

**M54 to M6 Link Road**

**TR010054**

**Volume 6**

**6.3 Environmental Statement**

**Appendices**

**Appendix 12.1 Human Health**

**Assessment**

Regulation 5(2)(a)

Planning Act 2008

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

January 2020

Infrastructure Planning

Planning Act 2008

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

**M54 to M6 Link Road  
Development Consent Order 202[ ]**

---

**6.3 Environmental Statement Appendices  
Appendix 12.1 Human Health Assessment**

---

<b>Regulation Number</b>	Regulation 5(2)(a)
<b>Planning Inspectorate Scheme Reference</b>	TR010054
<b>Application Document Reference</b>	6.3
<b>Author</b>	M54 to M6 Link Road Project Team and Highways England

<b>Version</b>	<b>Date</b>	<b>Status of Version</b>
1	January 2020	DCO Application

## Table of contents

<b>1. Human Health Assessment</b> .....	<b>1</b>
1.1 Introduction .....	1
1.2 Methodology.....	1
1.3 Assessment of potential human health effects .....	3
1.4 References.....	26

### List of Figures

Plate 1: The Dahlgren and Whitehead model of health determinants (Ref 2) .....	1
--	---

### List of Tables

Table 1.1: Human health determinants .....	2
Table 1.2: Access to Healthcare Services and other Social Infrastructure.....	4
Table 1.3: Access to Open Space and Nature .....	6
Table 1.4: Air Quality, Noise and Neighbourhood Amenity .....	8
Table 1.5: Accessibility and Active Travel.....	14
Table 1.6: Crime reduction and community safety .....	18
Table 1.7: Access to Work and Training .....	19
Table 1.8: Social Cohesion and Lifetime Neighbourhoods .....	20
Table 1.9: Minimising the use of resource .....	22
Table 1.10: Climate Change .....	23

# 1. Human Health Assessment

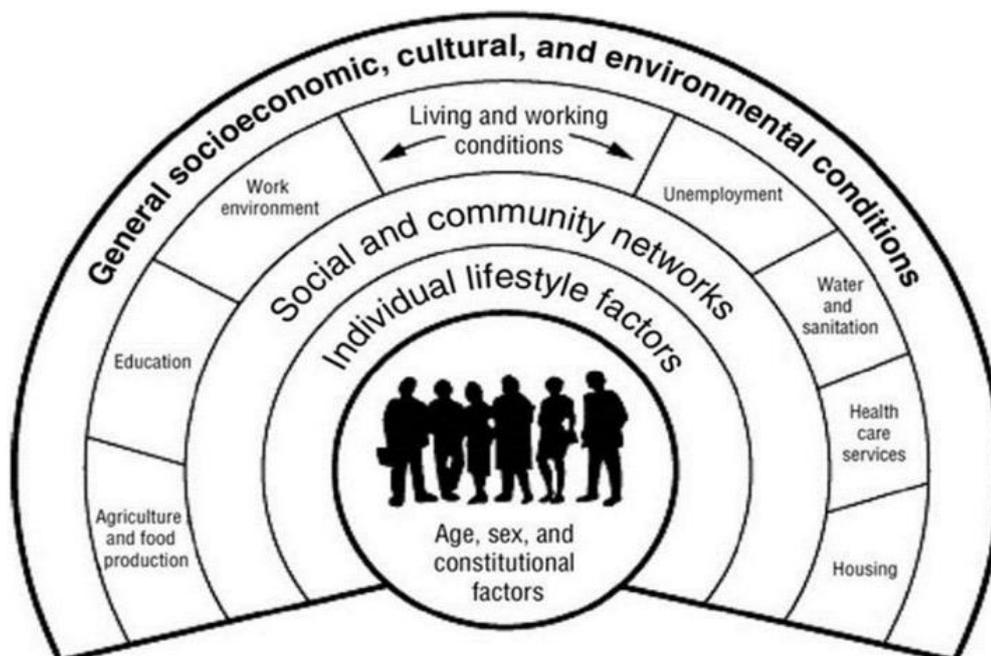
## 1.1 Introduction

1.1.1 This Appendix provides additional detail to the methodology for the assessment of effects on human health resulting from the construction and operation of the M54 to M6 Link Road (herein referred to as 'the Scheme'). A full qualitative analysis of the Scheme's impact on the determinants of health is presented in support of the assessment of human health detailed in Section 12.9 of the Environmental Statement [TR010054/APP/6.1].

## 1.2 Methodology

1.2.1 Factors that have the most significant influence on the health of a population are called 'determinants of health'; these include an individual's genetics and their lifestyle, the surrounding environment, as well as policy, cultural and societal issues. The interrelationship between these factors is shown in Plate 1.

1.2.2 Within a population there can also be health 'inequalities'. The World Health Organisation (WHO) defines these as "*differences in health status or in the distribution of health determinants between different population groups. For example, differences in mobility between elderly people and younger populations or differences in mortality rates between people from different social classes*" (Ref 1). This cumulative assessment of human health effects has taken account of these factors and considered how the Scheme may influence the physical and mental health wellbeing of local residents and inhabitants of the study area.



Source: Dahlgren and Whitehead (1991)

**Plate 1: The Dahlgren and Whitehead model of health determinants (Ref 2)**

1.2.3 Table 1.1 below sets out the health determinants as being relevant to the Scheme together with the key potential health impacts associated with each determinant (Ref 3).

**Table 1.1: Human health determinants**

Health Determinant	Potential Health Impact
Access to healthcare services and other social infrastructure	Strong, vibrant, sustainable and cohesive communities require good quality, accessible public services and infrastructure. Access to social infrastructure and other services is a key component of Lifetime Neighbourhoods. Encouraging the use of local services is influenced by accessibility, in terms of transport and access into a building, and the range and quality of services offered. Access to good quality health and social care, education (primary, secondary and post-19) and community facilities has a direct positive effect on human health. Opportunities for the community to participate in the planning of these services has the potential to impact positively on mental health and wellbeing and can lead to greater community cohesion.
Access to open space and nature	Providing secure, convenient and attractive open/green space can lead to more physical activity and reduce levels of heart disease, strokes and other ill-health problems that are associated with both sedentary occupations and stressful lifestyles. There is growing evidence that access to parks and open spaces and nature can help to maintain or improve mental health. The patterns of physical activity established in childhood are perceived to be a key determinant of adult behaviour; a growing number of children are missing out on regular exercise, and an increasing number of children are being diagnosed as obese. Access to play spaces, community or sport facilities such as sport pitches can encourage physical activity. There is a strong correlation between the quality of open space and the frequency of use for physical activity, social interaction or relaxation.
Air quality, noise and neighbourhood amenity	The quality of the local environment can have a significant impact on physical and mental health. Pollution caused by construction, traffic and commercial activity can result in poor air quality, noise nuisance and vibration. Poor air quality is linked to incidence of chronic lung disease (chronic bronchitis or emphysema) and heart conditions and asthma levels of among children. Noise pollution can have a detrimental impact on health resulting in sleep disturbance, cardiovascular and psycho-physiological effects. Good design and the separation of land uses can lessen noise impacts.
Accessibility and active travel	Convenient access to a range of services and facilities minimises the need to travel and provides greater opportunities for social interaction. Buildings and spaces that are easily accessible and safe also encourage all groups, including older people and people with a disability, to use them. Discouraging car use and providing opportunities for walking and cycling can increase physical activity and help prevent chronic diseases, reduce risk of premature death and improve mental health.
Crime reduction and community safety	Thoughtful planning and urban design that promotes natural surveillance and social interaction can help reduce crime and 'fear of crime', both of which impacts on the mental wellbeing of residents. As well as the immediate physical and psychological impact of being a victim of crime, people can also suffer indirect long-term health consequences including disability, victimisation and isolation because of fear. Community engagement in development proposals can lessen fears and concerns. The EIA Regulations 2017 require consideration of any significant effects arising

Health Determinant	Potential Health Impact
	from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development.
Access to work and training	Employment and income is a key determinant of health and wellbeing. Unemployment generally leads to poverty, illness and a reduction in personal and social esteem. Works aids recovery from physical and mental illnesses.
Social cohesion and neighbourhoods	Friendship and supportive networks in a community can help to reduce depression and levels of chronic illness as well as speed recovery after illness and improve wellbeing. Fragmentation of social structures can lead to communities demarcated by socio-economic status, age and/or ethnicity, which can lead to isolation, insecurity and a lack of cohesion. Voluntary and community groups, properly supported, can help to build up networks for people who are isolated and disconnected, and to provide meaningful interaction to improve mental wellbeing. Lifetime Neighbourhoods places the design criteria of Lifetime Homes into a wider context. It encourages planners to help create environments that people of all ages and abilities can access and enjoy, and to facilitate communities that people can participate in, interact and feel safe.
Minimising the use of resources	Reducing or minimising waste including disposal, processes for construction as well as encouraging recycling at all levels can improve human health directly and indirectly by minimising environmental impact, such as air pollution.
Climate change	There is a clear link between climate change and health. The available literature is clear that local areas should prioritise policies and interventions that 'reduce both health inequalities and mitigate climate change' because of the likelihood that people with the poorest health would be hit hardest by the impacts of climate change. Planning is at the forefront of both trying to reduce carbon emissions and to adapt urban environments to cope with higher temperatures, more uncertain rainfall, and more extreme weather events and their impacts such as flooding. Poorly designed homes can lead to fuel poverty in winter and overheating in summer contributing to excess winter and summer deaths. Developments that take advantage of sunlight, tree planting and accessible green/brown roofs also have the potential to contribute towards the mental wellbeing of residents.

1.2.4 The following health and wellbeing determinants have been excluded from the qualitative assessment of the potential effects as they are not considered to be capable of being influenced by the Scheme:

- Housing quality and design; and
- Access to healthy food.

### 1.3 Assessment of potential human health effects

1.3.1 The tables below set out in detail the assessment of the potential human health impacts and effects associated with the Scheme during the construction and operational phases and is supplementary to the assessment presented in Chapter 12: Population and Human Health of this Environmental Statement [TR010054/APP/6.1].

**Table 1.2: Access to Healthcare Services and other Social Infrastructure**

Assessment Criteria	Relevance to the Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
Does the proposal retain or re-provide existing social infrastructure?	No	The Scheme would not have an impact on the provision of existing health or social care services or influence the demand for and/ or capacity of public services.	Construction: N/A Operation: N/A	N/A
Does the proposal assess the impact on health and social care services and have local NHS organisations been contacted regarding existing and planned healthcare capacity?	No	<p>The Scheme would not have a direct impact on the provision of existing health and social care services or influence the demand for and/ or capacity of public services.</p> <p>During Scheme construction there is potential for increased severance for walkers, cyclists and horse riders (WCH) and motorised users when accessing local health care facilities (in Featherstone) and the nearest hospital (New Cross Hospital 4 km south of M54 Junction 1) due to temporary road/ lane closures associated with construction and the addition of construction traffic. This severance would be minimised through a Traffic Management Plan to be agreed with South Staffordshire Council (SSC) Staffordshire County Council (SCC), the City of Wolverhampton Council (CWC) and the emergency services. Appropriate mechanisms would be set up to communicate with local residents to highlight potential periods of disruption.</p> <p>The Scheme is anticipated to improve journey times along the A460 between M6 Junction 11 and M54 Junction 1, separating local and regional traffic. This would reduce severance experienced by local residents when accessing healthcare facilities in Featherstone and the surrounding areas. Improved access to healthcare is</p>	Construction: 0 Operation: +	Implementation of suitable temporary traffic management to be agreed with SSC, SCC, WCW and the emergency services prior to construction.

Assessment Criteria	Relevance to the Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		an essential component of creating sustainable, healthy communities.		
Does the proposal include the provision or replacement of a healthcare facility and does the facility meet NHS requirements?	No	The Scheme does not include the provision of healthcare facilities.	Construction: N/A Operation: N/A	N/A
Does the proposal assess the capacity, location and accessibility of other social infrastructure, e.g. primary, secondary and post 19 education needs and community facilities?	Yes	<p>The Scheme would not impact on the capacity and location of social infrastructure such as schools, social care and community facilities. The Scheme does not include or require the provision of education facilities.</p> <p>During construction of the Scheme there is potential for temporary disruption to the accessibility of Featherstone Academy primary school (Featherstone), Havergal Church of England Primary School (Shareshill) for pupils accessing these schools from outside the village utilising the existing A460.</p> <p>The catchment Senior School for the villages of Featherstone, Shareshill and Hilton is Cheslyn Hay Sport and Community High School in Cheslyn Hay. Increased congestion during construction would result in changes to journey patterns. This has the potential to increase journey times during construction prior to the opening of the new junctions. This is true for other community facilities in and around the surrounding area.</p> <p>This severance would be minimised through a Traffic Management Plan to be agreed with SSC SCC, CWC and the emergency services. Appropriate mechanisms</p>	Construction: 0 Operation: +	Implementation of suitable temporary traffic management to be agreed with SSC, SCC, WCV and the emergency services prior to construction.

Assessment Criteria	Relevance to the Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		would be set up to communicate with local residents to highlight potential periods of disruption. During operation access to schools and community facilities are anticipated to be improved due to the separation of local and regional traffic.		
Does the proposal explore opportunities for shared community use and co-location of services?	No	The Scheme does not include or require the provision of community facilities for shared community use and co-location services.	Construction: N/A Operation: N/A	N/A

**Table 1.3: Access to Open Space and Nature**

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
Does the proposal retain and enhance existing open and natural spaces?	Yes	There are no existing public open spaces or informal open spaces within the Scheme boundary. Additional planting is proposed adjacent to Brookfield Farm Site of Biological Importance (SBI) and Lower Pool SBI to mitigate the loss of natural spaces. However, these SBIs are not publicly accessible. Ecological enhancement measures are proposed at Oxdon Leasow (Whitgreaves Wood) to provide improvements to an area of ancient woodland. This land is owned by the National Trust and is not freely accessible to the public. The Scheme includes the realignment and diversion of public rights of way to maintain existing access to natural spaces. No new Public Rights of Way (PRoW) are proposed as part of the Scheme.	Construction: N/A Operation: 0	Refer to ecological mitigation measures outlined in the OEMP [TR010054/APP/6.11] and embedded mitigation for the realignment of PRoW outlined in Chapter 2: The Scheme [TR010054/APP/6.1].

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
In areas of deficiency does the proposal provide new open or natural space, or improve access to existing spaces?	No	There are no existing areas of community land including public open spaces or village greens within or adjacent to the Scheme boundary. The Scheme would not provide new open space or accessible natural space.	Construction: N/A Operation: N/A	N/A
Does the proposal provide a range of play spaces for children and young people?	No	The Scheme would not provide specific play spaces for children and young people.	Construction: N/A Operation: N/A	N/A
Does the proposal provide links between open and natural spaces and the public realm?	Yes	Access across the Scheme on a bridleway would be maintained through the provision of an accommodation bridge south of Brookfield Farm. This would maintain access between the public realm and natural spaces accessible via public rights of way.	Construction: 0 Operation: 0	Implementation of suitable mitigation measures such as WCH diversions during construction where required. Refer to Section 12.8 [TR010054/APP/6.1].
Are the open and natural spaces welcoming, safe and accessible for all?	No	The Scheme would not provide new publicly accessible open and natural spaces.	Construction: N/A Operation: N/A	N/A
Does the proposal set out how new open space will be managed and maintained?	No	The Scheme would not provide new open space.	Construction: N/A Operation: N/A	N/A

**Table 1.4: Air Quality, Noise and Neighbourhood Amenity**

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
<p>Does the proposal minimise construction impacts such as dust, noise, vibration and odours?</p>	<p>Yes</p>	<p>Best practice measures as outlined in Chapter 5: Air Quality, Chapter 11: Noise and Vibration [TR010054/APP/6.1] and detailed in the OEMP [TR010054/APP/6.11] would be developed into a CEMP. These measures and procedures would minimise impacts on receptors associated with dust, noise and vibration as far as is practicable during Scheme construction.</p> <p>Noise and Vibration Management Plans would form part of the CEMP and would be produced prior to construction outlining noise and vibration control measures, how Best Practicable Means (BPM) has been applied, mitigation measures including site hoarding, noise insulation and temporary re-housing procedures, monitoring and inspection protocols, and processes to ensure ongoing compliance and how any corrective actions would be implemented.</p> <p>No significant effects on dust emission are anticipated during the construction of the Scheme with mitigation measures in place.</p> <p>The potential for significant adverse construction noise effects is identified at the closest receptors to the construction works in the vicinity of Featherstone, Dark Lane, Hilton Lane and Brookfield Farm. This is based on robust assumptions on the plant and activities required, no attenuation due to site hoarding, and before details of the durations of individual activities are finalised. At all these receptors the potential significant effects are anticipated to be short term. Once specific details of the construction works are available, the potential to reduce</p>	<p>Construction: 0 Operation: N/A</p>	<p>Implementation of suitable mitigation measures as outlined in Sections 5.8 and 11.8 of the Environmental Statement and listed in the OEMP [TR010054/APP/6.11]. No further mitigation measures are required.</p>

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		<p>the magnitude of construction noise impacts, for example, through the use of localised site hoarding, will be determined through the requirements in the CEMP.</p> <p>There is the potential for short term combined significant effects from construction noise and vibration at the receptors located in close proximity to works involving vibratory rollers along the section of A460 which is modified by the Scheme, at the proposed Dark Lane turning head, along Hilton Lane and at Brookfield Farm.</p> <p>The construction traffic noise assessment is based on estimated construction traffic for the busiest period of the construction works and the period of traffic management on the M54 when one lane of eastbound traffic is diverted via the eastbound off/on slip-roads at Junction 1. The construction traffic noise impact is compared to the 2024 Do-Minimum scenario. The results indicate that no identified potentially noise sensitive receptor is anticipated to experience more than a negligible increase in traffic noise due to construction traffic. On this basis construction traffic is not anticipated to result in any significant adverse traffic noise effects.</p>		
Does the proposal minimise air pollution caused by traffic and energy facilities?	Yes	<p>No energy facilities are proposed as part of the Scheme.</p> <p><b>Construction</b></p> <p>Good practice measures detailed in Chapter 5: Air Quality and the OEMP would minimise air pollution during construction of the Scheme.</p> <p>More than half of receptors in the local air quality assessment during construction are anticipated to experience an imperceptible change in annual mean NO<sub>2</sub> resulting from construction traffic. The worst affected receptors identified during construction are three</p>	Construction: 0 Operation: 0	Implementation of suitable mitigation measures as outlined in Section 5.8 of the Environmental Statement [TR010054/APP/6.1] and listed in the OEMP [TR010054/APP/6.11].

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		<p>residential receptors on A460 Cannock Road. This increase in emissions is due to the increase in Heavy Duty Vehicles using the A460 during the construction stage. These increases would be below the nation air quality objective.</p> <p>Annual mean concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> are predicted to be below the air quality objective values for all receptors considered in the construction phase study. As such, the construction of the Scheme would not perceptibly worsen NO<sub>2</sub> or PM<sub>10</sub> concentrations that are already above objective, nor does it create any new exceedances. Neither does it perceptibly improve NO<sub>2</sub> or PM<sub>10</sub> concentrations above the air quality objective or the remove an existing exceedance of the objective.</p> <p><b>Operation</b></p> <p>During operation, the Scheme would cause a redistribution of traffic on the local highway network, resulting in a decrease in traffic flows on the A460 and an increase in traffic flows on the M54 and M6 with vehicles attracted to the area by the operation of the Scheme.</p> <p>As detailed in Chapter 5: Air Quality, of the sensitive receptors identified within 200m of the affected road network. The most sensitive areas of the study area, where annual mean concentrations of NO<sub>2</sub> and PM<sub>10</sub> are elevated in excess of or close to the air quality objective without the Scheme, the impact of the Scheme would be imperceptible. At locations where the Scheme would have its highest impacts, the with Scheme (DS) concentrations are well below the air quality objective values. As such, the operation of the Scheme would not perceptibly worsen NO<sub>2</sub> and PM<sub>10</sub> concentrations that are already above objective, nor does it create any new</p>		

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		<p>exceedances. Neither does it perceptibly improve NO<sub>2</sub> or PM<sub>10</sub> concentrations above the air quality objective or the remove an existing exceedance of the objective. Concentrations of PM<sub>2.5</sub> are also anticipated to be well below the air quality objective at all receptors within the study area during operation of the Scheme.</p> <p>No properties are predicted to be affected by small, medium or large changes in air quality above an air quality objective for the protection of human health.</p>		
<p>Does the proposal minimise the noise pollution caused by traffic and commercial use?</p>	<p>Yes</p>	<p>As detailed above no identified potentially noise sensitive receptor is anticipated to experience more than a negligible increase in traffic noise due to construction traffic in the busiest period of the works.</p> <p>Section 11.8 of Chapter 11: Noise and Vibration [TR010054/APP/6.1] outlines the operational noise mitigation measures incorporated into the Scheme to minimise operational traffic noise.</p> <ul style="list-style-type: none"> <li>• Approximately half of the route is in cutting, in particular at Hilton Lane, which would screen traffic thus reducing noise impacts in the vicinity and reducing the need for additional noise barriers.</li> <li>• The majority of the existing earth bund on the north side of the M54 eastbound off slip which provides some noise mitigation for Featherstone is retained.</li> <li>• Within the overall selected route, the distance between the Scheme and the eastern end of Dark Lane has been maximised.</li> <li>• The Scheme would be constructed with a thin surfacing system (i.e. a low noise surface), which results in lower levels of noise generation than a standard hot rolled asphalt surface. The use of thin</li> </ul>	<p>Construction: 0 Operation: 0</p>	<p>Implementation of suitable mitigation measures as outlined in Section 11.8 of the Environmental Statement [TR010054/APP/6.1] and listed in the OEMP, [TR010054/APP/6.11] and Environmental Mitigation Schedule, Appendix 2.1 [TR010054/APP/6.3].</p> <p>Completion of a noise regulations assessment following detailed design to determine which properties qualify for installation of additional noise insulation under the noise insulation regulations.</p>

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		<p>surfacing reduces noise levels by 3.0 dB at speeds of <math>\geq 75</math> km/hr.</p> <ul style="list-style-type: none"> <li>• Additional mitigation in the form of noise barriers have also been included within the Scheme design: <ul style="list-style-type: none"> <li>- a reflective noise barrier on the west side of the main line as it passes close to Dark Lane.</li> <li>- a reflective noise barrier on the east side of the existing A460 north of M6 Junction 11 in the vicinity of properties on Wolverhampton Road.</li> <li>- a reflective noise barrier on the west side of the main line as it passes close to Brookfield Farm.</li> <li>- a reflective noise barrier on the north side of the M54 eastbound off slip on top of the existing earth bund and the proposed eastern extension of this earth bund incorporated into the design.</li> <li>- a reflective noise barrier east of the proposed earth bund on the north side of the M54 extending to the new western dumbbell roundabout.</li> </ul> </li> </ul> <p>The majority of receptors would experience either no change or a negligible change in noise levels from traffic during operation in the short term (2024). The overall trend in the study area is for a slight increase in traffic flows, and therefore traffic noise. Two residential properties (In Hilton and Shareshill) are anticipated to experience a significant increase in traffic noise levels on the worst affected façade whilst 18 properties (along the A460, Featherstone) would experience a significant decrease. The Scheme is located mainly in the ward of Featherstone and Shareshill and is the ward with the most receptors in proximity to the Scheme. Heath</p>		

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		<p>statistics for this ward are generally above (an improvement on) the national average. Decreases in traffic noise are anticipated on the eastern edge of Featherstone along the existing A460, and the northern and western edges along New Road and East Road, which undergo a reduction in traffic due to the Scheme. A small number of properties in Shareshill would experience minor increases and minor decreases due to the rerouting of traffic.</p> <p>Receptors in the wards of Essington and Cheslyn Hay North and Saredon have a higher percentage of people with bad or very bad health and / or a limiting long term illness or disability than the national average, as set out in the Section 12.6 of the ES[ TR010054/APP/6.1]. Essington has a higher percentage of residents &lt;16 or &gt;65 (population most susceptible to health issues) than the national average. The majority of the wards of Essington and Cheslyn Hay North are outside of the study area for the noise and vibration assessment however a number of significant adverse noise effects are anticipated on the A460 through the ward of Essington, south of the M54, though the increase in noise as a result of the Scheme is minor. Reductions in air quality are also anticipated along this route though emission concentrations would not exceed the health objectives.</p> <p>The Scheme would result in a reduction in the overall number of residential buildings above the Significant Observable Adverse Effect Level (SOAEL) (the level above which significant adverse effects on health and quality of life occur) in the Scheme opening year (2024)</p>		

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		<p>and in the future assessment year (2039) during both the day and night.</p> <p>The Noise Important Area on the existing A460, which is bypassed by the Scheme, would experience a reduction in traffic noise. Noise Important Area to the north-east of M6 Junction 11, would experience an increase due to the increase in traffic on the A460 (north of Junction 11), however a noise barrier and thin surfacing system are included as part of the Scheme to reduce the magnitude of the worst case impact at nearby properties, which ranges from negligible decrease to negligible increase. The Noise Important Area on the M54 to the west of the Scheme would experience a negligible increase in the opening year due to the general trend to attract traffic to the Scheme.</p> <p>As the Scheme is a road scheme it is not a direct source of commercial or industrial noise.</p>		

**Table 1.5: Accessibility and Active Travel**

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
Does the proposal address the ten Healthy Streets indicators?	No	N/A	N/A	N/A
Does the proposal prioritise and encourage walking (such as through shared spaces)?	Yes	During construction, changes to journey times, local travel patterns, and certainty of route for pedestrians would arise from the temporary closures and diversions of PRoWs through direct land take and provision of access routes required for the construction of the Scheme. However, diversions/other relevant access	Construction: 0 Operation: 0	Implementation of suitable mitigation measures such as WCH diversions during construction where required, refer to the OEMP [TR010054/APP/6.11].

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		<p>points are to be provided which would minimise impacts on pedestrian routes.</p> <p>The design includes the provision of diversions and replacement routes for those severed by the Scheme resulting in some increases and some decreases in journey lengths.</p>		
Does the proposal prioritise and encourage cycling (for example by providing secure cycle parking and cycle lanes)?	Yes	<p>During construction, changes to journey times, local travel patterns, and certainty of route for cyclists would arise from the temporary and permanent closure and diversions of PRoWs required for the construction of the Scheme. Prior to construction diversion routes would be agreed with SSC, SCC and CWC to minimise the disruption to access of community facilities and public rights of way.</p> <p>During the operational phase, the Scheme would provide new shared footway and cycleways providing improved facilities to cyclists. New shared footways and cycleways are proposed around M54 Junction 1 and connecting Dark Lane and Hilton Lane.</p>	<p>Construction: 0 Operation: +</p>	<p>Implementation of suitable mitigation measures such as WCH diversions during construction where required, refer to the OEMP [TR010054/APP/6.11].</p>
Does the proposal connect public realm and internal routes to local and strategic cycle and walking networks?	Yes	<p>During construction, changes to journey times, local travel patterns, and certainty of route for WCHs would arise from the temporary closures and diversions of PRoWs through direct land take and provision of access routes required for the construction of the Scheme. However, diversions/other relevant access points are to be provided which would mitigate any potential impact on WCH routes.</p> <p>Improved cycling facilities are proposed as part of the Scheme design and the reduction of traffic along the A460 would improve the perception of safety on this route for cyclists, making it more likely to be used. There</p>	<p>Construction: 0 Operation: 0</p>	<p>Implementation of suitable mitigation measures such as WCH diversions during construction where required, refer to the OEMP [TR010054/APP/6.11].</p>

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		<p>are no strategic cycle routes within the vicinity of the Scheme to provide a connection to.</p> <p>Existing connections to the wider PRow network would be maintained through the provision of PRow diversions and where required the use of bridges.</p>		
Does the proposal include traffic management and calming measures to help reduce and minimise road injuries?	Yes	<p>Construction traffic impacts would be minimised through the OEMP [TR010054/APP/6.11] and associated traffic management plans. The construction contractor would liaise with SCC, SCC and CWC and the emergency services to agree and implement a Traffic Management Plan.</p> <p>Appropriate mechanisms to communicate with local residents would be set up to highlight potential periods of disruption (for example, web-based, newsletters, newspapers, radio announcements etc.) and an appropriate communication strategy would be developed.</p> <p>The Scheme's highway design is based on good practice, as embodied in the Design Manual for Roads and Bridges (DMRB). The Scheme would separate local and long-distance traffic through the inclusion of a free flow link between the mainline of the Scheme and the M54. This would result in large reduction in vehicles using the existing A460. It is anticipated that the Scheme would result in a reduction in vehicles on the A460 by approximately 80% to less than 6,000 vehicles this includes a reduction in Heavy goods Vehicles from 3400 to 300. This would reduce congestion and minimise the risk of road injuries.</p>	<p>Construction: 0</p> <p>Operation: +</p>	Implementation of suitable temporary traffic management to be agreed with SSC, SCC and CWC prior to construction.
Is the proposal well connected to public transport, local	No	N/A	<p>Construction: N/A</p> <p>Operation: N/A</p>	N/A

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
services and facilitates?				
Does the proposal seek to reduce car use by reducing car parking provision, supported by the controlled parking zones, car clubs and travel plan measures?	No	N/A	Construction: N/A Operation: N/A	N/A
Does the proposal allow people with mobility problems or a disability to access buildings and places?	Yes	<p>During construction, temporary diversions and closures to PRowS and footpaths may have a differential impact on people with mobility issues and footpaths that have a higher use of groups with protected characteristics. However, diversions/other relevant access points are anticipated to be provided. The majority of PRowS affected by the Scheme are currently considered to have very low use and due to the condition of these PRowS are unlikely to be used by people with mobility issues at present.</p> <p>During operation, new and realigned WCH facilities and reduction in traffic on local roads (A460 and Dark Lane) would improve connectivity for pedestrians and cyclists between local settlements as well as increasing opportunities for active travel for all including health benefits. This is a beneficial impact that can be shared by groups with protected characteristics including children, young people, older people and people with disabilities.</p> <p>In undertaking the design of routes for WCHs, the requirements of the Equality Act 2010 have been</p>	Construction: 0 Operation: +	Implementation of suitable mitigation measures such as diversions to WCH routes during construction where required. Refer to Section 12.8.

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		considered to ensure the needs of disabled users are considered in the design. An Equalities Impact Assessment [TR010054/APP/6.7] has been provided with the application. PRow have been realigned as close to their original alignment as practical to avoid extending WCH routes and ramps have been incorporated into the design to of WCH routes where required. Ramped access has been provided where required removing existing steps leading to M6 Junction 11 which may have hindered some users.		

**Table 1.6: Crime reduction and community safety**

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
Does the proposal incorporate elements to help design out crime?	Yes	Large areas are planting are proposed as part of the Scheme to mitigate environmental impacts. Fencing would be included around these areas to deter anti-social behaviour. Further consideration would be given to this during the detailed design stage.	Construction: N/A Operation: 0	N/A
Does the proposal incorporate design techniques to help people feel secure and avoid creating 'gated communities'?	No	N/A	Construction: N/A Operation: N/A	N/A
Does the proposal include attractive, multi-use public	No	The Scheme does not the provision of public open spaces and buildings.	Construction: N/A Operation: N/A	N/A

Assessment Criteria	Relevance to the Scheme	Details of Evidence	Potential Health Impact	Further Action or Mitigation Recommended
spaces and buildings?				
Has engagement and consultation been carried out with the local community?	Yes	Seven public consultation events were held during the Section 42 statutory consultation period (24 <sup>th</sup> May – 5 <sup>th</sup> July), refer to the Consultation Report [TR010054/APP/5.1].	Construction: N/A Operation: N/A	Consultation should continue with the local community through the detailed design of the Scheme.

**Table 1.7: Access to Work and Training**

Assessment Criteria	Relevance to the Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
Does the proposal provide access to local employment and training opportunities, including temporary construction and permanent 'end-us' jobs?	Yes	Construction of the Scheme is anticipated to provide net additional employment opportunities associated with the construction activities, some of which may be for local people.  No direct impacts on employment are expected as a result of the Scheme. Operation of the Scheme may improve accessibility to local employment and training opportunities with indirect benefits on mental health and wellbeing.	Construction: + Operation: +	A local employment and procurement policy would help to ensure that recruitment involving contractors during the construction stage is inclusive and that opportunities are available to all protected characteristic groups. This should include a requirement for contractors to adhere to national or local schemes to promote employment amongst underrepresented protected characteristic groups, e.g. the Disability Two Ticks scheme.
Does the proposal provide childcare facilities?	No	The Scheme does not include the provision of childcare facilities due to the nature of the Scheme.	Construction: N/A Operation: N/A	N/A
Does the proposal include managed	No	The Scheme does not include the provision of workspace for local business due to the nature of the Scheme.	Construction: N/A Operation: N/A	N/A

Assessment Criteria	Relevance to the Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
and affordable workspace for local businesses?				
Does the proposal include opportunities for work for local people via local procurement agreements?	Yes	<p>Construction of the Scheme is anticipated to provide net additional employment opportunities associated with the construction activities, some of which may be for local people.</p> <p>No direct impacts on employment are expected as a result of the Scheme. Operation of the Scheme may improve accessibility to local employment and training opportunities with indirect benefits on mental health and wellbeing.</p>	<p>Construction: +</p> <p>Operation: +</p>	<p>A local employment and procurement policy would help to ensure that recruitment involving contractors during the construction stage is inclusive and that opportunities are available to all protected characteristic groups. This should include a requirement for contractors to adhere to national or local schemes to promote employment amongst underrepresented protected characteristic groups, e.g. the Disability Two Ticks scheme.</p>

**Table 1.8: Social Cohesion and Lifetime Neighbourhoods**

Assessment Criteria	Relevance to the Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
Does the proposal consider health inequalities by addressing local needs through community engagement?	No	N/A	N/A	N/A
Does the proposal connect with	Yes	During the Scheme construction phase, temporary severance issues may occur due to disruption to existing	<p>Construction: 0</p> <p>Operation: +</p>	Implementation of suitable mitigation measures such as

Assessment Criteria	Relevance to the Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
existing communities, i.e. layout and movement which avoids physical barriers and severance and land uses and spaces which encourage social interaction?		road usage and WCH facilities. However, with mitigation measures in place, this would be limited. During the operation phase the Scheme would allow traffic to flow freely along the A460 reducing journey times and transferring traffic from local roads onto the strategic network. The Scheme would separate local and regional traffic reducing severance. The Scheme layout would not result in any new physical barriers between existing communities.		diversions to pedestrian and cyclist routes during construction where required. Refer to Chapter 12: Population and Human Health Section 12.8.
Does the proposal include a mix of uses and a range of community facilities?	No	Due to the nature of the Scheme it does not provide properties for a mix of uses or a range of community facilities. Exchange land would be provided to mitigate the loss of public open space.	Construction: N/A Operation: N/A	N/A
Does the proposal provide opportunities for the voluntary and community sectors?	No	Due to the nature of the Scheme it does not provide opportunities for voluntary and community sectors.	Construction: N/A Operation: N/A	N/A
Does the proposal take into account issues and principles of inclusive and age-friendly design?	Yes	In undertaking the design of routes for WCHs, the requirements of the Equality Act 2010 have been considered to ensure the needs of disabled users are considered in the design. An Equalities Impact Assessment [TR010054/APP/6.7] has been provided with the application. PRoW have been realigned as close to their original alignment as practical to avoid extending WCH routes and ramps have been incorporated into the design to of WCH routes where required. Ramped access has been provided where	Construction: N/A Operation: +	Implementation of suitable mitigation measures such as diversions to pedestrian and cyclist routes during construction where required. Refer to Chapter 12: Population and Human Health Section 12.8.

Assessment Criteria	Relevance to the Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		required removing existing steps leading to M6 Junction 11 which may have hindered some users.		

**Table 1.9: Minimising the use of resource**

Assessment Criteria	Relevance to Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
Does the proposal make best use of existing land?	Yes	The Scheme is a new link road on a greenfield site. The footprint of the Scheme has been minimised where possible (as outlined in Chapter 3: Assessment of Alternatives) to make best use of the land available.	N/A	N/A
Does the proposal encourage recycling, including building materials?	Yes	As outlined in Chapter 10: Material Assets and Wastes, the Scheme aims to prioritise waste prevention, followed by preparing for re-use, recycling and recovery and lastly disposal to landfill as per the internationally recognised waste hierarchy. Re-use and recycling of materials off-site where re-use on-site is not practical.  The OEMP [TR010054/APP/6.11] sets a target that 27% of aggregates should be secondary and recycled aggregates, for those applications where it is technically and economically feasible to substitute these alternative materials for primary aggregates.  Applying good industry practice to management of the waste materials generated by the Scheme, it is anticipated that an overall recovery rate of 94% can be achieved.	Construction:0 Operation: N/A	Refer to the OEMP [TR010054/APP/6.11].
Does the proposal incorporate sustainable design and construction techniques?	Yes	Chapter 14: Climate outlines climate change resilience mitigation measures embedded in the design of the Scheme. These measures would ensure the resilience of the Scheme to climate change through a range of design and material specification measures including where	Construction: 0 Operation: N/A	Resilient design measures will be implemented where appropriate as outlined in Appendix 14.2 [TR010054/APP/6.3]. Refer to the OEMP [TR010054/APP/6.11].

Assessment Criteria	Relevance to Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		<p>practicable: the use of construction materials with superior properties (such as increased tolerance to fluctuating temperatures), and incorporation of current road design standards and future climate change allowances.</p> <p>As outlined in Chapter 10: Material Assets and Wastes, the Scheme aims to prioritise waste prevention, followed by preparing for re-use, recycling and recovery and lastly disposal to landfill as per the internationally recognised waste hierarchy. Re-use and recycling of materials off-site where re-use on-site is not practical.</p> <p>The OEMP [TR010054/APP/6.11] sets a target that 27% of aggregates should be secondary and recycled aggregates, for those applications where it is technically and economically feasible to substitute these alternative materials for primary aggregates.</p> <p>Applying good industry practice to management of the waste materials generated by the Scheme, it is anticipated that an overall recovery rate of 94% can be achieved.</p>		

**Table 1.10: Climate Change**

Assessment Criteria	Relevance to Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
Does the proposal incorporate renewable energy?	No	The Scheme does not incorporate renewable energy.	Construction: N/A Operation: N/A	N/A
Does the proposal ensure that buildings and public spaces	No	As part of the ES, Chapter 14: Climate assesses the combined effects of the impacts of the Scheme and	Construction: N/A Operation: 0	Resilient design measures will be implemented where appropriate as outlined in

Assessment Criteria	Relevance to Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
are designed to respond to winter and summer temperatures, i.e. ventilation, shading and landscaping?		<p>potential climate change impacts on the receiving environment.</p> <p>During the operation phase in respect to climate change resilience the Scheme may be vulnerable to a range of potentially significant impacts. As identified in Chapter 14: Climate, based on the mitigation built into the design and assumed management practices, UKCP09 climate change projections, information from other environmental disciplines, and details on Scheme design, none of the potential impacts identified would be significant.</p> <p>Mitigation built into the design and assumed management practices are identified in Appendix 14.2 [TR010054/APP/6.3] and include measures such as the:</p> <ul style="list-style-type: none"> <li>• use of construction materials with superior properties such as increased tolerance to fluctuating temperatures; and</li> <li>• installation of equipment capable of withstanding high temperatures.</li> </ul>		Appendix 14.2 [TR010054/APP/6.3].
Does the proposal maintain or enhance biodiversity?	Yes	<p>Construction of the Scheme would require site clearance, resulting in temporary losses in biodiversity.</p> <p>Excluding the loss of an area of ancient woodland (which has been addressed through compensation planting as detailed in Chapter 8: Biodiversity), the Scheme would achieve no net loss in biodiversity, which by definition is the maintenance rather than enhancement of biodiversity on the site as a whole. However, the Scheme would achieve improvements to specific habitats as part of this overall objective and Highways England will seek to achieve further enhancements where possible outside the DCO process. Refer to Appendix 8.2: Biodiversity</p>	Construction: - Operation: 0	Implementation of appropriate mitigation measures and on-going maintenance as recommended in Section 8.8 and 8.10 of the ES [TR010054/APP/6.1] and detailed in the OEMP [TR010054/APP/6.11].

Assessment Criteria	Relevance to Scheme	Details and Evidence	Potential Health Impact	Further Action or Mitigation Recommended
		Metric Calculations of the Environmental Statement [TR010054/APP/6.3].		
Does the proposal incorporate sustainable urban drainage techniques?	Yes	The operational phase has the potential to result in polluted runoff and accidental spillage. The mitigation embedded into the drainage design of the Scheme would prevent or mitigate for any pollution incidents. Surface water runoff rates from the new highway arrangement would be controlled to the appropriate rates using sustainable drainage systems (SuDS), taking account of potential climate change (40% allowances). Further details are outlined in Chapter 13: Road Drainage and Water Environment, Appendix 13.2 Drainage Strategy [TR010054/APP/6.3] and in the OEMP [TR010054/APP/6.11].	Construction: N/A Operation: 0	Implementation of appropriate embedded mitigation measures and on-going maintenance as recommended in Section 13.8 and detailed in the OEMP [TR010054/APP/6.11].

## 1.4 References

- Ref 1 World Health Organisation (2006) Constitution of the World Health Organisation
- Ref 2 World Health Organisation (2006) *European strategies for tackling social inequities in health: Levelling up Part 2*. Available online at:  
[http://www.euro.who.int/\\_data/assets/pdf\\_file/0018/103824/E89384.pdf](http://www.euro.who.int/_data/assets/pdf_file/0018/103824/E89384.pdf)
- Ref 3 London Healthy Urban Development Unit (2019) HUDU Planning for Health: Rapid Health Impact Assessment Tool