

5. Transport

Introduction

- 5.1. This chapter has been prepared by Waterman Infrastructure & Environment Ltd and supports the outline planning application for the restoration of former settlement lagoons at tips 4 and 5 at the former Creswell Colliery in Bolsover, Derbyshire.
- 5.2. This chapter provides a description of the overall baseline conditions, proposed mitigation measures and an assessment of potentially significant traffic related environmental effects within the operational phase. The chapter then concludes with a short summary.

Site Description and Context

- 5.3. Since the closure of the Colliery in 1991 the site has suffered from criminal activity including vandalism, theft and unauthorised use by trespassing, including motorbike riders. Welbeck Estates therefore propose to fill the remaining ponds in order to prevent this activity. This would also remove the existing health and safety hazards and would create a new landform that would be consistent with the restored adjacent tips which have very few problems with regards to the aforementioned activities. It is therefore proposed that the area of the former tips 4 & 5 would be restored to agriculture grazing land and low key informal recreational status with enhanced grassland habitat provision. This would ensure that the restored area is put to a suitable end use which is managed.
- 5.4. To create this new landform would require the excavation and transportation of material from the north of the site to the south. The restoration would also require approximately 150,000 tonnes of inert material and soils to be imported to fill and cover the 3 former settling ponds.

Site Access Proposals

- 5.5. It is proposed to transport the material via the A616, Frithwood Lane and the bridge over the Robin Hood Rail Line. Utilising this route would eliminate the need/requirement to access the site from Colliery Road, and remove associated heavy good vehicle (HGV) movements along Elmtun Rd and through Creswell village. It is anticipated that there would be no more than 40 vehicular movements (HGVs) per day entering the site.

Assessment Approach

Methodology

- 5.6. The assessment approach has been based on the Institute of Environmental Assessment's (now the Institute of Environmental Management and Assessment - IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (Ref. 7.2)i. The guidelines recommend that a number of environmental effects are considered to be important when considering traffic from the development proposals.
- 5.7. Of those effects identified within the guidance, many would be considered by others elsewhere within this document due to the specialist skills required i.e. Air Quality and Noise assessments.
- 5.8. The methodology used in this report should provide Derbyshire County Council (DCC) with the necessary level of detail to demonstrate that the site can be accessed safely and that the impact upon users of the bridleway is minor.

Evaluation Methodology

- 5.9. The criteria used to determine the significance and magnitude of each of the traffic-related environmental effects due to the proposed scheme is based on advice given within the IEMA guidelines. The following has been used to define the significance of the impact of the proposed development:
- Substantial Impact - where the proposed development could be expected to have a very significant impact (either positive or negative) on the local highway network;
 - Moderate Impact – where the proposed development could be expected to have a noticeable impact (either positive or negative) on the local highway network;
 - Minor Impact – where the proposed development could be expected to result in a small, barely noticeable impact (either positive or negative) on the local highway network;
 - Negligible - where no discernible impact is expected on the local highway network as a result of the proposed development; and
 - No impact – no change to baseline environment.
- 5.10. The Guidelines state that “... for many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed up by data or quantified information wherever possible.”
- 5.11. Therefore, the following scale of categories, in addition to ‘adverse’ or ‘beneficial’ is to be used for the type of environmental effect. The importance of any receptor has also been considered in terms of international, national, county and district.

Severance

- 5.12. Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery and is used to describe the factors that separate people from other people and places. For example, severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities.
- 5.13. The effects of severance can be applied to motorists, pedestrians or residents. The guidelines suggest that changes of traffic flow of 30%, 60% and 90% are regarded as producing ‘minor’, ‘moderate’ and ‘major’ changes in severance respectively. However, there are no predictive formulae which give simple relationships between traffic factors and levels of severance.
- 5.14. The guidelines state that marginal changes in traffic flow are unlikely to create or remove severance, but that consideration in determining whether severance is likely to be an important issue should be given to factors such as road width, traffic flow and composition, traffic speeds, the availability of crossing facilities and the number of movements that are likely to cross the affected route. Consideration should also be given to different groups such as the elderly and young children.

Driver Delay

- 5.15. Delays to non-development traffic can occur at several points on the local highway network as a result of the additional traffic that would be generated by a development.
- 5.16. The guidelines state that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.

Pedestrian Delay

- 5.17. Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads, and therefore, increases in traffic levels are likely to lead to greater increases in delay. Delays would also depend upon the general level of pedestrian activity, visibility and general physical conditions of the location.
- 5.18. Given the range of local factors and conditions which can influence pedestrian delay, the guidelines do not recommend that thresholds be used as a means to establish the significance of pedestrian delay, but recommend that reasoned judgements be made instead. However, the guidelines do note that, when existing traffic flows are low, increases in traffic of around 30% can double the delay experienced by pedestrians attempting to cross a road. Professional judgment and reference to the above is therefore used to determine whether pedestrian delay impacts are minor, moderate or major significance (and adverse and beneficial).

Pedestrian Amenity

- 5.19. Pedestrian amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic.
- 5.20. The guidelines note that changes in pedestrian amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a beneficial effect and the latter an adverse effect. Professional judgment and reference to the above is therefore used to determine whether pedestrian amenity impacts are minor, moderate or major significance (and adverse and beneficial).

Fear and Intimidation

- 5.21. The scale of fear and intimidation experienced by pedestrians is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths, as well as factors such as the speed and size of vehicles.
- 5.22. There are no commonly agreed thresholds by which to determine the significance of the effect. However, the guidelines note previous work that has been undertaken which puts forward thresholds that define the degree of hazard to pedestrians by average traffic flow, 18 hour/day heavy vehicle flow and average speed over an 18-hour day in miles per hour.
- 5.23. The guidelines also note that special consideration should be given to areas where there are likely to be particular problems, such as high speed sections of road, locations of turning points and accesses. Consideration should also be given to areas frequented by school children, the elderly and other vulnerable groups. Professional judgment and reference to the above is therefore used to determine whether fear and intimidation impacts are minor, moderate or major significance (and adverse and beneficial).

Accidents and Safety

- 5.24. Where a proposed development is expected to produce a change in the character of the traffic on the local road network, as a result of increased HGV movement for example, the guidelines state the implications of local circumstances or factors which may elevate or lessen risks of accidents, such as junction conflicts, would require assessment in order to determine the potential significance of accident risk. Professional judgment and reference to the above is therefore used to determine whether accidents and safety impacts are minor, moderate or major significance (and adverse and beneficial).

Key Impacts and Effects

Traffic Impact

- 5.25. It is anticipated that the restoration works would take approximately 36 months to complete (approximately 50,000 tonnes per annum). It is expected that there would be no more than 40 vehicles (30 tonne vehicles) per day accessing / egressing the site. However, the quantum of recyclable material is currently unknown and this may result in a small number of additional vehicular trips.
- 5.26. A routing strategy would be agreed with the Local Highway Authority, which would mean only certain routes would be affected by associated development traffic. The strategy would recommend vehicles routeing via the A616, Frithwood Lane and the overbridge on the Robin Hood Rail Line. Importing material via this route would eliminate the need to use the existing access along Colliery Road and remove HGVs from Elmton Rd and travelling through Creswell village. The routing of vehicles would be set out in a Traffic Management Plan, which would be in force for the duration of the works and would be agreed with the Local Highway Authority, Derbyshire County Council.
- 5.27. On the basis of the assumptions made above, the links likely to experience an increase in vehicular traffic, associated with the development, are Frithwood Lane and the A616.
- 5.28. Any detrimental effects generated by the additional vehicular movements described above could be minimised through the use of a Traffic Management Plan, to control the timings of deliveries and to avoid such periods as the morning and evening peaks. Consideration of further mitigation measures are discussed later in this chapter.

Assessment of Effects

- 5.29. The assessment of the potential effects and their significance is defined below.

Severance

- 5.30. The effects of severance can be applied to motorists, pedestrians or residents. The guidelines suggest that changes of traffic flow of 30%, 60% and 90% are regarded as producing 'minor', 'moderate' and 'major' changes in severance respectively. This is the case for only one road, Frithwood Lane, which would result in an additional 40 vehicles using the lane per day (approximately 4 vehicles per hour).
- 5.31. This increase in traffic flows along Frithwood Lane is considered to be a moderate adverse effect during the day without provision of mitigation. Mitigation measures are therefore required and are discussed later in this chapter.
- 5.32. The percentage increases in traffic on other links (i.e. the A616) are predicted to be below 30% and therefore the effect upon severance is considered 'Minor' / 'Negligible' negative impact. No mitigation is considered necessary therefore on the A616 with respect to severance.

Driver Delay

- 5.33. Delays to non-development traffic can occur on the network due to additional traffic generated by a development. The IEMA guidelines note that these additional delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.

- 5.34. The local highway network currently operates comfortably within capacity with no problems occurring. The addition of development traffic is not expected to significantly affect the operation of the local highway network. Development trips would occur throughout the day (not limited to just the peak hours). As a result, the development proposals would have a 'Negligible' adverse impact on driver delay, without the provision of any mitigation. No mitigation is considered necessary.

Pedestrian Delay

- 5.35. In accordance with the IEMA guidelines, pedestrian delays are likely to occur when traffic affects the ability of people to cross roads.
- 5.36. On site observations would indicate that there is limited pedestrian activity along Frithwood Lane during the daytime. The level of activity would not be expected to change throughout the duration of the scheme. The majority of pedestrian trips that occur are still likely to take place during the evening and on weekends. Both of which are times/periods of the week when vehicles associated with the development are not expected to be operational.
- 5.37. It is therefore considered that without mitigation there is potential for minor adverse impacts associated with the proposed development. Mitigation measures are therefore required and are discussed later in this chapter.

Pedestrian Amenity

- 5.38. In accordance with the IEMA guidelines pedestrian amenity should only be considered significant in locations where the traffic flow is doubled.
- 5.39. Frithwood Lane would be expected to experience an increase in vehicular movements (approximately 40 vehicles per day), with traffic flows expected to more than double. This is predicted to result in a substantial negative impact without mitigation. Mitigation measures are therefore required and are discussed later in this chapter.
- 5.40. No other links would experience an increase in traffic flows where traffic flows would double.

Fear and Intimidation

- 5.41. The primary factor in increasing levels of fear and intimidation amongst pedestrians and cyclists is high percentage changes in overall vehicular volumes and HGV movements. Due to nature of the scheme, there is predicted to be an increase in the volumes of HGV traffic (approximately 40 vehicles per day) over the 3-year restoration period.

The largest increase in general traffic are expected to occur on Frithwood Lane and the A616. As mentioned above, the majority of existing pedestrian trips are likely to occur during the evening and on weekends (for recreational purposes). Both of which are times/days of the week when vehicles would not be operating. As a result of the proposed scheme, the proposals would result in a 'Minor' adverse impact upon pedestrian fear and intimidation, without provision of any mitigation measures. Mitigation measures are therefore required and are discussed later in this chapter.

Accidents and Safety

- 5.42. A desktop review of collision records from the online website Crashmap (<http://www.crashmap.co.uk/Search>) has been undertaken for the period 2011 to 2015 (5-year period). This indicates that 1 collision was recorded on the local highway network during this period. The collision occurred on the A616 approximately 75m to the north of Frithwood Lane. The collision occurred in 2011 and involved 1 vehicle and resulted in 1 casualty. A plan indicating the location of the collision is provided as part of Appendix 5.1.

- 5.43. There were no reported collisions along Frithwood Lane or at its junction with the A616. To the south of Frithwood Lane (on the A616) there were no reported collisions for a distance of 750m. It is considered therefore that there are no highway safety problems on the local highway network in the vicinity of the development site.
- 5.44. The proposed scheme is not expected to generate significant volumes of HGV movements (approximately 40 vehicles per day). With the exception of Frithwood Lane, the scheme is unlikely to produce a change in the character of traffic on the local road network. The increase in traffic flows which would occur as a result of the proposed scheme would likely result in a 'Minor' adverse impact on accidents and safety (without the implementation of mitigation).
- 5.45. The proposals would however result in the intensification of Frithwood Lane at its junction with the A616. As a result, a number of mitigation measures (discussed later in this chapter), are proposed to maintain and improve the safety for existing vehicular traffic and Vulnerable Road Users (VRU). With the mitigation measures in place, it is predicted that the increase in trips generated by the scheme would have a 'Negligible adverse' impact on highway safety.

Mitigation and Enhancement

- 5.46. In order to control the effects upon the environment during the scheme, the following Traffic Management Plan measures would be incorporated:
- Delivery vehicles would access and egress the site from the A616, via Frithwood Lane;
 - The A616 / Frithwood Lane site access would be appropriately signed;
 - A routing strategy would be prepared and drivers advised of this in order to limit the impact of vehicles on the local highway network and in particular Creswell Village. The Traffic Management Plan would be agreed with the Local Highway Authority;
 - All contractors would be made aware of the agreed route and would be expected to enforce its use through the implementation of penalties etc;
 - Signage would be erected within the site to clearly direct traffic;
 - The site working hours are likely to be as follows
 - 8:00am to 6:00pm Monday to Friday;
 - 8:00am to 2:00pm on Saturday; and
 - No works would take place on Sundays or Bank Holidays.
 - Delivery vehicles, whenever practical, would avoid peak hours to reduce traffic congestion and nuisance on the local highway network;
 - Vehicles associated with the development would not park on the local highway network;
 - Where works impact on the 'live' public highway, appropriate temporary traffic regulation orders would be put in place;
 - On site car parking would be provided for essential contractor vehicles;
 - The entrance to the site would be kept clear and clean. Appropriate cleaning/sweeping would be carried out;
 - In the interests of environmental and road safety all containers carrying materials would be appropriately covered or secured to prevent soiling of the highway network, causing a hazard to vehicles, pedestrian and cyclists;
 - The site would be appropriately secured; and
 - A 5-10mph speed limit could also be introduced across the site.

- 5.47. The implication of the measures outlined above seek to ensure there are no vehicular conflicts or potential road safety issues throughout the restoration scheme. Following implementation of the arrangements / measures discussed above, there would be expected to be a negligible adverse impact on the existing highway network / road safety. The full package of measures would be agreed with the Local Highway Authority within a Traffic Management Plan. It's is recommended that this be conditioned upon a Resolution to Grant planning permission.
- 5.48. Improvements are also proposed on Frithwood Lane, to mitigate the impact of traffic particularly on pedestrian's and other vehicular traffic. These improvements include:
- Provision of 6 passing places along Frithwood Lane. These would be introduced at regular intervals and would provide sufficient room to allow two HGV's to adequately pass one-another. The passing places would also provide VRU such as pedestrians, cyclists and equestrians with an area to wait safely whilst HGV's pass (or for HGV's to wait in). The location of the passing bays is illustrated on the drawings which form part of the Transport Statement report which is provided as Appendix 5.2 and
 - In addition to the passing places, the hedge on the south side of Frithwood lane from the A616 to the first bend is to be kept at a height which affords drivers visibility along the remainder of Frithwood lane, to a point where it starts to rise towards the rail bridge. This would allow drivers to see oncoming vehicles and VRU using the Lane.
- 5.49. As indicated earlier in this ES Transport Chapter, the development proposals would increase vehicular movements at the Frithwood Lane / A616 junction. In order to improve the visibility at the junction and to maintain road safety an improvement scheme is proposed which involves removing a section of the existing hedgerow along the A616 to improve and achieve the required visibility splays. The hedgerow is located in either the adopted highway and / or land controlled by the Client. The improvement scheme therefore is considered to be deliverable. A plan illustrating the visibility splays forms part of the Transport Statement report and is provided as Appendix 5.2 to this document.

Summary

- 5.50. This chapter has been prepared to assess the environmental effects which could arise from an increase in traffic flows during the restoration of former settlement lagoons at tips 4 and 5 at the former Creswell Colliery in Bolsover, Derbyshire.
- 5.51. The assessment has been undertaken in accordance with IEMA guidelines.

Likely Effects and Mitigation Measures

- 5.52. An assessment of traffic associated with the restoration scheme has concluded that there would be a minimal increase in traffic on the local highway network during the restoration period. In accordance with guidelines, this increase would not justify an assessment of the traffic related impacts on the environment, subject to implementation of identified mitigation measures. These mitigation measures include:
- Preparation of a Traffic Management Plan (to be agreed with the Local Highway Authority);
 - Provision of 6 passing places on Frithwood Lane. The passing places would be located at regular intervals and would provide sufficient room to allow two HGV's to successfully pass each other. The passing places would also provide Vulnerable Road users with an area to wait safely, whilst HGV's pass; and

- Modest improvements to the visibility splays at the A616 / Frithwood Lane junction are required and can be delivered within the adopted highway land and / or land controlled by Welbeck Estates.

Conclusions

- 5.53. The scheme proposals have been assessed against the IEMA guidelines, the results of which demonstrate that the forecast traffic would have a 'Negligible' impact upon the study area, in accordance with the assessment criteria. Without mitigation there is potential for 'minor' adverse impacts associated with the scheme.
- 5.54. To control the predicted environmental effects of the forecast traffic associated with the restoration scheme a package of mitigation measures are proposed. In particular, preparation of a Traffic Management Plan would seek to concentrate forecast traffic onto appropriate routes. When considered with the mitigation measures, the results of this assessment conclude the overall impact of the proposed scheme would be 'Negligible'.
- 5.55. It can therefore be concluded that, subject to the mitigation measures discussed, there are no transportation issues that would preclude the scheme from taking place.

ⁱ Institute of Environmental Assessment's (IEA) 'Guidelines for the Environmental Assessment of Road Traffic'