



# RIVER CROSSINGS: SILVERTOWN TUNNEL

SUPPORTING TECHNICAL DOCUMENTATION

## INTRODUCTORY HEALTH IMPACT ASSESSMENT

Hyder Consulting

October 2014

This Health Impact Assessment (HIA) Report presents an early indication of the potential impacts of the proposal on health and wellbeing. It also outlines potential mitigation measures to encourage a positive impact.

This report is part of a wider suite of documents which outline our approach to traffic, environmental, optioneering and engineering disciplines, amongst others.

We would like to know if you have any comments on our approach to the assessment, the potential impacts we have identified and mitigation we have suggested. To give us your views, please respond to our consultation at [www.tfl.gov.uk/silvertown-tunnel](http://www.tfl.gov.uk/silvertown-tunnel).

Please note that consultation on the Silvertown Tunnel is running from October – December 2014



This report (or note) forms part of a suite of documents that support the public consultation for Silvertown Tunnel in Autumn 2014. This document should be read in conjunction with other documents in the suite that provide evidential inputs and/or rely on outputs or findings.

The suite of documents with brief descriptions is listed below:-

- **Silvertown Crossing Assessment of Needs and Options**

This report sets out in detail, the need for a new river crossing at Silvertown, examines and assesses eight possible crossing options and identifies the preferred option.

- **Outline strategy for user charging at Blackwall and Silvertown Tunnels**

This note sets out TfL's emerging approach to charging at Blackwall and Silvertown Tunnels.

- **Silvertown Tunnel Traffic Forecasting Report**

This report presents the traffic impacts that the Silvertown Tunnel would have on the highway network.

- **Silvertown Tunnel Introductory Transport Assessment**

This report presents the existing transport network and travel demand and assesses the transport impacts of the proposed Silvertown Tunnel.

- **Silvertown Tunnel Outline Business Case, including:**

- **Economic Assessment Report**
- **Distributional Impact Appraisal**
- **Social Impact Assessment**

Sets out the evidence for intervening in the transport system to address the issues of congestion and road network resilience at the Blackwall Tunnel.

- **Silvertown Tunnel Introductory Environmental Assessment Report**

This report summarises the environmental work undertaken to date and presents an early indication of the potential impacts of the proposal and the mitigation measures being considered.

- **Silvertown Tunnel Introductory Equalities Impact Assessment Report**

This report presents an early indication of the potential impacts of the proposal on gender, race and age groups. It also outlines potential mitigation measures to encourage a positive impact.

- **Silvertown Tunnel Introductory Health Impact Assessment Report**

This report presents an early indication of the potential impacts of the proposal on health and wellbeing. It also outlines potential mitigation measures to encourage a positive impact.

# Transport for London

## Silvertown Tunnel

### Introductory Health Impact Assessment Report

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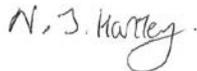


## Transport for London

## Silvertown Tunnel

## Introductory Health Impact Assessment Report

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## 1. Introduction

The London Plan and the Mayor's Transport Strategy have identified the need for investment in new infrastructure to enable future economic growth in southeast of London, including road infrastructure and improving cross-river connectivity. The east sub-region of London accounts for 37% of the forecast increase in the London population by 2031 and 22% of new jobs created. A river crossing at Silvertown is specifically identified as part of the package of river crossings needed to support and accommodate this growth.

The existing river crossings in east London do not cater adequately for current cross river road traffic movement; they are at or over capacity and there are severe resilience problems, particularly at the Blackwall Tunnel. While rail based public transport, walking and cycling are important, road travel (including local bus services) is also vital for the proper functioning of the London Thames Gateway area, and growth predictions are for significant increases in road travel and congestion. A solution to relieve congestion and improve resilience in the area around the Blackwall Tunnel will ensure that the significant growth planned in the area can be catered for and supported. Delays are caused not only by an excess of demand, but also by the need to close the Blackwall Tunnel at short notice for a variety of reasons from overheight vehicles to break downs. The proposed Silvertown Tunnel would be built to modern standards, and would serve to address the above issues.

The purpose of this report is to outline the scope of the health impact assessment and identify main impacts of the Scheme. Mitigation and enhancement measure are proposed where appropriate; however it should be noted that this is a preliminary assessment and the Scheme design will be developed and its mitigation having regard to the requirements of the draft NPS. In order to complete the assessment, the Healthy Urban Development Unit (HUDU) assessment tool/matrix<sup>1</sup> has been used. This is a high level assessment which aims to identify those determinants of health which are likely to be influenced by the Scheme. The next steps will be consultation with the relevant boroughs and the public. Consultation responses will inform the HIA which will be completed and consulted on in Summer 2015 and submitted with the final DCO application.

## 2. Assessment Approach/Methodology

The assessment matrix is designed to rapidly assess the potential health impacts of development plans and proposals, including planning frameworks and masterplans for large areas, regeneration and estate renewal programmes and outline and detailed planning applications. It is used at this stage of the project to inform the design, layout and composition of the Scheme.

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<sup>1</sup> HUDU Planning for Health. Rapid Health Impact Assessment Matrix. NHS, January 2013

The assessment matrix identifies eleven topics or broad determinants. Health impacts may be short

-term or tempor

and maintenance of a development and may particularly affect vulnerable or priority groups of the population. Where an impact is identified, mitigation actions are recommended to mitigate a negative impact or enhance or secure a positive impact.

### 3. Scoping

The assessment matrix focuses on the built environment and issues directly or indirectly influenced by planning decisions. Not all of the assessment criteria are relevant to the Scheme, therefore the assessment focuses on the key impacts.

Table 3-1 provides details of the assessment criteria which are scoped out of the assessment as well as justification for scoping out.

**Table 3-1 Scope of Assessment and Location in this Report**

Scoped item	Scoped in or out	Justification
Housing and quality design	Scoped out	There would be no homes included in the proposal. Therefore the housing criteria are not applicable.
Access to healthcare services and other social infrastructure	Scoped in	Relevant to the Scheme. Chapter 4
Access to open space and nature	Scoped in	Relevant to the Scheme. Chapter 5
Air quality, noise and neighbourhood amenity	Scoped in	Relevant to the Scheme. Chapter 6
Accessibility and active travel	Scoped in	Relevant to the Scheme. Chapter 7
Crime reduction and community safety	Scoped in	Relevant to the Scheme. Chapter 8
Access to healthy food	Scoped out	There would be no retail uses, no food stores nor smaller affordable shops.
Access to work and training	Scoped in	Relevant to the Scheme. Chapter 9
Social cohesion and lifetime neighbourhoods	Scoped in	Relevant to the Scheme. Chapter 10

Minimising the use of resources	Scoped in	Relevant to the Scheme. Chapter 11
Climate change	Scoped in	Relevant to the Scheme. Chapter 12

Sections 4 to 12 of this report include a summary of the potential health impacts and recommended mitigation of each of the scoped in assessment criteria.

#### 4. Access to healthcare services and other social infrastructure

Assessment criteria	Details/evidence	Recommended mitigation or enhancement actions
<b>Does the proposal retain or re-provide existing social infrastructure?</b>	The proposal would not have an impact on existing health or social care services or influence the demand for and/or capacity of public services.	N/A
<b>Does the proposal assess the demand for healthcare services and identify requirements and costs using the HUDU model?</b>	N/A	N/A
<b>Does the proposal provide for healthcare services either in the form of a financial contribution or in kind? Does a health facility provided as part of the development match NHS requirements and plans?</b>	N/A	N/A
<b>Does the proposal assess the capacity, location and accessibility of other social infrastructure,</b>	Health services and social infrastructure have been identified within 1km radius of the tunnel as part of the environmental assessment. It is not expected that there will be any loss of healthcare services and other social infrastructure as a result of the Scheme. Potential improvements relate to accessibility;	N/A

<b>e.g. schools, social care and community facilities?</b>	however it is unknown at this stage whether the tunnel will improve linkages. This will be assessed further in EIA and through the HIA process.	
<b>Does the proposal explore opportunities for shared community use and colocation of services?</b>	N/A	N/A
<b>Does the proposal contribute to meeting primary, secondary and post 19 education needs?</b>	N/A	N/A
<b>Summary</b>	The proposal is a road scheme and does not provide for any health or community facilities. However, the available social infrastructure in the vicinity of the Scheme has been assessed in terms of capacity, location and accessibility in order to identify any potential impact as a result of the Scheme. The assessment concluded that there will be no loss of social infrastructure resulting in overall neutral impact in terms of capacity. Accessibility to health care services and other social infrastructure is considered to be uncertain at this stage of the assessment.	

## 5. Access to open space and nature

Assessment criteria	Details/evidence	Recommended mitigation or enhancement actions
<b>Does the proposal retain and enhance existing open and natural spaces?</b>	There are no open spaces located within the site boundary therefore it is expected that there will be no loss of open space as a result of the Scheme. The open space most likely to be affected from construction activities (e.g. visual impact, noise) due to its close proximity (50m south east of the site boundary) is Central park located on the south side of the River Thames. Construction impacts will be managed through the effective implementation of the CEMP which the HIA will feed into.	The majority of construction impacts would be managed through the effective implementation of mitigation measures such as noise barriers, screening, etc.
<b>In areas of deficiency, does the proposal provide new open or natural space, or improve access to existing spaces?</b>	Access to existing open spaces will be improved for road users (e.g. journey times will be reduced for residents of Newham and Tower Hamlets visiting Greenwich Peninsula Ecology Park). However, no new areas of open space will be provided.  The only area of deficiency in the vicinity of the scheme is Royal Docks located near the northern approach (only 41% of the homes have good access to nature).	Appropriate landscaping of the Scheme will be provided although this is unlikely to offer significant health benefits. More opportunities should be sought to enhance the area and provide access to new open spaces thus increasing the percentage of natural/open space.
<b>Does the proposal provide a range of play spaces for children and young people?</b>	The proposal does not provide play spaces for children and young people.	N/A

<b>Does the proposal provide links between open and natural spaces and the public realm?</b>	The footbridge that currently crosses the Blackwall Tunnel Approach Road in the vicinity of Boord Street will be demolished. A temporary and permanent replacement will be provided to minimise community severance and to ensure pedestrian and cycling access to Thames Path and open spaces in Greenwich is available.	Public realm improvements in the vicinity of the approach roads could be considered further as part of the Scheme design.
<b>Are the open and natural spaces welcoming and safe and accessible for all?</b>	As the Scheme is a new tunnel the condition and accessibility of open and natural spaces is not applicable.	N/A
<b>Does the proposal set out how new open space will be managed and maintained?</b>	Management and maintenance of open and natural spaces directly as part of the proposals is not considered applicable to the Silvertown Tunnel. There will be appropriate aftercare proposals for any new landscaping provided as part of the Scheme.	N/A
<b>Summary</b>	There will be no loss of open or natural spaces as a result of the Scheme. Potential impacts on the existing opens spaces near the work sites are identified during construction. Negative impacts related to noise and visual disturbance will be temporary and localised during construction near the tunnel portal on the approach roads. Mitigation measures will be included in the CEMP to reduce the impact on local residents. Therefore the overall impact is considered to be neutral. More opportunities should be sought to enhance the area through landscaping near the northern portal which is an area of deficiency of open/green space.	

## 6. Air quality, noise and neighbourhood amenity

Assessment criteria	Details/evidence	Recommended mitigation or enhancement actions
<b>Does the proposal minimise construction impacts such as dust, noise, vibration and odours?</b>	<p>The existing noise conditions in the area are described in the Introductory Environmental Assessment Report. The noise effects during construction are limited to those residents who live adjacent to the worksites. The majority of residential receptors likely to be affected are located on the north side of the proposed scheme in Canning Town. The potential impacts from construction, particularly noise and dust will be negative; however they will be managed through measures set out in a CEMP.</p>	<p>The use of barge for transportation of materials and waste could minimise impacts of haulage on local roads.</p> <p>Construction impacts on air quality will be managed through the implementation of a CEMP.</p>
<b>Does the proposal minimise air pollution caused by traffic and energy facilities?</b>	<p>During operation, the tunnel will change traffic flows on the road network and hence change emissions which may therefore impact on receptors. As indicated by the high level assessment of emissions (Introductory EA report), the Scheme is predicted to result in both decreases and increases in emissions, resulting in both positive and negative impacts health impacts at receptor locations.</p>	<p>User changing is one mitigation measure being considered as this could control use of the tunnel and may subsequently affect traffic flows and air quality. Further work will be undertaken through the EIA and HIA process.</p>
<b>Does the proposal minimise noise pollution caused by traffic and commercial uses?</b>	<p>During operation, increases in noise levels may occur at some residential receptors within close proximity to the tunnel portals.</p>	<p>Further detailed assessment work will be undertaken through the EIA/HIA process. Potential mitigation measures will be considered which include thin/low-noise surfacing and noise barriers.</p>
<b>Summary</b>	<p>Negative health impacts are identified during the construction period of the Scheme. Impacts related to construction dust and traffic will be temporary in nature and will be localised within the immediate vicinity of the work sites. Mitigation measures included in a CEMP will contribute to reducing the overall impact. Potential air quality impacts during</p>	

operation are likely to be both positive and negative at different locations in the areas of the Scheme. Mitigation measure to reduce the impacts from new or increased traffic flows are considered; however the overall health impact is assessed as uncertain.

## 7. Accessibility and active travel

Assessment criteria	Details/evidence	Recommended mitigation or enhancement actions
<b>Does the proposal prioritise and encourage walking (such as through shared spaces?)</b>	Pedestrians will not be able to use the Silvertown Tunnel as it would not be a safe or pleasant environment. Furthermore the Emirates Airline provides a link for pedestrians and cyclists between the Greenwich Peninsula and Silvertown.	N/A
<b>Does the proposal prioritise and encourage cycling (for example by providing secure cycle parking, showers and cycle lanes)?</b>	Cyclists will not be able to use the Silvertown Tunnel for safety reasons.	N/A
<b>Does the proposal connect public realm and internal routes to local and strategic cycle and walking networks?</b>	The tunnel will provide a link (only vehicular access) to Thames path on both banks. Due to the nature of the scheme, it is not anticipated that benefits from the improved cross river connection will affect users of the Thames path (due to available alternatives i.e. Emirates Airline cable car and the direction of the cycle and pedestrian movements on the local network).	N/A
<b>Does the proposal include traffic management and calming measures to help reduce and</b>	Construction traffic impacts should be minimised through the CEMP and associated traffic management plans which the HIA will feed into. If traffic analysis shows increases in through-traffic using local residential streets, a range of localised traffic management and traffic calming measures will be employed to	As part of the design process, ensure that appropriate safety measures are included on approach roads to the tunnel.

<b>minimise road injuries?</b>	mitigate these impacts.	
<b>Is the proposal well connected to public transport, local services and facilities?</b>	<p>It is considered there would be no impacts on the operation of the Jubilee Line, Docklands Light Railway or Emirates Airline services. The tunnel portals do not have a material impact on the pedestrian access routes to nearby stations. Access routes to a potential new DLR station at Thames Wharf are maintained.</p> <p>The Scheme offers opportunities for significant enhancements to cross-river bus services.</p>	No further mitigation is required.
<b>Does the proposal seek to reduce car use by reducing car parking provision, supported by the controlled parking zones, car clubs and travel plans measures?</b>	<p>As a road scheme, the tunnel has the potential to generate traffic and encourage car use. However, user charging will be used to control demand.</p> <p>It is anticipated that the car parking provision will be reduced significantly near the southern approach due to planned development on the Greenwich Peninsula (note this is separate to this Scheme).</p>	Travel plan measures will be implemented during construction to manage traffic from construction workers commute.
<b>Does the proposal allow people with mobility problems or a disability to access buildings and places?</b>	N/A	N/A
<b>Summary</b>	Overall accessibility will be improved through better cross-river connectivity. The Scheme does not encourage active travel modes such as walking and cycling, however all the existing pedestrian and cycle routes will be maintained and the accessibility to public transport will remain the same. Therefore, the health impacts are assessed as neutral. The risks for road injuries will be minimised through appropriate safety measures incorporated in the design and traffic management.	

## 8. Crime reduction and community safety

Assessment criteria	Details/evidence	Recommended mitigation or enhancement actions
<b>Does the proposal incorporate elements to help design out crime?</b>	During construction, each of the worksites will be secure, and include appropriate lighting. Once operational, the tunnel has been designed to be safe and secure, and meet legislative requirements for security and safety in the case of possible terrorist activity or road accidents.	N/A
<b>Does the proposal incorporate design techniques to help people feel secure and avoid creating 'gated communities'?</b>	Appropriate lighting in the tunnel and signage of emergency exits will help road users feel secure when using the crossing.	An Automatic Incident Detection system will be radar or video based. It is anticipated that this decision will be left until a later design stage as it needs to be evaluated along with the relevant fire detection technology (heat or smoke) and the cost effectiveness of each option. Both systems have been effectively used in recent UK tunnel projects including Hindhead (radar) and Hatfield (video).
<b>Does the proposal include attractive, multi-use public spaces and buildings?</b>	N/A	N/A

<b>Has engagement and consultation been carried out with the local community?</b>	Consultation with local authorities and relevant health bodies has been carried out with regard to the scope and methodology of the EIA (host boroughs, Public Health England). Public consultation has also been undertaken regarding options and will continue to occur as the Scheme develops and to ensure compliance with Planning Act 2008 requirements.	It is recommended consultation with relevant health bodies continues to inform the HIA which will be undertaken in 2015.
<b>Summary</b>	During construction, each of the worksites will be secure, and include appropriate lighting. Once operational, the tunnel is designed to be safe and secure, and meet all legislative requirements for security and safety in the case of possible terrorist activity or road accidents. Appropriate lighting in the tunnel and signage of emergency exits will help road users feel secure when using the crossing. Therefore it is considered that the overall impact will be positive.	

## 9. Access to work and training

Assessment criteria	Details/evidence	Recommended mitigation or enhancement actions
<b>Does the proposal provide access to local employment and training opportunities, including temporary construction and permanent 'end-use' jobs?</b>	Jobs will be provided during construction, however currently the impacts are considered to be uncertain as TfL has standards for procurement. Potential improvements relate to accessibility – making jobs more accessible for local people and encouraging business growth and development. The River Crossings Development Study (Atkins 2014) estimates changes in accessibility to jobs within a defined study area and identifies that areas south of the river stand to gain the most in terms of additional access to jobs with a river crossing in place at Silvertown. For example Woolwich town centre could experience a 95.7% increase in accessibility as the result of a Silvertown crossing.	Consider opportunities to source local employment during construction and operation through promotion of jobs in local job centres and schools/colleges. Include apprentice and volunteering schemes.
<b>Does the proposal provide childcare facilities?</b>	N/A	N/A
<b>Does the proposal include managed and affordable workspace for local businesses?</b>	N/A	N/A
<b>Does the proposal include opportunities for work for local</b>	Potential impacts or opportunities for local employment during construction are currently uncertain.	Local employment and the use of local suppliers during construction and operation should be promoted.

<p><b>people via local procurement arrangements?</b></p>		
<p><b>Summary</b></p>	<p>Positive impacts are identified with regard to increased job opportunities and improved accessibility to jobs which has indirect benefits on mental health and well-being. Local employment and the use of local suppliers during construction and operation should be promoted.</p>	

## 10. Social cohesion an lifetime neighbourhoods

Assessment criteria	Details/evidence	Recommended mitigation or enhancement actions
<p><b>Does the proposal connect with existing communities, i.e. layout and movement which avoids physical barriers and severance and land uses and spaces which encourage social interaction?</b></p>	<p>The temporary severance due to demolition of Boord Street footbridge will be mitigated through the provision of temporary or permanent structure for pedestrians and cyclists.</p> <p>The tunnel reduces community severance through improved north-south links. However, levels of social interaction can be influenced by a number of other factors (such as availability of community facilities, quality and number of play grounds, etc.) therefore overall impact is neutral.</p>	<p>N/A</p>
<p><b>Does the proposal include a mix of uses and a range of community facilities?</b></p>	<p>N/A</p>	<p>N/A</p>
<p><b>Does the proposal provide opportunities for the voluntary and community</b></p>	<p>N/A</p>	<p>N/A</p>

<b>sectors?</b>		
<b>Does the proposal address the principles of Lifetime Neighbourhoods?</b>	N/A	N/A
<b>Summary</b>	Potential temporary severance in the vicinity of the Boord footbridge will be mitigated through replacement of the structure. North-south cross river connectivity will be improved once the tunnel is operational, however it is considered that the overall impact will be neutral as there is no direct link between the construction of a road scheme and social cohesion.	

## 11. Minimising the use of resources

Assessment criteria	Details/evidence	Recommended mitigation or enhancement actions
<p><b>Does the proposal make best use of existing land?</b></p>	<p>The safeguarded areas selected for the tunnel will lead to no permanent net loss of publicly accessible open or green space. On the southern side of the River Thames, the land use is predominantly car parking associated with the O2 arena. The tunnel portal and the link roads from the southern junction encompass an area of derelict land. Light industrial and commercial uses predominate around the northern portal. There is a small area of derelict land that is entirely surrounded by the aggregates business and through which the DLR passes.</p>	<p>N/A</p>
<p><b>Does the proposal encourage recycling (including building materials)?</b></p>	<p>It is unlikely that any of the excavated materials that will arise will be re-used on-site. Opportunities for re-use of excavated materials should be sought on suitable sites within the region. At this stage it is uncertain if there will be suitable local or regional sites which may be able to receive these excavated materials for beneficial re-use.</p> <p>If contamination is found within materials to be excavated then opportunities to treat the materials should be sought prior to any re-use off-site.</p>	<p>The ground investigation that is being undertaken will determine the extent of any contamination of the excavated materials.</p> <p>This information will also inform decisions about the potential re-use of materials generated during construction.</p>
<p><b>Does the proposal incorporate sustainable design and construction techniques?</b></p>	<p>TfL's Contractor will complete and adhere to the measures set out in the CEMP (including monitoring of construction impacts).</p>	<p>TfL will carry out CEEQUAL assessment of the project to ensure sustainable design and construction techniques are applied. A Sustainability Statement will also be produced to support the DCO application. This will</p>

		<p>identify key sustainability themes including: economic and social infrastructure; energy use; transport; natural resource use and waste; health and well-being; air and noise. The statement will bring together all key aspects and effectively describe the sustainability principles relevant to the Scheme and how it will address them.</p>
<p><b>Summary</b></p>	<p>There is uncertainty with regard to the level of contamination of any excavated materials and at this stage it is unlikely that any excavated materials will be suitable for re-use on-site but they could potentially be reused off-site. There will be no permanent loss of publicly accessible open space therefore the health impacts are considered to be neutral. However, potential benefits are identified with relation to the implementation of sustainable construction techniques with indirect positive impact on health in the long term.</p>	

## 12. Climate change

Assessment criteria	Details/evidence	Recommended mitigation or enhancement actions
<b>Does the proposal incorporate renewable energy?</b>	The proposals do not currently incorporate renewable energy.	Lighting and signage should make use of renewable energy where possible.
<b>Does the proposal ensure that buildings and public spaces are designed to respond to winter and summer temperatures, i.e. ventilation, shading and landscaping?</b>	Design of the tunnel structure incorporates appropriate ventilation.	N/A
<b>Does the proposal maintain or enhance biodiversity?</b>	As part of the environmental assessment effects of the Scheme on biodiversity are assessed. A Phase 1 habitat survey and further species specific surveys have been carried out. No presence of reptiles, bats, black redstart was recorded within the site boundary. The EIA will assess the impacts on biodiversity resources.	The mitigation measures included within the environmental assessment for biodiversity should be implemented.
<b>Does the proposal incorporate sustainable urban drainage</b>	Currently there is failure/collapse of current drainage system in the vicinity of Dock Road in Silvertown. The development proposes to fix and improve this. It is proposed to improve this by the provision of storage to attenuate the rates of discharge of surface water drainage. It is believed that once this has	N/A

<b>techniques?</b>	been done the drainage system will be able to cope with the additional increase in surface water so will not increase surface water flood risk on site or downstream of the site.	
<b>Summary</b>	Improvements of the drainage system will lead to reduced surface water flood risk. The overall impact on biodiversity will be neutral as there will be no net loss of protected species or valuable habitats, however opportunities could be sought to enhance the area within the site boundary. Positive impacts are associated with the design of the tunnel which will be able to respond to winter/summer conditions through appropriate ventilation.	

## 13. Conclusion

The results in the Introductory Health Impact Assessment are preliminary and based on early Scheme design. The assessment matrix identified the following **positive** health impacts:

- Increased job opportunities and improved accessibility to jobs with indirect benefits on mental health and well-being
- Safety and security of the tunnel with both direct benefits on both physical and mental health
- Reduced risk of road accidents due to traffic management measures, relieved congestion and appropriate design measures
- Secure work sites for the duration of the construction works
- Reduced flood risk and resilience during all seasons

The assessment matrix identified the following **negative** health impacts:

- Construction dust will have direct impacts on physical health however only temporary in nature
- Construction traffic noise will be temporary with direct and indirect impacts on mental health
- Traffic noise and air quality deterioration at some receptor locations
- Noise and visual disturbance during construction at the open space near the south work site

**Neutral** health impacts are identified with regard to:

- Encouraging active travel modes such as walking and cycling
- Biodiversity, open spaces and green space
- Capacity of available healthcare and social infrastructure
- Social cohesion

Mitigation measures will be included in the CEMP to reduce the negative health impacts where appropriate. Local employment and the use of local suppliers during construction and operation should be promoted. More opportunities should be sought to enhance the area near the northern portal which is an area of green space deficiency. This preliminary assessment of key health impacts is being issued for informal consultation. Following the consultation, comments will be considered during the development of the HIA which will be undertaken in 2015.