East Midlands Gateway
Phase 2 (EMG2)

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ENVIRONMENTAL STATEMENT

Volume 2 Technical Appendices

Appendix 17C

# Health Impact Assessment

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The East Midlands Gateway Phase 2
and Highway Order 202X and The East Midlands Gateway
Rail Freight and Highway (Amendment) Order 202X

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# 1. Health Impact Assessment

## 1.1. Introduction

1.1.1. This Appendix presents the Health Impact Assessment for the **DCO Scheme** (**EMG2 Works** and **Highways Works**), **MCO Scheme** (**EMG1 Works**) and **EMG2 Project** (**DCO Scheme** and **MCO Scheme**). The magnitude of impact classification provided in the Chapter 17: Population and Human Health is based upon the detailed analysis provided in the following sections.

## 1.2. The DCO Scheme (EMG2 Works and Highway Works)

### Construction phase

#### Health effects from changes in air quality

1.2.1. As outlined in Chapter 8: Air Quality, there is potential for dust emissions from earthworks, on-site construction activities and trackout, particularly as there are some residential receptors located within 20m of the Order Limits. However, as stated in Chapter 8: Air Quality, following the implementation of appropriate mitigation measures, the residual effect from dust is expected not to be significant.

1.2.2. There is also the potential for changes in local air quality from construction related traffic movements. These have been assessed for the **EMG2 Project** as a whole.

1.2.3. Overall, the changes in the dust and local air quality environment described above are minimal and, following the implementation of mitigation measures, would not cause significant effects in air quality terms. Where such small changes in the air quality environment are predicted, there would be no material impact on human health.

#### Health effects from changes in noise and vibration

1.2.4. Chapter 7: Noise and Vibration assesses noise impacts during the construction phase in the context of Lowest Observed Adverse Effect Level (LOAEL), 50dB during the daytime period and 40 dB during the night time period, and Significant Observed Adverse Effect Level (SOAEL) thresholds, 63 dB during the day time period and 55 dB during the night time period.

1.2.5. Changes in noise exposure from construction activities associated with the **DCO Scheme** (**EMG2 Works** and **Highway Works**) do not exceed the SOAEL at any nearby receptors. While there are exceedances of the LOAEL at four of the 10 residential receptors assessed[1], such exceedances would be short-term and temporary in nature, and would not persist for long enough for there to be any material impact on health and wellbeing.

1.2.6. It should be noted that some Highways Works will need to take place outside of the core construction working hours (07:00-19:00 hours Monday to Friday and 07:00-16:00 hours

[1] Receptors 2, 3, 4, 5 and 14 assessed in Chapter 7: Noise and Vibration have been excluded on the basis that they are hotels, which are not relevant to the assessment of human health as users of these resources would only be exposed to changes in noise for a short period of time

Saturday) and as such, may occur at night. Depending on the works being undertaken, there is potential for exceedances of the night time LOAEL and SOAEL. However, as previously stated, such exceedances would be short-term and temporary in nature; considering the limited duration and scarcity of these occasions, it is not considered that such exceedances would persist for long enough for there to be any material impact on health and wellbeing.

1.2.7. There is also the potential for changes in noise exposure from construction related traffic movements. These have been assessed for the **EMG2 Project** as a whole.

1.2.8. Overall, the changes in the noise environment described above would generally be below the level required for the onset of human health effects to occur (LOAEL). Where the LOAEL is exceeded at a small number of receptors, such changes in exposure (short-term and temporary in nature) are not considered to persist for long enough to result in any material impacts on human health.

**Health effects from changes in transport, access and connections**

1.2.9. As outlined in Chapter 6: Traffic and Transportation, traffic impacts during the construction phase would be lower than during operation. Furthermore, changes in traffic are assessed for the **EMG2 Project** as a whole, rather than for the **DCO Scheme** in isolation. As a result, the worst-case population and health assessment in relation to changes in transport, access and connections relates to the operational phase for the **EMG2 Project**.

**Health effects from changes in diet and nutrition**

1.2.10. As outlined in **Appendix 17A**, the assessment of impacts on diet and nutrition relates to the impacts from changes in severance on accessing food banks. However, as outlined above traffic impacts during the construction phase would be lower than during operation. Furthermore, changes in traffic are assessed for the **EMG2 Project** as a whole, rather than for the **DCO Scheme** in isolation. As a result, the worst-case population and health assessment in relation to changes in diet and nutrition relates to the operational phase for the EMG2 Project.

**Community safety**

1.2.11. The CEMP provides the framework with which all Phase and construction component specific Construction Environmental Management Plans (P-CEMPs) required for each component of development must accord.

1.2.12. The **DCO Scheme** comprises the following components:

- **EMG2 Works** – a comprehensive multi-unit logistics and advanced manufacturing development located south of East Midlands Airport and the A453, and west of the M1 motorway; and
- **Highways Works** – works to the highway network including significant improvements at Junction 24 of the M1 (referred to as J24 Improvements) and the road network interacting with that junction.

1.2.13. There would be 24/7 security at the **EMG2 Works**, supplemented by CCTV. The off-site **Highway Works** would have visiting security via patrols from the **EMG2 Works**. Fencing would

also be installed to secure each compound area, where each P-CEMP would include details of this.

1.2.14. Construction working hours for each of the above components of the **DCO Scheme** will be confined to 07:00-19:00 hours Monday to Friday, and 07:00-16:00 hours Saturday. As active construction compounds, and considering installed measures for security purposes such as fencing and security patrol, any potential for trespassing and associated impacts on community safety during these construction hours would be unlikely.

1.2.15. As outlined in the CEMP, temporary task lighting will be provided in the contractor's compound for security and safety reasons. While most lighting will be switched off outside of construction working hours, low levels of security lighting would remain on where deemed necessary. Such measures, in addition to security patrol, are implemented to reduce potential for trespassing and associated impacts on community safety during out of hours.

1.2.16. Furthermore, each P-CEMP shall set out details of advisory signage to be provided at each public access point (authorised or not) advising of possible hazards associated with each compound including:

- warnings that you are entering a construction site;
- warning of deep water adjacent to open bodies of water;
- the potential for sudden noise
- advisory signs that a PROW has been closed along with a plan of the substituted route;
- directional signs along substituted PROW;
- details on how to register a complaint; and
- emergency telephone numbers.

1.2.17. Overall, the above measures (security patrol, fencing, lighting and signage), would mitigate the potential for unauthorised access to construction compounds, and is considered sufficient to protect community safety.

**Health effects from changes in the visual environment (with regards to community identity, culture, resilience and influence)**

1.2.18. Of relevance to health and wellbeing, Chapter 10: Landscape and Visual, have assessed the potential for visual effects on the following:

- settlements; and
- recreational routes.

1.2.19. The visual assessment relating to road users has been excluded on the basis that any impacts while travelling by car would not impact health and wellbeing. Visual impacts for users, workers and visitors to Pegasus Business Park and Hotel, Donington Park Services and East Midlands Airport have also been excluded on this basis.

1.2.20. It should be noted that existing landscape features and the visual amenity of the areas of land covered by the **DCO Scheme** and its context have been carefully considered throughout the

planning and design process and have been important factors in informing and shaping the resultant **DCO Scheme**. This (primary mitigation) has included attention to the siting, layout and heights of the proposed buildings and consideration of the earthworks and ground modelling/ mitigation mounding proposals.

1.2.21. A full list of visual impacts are provided in **Appendix 10F**. In summary, construction of the **EMG2 Works** has the potential to cause changes in the visual environment for the following receptors:

- residents at Diseworth (principally residents on the north eastern side of the settlement and potentially others in the south east of the settlement);
- residents of other generally more scattered properties, including from Wood Nook Farm, West Barn, Dry Pot Lane and the north western edge of Long Whatton;
- users of Hyam's Lane PROW;
- users of Long Holden and the Cross Britain Way PROW; and
- users of other PROW.

1.2.22. Construction of the **Highways Works** (in particular the M1 – A50 link) has the potential to cause changes in the visual environment for the following receptors:

- residents at Kegworth (a relatively limited number of properties on the western/north western edge, including some on Windmill Way, Pritchard Drive and Ashby Road);
- a small number of individual properties at Long Lane (north of Kegworth) and limited properties and positions at Ratcliffe on Soar and Kingston on Soar;
- a stretch of PROW (footpath) on top of and to the east of the existing EMG mounding (immediately west of Plot 16) (footpath); and
- users of the Midshires Way (at Long Lane) and another PROW (running parallel to this but west of Long Lane).

1.2.23. The extent of visual impacts summarised above will vary, with some experiencing greater visual impact over a longer period of the construction process and others more limited impacts. Additionally, visual impacts from receptor locations will vary throughout the course of construction depending on the phasing and working arrangement of activities.

1.2.24. It should be noted that there will be no views towards the construction of the site proposals from the majority of properties/streets within Diseworth (affected by the construction of **EMG2 Works**), due principally to its relative low lying position, the landform variations and the intervening properties, buildings and planting within the settlement itself.

1.2.25. This, combined with the relatively limited number of properties visually impacted by the **Highways Works** within Kegworth and other limited properties in Ratcliffe on Soar and Kingston on Soar, suggest that while such effects may be significant, only a small number of people would be affected in the context of the total nearby population.

1.2.26. Similarly, while significant visual effects may be experienced from PROW, people use these resources in a transient way and therefore would only be subjected to such views temporarily.

1.2.27. Overall, the construction visual impacts described above have the potential to affect the quality of life for a relatively small number of residents in Diseworth and other individual properties in the surrounding area. Furthermore, there is no potential for physical health impacts associated with changes in the visual environment (including deterrence of use of PROW for physical activity and recreation due to changes in the visual environment, whereby reasonable and accessible alternative PROW exist locally and can be used instead).

**Health effects from access to open space and PROW for physical activity, leisure/play and recreation**

1.2.28. The **EMG2 Works** currently comprises undeveloped, predominantly arable, land; as such, there is no publicly accessibly open space being lost.

1.2.29. One PROW (L45/L46) generally follows the route of Hyam's Lane, which dissects the **EMG2 Works**. As stated in Chapter 3: Proposed Development, this PROW will become integrated into the upgraded Hyam's Lane, which will be resurfaced to enhance cycle access.

1.2.30. The intention is to construct footpaths as soon as the initial earthworks are completed (anticipated to commence in 2027 and last approximately 26 months) to maintain access across the **EMG2 Works**. On this basis, there is the potential for temporary disruption to the use of affected PROW for physical activity, leisure/play and recreation during this period.

1.2.31. However, the network of PROW to the west of Diseworth provides reasonable and accessible alternatives for physical activity, leisure/play and recreation. As such, the temporary disruption would not have a material impact on the ability of the local population to access PROW for physical activity, leisure/play and recreation, or associated impacts on health and wellbeing.

**Health effects from changes in socio-economic factors (employment and income)**

1.2.32. Having consistent income and being in long-term employment are two of the most important wider determinants of health.

1.2.33. Chapter 10: Socio-economics estimates that construction of the **DCO Scheme** would result in an average of 290 full-time equivalent (FTE) net additional on-site direct employment opportunities per annum. Once leakage and displacement have been taken into account, a further 145 net additional off-site indirect and induced employment opportunities would be generated per annum. Construction employment would peak at 325 FTE net additional on-site direct employment opportunities in 2027 and 2028, with an additional 162 FTE net additional off-site indirect and induced employment opportunities, with leakage and displacement have been taken into account.

1.2.34. Construction of the **DCO Scheme** is anticipated to take 5.8 years. As such, the employment direct, indirect and induced opportunities provided can be considered medium term and temporary in nature.

1.2.35. Overall, taking into consideration the number of employment opportunities generated during the construction phase, and the temporary (albeit medium term) nature of employment opportunities, it is considered that the health and wellbeing benefits would only have an impact at the individual level rather than at the population level.

## Operation phase

### Health effects from changes in air quality

1.2.36. Potential changes in air quality during the operation phase relate to changes in traffic movements only and have been assessed for the **EMG2 Project** as a whole.

### Health effects from changes in noise and vibration

1.2.37. Once operational, there is potential for changes in noise exposure from operational activity, fixed plant and changes in traffic flows during the day and night time periods.

1.2.38. For the **DCO Scheme**, significant noise effects occur where the rating level exceeds the background sound level by 10 dB. This would not occur at any receptor analysed from operational activities taking place during the day and night time periods. A LOAEL of 60dB $L_{AFmax}$ and SOAEL of 70 dB $L_{AFmax}$ has also been applied for the night time period, which is also not exceeded at any residential receptor analysed (only at hotel receptors, which are not considered relevant to the assessment of human health on the basis that there would be no long-term or consistent exposure to such noise impacts).

1.2.39. Target noise rating levels have been defined for fixed noise plant and substations that are equal to the typical background sound level at each receptor (or sensitivity test if relevant). However, at this stage no assessment has been undertaken and instead it is proposed that this would form part of the discharge of requirements. As such, it is not possible to undertake an assessment in the context of human health at this stage.

1.2.40. There is also the potential for changes in noise exposure from operational traffic movements. These have been assessed for the **EMG2 Project** as a whole.

1.2.41. Overall, the changes in the noise environment described above would be below the level required for the onset of human health effects to occur (LOAEL) during the day and night time period at residential receptors and on this basis would not result in any material impacts on human health.

### Health effects from changes in transport, access and connections

1.2.42. As outlined in Chapter 6: Traffic and Transportation, traffic impacts during the operational phase are assessed for the **EMG2 Project** as a whole, rather than for the **DCO Scheme** in isolation. As a result, the worst-case population and health assessment in relation to changes in transport, access and connections relates to the operational phase for the **EMG2 Project**.

### Health effects from changes in diet and nutrition

1.2.43. As outlined in **Appendix 17A**, the assessment of impacts on diet and nutrition relates to the impacts from changes in severance on accessing food banks. However, as outlined above changes in traffic during the operation phase are assessed for the **EMG2 Project** as a whole, rather than for the **DCO Scheme** in isolation. As a result, the worst-case population and health assessment in relation to changes in diet and nutrition relates to the operational phase for the **EMG2 Project**.

**Community safety**

1.2.44. During operation, the **DCO Scheme** will be managed from the existing management suite at EMG1, where there is a full-time security team that carry out regular patrols. The security officers also monitor CCTV from the camera located along the main estate roads.

1.2.45. Consistent with the security measures employed at EMG1, which have proven to be effective in deterring trespassing and anti-social behaviour, the extension of these measures to the **DCO Scheme** are considered to be protective of community safety.

**Health effects from changes in the visual environment (with regards to community identity, culture, resilience and influence)**

1.2.46. As previously stated, existing landscape features and the visual amenity of the areas of land covered by the **DCO Scheme** and its context have been carefully considered throughout the planning and design process and have been important factors in informing and shaping the resultant **DCO Scheme**. This (primary mitigation) has included attention to the siting, layout and heights of the proposed buildings and consideration of the earthworks and ground modelling/mitigation mounding proposals.

1.2.47. The operational assessment of health effects from changes in the visual environment takes into consideration visual impacts both at the start of operation, and 15 years post completion, once new mitigation planting has matured (additional mitigation).

1.2.48. At the start of operation, changes in the visual environment would impact the same/similar receptor groups as during the construction phase. The magnitude if these visual impacts are also likely to be the same/similar to those described in the construction phase assessment. However, the majority of visual impacts will reduce over time following the establishment and subsequent maturing/management of the proposed planting and habitats.

1.2.49. With regard to visual impacts from the **EMG2 Works**, the maturing and management of the existing and new perimeter planting will offer noticeable visual improvements through increased visual filtering and screening to the majority of the properties and receptors on the north eastern edge of Diseworth, from other relatively more distant properties and locations to the west and south of the site, users of Hyams Lane (PROW) and The Cross Britain Way.

1.2.50. For some other more distant and elevated receptors particularly to the south, west and east, the new planting will assist to varying degrees in filtering and assimilating the proposed buildings in the landscape and reducing views towards the more active and lower lying parts of the development, but to a lesser extent.

1.2.51. Overall, once matured, the mitigation planting would reduce the visual impacts at the majority of receptors and the operational impacts described above have the potential to affect the quality of life for a relatively small number of residents in Diseworth and other individual properties in the surrounding area. Furthermore, there is no potential for physical health impacts associated with changes in the visual environment (including deterrence of use of PROW for physical activity and recreation due to changes in the visual environment, whereby reasonable and accessible alternative PROW exist locally and can be used instead).

**Health effects from access to open space and PROW for physical activity, leisure/play and recreation**

1.2.52. The **DCO Scheme** includes provision of an informal publicly accessible community park (13 ha) which connects to the eastern extent of Diseworth. On the basis that the existing site does not comprise any publicly accessible open space, this provision represents a net addition to existing circumstance, providing opportunities for physical activity, leisure/play and recreation.

1.2.53. In addition to the integration of PROW L45/L46 into the upgraded Hyam's Lane, which will be resurfaced to enhance cycle access (as described in the construction phase assessment), the following additional improvement works to are proposed to extend public access routes and improved pedestrian and cycle connectivity to the surrounding areas during operation, particularly to and from Diseworth, to the Airport and existing EMG1 site:

- Active Travel Link (EMG2 Works No. 14), providing a dedicated cycle track alongside the A453 between the existing EMG1 site and the **EMG2 Works**;
- A new footpath from the western end of Hyam's Lane and PROW L45/L46 northwards through the proposed community park connecting to the A453 Ashby Road by the Airport entrance junction via the western edge of the **EMG2 Works**. This will link to the A453/EMA junction uncontrolled crossing. Currently there is no off road pedestrian access for this route;
- A new footpath from the western end of Hyam's Lane and PROW L45/46 southwards through the proposed community park connecting to Long Holden and PROW L48 via the western edge of the **EMG2 Works**. Connecting these two PROWs will create a valuable new publicly accessible route all the way from PROW L48 to the airport; and
- A new footpath from the eastern end of Hyam's Lane, and PROW L45 southwards connecting to Long Holden via the eastern edge of the **EMG2 Works**, creating a further valuable new publicly accessible route and a circular walk around the southern part of the **EMG2 Works**.

1.2.54. As a result of the proposed improvement works outlined above, operation of the **DCO Scheme** would result in long-term and permanent improvements in access to open space (the community park) and PROW for physical activity, leisure/play and recreation.

1.2.55. Such improvements are considered in the context of existing provision of open space and PROW locally, such as Diseworth Play area (in north-west extent of the village) and some informal spaces throughout the village, which provide opportunities for physical activity, leisure/play and recreation. Both quality and quantity of open space and PROW provision are taken into account; while the proposed community park is informal in nature, the provision would be larger than the existing publicly accessible open spaces in Diseworth and conveniently located in the eastern extent of the village which would balance out existing provision.

**Health effects from changes in socio-economic factors (employment and income)**

1.2.56. As stated in Chapter 5: Socio-economics, new employment opportunities are expected to result from the **DCO Scheme**, through the provision of 300,000 sqm GIA of warehousing floorspace and 100,000 sqm of mezzanine space within the **EMG2 Works**.

1.2.57. Based on an average employment density of 95 sqm (considered worst-case, as it is the upper end of the employment density range applied), and taking into consideration the average vacancy rate at similar facilities in the region, the **DCO Scheme** would support approximately 3,700 FTE gross on-site employment opportunities. While this is the case, it is likely that approximately 25% of the occupiers at the **DCO Scheme** will be relocated from existing, functionally sub-optimal distribution premises. As such, the **DCO Scheme** is estimated to result in a total of 2,945 FTE net additional on-site employment opportunities.

1.2.58. In addition, a further 2,020 FTE net additional employment opportunities would be generated off-site.

1.2.59. Overall, the total number of FTE employment opportunities equates to 4,965. While these would be long-term and permanent in nature, many of these are off-site and therefore any health and wellbeing benefits would be considerably diffuse across the study area population (comprising the population of Derby, Derbyshire, Nottingham, Nottinghamshire, Leicester and Leicestershire).

## 1.3. The MCO Scheme (EMG1 Works)

### Construction phase

#### Health effects from changes in air quality

1.3.1. As outlined in Chapter 8: Air Quality, there is potential for dust emissions from earthworks, on-site construction activities and trackout, particularly as there are some residential receptors located within 20m of the Order Limits. However, as stated in Chapter 8: Air Quality, following the implementation of appropriate mitigation measures, the residual effect from dust is expected not to be significant.

1.3.2. There is also the potential for changes in local air quality from construction related traffic movements. These have been assessed for the **EMG2 Project** as a whole.

1.3.3. Overall, the changes in the dust and local air quality environment described above are minimal and, following the implementation of mitigation measures, would not cause significant effects in air quality terms. Where such small changes in the air quality environment are predicted, there would be no material impact on human health.

#### Health effects from changes in noise and vibration

1.3.4. As previously stated, Chapter 7: Noise and Vibration assesses noise impacts during the construction phase in the context of Lowest Observed Adverse Effect Level (LOAEL), 50dB during the daytime period and 40 dB during the night time period, and Significant Observed Adverse Effect Level (SOAEL) thresholds, 63 dB during the day time period and 55 dB during the night time period.

1.3.5. As outlined in Chapter 7: Noise and Vibration, changes in noise exposure from construction activities associated with the **MCO Scheme** would not exceed the LOAEL or SOAEL at any nearby receptor.

1.3.6. There is also the potential for changes in noise exposure from construction related traffic movements. These have been assessed for the **EMG2 Project** as a whole.

1.3.7. On the basis that the LOAEL or SOAEL would not be exceeded and changes in noise from traffic would be negligible, there would be no material impacts on human health.

**Health effects from changes in transport, access and connections**

1.3.8. As outlined in Chapter 6: Traffic and Transportation, traffic impacts during the construction phase would be lower than during operation. Furthermore, changes in traffic are assessed for the **EMG2 Project** as a whole, rather than for the **MCO Scheme** in isolation. As a result, the worst-case population and health assessment in relation to changes in transport, access and connections relates to the operational phase for the **EMG2 Project**.

**Health effects from changes in diet and nutrition**

1.3.9. As outlined in **Appendix 17A**, the assessment of impacts on diet and nutrition relates to the impacts from changes in severance on accessing food banks. However, as outlined above traffic impacts during the construction phase would be lower than during operation. Furthermore, changes in traffic are assessed for the **EMG2 Project** as a whole, rather than for the **MCO Scheme** in isolation. As a result, the worst-case population and health assessment in relation to changes in diet and nutrition relates to the operational phase for the **EMG2 Project**.

**Community safety**

1.3.10. The **MCO Scheme** will operate under the EMG1 DCO provisions and requirements which already include a CEMP and provisions for P-CEMPs. As a result, there would be no change to the impacts on community safety and on this basis, no additional assessment is required.

**Health effects from changes in the visual environment (with regards to community identity, culture, resilience and influence)**

1.3.11. As previously stated, of relevance to health and wellbeing, Chapter 10: Landscape and Visual, have assessed the potential for visual effects on the following:

- settlements; and
- recreational routes.

1.3.12. Construction of the **MCO Scheme** has the potential to cause changes in the visual environment for the following receptors:

- residents at Kegworth (a relatively limited number of properties on the western/north western edge, including some on Windmill Way, Pritchard Drive and Ashby Road);
- a small number of individual properties at Long Lane (north of Kegworth) and limited properties and positions at Ratcliffe on Soar and Kingston on Soar;
- a stretch of PROW (footpath) alongside and immediately to the west of Plot 16; and
- users of the Midshires Way (at Long Lane) and another PROW (running parallel to this but west of Long Lane).

1.3.13. The extent of visual impacts summarised above will vary, with some experiencing greater visual impact over a longer period of the construction process and others more limited impacts. Additionally, visual impacts from receptor locations will vary throughout the course of construction depending on the phasing and working arrangement of activities.

1.3.14. The relatively limited number of properties visually impacted by the **MCO Scheme** within Kegworth and other limited properties in Ratcliffe on Soar and Kingston on Soar, suggest that while such effects may be significant, only a small number of people would be affected in the context of the total nearby population.

1.3.15. Similarly, while significant visual effects may be experienced from PROW, people use these resources in a transient way and therefore would only be subjected to such views temporarily.

1.3.16. Overall, the construction visual impacts described above have the potential to affect the quality of life for a relatively small number of residents in Kegworth and other individual properties in the surrounding area. Furthermore, there is no potential for physical health impacts associated with changes in the visual environment (including deterrence of use of PROW for physical activity and recreation due to changes in the visual environment, whereby reasonable and accessible alternative PROW exist locally and can be used instead).

**Health effects from access to open space and PROW for physical activity, leisure/play and recreation**

1.3.17. The **MCO Scheme** would be contained within the original EMG1 site and would not impact any existing publicly accessible open space (or PROW). As a result, there would be no change to the impacts on access to open space and PROW for physical activity, leisure/play and recreation and on this basis, no additional assessment is required.

**Health effects from changes in socio-economic factors (employment and income)**

1.3.18. Having consistent income and being in long-term employment are two of the most important wider determinants of health.

1.3.19. Chapter 10: Socio-economics estimates that construction of the **MCO Scheme** would result in an average of 65 full-time equivalent (FTE) net additional on-site direct employment opportunities per annum. Once leakage and displacement have been taken into account, a further 45 net additional off-site indirect and induced employment opportunities would be generated per annum.

1.3.20. Construction of the **DCO Scheme** is anticipated to take 2 years. As such, the employment direct, indirect and induced opportunities provided can be considered short term and temporary in nature.

1.3.21. Overall, taking into consideration the number of employment opportunities generated during the construction phase, and the temporary/short term nature of employment opportunities, it is considered that the health and wellbeing benefits would only have an impact at the individual level rather than at the population level.

## Operation phase

### Health effects from changes in air quality

1.3.22. Potential changes in air quality during the operation phase relate to changes in traffic movements only and have been assessed for the **EMG2 Project** as a whole.

### Health effects from changes in noise and vibration

1.3.23. Once operational, there is potential for changes in noise exposure from operational activity, fixed plant and changes in traffic flows during the day and night time periods.

1.3.24. For the **MCO Scheme**, significant noise effects occur where the rating level exceeds the background sound level by 5 dB. This would not occur at any receptor analysed from operational activities taking place during the day and night time periods. A LOAEL of 60dB $L_{AFmax}$ and SOAEL of 70 dB $L_{AFmax}$ has also been applied for the night time period, which is also not exceeded at any residential receptor analysed (only at hotel receptors, which are not relevant to the human health assessment as referenced above). When considering operational noise from the **MCO Scheme** in the context of current operations at the **EMG1 site**, the worst case increase is below 1 dB during both the day and night periods.

1.3.25. Target noise rating levels have been defined for fixed noise plant and substations that are equal to the typical background sound level at each receptor (or sensitivity test if relevant). However, at this stage no assessment has been undertaken and instead it is proposed that this would form part of the discharge of requirements. As such, it is not possible to undertake an assessment in the context of human health at this stage.

1.3.26. There is also the potential for changes in noise exposure from operational traffic movements. These have been assessed for the **EMG2 Project** as a whole.

1.3.27. Overall, the changes in the noise environment described above would be below the level required for the onset of human health effects to occur (LOAEL) during the day and night time period at residential receptors and on this basis would not result in any material impacts on human health.

### Health effects from changes in transport, access and connections

1.3.28. As outlined in Chapter 6: Traffic and Transportation, traffic impacts during the operational phase are assessed for the **EMG2 Project** as a whole, rather than for the **MCO Scheme** in isolation. As a result, the worst-case population and health assessment in relation to changes in transport, access and connections relates to the operation phase for the **EMG2 Project**.

### Health effects from changes in diet and nutrition

1.3.29. As outlined in **Appendix 17A**, the assessment of impacts on diet and nutrition relates to the impacts from changes in severance on accessing food banks. However, as outlined above changes in traffic during the operation phase are assessed for the **EMG2 Project** as a whole, rather than for the **MCO Scheme** in isolation. As a result, the worst-case population and health assessment in relation to changes in diet and nutrition relates to the operation phase for the **EMG2 Project**.

**Community safety**

1.3.30. During operation, the **MCO Scheme** will be managed from the existing management suite at EMG1, where there is a full-time security team that carry out regular patrols. The security officers also monitor CCTV from the camera located along the main estate roads.

1.3.31. Consistent with the security measures employed at EMG1, which have proven to be effective in deterring trespassing and anti-social behaviour, the extension of these measures to the **MCO Scheme** are considered to be protective of community safety.

**Health effects from changes in the visual environment (with regards to community identity, culture, resilience and influence)**

1.3.32. As previously stated, existing landscape features and the visual amenity of the areas of land covered by the **MCO Scheme** and its context have been carefully considered throughout the planning and design process and have been important factors in informing and shaping the resultant **MCO Scheme**. This (primary mitigation) has included attention to the siting, layout and heights of the proposed buildings and consideration of the earthworks and ground modelling/mitigation mounding proposals.

1.3.33. The operational assessment of health effects from changes in the visual environment takes into consideration visual impacts both at the start of operation, and 15 years post completion, once new mitigation planting has matured (additional mitigation).

1.3.34. At the start of operation, changes in the visual environment would impact the same/similar receptor groups as during the construction phase. The magnitude if these visual impacts are also likely to be the same/similar to those described in the construction phase assessment. However, the majority of visual impacts will reduce over time following the establishment and subsequent maturing/management of the proposed planting and habitats.

1.3.35. Visual impacts associated with the **MCO Scheme** would reduce following the maturing of planting principally associated with the mitigation undertaken as part of the original EMG1 development. After 15 years, the resultant visual effects are described as predominantly minor adverse and are strongly informed by the nature of the existing views, which already encompass large scale urbanising features and activities, including buildings, infrastructure and major roads and junctions. The most notable residual visual effect (minor/moderate adverse) will be experienced by users of the stretch of PROW alongside Plot 16 and for some residents on the western edge of Kegworth. As previously stated, people use PROW in a transient way and therefore would only be subjected to such views temporarily. This is also the case for the Highways Works.

1.3.36. Overall, once matured, the mitigation planting would reduce the visual impacts at the majority of receptors and the operational impacts described above have the potential to affect the quality of life for a relatively small number of residents in Kegworth and other individual properties in the surrounding area. Furthermore, there is no potential for physical health impacts associated with changes in the visual environment (including deterrence of use of PROW for physical activity and recreation due to changes in the visual environment, whereby reasonable and accessible alternative PROW exist locally and can be used instead).

**Health effects from access to open space and PROW for physical activity, leisure/play and recreation**

1.3.37. The **MCO Scheme** would be contained within the original EMG1 site and would not impact any existing publicly accessible open space (or PROW). As a result, there would be no change to the impacts on access to open space and PROW for physical activity, leisure/play and recreation and on this basis, no additional assessment is required.

**Health effects from changes in socio-economic factors (employment and income)**

1.3.38. As stated in Chapter 5: Socio-economics, new employment opportunities are expected to result from the **MCO Scheme**, through the provision of 26,500 sqm GIA of additional warehousing floorspace and 3,500 sqm of mezzanine space.

1.3.39. Based on an average employment density of 95 sqm (considered worst-case, as it is the upper end of the employment density range applied), and taking into consideration the average vacancy rate at similar facilities in the region, the **MCO Scheme** would support approximately 300 FTE gross on-site employment opportunities. While this is the case, it is likely that approximately 25% of the occupiers at the **MCO Scheme** will be relocated from existing, functionally sub-optimal distribution premises. As such, the **MCO Scheme** is estimated to result in a total of 240 FTE net additional on-site employment opportunities.

1.3.40. In addition, a further 165 FTE net additional employment opportunities would be generated off-site.

1.3.41. Overall, the total number of FTE employment opportunities equates to 465. While these would be long-term and permanent in nature, many of these are off-site and therefore any health and wellbeing benefits would be considerably diffuse across the study area population (comprising the population of Derby, Derbyshire, Nottingham, Nottinghamshire, Leicester and Leicestershire).

## 1.4. The EMG2 Project (DCO Scheme and MCO Scheme)

### Construction phase

**Health effects from changes in air quality**

1.4.1. As outlined above, there is potential for dust emissions from earthworks, on-site construction activities and trackout across all work packages, particularly as there are some residential receptors located within 20m of the Order Limits. However, as stated in Chapter 8: Air Quality, following the implementation of appropriate mitigation measures, the residual effect from dust is expected not to be significant.

1.4.2. There is also the potential for changes in local air quality from construction related traffic movements, primarily from the **DCO Scheme** which is larger in nature than the **MCO Scheme**. While this is the case, operation phase traffic movements are the focus of this assessment.

1.4.3. Overall, the changes in the dust and local air quality environment described above are minimal and, following the implementation of mitigation measures, would not cause significant effects in

air quality terms. Where such small changes in the air quality environment are predicted, there would be no material impact on human health.

**Health effects from changes in noise and vibration**

1.4.4. As previously stated, Chapter 7: Noise and Vibration assesses noise impacts during the construction phase in the context of Lowest Observed Adverse Effect Level (LOAEL), 50dB during the daytime period and 40 dB during the night time period, and Significant Observed Adverse Effect Level (SOAEL) thresholds, 63 dB during the day time period and 55 dB during the night time period.

1.4.5. The noise impacts of the **EMG2 Project** as a whole have been considered by comparing a selection of groups of activities taking place at the same time to represent the worst-case scenario in terms of construction noise. The results show that there would be potential exceedances of the LOAEL at the same four residential receptors affected by the **DCO Scheme**, which would be short-term and temporary in nature, and would not persist for long enough for there to be any material impact on health and wellbeing. As such, no additional adverse impacts are predicted.

1.4.6. There is also the potential for changes in local air quality from construction related traffic movements, primarily from the **DCO Scheme** which is larger in nature than the **MCO Scheme**. While this is the case, operation phase traffic movements are the focus of this assessment.

1.4.7. Overall, the changes in the noise environment described above would generally be below the level required for the onset of human health effects to occur (LOAEL). Where the LOAEL is exceeded at a small number of receptors, such changes in exposure (short-term and temporary in nature) are not considered to persist for long enough to result in any material impacts on human health.

**Health effects from changes in transport, access and connections**

1.4.8. As outlined in Chapter 6: Traffic and Transportation, traffic impacts during the construction phase would be lower than during operation. As a result, the worst-case population and health assessment in relation to changes in transport, access and connections relates to the operational phase for the **EMG2 Project**.

**Health effects from changes in diet and nutrition**

1.4.9. As outlined in **Appendix 17A**, the assessment of impacts on diet and nutrition relates to the impacts from changes in severance on accessing food banks. However, as outlined above traffic impacts during the construction phase would be lower than during operation. As a result, the worst-case population and health assessment in relation to changes in diet and nutrition relates to the operational phase for the **EMG2 Project**.

**Community safety**

1.4.10. On the basis that no additional assessment is required in relation to the **MCO Scheme** (as community safety measure remain the same as what is currently being implemented), the assessment of community safety in the context of the **EMG2 Project** remains the same as for the **DCO Scheme** in Section 1.2.

**Health effects from changes in the visual environment (with regards to community identity, culture, resilience and influence)**

1.4.11. As outlined in Chapter 10: Landscape and Visual, the construction visual effects of the **EMG2 Project** will reflect the combined effects of the **DCO Scheme** and **MCO Scheme**, however will principally be from the **EMG2 Works**.

1.4.12. It is noted that there are limited situations where the **EMG2 Works** will be seen in combination with the **EMG1 Works**. As a result, the assessment for the **DCO Scheme** is representative of the impact from the **EMG2 Project** as a whole.

1.4.13. On this basis, the construction visual impacts for the **EMG2 Project** have the potential to affect the quality of life for a relatively small number of residents in Diseworth, Kegworth and other individual properties in the surrounding area. Furthermore, there is no potential for physical health impacts associated with changes in the visual environment (including deterrence of use of PROW for physical activity and recreation due to changes in the visual environment, whereby reasonable and accessible alternative PROW exist locally and can be used instead).

**Health effects from access to open space and PROW for physical activity, leisure/play and recreation**

1.4.14. On the basis that no additional assessment is required in relation to the **MCO Scheme** (as the **MCO Scheme** would be contained within the original EMG1 site and would not impact any existing publicly accessible open space or PROW), the assessment of health effects from access to open space and PROW for physical activity, leisure/play and recreation in the context of the **EMG2 Project** remains the same as for the **DCO Scheme** in Section 1.2.

**Health effects from changes in socio-economic factors (employment and income)**

1.4.15. Having consistent income and being in long-term employment are two of the most important wider determinants of health. As stated in Chapter 5: Socio-economics, the construction phase of the **EMG2 Project** would require a range of occupational levels including unskilled or labouring jobs to more senior positions, as well as across a range of professional disciplines.

1.4.16. The assessment provided in Chapter 5: Socio-economics estimates that construction of the **EMG2 Project** would result in an average of 310 FTE net additional on-site direct employment opportunities per annum. Once leakage and displacement have been taken into account, a further 240 FTE net additional off-site indirect and induced employment opportunities would be generated per annum. Construction employment would peak at 475 FTE net additional on-site direct employment opportunities in 2028, with an additional 240 FTE net additional off-site indirect and induced employment opportunities, with leakage and displacement have been taken into account.

1.4.17. Construction of the **EMG2 Project** is anticipated to take 5.8 years. As such, the employment direct, indirect and induced opportunities provided can be considered medium term and temporary in nature.

1.4.18. Overall, taking into consideration the number of employment opportunities generated during the construction phase, and the temporary (albeit medium term) nature of employment

opportunities, it is considered that the health and wellbeing benefits would only have an impact at the individual level rather than at the population level.

## Operation phase

**Health effects from changes in air quality**

1.4.19. Air quality modelling results are provided in **Appendix 8G**, whereby two scenarios have been assessed for the operation phase:

- 2028 Scenario 1a vs 2a; and
- 2028 Scenario 1b vs 2b.

1.4.20. For 2028 Scenario 1a vs 2a, the average and worst case change in traffic pollutants at residential receptors are summarised as follows:

- NO2: average change of 0.3 µg/m$^3$ and maximum change of 2.3 µg/m$^3$;
- PM10: average change of 0.1 µg/m$^3$ and maximum change of 1.7 µg/m$^3$; and
- PM2.5: average change of 0.1 µg/m$^3$ and maximum change of 0.9 µg/m$^3$.

1.4.21. For 2028 Scenario 1b vs 2b, the average and worst case change in traffic pollutants at residential receptors are summarised as follows:

- NO2: average change of 0.4 µg/m$^3$ and maximum change of 2.6 µg/m$^3$;
- PM10: average change of 0.2 µg/m$^3$ and maximum change of 1.9 µg/m$^3$; and
- PM2.5: average change of 0.1 µg/m$^3$ and maximum change of 1.0 µg/m$^3$.

1.4.22. It should be noted that there are no exceedances of the relevant objective threshold set to be protective of the environment and human health at any residential receptor assessed. A quantitative health assessment will be undertaken to establish the potential human health effects at the population level.

**Health effects from changes in noise and vibration**

1.4.23. Once operational, there is potential for changes in noise exposure from operational activity, fixed plant and changes in traffic flows during the day and night time periods.

1.4.24. The noise impacts from operational activities of the **EMG2 Project** as a whole have also been considered for the peak periods of operation during the day and night time periods. The results show that in no instances does the rating level exceeds the background sound level by 10 dB, and none of the predicted individual noise event levels exceed the LOAEL of 60dB $L_{AFmax}$ or SOAEL of 70 dB $L_{AFmax}$ at residential receptors (only at hotel receptors which are not relevant to the human health assessment as referenced above). As such, no additional adverse impacts are predicted.

1.4.25. As previously stated, target noise rating levels have been defined for fixed noise plant and substations that are equal to the typical background sound level at each receptor (or sensitivity test if relevant). However, at this stage no assessment has been undertaken and instead it is

proposed that this would form part of the discharge of requirements. As such, it is not possible to undertake an assessment in the context of human health at this stage.

1.4.26. There is also the potential for changes in noise exposure from operational traffic movements. As outlined in Chapter 7: Noise and Vibration, operational traffic noise from the **EMG2 Works** would have no significant effect at the majority of receptors. The exception to this is R11 Grimes Gate during the night time period; however, this is only during the 2028 scenario with no local allocations. Local developments around the area are expected to dilute operational impacts.

1.4.27. Overall, the changes in the noise environment described above would be below the level required for the onset of human health effects to occur (LOAEL) during the day and night time period at residential receptors and on this basis would not result in any material impacts on human health. In relation to traffic specifically, the change in noise exposure at R11 Grimes Gate during the night time period would not result in any population-level human health impacts.

**Health effects from changes in transport, access and connections**

1.4.28. The following assessment themes in Chapter 6: Traffic and Transportation are considered relevant to the assessment of population and health and are considered further:

- severance;
- non-motorised user delay;
- non-motorised user amenity;
- fear and intimidation; and
- road user and pedestrian safety.

***Severance***

1.4.29. As outlined in Chapter 6: Traffic and Transportation, severance occurs where there is a 30% increase in AADT flows or HGVs, which would occur at the following road links:

- Links 5, 23, 24, 25, 26 and 27 – A42/M1 on/off-slips at M1 Junction 23A (Finger Farm);
- Link 6 – Long Street, Belton;
- Links 11 – unnamed road, Diseworth;
- Link 20, 49 and 52 – A453 between Hunter Road and Finger Farm;
- Links 28, 42, 43, 44, 45, 50 and 53 – A453 between Finger Farm and M1 Junction 24; and
- Link 33 – Beverley Road, East Midlands Airport.

1.4.30. However, it is important to consider the local context before concluding as such. The results of this contextual assessment are provided in the table below.

**Table 1: Population and health impacts from severance**

| Road link | Assessment |
|---|---|
| Links 5, 23, 24, 25, 26 and 27 – A42/M1 on/off-slips at M1 Junction 23A (Finger Farm) | Dedicated vehicular routes connecting traffic with the strategic road network at the M1 and A42 meaning there is no pedestrian or cycle desire line, nor any demand for crossing movements. |
| Link 6 – Long Street, Belton | A residential road through the village, which provides footways on both sides bound by residential properties. During the morning peak hour there would be just over two additional movements per minute which retains regular opportunities for people to cross the road. |
| Links 11 – unnamed road, Diseworth | A rural road bound by undeveloped land at both sides with no footway or cycle facilities. On this basis, there is little demand for crossing or turning movements other than for vehicular access into the adjacent fields. |
| Link 20, 49 and 52 – A453 between Hunter Road and Finger Farm | This section of the network currently has little demand for crossing movements because of the limited amount of development to the south but provides a footway/cycleway along the northern side of the road. The EMG2 Main Site will increase demand for crossing movements at this location for journeys to East Midlands Airport, EMG1 and Kegworth. It is proposed to install a new signal controlled Toucan crossing on the A453 with enhanced walking and cycling infrastructure, providing a safe and convenient location for people to cross this section of the A453. |
| Links 28, 42, 43, 44, 45, 50 and 53 – A453 between Finger Farm and M1 Junction 24 | |
| Link 33 – Beverley Road, East Midlands Airport | The road is industrial in nature at approximately 7.3 metres wide and provides footways on both sides. There are also controlled crossings (zebra crossings) which prioritise pedestrians crossing the carriageway. |

1.4.31. Overall, the majority of road links affected have limited pedestrian or cycle desire lines, limiting the demand for crossing. Where there is a desire line to cross, or new desire line created, sufficient infrastructure exists to facilitate this. As a result, it is not considered that there are any material adverse impacts on severance from a population and health perspective.

***Non-motorised user delay***

1.4.32. As outlined in Chapter 6: Traffic and Transportation, non-motorised user delay also occurs where there is a 30% increase in AADT flows or HGVs, and so affects the same road links referenced above. As previously stated, it is important to consider the local context before concluding as such. The results of this contextual assessment are provided in the table below.

**Table 2: Population and health impacts from non-motorised user delay**

| Road link | Assessment |
|---|---|
| Links 5, 23, 24, 25, 26 and 27 – A42/M1 on/off-slips at M1 Junction 23A (Finger Farm) | Form part of the strategic road network where there is no facilities or demand for pedestrians or cyclists who are forbidden to travel on these roads. |
| Link 6 – Long Street, Belton | The changes in traffic flows would result in just over two movements per minute. As there are no capacity issues on this part of the network, so there are not expected to be any significant delays to non-motorised users. |
| Links 11 – unnamed road, Diseworth | A rural lane that is bound by undeveloped fields at both sides, with no pedestrian or cycle facilities. |
| Link 20, 49 and 52 – A453 between Hunter Road and Finger Farm | Provides a footway/cycleway along the northern side of the road. The EMG2 Main Site will increase demand for crossing movements at this location for journeys to East Midlands Airport, EMG1 and Kegworth. It is proposed to install a new signal controlled Toucan crossing on the A453 with enhanced walking and cycling infrastructure, which will have a beneficial impact on non-motorised user delay. |
| Links 28, 42, 43, 44, 45, 50 and 53 – A453 between Finger Farm and M1 Junction 24 | The footway/cycleway improvements would extend along the section of A453 up to EMG1, and significant highway improvements that aim to reduce traffic flows on the A453 corridor and divert more traffic to the new free flow link via the M1 motorway. This will result in less traffic using the link which will also provide a beneficial impact to non-motorised user delay. |
| Link 33 – Beverley Road, East Midlands Airport | The road is industrial in nature at approximately 7.3 metres wide and provides footways on both sides. There are also controlled crossings (zebra crossings) which prioritise pedestrians crossing the carriageway. |

1.4.33. In conclusion, some affected road links have limited pedestrian/cyclist infrastructure. The road links that do have pedestrian/cyclist infrastructure would limit the potential for there to be any impact on non-motorised user delay. Proposed improvements on the remaining road links would have a beneficial impact on non-motorised user delay. As a result, it is not considered that there are any material adverse impacts on motorised user delay from a population and health perspective.

***Non-motorised user amenity***

1.4.34. Non-motorised user amenity relates to the relative pleasantness of a journey, where impacts arise where traffic flows are halved (beneficial) or doubled (adverse). The following links are expected to experience a 50% increase in AADT flows or HGVs:

- Links 5, 23, 24, 25, 26 and 27 – A42/M1 on/off-slips at M1 Junction 23A (Finger Farm);
- Link 6 – Long Street, Belton;
- Link 20, 49 and 52 – A453 between Hunter Road and Finger Farm;

- Links 28, 42, 43, 44, 45, 50 and 43 – A453 between Finger Farm and M1 Junction 24; and
- Link 33 – Beverley Road, East Midlands Airport.

1.4.35. As previously stated, it is important to consider the local context before concluding as such. The results of this contextual assessment are provided in the table below.

**Table 3: Population and health impacts from non-motorised user amenity**

| Road link | Assessment |
|---|---|
| Links 5, 23, 24, 25, 26 and 27 – A42/M1 on/off-slips at M1 Junction 23A (Finger Farm) | Do not allow pedestrian or cycle movements and are designed solely to accommodate vehicular movements. |
| Link 6 – Long Street, Belton | The changes in traffic flows would result in just over two movements per minute. As the absolute change is low, there would be no substantial impact on non-motorised user amenity. |
| Link 20, 49 and 52 – A453 between Hunter Road and Finger Farm | The improvements to the footway/cycleway facilities within the TA, together with additional crossing opportunities and reductions in traffic from the new M1 northbound to A50 free flow link, should provide a permanent, beneficial impact on the overall pleasantness of a journey along this link. |
| Links 28, 42, 43, 44, 45, 50 and 43 – A453 between Finger Farm and M1 Junction 24 | |
| Link 33 – Beverley Road, East Midlands Airport | The changes in traffic flows would result in less than five movements per minute. With the existing footway infrastructure and zebra crossings and general activity taking place nearby from the industrial/commercial units and airport, the overall change to the pleasantness of the journey would be negligible. |

1.4.36. In conclusion, some affected road links have limited pedestrian/cyclist infrastructure. The road links that do have pedestrian/cyclist infrastructure would limit the potential for there to be any impact on non-motorised user amenity. Proposed improvements on the remaining road links would have a beneficial impact on non-motorised user amenity. As a result, it is not considered that there are any material adverse impacts on motorised user amenity from a population and health perspective.

***Fear and intimidation***

1.4.37. Fear and intimidation are often experienced by pedestrians and driven by volume of traffic, HGV composition, vehicle speeds and physical characteristics such as narrow pavements and obstructions. The following links are assessed:

- Links 1 and 34 along London Road in Kegworth;
- Link 3 along Hemington Road to the east of Hemington village;
- Link 4 along Baroon/Hemington Lane connects the villages of Castle Donington and Hemington;
- Links 5 to 27 comprise the on/off-slips at Finger Farm roundabout (M1 Junction 23A);

- Link 6 at Long Street in Belton;
- Link 8 comprises Grimes Gate, which extends south from the A453 into Diseworth;
- Links 10 and 11 form The Green and the unnamed road that extend around the western edge of Diseworth and out to the south towards the A42;
- Link 19 along Main Street;
- A453 corridor from Hunter Road to M1 Junction 24 and the on/off-slips at M1 Junction 23A; and
- Link 33 along Beverley Road in East Midlands Airport.

**Table 4: Population and health impacts fear and intimidation**

| Road link | Assessment |
|---|---|
| Links 1 and 34 | Would experience a 10% increase in traffic. The southern part of London Road is more rural providing a footway separated from the carriageway by a verge. Where the road enters the built-up area of Kegworth further north, footways are provided on both sides and directly abut the carriageway and are generally wider at 2 metres at most places. London Road is subject to a 30mph speed limit and the nature of the environment in the vicinity of the road, with direct frontage housing, bus stops and pedestrian activity to the nearby commercial uses helps to control speeds. |
| Link 3 | Would experience an 11.3% increase in traffic, with only one HGV movement. The majority of pedestrian activity takes place at the western end of the link because of the presence of residential properties at the northern side of the road and a park at the southern side of the road. Hemington Primary School is also located nearby but not on the link itself. This section of Hemington Road is subject to a 30mph speed limit, with footways on both sides and is understood to experience on-street parking. |
| Link 4 | Would experience a 16.4% increase in traffic (approximately one additional movement per minute in either direction). At either end, the link is urbanised with direct frontage housing, footways, and small commercial units present. These sections of the link are also subject to 30mph speed limit. The section of the link in between the villages is rural with no footway provision but remains at a 30mph speed limit. This section is expected to accommodate less pedestrian activity. |
| Links 5 to 27 | Non-motorised users are not permitted to travel along these routes. |
| Link 6 | Would experience a 102% increase in traffic. This part of the network provides footways at both sides of the carriageway and is subject to a 30mph speed limit. During peak hours there would be just over two additional movements every minute in either direction. |
| Link 8 | Would experience a 13.7% increase in traffic. The actual increase of 350 movements across an entire day would result in limited impacts in any single hour. The northern part of Grimes Gate is rural in nature, absent of footways and largely undeveloped at both sides. Pedestrian activity is therefore low as the main demand will be via Hyam's Lane, which is subject to significant improvements to its width and surface as part of the **EMG2 Project** proposals. The southern part of Grimes Gate where it extends into Diseworth becomes more urbanised, with properties along both sides of the road and footway infrastructure along the western side of the road. The speed limit in this section reduces to 30mph from the national speed limit. |
| Links 10 and 11 | Would experience between a 18.3% and 30.9% increase in traffic. These roads are rural in nature with no footway provision and are largely undeveloped at both sides. The route accommodates predominantly vehicular traffic with a very low number of pedestrian or cycle movements. |

| Road link | Assessment |
|---|---|
| Link 19 | Would experience a 12.2% increase in traffic. The road is largely rural in nature and undeveloped at both sides (except the section in Lockington which serves a small number of residential properties) subject to a 30mph speed limit. It forms part of a wider cycle route connecting settlements including Sawley, Shardlow, Castle Donington and Long Eaton and provides a shared footway/cycleway along one side. |
| A453 corridor from Hunter Road to M1 Junction 24 and the on/off-slips at M1 Junction 23A | Strategic and designed to accommodate large volumes of traffic and high HGV percentages. The A453 corridor provides footway/cycleway facilities that are segregated from the carriageways and connected with signal controlled crossings near the EMG1 access roundabout. This infrastructure is being improved and traffic flows are expected to reduce due to the new M1 northbound to A50 free flow link, resulting in a beneficial impact. |
| Link 33 | Would experience a 191% increase in traffic. Provides footways on both sides connected with zebra crossings and subject to a 30mph speed limit. |

1.4.38. Overall, while changes in traffic would vary across the road links assessed, for various reasons – such as low speed limits, crossing infrastructure, proposed enhancement measures, low absolute change in traffic movements, the resultant impact on fear and intimidation is not considered to be material on a case by case basis.

***Road user and pedestrian safety***

1.4.39. Based on analysis of Personal Injury Collision data, the following road links were assessed for impacts of the **EMG2 Project** on road user and pedestrian safety:

- Links 10 – The Green, Diseworth; and
- Links 28, 42, 43, 44, 45, 50 and 43 – A453 between Finger Farm and M1 Junction 24.

1.4.40. At Link 10, recent signage improvements on the A453 approaching the junction appear to have reduced the rate of PICs, which were primarily due to the junction sitting in a dip in the road restricting visibility. The 18.3% increase in traffic flows would comprise cars or light vehicles and is not anticipated to increase the risk of collision.

1.4.41. Regarding the EMG1 access and M1 northbound off-slip at Junction 24, significant infrastructure improvements proposed will reduce traffic flows on the A453 and M1 northbound off-slip, leading to a permanent, beneficial impact on road user and pedestrian safety.

**Health effects from changes in diet and nutrition**

1.4.42. As outlined in **Appendix 17A**, the assessment of changes in diet and nutrition relates to the impacts from changes in severance on accessing food banks.

1.4.43. Table 1 provides a summary of severance impacts. As concluded, the majority of road links affected have limited pedestrian or cycle desire lines, limiting the demand for crossing. Where there is a desire line to cross, or new desire line created, sufficient infrastructure exists to

facilitate this. As a result, it is not considered that there are any material adverse impacts on severance from a population and health perspective. On the basis that no severance impacts would occur, there would be no adverse impacts on access to food banks, and associated impacts on diet and nutrition.

**Community safety**

1.4.44. During operation, the **EMG2 Project** will be managed from the existing management suite at EMG1, where there is a full-time security team that carry out regular patrols. The security officers also monitor CCTV from the camera located along the main estate roads.

1.4.45. Consistent with the security measures employed at EMG1, which have proven to be effective in deterring trespassing and anti-social behaviour, the extension of these measures to the **EMG2 Project** are considered to be protective of community safety.

**Health effects from changes in the visual environment (with regards to community identity, culture, resilience and influence)**

1.4.46. As outlined in Chapter 10: Landscape and Visual, the operation visual effects of the **EMG2 Project** will reflect the combined effects of the **DCO Scheme** and **MCO Scheme**, however will principally be from the **EMG2 Works**.

1.4.47. It is noted that there are limited situations where the **EMG2 Works** will be seen in combination with the **EMG1 Works**. As a result, the assessment for the **DCO Scheme** is representative of the impact from the **EMG2 Project** as a whole.

1.4.48. On this basis, once matured, the mitigation planting would reduce the visual impacts at the majority of receptors and the operational impacts described above have the potential to affect the quality of life for a relatively small number of residents in Diseworth, Kegworth and other individual properties in the surrounding area. Furthermore, there is no potential for physical health impacts associated with changes in the visual environment (including deterrence of use of PROW for physical activity and recreation due to changes in the visual environment, whereby reasonable and accessible alternative PROW exist locally and can be used instead).

**Health effects from access to open space and PROW for physical activity, leisure/play and recreation**

1.4.49. On the basis that no additional assessment is required in relation to the **MCO Scheme** (as the **MCO Scheme** would be contained within the original EMG1 site and would not impact any existing publicly accessible open space or PROW), the assessment of health effects from access to open space and PROW for physical activity, leisure/play and recreation in the context of the **EMG2 Project** remains the same as for the **DCO Scheme** in Section 1.2.

**Health effects from changes in socio-economic factors (employment and income)**

1.4.50. As stated in Chapter 5: Socio-economics, new employment opportunities are expected to result from the **EMG2 Project**, through the provision of 300,000 sqm GIA of warehousing floorspace and 100,000 sqm of mezzanine space within the **EMG2 Works**, and the provision of 26,500 sqm GIA of additional warehousing floorspace and 3,500 sqm of mezzanine space within the **MCO Scheme**.

1.4.51. Based on an average employment density of 95 sqm (considered worst-case, as it is the upper end of the employment density range applied), and taking into consideration the average vacancy rate at similar facilities in the region, the **EMG2 Project** would support approximately 4,000 FTE gross on-site employment opportunities. While this is the case, it is likely that approximately 25% of the occupiers at the **EMG2 Project** will be relocated from existing, functionally sub-optimal distribution premises. As such, the **EMG2 Project** is estimated to result in a total of 3,185 FTE net additional on-site employment opportunities.

1.4.52. In addition, a further 2,185 FTE net additional employment opportunities would be generated off-site.

1.4.53. Overall, the total number of FTE employment opportunities equates to 6,185. While these would be long-term and permanent in nature, many of these are off-site and therefore any health and wellbeing benefits would be considerably diffuse across the study area population (comprising the population of Derby, Derbyshire, Nottingham, Nottinghamshire, Leicester and Leicestershire).