



## **A5 Western Transport Corridor (A5 WTC)**

### **Appendix TNI – Theme Report: Construction Management**

# CONSTRUCTION MANAGEMENT

## Introduction

1. This Section of the paper outlines the site working hours, methods and sequencing that would be adopted by TransportNI contractors to construct the Scheme. Also outlined are the mitigation and control measures that would be implemented throughout the construction processes to minimise the impact of the works on people and the environment.

## Working Hours

2. The working hours for normal construction activities would be from 7.00am to 7.00pm Monday to Friday and to 4.30pm on Saturday. During the earthworks season, April to October, hours would extend to 9.00pm Monday to Friday. Some limited night time working would be required on bridge construction, the placing of bridge beams and the construction of junction and side road tie-ins. There would be no normal working on Sundays and bank holidays. Any exceptions to normal working hours would be agreed with TransportNI in advance.
3. Where construction works could have a significant impact on neighbouring properties, businesses and buildings, the affected parties would be advised of these works prior to their taking place. The Contractor's Public Liaison Officer would liaise closely with members of the public and businesses to inform of the measures to minimise the disruption and impacts of construction.

## Early Activities

4. The first activity on site would be surveying to set out the extents of the works, followed by the erection of both temporary and permanent boundary fencing. This would then be followed by site clearance, which involves the removal of walls, hedges, ditches, and trees, other vegetation and services from the site. This operation would take account of the various seasonal constraints and be carried out in accordance with a site clearance plan produced by an ecologist and subject to their certification prior to carrying out the works.
5. Archaeological excavation and monitoring of identified and potential sites would be carried out once the site has been secured and ahead of major earthwork operations.

## Utilities

6. There are several utility works required to facilitate the construction of the Scheme. Utility works include the statutory service providers: water, electricity, telephone, foul sewerage and other communication systems. Also, there are privately owned services that would require diversion or replacement (e.g. water supplies). These would be treated in a similar manner and with the same priority as those owned by the Statutory Undertakers.

## Earthworks

7. The Scheme has been designed to maximise the use of excavated materials from within the site. It would also minimise the import of material from quarries or other sources and avoid sending surplus material to landfill. Where appropriate, material would be recycled or modified to maximise its suitability for inclusion in the works. Some materials will not be suitable for inclusion in the works, these materials will be deposited in deposition areas at various locations along the Scheme.
8. Following fencing and site clearance works, topsoil would be stripped and stockpiled for re-use at a later date. Stockpiles would be sealed and seeded to prevent wind and rain erosion and aid dust suppression.
9. Where possible haul routes would be located within the Scheme's vesting footprint and temporary bailey bridges would be installed at discrete locations to enable construction plant to travel along the site uninterrupted. This would significantly reduce the haulage of material along the existing road network.
10. Pre-earthworks drainage ditches would be excavated along the periphery of the earthwork side slopes. These would ensure that any surface run-off and any land drainage that is encountered, is picked up and directed to designated discharge points.
11. Sediment control ponds would be excavated as part of the pre-earthworks process in order to prevent silt from entering watercourses. These lagoons would also provide a source of water for damping down dust during dry conditions.

## Roadworks

12. The roadworks strategy for the Proposed Scheme aims to co-ordinate the programme for the construction of the new A5WTC in the most efficient manner, whilst minimising disruption to the local road network.
13. The pavement design has been developed to maximise the use of materials arising within the Scheme's boundaries for its construction, thereby minimising

the import of construction materials. The new carriageways would be surfaced with low noise surfacing material. This would be a proprietary material that has an open textured surface resulting in lower wheel noise.

14. The installation of the new carriageway drainage would run concurrently with the general earthworks.
15. Following completion of the earthworks, drainage and pavement construction, finishing work would be carried out, including the installation of safety barrier, traffic signs, road lighting and road markings.

### **Footpaths and Private Means of Access**

16. During construction, Private Means of Access (PMA) and Public Rights of Way (PRoW) that cross the Scheme would be kept open with designated crossing points. In some cases, temporary diversions may be necessary on safety grounds. If temporary diversions are to be provided, they would be constructed to the appropriate standard and appropriately maintained. The duration of temporary diversions would be kept to a minimum, taking account of the construction programme.
17. Construction is not anticipated to have a major impact upon pedestrians or community facilities at settlements along the Scheme. However, there would be a need for long and short-term temporary closures of a small number of footpaths for public safety and construction practicality. Where temporary closures are required, suitable alternative routes would be provided.

### **Landscaping and Planting Works**

18. Planting would take place as early in the construction programme as feasible, taking account of any seasonal constraints, to ensure optimum growth and coverage prior to Scheme opening.

### **Site Traffic**

19. The majority of vehicle movements associated with the construction works would take place within the confines of the site.
20. The majority of materials would be delivered directly to specific locations on site where they are required for the construction works.
21. Access to the site compound, (the compound is an area set aside for the storage of specific materials, plant and equipment), and for direct site deliveries would be by existing A - and B - class roads and designated site accesses off

local roads. Access points to the site compound and the site would be clearly signed on the local road network.

### **Traffic Management**

22. Construction of the Scheme would directly affect the existing A5 at a number of locations along the Scheme, and it would also affect a number of side roads where they cross under/over the new A5 Scheme.
23. There would be disruption to the local road network during the construction phase with traffic management measures such as local temporary diversions, one way traffic control, short duration closures and night time closure for placing bridge beams. Temporary road closures may be necessary during the construction of side road bridges and new approach roads. These would only be implemented when approval has been given by Transport NI and other relevant authorities.
24. Local residents and road users would be notified of such closures well in advance.
25. A Scheme Traffic Management Plan would be developed and agreed with Transport NI and other relevant authorities. This would detail the individual traffic management schemes to be implemented at the various locations along the scheme where construction is taking place.
26. Haulage roads would be constructed across side roads within the site boundaries.
27. It is envisaged that limited access would be permitted on all side roads for the realignment and construction of the side road. Haulage roads would be agreed with Transport NI and suitable signage would be installed to control the use of the local network by construction traffic.

## **PROJECT MANAGEMENT**

### **Introduction**

28. The business management systems of the Contractors are accredited to ISO9001, as are the project management plans which would provide the foundation for managing this project.
29. The Contractor's Deputy Project Manager would lead on the health and safety, environmental and quality aspects of construction management throughout the construction period.

30. This section of the paper describes the Business Management System (BMS) and associated Project Management Plan. The Construction Environmental Management Plan, construction mitigation measures and community relations are then described in further detail.

### **Business Management System**

31. The Business Management System (BMS) provides an integrated approach to the management of operations and incorporates specific requirements for dealing with quality, health, safety and environmental matters.

32. The BMS is accredited to the following standards:

- i. BS EN ISO 9001 Quality Management System
- ii. BS EN ISO 14001 Environmental Management System
- iii. BS OHSAS 18001 Health and Safety Management System

33. The BMS would be audited regularly by both internal and external auditors. They would assess the appropriateness of the BMS against these standards and the level of implementation and compliance within the company.

### **Project Management Plan**

34. The Contractor would produce a Project Management Plan (PMP) which would be adopted from their accredited management system for Health and Safety, Quality and Environmental management.

35. The objective of the PMP is to provide a co-ordinated approach to project management. It is intended to communicate as widely as possible the policy, organisation, procedures and other documentation relevant to the project.

36. The Plan provides a cohesive and comprehensive approach to project management, removing duplication and integrating tasks where appropriate. Design Quality, Construction Quality, Environmental Management and Health and Safety Management plans are contained or referenced within the Project Management Plan.

37. The main headings contained within the PMP would be:

- i. Introduction – Description of Scheme and scope of services
- ii. Policies – Strategic policies for the project
- iii. Project Objectives – Jointly agreed project objectives
- iv. Project Performance Indicators – The headline Key Performance Indicators (KPI's)
- v. Project Organisation and Structure – Staff organisation details

- vi. Key Team Members and Responsibilities
- vii. Management System Arrangements – Subsection cover General Arrangements, Management of Project Processes, Health and Safety Management, Construction Environmental Management, Communication and Liaison, Control of Documentation, Project Planning, Design Control, Control of Resources, Commercial, Measurement Analysis and Improvement, Non- conformances, Management System Audits and Review
- viii. Core Project Processes – Process maps of core project processes
- ix. Schedule of Procedures – A list of applicable procedures

### **Construction Environmental Management Plan**

- 38. The Construction Environmental Management Plan (CEMP) details the roles and responsibilities of the personnel and measures required to manage, control and report on the environment requirements as identified in the Environmental Statement. The CEMP is a 'live' document that would be reviewed and updated at regular intervals throughout the project life cycle
- 39. The CEMP would be developed prior to the start of construction works. It would comply with the requirements of ISO 14001. The CEMP would dictate how environmental management would be achieved during the construction phase, so as to minimise the impact of all activities on the surrounding environment. The CEMP would describe all the means of demonstrating that the contract's environmental requirements, the Public Inquiry environmental commitments and all the environmental legal requirements, standards and guidelines are met.
- 40. The CEMP would include a means of identifying environmental non-conformances, carrying out corrective actions and therefore providing a method of demonstrating continuous improvement throughout the construction phase. The Project requirement for environmental site inspections, monitoring, auditing and reporting would be contained within the CEMP.
- 41. The CEMP would define the roles and responsibilities of key staff, including the Project Manager, the Environmental Manager, the Public Liaison Officer and Environmental Specialists. Environmental Specialists would be appointed prior to the start of construction to monitor and oversee specific environmental works.
- 42. The Environmental Manager would have experience of managing construction related environmental issues on similar construction projects. The role of the Environmental Manager would include:
  - i. Preparation, implementation and management of the CEMP
  - ii. Providing guidance for the site team in dealing with environmental matters, including legal and statutory requirements affecting the works
  - iii. Identifying and managing environmental risk

- iv. Providing an input to construction method statements to ensure that any environmental requirements are met
- v. Programming and obtaining any licenses, consents, etc., that is required from the Regulatory Authorities (Northern Ireland Environmental Agency, Rivers Agency, etc.)
- vi. Monitoring and reporting site performance against the CEMP
- vii. Carrying out regular site inspections, checks and audits and reporting these to the Project Manager.
- viii. Training for site personnel, including site inductions and specific training as required by the phasing of works on site
- ix. Collection and collation of CEEQUAL evidence
- x. Chairing environmental forums

43. The CEMP would include a series of environmental action plans that would define the scope, key roles, responsibilities, control procedures and any monitoring or training required to ensure that staff and operatives are aware of their responsibilities and environmental obligations. These specialist procedures would include:

- i. Water
- ii. Waste
- iii. Fuels, Oils and Chemicals
- iv. Noise and Vibration
- v. Air and Dust Emissions
- vi. Landscape and Visual
- vii. Agriculture
- viii. Archaeology
- ix. Ecology
- x. Public Interface

44. The CEMP would be subject to regular documented review by the Environmental Manager.

### **Construction Mitigation Measures**

45. Measures would be taken during the construction phase to minimise, as far as is reasonably practicable, the impact of construction activities on the surrounding area.

46. During the construction phase, all activities undertaken would be subject to a health and safety and environmental risk assessment. Where works require the consent or approval of any external body or authority, this approval would be obtained prior to construction works proceeding.

47. At the start of construction, an-up-to-date set of 'constraints drawings' would be prepared. These drawings would be based on the information presented in the Environmental Statement and on any additional environmental surveys that are

undertaken between the Public Inquiry and the start of construction. The constraints drawings would provide the construction team with information on all the environmental constraints to the construction of the A5 scheme.

48. The assessment of risk for any site operation would include reference to the constraints drawings to ensure that any environmental impact is adequately assessed and addressed prior to any specific construction operation commencing.
49. Site operations would be subject to regular inspection by site personnel trained in health and safety and environmental protection. Particular attention would be paid to site tidiness and litter. Inspections of work sites, compound areas and workmen's mess facilities would be undertaken and recorded, and actions required to achieve improvement would be monitored.
50. Inspections would include all aspects of health and safety, with respect to the work force and the general public. All environmental issues would be checked but specifically waste management, material storage, protection of vegetation, ecological habitats, site access points and plant crossings, and noise and dust control would be closely monitored.
51. Records of all inspections would be maintained on site.
52. Where works would have a large impact on neighbouring properties, businesses and buildings, the occupants of these premises would be advised of these works prior to their occurrence. The nature and extent of any such works, which might include piling, night-time works on side road tie-ins, would be agreed with the appropriate relevant authority in advance.

### **Community Relations**

53. Even with all the environmental controls and traffic control measures that would be adopted for the Scheme it is inevitable that there would be some inconvenience and disruption to residents, travellers and the local community. It is therefore very important to ensure that there are procedures and channels of communication in place to keep all stakeholders informed of activities and to quickly address any complaints or queries in a fair and timely manner.
54. An experienced Public Liaison Manager would be appointed who would be responsible for disseminating construction information to the statutory authorities, advisory bodies, landowners, local interest groups and the general public.
55. The Public Liaison Manager would actively communicate with all stakeholders through a process of listening, informing, consulting and acting. The aim being

to ensure that deliverables respond to requirements of key environmental, technical and local stakeholders.

## **KEY CONSTRUCTION ACTIVITIES**

### **Introduction**

56. In order to address concerns members of the public may have in relation to the construction of the Scheme, a number of potential issues have been identified and how we are committed to implementing the appropriate mitigation measures as contained within the Environmental Statement.

### **Working adjacent to SACs**

57. Works adjacent to, or in the vicinity of, Special Areas of Conservation (SACs), will be carried in accordance with the developed CEMP to ensure that construction activities are planned and managed in accordance with environmental requirements for the SACs identified within the Environmental Statement. It would ensure compliance with both the legal and contractual obligations as well as implement best practice in construction environmental management under appropriate ecological supervision and liaison with the relevant organisations.

### **Control of Sediment and Pollution of Watercourses**

58. In order to minimise the risk of environmental incidents, all drainage activities would be carried out in accordance with the CEMP – Principles and Guidance (Appendix 6G in Volume 3 of the Environmental Statement).
59. Particular consideration would be given to the areas designated for fuel and oils storage, storage of materials subject to Control of Substances Hazardous to Health (COSHH) assessments, generator sites, liquid waste storage, and hazardous waste storage. Methods of containment and specifics of control measures would be adopted in accordance with Northern Ireland Environment Agency guidelines and construction industry standards and set out in the CEMP.

### **Noise and Dust during Construction**

60. The CEMP would include a series of environmental action plans that would define the scope, key roles, responsibilities and control procedures that would be required. These specialist procedures would include the management of noise and dust during construction.

61. There will be a complaints procedure and register established to ensure all noise and dust environmental issues would be investigated / checked, resolved and closely monitored. Records of all inspections would be maintained on site.

### **Haul Roads and Access Locations**

62. Wherever possible, haul roads would be located within the Scheme footprint.
63. Haul of earthworks is typically done by articulated dump trucks, however the use of road lorries would be necessary to transport material to locations where only lorry access is feasible.
64. All deliveries of materials required for construction would access the site at the designated Site Access Locations along the haul route as outlined in Table 6G.19 Site Access Locations, Appendix 6G in Volume 3 of the Environmental Statement.
65. The majority of materials would be delivered directly to specific locations on site where they are required for the construction works. Specialist materials would be delivered to the site compound from which point they will be distributed via the internal haul road to where they are required.

### **Severance of Accesses**

66. Prior to erecting fencing or severing lands / access, the Public Liaison Officer would contact those affected landowners / occupiers / businesses to discuss both the short term and long term access arrangements including the programme of works. Suitable temporary access arrangements will be put in place and maintained for the necessary duration until the permanent arrangement is substantially complete.

## **CONCLUSIONS**

### **Construction Programme**

67. The sequencing of operations have been carefully planned to ensure the Scheme is built in accordance with Transport NI requirements and to ensure that minimal disruption occurs to the local environment during the construction process.

### **Construction Methods**

68. The construction methods have been selected with due consideration for the environment and the impact of the works on residents, road users and the wider community.

69. The Scheme design has been optimised to maximise the re-use of materials within the site, minimise the import of materials from outside the site and therefore minimise the need for the disposal of inert surplus material.
70. Public rights of way would need to be closed for short periods with alternative diversion routes implemented to ensure the safety of the public during the construction phase.
71. Environmental mitigation and control measures would be discussed and agreed with the appropriate authorities and would be implemented throughout the construction process to reduce the impact of the works upon residents, land use, air quality, water quality, the natural environment and cultural heritage.

### **Project Management**

72. By implementing a robust Project Management Plan and strict adherence to the Construction Environmental Management Plan the work would be delivered safely to the required standards and with careful consideration of the environment, the public and the wider community.
73. In addition, by actively communicating with all affected parties we aim being to ensure that construction responds to requirements of key environmental, technical and local stakeholders.

### **Summary**

74. The Early Contractor Involvement (ECI) process has ensured that buildability and construction issues have fully been addressed during the design development phase prior to the publication of draft Orders, in particular, temporary land requirements.
75. A construction programme will be developed to provide a clear understanding of environmental impacts and risks expected during the construction phase. The programme will also include the necessary mitigation measures.