%
Cardiff	357,160	49,588	19%
Merthyr Tydfil	59,324	10,745	12%
Monmouthshire	92,476	21,871	10%
Newport	147,769	25,808	13%
Rhondda, Cynon, Taff	237,411	44,380	13%
South Gloucestershire	274,661	50,481	12%
the Vale of Glamorgan	127,592	25,973	11%

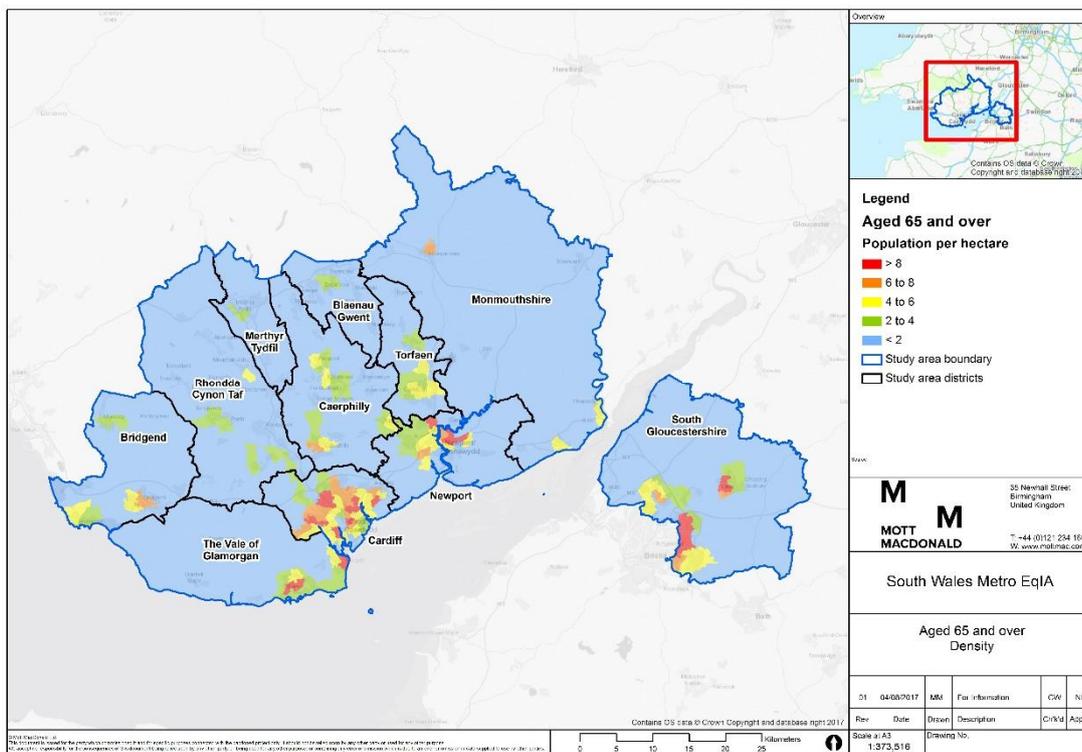
Study area	Total population	65 and over	65 and over (%)
Torfaen	91,836	18,107	12%
Total Study Area	1,780,029	321,745	14%
Wales	3,099,086	624,773	13%
England and Wales	57,885,413	10,336,345	13%

Source: ONS Census 2011 – mid-year population estimates 2015

The map below illustrates that:

- The highest densities of people aged 65 and over are located in urban area, in and around Cardiff, and Newport.
- There are, though, other areas throughout the region with moderate densities such as Bridgend, Abergavenny and Caerphilly.

Figure 6: Over 65 population density per hectare



Source: ONS Census 2011 – mid-year population estimates 2015

### 6.3 Disability

The EHRC notes that: “You’re disabled under the Equality Act 2010 if you have a physical or mental impairment that has a 'substantial' and 'long-term' effect on your ability to do normal daily activities.”<sup>60</sup>

<sup>60</sup> See: <http://www.equalityhumanrights.com/advice-and-guidance/new-equality-act-guidance/protected-characteristics-definitions/>.

For the purposes of this demographic profile, we have analysed the number of people living with a long-term limiting illness (LLTI) within Census and mid-year population data.

As identified in the table below, the proportion of people living in the study area with a LLTI (21 per cent) is slightly higher than the figure for England and Wales (18 per cent). Three local authorities – Blaenau Gwent (27 per cent), Merthyr Tydfil (27 per cent) and Rhondda Cynon Taff (26 per cent) have considerably higher percentages of people with a LLTI. Cardiff has a slightly lower proportion in this context (18 per cent).

**Table 6: Number and proportion of people living with a LLTI**

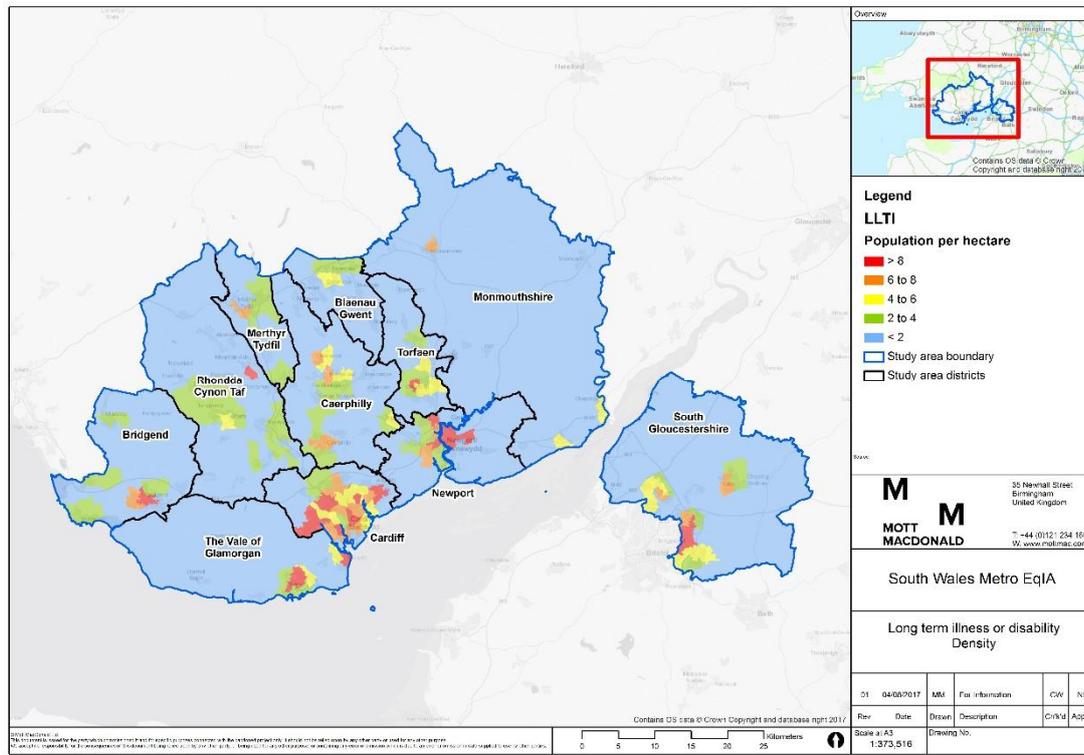
Study area	Total population 2011	LLTI	LLTI%
Blaenau Gwent	69,814	19,009	27%
Bridgend	139,178	34,359	25%
Caerphilly	178,806	45,365	25%
Cardiff	346,090	62,331	18%
Merthyr Tydfil	58,802	15,796	27%
Monmouthshire	91,323	18,392	20%
Newport	145,736	30,316	21%
Rhondda, Cynon, Taff	234,410	60,589	26%
South Gloucestershire	262,767	40,914	16%
the Vale of Glamorgan	126,336	25,629	20%
Torfaen	91,075	21,947	24%
<b>Total Study Area</b>	<b>1,744,337</b>	<b>374,647</b>	<b>21%</b>
Wales	3,063,456	695,855	23%
England and Wales	56,075,912	10,048,441	18%

Source: ONS Census– mid-year population estimates 2015

The map below illustrates that:

- There are high density areas of people with a LLTI throughout the region, although these tend to be on the outskirts of towns, for example Bridgend and Barry.
- Newport and Cardiff also have high densities spread out across the cities.
- Although the majority of the region has low densities, largely owing to its rural nature, there are a number of areas with moderate densities.

Figure 7: LLTI population density per hectare



Source: ONS Census 2011 – mid-year population estimates 2015

### 6.4 Pregnancy and maternity

There is no single indicator by which to measure the overall distribution of ‘pregnancy and maternity’ within a given area. There are, however, a number of proxy measures that can be used.

A proxy measure for pregnancy and maternity is available by identifying the number of females of child bearing age (16-44). The proportion of women aged 16 to 44 in the study area is in line with the England and Wales figure (37 per cent). Only Cardiff (45 per cent) has a proportion significantly above the national figure. There are also two local authorities – the Vale of Glamorgan (32 per cent) and Monmouthshire (29 per cent) that have considerably lower proportions of women aged 16 to 44. This is set out in the table below.

Table 7: Number and proportion of females aged 16-44

Study area	Total females	Females aged 16-44	Females aged 16-44%
Blaenau Gwent	35,342	12,580	36%
Bridgend	71,776	24,336	34%
Caerphilly	91,950	33,018	36%
Cardiff	181,610	81,416	45%
Merthyr Tydfil	30,254	10,984	36%
Monmouthshire	46,979	13,434	29%

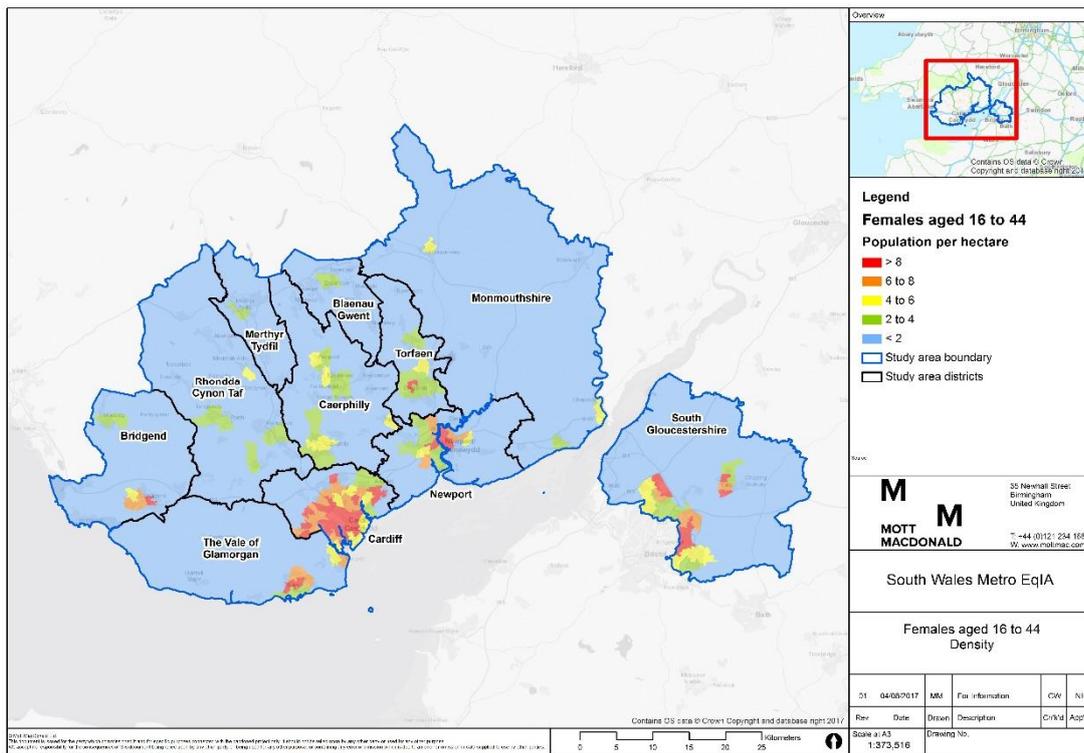
Study area	Total females	Females aged 16-44	Females aged 16-44%
Newport	75,300	27,652	37%
Rhondda, Cynon, Taff	120,966	44,033	36%
South Gloucestershire	138,306	49,619	36%
the Vale of Glamorgan	65,595	21,281	32%
Torfaen	47,049	16,320	35%
<b>Total Study Area</b>	<b>905,127</b>	<b>334,673</b>	<b>37%</b>
Wales	1,573,525	546,704	35%
England and Wales	29,330,566	10,883,205	37%

Source: ONS Census 2011 – mid-year estimates 2015

The map below illustrates that:

- The highest densities of women aged 16 to 44 are located in urban areas, notably around Cardiff and Newport.
- The majority of the region has low densities of women aged 16 to 44, but there are areas with moderate density throughout the study area.

Figure 8: Females aged 16-44 density per hectare



Source: ONS Census 2011 – mid-year population estimates 2015

## 6.5 Race and ethnicity

Race and ethnicity refers to a group of people defined by their race, colour, nationality (including citizenship), ethnicity, or national origin.

As set out in the table below, the proportion of people from a BAME background in the study area (8 per cent), which is significantly below the figure for England and Wales combined (20 per cent). Seven of the local authorities (Blaenau Gwent (3 per cent), Caerphilly (3 per cent), Merthyr Tydfil (5 per cent), Bridgend (4 per cent), Rhondda Cynon Taff (4 per cent), Torfaen (3 per cent) and Monmouthshire (4 per cent)) have significantly lower proportions of people from BAME groups. Newport (13 per cent) and Cardiff (20 per cent) are the only local authorities to have a proportion closer to the England and Wales combined average of 20 per cent.

**Table 8: Number and proportion of people from BAME backgrounds**

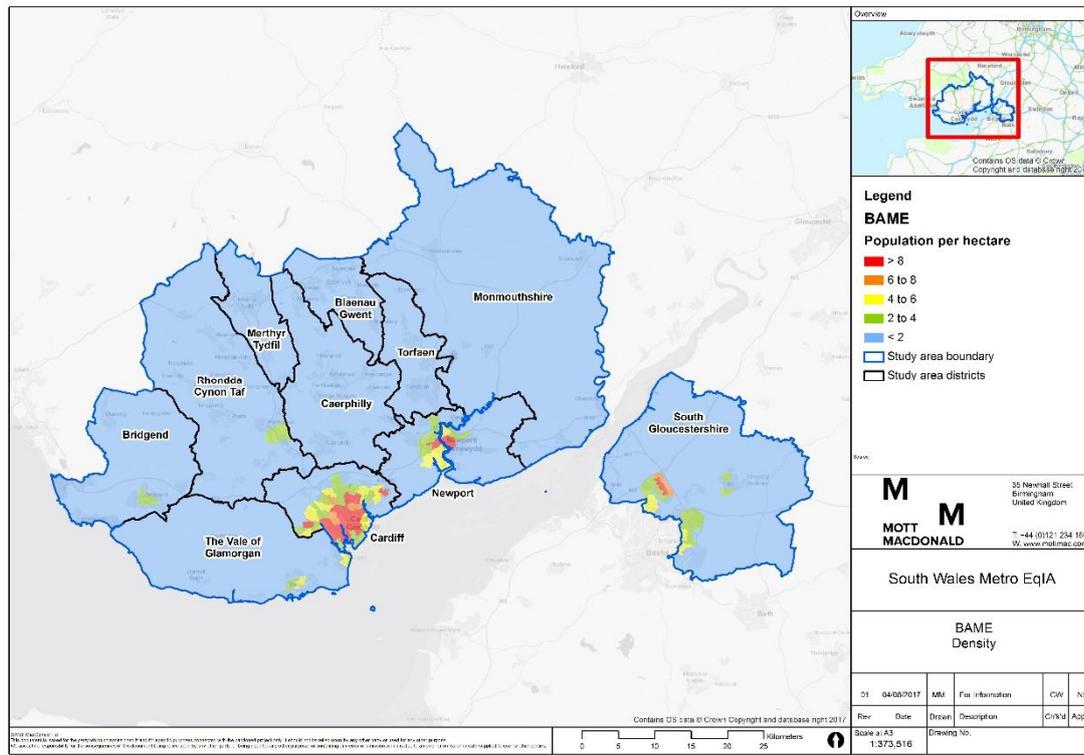
Study area	Total population	BAME	BAME%
Blaenau Gwent	69,814	1,860	3%
Bridgend	139,178	5,522	4%
Caerphilly	178,806	4,907	3%
Cardiff	346,090	68,292	20%
Merthyr Tydfil	58,802	3,167	5%
Monmouthshire	91,323	3,561	4%
Newport	145,736	18,980	13%
Rhondda, Cynon, Taff	234,410	8,694	4%
South Gloucestershire	262,767	21,156	8%
the Vale of Glamorgan	126,336	7,124	6%
Torfaen	91,075	2,866	3%
<b>Total Study Area</b>	<b>1,744,337</b>	<b>146,129</b>	<b>8%</b>
Wales	3,063,456	208,006	7%
England and Wales	56,075,912	10,941,226	20%

Source: ONS Census 2011 – mid-year population estimates 2015

The map below illustrates that:

- Overall the region has very low densities of people from BAME groups.
- There are three notable exceptions. Cardiff has a high density of people from BAME backgrounds throughout the city and its suburbs. Newport also has an area with moderate to high density.

**Figure 9: BAME population density per hectare**



Source: ONS Census 2011 – mid-year population estimates 2015

### 6.6 Sex

According to 2015 Mid-Year Population Estimates (based on the 2011 Census), there were 28.5 million men (49 per cent of the total population) and 29.3 million women (51 per cent of the population) in England and Wales. In the study area, there were 874,902 men (49 per cent of the population) and 905,127 women (51 per cent of the population). These figures are therefore in line with national levels.

### 6.7 Summary

The baseline analysis suggests that proportions of people from groups with protected characteristics are broadly in line with Welsh national averages. However, there are a small number of notable exceptions within individual local authorities. For example, Monmouthshire has a lower proportion of women of childbearing age (aged 16 to 44). In terms of age groups, the study area has no significant disparities in the number of children aged under 16 and young people aged 16 to 25. Three local authorities, though, do have substantially lower proportions of older people aged over 65. Overall, the data suggests that the study area has an age profile that is similar to the national averages.

Cardiff and Newport stand out as the areas with the greatest demographic differences. Cardiff has a substantially higher proportion of people aged 65 and over, but a lower proportion of people living with a LLTI. Newport is the only local authority to have a higher proportion of people in a civil partnership. Both Newport and Cardiff are unique in having significantly higher

proportions of people from Black, Asian and minority ethnic groups (BAME) compared to the regional average. This suggests a split between the urban and rural areas within the region.

# 7 Assessment of impacts

## 7.1 Introduction

This section presents the potential disproportionate positive and negative impacts on protected characteristic groups during the construction and operation phases of the South Wales Metro Phase 2 and Future Phases.

The impacts on protected groups can be categorised into two key groups during both the construction and operational phases. These are disproportionate impacts related to:

- the environment, in particular air quality and noise levels; and
- accessibility of economic and social opportunities.

The evidence for the potential impact, the distribution of the impact and any enhancement or mitigation measures that could be implemented are presented in this section. The analysis within this section is based on the baseline data, a review of relevant literature, and stakeholder engagement. These impacts are indicative only, and will be further updated and refined once detailed information about Phase 2 and the Future Phases is confirmed (i.e. completion of outline and detailed design).

## 7.2 Environment impacts

### 7.2.1 Air quality

#### 7.2.1.1 Construction

During construction, air quality levels may be temporarily adversely affected, as construction activities can mean additional heavy good vehicles (HGVs) travelling in the local area. There is also the potential for construction works to create dust, which also has the potential to temporarily reduce air quality.<sup>61</sup> Stakeholders also noted that due to disruption, or the perception of disruption, on public transport during the construction period, local people may choose private transport for local trips more often. This is likely to have a negative impact on air quality.

- **Pregnant women** living in areas with high levels of pollution are at risk of giving birth to a low birthweight baby and low birthweight can lead to an increase risk of children developing chronic diseases.<sup>62</sup>
- Research has also indicated that **children** are likely to be disproportionately impacted by reductions in air quality, as they tend to spend more time outside and their lungs are still developing.<sup>63</sup>
- **Older<sup>64</sup> and disabled people<sup>65</sup>** are also more likely to be negatively impacted during the construction period, as they are more likely to have health conditions that are negatively impacted by reduced air quality.

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<sup>61</sup> Sustainable build (2017): 'Pollution from construction'.

<sup>62</sup> NHS (2013): 'Air pollution associated with low birthweight'.

<sup>63</sup> UNICEF (2016): 'Clear the air for children'.

<sup>64</sup> DEFRA (2013): 'Short-term effects of air pollution on health'.

<sup>65</sup> Department for Environmental Food and Rural Affairs (2013): 'Guide to UK Air Pollution Information Resources'.

### 7.2.1.2 Operation

During the operational stage, air quality is likely to improve due to electrification of the Metro<sup>66</sup>, and a potential reduction in the number of users of private vehicles.<sup>67</sup>

**Children, older people, disabled people and pregnant women** are likely to disproportionately benefit from improved air quality. Babies and children are less likely to develop health conditions that may be related to poor air quality, and disabled and older people may see their health conditions improve or prevent the onset of new ones.

### 7.2.1.3 Distribution

The evidence review and stakeholder engagement process has shown that children, older people, pregnant women and disabled people are likely to be disproportionately impacted by the proposals than other sections of the population. The table below summaries the distributional assessment for air quality impacts.

**Table 9: Distribution of impact: air quality**

Social group	Study area average	Wales and England average	Distribution of impact
Children	19%	19%	Neutral
Disabled people	21%	18%	Low
Older people	18.1%	18.5%	Neutral
Pregnancy and maternity <sup>68</sup>	37%	37%	Neutral

Table 9 shows that:

- The proportion of children in the study area and the national average is the same. Therefore the distribution of the impact is classified as neutral.
- There are slightly more disabled people living in the study area (21 per cent) than the national average. There is a difference of three per cent and it is therefore classified as low.
- The proportion of older people within the study area is 18.1 per cent. This is only 0.4 per cent below the national average and has been classified as neutral.
- The proportion of women aged 16 to 44 (used here as a proxy measure for pregnancy and maternity) is the same in the study area, as the national average (37 per cent). Therefore, the distribution of this impact has been classified as neutral.

### 7.2.1.4 Mitigation and enhancement

During the construction period, measures should be implemented to limit the negative impacts of reduced air quality. This could include the development and adoption of a Construction Environmental Management Plan (CEMP), incorporating provision to screen sites to stop dust spreading, limiting the number of vehicles needed on site at any one time, and the use of low emission construction vehicles.<sup>69</sup>

<sup>66</sup> DEFRA (2015): 'Draft plans to improve air quality in the UK: tackling nitrogen dioxide in our towns and cities'.

<sup>67</sup> At present, only a high level assessment of the air quality impacts has been undertaken (limited to baseline figures), therefore it is not possible at present to identify any predications / objectives around air quality improvements.

<sup>68</sup> A proxy measure for pregnancy and maternity is available by identifying the number of females of child bearing age (16-44).

<sup>69</sup> Sustainable build (2017): 'Pollution from construction'.

The increased provision of buses and rail services will potentially encourage people to use public transport rather than private cars, which is likely to help to reduce the number of cars on the road and contribute to improved air quality levels. This could be further enhanced by actively encouraging people to use the Metro, by considering ticketing costs, ensuring a frequent and accessible service, and through promotion and advertising the health and environment benefits.

## 7.2.2 Noise levels

### 7.2.2.1 Construction

During construction, there are likely to be noise impacts, resulting from an increase in construction traffic travelling to and from the site and from the noise of the construction machinery.<sup>70</sup> Stakeholders highlighted that noise pollution may cause annoyance to those living nearby, and may disturb users of some community facilities.

- If the construction works are taking place in close proximity to community facilities, such as schools, concentration and cognitive development of **children** may be negatively impacted.<sup>71</sup>
- Noise can also impact those with **learning disabilities**, as changes to noise levels or extreme noise levels can create challenging behaviours.<sup>72</sup>
- High noise levels can also discourage **older and disabled people** from participating in activities outside the home, which can lead to disproportionate health impacts and increase social isolation.<sup>73</sup>

### 7.2.2.2 Operation

During the operational stage it is likely that the noise impacts of the rail component of the South Wales Metro are likely to be reduced due to electrification.<sup>74</sup> Also new rolling stock is likely to be quieter, meaning that noise pollution has the potential to be significantly reduced. Therefore, **children, older people, and disabled people** are likely to disproportionately benefit from a reduction in the negative effects discussed above.

### 7.2.2.3 Distribution

The evidence review and stakeholder engagement process has shown that children, older people, and disabled people are likely to be disproportionately impacted by the proposals than other sections of the population. The table below summaries the distributional assessment for noise level impacts.

**Table 10: Distribution of impact: noise**

Social group	Study area average	Wales and England average	Distribution of impact
Children	19%	19%	Neutral
Disabled people	21%	18%	Low
Older people	18.1%	18.5%	Neutral

<sup>70</sup> Sustainable build (2017): 'Pollution from construction'.

<sup>71</sup> World Health Organisation (2011): 'Burden of disease from environmental noise – quantification of healthy life years lost in Europe'.

<sup>72</sup> Scope defines this as behaviours which are challenging to others and may be a sign that something is wrong. It often shows that there is some unfulfilled need or a problem with communication. Scope defines four types of challenging behaviour, including: self-injurious, aggressive, stereotyped, and non-person directed. Scope (date unknown): 'Challenging behaviour'.

<sup>73</sup> Greater London Authority (2015): 'Health impacts of Cars in London'

<sup>74</sup> Department for Transport (2009): 'Britain's transport infrastructure: rail electrification'.

Source: Mott MacDonald 2017

Table 10 shows that:

- The proportion of children in the study area and the national average is the same. Therefore the distribution of this impact is classified as neutral.
- There are slightly more disabled people living in the study area (21 per cent) than the national average. There is a difference of three per cent and the impact is therefore classified as low.
- The proportion of older people within the study area is 18.1 per cent. This is only 0.4 per cent below the national average, meaning it has been classified as neutral.

#### 7.2.2.4 Mitigation and enhancement

Effective management of noise impacts can be achieved primarily through restrictions on appropriate working hours. A CEMP (as noted above) could be used to manage noise impacts in this way, by setting clear guidelines on working hours, night-time working and working at weekends. It was noted by stakeholders that it should be ensured that works are not undertaken during the night.

Adverse noise impacts during construction could also be mitigated by investing in physical noise reduction measures, such as noise barriers and earth mounds.<sup>75</sup> Reduced noise pollution can also be achieved through careful handling of materials; use of moderate, low-noise power tools; utilisation of low impact technologies; and effective use of sound shields.

Lowering noise pollution impacts could be enhanced by ensuring that all new rolling stock is as quiet as possible and maximising the use of electrification within the proposals. There is an ambition set out in the SEA to resolve the noise priority areas that are within the Metro scheme footprint.

### 7.3 Accessibility of public transport

#### 7.3.1 Accessibility of the network

##### 7.3.1.1 Construction

During construction, accessibility to stations that are undergoing upgrades may be restricted, meaning some groups may be unable to access some stations and services. This may lead to travel disruption and inconvenience for those who are temporarily unable to access stations and their facilities. Disruption during the construction period may also cause users to avoid using public transport due to unfamiliarity with available services, making some people more anxious about travelling.<sup>76</sup> Stakeholders also noted that congestion may be increased during the construction period, meaning that some users are unable to travel at peak times due to limited space and problems with accessibility.

This is likely to particularly impact those groups who may struggle to access poorly designed (permanent and temporary) infrastructure:

- **Older people** are particularly likely to be impacted by any changes to public transport and its accessibility as they are more likely to have mobility problems.<sup>77</sup> They are also more likely to

<sup>75</sup> Sustainable build (2017): 'Pollution from construction'.

<sup>76</sup> Transport for London (2009): 'Older people's experience of travel in London'.

<sup>77</sup> Transport for London (2009): 'Older people's experience of travel in London'.

lack access to the internet, making it harder to make alternative arrangements that are publicised online.

- Accessibility is cited as a common barrier experienced by **disabled people** with regards to public transport (including, for example, lack of ramps and low flooring).<sup>78</sup>
- Research indicates that local public transport is a lifeline for many parents with young children and accessible buses make it easier to use, therefore reducing social isolation and increasing social inclusion. Multiple issues were highlighted with people from the **pregnancy and maternity** protected characteristic group in accessing public transport.<sup>79</sup>

### 7.3.1.2 Operation

During the operational stage, there is the potential for pedestrian access to be improved, depending on how the proposals cater for all potential passenger groups. The proposals have the ability to significantly improve passenger accessibility of public transport across the region, as long as improving accessibility is explicitly designed into the proposals from the start.

Currently there are many problems with accessibility in the pedestrian and transportation environment, which is restricting access to the network for those users who require accessible infrastructure. Stakeholders noted the following as key problems with the accessibility of the current network:

- lack of / inaudibility of spoken announcements or visual displays;
- big gaps between trains and platform edges;
- broken lifts;
- steep gradients on slopes and ramps;
- stepped footbridges without an accessible alternative;
- lack of staff training on accessibility equipment (e.g. ramps);
- not enough space for wheelchairs / pushchairs; and
- lack of accessible toilets.

Stakeholders highlighted that these problems were particularly acute among **older and disabled people**, as well as people from the **pregnancy and maternity** protected characteristic group (who may be travelling with a pushchair / pram and / or with young children).

### 7.3.1.3 Distribution

The evidence review and stakeholder engagement process has shown that disabled and older people, as well as people from the pregnancy and maternity protected characteristic group are likely to be disproportionately impacted by the proposals than other sections of the population. The table below summarises the distributional assessment for impacts resulting from accessibility of the network.

**Table 11: Distribution of impact: accessibility of the network**

Social group	Study area average	Wales and England average	Distribution of impact
Disabled people	21%	18%	Low
Older people	18.1%	18.5%	Neutral

<sup>78</sup> Transport for London (2015): 'Travel in London: Understanding our diverse communities'.

<sup>79</sup> European Union Commission (date unknown): 'Priorities for the use of bus transport by disabled people, older people and parents with young children in buggies'.

Social group	Study area average	Wales and England average	Distribution of impact
Pregnancy and maternity	37%	37%	Neutral

Source: Mott MacDonald 2017

Table 11 shows that:

- There are slightly more disabled people living in the study area (21 per cent) than the national average. There is a difference of three per cent and it is therefore classified as low.
- The proportion of older people within the study area is 18.1 per cent. This is only 0.4 per cent below the national average, meaning it has been classified as neutral.
- The proportion of women aged 16 to 44 (used here as a proxy measure for pregnancy and maternity) is the same in the study area, as the national average (37 per cent). Therefore, the distribution of this impact has been classified as neutral.

#### 7.3.1.4 Mitigation and enhancement

Further in-depth consultation with older people and disabled people (and groups that represent their interests, as well as users travelling with a pushchair / pram (and their representatives)) should be undertaken on detailed designs for all aspects of the scheme. This is recommended both to identify particular issues with scheme design and to help to secure buy-in to any proposed temporary and permanent changes to the network arising from construction and operation of the final South Wales Metro Programme. Consultation needs to involve local groups, in order to understand what ideas they have about measures to manage and mitigate any negative impacts.<sup>80</sup>

Appropriate information should also be provided so that users can plan their journeys in advance and make alternative arrangements, which will minimise any potential negative impacts arising from restricted access to the network. Communication is vital in keeping local communities informed of the works and mitigating any potential negative impacts during the construction phase. All information needs to be clear, easy to understand and should be made available in a variety of formats.

During both the construction and operation period, the provision of inclusive pedestrian access features (such as step-free access, ramps, reduced street furniture and tactile paving) is recommended to mitigate access barriers along the routes of the Metro. All relevant guidelines should be followed in order to improve accessibility for all users of the network.

The proposals could be further enhanced by ensuring that connections are provided with other modes of transport, as currently people can have very disjointed journeys due to inconsistent accessibility across different forms of public transport. Stakeholders particularly highlighted that accessibility provision often is not available once a user has left a station. One possible enhancement to the current proposals would be to investigate how accessibility can be improved after users exit the station or stop. It is likely that this will involve collaborative working with local authorities and others to help better plan door to door accessible provision.

<sup>80</sup> Royal Borough of Kensington and Chelsea (date unknown): 'Communication during building projects'.

## 7.3.2 Employment

### 7.3.2.1 Construction

Temporary employment will be generated through the need for people to provide construction and non-construction support throughout the construction period. These opportunities could provide employment opportunities from local people,

There is, though, the potential for negative impacts during the construction phase, as access to the network may be reduced. As during any construction period of any major transportation project, there is the potential for service disruption. Stakeholders also highlighted that during the construction period, there is the potential for re-routing of services, making journeys to / from work more difficult. This is likely to particularly impact people without access to private transport:

- **Young people** face disproportionately high insurance costs and see the costs of maintaining a car as a barrier to owning private transport.<sup>81</sup>
- Evidence also suggests that 60 per cent of **disabled people** do not have a car available to their households, compared to 27 per cent of the overall population.<sup>82</sup>
- People from certain **BAME communities** are also less likely to own a car and rely more heavily on public transport than other ethnic groups.<sup>83</sup>
- **Women** are also less likely to hold a full car driving license than men. In 2016, 80 per cent of men held a driving license compared to 67 per cent of women.<sup>84</sup>
- For **older people**, public transport can play an important role in maintaining their ability to visit friends and relatives and take part in activities outside of the home.<sup>85</sup>

The extent of this impact is likely to depend on the duration and severity of the disruptions to services required.

### 7.3.2.2 Operation

During the operational stage, increased connectivity will create opportunities for people to access employment in new locations. The proposals are also likely to improve access for those groups discussed above (**young people, disabled people, people from BAME communities, women, and older people**) who are less likely to have regular or easy access to private transport. Access to employment opportunities for these groups is likely to improve.

Stakeholders highlighted that new locations are likely to become more “commutable” due to reduced journey times and it was hoped that the proposals would lead to “polycentric development”, with economic activity moving away from being solely focussed on Cardiff. The proposals are likely to improve the economy of South Wales and lead to regional economic growth, with opportunities for increased employment and social improvement. There is the potential for a range of permanent full time and part time employment to be generated across the network in a mix of professional and manual roles, particularly for those people (such as **young people** and **BAME groups** as noted above) that are more likely to struggle with access to employment opportunities.

<sup>81</sup> RAC Foundation (2017): ‘Motor insurance premiums for young drivers in the UK and Europe’.

<sup>82</sup> The Papworth Trust (2016): ‘Disability in the United Kingdom: Facts and figures’.

<sup>83</sup> Department for Transport (2015): ‘Travel by car availability, income, ethnic group, household type and NS-SEC’

<sup>84</sup> Department for Transport (2017): ‘National Travel Survey 2016’.

<sup>85</sup> Transport for London (2015): ‘Travel in London: understanding our diverse communities’.

### 7.3.2.3 Distribution

The evidence review and stakeholder engagement process has shown that people from BAME groups, disabled, older and younger people, as well as women are likely to be disproportionately impacted by the proposals than other sections of the population. The table below summaries the distributional assessment for employment impacts.

**Table 12: Distribution impact: employment**

Social group	Study area average	Wales and England average	Distribution of impact
BAME	8%	20%	Neutral
Disabled people	21%	18%	Low
Older people	18.1%	18.5%	Neutral
Women	51%	51%	Neutral
Young people (16-24)	14%	13%	Low

Source: Mott MacDonald 2017

Table 12 shows that:

- The proportion of people from a BAME background is significantly lower in the study area (eight per cent), than the national average of 20 per cent. This is a difference of 12 per cent and means that the distribution of the impact has been classified as neutral (as the study area figure is lower than the national average).
- There are slightly more disabled people living in the study area (21 per cent) than the national average. There is a difference of three per cent and it is therefore classified as low.
- The proportion of older people within the study area is 18.1 per cent. This is only 0.4 per cent below the national average, meaning it has been classified as neutral.
- The proportion of women aged 16 to 44 (used here as a proxy measure for pregnancy and maternity) is the same in the study area, as the national average (37 per cent). Therefore, the distribution of this impact has been classified as neutral.
- The proportion of young people living in the study area (14 per cent) is broadly similar to the national average (13 per cent), meaning that the distribution of the impact has been classified as low.

### 7.3.2.4 Mitigation and enhancement

The potential negative impacts of reduced access to the network that could arise during the construction phase can be managed through providing alternative routes and public transport provision to maintain people's access to employment (and other destinations). All replacement services will need to be appropriate and well-publicised and additional measures may need to be implemented, for example bus priority measures. These measures should ensure that journey times remain reasonable and places of importance to local people are still accessible. The works should also be managed to ensure least disruption for local residents directly affected by the Programme. Stakeholders noted that consultation should be undertaken with local authorities so that there is no conflict of works during the construction works on the Programme.

Consultation needs to involve local groups to help best understand their potential concerns and any recommendations about measures to manage and mitigate any actual and perceived negative impacts<sup>86</sup>. Information should also be provided via a variety of media (to ensure access

<sup>86</sup> Royal Borough of Kensington and Chelsea (date unknown): 'Communication during building projects'.

for all) so that people can plan their journeys in advance and make alternative arrangements where necessary, helping to minimise any potential negative impact.

During both the construction and operation phase, there is the potential for employment benefits to be increased through targeting specific groups who are likely to disproportionately benefit from employment opportunities, for example those from BAME groups and young people. A stakeholder posited the idea that the works should build community procurement benefits into the proposals, so that local people benefit from employment opportunities. There is also the potential for development opportunities around the new stations and enhanced routes, for example, through creation of new business parks.

Maximising the employment opportunities arising from the South Wales Metro Programme for local people – including young people and BAME people – may require the implementation of contractual clauses when engaging a contractor to undertake the work. Such clauses could be used to specify that a certain proportion of the construction workforce are drawn from the local area, perhaps targeting those who are out of work, and offering opportunities for work-based training, such as apprenticeships.

One stakeholder also noted that the cost of the new services should be carefully considered, as high cost public transport is likely to limit the benefits of the Programme and reduce the benefit to those groups who are likely to be on lower incomes / unemployed.

### 7.3.3 Social infrastructure

#### 7.3.3.1 Construction

As noted above with access to employment, during the construction stage, access to the network and subsequently to social infrastructure may be disrupted on a temporary basis, depending upon how the works are managed. This may restrict the ability of local people to access medical appointments and social networks,<sup>87</sup> or other social and cultural goods. This may be particularly challenging for those people (including **young people, disabled and older people, women** and those from **BAME communities** as discussed above) who are less likely to have access to private transport, and for those who require access to facilities that service particular social, cultural, or religious groups.

#### 7.3.3.2 Operation

During the operational stage, the improved network – including additional stations, and rail and bus services – will increase residents' access to social infrastructure, particularly those in rural communities who may not currently have regular and reliable access to public transport. Numerous stakeholders commented on how this should help people to travel more quickly to different places and create a more connected public transport system. Once the infrastructure is in place, there is scope for people with protected characteristics (including **young people, disabled people, older people, women** and those from **BAME communities** as discussed above) to increase their use of public transport due to the improvements to services in areas that currently have limited access.

#### 7.3.3.3 Distribution

The evidence review and stakeholder engagement process has shown that people from BAME groups, young people, disabled and older people, and women are likely to be disproportionately

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<sup>87</sup> UCL (2014): 'Transport and poverty: a review of the evidence'.

impacted by the proposals than other sections of the population. The table below summarises the distributional assessment for social infrastructure accessibility impacts.

**Table 13: Distribution impact: accessibility of social infrastructure**

Social group	Study area average	Wales and England average	Distribution of impact
BAME	8%	20%	Neutral
Disabled people	21%	18%	Low
Older people	18.1%	18.5%	Neutral
Women	51%	51%	Neutral
Young people	14%	13%	Low

Source: Mott MacDonald 2017

Table 13 shows that:

- The proportion of people from a BAME background is significantly lower in the study area (eight per cent), than the national average of 20 per cent. This is a difference of 12 per cent and means that the distribution of the impact has been classified as neutral (as the study area figure is lower than the national average).
- There are slightly more disabled people living in the study area (21 per cent) than the national average. There is a difference of three per cent and it is therefore classified as low.
- The proportion of older people within the study area is 18.1 per cent. This is only 0.4 per cent below the national average, meaning it has been classified as neutral.
- The proportion of women in the study area and nationally is the same (51 per cent), meaning that the impacts has been classified as neutral.
- The proportion of young people living in the study area (14 per cent) is broadly similar to the national average (13 per cent), meaning that the distribution of the impact has been classified as low.

#### 7.3.3.4 Mitigation and enhancement

As above, during the construction phase, the potential negative impacts of reduced access to the network can be mitigated through providing appropriate and convenient alternative routes and modes of transport for people to access the social infrastructure they may require. The works should also be managed to minimise construction-related disruption for local residents.

Consultation will need to involve local community and representative groups (once schemes within the Programme have been finalised) in order to understand their thoughts on measures to manage and mitigate the negative impacts.<sup>88</sup> Information should also be provided so that people can plan their journeys in advance and make alternative arrangements, which will help minimise any potential negative impacts arising from restricted access of the network.

Ability to access social infrastructure for those without access to a car could also be enhanced by effectively integrating tickets across different modes of transport and reducing the cost of transport. One stakeholder proposed that the WG should look at extending the free bus passes for older and disabled people to the young, as well as to other modes of transport such as the rail network.

<sup>88</sup> Royal Borough of Kensington and Chelsea (date unknown): 'Communication during building projects'.

### 7.3.4 Access to information

#### 7.3.4.1 Construction

In addition to the impacts of changes to the physical environment, the processes around the development also have the potential to impact on groups with protected characteristics. In particular, information regarding disruptions to the network and potential severance of existing routes during the construction period will need to be communicated to the public. Access to information can disproportionately impact certain groups:

- **Older people** are less likely to have access to the internet, meaning that they may miss out on information about consultations and scheduling of works.<sup>89</sup>
- Many **disabled people** can also find it difficult to access information when using public transport.<sup>90</sup> People who are deaf or blind may also have problems accessing information in traditional formats or on websites.<sup>91</sup>
- For those with English as a second language, which may include people from some **BAME** groups, accessing information is more difficult due to language barriers. Language barriers may prevent people from accessing information about unfamiliar transport routes or from taking up social and employment opportunities in their local area.<sup>92</sup>

#### 7.3.4.2 Operation

Information during the operation period, for example, about new routes and service times, also need to be effectively communicated to users and to the local population. How this information is communicated can have a substantial impact on the accessibility of services. Stakeholders highlighted how lack of familiarity of service can make **disabled and older people**, as well as those from **BAME groups**, less likely to use the new service, therefore preventing them from benefitting from its implementation.

#### 7.3.4.3 Distribution

The evidence review and stakeholder engagement process has shown that people from BAME groups, disabled and older people are likely to be disproportionately impacted by the proposals than other sections of the population. The table below summarises the distributional assessment for impacts resulting to access to information about the Programme.

**Table 14: Distribution impact: access to information about the Programme**

Social group	Study area average	Wales and England average	Distribution of impact
BAME	8%	20%	Neutral
Disabled people	21%	18%	Low
Older people	18.1%	18.5%	Neutral

Source: Mott MacDonald 2017

Table 14 shows that:

<sup>89</sup> Britain thinks (2015): 'Life offline: what life is like for older people who don't use the internet'.

<sup>90</sup> NHS (2015): 'What is a learning disability?'.

<sup>91</sup> Transport Committee (2013), Access to transport for disabled people, available at: <https://publications.parliament.uk/pa/cm201314/cmselect/cmtran/116/11602.htm>

<sup>92</sup> Transport for London (2012): 'Understanding the travel needs of London's diverse communities'.

- The proportion of people from a BAME background is significantly lower in the study area (eight per cent), than the national average of 20 per cent. This is a difference of 12 per cent and means that the distribution of the impact has been classified as neutral (as the study area figure is lower than the national average).
- There are slightly more disabled people living in the study area (21 per cent) than the national average. There is a difference of three per cent and it is therefore classified as low.
- The proportion of older people within the study area is 18.1 per cent. This is only 0.4 per cent below the national average, meaning it has been classified as neutral.

#### 7.3.4.4 Mitigation and enhancement

The provision of information in a range of formats can help to mitigate some of the difficulties people have in accessing information. For example, speech recognition, audio points, visual displays (destination maps and timetables), hearing loops, Braille, clear signage, and large print may help to ensure that disabled people are fully aware of public transport services, and are able to make full use of them.<sup>93</sup>

Moreover, the use of technology (such as transport apps) can support disabled people to access information in a subtle and effective way. Information would need to be clear and easily understandable for the ordinary person and in a range of languages, so that everyone within the local community can access the information. It would also be important to involve a range of people in disseminating the information, for example local community groups.

Training is also essential in delivering an accessible and inclusive service; providing additional training to staff would support them to better identify passenger needs. This in turn would help staff to communicate with a range of people with different needs and provide more accessible information. Spoken announcements on all public transport was raised by stakeholders during the engagement process. Installation of visual displays would also help people with hearing loss, as well as older people with similar sensory impairments. This could further enhance the benefits of the Programme for these users, through improving access to information.

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<sup>93</sup> BILD (2002): 'Factsheet: Communication', available at: <http://www.bild.org.uk/>

## 8 Conclusions and recommendations

### 8.1 Summary of impacts

The tables below summarise the findings of the potential impacts and identifies the groups likely to experience disproportionate positive and negative impacts within the context of the South Wales Metro Programme from Phase 2 onwards, during both the construction and operational phases.

Drawing together the information from the baseline, literature review and stakeholder engagement the impacts, their extent, and the sensitivity of the groups likely to experience them were identified to reach a balanced assessment of impact and distribution. The following scale has been used to determine the magnitude of both positive and negative impacts on the groups identified.

**Table 15: Impact assessment scale**

000	Major adverse
00	Moderate adverse
0	Minor adverse
0	Neutral
P	Minor beneficial
PP	Moderate beneficial
PPP	Major beneficial

The tables also identify those impacts that can be assessed quantitatively by assessing the distribution of the impact in the context of the social and demographic profile of the local population.

**Table 16: Impacts summary: construction stage**

Impact area	Impact	Potential disproportionate impacts	Protected characteristic(s)	Distribution of impact	Impact
Environment	Air quality impacts	During construction, air quality levels may be temporarily adversely affected, as construction activities can mean additional HGVs travelling in the local area. There is also the potential for construction works to create dust, which also has the potential to temporarily reduce air quality.	Children	Neutral	Minor adverse
			Disabled people	Low	Minor adverse
			Older people	Neutral	Minor adverse
			Pregnancy and maternity	Neutral	Minor adverse
	Noise impacts	During construction, there are likely to be noise impacts, resulting from an increase in construction traffic travelling to and from the site and from the noise of the construction plant.	Children	Neutral	Moderate adverse
			Disabled people	Low	Minor adverse
			Older people	Neutral	Minor adverse

## Equality Impact Assessment

Impact area	Impact	Potential disproportionate impacts	Protected characteristic(s)	Distribution of impact	Impact
Accessibility of the Metro	Accessibility of the network	Accessibility at stations that are undergoing improvement works may be restricted.	Disabled people	Low	Minor adverse
			Older people	Neutral	Minor adverse
			Pregnancy and maternity	Neutral	Minor adverse
	Employment impacts	During the construction stage, temporary employment will be generated through the need for people to provide construction and non-construction support. There is though, the potential for negative impacts during the construction phase, as access to the network may be reduced.	BAME groups	Neutral	Neutral
			Disabled people	Low	Minor adverse
			Older people	Neutral	Minor adverse
			Women	Neutral	Minor adverse
			Young people	Low	Neutral
	Social infrastructure impacts	Accessibility to the network and subsequently to social infrastructure may be disrupted on a temporary basis.	BAME	Neutral	Minor adverse
			Disabled people	Low	Minor adverse
			Older people	Neutral	Minor adverse
			Women	Neutral	Neutral
			Young people	Low	Minor adverse
	Access to information on the Programme	The processes around the development have the potential to impact on groups with protected characteristics. In particular, during the construction stage, how any disruptions to the network and potential severance of existing routes is communicated to the public.	BAME groups	Neutral	Minor adverse
			Disabled people	Low	Minor adverse
			Older people	Neutral	Minor adverse

Source: Mott MacDonald 2017

**Table 17: Impacts summary: operational stage**

Impact area	Impact	Potential disproportionate impacts	Protected characteristic(s)	Distribution of impact	Impact
Environment	Air quality impacts	During the operational stage, air quality is likely to improve due to electrification of the Metro, and potential reduction in number of users of private vehicles.	Children	Neutral	Minor beneficial
			Disabled people	Low	Minor beneficial
			Older people	Neutral	Minor beneficial
			Pregnancy and maternity	Neutral	Minor beneficial
	Noise impacts	During the operational stage it is the noise impacts of the	Children	Neutral	Moderate beneficial

Impact area	Impact	Potential disproportionate impacts	Protected characteristic(s)	Distribution of impact	Impact
Accessibility of the Metro		rail component of the South Wales Metro are likely to be reduced due to electrification. Also new rolling stock is likely to be quieter, meaning that noise pollution has the potential to be significantly reduced.	Disabled people	Low	Minor beneficial
			Older people	Neutral	Minor beneficial
	Accessibility of the network	During the operational stage, there is the potential for pedestrian access to be improved, depending on how the proposals plan to cater for pedestrians.	Disabled people	Low	Minor beneficial
			Older people	Neutral	Minor beneficial
			Pregnancy and maternity	Neutral	Minor beneficial
	Employment impacts	During the operational stage, increased connectivity will enable access to employment opportunities. Permanent full time and part time employment will be also be generated across the network.	BAME groups	Neutral	Moderate beneficial
			Disabled people	Low	Minor beneficial
			Older people	Neutral	Minor beneficial
			Women	Neutral	Minor beneficial
			Young people	Low	Moderate beneficial
	Social infrastructure impacts	During the operational stage, the improved network including additional stations, and rail and bus services will increase residents access to social infrastructure, particularly those in rural communities who may not currently have access to public transport.	BAME	Neutral	Moderate beneficial
			Disabled people	Low	Moderate beneficial
			Older people	Neutral	Moderate beneficial
			Women	Neutral	Minor beneficial
			Young people	Low	Moderate beneficial
	Access to information on the Programme	Information during the operation period, for example, about new routes and service times, also need to be communicated to the local population. How this information is communicated can have a great impact on the accessibility of services.	BAME groups	Neutral	Neutral
			Disabled people	Low	Neutral
			Older people	Neutral	Neutral

Source: Mott MacDonald 2017

## 8.2 Summary of mitigation and enhancements: recommendations

### 8.2.1 Mitigation

A range of mitigation measures could be implemented to minimise and manage the potential negative impacts that may occur as a result of the proposed works. These are set out in the previous chapter, but are summarised below and include:

- measures to reduce noise and air pollution impacts;
- communication and engagement with the local population;
- maintaining access throughout the construction period to order to minimise disruption; and

- putting in place alternative travel arrangements, if access is disrupted, to ensure that people are still able to travel around the region.

Mitigation measures will need to be assessed on a case-by-case basis, depending on the local situation, for example how accessible and well-positioned the local road network is and how close to local houses and public facilities the proposed works will be. It is likely that different solutions will be necessary, based on the specific problem and local situation.

### 8.2.2 Enhancements

The proposals could be enhanced through consideration of the following to ensure that benefits are realised to the greatest degree. These are also set out in the previous chapter, but include:

- integrating different transport modes to enable intermodal travel. For example ticket, route and service times should work together to create a more joined-up system;
- considering accessibility at the earliest stage within the design proposals. All facilities at, for example, stations should be fully accessible for all users;
- providing additional training for staff working in a public transport setting in order to ensure that they are fully able to assist those who need help when using public transport;
- considering wider accessibility alongside the Metro proposals, for example making town centres, bus stops and other areas associated with the use of public transport;
- targeting employment opportunities, in the short and long term, towards local people, especially those who are more likely to be unemployed; and
- improving safety and security through consistent implementation of additional measures, such as CCTV and adequate lighting, throughout the proposed works.

### 8.3 Next steps

The EqIA has identified a range of potential impacts potentially disproportionately affecting people with protected characteristics. Implementation of the mitigation and enhancement measures set out above will contribute to managing these potential impacts.

There is a requirement as part of the PSED in Wales to monitor the project to ensure that the general and specific duties are complied with.<sup>94</sup>

This EqIA will be published alongside the SEA and HIA for the South Wales Metro Phase 2 and 3.

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<sup>94</sup> EHRC: 'Assessing impact: A guide for listed public authorities in Wales'

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# A. Full list of projects under consideration

## A.1 Introduction

This table provides a full list of the shortlisted packages of schemes that are currently being considered for Phase 2.

**Table 18: Options and description of packages of schemes**

Option	Description
<b>Do Nothing</b> <ul style="list-style-type: none"> <li>No change from current running options</li> </ul>	No changes to the South Wales Metro network.
<b>Rhymney Package</b> <ul style="list-style-type: none"> <li>Scheme 1-Light Rail Conversion Cardiff Queen Street to Cardiff to Rhymney.</li> <li>Scheme 8: Light Rail conversion Ystrad Mynach to Trelewis</li> <li>Schemes 12 and 13: Light Rail Station Wedal Road and Crwys Road.</li> <li>Scheme 166: Park and Ride Cardiff Gate</li> </ul>	Electrification in the form of Light rail and Heavy rail. Likely to involve installation of gantries, signal alteration, works to bridges and tunnels, replacement of rolling stock. New stations along existing and Park and ride at Cardiff Gate near to existing business park.
<b>MTA Lines Package</b> <ul style="list-style-type: none"> <li>Scheme 26: Light Rail Conversion of existing Heavy Rail lines</li> <li>Cardiff Queen Street to Merthyr / Treherbert / Aberdare</li> </ul>	Electrification in the form of Light rail and Heavy rail. Likely to involve installation of gantries, signal alteration, works to bridges and tunnels, replacement of rolling stock
<b>MTA Lines Package</b> <ul style="list-style-type: none"> <li>Scheme 30 (LR station, Gabalfa)</li> <li>Scheme 34 (LR station, Upper Boat)</li> <li>Scheme 36 (LR station, Nantgarw)</li> <li>Scheme 38 (LR station, Maindy)</li> <li>Scheme 140 (New Bus Station, Merthyr)</li> <li>Scheme 147 (Aberdare Bus Station Upgrade)</li> <li>Scheme 159 (Pontypridd Bus Station Upgrade)</li> </ul>	Construction of new light rail stations. Potentially partial demolition of bus stations and expanded facilities.
<b>Central Cardiff on Street Package</b> <ul style="list-style-type: none"> <li>Scheme 22: LR conversion of Cardiff Bay and Coryton Lines</li> <li>Schemes 20 and 21: Extension of Cardiff Bay Line to Cardiff Central (via Dumballs Rd) and Porth Teigr (via Bute Place and Pierhead St)</li> <li>Scheme 16: LR station Louden Sq.</li> <li>Scheme 218: LR on street from Cardiff Castle to Cathays</li> </ul>	Predominantly electrification, construction of one new station and also tram style on street running over a small distance.
<b>Northwest Corridor Package</b> <ul style="list-style-type: none"> <li>Schemes 53 and 229: LR spur from Creigau to Pontyclun via Llantrisant and Llantrisant to Beddau</li> <li>Scheme 49: LR Station Victoria Park</li> </ul>	Re-opening of a historic rail line with new electric light rail. New light rail station, Cardiff (Victoria Park)
<b>Vale of Glamorgan line package</b> <ul style="list-style-type: none"> <li>Scheme 65 – LR spur to Sports Village in Cardiff</li> <li>Scheme 67: HR Station St Athan</li> <li>Schemes 94, 120: BRT Cardiff – Barry and Cardiff – Cardiff Airport</li> <li>Scheme 226 HR diesel service enhancements Cardiff to Bridgend</li> </ul>	Electrified extension of Penarth Line to Cardiff Sports Village, enhanced frequency diesels to Bridgend, with BRT schemes and one new station.  Diesel is assumed to be lower emissions newer diesel therefore enhanced frequencies are not likely to significantly affect emissions.
<b>VOG Line Package</b>	Street works and gantry construction.

Option	Description
<ul style="list-style-type: none"> <li>Scheme 65: LR conversion of Penarth Line with on-street running through Grangetown</li> </ul>	
<b>Bridgend Package</b> <ul style="list-style-type: none"> <li>Scheme 110: BRT from Bridgend to Porthcawl</li> </ul>	Road works to provide priority running (possible segregation) for buses to reduce delays due to congestion.
<b>Ebbw Valley Line</b> <ul style="list-style-type: none"> <li>Scheme 84: HR Station at Newport West</li> </ul>	Construction of new station.
<b>Mainline Relief Lines</b> <ul style="list-style-type: none"> <li>Scheme 71: HR Electrification of existing HR lines between Cardiff Central &amp; Severn Tunnel Junction (plus Scheme 81 additional services through Severn Tunnel Junction)</li> <li>Schemes 152 and 204: Upgrade of station plus P&amp;Ride Cardiff Central</li> <li>Schemes 76, 77: HR electric stations Rumney and St Mellons</li> <li>Scheme 168: Park and Ride Llanwern</li> </ul>	Installation of gantries, expansion of existing parking facilities, additional train services.
<b>Newport BRT Network</b> <ul style="list-style-type: none"> <li>Schemes 80, 102 and 104: Newport – Cardiff, Newport – Celtic Springs, Newport – Celtic Manor, Celtic Manor – Monmouth and Newport – Malpas (also includes Cross Valleys BRT)</li> </ul>	Road works to provide priority running (possible segregation) for buses to reduce delays due to congestion.
<b>Dualling of existing lines</b> <ul style="list-style-type: none"> <li>Cardiff Bay to Cardiff Queen Street, Heath to Coryton, Radyr – Taffs Well</li> <li>Abercynon – Aberdare, Porth – Treherbert</li> <li>Troed-y-Rhiw-Pentrebach, Bargoed - Rhymney</li> </ul>	Installation of an additional line adjacent to existing, along key corridors to allow enhanced frequency running.
In combination schemes	
<b>Rhymney package Less Likely Options</b> <ul style="list-style-type: none"> <li>(P&amp;R Rhymney, Ystrad Mynach, Bargoed, Pengam, Llanbradach and Cardiff Gate.</li> <li>LR to Cardiff Gate, BRT to Cardiff Gate, New LR stations Wedal Rd, Crwys Rd</li> <li>Station upgrade Ystrad Mynach</li> <li>Re-opening of HR alignment as LR plus on-street Hengoed to Blackwood</li> </ul>	Combination of 6 No. Park and Ride facilities, new light rail (electric) to Cardiff Gate, Bus improvement measures to Cardiff gate, New Stations in Cardiff and re-opening of historic rail line (plus on street running) Hengoed to Blackwood.
<b>MTA lines package Less Likely Options</b> <ul style="list-style-type: none"> <li>BRT Maerdy – Porth and Cardiff-Pontypridd</li> <li>LR on street Merthyr-Dowlais Top)</li> </ul>	Bus improvement options and on-street or tram type running.
<b>NW Corridor, less likely options</b> <ul style="list-style-type: none"> <li>P&amp;Ride Pontyclun, Miskin, J33</li> <li>BRT Cardiff – Pontyclun, Pontyclun-Church Village – Pontypridd, Cardiff – Talbot Green</li> <li>HR station St. Fagans</li> <li>Bus and Rail interchange Ely Paper Mill</li> </ul>	3 No. Park and Ride sites, bus rapid transit measures, new heavy rail (diesel) station on existing line and a new bus / rail interchange.
<b>VOG Package – Less likely options</b> <ul style="list-style-type: none"> <li>BRT priority measures, Cardiff – Dinas Powys</li> </ul>	Road works to provide BRT. New rail line (short length across farmland, new HR station and new Park and Ride
<b>Bridgend Package – Less Likely Options</b> <ul style="list-style-type: none"> <li>BRT Bridgend – Blaengarw</li> <li>Bridgend – Maesteg</li> <li>Bridgend – Treorchy</li> <li>Bridgend-Cowbridge-Cardiff</li> <li>Track doubling Garth-Tondu</li> <li>P &amp; Ride Pyle, Bridgend, HR Station, Brackla</li> <li>Enhanced frequency HR diesel Cardiff Central – Pontyclun</li> </ul>	Roadworks to deliver bus enhancement measures, additional track adjacent to existing between Garth and Tondu, single park and ride near Bridgend, new rail station in Brackla and more regular train service (modern diesel) between Cardiff and Pontyclun.

Option	Description
<b>Ebbw Valley Line Less likely Options</b> <ul style="list-style-type: none"> <li>● HR electric upgrade Cardiff Central – Ebbw Vale</li> <li>● HR diesel spur to Abertillery, BRT Abertillery – Newbridge</li> <li>● P &amp; Ride Wern industrial estate</li> <li>● HR station Crumlin</li> </ul>	No description provided
<b>Marches Package less likely options</b> <ul style="list-style-type: none"> <li>● Scheme 86: Enhanced frequency diesel Cardiff to Abergavenny</li> <li>● HR stations Caerleon, Seastopol and Mamhilad. Park and Ride Abergavenny</li> </ul>	No description provided
<b>Cardiff on Street – Less Likely Options</b> <ul style="list-style-type: none"> <li>● P &amp; R Coryton, LR Coryton - Radyr / Morganstown</li> <li>● LR Heath Holt - Wedal Rd, LR on street Cardiff – St Mellons, LR to Culverhouse Cross, various on street LR options</li> </ul>	No description provided

Source: Mott MacDonald (2017): 'South Wales Metro Strategic Environmental Assessment'

## B. Stakeholder engagement

### B.1 Stakeholder consultations

As the proposed Metro Programme will affect a range of local users, stakeholder engagement activities have been undertaken by Mott MacDonald in August / September 2017. Engagement has been carried out with representatives from all 11 of the local authorities affected by the Programme. This was either with an equalities specialist working within the council, or a representative from the planning department. The potential impacts of the scheme were discussed and stakeholder view points on the impacts of the scheme gathered. The table below details stakeholders consulted as part of this process:

**Table 19: Stakeholder consultations**

Council	Name	Council department / role
Blaenau Gwent	Sarah Keefe	Equality and diversity team
Bridgend	Mark Shepherd	Corporate director - communities
Caerphilly	Tim Stephens	Development control manager
Caerphilly	Anwen Cullinane	Equalities and Welsh language team
Cardiff	Andrew Lucas	Equality and diversity team
Merthyr Tydfil	Kerry O'Donovan	Corporate risk and equalities
Monmouthshire	Alan Burkitt	Equality and diversity team
Newport	Hugh Williams	Corporate policy officer
RCTCBC	Esther James	Equality and diversity team
RCTCBC	Roger Waters	Highways and streetcare
South Gloucestershire	Rachael Williams-Lock Will Bee	Equalities and third sector team
Torfaen	Kate Williams	Equality and diversity team
Vale of Glamorgan	Nicola Hinton	Corporate equality

Source: Mott MacDonald 2017

## C. Approach to distributional analysis

### C.1 Introduction

This appendix outlines the methodology used to assess the variance of the impacts of the South Wales Metro Programme across the different social groups identified as being impacted within chapter 7. Both beneficial and adverse impacts of the Programme are considered as part of the distributional analysis, along with the identification of social groups likely to be affected.

### C.2 Assessing the distribution of impacts

The distributional assessment is applied after determining which equality groups are likely to experience disproportionate effects and whether the impact is likely to be beneficial or adverse (these conclusions are drawn from the literature review and stakeholder engagement processes).

The distributional analysis of impacts on particular groups is designed to show whether the impacts that have been identified will be experienced to a greater or lesser extent by people living in the study area because of the particular social and demographic characteristics of the area when compared with national averages.

For example, an impact that is identified as disproportionately affecting older and disabled people is likely to have a more widespread impact in areas where these groups represent a larger proportion of the population than elsewhere.

Our approach to analysing the distribution of equality impacts has been adapted from acknowledged best practice, including taking reference from the Department for Transport's WebTAG unit 4.2 (Distributional Impact Appraisal).<sup>95</sup> The distribution of beneficial or adverse impacts is assessed using the following guidance:

**Table 20: Classifying distribution impacts**

Impact rating	Rationale
Major	Where the proportion of people from a particular social group in the study area is significantly larger (i.e. where the difference in proportion is greater than +6 per cent) than the national average.
Moderate	Where the proportion of people from a particular social group in the study area is somewhat larger (i.e. where the difference in proportion is between +4 per cent and +6 per cent) than the national average.
Low	Where the proportion of people from a particular social group in the study area is slightly larger (i.e. where the difference in proportion is between +1 per cent and +3 per cent) than the national average.
Neutral	Where the proportion of people from a particular social group in the study area is smaller than the national average (i.e. where the difference in proportion is less than 0 per cent).

Source: Mott MacDonald 2017

<sup>95</sup> Department for Transport (2014): 'TAG Unit A4.2 Distributional Impact Appraisal'.

## D. Socio-demographic baseline: scoped out groups

### D.1 Gender reassignment

There are multiple definitions of 'gender reassignment', for the purposes of equality law, gender reassignment is defined as 'a process which is undertaken under medical supervision for the purpose of reassigning a person's sex by changing physiological or other characteristics of sex, and includes any part of such a process.' This means that an individual does not need to have undergone any specific treatment or surgery to be protected by the law.<sup>96</sup>

There is currently no official data collected on gender identity in the study area, Wales or England. The ONS, though, has estimated that the size of the Trans community in the UK could range from 65,000 to 300,000.<sup>97</sup> Additionally, statistics from the Ministry of Justice show that between 2005 and 2014, 3,662 full Gender Recognition Certificates have been issued.<sup>98</sup>

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<sup>96</sup> EHRC (2013): 'Transgender: what the law says'. See: <http://www.equalityhumanrights.com/advice-and-guidance/your-rights/transgender/transgender-what-the-law-says/>.

<sup>97</sup> ONS (2009): 'Trans Data Position Paper'.

<sup>98</sup> Ministry of Justice (2014): 'Tribunals and gender recognition statistics: July to September 2014' See: <https://www.gov.uk/government/statistics/tribunals-and-gender-recognition-certificate-statistics-quarterly-july-to-september-2014>.

## D.2 Marriage and civil partnership

Marriage and civil partnership is covered by the Equality Act 2010 on the grounds of unlawful discrimination.<sup>99</sup> People who are married, or in a civil partnership, must be treated the same as people who are not and, similarly, same sex civil partners must be treated the same as married heterosexual couples on a wide range of legal matters.

The table below shows that of those living in the study area, the proportion that are married (46 per cent) is in line with the national average. Monmouthshire (54 per cent) has considerably higher proportions of married people, whereas Cardiff has a considerably lower proportion (39 per cent). The proportion of people in a civil partnership in the study area is in line with the Welsh figures (0.2 per cent). Newport is the only local authority that has a proportion that is above at 0.4 per cent.

**Table 21: Marriage and civil partnership**

Study area	All resident 16+	Single	Single %	Married	Married%	In a registered same-sex civil partnership	In a registered same-sex civil Separated <sup>100</sup>	Separated %	
Blaenau Gwent	57,321	19,611	34%	25,394	44%	113	0.2%	1,274	2%
the Vale of Glamorgan	102,504	31,616	31%	50,379	49%	185	0.2%	2,348	2%
Caerphilly	143,825	46,484	32%	68,963	48%	229	0.2%	2,961	2%
Newport	116,348	40,082	34%	52,969	46%	410	0.4%	3,052	3%
Merthyr Tydfil	47,842	16,871	35%	21,453	45%	110	0.2%	1,199	3%
Bridgend	113,890	35,156	31%	55,349	49%	184	0.2%	2,559	2%
Rhondda, Cynon, Taff	190,116	64,493	34%	87,294	46%	379	0.2%	4,255	2%
South Gloucestershire	212,837	64,712	30%	110,532	52%	297	0.1%	4,614	2%
Torfaen	73,833	22,994	31%	35,187	48%	185	0.3%	1,652	2%
Cardiff	283,115	127,380	45%	109,008	39%	625	0.2%	6,056	2%
Monmouthshire	75,080	19,767	26%	40,611	54%	124	0.2%	1,593	2%
Total Study Area	1,416,711	489,166	35%	657,139	46%	2,841	0.2%	31,563	2%
Wales	2,507,160	840,347	34%	1,167,315	47%	4,654	0.2%	54,686	2%
England and Wales	45,496,780	15,730,275	35%	21,196,684	47%	104,942	0.2%	1,195,882	3%

Source: ONS Crown Copyright Reserved [from Census 2011]

<sup>99</sup> See: <https://www.equalityhumanrights.com/en/equality-act/protected-characteristics>.

<sup>100</sup> But still legally married or still legally in a same-sex civil partnership.

### D.3 Religion and belief

Religion and belief refers to any religion or belief, including lack of belief.

Distinctions are frequently drawn in order to identify those professing a 'minority faith' which in the UK tends to include Buddhism, Hinduism, Islam, Judaism, and Sikhism (as well as other faiths, such as Baha'i and smaller groups such as pagans). This distinction is made because in most areas the majority of the population tend to express their religion or faith as some form or denomination of Christianity, as a professed lack of religion or faith (including atheists and humanists) or a preference not to answer.

As shown in the table below, the proportion of people from a minority faith group in the study area (3 per cent) is below the figure for England and Wales (8 per cent). Ten of the local authorities (Blaenau Gwent (1 per cent), the Vale of Glamorgan (2 per cent), Caerphilly (1 per cent), Merthyr Tydfil (1 per cent), Bridgend (1 per cent), Rhondda Cynon Taff (1 per cent), South Gloucestershire (2 per cent), Torfaen (1 per cent), Monmouthshire (1 per cent) and Newport (6 per cent)) have proportions that are below the England and Wales figure. Cardiff (10 per cent) is the only local authority to have a proportion slightly higher than the England and Wales average.

**Table 22: Number and proportion of people from minority faith groups**

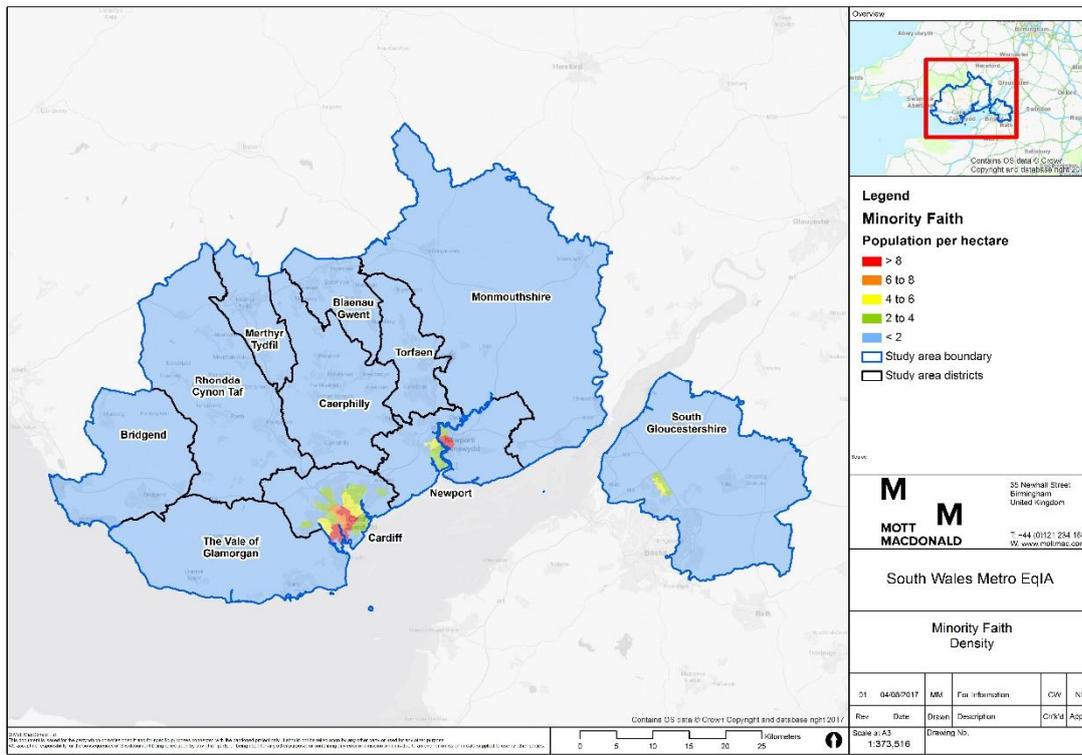
Study area	Total population	Minority faith	Minority faith%
Blaenau Gwent	69,814	663	1%
Bridgend	139,178	1,730	1%
Caerphilly	178,806	1,729	1%
Cardiff	346,090	33,607	10%
Merthyr Tydfil	58,802	678	1%
Monmouthshire	91,323	1,173	1%
Newport	145,736	8,607	6%
Rhondda, Cynon, Taff	234,410	3,120	1%
South Gloucestershire	262,767	6,221	2%
the Vale of Glamorgan	126,336	2,103	2%
Torfaen	91,075	1,089	1%
<b>Total Study Area</b>	<b>1,744,337</b>	<b>60,720</b>	<b>3%</b>
Wales	3,063,456	83,232	3%
England and Wales	56,075,912	4,697,476	8%

Source: ONS Census 2011 – mid-year population estimates 2015

The map below shows that:

- The study area has very low levels of people from minority faith groups.
- There are two areas with notably densities of people from this protected characteristic: Cardiff and Newport. This suggests an urban-rural split, with people from minority faith groups predominantly living in or around the cities of the region.

**Figure 10: Minority faith population density per hectare**



Source: ONS Census 2011 – mid-year population estimates 2015

### D.4 Sexual orientation

Sexual orientation refers to a person’s emotional, romantic, and/or sexual attraction to another person. This may be towards people of their own gender, people of a different gender or towards people of more than one gender.<sup>101</sup> In general, consideration of this characteristic focuses on people who identify as lesbian, gay or bisexual (LGB).

There are no official or census figures for the LGB community and estimates vary, meaning that there is an overall lack of quantitative data for this group available. However, in 2016 ONS released a statistical bulletin on sexual identity in the UK<sup>102</sup>. The data that was released showed that in 2015, 1.7 per cent of the UK population identified themselves as LGB. And, those who identified themselves as LGB were more likely to be aged 16-24.

Local area statistics are even harder to identify. Scotland and Wales both had the lowest percentage (1.6 per cent) identifying as LGB within the UK.

<sup>101</sup> Stonewall (2017): ‘Safe travels: Global mobility for LGBT staff’. See: [http://www.stonewall.org.uk/sites/default/files/safe\\_travels\\_guide\\_2017.pdf](http://www.stonewall.org.uk/sites/default/files/safe_travels_guide_2017.pdf)

<sup>102</sup> Office for National Statistics (2016): ‘Sexual identity, UK: 2015’. See: <https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/sexuality/bulletins/sexualidentityuk/2015>

