THE MERSEY GATEWAY PROJECT

DELIVERY PHASE

WASTE

CHAPTER 15.0

WASTE

C O N T E N T S

FIGURES

APPENDICES

15. WASTE

15.1 Introduction

15.1.1 The Project primarily involves the construction of a ~~road crossing~~ new crossing ~~(the New Bridge) of~~ across the Estuary, between Widnes and Runcorn called the Mersey Gateway Bridge (the new bridge) in the North West region of England. In addition to the New Bridge, the Project involves enhancements and additions to the local road network and de-linking works associated with the existing Silver Jubilee Bridge (the SJB) to reduce traffic levels on it. ~~and the installation of toll plazas on the approaches to the SJB.~~ The method of construction for the Project is set out in the revised Construction Methods Report (CMR) (Appendix 2.1, Chapter 2).

15.1.2 The Proposals comprised in the Further Applications affect the Project specifically as follows:

a. Adoption of Open Road Tolling Technology from opening, as opposed to the barrier tolling authorised by the Permissions and Orders;
b. Redesign of the on- and off-slips at the formerly proposed Widnes Loops Junction to remove the loops configuration from the proposals and provide a grade separated roundabout junction;
c. Changes to the vertical alignment of the mainline of the Project as a result of other design changes;
d. Adjustments to the alignment at Lodge Lane Junction to remove the need to replace the existing busway bridge; and
e. Adoption of urban highway standards in some locations where rural standards had been used.

15.1.3 This Chapter considers the potential environmental effects from waste generation and its management throughout the Project. Waste Management issues during both the construction and operation phase are considered.

15.1.4 The nature, scale and location of the Project are described in Chapter 2 of this ES.

15.2 Purpose of the Study

15.2.1 In common with all major projects, the New Bridge, the SJB works and associated and remote highway works (the Project) has the potential to generate significant quantities of waste material, which will require appropriate handling, storage, treatment, transportation and disposal. These activities have the potential to impact on those living close to and working on the Project as well as the waste management industry whose capacity would be required.

15.2.2 In addition to the scale of the Project, the industrial history in the study area (which is defined below) means that much of the soil and groundwater in the proposed construction areas are contaminated. This increases the potential for effects to occur and the potential significance of those effects should they arise.

15.2.3 For these reasons, an assessment of the potential effects from the generation of wastes and their management is required.

15.2.4 The Permissions and Orders established the principle of the Project and together granted planning permission, powers to acquire land, powers to charge tolls, powers to interfere with navigation and other powers. However, they relate to relatively specific forms of development. As the Project moves into its delivery phase, the Council must have regard to a number of considerations necessary and relevant to secure the implementation of the Project and address any changes in circumstances since the date of the Permissions and Orders.

15.2.5 Therefore, a series of planning applications (known as the Further Applications) are to be submitted with the objectives of:

a. Allowing design changes to accommodate newly available technology and emerging legal developments such as open road tolling (i.e. toll collection without barriers and/or toll booths);
b. Permitting the Project Company flexibility to construct the Project in a manner that is as economically advantageous to the Council as possible; and
c. Securing the quality of the design of the Project that is actually delivered.

15.2.6 The purpose of the study is to assess the environmental effects of the Project including the Proposals. This study is known as the 2011 Further Applications ES.

15.2.7 A description of the Proposals is provided in Chapter 2: those relevant to Waste Management are summarised below:

Area	Summary of Proposals
A – A526 Speke Road to Liverpool (A526 Speke Road)	a. Toll plazas removed; b. Extent of overall works reduced to reflect removal of toll plazas; c. Slip roads and embankments re-designed to reflect removal of toll plaza, low retaining wall added on northern off slip; and d. The reduced extent of the works means there will be no requirement for any works that might affect either Stewards Brook or the Old Lane Subway.
B – Ditton Junction to Freight Line	a. Toll plazas removed; b. Slip roads and embankments re-designed to reflect removal of toll plazas; c. Main alignment shifted north to reduce adverse effects

Area	Summary of Proposals
	during construction in terms of disruption to road users; and d. Providing flexibility in approach to structure design
C – Freight Line to St Helens Canal including the new Widnes Loops Junction	a. Toll plazas removed; b. Junction, slip road and embankments re-designed (as roundabout) to reflect the removal of the toll plazas; c. Alternative construction of embankment / structures at Victoria Road; d. Revisions to the alignment to take account of the changes including a reduction in the vertical alignment and moving of the horizontal alignment to the south; and e. Providing flexibility in approach to structure design.
D – Mersey Gateway Bridge (the New Bridge)	a. Provision of greater flexibility in design details of the New Bridge covering the deck design and cable arrangements including removal of potential provision for future light rapid transit; b. Revision to the northern abutment and the new bridge to tie into the lower vertical alignment in Area C. This revision does not affect the navigational clearances and the clearance over St Helens Canal is maintained; c. Re-location of the northern abutment to avoid high pressure gas main on the southern side of St Helens Canal, this will involve the abutment moving to the south east (towards the salt marsh) and alteration to the extent of the narrowing of the canal; d. Alternative construction of St Helens Canal Bridge; and e. Providing flexibility in approach viaduct design.
E – Astmoor Viaduct	a. Provision of greater flexibility in design details of the New Bridge covering the deck design; and b. Providing flexibility in approach viaduct design.
F – Bridgewater Junction	a. Minor re-alignment of slip roads and associated embankments; b. Extent of slip road works reduced; and c. Providing flexibility in approach to structure design.
G – Central Expressway, Lodge Lane and Weston Link Junction	a. Re-alignment of Calvers Road omitted; b. Merge / diverge to Halton Lea reinstated; c. Addition of retaining walls and traffic signals at Central Expressway slips to accommodate design developments; d. Existing Busway bridge retained with adjustments in line / level to fit alignment through existing bridge; e. Simplified route for footway/bridleway at Weston Link Junction; and f. Overall extent of slip road works reduced; and g. Providing flexibility in approach to structure design.
H – M56 Junction 12	a. No changes to proposals.
I – Silver Jubilee Bridge and Widnes De-Linking	a. Removal of toll plazas; and b. Queensway reduced to three lanes to accommodate cycle/footway over existing structures

15.2.8 There are a series of structural options proposed as part of the Further Application and these are detailed in Chapter 2. Earthworks modelling and early engineering design work undertaken to date for each has shown that each would result in very similar volumes of material arising during demolition and construction. Therefore, this chapter uses a quantity of waste arising which is re representative of all options proposed.

15.2.9 A series of advanced works are either being carried out, or are planned to be carried out, for the Project. These comprise:

a. Site clearance
b. Demolition
c. Service and utilities diversions
d. Remediation at Catalyst Trade Park / Thermphos

15.2.10 The activities associated with these operations were assessed as part of the Orders ES and are covered by the assessments in the Further Applications ES.

15.2.11 As detailed in Chapter 3 a Construction and Operation Code of Practice For Environmental Management (COPE) has been developed to outline the measures required to mitigate and monitor the construction and operation of the Project. A series of further surveys are underway, or are about to commence, to comply with the requirements of the Orders ES COPE. Where appropriate the data from these surveys has been incorporated into the baseline data for the Further Applications ES.

The Definition of Waste

15.2.12 The definition and classification of waste and the regulatory regimes that apply will affect the systems needed for handling and managing waste arisings from the Project. Materials that are considered no longer to be commercially viable to keep, or no longer required by the original owner becomes legally defined as waste, regardless of whether or not they are sent to a recycling facility or sold to a third party.

15.2.13 Under S.75 Environmental Protection Act 1990, Controlled wastes include household, industrial or commercial wastes. Under this legislation, wastes produced by the Project will be classified as Commercial and Industrial wastes (C&I waste~~s~~).

15.2.14 Waste arisings from the Project may be reused within the Project Area or exported from the site of the proposed works (e.g. spoil from excavation, de-watering effluent, contaminated soils and demolition materials from buildings and existing carriageway). As a general rule materials exported off-site for storage or recycling are still likely to be subject to waste regulations, even if they are to be reused on the site at a later date. Materials that remain on-site for reuse, re-processing or recycling within the site boundary could be considered to remain with the 'chain of utility', and for the purpose of this Environmental Statement (ES) are not classified as waste.

15.2.15 In addition, contaminated soils excavated during the construction works are likely to be classified as hazardous wastes. In such circumstances, the legislation requires some form of pre-treatment to occur on site prior to export for disposal.

15.2.16 The Project will inevitably lead to the generation of waste materials, mainly during the construction stage, although small quantities of waste material will be generated during the operation and maintenance phase of the Project. This Chapter identifies and assesses potential effects arising from the generation and management of waste arisings, identifies linkages with other Chapters, and develops appropriate mitigation and enhancement measures. This is to ensure that opportunities to minimise waste generation are recognised

and adopted, the most appropriate disposal routes are maximised, and the reused and recycled waste arisings are managed appropriately.

15.2.17 Waste management is subject to a substantial body of legislation, which is described in greater detail in the policy Section of this Chapter (Section 15.4). This legislative background forces the assessment of waste issues at an early stage of a project, and is a material consideration for the planning authorities in deciding planning applications. Many of the environmental risks associated with waste management will be controlled through adoption of procedures which are in compliance with the existing regulatory regime. This includes the 'Duty of Care' Regulations' which ensure that producers and handlers of waste 'take reasonable measures to prevent the unauthorised deposit, treatment or disposal of waste', failure to comply with the Duty of Care is an offence. The ~~Waste Management Licensing~~ Environmental Licensing Regulations involve the issuing of ~~licenses~~ permits by the Environment Agency (EA) and aim to ensure that the authorised activities do not cause pollution of the environment, harm to human health or serious detriment to local amenities. However, waste policy and legislation can only provide a framework for waste management. They cannot in themselves lead to the total cessation of waste generation, and hence cannot eradicate all of the potential effects that could arise from waste generated during the construction of the Project. Therefore, this Chapter considers where such effects may occur and where they can be reduced through alternative waste management practices, such as treatment and disposal techniques, assessment of transportation activity and resource depletion.

15.2.18 The purpose of this Chapter is to identify the nature and significance of potential effects, setting out the key mitigation principles and concepts, such as safe storage of arisings, minimisation of arisings through detailed design and identification of opportunities to re-use arisings where possible. A range of waste management measures ranging from standard practice compliance systems to best practice targets and Key Performance Indicators (KPI) monitoring are available to incorporate into the Project. It is assumed that a 'best practice' approach to the management of waste arisings during this Project will be adopted to ensure that close monitoring and subsequent changes in method will be applied to the Project waste arisings so as to reduce and mitigate the potential effects.

Context

15.2.19 The Project is a major infrastructure development which will involve the handling of significant quantities of construction, excavation and demolition materials, much of which is likely to contain hazardous arisings from historical industrial use in the area, particularly from the alkaline chemical industry. As described in Chapter 14 (Contamination of Soils, Sediments and Groundwater) those areas will be subject to works. For this reason remediation of areas subject to historic pollution as a result of previous uses may very well be required. This in turn will generate waste arisings and will have implications for the waste management infrastructure (such as landfill sites, material recycling and composting facilities and sites to deal with liquid hazardous arisings), disposal capacity and transportation issues (such as an increase in vehicle movements and the noise and dust arisings which come with moving waste on and off-site).

15.2.20 Waste management, particularly within the construction sector, is in a period of transition, moving from traditional waste disposal practices (predominantly disposal to landfill) towards a material resource system with an emphasis on waste minimisation, reuse, recycling and recovery. ~~Although at present, there are no statutory targets for the minimisation, recycling and recovery of construction and demolition wastes, strategic developments in the EU and Government Policy indicate that these will be introduced in the near future (although no specific date has been set). Although these will affect the Project, they are not currently~~

~~available for use as tests within the ES.~~ The National Waste Strategy 2007 provides for the future introduction of targets to reduce the generation of construction and demolition waste (see Paragraph 15.4.34), and Regional policy (see paragraph 15.4.56) includes targets to reduce waste growth in the North West of England to zero. Therefore, the Project Company ~~Concessionaire~~ will have to comply with these targets and will have to introduce them into the Project targets via the Construction Environmental Management Plan (CEMP). However, for the purposes of this assessment they have not been considered.

15.2.21 The aim of this Chapter is ~~to~~ assess systematically ~~identify~~ the anticipated waste streams that could ~~would~~ arise during the Project (based on the assessments made during the Environmental Impact Assessment (EIA) phase of the Project), make professional judgments on the potential effects on the environment and waste infrastructure that may be expected, identify mitigation measures and introduce appropriate waste management concepts that will be applied to the Project.

15.3 Study Area

15.3.1 The study area utilised in ~~this~~ the Orders ES and the Further Application ES assessment comprises two components. These are:

a. The "Project Corridor". This comprises a 1km wide corridor centred on the centreline of the proposed works. This area was used for the assessment of effects to local receptors due to the generation, handling, transportation and storage of waste arisings from the Project; and

b. ~~The~~ England's "North West Region" (The North West). Although ~~the~~ Halton Borough Council (Halton BC) is the Waste Management Authority, and waste planning has been undertaken within the Merseyside sub-region, it is anticipated that waste management and disposal facilities across the North West region will be utilised for the Project. Therefore, for the purposes of this assessment the wider study area has been assumed to be the North West region, which is defined by the administrative political boundary, incorporating the counties of Cheshire, Cumbria, Greater Manchester, Lancashire and Merseyside. A map identifying the boundary of the North West ~~Region~~ is shown as Figure 1.2 (Chapter 1).

15.3.2 In terms of the Project Corridor, there will be a number of component areas which perform different roles in the waste management process. Examples of these include:

a. The construction site, or source of the arising. In most cases this will comprise an excavation from which material is extracted. However, in some cases, small short term stockpiles of material may be retained at the location of arising; and

b. The Project Company ~~Concessionaire's~~ construction compounds. The majority of excavated material will be transported to the compounds if they require short term storage prior to reuse (e.g. topsoils), pre-treatment prior to export for disposal (e.g. hazardous waste) or quarantine (material of unknown quality). In addition, any recycling activities undertaken directly by the Project Company ~~Concessionaire~~ will occur on the compounds. It is currently proposed that the construction compounds will be situated at St Michaels Golf Course, Catalyst Trade Park and Astmoor Business Park.

15.3.3 It is probable that the Project Company ~~Concessionaire~~ will interface with the local waste management industry in Halton and the North West ~~Region~~, not only for disposal of wastes, but also with regard to recycling and bioremediation. The assessment of these is undertaken as part of the North West ~~Region~~. A list of identified waste management facilities within the North West ~~Region~~ is shown in Appendix 15.2~~2~~3, with their locations shown in Figures 15.4 to 15.10 (Appendix 15.1).

15.3.4 Although waste arisings will be generated within the local confines of the Project Corridor, some of the subsequent effects will depend upon the route of movement of lorries transporting waste arisings and the location of "treatment" and disposal facilities will be used. These activities will predominantly be carried out in a much wider area (i.e. outside Halton BC), and for some specialised wastes streams (such as hazardous) may occur across the entire North West ~~Region~~.

15.3.5 The Project not only involves construction of the New Bridge, but involves extensive work on existing highways in both Widnes and Runcorn to provide improved links to the New Bridge. The overall Project also includes modifications to and subsequent de-linking of the SJB in Widnes. Future possibilities include de-linking the SJB ~~in Runcorn~~. This will be the subject of separate applications and is not considered further in this Chapter.

15.3.6 The Project Corridor has been divided into 9 separate construction areas which are described and identified in Figure 2.1 (Chapter 2). The construction activities in each area

will generate different types and quantities of waste at different times in the construction programme.

15.4 Relevant Legislation and Planning Policy

European Legislation and Policy

15.4.1 UK waste policy is shaped by European waste policy and the EU legislative framework. European legislation stems primarily from the Waste Framework Directive (~~75/442~~ 2008/98/EC (which revises 75/442/EEC and was adopted by the European Council on 20th December 2008)), which has been incorporated by the UK under primary and secondary legislation, codes of practice and other measures. The transposition of EU law into domestic legislation has had far reaching implications for UK waste policy, affecting municipal, commercial and industrial waste management practices. The Waste Framework Directive sets out fundamental principles and definitions for the management of wastes, such as the Waste Hierarchy (in order of preference requiring that waste is reduced, reused, recycled, used for energy recovery or disposed), the Proximity Principle and regional self-sufficiency (which is discussed below). Figure 15.2 (Appendix 15.1) summarises the Waste Hierarchy.

15.4.2 The emphasis of the legislative framework is on the reduction of the UK's dependence on landfill, particularly for biodegradable municipal waste (BMW), and to control disposal activities so as to minimise risks to human health and the environment. However, the European policy framework continues to evolve, and recent strategic developments place increased emphasis on waste minimisation and recycling. The EU Thematic Strategy on the Reduction and Recycling of Waste[1] aims to *'promote waste minimisation and recycling of all waste streams, including construction and demolition waste'*, which is of relevance to this Project. This strategy has significant implications for waste management legislation, in particular for the definition of waste, when a material ceases to be a waste, the definition of recycling and recovery, product standards, specifications and specific targets or regulations applying to particular waste groups. This Chapter has aimed to incorporate the principles identified in this strategy for the day-to-day operations in the Project.

15.4.3 The Waste Framework Directive has recently been revised and reissued (in 2008, see paragraph 15.4.1) ~~is currently under review by the European Council and European Parliament, and the proposed amended Directive will have practical implications for commercial and industrial waste minimisation and recycling. Recent EU and National policy developments indicate that the Government will be~~ and introduces more measures to minimise waste and promote recycling, particularly for commercial and industrial wastes ~~in the near future~~.

15.4.4 In summary, the European Waste Framework sets out the following principles which are reflected in UK policy. Those relevant to the Project have been mentioned below. It must be stressed that the following lists are non-hierarchical:

15.4.5 EU Environmental Policy[2] and Government Review 2011[3]

a. Precautionary Principle (where there are threats of serious or irreversible damage from waste management activities, a lack of full scientific certainty must not be used as a reason for postponing cost-effective measures to prevent environmental degradation);
b. Prevention better than remediation (seek ways to minimise the amount of waste generated through design and construction methods);

[1] Taking Sustainable use of Resources Forward: A Thematic Strategy on the Prevention and Recycling of Waste (2005).
[2] Treaty of Rome Article 174 as Amended by the Single European Act 1986 and the Treaty of Amsterdam
[3] Government Review of Waste Policy in England 2011, DEFRA

c. Remediate at source (seek ways to reduce transportation of waste arisings by treating them on-site, where practicable to do so); and
d. Proximity Principle (the requirement for waste to be recovered, treated or disposed of as near to the source as possible).

15.4.6 EU Waste Management Strategy[4]

a. Waste Hierarchy (an over-arching guiding principle for waste management options. However, in order to optimise costs savings and environmental benefits, a more sophisticated method may be used for assessing management options at the detailed design stage);
b. Proximity Principle; and
c. Self-sufficiency (in broad terms, this means that each country and its regions (in the case of the Project – the North West) should, where possible, manage its own waste materials).

15.4.7 Waste Framework Directive[5]

a. Waste Hierarchy;
b. Use of the Best Available Techniques;
c. Strive for regional self-sufficiency for the subsequent treatment and disposal of waste; and
d. Permitting and licensing regimes (issued by the regulatory authority – in this case, the EA as the domestic regulatory authority) as a means of preventing and controlling pollution from waste activities that may harm the environment or human health.

UK National Legislation and Policy

UK National Legislation

15.4.8 The principle overarching legislation affecting the day to day management of waste is the Environmental Protection Act 1990 (EPA 1990). This sets out the framework for pollution control (Part I), provisions for Waste on Land (Part II), contaminated land (Part IIA), nuisance (part III) and other environmental controls (Parts IV-VIII). The EPA 1990 was ~~recently~~ reinforced by the Clean Neighbourhoods and Environment Act 2005, which introduced, among other things, provisions to tackle the illegal deposit of construction and demolition waste. As a result of the new WFD the new Waste (England and Wales) Regulations 2011 came into force on 29 March 2011. Waste management activities are also affected by other legislation including the Water Act 2003, Pollution Prevention and Control Act 1999, the Control of Pollution (Amendment) Act 1989 and the Health and Safety at Work Act 1974.

15.4.9 In summary, the broad legislative principles are (in non-hierarchical order) to:

a. Meet legal requirements for operations, monitoring, reporting etc.;
c. Minimise the risk of prosecution, criminal sanctions and civil action;
d. Avoid risks of breaches leading to negative image and publicity; and
e. Comply with Codes of Practice, and good practice guidance.

15.4.10 The key legislative regimes for waste management include:

a. Waste definition and classification;
b. Duty of Care;

[4] First implemented in 1989, and subsequently revised in 1996
[5] 75/442 as Amended 91/156

c. Regulations affecting the consignment and movement of waste (e.g. use of registered carriers);
d. Planning permissions, licences and permits and the Pollution Prevention and Control (PPC) regime;
e. Landfill tax and the Landfill Regulations;
f. Water pollution control regime (discussed in Chapter 8);Hazardous waste regulations; and
g. Health and Safety Legislation.

15.4.11 All the above legislative requirements will apply to the Project through identifying and mitigating potential effects at the EIA stage. The key legislative principles specifically relevant only to waste are mentioned below.

Site Waste Management Plans (SWMP)

15.4.12 ~~A Voluntary Code of Practice on~~ Site Waste Management Plans (SWMP) are a legal requirement for a project of this scale ~~has been introduced by the Department for Trade and Industry (DTI), and the forthcoming SWMP Regulations will be incorporated into UK law in April 2008. They~~ and are intended to tackle problems associated with the illegal deposit of construction and demolition waste by requiring contactors to identify waste streams and management procedures in advance of works. The Project Company ~~Concessionaire~~ will ensure that a SWMP is prepared in full before any construction activities are started. In relation to the Project, it will be a key driver in identifying opportunities to reuse arisings that would otherwise have been sent for landfill in addition to the identification of all treatment and disposal routes to accommodate all waste arisings that will be generated.

Duty of Care

15.4.13 Under S.34 of the EPA 1990, anyone who imports, produces, carries, keeps, treats, disposes of or is a broker of Controlled waste has a duty to take all reasonable and applicable measures to:

a. Prevent anybody else whom they may or may not know from illegally depositing, keeping, treating or otherwise disposing of the waste;
b. Prevent the escape of waste;
c. Ensure that waste transfer only occurs to an authorised person or for authorised transportation purposes; and
d. Enable others, by a written waste description, to avoid contravention of S.33 of the EPA 1990 and comply with the Duty of Care.

15.4.14 Under the Duty of Care Regulations 1991 all controlled waste movements (which will be applicable to the movement of waste arisings during the Project) must be accompanied by a WTN (Waste Transfer Note), which ensures that the waste is handled safely and disposed of or recovered within the law.

15.4.15 Regulation 19 of the Landfill Regulations 2002 has amended the Duty of Care Regulations to enable waste to be identified/classified on the WTN by reference to an appropriate six-digit EWC (European Waste Catalogue, which is identified in the Lists of Wastes Regulations 2005) code. A WTN must also contain the following information:

a. Quantity of waste;
b. Six-digit European Waste Catalogue (EWC) code to identify the waste type;
c. Type of container;
d. Time and place of transfer;
e. Name and address of transferor or transferee;

f. Whether the transferor is the producer of the waste (which will be the case for the Project);
g. Method of transportation;
h. Licence number and name of the licensing authority for a waste management licence holder; and
i. Registration certificate for a registered carrier (which is a unique reference number).

15.4.16 Failure to provide sufficient information on the WTN may result in prosecution by the EA. Reputable waste carriers (particularly those who provide a nationwide collection service) have systems in place to ensure that all movements of waste arisings are in accordance with the law before being removed from the construction site. A single WTN is allowed to cover multiple consignments, provided that the description of the waste and all other details are the same for all consignments. This option would be at the discretion of the Project Company ~~successful Concessionaire~~ when compiling the SWMP and logistics of the movement of waste arisings during the Project.

15.4.17 Carriers of Controlled waste must be registered under S.2 of the Control of Pollution (Amendment) Act 1989. It is the consignor's duty to check with the EA that the carrier is registered or exempt from registration.

Planning Permission, ~~Licence~~ or Permit

15.4.18 Planning permission may be required for proposed waste management facilities intended to treat or dispose of Project waste, such as an on-site landfill for Project waste, a new off-site construction consolidation centre, or adaptation of an existing recycling facility to accept new Project waste streams. These facilities will need ~~either a licence or~~ a permit to operate. ~~The waste management licensing system is currently being replaced by the consent procedures under the Pollution Prevention and Control Regime, but these are expected to be replaced over time by a unified Environmental Permitting system, which would be in place by the time the Project commences.~~ The Environmental Permitting system has been introduced to simplify and streamline the existing waste licensing system by incorporating all waste activities under a single permit that would be regulated by one authority. It should have little effect on the day-to-day waste operations of the Project, but it would be the responsibility of the Project Company ~~Concessionaire~~ to identify all the required waste permits required for the Project prior to undertaking relevant waste activities within the compounds. Historically, the EA is responsible for regulating some licences and permits, whilst the local authority are for others. Some on-site treatment or recycling activities may need a mobile permit, licence or registered exemption, depending on the nature and size of the operation, and this will be considered further during the detailed design phase of the Project.

15.4.19 In general, the clean-up or remediation of previously used land requires a waste management license. Under the new 'mobile treatment plants' system recently introduced by the EA, a single license can be obtained which allows operators to use several pieces of mobile plant, either individually or in combination, at the same time on different sites. This may be the case for the Project.

Hazardous Waste

15.4.20 The Hazardous Waste (England and Wales) Regulations and the List of Wastes (England) Regulations came into force in July 2005, replacing the Special Waste Regulations 1996. The Special Waste Regulations 1996 transposed into UK law the requirements of the European Hazardous Waste Directive (91/689/EEC) which sets out requirements for the controlled management of hazardous (special) waste. The 2005 Regulations set out procedures to be followed when disposing of, carrying and receiving hazardous waste.

15.4.21 All waste may be classified under the European Waste Catalogue (EWC) (identified from the List of Waste Regulations). Waste can be classified into three separate classes, which would determine whether it is classified as hazardous and the subsequent disposal/treatment route:

a. Hazardous Waste, which must be treated in accordance with the Hazardous Waste Regulations;
b. Waste streams, whether assigned an EWC code or not, that could either be classified as 'Hazardous' or 'Non-hazardous', depending on the concentration levels of certain 'dangerous properties' above a certain threshold level (e.g. toxicity, corrosive strength, flammability). This would often require laboratory testing to determine whether the waste will be managed in accordance with the Hazardous Waste Regulations. These are often called 'Mirror Entries', and a significant amount of waste generated by the Project will come under this class; and
c. Waste streams that have been assigned an EWC code but do not contain any hazardous properties. These are classified as 'Non-hazardous' and will not fall under these regulations.

15.4.22 To comply with the Hazardous Waste Regulations 2005, waste producers must ensure that:

a. A hazardous waste producer licence is obtained and registered with the EA (providing more than 200Kg of hazardous waste is produced in any one year);
b. All hazardous waste must be listed and assigned an EWC code specific to their properties prior to being consigned off-site;
c. Mixing of different classes of hazardous waste is prohibited; and
d. Records of all movements involving hazardous waste to be kept for a period of two years from the date of the waste being removed off-site.

15.4.23 The waste producer (in the case of this Project, the Project Company ~~Concessionaire~~) is under a duty of care to ensure the accurate characterisation of all waste streams generated from the Project to determine whether the waste is hazardous or not. Many reputable licensed waste carriers will be able to provide the service of regularly testing samples of waste from the Project prior to removal off-site, and this approach should be adopted prior to the start of construction.

UK National Planning Policy

15.4.24 Planning Policy Statement 10[6] 'Planning for Sustainable Waste Management' (PPS10) sets out the overall objectives of the Government's policy on waste. The document serves two purposes. Firstly, it sets out the broad principles for the management of waste with respect to the development of strategies, regeneration and the prudent use of resources, and secondly, it sets out the Government's policy on the planning of new waste management facilities.

PPS10 'Planning for Sustainable Waste Management'

15.4.25 According to Planning Policy Statement 10 'Planning for Sustainable Waste Management' (PPS10) the overall objective of Government policy on waste is to:

a. Protect human health and the environment (through applying appropriate mitigation measures during construction and operation);
b. Move waste management up the waste hierarchy (identify opportunities to minimise, reuse and recycle waste arisings rather than landfill);
c. Dispose of waste as a last resort (through adopting the principles of the waste hierarchy); and

d. Break the link between economic growth and waste generation.

15.4.26 These principles reflect the principles set out in the European Waste Framework Directive and the National Waste Strategy (England) 2007.

15.4.27 PPS10 sets out the Government's aim to break the link between economic growth and waste generation through:

a. 'more sustainable waste management, moving the management of waste up the 'waste hierarchy' of reduction, reuse, recycling and composting, using waste as a source of energy, and only disposing as a last resort'; and
b. 'step-change in the way waste is handled and significant new investment in waste management facilities.'

15.4.28 PPS10 highlights the need for Regional bodies to take account of all waste streams, including commercial and industrial waste, and more specifically construction waste. According to PPS10 Regional Spatial Strategies should include a concise strategy for waste management looking forward to a 15-20 year period, and 'aim to provide sufficient opportunities to meet the identified needs of their area for waste management for all waste streams'. Furthermore, Regional Planning Bodies must 'identify tonnages of waste requiring management for both the commercial and industrial sectors as well as the municipal waste sector'. At this stage it is necessary to test whether there will be sufficient waste infrastructure to accommodate the waste streams arisings generated during the Project. The anticipated waste generation from this Project has not been taken into account in the latest regional and local waste planning documents that highlight what capacity requirements should be made in future.

15.4.29 PPS10 recognises in Section 7 that Regional Planning Bodies must take into account not only national forecasts of waste arisings, but also waste arisings across the region, including 'any particular waste management needs arising from the regional economy, including hazardous wastes and for recycling construction and demolition waste'. As discussed in Paragraph 15.4.26, it cannot be assumed at this stage that there will be sufficient waste infrastructure to accommodate the waste streams arisings generated during the Project, as the anticipated waste generation from this Project has not been taken into account in the latest regional and local waste planning documents that highlight what capacity requirements should be made in future.

Planning for Waste Management Facilities

15.4.30 Not only are waste streams a strategic consideration, but they must also be taken into account in planning for the provision of new waste management capacity. PPS10 states that the planned provision and distribution of new capacity must be based on, *inter alia,* a '*robust analysis of available data and information*'.

15.4.31 Any specific facilities needed to manage waste generated as part of the Project, such as a dedicated landfill, may need planning permission, and the application will need to be consistent with the principles set out in PPS10.

15.4.32 In summary:

a. Planning authorities must take into account all waste streams in their area;
b. Regional strategy provides the opportunity to meet waste management needs for all waste streams;
c. Regional planning bodies must identify waste tonnages for both commercial and industrial waste as well as municipal waste; and

d. Regional planning bodies must take into account particular waste management needs, including the recycling of construction and demolition wastes.

The National Waste Strategy 2007 [7]

15.4.33 Under the Town and Country Planning (Development Plans) (England) Regulations 1999 planning authorities must take into consideration the National Waste Strategy when producing development plans.

15.4.34 The National Waste Strategy (England and Wales) has recently been updated after extensive industry consultation, and the new National Waste Strategy (England) was published in May 2007. Key relevant points from the Waste Strategy (England) May 2007, which is deemed relevant to the Project, are outlined below:

a. According to the Strategy 'each part of society must take responsibility and show leadership through reducing its own waste';
b. Commercial and industrial landfill rates are anticipated to fall by 20% (by tonnage) in 2010 compared with 2004 levels, which will have a knock-on effect of the availability of available capacity for disposal of waste arisings during the Project;
c. The Strategy provides for the future introduction of a target to reduce construction and demolition waste to landfill by 50% in 2012 (with a 2005 baseline). This is on track and further work is being undertaken by the Sustainable Construction Task Group Action Plan. ~~Although these targets are yet to become mandatory, and no date has been set for consulting on this issue, the Project must as a result consider all potential disposal/treatment routes with landfill disposal as a last resort; and~~
~~d. SWMPs are to become a mandatory requirement in April 2008).~~

15.4.35 The Strategy also strongly reinforces the following principles:

a. Reduce and recycle are a top priority;
b. Good waste management will save money and mitigate environmental effects; and
c. Commercial and industrial landfill capacity is expected to reduce with targets being introduced to help achieve this.

Draft National Planning Policy Framework[8]

15.4.36 In July 2011, The Government issued the Draft National Planning Policy Framework (NPPF). This document is aimed at simplifying the existing national policy documents (Planning Policy Statements (PPS) and Planning Policy Guidance (PPG)) into one document, with the aim of make the planning system accessible for communities and to promote sustainable growth.

15.4.37 Advice from the planning inspectorate is:

"It is a consultation document and, therefore, subject to potential amendment. It is capable of being a material consideration, although the weight to be given to it will be a matter for the decision maker in each particular case. The current Planning Policy Statements, Guidance notes and Circulars remain in place until cancelled."

15.4.38 With regard to waste, however, the NPPF has no weight. In part 7 of the Introduction, the NPPF states that: "this framework does not contain specific waste policies, since National Waste Planning Policy will be published alongside the National Waste Management Plan for England". In the footnote to this statement, the NPPF goes on to state that "The Waste Planning Policy Statement will remain in place until the National Waste Management Plan is published".

Design Manual for Roads and Bridges[9]

15.4.39 Volume 11 of the Highways Agency's DMRB policies relates to the principles and techniques that must be considered when carrying out an EIA involving highway Projects. Where land has been contaminated by waste residues from former industrial processes, an emphasis will need to be placed on methods to isolate or treat the waste arisings prior to further development on the site.

15.4.40 Interim advice Note IAN 125/09 was issued by the Highways Agency in October 2009. This identifies the requirements for a waste and materials chapter to be included in any ES produced utilising the DMRB Guidance, and so is directly applicable to the project. This is further discussed at 15.5.44.

Regional Planning

15.4.41 The regional planning documents of relevance to waste management and the Project are:

a. ~~Regional Spatial Strategy for the North West (RPG 13~~North West of England Plan Regional Spatial Strategy to 2021)[10]. This has replaced the Regional Spatial Strategy for the North West (RPG13), and so text on RPG13 below has been struck through. The Coalition Government intends to abolish Regional Spatial Strategies (RSS) under powers of the Localism Act 2011 (s109). Until the Secretary of State issues the relevant order, to revoke whole or parts of the RSS, the RSS for the North West remains part of the statutory development plan.
b. ~~Merseyside Waste Local Plan.~~ The Updated Regional Waste Strategy for England's North West. February 2010 Regional Leaders Board; and
c. Joint Merseyside Waste Development Plan[11] Document currently at consultation stage.

~~*Regional Spatial Strategy for the North West Region*~~

~~15.4.42 Regional Spatial Strategy for the North West Region (RPG13) was published in 2003. It provides a framework for the principles adopted in current UDP (2005) and the emerging local Development Planning Documents (DPDs). The following text in paragraphs 15.4.35 to 15.4.38 has been taken from this document to indicate the most recently adopted planning strategy for the management of waste arisings within the region. Policy measures that have been fully adopted from the National Strategy will not be mentioned below, only policies specifically relevant to the North West.~~

~~15.4.43 Policy EQ4 states that 'Owing to the rapidly diminishing landfill capacity in the North West, waste planning, collection and disposal authorities should, as a matter of priority, work with all stakeholders, including the waste industry, to reduce the volume of biodegradable waste sent to landfill, in accordance with the national waste strategy and the requirements of the EU Landfill Directive'. All key agencies should review their waste minimisation policies as a matter of priority with a view to adopting best practice, and co-operate in the promotion of waste minimisation practices throughout the region. Waste management options should be determined through the application of the following principles, all of which have been considered in detail whilst identifying potential effects and appropriate mitigation measures for the Project:~~

~~a. The Waste Hierarchy which advocates waste minimisation, then re-use, then recycling, composting and energy recovery, where recycling and composting options are not appropriate. Disposal should only be considered if none of the former options are viable. Disposal through 'land-raising' should be discouraged and regarded as a very last resort;~~

b. The Best Practicable Environmental Option (BPEO) for each waste stream. Consideration of what constitutes BPEO in each case should be guided by the priorities of the waste hierarchy (e.g. reusing soils where practicable rather than landfill);
c. Regional Self Sufficiency – most waste should be treated or disposed of within the region in which it is produced; and
d. 'Proximity Principle' – waste should generally be managed as near as possible to its place of production, to minimise the environmental effect of transporting waste.

15.4.44 Policy EQ5 states that Waste management options should be determined through the application of the principles listed in Paragraph 15.4.35 above. The only relevant principle is for the increased reuse and recycling of household waste (not relevant in the case of the Project), commercial and industrial waste, including the development of centralised materials recycling facilities.

15.4.45 RPG 13 states that waste planning and disposal authorities should establish clear frameworks for the provision of appropriate waste management in their areas. These will be informed by the Regional Waste Strategy, which the North West Regional Assembly (NWRA) is drawing up with advice from the Regional Technical Advisory Body (RTAB) on the likely levels of waste to be managed within the Region and the likely requirements for management and disposal facilities.

15.4.46 It is the view of the NWRA that the region currently relies too heavily on final disposal waste management practices with significant amounts of waste moved from urban areas to landfill sites in more rural areas. Recycling levels for the region as a whole are well below Government targets of 50%, and the amount generated is predicted to increase. Provisional figures for the recycling of commercial and industrial waste are around 35%.

Merseyside Waste Local Plan

15.4.47 The Council has collaborated with the other members of the Merseyside Waste Disposal Authority (Knowsley Metropolitan Borough Council, Liverpool City Council, St. Helens Metropolitan Borough Council, Sefton Metropolitan Borough Council and Wirral Metropolitan Borough Council) to produce a joint-working 'Merseyside Waste Local Plan', a Development Planning Document that forms part of each Borough's Local Development Framework.

15.4.48 This is currently in its initial draft stage, and due to go out for public consultation in early 2008, with subsequent adoption in April 2010 (around the beginning of construction of the Project). The policies and plans within this document will, therefore, be the primary document under which the wastes generated within the Project will be subject to. However, no current information is available, and the Merseyside Waste Disposal Authority will not release information prior to the consultation period. Therefore, this cannot be used as a test for the assessment of waste effects resulting from the Project at this stage.

North West of England Plan Regional Spatial Strategy to 2021 *Emerging Regional Spatial Strategy*

15.4.49 RPG13 is being replaced, and a A new Regional Spatial Strategy has been was published in draft form for public consultation in January 2006 September 2008. The Draft RSS considers waste issues in Section 11 – Enjoying and Managing the North West-Environmental Enhancements and Protection.

15.4.50 The Draft RSS was examined in public between March and June 2006. The Secretary of State established a Panel to examine the draft plan between November 2006 and February 2007. This Panel reported in May 2007. It is anticipated that the Secretary of State will publish proposed changes in March 2008. This will be followed by a period of public

~~consultation and subsequent publication of published the final North West Plan in August 2008.~~

15.4.51 Policy EM10 identifies the need for a Regional approach to waste management. This policy refers to the National Waste Strategy and PPS10, and the objectives of the Regional Waste Strategy. It includes targets for municipal, household and commercial/ industrial wastes.

15.4.52 ~~Draft~~ Policy EM11 identifies the relevant Waste Management Principles for the North West. These comprise:

a. Reducing the growth in waste produced;
b. Making the most of opportunities for waste reuse;
c. Encouraging recycling and composting;
d. Intermediate treatment of wastes (through anaerobic digestion or mechanical biological treatment);
e. Treatment to deal with hazardous materials;
f. Recovering value, in the form of energy, from waste that is not recycled; and
g. Maintaining sufficient landfill capacity for the disposal of residual waste.

15.4.53 ~~Draft~~ Policy EM12 identifies that Local Authorities should use sustainability principles in waste management, including the proximity principle – i.e. that waste should be managed close to the point of source.

15.4.54 ~~Draft~~ Policy EM13 deals with the provision of suitable waste management facilities through Local Waste plans and proposals. It also identifies the need for Local Authorities to work together to provide regionally and nationally significant waste management facilities. The supporting statement to the draft policy identifies indicative capacities needed for commercial and industrial waste, household waste and hazardous waste. For Hazardous waste the ~~draft~~ plan identifies the need to provide over ~~837,000~~ 960,000 tonnes of capacity to 2020.

~~15.4.55~~ The Panel report made recommendations on a number of policies and the response to these are included in the text above. ~~The Panel report makes a number of recommendations to the Secretary of State relating to the draft policies given in the draft Plan. Those of relevance to the Project are:~~

~~a. Draft Policy EM10 – the Panel recommended replacing this with a series of specific targets that should be achieved where practicable. These included targets for municipal (household) and commercial and industrial waste, but did not include targets for demolition or construction wastes such as those generated by the Project;~~
~~b. The Panel suggested strengthening the hierarchical nature of the waste management options given in Draft Policy EM11, and added specific waste management techniques, such as MBT and anaerobic digestion, to the draft Policy;~~
~~c. The Panel suggested strengthening the wording of Draft Policy EM12 to ensure that sufficient facilities are available locally to reduce unnecessary transport of waste;~~
~~d. The Panel noted that the timescales referred to in draft Policy EM13 gave only a 12 year period (i.e. to 2020) rather than the 15-20 year period recommended in PPS10; and~~
e. ~~The Panel noted that Construction and Demolition wastes were not covered by the Draft Policies in the Plan. They suggested that the RSS should attempt to identify expected tonnages of wastes from this sector. They did note that there is little reliable information on waste from this source and considered that the publication of the plan should not be delayed whilst such information was gathered. The Panel considered, therefore, that this should be considered in the next review of the plan~~.

The Updated Regional Waste Strategy for England's North West[12]

15.4.56 This 2010 plan replaces the previous 2004 regional Waste Plan for the North West. The aims of the strategy are to build upon those of the 2004 strategy. They aim to:

a. Ensure that waste management infrastructure facilities and systems are developed in accordance with the principles of sustainable development and the Governments waste Hierarchy;
b. Provide a clear framework for stakeholders to guide the future development of waste management in the North West,;
c. Deliver waste management policy in the North West so it is consistent with and contributes towards the overall aims of the Governments National Waste Strategy 2007;
d. Maximise the opportunities for North West businesses arising from sustainable waste management;
e. Offer a clear, transparent and informative approach that is valued by local and regional stakeholders and is supported by local communities;
f. ensure there is sufficient flexibility in the strategy to incorporate changes; and
g. Reduce environmental effects of waste management.

15.4.57 The strategy includes 19 Policy Statements. Of these, the following are pertinent:

a. PS3 The strategy sets a "year on year" target of 0% increase on waste generation;
b. PS4 The strategy encourages the use of re-use and recycling;
c. PS6 The policy encourages the separation collection and processing of bio-degradable waste;
d. PS10 The strategy recognises the need to maintain landfill capacity by restricting the use of landfills to the disposal of final residues; and
e. PS11The strategy promotes the use of recycled construction and demolition waste. Contractors are encouraged to minimise waste generation through the production of Site Waste Management Plans.

Local Planning Policy

15.4.58 The local planning policy ~~documents~~ of relevance to waste management and the Project is ~~are~~:

a. Halton Unitary Development Plan (2005);
b. Emerging Local Development Framework (LDF); ~~and~~
c. Joint Merseyside Waste Development Plan Document; and
d. Halton Region Solid Waste Management Strategy (2006).

Halton Borough Council Unitary Development Plan (2005) and Emerging LDF

15.4.59 The Halton B C Waste Local Plan was published in 1996, with the policies subsequently incorporated into the Halton Unitary Development Plan (UDP) in 2005. These plans primarily outline policies relating to the construction of facilities and management of household waste arisings. Only one policy, NW17, is pertinent ~~relate~~ to the Project.

15.4.60 UDP Policy NW17 states that major projects, including major transportation projects, shall make provision for source separation and storage of different types of waste for collection and facilities. It also requires some forms of development to provide public recycling facilities. It is assumed that this does not relate to road projects. However this is not clear from the wording of the policy, but it is felt may relate to the development of civic amenity sites. The justification text accompanying the policy identifies the Councils ~~the Boroughs~~ desire to encourage recycling. Therefore, for the purposes of this assessment, it has been assumed that the Council ~~the Borough~~ will require the Project Company ~~Concessionaire~~ to

undertake recycling for project generated wastes where viable, but that the provision of publicly accessible recycling facilities will not be required.

15.4.61 The LDF is in the process of being prepared by the Council and will, when adopted, replace the existing 2005 UDP. The LDF consists of a number of documents, the first of which to be prepared is prepared is the Core Strategy. This document is in the process of preparation, and has not yet been adopted by the Council. The document that will set out the development control policies for the Council will follow this.

15.4.62 In May 2011, the Council published the Revised Proposed Submission Document of the Core Strategy and submitted it to Government for examination, which is scheduled for November 2011. Following the examination, the Inspector will publish his report as to whether the Core Strategy is "sound" and whether any amendments are necessary. The Core Strategy is not yet adopted; however given its advanced stage of development and the extent of public consultation in its preparation, it is capable of carrying material weight.

15.4.63 Within the Core Strategy, only policy CS24 relates to Waste. The policy promotes sustainable waste management in accordance with the Governments waste hierarchy. In particular the policy safeguards sites for future waste management, ensures that future waste management needs will be met, encourages good site design and sustainable transport solutions, and commits to minimising the impacts on the environment from the Councils waste management facilities.

Draft Joint Merseyside Waste Development Plan Document

15.4.64 This is currently at consultation stage.

15.4.65 The Joint Waste Development Plan Document (Waste DPD) for Merseyside and Halton BC sets out a planning strategy for sustainable waste management that extends to 2025.

15.4.66 The six councils of Halton, Knowsley, Liverpool, Sefton, St Helens and Wirral are preparing the Joint Waste DPD for the sub-region. The purpose of the Joint Waste DPD is to enable the adequate provision of waste management facilities (including disposal) in appropriate locations for municipal, commercial and industrial, construction, demolition and excavation, and hazardous wastes.

15.4.67 The Report includes:

a. New, replacement sites for inclusion in the Waste DPD (in Halton BC, Liverpool, Sefton and St. Helens);
b. An update on the evidence base and changes to the needs assessment; and
c. An update on the Regional Spatial Strategy.

15.4.68 The report does not include specific reference to the Project.

~~Emerging Local Development Documents~~

~~15.4.69~~ This text is replaced by that discussing the emerging LDF above. ~~The Council are currently in the process of developing its Local Development Documents. These will replace the provisions of the UDP over time. Currently the UDP has been protected until at least 2011, and so will continue to form the basis for this assessment throughout the planning procedure.~~

~~15.4.70~~ ~~The Council have currently prepared the Core Strategies for the LDD. However, specific Development Documents have not been prepared. As mentioned above, the Halton Local Development Framework will adopt the Merseyside Waste Local Plan as the appropriate~~

~~Local Development Document for Waste matters. This is due for issue for consultation in 2008 and adoption in 2010. This is also not available for use in this assessment.~~

15.4.71 ~~Halton have prepared a solid waste strategy covering the Borough. This strategy was published in 2006 and covers the period to 2010. The strategy contains no policies. However, it contains a number of key components which can be used as tests for the assessment of the Project. These include:~~

~~a. Maximise capacity at Halton waste management sites; and~~
~~b. Enhance industrial/Commercial/Institutional recycling.~~

Summary

15.4.72 In theory, all potential waste streams and their relevant effects arising from the Project can be accommodated and mitigated by waste management facilities currently operating within the North West ~~Region~~, but not solely in the Halton BC area. The Project has not been specifically mentioned in the emerging planning policy framework, ~~(The Merseyside Waste Local Plan, which is currently under review and due for public consultation in early 2008)~~ so it cannot be assumed at present that all waste streams can be accommodated within the local area until the anticipated waste arisings generated by the Project have been specifically accounted for in the relevant planning documents. Until this is the case, the potential wider-regional effects arising from the Project must be considered (e.g. longer transport journeys, alternative methods of transportation).

15.5 Assessment Methodology

15.5.1 The methodology adopted for the assessment of effects in this Chapter comprises 8 sequential components. These are:

a. Identification of the baseline and capacity analysis;
b. Policy review;
c. Data on waste generation;
d. Identification of effects in the Project Corridor;
e. Identification of effects in the North West ~~Region~~;
f. Identification of receptors;
g. Effect assessment tables; and
h. Assessment of mitigation, enhancement opportunities and residual effects.

Identification of the Baseline and Capacity Analysis

15.5.2 The generation of waste during the Project will have an effect on the waste infrastructure within the North West Region. The current amount of C&I waste currently generated and the location and capacity of facilities within the North West ~~region~~ (based on the most recent third party data available) has been identified to determine the availability of waste infrastructure capacity to accommodate the waste arisings that are expected to be generated throughout the Project. Capacity and arisings data was provided through the EA website (Ref. 3). The identity and location of waste facilities within the North West ~~Region~~ were established through dialogue with the EA's External Relations Team in the North West. Waste facilities within the Project Corridor were also identified in this way.

Policy Review

15.5.3 The policy context (highlighted in Section 15.4) identified the relevant drivers, constraints and principles for waste and resource management, together with relevant planning policy and legislation. As part of the assessment exercise, the policy drivers relevant to the Project will be identified and a determination will be made as to the effect that they will have on the Project.

Data on Waste Generation and Capacity Analysis

15.5.4 The waste volumes and types that are predicted to be generated during the construction phase of the Project were estimated for each construction area of the Project. This was based on information contained in the revised CMR (Appendix 2.1, Chapter 2), and summarised in Section 15.7 of this Chapter.

15.5.5 For post construction, waste volumes were estimated by using nationally averaged data for each person in the UK. This was then multiplied by the number of jobs developed during the operation phase to give an estimate of the 'office' type waste generated from the toll booths. For maintenance waste, the following was used to identify the volumes generated:

a. Landscaping waste – this has been calculated by multiplying the area of soft landscaping provided (~~37.4Ha~~ 50.2Ha) a part of the Project by a figure for green waste generated per square meter in Halton BC's Parks and Gardens (0.91m^3/Ha). This gives ~~31.6~~ 45.7m^3 per annum;
b. Lamps and other consumables - the number generated per year is calculated by dividing the number of lamps provided by the average lamp life. In this case each lamp is estimated as having a lifetime of 3 years after which all lamps will be replaced. Each lamp occupies a volume of approximately 0.002m^3 and there are ~~949~~ approximately 950 lamps on the Project; and

c. Highways surface – assumed that standard asphalt used with a 30 year life, and so no replacement will occur within the Project assessment period.

15.5.6 This assessment specifically identified and assessed effects arising within both the Project Corridor and a wider area (the North West ~~Region~~) within which treatment and disposal facilities are located. The Project Corridor crosses the urban areas of Widnes and Runcorn as well as the Estuary and also areas subject to indirect effects likely to occur outside of the construction area (such as the local road network), which are assessed as part of the North West ~~Region~~.

15.5.7 For the purpose of this Chapter, each construction area within the Project Corridor has been assessed individually to outline unique waste arisings that may be expected at each location. This helps to identify particular waste streams specific to that location, which may require treatment/disposal by a method different to conventional routes. For example, Widnes has been historically associated with the alkali chemical industry, so it is anticipated that masonry and soils from that location may be classified as hazardous waste due to the levels of contamination present. Therefore, they would require treatment/disposal by an alternative method to masonry and soil waste streams generated in Runcorn where the arisings may be uncontaminated, or contaminated with different materials. The assumptions made during this Chapter have been based on the current knowledge on the area available at this stage and are identified in this ES. Some waste streams will possess the same characteristics and handling requirements, regardless of site location, so will be assessed collectively for any potential effects and opportunities for future reuse elsewhere on the Project, if practicable to do so.

15.5.8 The Project Company ~~Concessionaire should~~ will identify and reuse as much of the waste arisings generated during the Project where practicably possible to help reduce effects from waste generation, such as the number of vehicle movements generated and quantities disposed. The more waste that requires removal from site, the higher the likelihood there is of having to transport the waste over longer distances if local capacity is unable to accommodate it, increasing the size of the overall study area that would be affected by this Project. It is felt that all waste streams identified can feasibly be treated/disposed of within the North West.

15.5.9 The classification of waste arisings is an important aspect in deciding both the options for reuse and recycling, the need for pre-treatment and disposal location. Therefore, the classification of waste has been undertaken by reference to Chapter 14, using the Hazwasteonline™, tool, which has replaced the CAT-WASTE assessment tool. ~~For material not classified as contaminated, this has been classified as inert non-biological waste. For vegetation waste, this has been classified as biologically active waste. For contaminated materials excavated, the results of the soil chemical testing were inputted into the Waste Soils Characterisation Assessment Tool, CAT-WASTE$_{SOIL}$ was used to assess whether these comprised as hazardous waste. It may be stressed, however, that the CAT-WASTE$_{SOIL}$ tool is somewhat conservative in its classification of whether materials are hazardous or not, so although it may have determined that the soils analysed may be contaminated, this does not necessarily mean that they are hazardous in nature. All soil loads would require Waste Acceptance Criteria (WAC) testing by the Concessionaire during the construction phase to ultimately determine the appropriate disposal route for that particular arising~~.

15.5.10 In terms of the European Waste Catalogue (EWC), soil and sediment to be excavated during the construction phase of this development will be classified as follows:

- *Excavated Soil*
  17 05 03* soil and stone containing dangerous substances

- *Excavated River Sediment and Dredgings*
  17 05 05* dredging spoil containing dangerous substances

15.5.11 1.1.3 These EWC classifications are "Mirror Entry" wastes, which means that they are Hazardous Waste only if the dangerous substances are present at concentrations greater than threshold concentrations for specific hazard properties. A preliminary hazard assessment is required to identify whether the hazard property thresholds have been exceeded.

15.5.12 This assessment analyses the available laboratory data against the relevant threshold limits for various hazard properties, as defined in the Hazardous Waste Directive (91/689/EC), to determine whether the soil is likely to be classified as non-hazardous or hazardous waste. The European Waste Catalogue (2002) sets out the Hazardous Waste Threshold Limits for each hazard property. When two or more substances in a mixed waste, such as soil, are classified by the same hazard property the cumulative effect of both substances must be considered.

15.5.13 The assessment has been undertaken using the Waste Soils Characterisation Assessment Tool, Hazwasteonline™, to determine whether the soil is likely to be classified as non-hazardous or hazardous waste. Hazwasteonline™ is based on current regulations and guidance and calculates the cumulative effects of all recorded substances in the soil. Experience indicates that Hazwasteonline™ can be a conservative tool for assessing whether the results of soil contamination testing are likely to hazardous waste.

15.5.14 The Hazwasteonline™ tool identifies soils as either Hazardous Waste, Non-Hazardous Waste, or Potentially Hazardous Waste. In the case of the last designation, the data has been reviewed to identify those samples for which it is the presence alone of a single contaminant that has resulted in this designation. In these instances, a very basic screening exercise has been undertaken whereby if the determinants that have triggered this designation were recorded at concentrations less than 1mg/kg (1ppm), it is considered unlikely that a receiving landfill would actually determine this to be representative of Hazardous Waste.

15.5.15 The assessment undertaken in the contaminated land assessment showed that a large proportion of the samples assessed using the HazWasteOnline™ assessment tool fell into the 'potentially hazardous' waste category. Whilst this would have to be checked using WAC tests, for the purposes of this assessment "potentially hazardous" has been taken to mean 'hazardous' in order to adopt a worst case scenario. Table 15.6 shows the percentage of each waste arising tested which falls into the potentially hazardous category.

~~15.5.16 CAT-WASTE$_{SOIL}$ is an online tool providing subscribers with a quick, easy to use web-based facility that allows rapid assessment of contaminated soils, and their classification as either hazardous or non-hazardous waste. The CAT-WASTE$_{SOIL}$ homepage indicates this tool was developed by Atkins working in partnership with the McArdle group based on current regulations and guidance. The methods used for this tool have been discussed in more detail in Chapter 14.~~

~~15.5.17 The CAT-WASTE$_{SOIL}$ assessment identifies soils in the following hazard classes:~~

~~a. H5 (Harmful) - arsenic, cadmium, lead, selenium, boron and mercury;~~
~~b. H7 (Carcinogenic) – arsenic, lead, petroleum hydrocarbons (assessed as lubricating oils) and PAHs;~~
~~c. H10 (Toxic for reproduction) - lead and benzo(a)pyrene;~~
~~d. H11 (Mutagenic) – benzo(a)pyrene; and~~
~~e. H14 (Ecotoxicity) – heavy metals, PAHs, 2,4,6-trichlorophenol, pentachlorophenol and 1,2,4 trichlorobenzene.~~

15.5.18 Waste Capacity of disposal sites in the North West ~~Region~~ was gathered from the EA.

Identification of Effects on the Project Corridor

15.5.19 The effects resulting from the generation and management of wastes within the Project Corridor will differ from those occurring within the North West ~~region~~. This is due to the construction activities arising within the Project Corridor and the proximity of receptors to wastes generated, stored and treated within it. The effects that would be predicted to arise from the management of waste arisings within the Project Corridor have been identified via a review of the revised CMR (Appendix 2.1, Chapter 2) and discussions with technical authors of other Chapters of this ES, as well as professional experience on other similar major infrastructure projects. Some effects arising from the management of waste are discussed in other Chapters within this ES. Examples of this are transport, noise and air quality effects.

15.5.20 The review identified activities in each construction area, cross referencing this to data on geology and contamination discussed in Chapter 14. This was used to calculate arisings of each waste type for each construction area.

15.5.21 The timing of waste arisings will be dependent upon the Project Company's ~~Concessionaire's~~ detailed design and construction programme, neither of which are currently available. Therefore, for the purposes of this assessment, the waste arisings, and potential effects resulting from them, have been averaged out over the anticipated 40 month construction period.

Identification of Effects on the North West region

15.5.22 A key policy objective stemming from the Waste Framework Directive and Waste Strategy 2007 is to manage waste in line with the Waste Hierarchy (Figure 15.2 (Appendix 15.1)), with disposal to landfill as a last resort. The ~~Concessionaire~~ Project Company should be required to reuse and recycle as much waste as possible, as well as instigating waste minimisation procedures within the construction phase. However, there are several practical constraints which may limit the waste management options available which must be taken into consideration.

15.5.23 The practical constraints are:

a. The available waste treatment and recycling capacity at suitably local treatment sites, including the limit on maximum annual inputs enforced through the site license conditions;
b. The distance to some of the appropriate facilities for some wastes produced (e.g. Galligu wastes);
c. The nature of the waste – contaminated hazardous wastes may have limited viable options for reuse and recycling; and
d. Waste arisings from the Project, that are suitable for reuse, becoming available too early for this purpose, in which case they will have to be removed from the Project

Corridor for treatment or disposal if there is not sufficient storage available within the construction compounds.

15.5.24 Therefore, for the purposes of the "without mitigation" assessment, a worst-case scenario has been assumed that all wastes generated by the Project will go to landfill.

15.5.25 Figures of waste streams that can be generated on a typical construction project have been taken from the EA website (Ref. 3). To calculate the volume of wastes generated from the tonnages identified, it has been assumed that the following waste densities (tonnes per cubic metre of material), which have been taken from the Waste and Resources Action Programme (WRAP) website (Ref. 12), are pertinent to the Project:

a. Concrete 2.4t/m^3 of material generated
b. Masonry 2.0t/m^3 of material generated

15.5.26 In addition an average density for soils and made ground of 1.8-2.0 t/m^3 has been measured (data from Site Investigations undertaken in the Project).

15.5.27 Therefore, for the purposes of the Project, a density of 2.0t/m^3 has been used in calculating vehicle load quantities. On excavation and disposal, a bulking factor (to take account of air pockets that will be generated in the load once it is extracted from the ground) requires to be applied. For the purposes of this assessment a factor of 1.6 has been applied (taken from the WRAP website) (Ref. 12).

15.5.28 Effects arising from the management of waste arisings that lie outside the Project Corridor have been identified in the Effect Assessment Tables. These would include the effects on waste infrastructure capacity and vehicle movements associated with the transportation of waste across the region for further treatment/disposal. These are discussed in more detail in Section 15.7. The assessment has compared the total arisings from the Project over the construction period with available capacity, both in terms of total capacity and annual licence capacity (i.e the total amount of capacity allowed in license conditions for all disposal sites in the North West in any one year). The amount of remaining annual capacity in landfills in the North West has been calculated by subtracting the current annual waste deposition from the total annual landfill capacity in the Region. The annual waste arisings from the Project has then been compared to the remaining capacity in the North West. This has been undertaken for hazardous and non hazardous waste.

15.5.29 The total number of vehicle miles required by the movement of wastes generated from the Project has been calculated on a worst-case scenario by:

a. Assuming all hazardous waste will be deposited in the furthest hazardous waste landfill in the North West ~~Region~~; and
b. Assuming all non-hazardous waste (all remaining wastes) will be deposited in the furthest non-hazardous waste landfill in the North West ~~region~~.

15.5.30 The total number of vehicles required has been based on the volume of waste produced in each class divided by the volume of a standard HGV using a bulking factor/density of 1.6. This produced a capacity of approximately 15m^3 per vehicle.

Identification of Receptors

15.5.31 The effects associated with the management of waste arisings will have the potential to have a significant effect on local and regional receptors.

15.5.32 For the construction phase, those individuals that could come into contact with waste materials during excavation, pre-treatment, handling or disposal, both directly and indirectly

(such as in contaminated runoff and dust) were identified as receptors. Those considered as sensitive receptors that would be 'vulnerable' would be the construction site workers, as they would be susceptible to the effects from the management of waste arisings on a day-to-day basis.

15.5.33 Additional Project Corridor receptors were identified where the accidental release of wastes into the environment could impact the receptor. This included surface water quality and terrestrial and aquatic ecosystems, which have also been considered as sensitive receptors that would be considered 'vulnerable'.

15.5.34 In terms of regional receptors, those landfills potentially acting as disposal sites for wastes generated by the Project were identified from EA data. In addition, the regional road network has been considered as a receptor due to the requirement for waste arisings to be transported and the locations of the facilities to accommodate the waste arisings.

15.5.35 Operational effects have been identified by assessing activities which may potentially generate waste and those who would be exposed to such waste. This includes local receptors such as residents and operational site workers as well as the regional waste management system (treatment/disposal facilities).

Effect Assessment Tables

15.5.36 Assessment techniques for waste are still relatively new, and the assessment exercise relies on professional judgment, drawing upon the policy principles and considerations described in this Chapter.

15.5.37 Effects that may arise from the management of waste arisings during the Project are presented in the Effect Assessment tables, shown in Section 15.7. These effects have been assessed using the standard EIA assessment criteria methodology, which is as follows:

a. Timescale duration of the effect (which are categorised as short (0-40 months), medium (40 months-10 years) and long-term (10+ years);
b. Whether the effect would be permanent or temporary in nature;
c. Whether the effect would have a direct or indirect impact on the receptor; and
d. The magnitude, importance (criteria explained below in paragraphs 15.5.32 to 15.5.34) and the overall significance effect.

Effect Scales

15.5.38 The importance of the effect is rated in terms of the importance of the receptor. This depends on the nature of the receptor, whether it is a person, group, the environment or the waste management infrastructure itself and the sensitivity of the receptor to that particular effect. The scale used to determine the importance of the receptor is outlined in Table 15.1 below:

Table 15.1 - Guidance for Assessment of Importance

Scale	Guidance
High	Receptor is very sensitive to the effect and is from a notably vulnerable group, such as children, elderly, or sensitive watercourses. In the context of waste and resource management, the receptor is the waste management infrastructure, where particular sensitivity may arise due to a scarcity in capacity or availability. High importance may also result from a large group of people being affected, for example, a recycling activity located near to offices, or the receptors are particularly sensitive, for example hazardous wastes being handled near a school.
Moderate	The receptor is sensitive to the anticipated effect but is not from a notably vulnerable

	group. The receptor is likely to experience moderate effects from the activity, but these are mitigated for example due to the duration or nature of the effect or the distance between the activity and the receptor. With regards to waste management infrastructure, this particular sensitivity may arise if there is sufficient capacity available to accommodate the waste streams (compared to the scarcity of capacity above), but is still considered important as it will result in reduced availability over time.
Low	The receptors may be sensitive to some effects, but these are unlikely to be prolonged or significant, and do not pose a danger to health or the environment. With regards to the waste infrastructure, this particular sensitivity may arise if waste arisings cannot be reused on-site, but can be accommodated at waste facilities that will have no impact on future availability (e.g. water treatment works or composting facilities).
Neutral	The effects will not be noticeable to receptors due to the source and nature of the activity. There is no danger of harm to human health or the environment.

15.5.39 The magnitude of the effect is dependant on the extent of the effect, and would take into account the volumes of waste arisings generated, the nature of the material, (e.g. whether it is hazardous, non-hazardous or inert), ease of handling and the implications for treatment and disposal (e.g. whether facilities are easily available or whether treatment or disposal capacity is restricted). The treatment/disposal capacity requirements should be considered in relation to the capacity available, taking particular account of the Proximity Principle.

15.5.40 Table 15.2 illustrates how magnitude has been considered in this effect assessment exercise:

Table 15.2 - Guidance for Assessment of Magnitude

Scale	Guidance
High	A large quantity of material (more than 1000m^3 per annum) is likely to arise, or a smaller quantity of a harmful waste stream (such as asbestos) is likely to arise comparative to the capacity that will accommodate the particular waste stream within the North West Region. Treatment and disposal options are limited and capacity is restricted (e.g. hazardous landfill). The materials may need special handling, storage or transportation requirements, or be subject to particularly stringent legislation, such as waste oils or liquid hazardous wastes. All hazardous waste, regardless of volume, will be in this category.
Moderate	A moderate amount of material (between 100m^3 and less than 1000m^3 per annum) is likely to arise which may have some particular treatment or disposal requirements (for example, dewatering effluent requiring particular techniques for handling and containment and a consent for discharge).
Low	Arisings are likely to be low (less than 100m^3 per annum), and treatment or disposal options are widely available, local or likely to involve reuse or recycling as standard practice.

15.5.41 For the purpose of this assessment, the effects have been generated from the management of two groups of waste stream. These are:

a. 'General' waste streams (e.g. non-hazardous waste streams such as masonry, general vegetation waste from site clearances and clean soils) that would generate the same impact on the receptor, regardless of waste stream and location within the Project Corridor; and
b. Site specific waste streams (e.g. contaminated soils that are hazardous in nature that have stemmed from the historic industrial use in the area) which are unique to the Project have been assessed individually where the effects would differ from the general handling of non-hazardous waste arisings.

15.5.42 The different phases of the Project have been grouped as follows and the effects associated with that particular phase have been identified in the assessment tables:

a. Do nothing effects;
b. Construction phase effects; and
c. Operational phase effects.

Identification of Mitigation Measures, Enhancement Opportunities and Residual Effects

15.5.43 Mitigation or enhancement opportunities have been identified for each effect that has been assumed to occur during the Project, and is discussed in Section 15.8. At this stage of the Project, some aspects of waste management are subject to uncertainties. Where particular activities that generate waste streams unique to the Project that may pose a significant effect, these have been highlighted and potential solutions for their subsequent reuse, treatment or disposal have been suggested.

Interim Advice Note IAN 125/09

15.5.44 Interim advice Note IAN 125/09 was issued by the Highways Agency in October 2009. The advice contained within this document effects the structure of any Environmental Impact Assessments which use the Design Manual for Roads and Bridges (DMRB) methodologies. In particular, the IAN introduces a chapter entitled "Waste and Materials". Clearly the Orders ES predicted the introduction of waste as an issue to be included in Environmental Impact Assessments (EIA's). However, the Orders ES did not include any assessment of material use, other than that described in re-use of excavated materials.

15.5.45 Guidance on the methodology for use in assessing the implications on waste and materials in EIAs compliant with DMRB has yet to be issued by the Highways Agency.

15.5.46 The IAN clearly states that where the project sponsor believes the project has progressed beyond a point where the introduction of the amendments identified in the IAN would cause unreasonable delay, or incur additional costs the project sponsor has the authority to decide not to adopt the IAN on the relevant project.

15.5.47 For the purposes of this EIA, therefore, the Council has agreed that the chapter will be updated, but will not include an assessment of the environmental implications on material choice, other than the re-use of materials excavated on the Project.

CL:aire Protocol

15.5.48 The CL:aire Protocol was published as "The definition of Waste: Development Industry Code of Practice" in March 2011. This document provides a code of practice to developers in the assessment and reuse of materials, particularly where these materials are contaminated. The protocol argues that any materials generated during site works can be re-used, with or without pre-treatment, where they can be shown to meet four criteria. These comprise the following:

a. Where they do not compromise human health or the environment;
b. Where they suitable for use with, or without, pre-treatment;
c. Where there is a certainty of use; and
d. Where the quantity of material does not exceed the amount required for the project.

15.5.49 Using this protocol any material generated may be reused so long as it meets the four criteria. Testing to confirm that these criteria are met will only be undertaken when the material is generated. Therefore, for the purposes of this assessment, it has been assumed that for the initial assessment of waste generation, all material identified using the HazWasteOnLine tool would not meet the four criteria and therefore would be removed as waste. However, a discussion of this position is included in the mitigation section of this chapter (section 15.7).

15.6 Baseline and Results

15.6.1 The waste management baseline comprises of four key elements:

a. Current amounts of waste generated within the North West ~~Region~~ and Merseyside ~~Halton~~ sub-region;
b. Waste generation in the Project Corridor;
c. Estimated waste treatment and disposal capacity within the North West ~~Region~~ (and Halton sub-region where available); and
d. Contaminated Land – Potential Arisings of Hazardous Materials that could be generated during the Construction Phase.

15.6.1 A scoping exercise was undertaken to identify all potential significant environmental effects likely to be associated with the construction and operation of the Project including the Proposals. The results of the scoping exercise for the Project including the Proposals were summarised in The Project Orders and Applications Environmental Impact Assessment Scoping Report published for consultation in October 2011. This was issued to a wide range of statutory and non-statutory consultees. Where additional consultation was carried out specifically relating to Waste Management this is detailed below.

Current Waste Generation within the North West region

15.6.2 In ~~2005~~ 2010, an estimated ~~22.3~~ 20.7 million tonnes of solid household, commercial and industrial waste was handled in the North West[6]. ~~Based on a 1.5% annual increase (current annual waste growth rate within the North West Region), this would give an estimated 23.3 million tonnes for 2008 for the North West Region. The 2010 2005 data are the latest available figures at the time of writing this Chapter.~~ Of this, approximately:

a. ~~10.8~~ 5.2 million tonnes were sent to landfill;
b. ~~6.8~~ 5.82 million tonnes were sent to transfer stations ~~for further disposal/treatment~~;
c. 5.22 million tonnes were treated;
d. ~~1.6 million tonnes were sent for metal recovery~~;
e. ~~0.5~~ 2.8 million tonnes of metal were recycled;
f. ~~1.8~~ 0.4 million tonnes were incinerated ~~or undertook physico-chemical treatment~~;
~~g. 0.2 million tonnes were composted; and~~
~~h. 0.6 million tonnes were treated through mechanical and biological treatment process~~.
i. 0.98 million tonnes were treated to land; and
j. 0.47 million tonnes of hazardous waste were treated.

15.6.3 ~~Based on the 2005 data, approximately 4.4 million tonnes of construction and demolition waste was sent to landfill in the North West region in 2005*~~

Waste Generation within the Project Corridor

15.6.4 A range of wastes are currently generated in the Project Corridor. These include:

a. Household waste;
b. Commercial and industrial waste; and
c. Green waste from parks and gardens.

15.6.5 There are no residential properties proposed to be demolished within the Project Corridor as a result of the Project. Therefore, waste volumes from this source are not predicted to change as a result of the Project, and have therefore not been assessed any further.

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6 Environment Agency website (2010)
Note: *The EA no longer publish this information.

15.6.6 The commercial and industrial waste generated within the Project Corridor is from businesses on the Catalyst and Astmoor Industrial Estates. For the purpose of this assessment it has been assumed that the businesses will be, or have already been relocated elsewhere within Halton, and will continue to generate the same amount and type of wastes as they currently are. This assumes a 'worst-case' scenario. As this is still the position, therefore, waste volumes from this source are not predicted to change as a result of the Project, and have therefore not been assessed any further.

15.6.7 Although small areas of the Community Park at Wigg Island are potentially affected, the total waste generation, and the routes taken to manage such wastes are unlikely to change significantly. Wigg Island Community Park represents 3% of all parks and gardens in the Council ~~Borough~~, Given that approximately ~~460~~ 582 tonnes (data obtained from the Council ~~736m^3~~ 932m^3 based on 1.6 cubic metres per tonne) of green waste is produced by the Borough's parks and Gardens per year (2010 information provided by Halton BC), this gives approximately ~~22.1~~ 28m^3 of waste being generated per year from Wigg Island Community Park.

Landfill Capacity and Deposition Rates in the North West Region

15.6.8 There was approximately ~~684~~ 602 million cubic metres (key data from EA website) of landfill void space available in England and Wales in ~~2005~~ 2010 (latest set of figures available from the EA website (Ref. 3). Table 15.3 shows the remaining landfill capacity (for all waste classifications) for the North West ~~Region~~ and the Merseyside ~~Halton & Warrington~~ sub-region (no longer classified as the Halton & Warrington sub-region). A full set of data for the North West ~~Region~~ and Sub-Regions is provided in Appendix ~~Table~~15.2~~3~~.

Table 15.3 - Landfill Capacity for Warrington and Halton area and the North West ~~Region~~ (Ref. 3).

Landfill Type	**Total Capacity for North West ~~Region~~ ('000 m^3)**	**~~Warrington and Halton Sub-Region~~** Merseyside Region **('000 m^3)**	**% of Regional capacity located in ~~Warrington & Halton~~ Merseyside sub-region**
Hazardous Merchant	~~5,923~~ 5,160	~~3,480~~ 3,159	~~58%~~ 61%
Hazardous Restricted	0 170	~~0~~ 0	0%
Non-hazardous with SNRHW	~~17,328~~ 14,810	~~0~~ 0	0%
Non-hazardous	~~51,577~~ 35,082	~~26, 207~~ 1,199	~~51%~~ 3%
Non-hazardous restricted	~~6,303~~ 3,415	~~530~~ 0	~~8%~~ 0%
Inert	~~12,299~~ 14,029	~~600~~ 0	~~5%~~ 0%
Totals	~~93,430~~ **72,666**	~~30,817~~ **4,358**	~~33%~~ **6%**

*Figures in 000's tonnes

15.6.9 In ~~2005~~ 2010 approximately ~~10.8 million cubic metres~~ 5.2 million tonnes (8.32 million cubic metres) of solid waste was disposed of in the North West Regions' landfill sites. Of that, ~~127,629 cubic metres~~ 71,000 tonnes (113,500 cubic metres) (EA Figures) were classified as hazardous waste that required disposal at hazardous merchant landfill sites (based on the latest set of figures from the EA website (Ref. 3)). This rate of hazardous waste disposal ~~has remained at a roughly consistent level over the past four years from which reliable data is available (2000/01-2004/05)~~ arisings has reduced in the North West by over 11% between 2006 and 2010 and the amount going to landfill has reduced by over 40% over the same period. Assuming as a 'worst-case' scenario that there is ~~an increase in the growth of~~

~~hazardous waste requiring disposal to landfill in the North West Region of, say 2% per annum (which is the current rate of increase),~~ a further 11% reduction in hazardous waste requiring treatment in landfill in the next 5 years (up to 2015), this would result in a consumption of approximately 63,190 tonnes (126,380 cubic metres) in 2015. ~~0.95 million cubic metres of available hazardous waste landfill capacity in the North West Region by the anticipated time construction on the Project commences in October 2013 April 2011. This would leave approximately 4.95 5.04 (5,160,000 capacity – 118,400) million cubic metres of capacity remaining for hazardous wastes.~~

15.6.10 The number of hazardous landfill sites in England and Wales reduced significantly after legislative changes came into force in July 2004. By the end of 2005 there were only 13 merchant (sites which accept waste on a commercial basis) hazardous landfill sites within England. This ~~has~~ subsequently ~~risen~~ rose to 16 by May 2007. In keeping with the Governments' 'Proximity Principal' it is assumed for the purposes of this study that only sites in the North West of England will be used. A map identifying the location of the hazardous landfills within the North West ~~England and Wales (obtained from the EA website~~ are shown in Figure 15.3 and hazardous and "special" waste landfills on Figure 15.10 (Appendix 15.1).

15.6.11 Based on 2007 data, 61% of the North West merchant Hazardous waste landfill capacity is located in the Merseyside sub-region, amounting to a total of 3,159,000m^3 of landfill space. The location of landfills able to accept hazardous waste (identified as Hazardous or Special) has been provided in 2011 by the EA and is shown on Figure 15.10). This identifies a total of 10 sites which could potentially accept contaminated wastes from the Project. The majority of these are located relatively close to the Project and lie between Crewe and Preston. The total annual capacity available for hazardous waste in the North West of England for 2011 is 726,000 tonnes. ~~the location of the Project is fortuitous in that 6 of the 16 a number of the merchant hazardous landfill sites are located in the North West Region which collectively have an existing total licensed annual throughput tonnage of 428,500 tonnes (at Chorley, Crewe, Distington, Skelmersdale and Windsford, with one facility situated inside the Project Corridor at Randle Island). Nearly 60% of the regional hazardous landfill capacity and 50% of the non-hazardous landfill capacity is located within the Warrington-Halton area (within 20km of the study area at the farthest point).~~

15.6.12 For ~~non-hazardous~~ non-inert waste (landfills are now classified as accepting inert and non-inert waste), the available capacity in the North West Region is being taken up rapidly (based on current landfill consumption rates obtained from the EA website (Ref. 3). The available capacity in landfills in the region will have reduced to ~~34~~ 47.7million by the start of the Project (~~2011~~ 2015), assuming no additional capacity comes on line before this and growth rates remain at 2% per annum. By the end of the ~~Project~~ construction phase this will have reduced to ~~4.6~~ 37.7million cubic meters.

15.6.13 At the time of writing this Chapter, the total annual permitted landfill licensed input ~~capacity~~ is ~~approximately~~ over 4 ~~5~~ million cubic meters ~~not currently available from the EA for non-hazardous and inert~~ for non-inert landfills within the region.

Treatment Facilities

15.6.14 Apart from landfill, the North West region has an abundance of licensed waste facilities capable of accommodating the nature of waste arisings generated during the Project. These consist of:

a. Transfer stations (which are used to accommodate waste streams, bulk them up before moving the arisings on for further treatment/disposal);
b. Metal Recovery Facilities;
c. Biological Treatment;

d. Chemical Treatment;
e. Material Recycling Facilities;
f. Composting Facilities; and
g. Physico-chemical treatment (which includes incineration).

15.6.15 Approximately ~~82~~ 88.5 million tonnes of waste was ~~deposited~~ handled in either transfer stations for deposit/treatment at another location or for final treatment within England and Wales (based on latest figures available from the EA website (Ref. 3). This is shown in Table 15.4 below. ~~This figure includes incineration, which accounts for around 6.5 million tonnes.~~ Around ~~11.6~~ 13.8 million tonnes were deposited at these sites in the North West region (0.5 million by incineration, discussed below). Growth in the levels of waste deposits to these facilities within the North West region has increased year on year ~~18% between 2001 and 2005~~. Figures for the total licensed capacity for these facilities within the region are currently unavailable from the EA.

Table 15.4 - Waste Deposits Sent to Treatment Facilities within the North West Region and the Total Combined within England and Wales, ~~2005~~ 2010 (Ref. 3).

Site Type		~~Site code~~	North West (Tonnes) 2010	England and Wales (Tonnes)
Transfer	Hazardous Waste	~~A9~~	~~1,554~~ 815	~~5,363~~ 5,844
	Household, Industrial and Commercial	~~A11~~	~~5,107~~ 4,214	~~36,583~~ 27,414
	Clinical	~~A12~~	~~20~~ 5	~~193~~ 97
	Non-biodegradable	~~A14~~	63	~~1,674~~ 1,712
	Civic amenity site	~~A13~~	~~102~~ 723	~~2,728~~ 6,322
Transfer Total			**~~6,848~~ 5820**	**~~46,541~~** 41,389
Treatment	Material recovery	~~A15~~	~~554~~ 916	~~4,788~~ 6,375
	Physical	~~A16~~	~~870~~ 1,204	~~14,623~~ 11,206
	Physico-chemical	~~A17~~	~~899~~ 284	~~1,542~~ 3,026
	Chemical	~~A21~~	2	~~501~~ 525
	Composting	~~A22~~	~~164~~ 308	~~1,712~~ 3,931
	Biological	~~A23~~	~~616~~ 2,509	~~2,575~~ 7,328
Treatment Total			**~~3,105~~ 5,223**	**~~25,740~~ 32,392**
Metal Recycling Site	~~Vehicle dismantler~~	~~A19~~	~~50~~	~~893~~
	~~Vehicle dismantler~~ Vehicle De-pollution	~~A19a~~	~~72~~ 727	~~358~~ 2,288

Metal recycling site	~~A20~~	~~1,500~~ 2,070	~~10,480~~ 12,386
Metal Recycling Site Total		**~~1,622~~ 2,798**	**~~11,731~~ 14,674**

*Figures in 000's tonnes

Incineration

15.6.16 Approximately ~~6.6~~ 9.2 million tonnes of incineration capacity is currently available in England and Wales (based on the latest available figures from the EA website Ref 3). Of that, over ~~500,000~~ 638,000 tonnes of incineration capacity is located within the North West region (based on ~~2005~~ 2010 figures). Table 15.5 below shows the current incineration capacity levels in the North West region compared to the whole of England and Wales. Some hazardous C&I waste generated during the Project could potentially be taken to a hazardous waste incinerator ~~(situated at Ribblesdale and~~ such as Ellesmere Port), although this would be based on a commercial decision taken by the ~~Concessionaire~~ Project Company.

Table 15.5 - Incineration Capacity within the North West Region and Total Combined within England and Wales (Ref. 3).

Incineration Type	North West (Tonnes)	England and Wales (Tonnes)
Municipal and/or Commercial and Industrial (Re-named category)	~~120~~ 127	~~3,296~~ 5,012
Sewage Sludge	~~50~~ 100	~~593~~ 333
Hazardous	~~344~~ 115	~~1,060~~ 210
Animal Carcass	-	~~112~~ 2
Animal By-Product (New category)	100	1258
Clinical	-	225
Co-Incineration	~~4~~ 175	~~1,029~~ 2,192
Energy from Waste	4	~~289~~ -
Total	**~~523~~ 617**	**~~6,604~~ 9,232**

*Figures in 000's tonnes

Location of Facilities

15.6.17 Maps showing the location of waste management facilities by type within the North West region are shown as Figures 15.4 to 15.10 (Appendix 15.1), and a list of these sites are provided in Appendix 15.~~2~~3.

Contaminated Land – Potential Arisings of Hazardous Materials that could be generated during the Construction Phase

15.6.18 The industrial history of the Borough has left a legacy of contaminated land within the Project Corridor, and it is important to understand how this contamination influenced the waste management options for excavated wastes. The physical and chemical properties of the contaminated materials will influence their ability to be reused on site and off site disposal and treatment routes used. It should also be noted that the EA's current position is that contaminated soils should not be reused on site. Ground conditions are discussed in detail in Chapter 14. This identifies the geological profile of the Project Corridor areas, which consist of the following geological sequence layers and their main constituents:

a. Made Ground;

b. Alluvium;
c. Glacial; and
d. Bedrock.

15.6.19 The Made Ground is where the majority of contamination is found. This is highly variable (see Chapter 14 for constituents).

15.6.20 A chemical waste/by-product from the chemical industry within the Widnes area known as 'Galligu' was noted to be present within the made ground across the Widnes area at the majority of the locations from the St Helens Canal up to the western extent of the investigation at St. Michaels Golf Course.

15.6.21 The nature and location of these in-situ materials (whether hazardous or not) that will be affected by the Project are discussed in Chapter 14.

15.6.22 The assessment undertaken in the contaminated land assessment showed that a large proportion of the samples assessed using the ~~CAT-WASTE$_{SOIL}$~~ HazWasteOnLine assessment tool fell into the 'potentially hazardous' waste category. Whilst this would have to be checked using WAC tests, for the purposes of this assessment "potentially hazardous" has been taken to mean 'hazardous' in order to adopt a worst case scenario. Table 15.6 shows the percentage of each waste arising tested which falls into the potentially hazardous category (Note: the original Table 15.6 below, has been replaced with a new Table 15.6 as the assessment tool used to define the hazardous waste quantities has changed).

Table 15.6 - Percentage of Potentially Hazardous Waste Identified from Borehole Analysis

	Total Number of Samples	Classified by HazWaste Online as Hazardous Waste	Proportion of samples classified as Hazardous Waste	Classified by HazWasteOnline as Potentially Hazardous Waste	Proportion of samples classified as Potentially Hazardous Waste	No. of Potentially Hazardous Waste samples unlikely to be classified as Hazardous**	Total Proportion Hazardous Waste considered in Assessment
Area A – Alluvium	1	1	100%	0	0%	N/a	100%
Area A – Made Ground	36	8	22%	2	6%	1	25%
Total	**37**	**9**	**24%**	**2**	**5%**	**1**	**27%**
Area B1 – Made Ground	30	9	30%	5	17%	3	37%
Area B1 – Glacial Till	5	1	20%	1	20%	1	20%
Area B2 – Alluvium	3	0	0%	0	0%	N/a	0%
Area B2 – Glacial Till	6	0	0%	1	17%	1	0%
Area B2 – Made Ground	33	9	27%	6	18%	2	39%
Total Area B	**77**	**19**	**25%**	**13**	**17%**	**7**	**32%**
Area C – Alluvium	65	5	8%	38	58%	28	23%
Area C – Glacial Till	7	0	0%	2	29%	0	29%
Area C – Made Ground	125	29	23%	51	41%	10	56%
Total Area C	**197**	**34**	**17%**	**91**	**46%**	**38**	**44%**
Area D – Estuary	116	0	0%	50	43%	0	43%
Area D Runcorn – Alluvium	22	3	14%	5	23%	0	36%
Area D Runcorn – Made Ground	10	0	0%	6	60%	1	50%
Area D Runcorn Wigg – Alluvium	9	0	0%	3	33%	1	22%
Area D Runcorn Wigg – Glacial Till	1	0	0%	0	0%	N/a	0%

	Total Number of Samples	Classified by HazWaste Online as Hazardous Waste	Proportion of samples classified as Hazardous Waste	Classified by HazWasteOnline as Potentially Hazardous Waste	Proportion of samples classified as Potentially Hazardous Waste	No. of Potentially Hazardous Waste samples unlikely to be classified as Hazardous**	Total Proportion Hazardous Waste considered in Assessment
Area D Runcorn Wigg – Made Ground	15	2	13%	9	60%	0	73%
Area D Widnes – Alluvium	84	3	4%	18	21%	5	19%
Area D Widnes – Glacial Till	2	0	0%	1	50%	0	50%
Area D Widnes – Made Ground	33	19	58%	9	27%	3	76%
Area D Widnes – Peat	3	0	0%	2	67%	0	67%
Total Area D	**179**	**27**	**15%**	**53**	**30%**	**10**	**39%**
Area E – Glacial Till	5	0	0%	0	0%	N/a	0%
Area E – Made Ground	6	1	17%	0	0%	N/a	17%
Total Area E	**11**	**1**	9%	**0**	0%	**0**	9%
Area F – Alluvium	1	0	0%	0	0%	N/a	0%
Area F – Glacial Till	1	0	0%	0	0%	N/a	0%
Area F – Made Ground	17	0	0%	0	0%	N/a	0%
Total Area F	**19**	**0**	**0%**	**0**	**0%**	**0**	**0%**
Area G – Alluvium	8	0	0%	0	0%	N/a	0%
Area G – Made Ground	11	2	18%	0	0%	N/a	18%
Total Area F	**19**	**2**	**11%**	**0**	**0%**	**0**	**11%**
Area H – Glacial Till	1	0	0%	0	0%	N/a	0%
Area H – Made Ground	6	0	0%	0	0%	N/a	0%
Total Area H	**7**	**0**	**0%**	**0**	**0%**	**0**	**0%**

	Total Number of Samples	Classified by HazWaste Online as Hazardous Waste	Proportion of samples classified as Hazardous Waste	Classified by HazWasteOnline as Potentially Hazardous Waste	Proportion of samples classified as Potentially Hazardous Waste	No. of Potentially Hazardous Waste samples unlikely to be classified as Hazardous**	Total Proportion Hazardous Waste considered in Assessment
Area I1 – Made Ground	4	0	0%	0	0%	N/a	0%
Area I2 – Alluvium	1	1	100%	0	0%	N/a	100%
Area I2 – Glacial Till	3	0	0%	0	0%	N/a	0%
Area I2 – Made Ground	29	9	31%	4	14%	0	45%
Area I2 Runcorn – Made Ground	3	1	33%	0	0%	N/a	33%
Total Area I	**40**	**11**	**28%**	**4**	**10%**	**0**	**38%**

~~15.6.23 In addition to the samples identified using CAT-WASTE$_{SOIL}$, chrysotile (white) and crocidolite (blue) asbestos was also identified in soil samples tested from the following during the Phase 6 site investigation:~~

~~a. BH75 (at 2.0m and 3.0m bgl) on St Michaels Golf Course in Widnes;~~
~~b. BH85 (at 6.0m bgl) Queensway road embankment in Widnes;~~
~~c. BH114 (at 1.6m & 2.0m) at Astmoor Junction in Runcorn; and~~
~~d. BH125 (2.0m-2.45m bgl) at the Southern Expressway Junction in Runcorn.~~

15.6.24 In addition to those samples identified using Hazwasteonline™ as potentially being classified as Hazardous Waste, chrysotile (white) and crocidolite (blue) asbestos was also identified in the following soil samples:

e. BH75 (at 2.0m and 3.0m bgl) – Area A, Made Ground;
f. BH85 (at 6.0m bgl) – Area I2, Made Ground; and
g. BH114 (at 1.6m & 2.0m) – Area F, Made Ground.

15.7 Assessment of Effects

Introduction

15.7.1 The assessment of the effects of the Project in terms of waste management has considered the 'do nothing' and 'do something' scenarios. Under the 'do nothing' scenario, it has been assumed that the Project would not be constructed. Therefore waste arisings under this scenario are likely to be similar to the results of the baseline assessment in Section 15.6. The assessment of the 'do something' scenario considered the effects of the Project assuming it is constructed in accordance with the revised CMR (Appendix 2.1, Chapter 2), for both the construction and operational phases.

15.7.2 The assessment of the Project under the 'do something' scenario has considered its effects in terms of those within the Project Corridor (i.e. local effects) and those on the North West Region (i.e. the macro effects) in terms of the effects on the regional waste management capacity and road network. The effects of the Project have also been assessed in relation to the legislation and policy referred to in Section 15.4.

15.7.3 Before the effects of the Project may be assessed, it is necessary to identify the types of waste streams likely to arise from the Project and estimate the likely quantities (where practicable to do so) for each stream identified.

Types of Waste Stream Likely to Arise from the Project

15.7.4 In common with all major infrastructure projects, the Project will lead to the generation of materials that are not required for use on the Project, and so will become waste. It is important that the quantity and nature of these materials is clearly understood. An assessment was undertaken to identify the waste streams likely to arise during the Project, which would enable the assessment of the potential effects that may arise from their generation and handling. This review was based on the activities predicted to occur in the nine Project construction areas (as now detailed in the revised CMR (Appendix 2.1, Chapter 2). Data from the contamination assessment and geotechnical data, obtained from Chapter 14, as well as predicted demolition requirements was used to predict the quantity and type of materials to be generated during construction.

15.7.5 The Project activities that are anticipated to generate waste from the nine construction areas within the Construction Corridor are identified in the revised CMR (Appendix 2.1, Chapter 2) and diagramatically identified in figures (Appendix 2.2, Chapter 2) include:

a. Construction works (which involve the laying of sub-base and surfacing of the carriageway, construction of ghost islands, running strips between lanes and the construction of new link roads);
b. Pavement construction assembly activities associated with the bridge and associated highways, which involves the installation of piles, caps, and associated towers;
c. Drainage (includes dewatering of deep excavations and subsequent drainage aspects during the operational phase of the Project);
d. Demolition (associated with the ~~de-linking strategy of the SJB and surrounding Widnes area and the~~ removal of existing building infrastructure currently in the path of the Project);
e. Construction phase maintenance;
f. General site activities (office and canteen waste, vehicle washings that may use detergents etc); and
g. Earthworks (includes enabling works and substantial preparatory works to enable construction to occur).

15.7.6 The following significant waste streams (shown in Table 15.7) are anticipated to be generated by the activities identified above:

Table 15.7 - Waste Streams Anticipated to be Generated by the Project

Waste Stream
Non-hazardous soils and general spoil
Hazardous soils
Green/vegetation waste
Concrete and masonry aggregates
Asphalt and road planings
Office/canteen waste
Groundwater effluent

15.7.7 Utilising the revised CMR, the anticipated waste streams at each construction area from the activities required to be undertaken as part of the Project have been identified in Table 15.8 below. An initial estimate of the most appropriate treatment/disposal route has been identified for all waste streams anticipated during both the construction and operational phases of the Project. It should be noted that materials generated which are not contaminated will generally be reused on site as engineered fill. Overall, there is a deficit of cut to fill, and so it is considered unlikely that non-contaminated material, which meets the geotechnical criteria for fill materials, will be exported as waste.

15.7.8 Some data in Table 15.8 below has been struck through, either because the arisings are now able to be reused within the construction works (whereas at the time the Orders ES was completed they were not able to be used) or because more recent reviews of the construction process indicated the materials may be generated too late for re-use on site.

Table 15.8 - Summary of Expected Waste Arisings for the Construction and Operational Phases Against the Project Elements and Activities.

Project Element	Construction Phase			Operational Phase		
	Activities	**Expected Waste Arisings**	**Likely Destination for Waste Arisings**	**Activities**	**Expected Waste Arisings**	**Likely Destination for Waste Arisings**
i. Alignment of the New Bridge (construction area D)	Removal of vegetation and spoil for construction access/methods (e.g. cofferdams) Earthworks Piling Construction of superstructure Construction of deck and road pavement Site compound Miscellaneous works (e.g. parapets, signs) Removal of vegetation and spoil for construction access/methods (e.g. cofferdams)	Marsh vegetation Excavated spoil Surplus cut/fill material Piling spoil Contaminated spoil Dewatering effluent General site waste (e.g. packaging, catering and office waste)	Excavated spoil, cut/fill material and vegetation to be treated on-site then re-used elsewhere on Project as fill if practicable. Contaminated spoil to be removed from site and disposed at hazardous landfill if remediation measures prove unsuccessful. Dewatering effluent will be treated on-site to render it safe enough to be discharged into local sewerage system. If that is not possible, effluent to be removed from site for further treatment. General site waste can be separated at source where possible and recycle (plastics and paper). Remaining waste can be sent for incineration or non-hazardous landfill.	Bridge maintenance Maintenance of signage Road traffic accident repairs Deck maintenance	Wastes arising from general highways maintenance emergency resurfacing and maintenance of the superstructure, potentially including paint strippings and removal/replacement of other protective coatings, detritus and drain clearance.	Hazardous waste arisings (paint strippings and coating liquids) to be stored on-site in an appropriate and secure storage container, which will be removed by an appropriate licensed waste carrier for further treatment. Detritus and drain clearance residues to be periodically removed using a tanker by the Council (as waste collection authority) for recovery at a composting facility (subject to WAC test results).

Project Element	Construction Phase			Operational Phase		
	Activities	**Expected Waste Arisings**	**Likely Destination for Waste Arisings**	**Activities**	**Expected Waste Arisings**	**Likely Destination for Waste Arisings**
	Demolition of light industrial buildings					
ii. Construction of piers in the River (construction area D)	Removal of spoil, sands and silts from the Estuary Placement of granular fill on saltmarshes as temporary road for construction vehicles	Marsh vegetation Excavated spoil Surplus cut/fill material Granular fill (inert material) Contaminated spoil	Vegetation and spoil removed for the construction of cofferdams will be incorporated into the Project where possible. As much of this will consist of sand and silt, there is the possibility to replace it back into the Estuary. Remaining arisings that cannot be incorporated into the Project will be landfilled. Contaminated spoil to be removed from site and disposed at hazardous landfill if remediation measures prove unsuccessful.	Bridge maintenance Maintenance of piers	Wastes arising from maintenance of the superstructure, potentially including paint strippings and removal/replacement of other protective coatings and detritus	Hazardous waste arisings (paint strippings and coating liquids) to be stored on-site in an appropriate and secure storage container, which will be removed by an appropriate licensed waste carrier for further treatment. Detritus and drain clearance residues to be periodically removed using a tanker by the Council (as waste collection authority) for recovery at a composting facility (subject to WAC test results).
~~iii. Incorporation into the existing highways infrastructure (construction area E-H)~~	~~Earthworks~~ ~~Pavement works~~ ~~Drainage works and replacement,~~	~~Surplus cut/fill material~~	~~Surplus cut/fill material will be used elsewhere on the Project where possible. Otherwise it will be removed from site and taken to composting facility.~~	~~Maintenance of road pavement,~~ ~~Repairs and maintenance of safety features (e.g. crash barriers or railings)~~	~~Waste arisings from general highways maintenance, e.g. road planings, metals, electronic and electrical equipment and communications equipment, drainage materials, detritus and drain clearance.~~	~~Maintenance materials to be stored on site for periodic removal by a licensed waste carrier for future reuse/recycling or treatment.~~

Project Element	Construction Phase			Operational Phase		
	Activities	Expected Waste Arisings	Likely Destination for Waste Arisings	Activities	Expected Waste Arisings	Likely Destination for Waste Arisings
~~iv. Modifications and de-linking of the SJB (construction area I)~~	~~Demolition~~ ~~Miscellaneous works (e.g. replacement of ancillary items~~ ~~Gantries~~ ~~Communications~~ ~~Lighting~~ ~~Street furniture etc)~~ ~~Site compound~~ ~~Removal of light industrial buildings~~	~~Asphalt planings~~ ~~Granular fill (inert material)~~ ~~Contaminated soil~~ ~~Some demolition material~~ ~~Drainage materials, metals and plastics arising from removal of/modifications to miscellaneous items such as cable, metal~~	~~Asphalt planings from pavement works can be reused where practicable, otherwise landfilled.~~ ~~Surplus granular fill material not required for highways construction will be sent to a transfer station off-site for future use or an inert landfill if opportunities for further use on the Project are not found.~~ ~~Contaminated spoil to be removed from site and disposed at hazardous landfill if remediation measures prove unsuccessful.~~ ~~Majority of demolition waste will be crushed and reused on-site where practicable for the landscaping of embankment areas. Remaining arisings that cannot be incorporated into the Project will be removed from site to a transfer station for use elsewhere, otherwise landfilled.~~ ~~Drainage materials, plastic and metals will be removed from site for recycling.~~	~~Maintenance of street furniture, communications etc~~ ~~Maintenance of drainage systems~~		

Project Element	Construction Phase			Operational Phase		
	Activities	**Expected Waste Arisings**	**Likely Destination for Waste Arisings**	**Activities**	**Expected Waste Arisings**	**Likely Destination for Waste Arisings**
v. Alterations to public transport, cycle and pedestrian links (all construction areas)	Pavement works Smaller scale earthworks and landscaping	Cycle/pedestrian pavement planings or other surfacing materials e.g. brick paving or flag stones Smaller volumes of spoil and topsoil and green waste	Asphalt planings can be reused where practicable, otherwise landfilled. Topsoil and green waste will be removed from site and sent to a composting facility.	Maintenance of cycle ways, footpaths and public transport facilities or links Maintenance and updating of tolling facilities Maintenance of local environmental quality (i.e. wastes arising from Local Authority Cleansing Duty and other duty bodies) Possible clearance of fly-tipping incidents	Pavement planings, green waste/weeding, topsoil and mulch, litter, dog waste, Food-on-the-go waste, possible litter associated with tolling system (tickets, receipts etc.), detritus and drainage clearance, waste electronic and electrical equipment (WEEE), booth refit wastes.	Litter bins to be emptied periodically by local authority. WEEE to be stored on-site and collected by licensed waste carrier for further treatment.
vi. ~~Tolling and road user charging and development of associated~~ Construction and demolition in association with infrastructure (construction sections A-~~C~~ I)	Demolition Earthworks Pavement works Drainage Communications	Demolition waste from brick and / or framed buildings, including mixed interior soft strip materials (e.g. plasterboard, fixtures and fittings, steel, brick)	Majority of demolition waste will be crushed and reused on-site where practicable for the landscaping of embankment areas. Remaining arisings that cannot be incorporated into the Project will be removed from site to a transfer station for use elsewhere, otherwise landfilled. Mixed soft strip materials will be separated where possible	Maintenance of cycle ways, footpaths and public transport facilities or links ~~Maintenance and updating of tolling facilities~~ Maintenance of local environmental quality (i.e. wastes arising from	Pavement planings, green waste/weeding, topsoil and mulch, litter, dog waste, ~~Food-on-the-go waste, possible litter associated with tolling system (tickets, receipts etc.),~~ Detritus and drainage clearance, waste electronic and electrical equipment (WEEE), booth refit wastes.	Litter bins to be emptied periodically by local authority. WEEE to be stored on-site and collected by licensed waste carrier for further treatment.

Project Element	Construction Phase			Operational Phase		
	Activities	**Expected Waste Arisings**	**Likely Destination for Waste Arisings**	**Activities**	**Expected Waste Arisings**	**Likely Destination for Waste Arisings**
	Lighting and installation of tolling equipment		and removed off-site for further treatment. Metal arisings will be taken off-site and recycled.	Local Authority Cleansing Duty and other duty bodies)		
	~~Removal of Galligu waste from St Michaels Golf Course~~	Surplus cut/fill material	Surplus cut/fill material will be removed from site and taken for and sent to composting facility or non-hazardous landfill as a last resort.	Possible clearance of fly-tipping incidents		
		Contaminated fill	Contaminated spoil to be removed from site and disposed at hazardous landfill if remediation measures prove unsuccessful.			
		Mixed site waste reflecting construction activities	General mixed site waste can be separated at source where possible and recycle (plastics and paper). Remaining waste can be sent for incineration or non-hazardous landfill.			
		WEEE	Waste electronic and electrical equipment can be sent for recycling at appropriately licensed facilities.			

Predicted Quantities of Waste Arisings

15.7.9 The following sections identify the type and quantities of wastes generated by construction area, and also a composite quantity of waste by stream. These quantities have been revised following changes to the design of the project, as defined in Chapter 2 of this ES.

Area A – ~~Main Toll Plaza~~ Project Termination (Widnes)

15.7.10 A substantial area of land will be required for the construction of the project and land on St Michaels Golf course has been identified as a potential compound location ~~main toll plaza and expansion of the existing carriageways as they approach the toll plaza. Canopies will be required over the toll booths and enhancements made to the drainage.~~.

15.7.11 Once the site is cleared of vegetation ~~or soils~~, there will be minimal cutting of existing soil. ~~The ground that will support the new carriageways would be improved by a grid of vibro-concrete columns. These columns are approximately 4m^2, and would be sunk into the ground to an average depth of 6m. The columns will be overlaid with geotextile membrane and layers of fill will be imported from that previously removed from the Widnes Eastern Bypass works, with the carriageway constructed on top. Excavations will be required to accommodate the culvert extensions.~~

~~15.7.12 There will be limited removal of soils associated with this area, as the carriageway and toll booths will be positioned close to the existing ground level. There will be minimal cutting of the existing topsoil layer, so the migration of contaminated soils around the site would be low. The main waste arisings will be from the removal of soils for the construction of the culverts.~~

15.7.13 Results from the borehole soil assessment carried out in Chapter 14 identified heavy contamination of the soils, particularly arsenic, sulphur and lead. This is down to the fact that the southern part of this area (~~currently~~ St. Michael's Golf Course) was originally used as a landfill site for the deposit of the chemical by-products (particularly Galligu) generated from the historical industrial use of the area.

15.7.14 A diagrammatic illustration of Area A is shown in Reference Design Drawing No. B4027/4/H/100/201 (Appendix 2.2, Chapter 2).

15.7.15 Table 15.9 identifies the area specific waste streams that would require further treatment/disposal:

Table 15.9 - Specific Waste Streams Identified in Area A

Waste Stream	Possible Treatment/Disposal Destination	Estimated Quantity (m^3)
Contaminated soils (particularly containing arsenic, lead, nickel, barium and sulphurous compounds) from carriageway drainage works.	Test suitability for use on site using CL:aire: guidelines. Pre-treatment using soil remediation to stabilise material. High likelihood that it would require disposal at hazardous landfill or incineration if pre-construction remediation measures fail to reduce contamination levels sufficiently.	~~4,000~~ 1950*
Bitumen and general construction materials from carriageway works	~~Material likely to be contaminated, but can be crushed, washed and reused on-site provided the structure is free from tar and oils. Otherwise it would require disposal at a hazardous landfill.~~ Material to be reused on site.	~~3,000~~ 0**

Waste Stream	Possible Treatment/Disposal Destination	Estimated Quantity (m^3)
Green waste/vegetation from site clearance works.	Removed from site and taken to composting facility for reuse.	~~500~~ 50***
Asbestos recovered from soil.	Disposal at landfill.	No data available currently****
TOTAL	**-**	**~~7,500~~ 2,000**

Notes

* Volume reduced due to reduction of works in St Michaels Golf Course and at northern end of construction area.

** Bituminous materials and road planings are now able to be reused within the Concrete Bound Granular Material within road base. Therefore, this material will be reused and will not become waste.

*** Reduced volume due to reduction in work at northern end of scheme.

******* Contaminated land data indicates that some asbestos is present within soils in this area. It is possible that during construction discrete areas of asbestos may be found, and these may be managed separately from soils. It is also possible however that asbestos may be integrated within the soils and both materials will be managed as a combined load. This will be a decision made by the Project Company ~~Concessionaire~~ in consultation with the local waste ~~disposal~~ regulation authority.

Area B – Ditton Junction to Freight Line

15.7.16 Ditton Roundabout Junction (Ditton Junction) would be changed from a roundabout to a signal-controlled junction. The new carriageway will increase in level on an embankment, turning into a bridge to rise over the new junction as it is taken over the freight line. Modifications to the existing carriageways would be required to accommodate some additional toll booths on the slip roads.

15.7.17 The area would require demolition of existing light industrial buildings and concrete foundations, excavation of the existing Ditton Junction ~~Road roundabout~~ and surrounding carriageways, removal of vegetation and demolition of existing bridge decks.

15.7.18 The New Bridge will require the construction of abutments at each end, which will require foundations. This is achieved by piling into the ground and the installation of pile caps at each end. These excavations will generate waste arisings as soil is removed. The embankments will be supported by stabilising the ground using vibro-concrete columns, which would minimise soil removal.

15.7.19 Similar to Area A, this area is heavily contaminated, caused by the historical activities of chemical industries, so it is imperative to minimise removal of the soils, and hence generation of wastes in this area. It is anticipated that minimal amounts of contaminated soils will be removed from site, and measures will be introduced to inhibit the migration of contaminants.

15.7.20 A diagrammatic illustration of Area B is shown in Reference Design Drawing No. B4027/4/H/100/202 (Appendix 2.2, Chapter 2).

15.7.21 Table 15.10 identifies the area specific waste streams that would require treatment/disposal:

Table 15.10 - Specific Waste Streams Identified in Area B

Waste Stream	Likely Treatment/Disposal Destination	Estimated Quantity (m^3)
Contaminated soils (particularly containing arsenic, lead, VOCs and sulphurous compounds) from piling activities and drainage works.	Test suitability for use on site using CL:aire: guidelines. Pre-treatment using soil remediation to stabilise material. High likelihood that it would require disposal at hazardous landfill or incineration if pre-construction remediation measures fail to reduce contamination levels sufficiently.	~~4,000~~ 5,000
Concrete and steel arisings from demolition of existing bridges	Aggregate material crushed and washed for further reuse on site. Alternative option is to remove from site to transfer station for it to be reprocessed for use on another Project. Landfill not necessary as it is assumed that sufficient storage capacity is available elsewhere (transfer stations).	~~2500~~ 0*
Bitumen and general construction materials from carriageway works	~~Material likely to be contaminated, but can be crushed, washed and reused on-site provided the structure is free from tar and oils. Otherwise it would require disposal at a hazardous landfill.~~ Material to be reused on site.	~~See note below~~ 0*
Masonry materials from the demolition of existing buildings and their foundations	Aggregate material crushed and washed for further reuse on site. Alternative option is to remove from site to transfer station for it to be reprocessed for use on another Project. Landfill not necessary.	15,000
General waste construction materials comprising used formwork shutters, reinforcement steel, concrete and empty drums and containers	Recovery of materials through segregation to be followed by removal off-site for future reuse or recycling on other projects.	100
Green waste/vegetation from site clearance works.	Removed from site and taken to composting facility for reuse.	50
TOTAL	**-**	**~~22,650~~ 20,150**

~~*** Note** At the time of writing the Costings Report, the surveyor identified all bitumen in these areas to go to a licensed tip and consolidated the volumes with the 'contaminated soils' above due to the nature of the material in the area~~.

Notes

* Volume removed as this material will be reused directly in embankment construction.

** Bituminous materials and road planings are now able to be reused within the Concrete Bound Granular Material within road base. Therefore, this material will be reused and will not become waste.

Area C – Freight Line to St. Helen's Canal

15.7.22 There will be significant construction activities in this area to create a junction and advance the proposed highway to the approach of the New Bridge. Work involved will create 5 new single-span bridges, a high-level multi-span aqueduct to accommodate the carriageway

between the freight line bridge and the new Widnes Loops Junction and an embankment to accommodate the carriageway on the approach to the canal.

15.7.23 Significant earthworks would be required in this area to accommodate the large number of pile caps (potentially 50-60) required between the freight line and canal, although this is subject to future modification at the detailed design stage. The ground soils in the area are heavily contaminated with 'galligu' and solvents from historic industrial uses. These would require remediation prior to excavation in the area to stabilise the contaminants, which is discussed in more detail in Chapter 14. In addition, some existing industrial buildings will require demolition (included in the advanced works), but the materials can be retained on site and either reused or re-cycled. The concrete foundations will be heavily contaminated, so will require removal off-site for crushing and treatment. The existing carriageway and embankment of the A557 Eastern Widnes Bypass will need to be excavated, but the bitumous material can be re-cycled and embankment soil remediated and reused (currently proposed for use as in-fill for works in Area A).

15.7.24 A diagrammatic illustration of Area C is shown in Reference Design Drawing No. B4027/4/H/100/202 (Appendix 2.2, Chapter 2).

15.7.25 Table 15.11 identifies the area specific waste streams that would require further treatment/disposal:

Table 15.11 - Specific Waste Streams Identified in Area C

Waste Stream	Likely Treatment/Disposal Destination	Estimated Quantity (m^3)
Contaminated soils generated from piling activities and drainage works. Expected to contain similar contaminants to soils found in Area A.	Test suitability for use on site using CL:aire: guidelines. Pre-treatment using soil remediation to stabilise material. High likelihood that it would require disposal at hazardous landfill or incineration if pre-construction remediation measures fail to reduce contamination levels sufficiently.	~~12,500~~ 12,200
Masonry materials from the demolition of existing buildings and their foundations	Aggregate material crushed and washed for further reuse on site. Alternative option is to remove from site to transfer station for it to be reprocessed for use on another Project. Landfill not necessary.	5,000 +
Bitumen and general construction materials from carriageway works	~~Material likely to be contaminated, but can be crushed, washed and reused on-site provided the structure is free from tar and oils. Otherwise it would require disposal at a hazardous landfill.~~ Material to be reused on site.	~~9,000~~ 0*
General waste construction materials comprising used formwork shutters, reinforcement steel, concrete and empty drums and containers	Recovery of materials through segregation to be followed by removal off-site for future reuse or recycling on other projects.	750
Green waste/vegetation from site clearance works.	Removed from site and taken to composting facility for reuse.	20
TOTAL	**-**	**~~27,270~~ 18,370**

Note

* Bituminous materials and road planings are now able to be reused within the Concrete Bound Granular Material within road base. Therefore, this material will be reused and will not become waste.

+ Material from advanced works assumed to be reused in construction of the Project.

Area D – The Mersey Gateway Bridge

15.7.26 Before reaching the Estuary, the carriageway will have to cross the saltmarshes on both sides. It is envisaged that a stone haul road would be laid directly over the grasses of the salt marsh using multiple layers of geotextile and granular fill. There is some hazardous contamination in the made ground soils underlying the saltmarsh vegetation, but this will not be disturbed during the construction process. It is likely that the temporary stone haul road will be fully removed upon completion for off-site treatment/disposal ~~although opportunities to reuse this material elsewhere on the Project are currently being considered.~~

15.7.27 There will be construction of 3 bridge towers in the Estuary. Analysis of borehole data has identified alluvium (silty slightly gravely sand) at ground level, overlying sandstone bedrock, which is largely uncontaminated. The base piles will be constructed within cofferdams which will be removed on completion of the pile field and piers and will be sunk through the alluvium and into the bedrock level for stability. Once the cofferdams are in place, they will be filled with sand from the Estuary as they are predominantly hollow inside. Liquid that rises from the sands during the sinking of the cofferdams will be pumped back into the Estuary. A jetty will be temporarily created during the construction of the New Bridge. This will be created by sinking piles into the bedrock and placing deck units on top to allow the movement of vehicles across the Estuary. Upon completion, the deck units will be uninstalled and the piles removed from the bedrock riverbed by vibration and lifting them out using cranes.

15.7.28 Very little waste will require removal off-site, as the majority of materials removed (sand, silt and water) from the river will be replaced back into the cofferdams.

15.7.29 A diagrammatic illustration of Area D is shown in Reference Design Drawing No. B4027/4/H/100/202 (Appendix 2.2, Chapter 2).

15.7.30 Table 15.12 identifies the area specific waste streams that would require further treatment/disposal:

Table 15.12 - Specific Waste Streams Identified in Area D

Waste Stream	Likely Treatment/Disposal Destination	Estimated Quantity (m^3)
Granular material used for creating the temporary stone haul road on the saltmarshes	Currently likely for disposal/treatment off-site, as the haul road will be removed after embankment construction ceases. although opportunities for reuse on other projects are currently being considered	22,800 *
Contaminated soils generated from piling activities and drainage works. Expected to contain similar contaminants to soils found in Areas A and B.	Test suitability for use on site using CL:aire: guidelines. Pre-treatment using soil remediation to stabilise material. High likelihood that it would require disposal at hazardous landfill or incineration if pre-construction remediation measures fail to reduce contamination levels sufficiently.	~~28,000~~ 11,100
General waste construction materials comprising used formwork shutters, reinforcement steel, concrete and empty drums and containers	Recovery of materials through segregation to be followed by removal off-site for future reuse or recycling on other projects.	500

Waste Stream	Likely Treatment/Disposal Destination	Estimated Quantity (m^3)
Green waste/vegetation from site clearance works.	Removed from site and taken to composting facility for reuse.	200
TOTAL	**-**	~~**51,500**~~ **34,600**

Note

* Material recovered too late to be reused on project, therefore needs to go offsite for recycling. Therefore becomes a waste.

Area E – Astmoor Viaduct

15.7.31 As the New Bridge approaches the Runcorn side of the Estuary, it will need to cross the Wigg Island hazardous landfill site. Piles will need to be sunk into the ground to enable the placement of pile caps to support a viaduct that will carry the carriageway up to the Bridgewater Junction.

15.7.32 The viaduct will cross the Astmoor Industrial Estate. Existing buildings in its path will require demolition along with the clearance of existing vegetation in the area that may need to be excavated. These materials can be recovered and reused elsewhere on the Project or taken off-site to be reused elsewhere, avoiding landfill.

15.7.33 The construction of piles and pile caps for the viaduct will require the removal of a large amount of contaminated soil from the landfill site, because it was predominantly used to deposit chemical by-products from the historical industrial use of the area. There is the possibility of relocating this soil to another location on the landfill site, thereby removing the need to remove it off site. This option would have to be considered further during the detailed design phase of the Project.

15.7.34 A diagrammatic illustration of Area E is shown in Reference Design Drawing No. B4027/4/H/100/203 (Appendix 2.2, Chapter 2).

15.7.35 Table 15.13 identifies the area specific waste streams that would require further treatment/disposal:

Table 15.13 - Specific Waste Streams Identified in Area E

Waste Stream	Likely Treatment/Disposal Destination	Estimated Quantity (m^3)
Contaminated soils (particularly containing arsenic, lead, nickel, carbon disulphide, chlorinated compounds and VOCs.	Test suitability for use on site using CL:aire: guidelines. Pre-treatment using soil remediation to stabilise material. High likelihood that it would require disposal at hazardous landfill or incineration if pre-construction remediation measures fail to reduce contamination levels sufficiently.	12,000
Masonry materials from the demolition of existing buildings and their foundations in the Astmoor Industrial Estate.	Aggregate material crushed and washed for further reuse on site. Alternative option is to remove from site to transfer station for it to be reprocessed for use on another project. Landfill not necessary.	~~8,000~~ 7500
General waste construction materials comprising used formwork shutters, reinforcement steel, concrete and empty drums and containers	Recovery of materials through segregation to be followed by removal off-site for future reuse or recycling on other projects.	500

Waste Stream	Likely Treatment/Disposal Destination	Estimated Quantity (m^3)
Green waste/vegetation from site clearance works.	Removed from site and taken to composting facility for reuse.	50
TOTAL	**-**	~~**20,550**~~ **20,050**

Area F – Bridgewater Junction

15.7.36 To connect the Astmoor Viaduct to the A533 Central Expressway in Runcorn, enhancements to the existing Junction of the A558 Daresbury Expressway to the A533 Central Expressway (the Bridgewater Junction) will be required. This will comprise a two-level interchange forming a north-south route onto the expressway above the existing east-west route, which would become a gyratory junction with slip roads incorporated to reach the higher level.

15.7.37 Significant amendments to the existing road network would be required. This would involve the demolition of the existing slip roads and removal of the existing carriageway for the new alignment. All of the demolition material has the potential to be reused elsewhere, alleviating the need for landfill. Piles will be sunk into the ground to support the abutments of the new bridges required. The waste materials generated here are unlikely to contain contaminated soils and so they can be reused as fill in the construction of the embankments required to support the expressway above the proposed gyratory system.

15.7.38 Asbestos has been found in this area, which will require disposal at landfill.

15.7.39 A diagrammatic illustration of Area F is shown in Reference Design Drawing No. B4027/4/H/100/203 (Appendix 2.2, Chapter 2).

15.7.40 Table 15.14 identifies the area specific waste streams that would require further treatment/disposal:

Table 15.14 - Specific Waste Streams Identified in Area F

Waste Stream	Likely Treatment/Disposal Destination	Estimated Quantity (m^3)
Concrete and steel arisings from demolition of existing bridges	Aggregate material crushed and washed for further reuse on site. Alternative option is to remove from site to transfer station for it to be reprocessed for use on another project. Landfill not necessary.	~~2,000~~ 0*
Asbestos	Disposal at non-hazardous landfill that possesses an SNRHW cell to accommodate it.	No data available currently**
Bitumen and general construction materials from carriageway works	~~Material likely to be contaminated, but can be crushed, washed and reused on-site provided the structure is free from tar and oils. Otherwise it would require disposal at a hazardous landfill.~~ Material to be reused on site.	~~See note below**~~ 0***
Non-hazardous soils from piling activities	Reuse elsewhere on Project as fill material if required. Otherwise removal off-site for consolidation and reuse in another project, Disposal at non-hazardous landfill last resort	~~10,000~~ 0****
General waste construction materials comprising used formwork shutters, reinforcement steel, concrete and empty drums and containers	Recovery of materials through segregation to be followed by removal off-site for future reuse or recycling on other projects.	250
Green waste/vegetation from site clearance works.	Removed from site and taken to composting facility for reuse.	250
TOTAL	**-**	~~**12,500**~~ **500**

Notes

* Volume removed. 1500m3 generated from Lodge Lane Bridge will be directly reused on site in embankment construction.

****** Contaminated land data indicates that some asbestos is present within soils in this area. It is possible that during construction discrete areas of asbestos may be found, and these may be managed separately from soils. It is also possible however that asbestos may be integrated within the soils and both materials will be managed as a combined load. This will be a decision made by the Project Company ~~Concessionaire~~ in consultation with the local waste disposal authority.

~~** **Note** At the time of writing the Costings Report, the surveyor identified all bitumen in these areas to go to a licensed tip and consolidated the volumes with the 'contaminated soils' above due to the nature of the material in the area.~~

*** Bituminous materials and road planings are now able to be reused within the Concrete Bound Granular Material within road base. Therefore, this material will be reused and will not become waste.

**** Material now to be directly reused in embankment construction.

Area G – Central Expressway, Lodge Lane and Weston Link Junction

15.7.41 Minor modifications are proposed to the existing road network to improve access and flow to and from the A553 Central Expressway. Much of the existing network will remain intact. Some additional slip roads would be required, which would generate some cut material, but as this is not contaminated, it can be reused elsewhere on the Project.

15.7.42 The Junction of the A533 Central Expressway and the A533 Southern Expressway (the Lodge Lane Junction) will be modified to change the priority of the junction. This would

require some piling and the construction of a bridge. Waste soils here are not contaminated and would be reused as part of the new embankment fill required here.

15.7.43 The Junction of the A533 Bridgewater Expressway and the A557 Weston Point Expressway (the Weston Link Junction) will be largely unchanged, with only an incorporation of some new slip roads to improve the flow of traffic. This will involve some minor cutting works, generating some waste arisings. Borehole samples have indicted the presence of lead contamination in the soil. This cannot be reused elsewhere in the Project, but can be taken off-site for remediation and used elsewhere, rather than being sent to landfill.

15.7.44 A diagrammatic illustration of Area G is shown in Reference Design Drawing Nos. B4027/4/H/100/204 and B4027/4/H/205 (Appendix 2.2, Chapter 2).

15.7.45 Table 15.15 identifies the area specific waste streams that would be expected to require removal from site for further treatment/disposal:

Table 15.15 - Specific Waste Streams Identified in Area G

Waste Stream	Likely Treatment/Disposal Destination	Estimated Quantity (m^3)
Bitumen and general construction materials from carriageway works	~~Material likely to be contaminated, but can be crushed, washed and reused on-site provided the structure is free from tar and oils. Otherwise it would require disposal at a hazardous landfill.~~ Material to be reused on site.	~~5,000~~ 0*
Contaminated soils from excavation	Test suitability for use on site using CL:aire: guidelines. Pre-treatment using soil remediation to stabilise material. High likelihood that it would require disposal at hazardous landfill or incineration if pre-construction remediation measures fail to reduce contamination levels sufficiently.	7200
Concrete and steel arisings from demolition of existing bridge	Aggregate material crushed and washed for further reuse on site. Alternative option is to remove from site to transfer station for it to be reprocessed for use on another project. Landfill not necessary.	~~1,000~~ 0**
Non-hazardous soils from piling and cutting activities	Reuse elsewhere on Project as fill material if required. Otherwise removal off-site for consolidation and reuse in another project, Disposal at non-hazardous landfill last resort	~~1,250~~ 0**
General waste construction materials comprising used formwork shutters, reinforcement steel, concrete and empty drums and containers	Recovery of materials through segregation to be followed by removal off-site for future reuse or recycling on other projects.	150
Green waste/vegetation from site clearance works.	Removed from site and taken to composting facility for reuse.	500
TOTAL	**-**	~~**7,900**~~ **7850**

Notes

* Bituminous materials and road planings are now able to be reused within the Concrete Bound Granular Material within road base. Therefore, this material will be reused and will not become waste.

** Material volumes removed as they will be directly reused in embankment construction.

Area H – M56 Junction 12

15.7.46 Only minor amendments to the existing road network would be required here. ~~The creation of a retaining wall would require piling activities, which would generate soils. There is no significant contamination of the soils in this area, so it can be reused elsewhere on the Project as fill material.~~ No ~~other~~ significant waste arisings would be expected here.

15.7.47 A diagrammatic illustration of Area H is shown in Reference Design Drawing No. B4027/4/H/100/206. (Appendix 2.2, Chapter 2).

15.7.48 Table 15.16 identifies the area specific waste streams that would be expected to require removal from site for further treatment/disposal:

Table 15.16 - Specific Waste Streams Identified in Area H

Waste Stream	Likely Treatment/Disposal Destination	Estimated Quantity (m^3)
Non-hazardous soils from piling and cutting activities for new retaining wall	Reuse elsewhere on Project as fill material if required. Otherwise removal off-site for consolidation and reuse in another project, Disposal at non-hazardous landfill last resort	~~2,500~~ 0*
General waste construction materials comprising used formwork shutters, reinforcement steel, concrete and empty drums and containers	Recovery of materials through segregation to be followed by removal off-site for future reuse or recycling on other projects.	150
Green waste/vegetation from site clearance works.	Removed from site and taken to composting facility for reuse.	100
TOTAL	**-**	**~~2,750~~ 250**

Notes

* Material removed as form of retaining structure has changed and waste material will no longer be generated

Area I – Silver Jubilee Bridge and Widnes De-linking Works

15.7.49 With the opening of the New Bridge, there would be a significant reduction in the traffic flow expected on the SJB ~~Silver Jubilee Bridge~~, so the carriageway would be downgraded from two to one lane in each direction in addition to the creation of footpaths and a dedicated cycle path.

~~15.7.50 A tolling plaza would be constructed on the existing Queensway carriageway (Widnes side). The embankment and viaduct leading to the Widnes Eastern Bypass would be removed by demolition and excavation. The road link between the tolling plaza and the Ditton Junction (Area A) will be downgraded to a two lane single carriageway, with all remaining carriageway arisings removed.~~

15.7.51 These works would not require significant removal of soil, but removal of the existing carriageway and embankments will generate waste arisings. It is proposed that these arisings will be reused elsewhere on the Project, but as the de-linking works is the last phase of the Project, there will be limited opportunities for this.

15.7.52 A diagrammatic illustration of Area I is shown in Reference Design Drawing Nos. B4027/4/H/100/207 and B4027/4/H/208. (Appendix 2.2, Chapter 2).

15.7.53 Table 15.17 identifies the area specific waste streams that would be expected to require removal from site for further treatment/disposal:

Table 15.17 - Specific Waste Streams Identified in Area I

Waste Stream	Likely Treatment/Disposal Destination	
Contaminated soils (particularly containing arsenic, lead, nickel, carbon disulphide, chlorinated compounds and VOCs.	Test suitability for use on site using CL:aire: guidelines. Pre-treatment using soil remediation to stabilise material. High likelihood that it would require disposal at hazardous landfill or incineration if pre-construction remediation measures fail to reduce contamination levels sufficiently.	570*
PFA and soils of unknown quality*	Reuse elsewhere on Project as fill material if required. Otherwise removal off-site for consolidation and reuse in another project, Disposal at non-hazardous landfill last resort	58,500**
Bitumen and general construction materials from carriageway works	~~Material likely to be contaminated, but can be crushed, washed and reused on-site provided the structure is free from tar and oils. Otherwise it would require disposal at a hazardous landfill.~~ Material to be reused on site.	1,000***
TOTAL	**-**	**~~1,000~~ 60,070**

Notes

* Reduced volumes of earthworks materials generated, therefore reduction in volumes of contaminated materials generated.

** Materials now considered to be generated too late in the construction programme for reuse in embankment construction. Material in existing embankment is mainly PFA. This is assumed to be non-hazardous waste.

*** Bituminous materials and road planings are generated too late to be reused in construction.

15.7.54 A list of significant waste streams and their estimated arisings (identified from the revised CMR) is shown in Table 15.18 below. These have been generated from the construction areas identified above in respect of those totalling more than 1,000m^3, which have been identified as 'high' in magnitude. The figures below do not include arisings that can be accommodated for reuse on-site, merely what will be left over from the Project and removed from site for further treatment/disposal. The Project Company ~~Concessionaire~~ should be required to identify opportunities to ensure that waste arisings from the list below are removed from site for future reuse (where practicable to do so) on concurrent or future projects in the region. This should reduce the actual amounts sent to landfill.

Table 15.18 - Anticipated Quantities of Project Waste Arisings

Category	Waste Material	Estimated Quantity (m^3)
Contaminated Soils	Contaminated soils removed from drainage works	~~7,500~~ included below
	Contaminated soils removed from piling activities	~~42,000~~ 50,020

Category	Waste Material	Estimated Quantity (m^3)
Green/vegetation Wastes	Soils removed from piling activities that are deemed not to be contaminated by WAC testing	~~25,750~~ 0
	Green/vegetation waste	~~1,670~~ 1220
Demolition Wastes	Carriageway excavation waste	~~18,000~~ 1000
	Waste from the demolition of existing bridges	~~5,500~~ 0
	Waste from the demolition of existing buildings	~~28,000~~ 27,500
PFA and other embankment wastes		58,500*
Construction Site Wastes	General construction site waste	2,400
Other Wastes	Waste from temporary construction (and subsequent removal) of gravel road over saltmarshes	22,800
TOTAL	**-**	~~**153,620**~~ **163,440**
Source: Based on data ~~analysed~~ taken from the CMR Note * New row- material now considered to be generated too late for reuse.		

15.7.55 In summary, of the waste materials anticipated to be generated, and not reused on site in the reference design amount to approximately ~~153,620~~ 163,440m^3 in volume. Of this, approximately ~~32.2~~ 30.8% has been identified as contaminated in nature, which, depending on results of WAC tests for each load undertaken by the Project Company ~~Concessionaire~~ could potentially become hazardous waste.

15.7.56 It is difficult to predict the volume of site construction waste arisings during construction. However, it has been estimated that the compound will generate up to 80m^3 'domestic' waste and approximately 500m^3 of 'office waste' per annum as a 'worst-case' scenario.

~~15.7.57 Operational waste streams would be generated by the day-to-day running of the toll plaza (general office waste and removal of waste from public litter bins), maintenance on the New bridge and surrounding highway infrastructure, replacement of WEEE (Waste Electrical and Electronic Equipment) that would become redundant over time and the removal of green/vegetation waste from landscape maintenance. Again, it is difficult to predict the volume of operational waste generated, but an estimation of 1,000m^3 is being assumed as a 'Worst-case' scenario.~~

Assessment of Effects

15.7.58 The reassessed waste generation figures are very similar to those calculated and presented in the Orders ES. The reassessment of potential impacts included below is, therefore, also very similar to that included in the Orders ES.

Construction Phase Effects – Project Corridor

15.7.59 Materials excavated from the construction site will be returned to the site compounds for subsequent management. The activities of extracting these materials form their source, i.e. noise and dust from machinery have been assessed in other Chapters. However, once materials are removed from their initial location and placed within the compounds specific waste management activities will begin and these have the potential to impact local receptors. The compounds are proposed to be located at St Michaels Golf course, Astmoor Industrial Estate, and Catalyst Business Park.

15.7.60 The activities likely to occur will be:

a. Waste storage;
b. Pre-treatment of potentially contaminated materials;
c. Storage of materials of unknown quality in a quarantine area;
d. Waste segregation; and
e. Transportation of materials.

15.7.61 These activities potentially give rise to a number of potential environmental issues:

a. Uncontrolled release to controlled waters causing Pollution (identified in detail in Chapter 8);
b. Releases of dusts from the compound (construction effects as a whole identified in Chapter 19);
c. Releases of odours from the site (construction effects as a whole identified in Chapter 19); and
d. Noise effects (construction effects identified as a whole in Chapter 17).

15.7.62 It would be a requirement upon the Project Company ~~Concessionaire~~ to undertake the source segregation of waste streams. This is required both to provide a pre-treatment mechanism of separating hazardous from non-hazardous waste (particularly soils) to enable to opportunity for some streams to be reused or recycled. The location and design of these facilities are currently not available, so it has been assumed that for the purposes of this assessment the waste will merely be stored in open-air stockpiles. Another effect that may arise whilst storing waste arisings is that some loads removed from the construction areas would be of such a hazardous nature that there is no current end disposal point for it, leaving it temporarily 'orphaned'. This would need to be stored in a 'Quarantine' area for what could be a prolonged period of time, taking up site compound space whilst measures to negotiate its removal are undertaken.

Effects on Watercourses

15.7.63 The following water courses are potentially at risk:

a. St Michaels Golf Course Compound site – Stewards Brook;
b. Catalyst Trade Park – No surface water bodies adjacent; and
c. Astmoor Industrial Estate – Manchester Ship Canal and the Bridgewater Canal.

15.7.64 Waste stored in stockpiles are likely to become wet during storage, pre-treatment and handling. This has the potential to generate run-off into local watercourses, causing environmental damage if heavily contaminated soils are stored. Such releases, if un-mitigated, could result in short-term localised effects on surface water quality, which has been classified as a sensitive receptor, hence a high importance has been assigned to this particular effect.

15.7.65 In the case of Stewards Brook, the water quality has recently improved due to remedial works carried out by the Council, ~~is already significantly affected by contaminated groundwater entering from contaminated land under the golf course~~. and it is not predicted that small inputs of contaminated runoff from waste stockpiles will significantly reduce water quality. In the case of the Manchester Ship canal and Bridgewater canal, the potential for localised pollution is higher, and therefore of moderate magnitude and could lead to a medium negative significance.

Releases of Dust

15.7.66 Releases of dust from waste pre-treatment activities could be contaminated. Any dust released would be re-deposited within 200m of the source.

a. St Michaels Golf Course (assumed compound site) – No residential properties within 200m. However, commercial properties along Ditton Road are within 200m and could be impacted;
b. Catalyst Trade Park –the nearest properties in Newtown and commercial properties remaining on the trade park lie within 200m of the compound and could be affected ; and
c. Astmoor Business Park – The nearest residential properties lie just over 200m from the compound in Halton Brook. It is unlikely that these will be impacted from dust emissions from the waste management areas on the compound.

15.7.67 It is predicted that generation of dust from waste activities will be relatively low in nature, with a moderate importance being assigned as the receptors involved would not be from a vulnerable group, with moderate magnitude. It has been assessed as having a low negative significance.

Odour

15.7.68 Some waste streams (particularly those that are biodegradable, such as green/vegetation waste) will start to create an odour if stored for a prolonged period of time. It is not anticipated that highly odorous waste materials will be stored on site over long periods, so no significant effect has been predicted.

Noise Effects

15.7.69 Noise generated by the waste sorting activities on the compounds will form part of the noise generating activities on site and are likely to be difficult to distinguish from other activities occurring. The noise impact of activities at each of the compounds has been assessed in Chapter 17. No separate assessment of noise has been undertaken for the waste activities on each of the compounds.

Construction Phase Effects – North West Region

15.7.70 Once the waste arisings have left the Project Corridor, their handling and disposal have the potential to create effects at the North West ~~Region~~ scale. Three potential effects have been identified, as follows:

a. Consumption of landfill and waste treatment capacity;
b. Movement of vehicles across region to transport waste arisings to final destination; and
c. Spillage of waste arisings onto highway network during transportation.

Consumption of Landfill Capacity

15.7.71 Landfill capacity in the North West ~~Region~~ continues to be used for wastes produced within the Region. Activities by Local and Regional Government continue to try and slow the rate of growth in waste arisings, and the North West has a policy to reduce increases in waste arisings to zero. However, waste disposal and management capacity continues to be an issue, and will do until new facilities are constructed.

15.7.72 The baseline Section (Section 15.6) discusses the current estimates of landfill capacity within the North West Region. It assumes that no new capacity comes on stream before this 2015 ~~2011~~, and that continuing waste reduction strategies are ineffective in the future in the Region (i.e. it presents a worst case scenario). The estimated remaining landfill capacity within the Region in ~~2011~~ 2015 is identified in Table 15.19 below. Capacities at inert landfills have not been included in this calculation. This is because the anticipated quantities generated during the Project destined for these sites will be relatively low in magnitude, but it would be the responsibility of the Project Company ~~Concessionaire~~ to identify and arrange the final destinations for disposal.

Table 15.19 - Assumed Landfill Capacity Remaining Within the North West Region upon Commencement of the Project in 2015 ~~2010~~

Landfill Type	Annual Licensed Capacity in North West Region (m^3)	Total Estimated Capacity for North West Region in ~~2011~~5 (m^3)
~~Non-hazardous~~ Non-inert	-	~~29,800,000~~ 47,700,000
~~Hazardous Merchant~~ Restricted User*	~~428,500~~	~~4, 950,000~~ 5,330,000

NOTE *Restricted User is a specific term used in licensing waste management facilities where use of the facility is restricted to specific users.

15.7.73 Of the ~~153,620~~ 163,440m^3 of waste arisings anticipated to be generated from the Project, approximately ~~49,500~~ 50,020m^3 will be classified as hazardous and approximately 113,420 ~~104,120~~ m^3 as non-hazardous.

15.7.74 In terms of hazardous waste arisings from the Project, it has been calculated that approximately ~~12,375~~ 12,505m^3 are generated per year (assuming a 4 year construction period). Total landfill capacity for this type of waste is calculated as approximately 5.33 ~~4.95~~ million cubic meters., ~~and annual licensed input capacity is approximately 428,500 m^3 per year at 2011~~ at 2015.

15.7.75 Current disposal rates for hazardous waste are estimated at approximately ~~143,324~~ 71,000 tonnes per year (approximately 142,000 m^3 ~~estimated by factoring up 2005 disposal rates~~). The volume of hazardous waste generated per year by the project (estimated in 15.7.74 as 12,505m^3) is a small proportion of the landfill capacity available, and only increases the annual generation of hazardous waste by 8.8% per year for the construction period. This means that ~~there will be approximately 285,126m^3 annual capacity available in the north west region,~~ significantly more that that required for the Project. Therefore, this analysis shows that there will be sufficient capacity in the waste management system in the North West Region to accommodate hazardous wastes produced by the Project, and therefore no significant impact is predicted.

15.7.76 In terms of non-hazardous waste, the analysis undertaken in this ES has estimated that, if no new capacity comes on stream and waste reduction activities promoted by UK Government are ineffective, landfill capacity in the North West Region for non-hazardous waste in ~~2011~~ 2015 will be approximately ~~29.8~~ 47.7million cubic meters at the start of the project. Although it appears that there will be sufficient capacity available within the North West

Region to accommodate non-hazardous waste arisings from the Project, this cannot be guaranteed to be the case by the time the Project starts as projected data on the annual licensed input capacity is currently unavailable. However, the Project is anticipated to generate less than 1% of the current annual disposal volume in the Region, although the importance of the receptor has been assigned as moderate due to the fact that void space will permanently be filled with a moderate magnitude. Therefore, the effect is only a low negative significance.

15.7.77 Information from the EA shows that they are unaware of any new landfill capacity proposed in the North West ~~Region.~~

15.7.78 It should be noted that the above analysis is a worst case scenario. It is expected that waste recycling and waste reduction strategies for components of the non-hazardous waste streams will be successful over the Project construction period.

15.7.79 Because of the financial penalties brought in under the Landfill Allowance Trading Scheme (LATS) requirements (a requirement for all waste disposal authorities to reduce the amount of biodegradable waste they send to landfill, reducing in quantity annually), additional capacity for diverted biodegradable waste should continue be provided by ~~2009~~2015. The LATS targets primarily affect the direct landfilling of biological waste, and places fines on Local Authorities that do not meet targets for the diversion of biological waste (primarily household waste) from Landfill by 2009. Most Waste Disposal Authorities, like Halton, ~~are in the process of~~ ~~developing~~ continue to divert waste from landfill by developing new waste treatment facilities waste treatment facilities, such as Energy-from-Waste Plant (EfW) or Mechanical Biological Treatment recycling facilities, to meet these targets. This would have the effect of reducing the volume of the household waste component of the non-hazardous waste stream, thereby increasing landfill lifetimes. ~~RPG13 includes preliminary conclusions on the nature of regional waste management facilities required. This favoured a combination of composting and EfW facilities~~. ~~The recent draft RSS for the North West region (2006) is less decisive and advocates a range of facilities based on BPEO and the Waste Hierarchy~~. The decision on the type, location and technology of waste management facilities which will be developed will be decided through the development of the Joint Merseyside waste Development Plan Document. Given this, and the time required to deliver major regional waste management facilities, it is unlikely that these will be delivered over the lifetime of the Project. It is possible that new merchant facilities could take some of this required capacity. However, none have been submitted for planning permission so far, and so it is unlikely that these will significantly affect non-hazardous waste inputs to landfill in the North West ~~Region~~ over the Project timescale.

Total 'Worst-case' Transportation Miles Generated During the Project

15.7.80 It is predicted that the Project will generate approximately ~~153,620~~ 163,440m^3 of waste, which cannot be reused on site of which ~~104,120~~ 113,420m^3 is predicted to be non-hazardous in nature, with the remaining amount (~~49,500~~ 50,020m^3) assumed to be potentially hazardous and requiring a separate disposal location.

15.7.81 Assuming a 'Worst-case' scenario whereby all waste arisings are disposed in landfill, and all at the furthest facility from the construction compounds the number of vehicle miles across the region can be calculated. For non-hazardous waste, the furthest is Distington Landfill site, situated 125.3 miles from the Project Corridor. For hazardous waste the furthest is Eardswick Hall Landfill site, situated 27.3 miles away from the Project Corridor at Minshall Vernon, near Crewe. Both landfills are within the North West region and so meet the Regional self sufficiency policy.

15.7.82 To transport the waste to these landfill sites, it has been assumed that 'Tipper lorries' would be used, which are capable of accommodating approximately 15m^3 of material in each load. The following number of anticipated vehicle loads required and the total vehicle miles likely to be generated to dispose of the waste to the aforementioned landfill sites from the arisings generated throughout the Project are summarised in Table 15.20 below.

Table 15.20 - Anticipated 'Worst-case' Transport Miles Generated Through the Movement of Waste During the Project

Waste Classification	Anticipated Total 'Tipper lorries' Required to Transport Waste Arisings Throughout the Project	Anticipated Daily 'Tipper lorries' Required to Transport Waste Arisings (based on a 5-day working week over 40 months (865 days))	Anticipated Total Vehicle Miles Generated (Round-trip journey)	Anticipated Daily Vehicle Miles Generated (Round-trip journey based on a 5-day working week over 40 months (865 days))
Non-hazardous	~~6,941~~ 7561	~~8.0~~ 8.7	~~1,739,415~~ 1,894,787	~~2,011~~ 2,191
Hazardous	~~3,300~~ 3335	~~3.8~~ 3.9	~~180,180~~ 182,091	~~208~~ 211
TOTAL	**~~10,241~~ 10,896**	**~~11.8~~ 12.6**	**~~1,919,595~~ 2,076,878**	**~~2,219~~ 2402**

15.7.83 The total mileage has increased since the Orders ES. However, Chapter 16 has reconsidered the transport of construction materials, including waste materials, across the region, and has concluded the impact of these is not significant.

15.7.84 The figures above are based on the 'Worst-case' scenario that waste arisings will be sent to the furthest landfill sites in the North West region. In fact, it is likely that the Project Company ~~Concessionaire~~ will chose to use landfills as close to the Project as possible, and it should be remembered that there is a hazardous waste landfill at Randle Island, inside the Project Corridor.

Spillage of Waste Arisings During Transportation

15.7.85 There is a very slight risk of waste arisings spilling out of the tipper lorries onto the road network during transportation of the loads for final treatment/disposal. This has the potential to create an unsightly mess on the carriageway, and if a significant quantity were to be spilt (which would be highly unlikely with the proposed mitigation measures put in place) there is a chance of contamination of nearby watercourses if the material is washed off the carriageway. In practice, all vehicles used will be sheeted to restrict losses of wastes from them, and will use wheel washes prior to moving onto the public highway to minimise any transfer of waste onto the highway. This is considered a low risk to receptors of moderate importance and low magnitude, and so a low effect significance (ie the assessment of significance has not changed from the Orders ES).

Operational Phase Effects – Project Corridor

15.7.86 The following activities are anticipated to result in wastes being generated during the operation of the Project:

~~a. "Office" type wastes from the toll booths and welfare facilities;~~
b. Maintenance wastes from the highway infrastructure; and
c. Maintenance wastes from landscaping provided as part of the Project.

15.7.87 In general, the volume of wastes generated during operation is very small in relation to those generated during construction~~, and~~. Indeed, the volumes of waste will reduce as a result of the removal of the toll booths from the Project. ~~i~~It is predicted that there would be no significant effects ~~along with low magnitudes~~ anticipated during the operational phase.

Office Wastes from Toll Booths

15.7.88 This type of waste will no longer be generated as the Project does not include toll booths.

~~15.7.89 Office Type Wastes will contain biodegradable fractions, and so will be classified as biological non-hazardous waste. It will be collected and stored in "wheelie bin" type containers and will be removed on a regular (probably weekly although this is to be arranged under a commercial agreement by the Concessionaire) basis. For the purposes of this assessment it has been assumed that this will go to a suitably licensed landfill by a licensed contractor under a consignment note system.~~

~~15.7.90 The volume of waste generated is estimated as 58m^3 per year, which is only 1.1m^3 per week. This would require less than one refuse collection vehicle load per week and so is considered insignificant in terms of impact on the Project Corridor.~~

15.7.91 The use of open road tolling would require administrative and service centres for the tolling equipment. These may be in close proximity to the New Bridge or elsewhere. In both cases, existing buildings will be used, and waste generated from them will not form part of these proposals having been assessed during the planning process for those buildings. Should the Project Company decide to construct its own, new, offices, these would be subject to a separate planning application, and waste generation from this property would be considered under that application. Therefore, waste generated from the administration and servicing of the open road tolling is excluded from this assessment.

Highway Infrastructure Maintenance

15.7.92 The highway infrastructure provided as part of the Project will have to be maintained. The further applications do not affect the maintenance required. In terms of consumables, such as lamps, the volume generated per year is very small. For lamps there are ~~949~~ approximately 950 on the Project and these are predicted to be replaced on a three year programme. This generates only 1.8m^3 of waste every three years (0.6m^3 per year). These materials will be placed in waste containers and transported off site by licensed contractors for recycling at facilities in the North West Region. This will require a single vehicle movement every three years, and so is predicted to be not significant to local receptors.

15.7.93 Other maintenance activities will possibly be required. However, major replacement of surface materials is unlikely to be required over the first concession period. Any surfacing materials generated by small scale works during the concession will be classified as hazardous waste and sub-base materials as inert non-hazardous waste. Any small scale maintenance will not result in significant waste management traffic movements and licensed contractors will be used for the transport, treatment and handling of these wastes. It is not predicted that these works will result in significant waste management effects on local receptors.

Landscaping Maintenance

15.7.94 The Project includes the delivery of ~~34.7~~ 50.2Ha of landscape planting. This will be maintained on a regular basis. Calculations show that approximately ~~31.2m^2~~ 45.7m^3 of landscape maintenance material will be generated per year. This material will be classified as biological non hazardous waste and will be transported off site by licensed contractors to

a suitable composting or Material Recovery Facility in the North West ~~Region~~. This would generate approximately ~~three~~ four vehicle movements per year. This is not anticipated to be significant in local receptor terms.

Operational Phase Effects – North West Region

Regional Waste Capacity

15.7.95 Due to the small volumes of material arising during operation, it is not considered likely that this will have an impact on the regional waste infrastructure.

Policy Review

15.7.96 ~~Joint Merseyside Waste Development Plan Document is an emerging plan which will replace specific areas of the Halton UDP after 2011. Specific information and decisions on policies have not been published to date and so an assessment against these is not possible at this stage. However, the Concessionaire will be required to adopt waste management practices which are compliant with the policies they develop.~~ The North West England Regional Spatial Strategy to 2021 was published in September 2008 and the Updated Regional Waste Strategy for England's North West was published in 2010.

15.7.97 ~~Policies EQ4 and EQ5 within the Regional Spatial Strategy for the North West Region (RPG13), require local waste authorise to adopt National legislation and policies within their Local Waste Plans. The policies will not be applied directly to the Project, rather they will be applied through the emerging Joint Merseyside Waste Development Plan Document. However, the Policies also reference the waste hierarchy, use of BPEO, Regional Self Sufficiency and the proximity principle, which will apply to the Project.~~ The proposed mitigation will require the Project Company to incorporate as much reuse, and recycling of wastes generated as possible, reducing the amount of waste that will be sent directly to landfill. This is in accordance with the policies given in the above plans.

15.7.98 The reuse of excavated material reduces waste volumes that would have to be removed for off-site disposal. This meets both the aims of the waste hierarchy and BPEO. In addition, the use of local landfills for the remaining material meets the proximity principle and the regional self sufficiency principle. Therefore, the waste management proposals mentioned above meet the aims of these policies.

15.7.99 The ~~emerging Halton~~ UDP (2005) is in the process of being replaced by the LDF. However, the published documents in the LDF have not been adopted and so are not formal policy. In the interim, the Councils UDP policies are protected. The UDP generally reuses policies developed for the 1996 Halton Waste Plan and supplements these with commentary on more recent government policies, such as the Proximity Principle, Waste Hierarchy and other elements of the National Waste Strategy 2000. The majority of the policies are intended to control the management of household waste arisings and the development of new waste infrastructure. Policy MW17 requires major development projects, including transport schemes, to provide facilities for source segregation and storage for different types of waste stream during the construction phase of a development. It also encourages recycling of waste. Therefore, the mitigated waste management strategy will meet the requirements of ~~with~~ Policy NW17.

Table 15.21 - Assessment Table for Effects Arising from the Management of Waste Arisings on the Project

Effect	Receptor and Importance	Nature of Effect	Significance (High, Moderate, Low and Positive / Negative)
Do Nothing			
Construction Phase			
Uncontrolled release of contaminants to controlled Water	Site Operatives, Local Community, Water bodies High Importance	Negative Short Term Temporary Direct Moderate Magnitude	Moderate Negative Significance
Generation of dust from handling of wastes	Site Operatives, Local Community Moderate Importance	Negative Short term Temporary Direct Moderate Magnitude	Low Negative Significance
Generation of odours from handling of wastes	Site Operatives, Local Community Moderate Importance	Negative Short Term Temporary Direct Low Magnitude	Not Significant
Consumption of available landfill and treatment capacity	Waste Management Infrastructure Moderate Importance	Negative Short term Permanent Direct Moderate magnitude	Low Negative Significance
Movement of vehicles across region to transport waste arisings as far as practicable	Site Operatives, Local community, Local and Regional Transport Network Moderate Importance	Negative Short Temporary Direct Low Magnitude	Not Significant
Spillage of waste arisings onto highway	Local community, Local and Regional Transport Network Medium Importance	Negative Short Temporary Direct	Low Negative Significance

Effect	Receptor and Importance	Nature of Effect	Significance (High, Moderate, Low and Positive / Negative)
		Low Magnitude	
Operational Phase			
~~Generation and management of 'office' type wastes from toll booths~~	~~Local Community, Local Waste Management Infrastructure Moderate Importance~~	~~Negative Short term Temporary Direct Low Magnitude~~	~~Not Significant~~
Generation and management of maintenance wastes from the highways infrastructure	Local Community, Local Waste Management Infrastructure Moderate Importance	Negative Short term Temporary Direct Low Magnitude	Not Significant
Generation and management of landscape maintenance wastes	Local Community, Local Waste Management Infrastructure Moderate Importance	Negative Short term Temporary Direct Low Magnitude	Not Significant

15.8 Mitigation, Compensation, Enhancement and Monitoring

15.8.1 For the purposes of waste management, mitigation measures can be considered to be either management issues, such as the proposed CEMP; and physical measures.

15.8.2 ~~No enhancement proposals are included for waste management as the reference design already includes as much reuse of excavated materials as possible.~~ The CL:aire Protocol was published as "The definition of Waste: Development Industry Code of Practice" in March 2011. This document provides a code of practice to developers in the assessment and reuse of materials, particularly where these materials are contaminated. The protocol argues that any materials generated during site works can be re-used, with or without pre-treatment, where they can be shown to meet four criteria. These comprise the following:

a. Where they do not compromise human health or the environment;
b. Where they suitable for use with or without pre-treatment;
c. Where there is a certainty of use; and
d. Where the quantity of material does not exceed that required for the project.

15.8.3 Clearly this protocol allows the re-use of materials where they can meet the four criteria with or without pre-treatment. This would allow the Project Company to re-use material which has been classified as hazardous waste where pre-treatment would enable them to meet the four criteria above. The amount of material which would be classified as hazardous waste in this assessment but which could, with pre-treatment, be recycled as engineered fill is difficult to predict at this stage and without specific testing. Therefore, as a worst case scenario, the authors have assumed that all material classified as hazardous waste would continue to be removed for disposal.

15.8.4 As part of the management of environmental impacts, the Project Company will implement the requirements of the Construction and Operation Code of Practice for Environmental Management (COPE). This includes a specific section on Waste, concentrating on the SWMP, roles and responsibilities for waste management, waste handling and storage and monitoring. The COPE is described in Chapter 3 of the Further Applications ES.

15.8.5 Legal requirements have been assumed to be required, and so are not included in the mitigation Section. This includes the ~~requirements for~~ SWMP which is now a legal requirement for projects of this scale. ~~Although these are not currently legally required, they will be by the time the Project construction begins~~.

15.8.6 The SWMP approach provides a framework for incorporating all of the relevant information concerning the management of Project wastes in one document, including overarching strategy commitments, specific waste and recycling objectives, waste data, management options, monitoring and review. In addition, the SWMP can incorporate the ~~concessionaire's~~ Project Company's approach to the CL:aire: protocol. The Plan will be developed as a stand alone document, but will also form part of the broader construction planning framework, for example, the Environmental Management Plan (EMP), which will be secured by condition.

15.8.7 Prior to construction the ~~Concessionaire~~ Project Company will prepare a detailed design for the Project. Consequent to this the ~~Concessionaire~~ Project Company will be required to prepare an EMP. This will include a series of key environmental performance indicators. These will be used in value engineering activities to reconsider aspects of the design. Waste management issues will be a major part of this assessment. The aims will be to minimise the amount of wastes generated by increasing reuse or reducing excavations, and to recycle materials such as concrete as secondary aggregates in the Project. However, the results of this process cannot be predicted at this time, but they are anticipated to reduce the effects on the Project.

Key Mitigation Measures for the Construction Phase

15.8.8 The key management measures to be employed as part of mitigating effects from waste management activities will be the CEMP. This is a subset of the EMP covering only the construction phase. As part of the CEMP the ~~Concessionaire~~ Project Company will prepare a Waste and Resources Management Plan. This will detail all aspects of the Project related to the management of wastes on the Project. The plan will include descriptions of the following:

a. Ticketing of all loads of material generated on site. This will include a description of the location of arising and details of the nature of the material;
b. Transportation arrangement to be used, including sheeting of all vehicles carrying contaminated wastes, or suspected contaminated wastes;
c. Storage requirements for wastes in the quarantine, pre-treatment and general storage areas on the compound;
d. Transport arrangements for materials exported from site, including sheeting requirements, routes to be used, waste transfer notes, WAC test results and destination;
e. Pre-treatment of hazardous waste materials to extract ~~non-hazardous waste~~ material for re-use on site, or export to off site recycling facilities;
f. Engagement with the local waste management industry to divert Project non-hazardous waste from landfill to local recycling facilities; and
g. Any special requirements or difficult wastes.

15.8.9 In addition to the Waste and Resources Management Plan, there will be other Management plans which interact with waste management. These include:

a. Water and Hydrodynamics Management Plan;
b. Air Quality Plan;
c. Contamination and Remediation Management Plan;
d. Landscape and Visual Management Plan; and
e. Pollution Control and Contingency Management Plan.

15.8.10 The aspects from these plans which interface with waste management include:

a. Dust suppression measures from stockpiles (including waste material stockpiles);
b. Surface water runoff systems from stock pile areas;
c. Control of wheel wash waters;
d. Pollution control measures, including the provision of spill kit and emergency procedures;
e. Monitoring measures proposed; and
f. Remediation methods to minimise the generation of hazardous waste, or reduce the activity of wastes generated.

15.8.11 In addition to the above, the ~~Concessionaire~~ Project Company will be required to provide training, in the form of an environmental induction and tool box talks, to all staff working on site. This will include training on waste matters.

15.8.12 The physical measures which could be used to minimise effects from waste management operations should include:

a. Use of bunded hard surfaces on the waste quarantine and waste pre-treatment areas;
b. Use of bunding for the waste storage areas;
c. Storage of wastes in locations on the compounds which take account of the location of local receptors;

d. Sheeting of waste stockpiles in the quarantine and pre-treatment areas;
e. Sheeting of vehicles carrying waste materials across and off site;
f. WAC testing of waste materials to fully understand the nature of the material and handling requirements (including reducing double handling of wastes); and
g. Signage and access control to waste storage areas.

15.8.13 These ~~should~~ could be secured by condition.

Engagement with the Local Waste Management Industry

15.8.14 The ~~Concessionaire~~ Project Company will be encouraged to engage early with the local waste management industry to identify alternative measures to manage wastes, other than landfill. Examples of this include:

a. Use of ~~the~~ facilities such as the Ellesmere Port EfW plant to treat galligu containing wastes (subject to WAC analysis). This will reduce both the volume and reactivity of the wastes, although the heavy metal content of ~~waste~~ the resultant ash may still require it to be classified as contaminated;
b. Use of local remediation companies to recover products from groundwater, either using mobile treatment licenses or permanent facilities ~~such as the Biffa/Biogene plant at Risley~~;
c. Use of local recycling facilities for unwanted non-hazardous waste topsoils, concrete and geological materials if these occur;
d. Use of local compost facilities for vegetation removed during site clearance; and
e. Recovery of metals, signs, old street furniture and cabling via local recycling facilities.

Waste Hierarchy and Proximity Principal

15.8.15 The successful ~~Concessionaire~~ Project Company will be required to adopt the Government's Waste Hierarchy and Proximity Principle. This will mean that the ~~Concessionaire~~ Project Company will be encouraged to reduce waste through identifying opportunities to minimise, reuse, recycle and seek methods of treatment/disposal for wastes other than landfill through their use of the Claire: protocol, the SWMP and CEMP. Applying the proximity principal to the management of waste ensures that avenues are explored to treat and dispose of waste arisings as close as possible to the origin of the wastes. Through identifying and negotiating gate fees with nearby site operators, the will not only ~~Concessionaire~~ Project Company reduce the number of vehicle miles anticipated throughout the Project and outlined in Table 15.20, but will also reduce their overhead costs. At this stage, it is not possible to assess the likely reduction in vehicle miles that will occur over the regions roads as it will be a decision of the ~~Concessionaire~~ Project Company on the balance between, minimisation, reuse or treat/dispose, and the actual sites used, so at this stage the degree to which waste arisings will be reduced below the levels assumed earlier in this assessment cannot be precisely determined.

Storage and Dust Suppression Techniques

15.8.16 Nuisances such as dust, noise and odours could be controlled through the application of Best Available Techniques (BAT) for mobile plant and processing equipment associated with waste management activities on the Project site.

15.8.17 Monitoring of liquid and dust levels will be undertaken on a frequency agreed with the local authority in all storage areas, which would be controlled through the provisions of the CEMP.

15.8.18 The design of the site compounds are currently not available, so it is difficult to quantify the area of the compound that would be allocated for the storage of waste arisings. It is a requirement to 'pre-treat' waste streams prior to disposal at landfill. This means that the

~~Concessionaire~~ Project Company will be required to accommodate separate receptacles for each waste stream. It would be advantageous for the ~~Concessionaire~~ Project Company to undertake waste segregation activities at source, with immediate removal from site, which would avoid double-handling, reduce the potential for odours and free-up space on the compound for storage of other wastes if necessary.

15.8.19 It is possible that some arisings will require a prolonged period of time to be stored on the compound, especially where these are of unexpected nature and time is required to identify appropriate management and disposal. This may be due to when waste destined for disposal is 'orphaned' and requires placement in a quarantine area. The ~~Concessionaire~~ Project Company would have to provide mechanisms for the control of dust and liquid run-off

Different Approaches for Homogenous and Mixed Waste Streams

15.8.20 There are three broad categories of waste arisings, each of which may provide different mitigation options:

a. Larger volume, homogenous uncontaminated waste streams (such as non-hazardous soils);
b. Large Volume mixed contaminated materials (such as demolition material from buildings and waste historically associated with the alkali chemical industry in the area); and
c. Smaller volume or mixed waste streams (such as metals and plastics).

15.8.21 The management approach to these groups will ~~varies~~ be defined by the Project Company, but will vary due to the nature and volume of the wastes. The paragraphs below set out some considerations and recommendations for management of these three groups of materials.

15.8.22 The reuse of such materials, ~~once generated, is difficult. Mitigation measures have already been taken into account in the reference design and minimisation of these wastes has been achieved by the use of an embankment over Catalyst Park and minimisation of dig over the former St Michaels Golf Course. However, significant volumes of these materials will be generated~~ will be defined by the use of the CL:aire: Protocol criteria. For the purposes of this assessment, it has been assumed that all material classified by the Hazwasteonline™ tool as hazardous waste will be removed as waste. However, it is clearly sustainable for the Project Company to reuse as much material generated by the scheme as possible. This would reduce vehicle mileage during construction (both waste trucks removing waste and import of engineered fill materials to replace those removed), as well as reducing the local environmental issues related to such traffic, such as noise and air quality. However, where material cannot be reused on site, then the sustainable solution would be to reuse local waste facilities wherever possible. The possible use of the Randall Island (Wigg Island) hazardous landfill site will be investigated for waste streams that have no alternative option but to require landfilling primarily due to their hazardous nature. On site storage and double-handling should be minimised. It is essential that information on total tonnages and classification (inert, hazardous and non-hazardous) is continually revised during the design development and construction planning stage.

15.8.23 A range of waste streams will be generated as a result of the construction process, spoilage, demolition and other site activities. They may be instantly mixed, as in the case of building materials ~~soft~~ soil-stripping, or may be segregated at source, as in the case of de-construction of a steel framed building, lighting columns or signage. While these materials may be smaller in volume, the broad range of materials can mean that significant space is required within the site compound for segregation activities, different skips and receptacles, bulking and storage, reprocessing and recycling. In some instances, it will be preferable to

take the materials off-site for sorting and bulking, possibly in a dedicated project waste management centre (to be set up during the detailed design phase if required), or through a contract with a local third-party recycler(s).

15.8.24 Although smaller in volume, particular material streams, such as steel or aluminium may have a relatively high secondary resource market value, which will provide an economic driver to separate and manage in line with the waste hierarchy. Other materials streams may have recycling potential, depending on the facilities that operate within the local or regional area and the market price for the materials, which can be volatile, subject to global markets and demand.

15.8.25 Where recycling is considered to be a viable option, consideration should be given to early negotiations with recycling partners, so that the provider can plan for expected volumes and possibly invest in new or specialist equipment as appropriate, for example, it may be worth investing in a mobile 'construction and demolition waste materials recovery facility' for a project the size of the Mersey Gateway Project. It is recommended that expected quantities are revised as the Project develops and expected site wastes are estimated as accurately as possible during the detailed design stage in order to provide potential recycling partners with a basis for quotations and capacity planning.

Good Practice Guidance

15.8.26 There is a wide range of good practice benchmarking that (in correlation with the adoption of a SWMP and CEMP) will be effective against mitigating many of the effects associated with the Project. The ~~Concessionaire~~ Project Company will be encouraged to adopt good practice benchmarking as a standard procedure throughout the Project, and enhance where possible when opportunities to do so arise. The good practice benchmarking procedures that would be relevant to the Project are listed and discussed below.

15.8.27 Good practice benchmarking involves reviewing industry practice, case studies and relevant guidance documents and performance data to identify practicable and effective measures for improving resource efficiency, implementing mitigation measures and achieving Project waste objectives.

15.8.28 A range of good practice guidance exists for the management, monitoring and reporting of construction waste. Key sources of information include:

a. The Waste and Resources Action Programme (WRAP) Construction Sector resources (www.wrap.org.uk/construction/)[13];
b. The Building Research Establishment (BRE) SMARTWaste Benchmarking initiative and DEFRA funded project (www.smartwaste.co.uk/benchmarking.jsp)[14]; and
c. Envirowise Construction Sector advice (www.envirowise.gov.uk/skip)[15].

~~15.8.29 National initiatives such as the WRAP (Waste & Resources Action Programme) Construction programme and the DTI SWMPs are helping planners and contractors to identify opportunities for better waste management performance. SWMPs now have a statutory basis under the Clean Neighbourhoods and Environment Act 2005 (tied in with the need to tackle fly-tipping associated with the construction industry through systematic controls and tightened site discipline), with SWMPs to become a legal requirement for larger construction projects in April 2008.~~

15.8.30 The Project provides an opportunity for the Client and the ~~Concessionaire~~ Project Company to demonstrate better, more sustainable, ways of managing construction waste. To achieve this, a policy commitment and specific waste objectives for the Project should be identified early and endorsed from the top down.

Construction Site Discipline

15.8.31 Roles and responsibilities will be clearly allocated and identified In the EMP. Waste management activities should be taken into consideration in the site layout to minimise spoilage and damage to materials by site vehicles. Ensure that adequate space is allowed for the sorting and storage of materials, and that space is allowed for the safe handling of wastes and inspection and labelling of hazardous materials. Awareness and training should be incorporated into the site induction/training programme as appropriate and health and safety issues relating to waste management should be included in the health and safety site induction as required.

Transportation of Waste Arisings

15.8.32 Mitigation measures associated with the transportation of waste arisings as part of the overall construction phase are discussed in detail in Chapter 16. It is difficult to quantify how significant an effect the transportation of waste arisings will have on the overall Project, but it would be the responsibility of the ~~Concessionaire~~ Project Company to ensure that the Proximity Principal is adopted.

15.8.33 In addition, once tipper lorries are fully loaded, there is a possibility of spillage of the load onto the carriageway during transportation. This is mitigated as far as possible through the installation of a sheeting canvas, which would secure the load tightly.

Monitoring Requirements

Continued Monitoring of Expected Waste and Material Arisings

15.8.34 Waste volumes and types will continue to change as the Project progresses, particularly through the detailed design development and construction planning stages of the Project and by the adoption of the CL:aire: protocol by the Project Company ~~Concessionaire~~. Waste data should continue to be collated in a master database and updated to take into account changes to the design of construction methods which affect the Project waste streams. These changes can then be incorporated into the revised SWMP.

Monitoring of Storage and Handling Provisions and Duty of Care

15.8.35 Hazardous waste containers and other storage arrangements should be checked and monitored in line with legislative requirements (e.g. for waste oil) and health and safety procedures, which should be identified in the health and safety assessment. An audit programme for wastes should be integrated into the general environmental audit programme under the CEMP.

15.8.36 As outlined in Section 15.4, the waste management Duty of Care requires waste to be monitored from cradle to grave using specified procedures for waste description, transfer and treatment and disposal. These monitoring requirements might typically be incorporated into the Project's Operations Control Documentation or other management systems and should fulfil all of the requirements set out for waste transfer and notification under the Duty of Care Regulations.

15.8.37 All materials and loads should be ticketed during construction.

On-Site Monitoring for Nuisance Related to Waste Management Activities

15.8.38 On-site sorting and segregation operations and recycling processes using mobile plant will require monitoring to control effects associated with nuisance, such as dust, noise or vibration. These monitoring requirements will be identified as part of the waste management

licensing or permitting procedures and normally specified under the terms or conditions of the licence or permit. Under the Waste Framework Directive regulators are required to undertake appropriate periodic inspection of authorised waste management facilities, including mobile plant where applicable. The EA uses the Environmental Protection Operator Pollution Risk Appraisal procedure to assess the risks that a waste management operation poses to the environment and identify and prioritise monitoring requirements and risk control measures.

Monitoring of Specific Activities

15.8.39 Some activities such as piling operations may require specialist monitoring as part of pollution control measures.

Construction Phase Monitoring and Reporting

15.8.40 Monitoring requirements are a key feature of the SWMP, and CEMP. Construction phase waste reporting should be embedded into the tender requirements, contractor/subcontractor's terms of contract and performance monitoring systems.

15.8.41 Site waste arisings should be monitored against agreed waste management objectives, using, for example, KPIs, which can be incorporated into contractual agreements or linked with positive or negative incentive schemes. Performance should be monitored by an independent waste specialist on behalf of Halton BC ~~the Client~~ or Project Company ~~Concessionaire~~ and remedial action taken if necessary, to ensure that strategic waste objectives are carried forward and delivered on site.

15.8.42 According to WRAP 'Regular reporting from contractors will help procurers monitor progress towards achieving the targets set at the outset of the Project, as well as enabling procurers to take remedial action if necessary'. Good practice guidance suggests that:

a. KPIs must be selected to monitor the ~~Concessionaire~~ Project Companies performance against the Project waste strategy and objectives;
b. KPIs and reporting requirements should be incorporated into the contract documents;
c. Performance should be monitored and weaknesses should be identified and addressed, and remedial action taken if necessary; and
d. Consideration should be given to including positive or negative incentive schemes to encourage contractors to meet the Project waste objectives.

15.8.43 Some potential KPIs which may be used are illustrated in Table 15.22. The actual KPI's used will be negotiated between HBC and the ~~successful Concessionaire~~ Project Company.

Table 15.22 - An Illustration of Suggested Waste Management

Key Performance Indicators for Construction

	Indicator	Measurement	Objective
KPI 1	Tonnage of waste and material arisings	Monthly and cumulatively against overall Project value and total man-hours	To provide an incentive to minimise waste at source
KPI 2	Tonnage of hazardous waste arisings	Monthly and cumulatively against overall Project value and total man-hours	To minimise hazardous waste arisings and demonstrate the effectiveness of the ~~concessionaires~~ Project Company's approach to the CL:aire protocol.
KPI 3	Tonnage reused, recycled or recovered on-site	Monthly and cumulatively against overall Project value	To provide an incentive to minimise the off site export of materials. To encourage diversion from landfill and demonstrate the effectiveness of the ~~concessionaires~~ Project Company's approach to the CL:aire protocol.
KPI 4	Tonnage of reused, recycled or recovered off-site.	Monthly and cumulatively against overall Project value	To provide an incentive to promote onsite reuse and recycling.
KPI 5	Tonnage disposal	Monthly and cumulatively against overall Project value	To highlight the proportion of waste disposed of
KPI 6	Cost of reuse, recycling or recovery	Monthly and cumulative cost per £100k	To highlight the direct cost of reuse, recycling or recovery
KPI 7	Operative awareness	No. of operatives that have undertaken waste awareness training against total no. of staff	To encourage comprehensive training and awareness among site operatives at all grades.

Interim and Post-Completion Review

15.8.44 Interim reviews of performance indicators against the original Project waste objectives are a helpful way of monitoring progress against the waste objectives and identifying whether remedial action is necessary to amend site procedure and ensure the effective delivery of the necessary mitigation measures.

15.8.45 According to good practice guidance and the DTI Code of Practice on SWMPs a post-completion review is recommended to identify and share Project successes and lesson learned.

Compensation

15.8.46 ~~As the scale of~~ The Mersey Gateway Project will inevitably generate waste arisings. The potential quantities involved and the effects that would be expected to arise have been identified. After applying mitigation measures to all the effects identified, residual effects will exist, which are discussed in Section 15.9. It is felt that applying monetary compensation of any kind to sensitive receptors on top of the measures already discussed will not reduce the residual effects further, and will not be considered further in this Chapter.

15.9 Residual Effects

Policy Assessment

15.9.1 The Joint Merseyside Waste Development Plan Document is an emerging plan which will replace specific areas of the Halton UDP after 2011. North West England Regional Spatial Strategy to 2021 was published in September 2008 and the Updated Regional Waste Strategy for England's North West was published in 2010. ~~Specific information and decisions on policies have not been published to date and so an assessment against these is not possible at this stage. However, the Concessionaire will be required to adopt.~~

15.9.2 ~~In terms of Policies EQ4 and EQ5 within the Regional Spatial Strategy for the North West Region (RPG13),~~ The proposed mitigation will require the ~~Concessionaire~~ Project Company to incorporate as much reuse, and recycling of wastes generated as possible, reducing the amount of waste that will be sent directly to landfill. This is in accordance with the ~~RPG~~ policies given in the above plans.

15.9.3 Landfill disposal within the North West Region has been used in Section 15.8, although the reference design already includes as much reuse of materials as possible. Therefore the Project already meets the policies on recycling, regional self sufficiency and the proximity principle. However, landfilling of the non-hazardous wastes would not be the BPEO and would be the lowest level on the waste hierarchy. Therefore the proposal to landfill ~~all~~ any non-hazardous waste would conflict with these aims. Should the ~~mitigation measures be implemented, a proportion of the non-hazardous waste stream would be diverted to recycling operations within the North West Region~~ CL:aire: protocol be implemented, all material suitable for re-use would be reused on site. This would include both potentially hazardous and non-hazardous materials. Calculations show that there is a need to import over 330,000 m^3 of materials to complete the project construction. Any material generated during earthworks and demolition which could be reused would be utilised accordingly. This would fully meet ~~meeting~~ the BPEO test.

15.9.4 The Halton UDP (2005) is in the process of being replaced by the LDF. However, the published documents in the LDF have not been adopted and so are not formal policy. In the interim, the Halton UDP policies are saved. The UDP generally reuses policies developed for the 1996 Halton Waste Plan and supplements these with commentary on more recent government policies, such as the Proximity Principle, Waste Hierarchy and other elements of the National Waste Strategy 2000. The majority of the policies are intended to control the management of household waste arisings and the development of new waste infrastructure. Policy MW17 requires major development projects, including transport schemes, to provide facilities for source segregation and storage for different types of waste stream during the construction phase of a development. It also encourages recycling of waste. Therefore, the mitigated waste management strategy will meet ~~with~~ the requirements of Policy NW17.

Construction Effects – Project Corridor

15.9.5 The use of the CL:aire: Protocol, the SWMP and the Materials and Waste management plan combined with physical and management measures for the management of wastes on construction sites and during transport will have the following effects:

a. Reduction in the amount of waste generated and optimisation of the re-use of material on site, reducing vehicle movements for waste management and material importation;
b. Reduction in the potential for contaminated dusts to be raised from waste stockpiles;
c. Reduction in the likelihood for contaminated liquids to be accidentally released from waste stockpiles;

d. Reduction in the likelihood that wastes will be carried onto the local road network on the wheels of vehicles;
e. Reduction in the potential for spillages to occur during transport of waste; and
f. Reduction in the likelihood of the use of inappropriate storage, handling or disposal of waste materials.

15.9.6 This will lead to a reduction in the effects on local receptors within the Project Corridor. At present it is not possible to quantify these reductions in effects.

Construction Effects – North West Region

15.9.7 The use of the CL:aire: Protocol approach will lead to the re-use of material which would formerly have become waste. In particular, material which the Hazwasteonline™ tool has classified as hazardous would also potentially be reused. It is not possible to quantify the potential reductions currently, and some material, will continue to be waste, due to the timing of their arising, or due to their chemical and/or physical properties, However, assuming all of this type of waste meets the four CL:aire protocol tests, then all 50,020m^3 of hazardous waste could be reused on site during construction.

15.9.8 The use of the waste hierarchy through the SWMP will lead to more sustainable decisions being made on the waste generated. Therefore, material such as stone recovered from the causeway over the saltmarsh, shuttering and formwork will be sent for recycling rather than to landfill.

15.9.9 The use of more proximate facilities than those identified in Section ~~15.8~~ 15.6 will have the following benefits:

a. Reduction of vehicle miles travelled;
b. Reduction in requirements for landfill capacity due to the use of alternative treatment facilities which will either recycle wastes and remove them from the waste stream, or reduce their volume; and
c. Reduce the potential for spillage onto the highway by the use of sheeting, and reduction in vehicle miles.

15.9.10 These arrangements will be made by the ~~Concessionaire~~ Project Company, and it is not possible to identify which they will use. Therefore, it is not possible to quantify the change in waste volumes, the routes taken to treat and dispose of waste arisings, or the effects on landfill capacity and vehicle miles travelled.

Operation Effects – Construction Corridor

15.9.11 ~~No mitigation measures are proposed to reduce the volumes of office wastes from the toll booths and welfare facilities as this would not reduce the number of waste collection vehicle movements to and from the site on a weekly basis. Therefore, the residual effect is as identified in Section 15.8~~. The removal of the toll plazas from the proposed works would mean that office type wastes from these facilities would not occur.

Operation Effects – North West ~~Region~~

15.9.12 The ability to use mitigation measures during operation of the Project to divert green waste from landfill, will depend upon the type and location of regional waste management facilities provided by the local authorities or private sector, and the date these are provided. The use of these facilities has the potential to divert waste and, therefore, extend landfill lifetimes. It also has the potential to move the waste stream "up the waste Hierarchy" in line with Government guidance. It should be ~~noted, however, it is impossible to quantify this~~

~~improvement at this time.~~ possible to direct all green waste to composting and avoid landfill. However, this cannot currently be confirmed.

15.9.13 Effects that were considered to be 'not significant' pre-mitigation have remained the same upon assessing residual effects. These are:

a. Generation of odours from the handling of wastes;
b. Movement of vehicles across the North West Region to transport waste arisings; and
c. All operational phase effects.

15.9.14 Some effects are likely to be reduced in significance following mitigation. These are:

a. Uncontrolled release of contaminants to controlled water (mitigated from a 'medium negative significance' to 'not significant' through the use of bunding around waste loads); and
b. Spillage of waste arisings on the highway (mitigated from a 'low negative significance' to 'not significant' through the use of sheeting on vehicles).

15.9.15 Some residual effects have been identified that will remain negative in nature, even after mitigation. These are all of a low significance. These are:

a. Generation of dust from the handling of wastes (mitigated somewhat through the spraying of stockpiles and washing of vehicles, but remains at the same level of a 'low negative significance'); and
b. Consumption of available landfill and treatment capacity (although the ~~Concessionaire~~ Project Company will be encouraged to reduce the volumes of waste to landfill where practicable to do so, but remains at the same level of 'low negative significance').

15.9.16 The residual effects are described in summary in Table 15.24

Table 15.23 - Residual Effects Anticipated through the Management of Waste Arisings During the Project

Effect	Receptor and Importance	Nature of Effect	Significance (High, Moderate, Low and Positive / Negative)	Appropriate Mitigation Measure	Residual Effect
Uncontrolled release of contaminants to controlled Water	Site Operatives, Local Community, Water bodies High Importance	Negative Short Term Temporary Direct Moderate Magnitude	Moderate Negative Significance	Use of bunded hard surfaces and bunding around loads to capture runoff. Provision of spill kits and emergency procedures.	Not Significant
Generation of dust from handling of wastes	Site Operatives, Local Community Moderate Importance	Negative Short term Temporary Direct Moderate Magnitude	Low Negative Significance	Sheeting of load-carrying vehicles whilst in motion and spraying of stockpiles and vehicles.	Low Negative Significance
Generation of odours from handling of wastes	Site Operatives, Local Community Moderate Importance	Negative Short Term Temporary Direct Low Magnitude	Not Significant		Not Significant
Consumption of available landfill and treatment capacity	Waste Management Infrastructure Moderate Importance	Negative Short term Permanent Direct Moderate magnitude	Low Negative Significance	Project Company ~~Concessionaire~~ to further identify methods of handling waste arisings that are at the higher end of the 'Waste Hierarchy' such as minimising and reuse.	Low Negative Significance
Movement of vehicles across region to transport waste arisings as far as practicable	Site Operatives, Local community, Local and Regional Transport Network Moderate Importance	Negative Short Temporary Direct Low Magnitude	Not Significant		Not Significant
Spillage of waste arisings onto highway	Local community, Local and Regional Transport Network Moderate Importance	Negative Short Temporary Direct Low Magnitude	Low Negative Significance	Use of sheeting to cover loads during transportation.	Not Significant

Effect	Receptor and Importance	Nature of Effect	Significance (High, Moderate, Low and Positive / Negative)	Appropriate Mitigation Measure	Residual Effect
Operational Phase					
~~Generation and management of 'office' type wastes from toll booths~~	~~Local Community, Local Waste Management Infrastructure Moderate Importance~~	~~Negative Short term Temporary Direct Low Magnitude~~	~~Not Significant~~		~~Not Significant~~
Generation and management of maintenance wastes from the highways infrastructure	Local Community, Local Waste Management Infrastructure Moderate Importance	Negative Short term Temporary Direct Low Magnitude	Not Significant		Not Significant
Generation and management of landscape maintenance wastes	Local Community, Local Waste Management Infrastructure Moderate Importance	Negative Short term Temporary Direct Low Magnitude	Not Significant		Not Significant

Table 15.24 - Summary of Residual Impacts Resulting from the Proposals

Area	Summary of Proposals	Summary of Impacts
A – Speke Road	a. Toll plazas removed; b. Extent of overall works reduced to reflect removal of toll plazas; c. Slip roads and embankments re-designed to reflect removal of toll plaza, low retaining wall added on northern off slip; and d. The reduced extent of the works means there will be no requirement for any works that might affect either Stewards Brook or the Old Lane Subway.	Waste Management has been considered both as an impact on waste management capacity across the North West Region and as impacts within a study area centred on the project alignment. The Project Company will approach construction, and any waste management associated with this, as a single project, and will not undertake construction using the Areas used in this assessment. Materials generated in one area will be transported along the construction route to be used elsewhere on the construction site. Therefore, it is inappropriate to discuss local impacts by project area. The impact of the Project, including the proposals, on regional waste management capacity is considered to be, at worst, low negative significance. The use of the Claire: Protocol will further reduce waste quantities and therefore the impact on regional waste management capacity. Dust from materials storage and earthworks and from the handling of wastes will be allow negative significance. Impacts would be minimised by the reduction in time wastes are stored, reducing the number of times waste materials are handled and industry best practice (such as dust suppression, wheel washes etc). However, a residual impact will occur to those living close to the Project alignment.
B – Ditton Junction to Freight Line	a. Toll plazas removed; b. Slip roads and embankments re-designed to reflect removal of toll plazas; c. Main alignment shifted north to reduce adverse effects during construction in terms of disruption to road users; and d. Providing flexibility in approach to structure design	
C – Freight Line to St Helens Canal including the Widnes Loops Junction	a. Toll plazas removed; b. Junction, slip road and embankments re-designed (as roundabout) to reflect the removal of the toll plazas; c. Alternative construction of embankment / structures at Victoria Road; d. Revisions to the alignment to take account of the changes including a reduction in the vertical alignment and moving of the horizontal alignment to the south; and e. Providing flexibility in approach to structure design.	
D – Mersey Gateway Bridge		
E – Astmoor Viaduct	a. Provision of greater flexibility in design details of the New Bridge covering the deck design; and b. Providing flexibility in approach viaduct design.	

Area	Summary of Proposals	Summary of Impacts
F – Bridgewater Junction	a. Minor re-alignment of slip roads and associated embankments; b. Extent of slip road works reduced; and c. Providing flexibility in approach to structure design.	
G – Central Expressway, Lodge Lane and Weston Link Junction	a. Re-alignment of Calvers Road omitted; b. Merge / diverge to Halton Lea reinstated; c. Addition of retaining walls and traffic signals at Central Expressway slips to accommodate design developments; d. Existing Busway bridge retained with adjustments in line / level to fit alignment through existing bridge; e. Simplified route for footway/bridleway at Weston Link Junction; and f. Overall extent of slip road works reduced; and g. Providing flexibility in approach to structure design.	
H – M56 Junction 12	a. No changes to proposals.	
I – Silver Jubilee Bridge and Widnes De-Linking	a. Removal of toll plazas; and b. Queensway reduced to three lanes to accommodate cycle/footway over existing structures	

15.10 References

Ref 1 Taking Sustainable Use of Resources Foreward: A Thematic Strategy on the Prevention and recycling of Waste 2005. European Community.

Ref ~~10~~ 2 Treaty of Rome Article 174 as Amended by the Single European Act 1986

Ref 3 Government review of Waste Policy in England 2011 Defra.

Ref ~~9~~ 4 The Practical Guide to Waste Management Law' by Richard Hawkins and Heidi Shaw, Thomas Telford Publishing, 2004, 2006.

Ref ~~1~~ 5 75/442 Waste Framework Directive (As amended)

Ref 6 Planning Policy Statement 10 (PPS10), ODPM (now DCLG)

Ref 7 National Waste Strategy 2007. Defra.

Ref 8 Draft National Planning Policy Framework, 2011. DCLG

Ref ~~14~~ 9 Design Manual for Roads and Bridges (Volume 11 Section 3)

Ref 10 North West England Plan Regional Spatial Strategy to 2012. Government Office for the North West. 2008.

Ref 11 Joint Merseyside Waste Development Plan (in preparation). Merseyside Environmental Advisory Service. 2010.

Ref 12 Updated Regional Waste Strategy for England's North West. 2010. Regional Leaders Board.

Ref 13 Waste and Resources Action Programme (WRAP) Construction Sector resources www.wrap.org.uk/construction

Ref 14 ~~2~~ BRE SMARTWaste Benchmarking initiative and Defra funded Project (www.smartwaste.co.uk/benchmarking.jsp)

Ref 15 Envirowise (www.envirowise.gov.uk)

~~Ref 3 Environment Agency www.environment-agency.gov.uk~~

~~Ref 4 Environmental Protection Act 1990~~

~~Ref 6 Mayer Parry Recycling Case, which took 2 years to defined recycling and the point at which a material ceases to be waste (R(MPR) v. Environmental Agency and others judgement, 19 June 2003; ECJ case C-444/00) Palin Granit Oy v Vehmassalon kansanterveystyön kuntayhtymän [2002] 2 CMLR 24 Case C-90/00~~

~~Ref 7 Planning Policy Statement 10 (PPS10), ODPM (now DCLG)~~

~~Ref 8 SWMPs: Guidance for Construction Contractors and Clients, Voluntary Code of Practice' DTI July 2004 (www.wrap.org.uk/downloads/site_waste_management_plan.71efe720.pdf)~~

~~Ref 11 Waste Directory www.wasterecycling.org.uk~~

~~Ref 12~~ ~~Waste and Resources Action Programme (WRAP) Construction Sector resources www.wrap.org.uk/construction~~

~~Ref 13~~ ~~WRAP Advanced Workshop on SWMPs 22nd March 2007~~