



Sustainable Construction, Maintenance and Operations Reporting and Performance - Review of HA and SP Tools

By

C4S at TRL Limited and Halcrow

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Sustainable Construction, Maintenance and Operations

Reporting and Performance - Review of HA and SP Tools

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By C4S at TRL Limited and Halcrow

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Approvals	
Project Manager	R Greenwood
Quality Reviewed	Dehlia Farrow

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Executive Summary

The report looks to review the current Data Collection Methods that are in place for the HA and its Service Providers (SP) to capture data pertaining to waste, material resource use and energy with regard to relevant regulations and guidance. Through analysing drivers and targets set at various levels, gaps can be identified within the capabilities of the Data Collection Methods to record this information. This report will discuss the targets and legislation that the HA are required to meet and highlight the importance of Data Collection Methods to ensure that this is being encapsulated within current systems.

In the 1980s, increasing concern about the effects of economic development on health, natural resources and the environment led the United Nations to publish the Brundtland Report, *Our Common Future* (1987). The report put Sustainable Development on the political agenda and provided a catalyst for legislation and regulation surrounding the environment.

The Highways Agency has the overarching responsibility for the management and operation of the strategic trunk road network. In undertaking this role, the Highways Agency is committed to demonstrate its environmental performance against key targets and drivers implemented through a framework of legislation and policy relating to waste, resource use and energy. The role of the data collection methodologies is to capture data with respect to the Highways Agencies performance. This performance data can then be used to demonstrate the Highways Agency is managing the estate and conducting its operations in a manner which is compliant to legislative requirements and meeting commitments made in policy.

An initial scoping review of the Highways Agencies 8 principle data collection methods and 2 service provide methods concluded EnvIS- the Environmental Information System, HAPMS – Highways Agency Pavement Management System, DDMS- Drainage Data Management System and SMIS – Structure Management Information System demonstrated a capability to capture data pertaining to waste, material resource use and energy and were identified in a short list for further research..

To allow for full gap analysis two criteria's were developed. The Criteria sought to test to functional performance and scope of the Data Collection Methods.

The assessment of EnvIS, HAPMS and DDMS demonstrates the management of data and system functionality is capable of responding to performance based enquires in which the Highways Agency may undertake. There is no evidence of significant operational gaps in EnvIS, HAPMS and SMIS methods capability.

The Highways Agency is not currently capturing data against 11 criteria in relation to legal compliance (administrative) issues pertaining to SWMP, carbon or energy and construction material resources. The remaining 17 data quality capture requirements are met by EnvIS to a full or partial capacity. Figures 1 to 4 below outline tool performance against the data capture requirements.

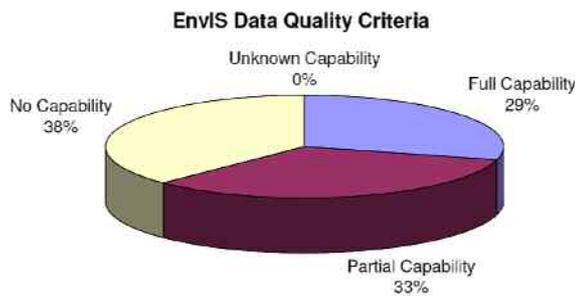


Figure 1, EnvIS Data Quality Criteria Performance

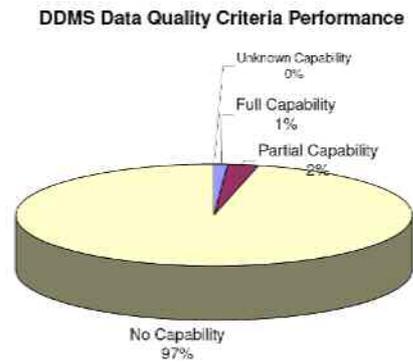


Figure 2 EnvIS Data Quality Criteria Performance

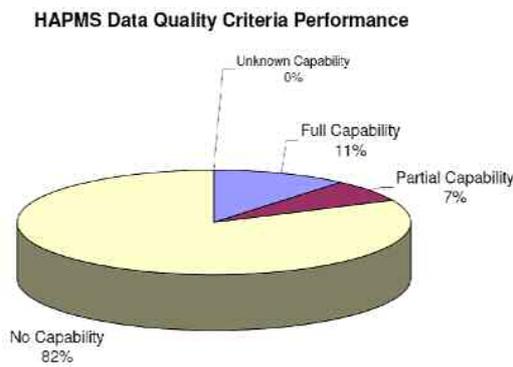


Figure 3 HAPMS Data Quality Criteria Performance

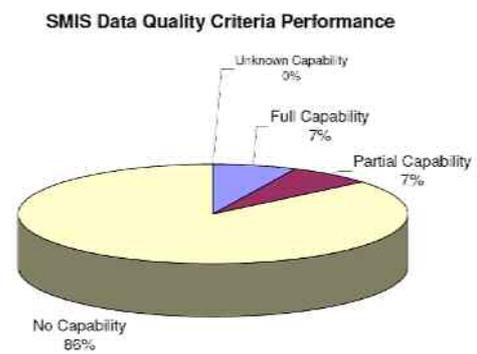


Figure 4 SMIS Data Quality Criteria Performance

The study has shown that there is no data capture in relation to carbon and energy and construction material resources. Data capture in response to these issues is a clear gap in the Highways Agency's data collection methods that requires future research and development need. This has demonstrated that there is a risk that the HA is unable to demonstrate a compliance or response to the following drivers:

- Administrative legislative requirements relating to SWMP;
- To the emerging Government policy and strategy commitments in relation to carbon, energy and construction material resources.

Recommendations are made in relation to the development of a co-ordinated data collection method strategy, mitigation against immature data in EnvIS, future research to develop data collection methods to respond to data capture gaps and data interrogation and manipulation methods.

Abbreviations List

HA – Highways Agency

SP – Service Providers

HADDMS – Highways Agency Drainage Database Management System

HAGDMS – Highways Agency Geo-technical Database Management System

HAPMS – Highways Agency Pavement Management System

EnvIS – Environmental Information System

EMaRS – Environmental Management and Reporting System

SUMIS – Scheme Update Management Information Systems

SWISH – Spatial Web Information System for Highways

IPPC – Integrated Pollution Prevention Control

WFD – Waste Framework Directive

EPA – Environmental Protection Act

PPC – Pollution Prevention Control

WML – Waste Management Licensing

GIS – Geographical Information System

SWMP – Site Waste Management Plans

EWC – European Waste Code

1 Introduction

Since the 1980's there have been rapid developments in the legislation surrounding the environment. The Brundtland Report produced, 'Our Common Future' in 1987¹ and introduced the concept of sustainable development. Since then there have been further developments such as the Kyoto Protocol which called upon nations to reduce their carbon emissions.

A framework of legislation and policy implementing targets and drivers has been introduced to engage industry and implement sustainability.

The Highways Agency (HA) has the overarching responsibility for the management and operation of the strategic trunk road network. In undertaking this role the Highways Agency is required to demonstrate performance against key targets and drivers implemented through the framework of legislation and policy relating to waste, resource use and energy.

To capture the actions undertaken through the management and operation of the network, the Highways Agency have implemented 8 principle data collection methods. This performance data can then be used to demonstrate the Highways Agency is managing the estate and conducting its operations in a manner which is compliant to legislative requirements and meeting commitments made in policy.

This document reports the findings of a review of HA Data Collection Methods capability in relation to waste material resource use and energy.

The legislative and policy framework with respect to waste, resource use and energy has evolved significantly in recent years. In particular, The National Waste Strategy 2007 has highlighted the construction industry as an area that impacts upon sustainability. Due to these changes there is a requirement to ensure that HA will have a Data Collection Methods which can demonstrate how sustainability in waste, material resource use and energy are being addressed. This is to ensure that it meets the regulations and legislation set by the Government.

This report looks to address this through identifying areas that require development within HA Data Collection Methods to ensure it meets the targets set out in legislation and policy. This report will also discuss the targets and legislation that the HA are required to meet and highlight the importance of Data Collection Methods to ensure that this is being encapsulated within current systems.

1.1 What are the aims and objectives of this report?

The report will review the HA and its Service Providers (SP) current Data Collection Methods in capturing data pertaining to waste, material resource use and energy with regard to relevant regulations and guidance. Through analysing drivers and targets set at various levels, gaps can be identified within the capabilities of the Data Collection Methods to record this information. This will allow recommendations for the development of Data Collection Methods to be made.

¹ http://www.re-set.it/documenti/1000/1800/1850/1856/brundtland_reportpdf.pdf
accessed 17/03/08

The objective of this review is to:

- Review the extent to which existing Data Collection Methods are in place in capturing data relating to waste and resource efficiency.
- Undertake data capture alignment to allow for the identification of gaps in relation to current and future legislative requirements and corporate reporting performance targets.
- Recommend approaches to support the development of Data Collection Methods to ensure effective compliance and reporting.

1.2 Scope of the report

In order to ensure that the objectives of this report were met. The research was undertaken in 4 discrete stages. The actions undertaken in each stage are outlined below:

Stage 1 Scoping review of Data Collection Tools - The aim of Stage 1 was to undertake an overarching high level review of the specified correct HA Data Collection Methods to identify those systems with potential data capability in waste and resource efficiency which would be subject to further review.

Stage 2 Detailed review of legislation and policy - An in-depth study of relevant Legislative Regulatory Reform Bills, European Directives, Acts, Regulations, Government Policy and corporate policy. Through conducting this study targets and drivers were identified.

Stage 3 Development of Data Collection Tools Review Criteria – Development of review criteria reflecting the key required components of a HA Data Collection Method. The criteria assessed two key areas which were System Application and Data Quality.

Stage 4 Detailed Comparative Assessment, conclusions and recommendations- A comparative assessment was undertaken through the application of identified review criteria to the specified current Data Collection Methods. This is to identify performance against key requirements and recommendations for HA to ensure compliance against legislative and corporate requirements in the area of waste, resource use and energy.

2 HA Data Collection Methods Scoping Review

Principle Data Collection Methods currently applied within the Highway Agency were subject to a scoping review to determine each methods general performance capability. The aim of the scoping review was to identify a short list of Data Collection Methods for further review based on a potential capability for data capture on waste, resource use and energy.

The scoping review investigated the following aspects of each data collection method:

- General information relating to the objective, implementation date, HA Sponsor and contractual application;
- Data capture capability in relation to waste, materials and energy;
- Data recording and transfer formats, frequency and confidence;
- Ease of use.

The following 9 principle Data Collection Methods were subject to the scoping review:

- 1) HADDMS – Highways Agency Drainage Database Management System,
- 2) HAGDMS – Highways Agency Geo-technical Database Management System,
- 3) HAPMS – Highways Agency Pavement Management System,
- 4) EnvIS – Environmental Information System,
- 5) SUMIS – Scheme Update Management Information Systems,
- 6) SMIS – Structures Management Information Systems
- 7) Scoping Tool – Environmental Assessment Scoping Tool,
- 8) SWISH – Spatial Web Information System for Highways, and
- 9) RK11 – Designers Environmental Impact Checklist (Area 14)

2.1 Data Collection Method Scoping Review Summary

A summary of the findings in relation to each Data Collection Method from the scope review is outlined below.

2.1.1 HADDMS – Highways Agency Drainage Database Management System

Implemented in 2004 HADDMS records information relating to drainage infrastructure associated with the Strategic Trunk Road Network. The scoping review identified the following key aspects relating to the system performance.

- Highways Agency and its Service Providers are contractually bound to use this system,
- The method does not contain any information specifically related to waste or energy,
- The method potentially has capability to capture data on resource relation construction materials,
- Service Providers and Operating Companies are responsible for collating data on drainage from all available sources, and
- The principle types of information held on this system relate to mapping systems from drainage such as the composition of drainage and the build type.

2.1.2 HAGDMS – Highways Agency Geo-technical Database Management System

Implemented in 2002, HAGDMS is an inventory of the Highways Agency geotechnical asset data. The scoping review identified the following key aspects relating to the system performance.

- The system is based on a mapping interface and includes databases containing information on the geotechnical assets of the Highways Agency,
- HAGDMS is used both internally and externally,
- Information is currently provided on paper format, no information is capable of being reported on or contribute to provide robust baseline information, and
- GDMS is currently undergoing a significant review that will in the first phase enable historic reports to be held as PDF and in the second phase create a data capturing process and format which will have some relevance to waste and resource use.

2.1.3 HAPMS – Highways Agency Pavement Management System

HAPMS, implemented in 2000, provides current and historic information on the HA pavement network system. The system records information on the construction and management of pavements. The scoping review identified the following key aspects relating to the system performance.

HAPMS was designed to record maintenance and limited information unrelated to waste, resource use and energy recorded on this system mirrors the information that is recorded in EnvIS.

- HAPMS does not hold any waste data
- The system does have the potential, through data manipulation, to record information on resource or energy use by deriving information from material type, amount of material removed or replaced and the length of maintenance at the site, and
- The system is used frequently and there is a requirement on agents to submit information required on the system.

2.1.4 EnvIS – Environmental Information System

EnvIS is the most recent of the Highways Agency's data collection methods, implemented in 2007, EnvIS records information in relation to environmental assets located within the highways estate and surrounding areas and management of the asset. The scoping review identified the following key aspects relating to the system performance.

- EnvIS has the following objectives and aims 1) enable consistent and accurate recording and retrieving of specific environmental data about the trunk road network 2) assist in the review and reporting of environmental performance of both the HA and Service Providers 3) standardise terminology and improve communication between the HA and Service Providers for the recording and retrieving of EnvIS data 4) improve understanding of the environmental issues and opportunities that must be considered at different stages of trunk road management, 5) assist in the handover of environmental data from Designers to Network Management Agents (and vice versa) and the transfer of environmental data from an outgoing Network Management Agent to its successor 6) assist Designers and Network Management Agents in the collection of environmental data, and use this information to develop specific environmental

management programmes and strategies, including Environmental Management Plans (EMPs),

- EnvIS has a waste and material resource recording capability. Material resources are defined as solid materials that are used in construction, maintenance and operation. Within EnvIS water and energy are not considered to be a material resource,
- EnvIS records European Waste Catalogue (EWC) codes and a description of the waste. The waste class (inert, non-hazardous and hazardous), waste quantity in tonnes, and the waste destination are all recorded,
- EnvIS collects a detailed description of the material and the material class (system categories material as primary, recycled, and reused.) The quantity (in tonnes) and the origin of the materials are recorded, and
- EnvIS does not currently record energy data except recording any waste that is sent to energy from waste facility. The system also has the capability to record when materials have been re-used, recycled and reduced.

2.1.5 SUMIS – Scheme Update Management Information Systems

The purpose of SUMIS is to record scheme progress and management data. The method has been developed to provide a central networked area to record project information. The method, implemented in 2007, is based within an access database to track project progress. The scoping review identified the following key aspects relating to the system performance.

There is a requirement to continually update data and a reporting deadline at the end of the calendar month, and this system does not have any capabilities to record material resource use, energy or waste production information.

2.1.6 SMIS – Structures Management Information Systems

The purpose of SMIS is to manage information pertaining to construction and management of highways structures. The SMIS Data Collection Method was implemented in 2001/2002. The scoping review identified the following key aspects relating to the system performance.

- The data on SMIS is updated continually because there is a requirement on contractors to update the inspection and inventory database continually,
- The system has no capability to capture information on waste or energy data,
- Information is recorded for resource use by entering information of the type of materials used in construction, and
- SMIS is only available internally within the HA and has potential to be provided to the HA service providers.

2.1.7 Scoping Tool – Environmental Assessment Scoping Tool

The Scoping tool was developed in order to alert project leaders to potential issues within schemes and can be used across the lifecycle of a project. The scoping review identified the following key aspects relating to the system performance.

- The production of project scoping reports, as well as ensuring a level of uniformity in the reports produces,
- Currently available on the Highways Agency internal network however there is the possibility that this Data Collection Method could be made available to project contractors,
- No technical project data is captured on this method. The information captured on the system in relation to waste is captured in response to particular questions such as, whether the scheme will require borrow pits and whether hazardous materials would demand specialist treatment. The answer to these question can be a 'yes', 'no' or 'unknown' response,
- Currently there is no data capture for material resource use or energy.
- The frequency of the data entered onto the system is dependent upon the scheme and is entered by project leaders, and
- There is the potential to extract information from schemes once 'scoped' although there is no built in facility to interrogate the system and generate trends.

2.1.8 SWISH – Spatial Web Information System for Highways

SWISH is a Service Provider data collection method for recording assets on HA major projects. SWISH has been developed for the A3 Hindhead and is designed to help the project team manage volumes of data the design and consultation process generate. The scoping review identified the following key aspects relating to the system performance.

- The system is generic and is designed to hold any format or structure of data linked to a map,
- The data is not asset specific and only records general information for example the asset location,
- The method has no capability to record prescriptive data,
- This data collection method system is an internet based GIS,
- SWISH can store and display maps, aerial photographs, and any data that can be located by its geographical co-ordinate's,
- There is the potential for SWISH to become a generic tool for us on HA major projects,
- There is no capability for SWISH to record data on waste, material resource use and energy, and
- A3 Hindhead is the only HA major project using SWISH at present.

2.1.9 EA 14 – RK11

PK11 is a Service Provider data collection method currently utilised within Area 14. The method collects data relating to environmental impact and assessment. The scoping review identified the following key aspects relating to the system performance.

- The method is not a data collection method and has no information database,
- The method a methodology for undertaking environmental impact and assessment,
- The methodology is a Designers Environmental Impact Checklist comprising of 21 questions or information prompts and tick box response, and
- The methodology used to assess various environmental aspects of a scheme.

2.2 Scoping Review Analysis and Recommendations

The aim of the scoping review was to identify a short list of Data Collection Methods for further review based on a potential capability for data capture on waste, resource use and energy. Methods that demonstrate a capability or potential capability to capture data on these issues will be short listed for further investigation as a part of this research.

In consideration of the information determined by the scoping review four data collection methods have been identified for further review. These methods have been selected as they currently demonstrate, or have the potential to support the capture of data pertaining to waste and resource use. The short-listed methods are listed below:

- EnvIS – Environmental Information System,
- HADDMS – Highways Agency Drainage Management System,
- HAPMS – Highways Agency Pavement Management System, and
- SMIS – Structures Management Information System

The scoping review demonstrates a number of the methods have some capacity for capturing data on issues pertaining to waste and resource use. However it is evident that none of the current data collection methods support any form of data capture on energy.

Table 3.1 provides a capability summary of each data collection method with respect to data capture on waste, resource use and energy, defines the short listed methods for further investigation and provides comment on the basis of the short listing decision.

Table 3.1: Summary of Data Collection Methods and Data Capabilities

Data Collection Method	Data Capture			SHORT LISTED	Comments
	WASTE	RESOURCE USE	ENERGY		
ENVIS	Y	Y	N	Yes	Short listed due to capability for relevant data capture
HADDMS	N	?	N	Yes	Short listed due to potential capability relevant for data capture
HAPMS	N	?	?	Yes	Short listed due to potential capability for relevant data capture
HAGDMS	N	N	N	No	Excluded due to no capability at present, future development planned however functionality is not defined.
SUMIS	N	N	N	No	Excluded as tool is applied on a project basis and has no capability to capture relevant data.
SMIS	N	?	N	Yes	Short listed due to potential capability for relevant data capture
Scoping Tool	N	N	N	No	Excluded due to tool is an environmental issue scoping tool not an asset collection method.
SWISH	N	N	N	No	Excluded due to tool not holding asset or specific information, GIS and document storage tool.
AREA 14 RK11	N	N	N	No	Excluded due to tool is not a data collection method.
Key – Y = Yes Capability, N = No Capability ? = Uncertain of Current and Future Capability					

Appendix A provides a comparison summary of Highways Agency data collection methods.

3 Legislation and Policy

The aim of this section of the report is to identify the relevant international and national commitments upon the Highways Agency in relation to waste, material resource use and energy. These commitments will inform the data collection requirements of the short listed data collection methods.

3.1 Legislation and Policy Review Scope

An in-depth review has been undertaken to identify commitments relating to waste, resource use and energy created from a framework of legislation and policy. The review will enable the identification and quantification of commitments upon the highways Agency in terms of legislative compliance and effectiveness of performance.

The review included over 30 legislative and policy instruments specifically relating to waste, resource use and energy. Appendix B presents a discussion of the key elements and relationships supported by the legislative and policy framework in which the highways Agency is required to operate. Appendix C presents relevant extracts from the legislation and policy which creates a commitment upon the highways Agency. The list following identifies those legislative and policy document included within the review.

The literature surrounding sustainability, waste, material resource use and energy is comprehensive. As a result there has been a need to focus upon the literature that is specifically relevant to waste, material resource use and energy in relation to the activities for the HA and its SP.

Directives

- Waste Framework Directive (2006/12/EC)
- Landfill Directive (1999/31/EC)
- Hazardous Waste Directive (91/689/EC)
- Integrated Pollution Prevention Control (IPPC) Directive
- Water Framework Directive

Bills

- The Energy Bill 2007 -2008
- The Clean Neighbourhoods and Energy Bill 2005
- The Climate Change Bill (draft)
- The Water Bill 2003

Act

- Environmental Protection Act (as amended) 1990
- Clean Neighbourhoods and Environment Act 2005
- Control of Pollution (amendment) Act 1989 c.14
- Sustainable Energy Act
- Water Act 2003
- Pollution Prevention and Control Act 1999

Regulation

- Waste Management Licensing Regulations (as amended) 1994
- Pollution Prevention Control (England and Wales) Regulations 2000
- Landfill Regulations (England and Wales) 2000
- Hazardous Waste Regulations (England and Wales) 2005

- Environmental Protection (Duty of Care Regulations) 1994
- The Lists of Wastes (England) Regulations 2005
- The Water Resources (Abstraction and Impounding) Regulations 2006
- The Site Waste Management Plans Regulations 2007
- The Soil Regulations

Policy and Guidance

- European Commission – ‘Sustainable Construction; Final Report’ May 2001
- The Department for Food and Rural Affairs, The National Waste Strategy for England 2007
- The Department for Food and Rural Affairs, The National Waste Strategy Annex C3 2007
- The EU Thematic Soil Strategy 2006
- HM Government, Securing the Future – UK Government Sustainable Development Strategy (7th of March 2005)
- Department for Trade and Industry (2006) Sustainable Construction
- The Highways Agency (June 2007), ‘Achieving Sustainability, The Highways Sustainable Development Action Plan 2007 – 2008.’
- The Highways Agency (2003), ‘Building Better Roads: Towards Sustainable Construction’

3.2 Legislative and Policy Strategic Objectives, Targets and Drivers

The legislative and policy framework facilitates the improved management of waste, resource use and energy through the implementation of key objectives, target and drivers. These are seen to be closely aligned with the principles of sustainable development and assist industry in to enact sustainable development techniques.

This framework of objectives, target and drivers has clear implications on the operation of the Strategic Truck Road Network and therefore the working practices of the Highways Agency and its Service Providers. Table 4.1 below summarises the key management objectives the legislative framework introduces and to which the HA will need to respond. Table 4.2 identifies the key targets against which the HA will need to respond and performance measured.

Table 4.1: Legislative Targets Summary Table

Strategic Objective/Target	Directive/ International Agreement	Bill/Act/Regulation
Objective 1 To provide energy in a manner reflecting new technologies to protect the environment (carbon reduction) and tax payer as market evolves.	Kyoto Protocol	• Energy Bill
Objective 2 UK target for a 60% reduction of Carbon emissions by 2050 (on 1990 levels) and a 26% to 32% reduction by 2020 legally binding		• Climate Change Bill
Objective 3 To reduce the production of waste through improved waste classification, treatment, recovery and re-use. Develop and implement a SWMP for construction and demolition projects with a value of more than £300,000.	The Waste Directive	<ul style="list-style-type: none"> • Waste Management Licensing Regulations (as amended) 1994 • Landfill Regulations (England and Wales) 2002 • The Hazardous Waste Regulations (England and Wales) 2005 • Environmental Protection (Duty of Care Regulations) 1994 • Site Waste Management Plans (England and Wales) Regulations 2007
Objective 4 To reduce the volume and type of waste going to landfill. To encourage the reuse and treatment of waste to prevent waste going to landfill.	Landfill Directive	• Landfill Regulations (England and Wales)
Objective 5 To reduce the volume of hazardous waste going to landfill and allow for greater environmental control at disposal facilities allowing hazardous waste.	The Hazardous Waste Directive	<ul style="list-style-type: none"> • The Hazardous Waste Regulations (England and Wales) 2005 • The Lists of Waste (England) Regulations 2005
Objective 6 To enact tighter controls on complex waste management facilities to allow for greater environmental control.	The Integrated Pollution Prevention Control Directive	• The Pollution Prevention Control (England and Wales) Regulations 2000
Objective 7 To protect and ensure the sustainable use of soils	The Soil Framework Directive	• n/a
Objective 8 To manage and regulate abstraction ensuring sustainable use and protection of water resources.	The Water Framework Directive	<ul style="list-style-type: none"> • The Water Act 2003 • The Water Resources (Abstraction and Impounding) Regulations 2006

Table 4.2: Policy Targets Summary Table

Informative/Target Description	Reference policy
Target 1 Target to reduce the amount of waste going to landfill – 1) 22.3 million tonnes in 2000 to 12.2 million tonnes in 2020. Intermediary target of 15.9 million tonnes by 2010.	<ul style="list-style-type: none"> • National Waste Strategy 2007
Target 2 Proposed target of halving the amount of waste going to landfill by 2012 (potentially against 2005 figures)	
Target 3 Proposed target of zero net waste (at construction site level) by 2015.	
Target 4 Proposed target of zero waste (from construction) to landfill by 2020	
Target 5 Demonstrates best practice across field of environment issues including 1) Sustainable consumption and production 2) Climate Change 3) Natural Resource Protection 4) Sustainable Communities.	<ul style="list-style-type: none"> • Securing the future Delivering UK Sustainable Development Strategy
Target 6 Implement a design for minimum waste relating to residual material and recyclable material.	<ul style="list-style-type: none"> • Highways Agency Sustainable Development Action Plan (2008-2008) • Building Better Roads: Towards Sustainable Construction (2003)
Target 7 Implement an energy efficiency strategy for road lighting	
Target 8 HA to establish a programme of improvement and measuring it's performance	<ul style="list-style-type: none"> • Highways Agency Procurement Strategy (2001) • Highways Agency Business Plan (2007/08)

3.3 Legislative and Policy Operational Commitments

The Legislative and policy framework implements a number of operational requirements which are complementary to the embodied strategic objectives and targets. The comprehensive legislative and policy review identified the strategic objectives, targets and drivers in relation to waste resource use and energy. These strategic objectives and targets are implemented by placing legislative compliance and policy commitments on organisations. Table 4.3 below identifies commitments couched within legislation and policy to which the Highways Agency is required to demonstrate performance against. Appendix C presents the detailed extracts from legislation and policy from which these commitments are formed.

Table 4.3: Legislative and policy Operational Commitments

Legislation/Policy Instrument	Outline of Commitment Issue
Waste Management Licensing Regulations 1994 (as amended)	Registration of exempt waste treatment activities
Pollution Prevention and Control (England and Wales) Regulations	Waste Management Licences and Pollution Prevention Control Permits
Hazardous Waste (England and Wales) Regulations 2005	Hazardous waste consignment notes
Environmental Protection (Duty of Care) Regulations 1991	Requirement of a Consignment /Transfer Notes
The Water Resources (Abstraction and Impounding) Regulations 2006	Abstraction Licence for the use of a water resource
Site Waste Management Plan Regulations 2008	Requirement to complete a Site Waste Management Plan recording following Responsibilities Project Value Decisions to minimise waste and deviations from SWMP plans Predicted and actual waste type, Volume & treatment actions (incl. removal and reference registrations and permits) site location and construction dates waste carriers and destinations Cost Savings
National Waste Strategy 2007	Reduction of tonnes of waste to landfill Increase in Waste management actions (reduce, re-use and recycle)
National Waste Strategy 2007 Annex C3	Contractual performance measurement for the improvement of materials and resource efficiency Waste Neutral construction by 2012 on major projects
The Department for Trade and Industry 'Sustainable Construction Strategy' (2006)	Carbon emissions reduction Zero Waste by 2020
The Highways Agency (2007 'Achieving Sustainability, The Highways Sustainable Development Action Plan	Carbon emissions reduction

4 Review Criteria

To enable an accurate data capture assessment each short listed method was subjected to standard review criteria. This section of the report establishes the assessment review criteria specifically addressing the legislative and policy framework commitments in waste, resource use and energy use issues.

The role of the data collection methodologies is to capture data with respect to the Highways Agencies performance. This performance data can then be used to demonstrate the Highways Agency is managing the estate and conducting its operations in a manner which is compliant to legislative requirements and meeting commitments made in policy.

The purpose of the review criteria is to assess the scope and function of each data collection method against data capture and process requirements to enable the Highways Agency to demonstrate operational compliance to legislation and policy commitments.

In order to accurately establish requirements two criteria assessing the data quality requirements and application requirements were developed. A data quality criterion was developed with the aim of testing each method's information capture capability. The application criterion was developed to test the adequacies of each method's data capture process.

The assessment against the identified criteria will enable the gaps in method function data capture to be identified.

4.1 Application Review Criteria

The purpose of the application criteria is to test how the method functions are applied operationally. The assessment will identify operational issues which could potentially hinder the accurate reporting of performance data. The criteria focus on the following key functional issues:

- Method ownership,
- Update frequency
- Contractual circumstances,
- Ease of use,
- Data format and transfer,
- Accessibility, and
- Data assurance

Table 5.1 presents the Application criteria to be applied to each data collection method in order to determine the adequacy of method function.

Application Criteria	
AC1	System accessible to Highways Agency and Service Providers
AC2	Information held in data format or able to produce data format
AC3	Minimal annual update frequency
AC4	Data transfer contractually bound
AC5	Data owned by Highways Agency
AC6	Enable reporting interrogation
AC7	Full data confidence quality assured
AC8	Easy to use (including navigation, manipulation and interpretation)

4.2 Data Quality Review Criteria

The purpose of the data quality criteria assessment is to test the scope and quality of data capture within each data collection method. The assessment will identify data capture gaps against performance reporting requirements.

The Data quality Criteria is therefore required to test for the capability of data capture directly responding to commitments within legislation and policy. An in depth review of over 30 pieces of legislation and policy addressing waste, resource use and energy has shown measurable commitments a number of measurable commitments.

Table 4.4 in Section 4 of this report identifies commitments couched within legislation and policy to which the Highways Agency is required to demonstrate performance against.

Appendix C presents the detailed extracts from legislation and policy within the commitments are formed and an accompanying Data Quality Criteria to test for data capture in response to each commitment.

The Data Quality Criteria identified to test data capture against commitments is presented in Table 5.1 below. The table is a summary of Appendix C presenting each Data Quality Criteria referenced against the legislation or policy in which the commitment is made and to which the data Quality Criteria is responding.

The criteria under waste focused upon the types of waste produced, the destination of the waste, waste minimisation and Site Waste Management Plans. The material resource use criteria looked at whether there was a record of what material had been used this also included water as a resource. The energy criteria looked to determine whether a carbon calculator was available within any of the Data Collection Methods.

Table 5.1: Data Quality Criteria

Data Quality Criteria		Reference Legislation/Policy
DQC1	Record of client	
DQC2	Record of principal contractor	
DQC3	Record of the project value.	
DQC4	Record of date work commenced.	
DQC5	Record of person who drafted SWMP	
DQC6	Record of site location	
DQC7	Record of decisions made to minimise waste prior to SWMP	
DQC8	Record of waste quantities of waste types produced (state the EWC code)	National Waste Strategy 2007 The Site Waste Management Plans Regulations 2005
DQC9	Record of waste management action (re-using, recycling and disposal)	The Site Waste Management Plans Regulations 2007
DQC10	Records of identity of person removing the waste	
DQC11	Record of waste type removed (state the EWC code.)	
DQC12	Record of waste destination by WML number or PPC number	
DQC13	Record of deviation explanation	
DQC14	Record of waste carriers licence number	
DQC15	Record of consignment note code or waste transfer note reference for waste removed.	
DQC16	Record of registration number of exempt (from waste management licensing regulations) activity.	Waste Management Licensing Regulations (as amended) 1994 The Site Waste Management Plans Regulations 2007
DQC17	Record of waste types produced (state the EWC code).	The Site Waste Management Plans Regulations 2007
DQC18	Record of waste management action(re-use off/onsite, recycle off/onsite, recovered off/on site, landfill or otherwise disposed of)	
DQC19	Record of comparison of actual and planned waste quantity	
DQC20	Record cost savings from SWMP	
DQC21	Record of waste to landfill in tonnes.	National Waste Strategy 2007 Department for Trade and Industry (2006) Sustainable Construction Strategy
DQC22	Record of date the exemption began	Waste Management Licensing Regulations (as amended) 1994

Data Quality Criteria		Reference Legislation/Policy
DQC23	Record of date the exemption expires	Waste Management Licensing Regulations (as amended) 1994 The Highways Agency (2003), 'Building Better Roads: Towards Sustainable Construction'
DQC24	Record of performance of energy carbon indicator	Department for Trade and Industry (2006) Sustainable Construction Strategy
DQC25	Record of construction material resource.	The Water Resources (Abstraction and Impounding) Regulations 2006 National Waste Strategy Annex C3 2007 Department for Trade and Industry (2006) Sustainable Construction Strategy
DQC26	Record of abstraction licence number	The Water Resources (Abstraction and Impounding) Regulations 2006
DQC27	Record of contractual performance measurement with respect to waste and materials resource efficiency	National Waste Strategy Annex C3 2007

4.3 Criteria Assessment Methodology

Each of the HA data collection methods are unique in their function and data capture. This has resulted in a broad variation of scope and data capture between each data collection method. In recognition of this variation and the potential capability enhancement a scale of performance against each criterion was assessment. A 4 tiered assessment scale is identified below:

- 1 = Full Capability,
- 2 = Partial Capability,
- 3 = No Capability, and
- 4 = Unknown Capability.

The 4 short listed data collection methods are assessed with the data quality and application criteria by the application of the criteria to determine it performance to the 4 tiered assessment scale. The performance of each method is assessed individually, the results from this assessment is then compared. The comparative assessment will then determine the data capture currently available to the Highways Agency and conversely the data gaps in relation to waste, resource use and energy.

5 Data Collection Method Assessment

This section presents the findings of the data collection method performance against the assessment criteria identified in Section 5 of this report.

The individual performance assessment of the 4 short listed data collection methods (EnvIS, HADDMS, HAPMS and SUMIS) against the assessment criteria is presented in Appendix D. Table 6.1 outlines a summary of performance.

An initial assessment of EnvIS, HADDMS, HAPMS and SUMIS performance against the criteria reveals:

- All 4 methods performed to full or partial capability under all of the Application Criteria, with the exception of unknown performance for DDMS against 3 criteria,
- A performance of gap in capability to record data on energy and material resource use. Whilst some of the data collection methods do have capability to record detailed information pertaining to waste not all of the waste criteria has been met, and
- EnvIS has demonstrated having the broadest data capture capability, capturing waste and resources data.

Table 6.1: Data Collection Method Criteria Performance Assessment

SYSTEM NAME		ENVIS	HAPMS	DDMS	SMIS
1- Full Capability 2- Partial Capability (must comment) 3- No Capability 4- Unknown Capability (must Comment)		PERFORMANCE ASSESSMENT RATING SCALE 1-4			
Application Criteria					
AC1	System accessible to Highways Agency and Service Providers	1	1	1	1
AC2	Information held in data format or able to produce data format	1	2	1	2
AC3	Minimum annual update frequency	2	2	4	2
AC4	Data transfer contractually bound	1	1	1	2
AC5	Data owned by Highways Agency	1	1	4	1
AC6	Enable reporting interrogation	1	1	4	1
AC7	Full data confidence, quality assured	1	2	2	2
AC8	Easy to use (include navigation, manipulation and interpretation).	1	2	1	2
Data Quality Criteria					
DQC 1	Record of client	1	1	1	1
DQC 2	Record of principal contractor	2	2	1	2
DQC 3	Record of the project value.	2	2	3	3
DQC 4	Record of date work commenced.	2	1	2	2
DQC 5	Record of person who drafted SWMP	2	3	3	3
DQC 6	Record of site location	2	1	1	1
DQC 7	Record of decisions made to minimise waste prior to SWMP	2	3	3	3
DQC 8	Record of waste quantities of waste types produced (state the EWC code)	1	3	3	3
DQC 9	Record of waste management action (re-	1	3	3	3

SYSTEM NAME		ENVIS	HAPMS	DDMS	SMIS
1- Full Capability 2- Partial Capability (must comment) 3- No Capability 4- Unknown Capability (must Comment)		PERFORMANCE ASSESSMENT RATING SCALE 1-4			
	using, recycling and disposal)				
DQC 10	Records of identity of person removing the waste	1	3	3	3
DQC 11	Record of waste type removed (state the EWC code.)	3	3	3	3
DQC 12	Record of waste destination by WML number or PPC number	3	3	3	3
DQC 13	Record of deviation explanation	3	3	3	3
DQC 14	Record of waste carriers licence number	3	3	3	3
DQC 15	Record of consignment note code or waste transfer note reference for waste removed.	3	3	3	3
DQC 16	Record of registration number of exempt (from waste management licensing regulations) activity.	3	3	3	3
DQC 17	Record of waste types produced (state the EWC code).	1	3	3	3
DQC 18	Record of waste management action(re-use off/onsite, recycle off/onsite, recovered off/on site, landfilled or otherwise disposed of)	1	3	3	3
DQC 19	Record of comparison of actual and planned waste quantity	2	3	3	3
DQC 20	Record cost savings from SWMP	3	3	3	3
DQC 21	Record of waste to landfill in tonnes.	1	3	3	3
DQC 22	Record of date the exemption began	3	3	3	3
DQC 23	Record of date the exemption expires	3	3	3	3
DQC 24	Record of performance of energy carbon indicator	3	3	3	3
DQC 25	Record of construction material resource.	1	3	2	3
DQC 26	Record of abstraction licence number	2	3	3	3
DQC 27	Record of contractual performance measurement with respect to waste and materials resource efficiency	2	3	3	3

5.1 Application Criteria Performance Assessment

This section outlines the performance of each methods performance against the application criteria assessment.

5.1.1 EnvIS Application Criteria Performance

EnvIS records the highest percentage of Full Capability of the Data Collection Methods. EnvIS is demonstrated 7 out of the 8 criteria to full capability with 1 criterion to partial capability in the application criteria.

EnvIS is a mandatory requirement with a process in place to ensure that the data entered is compliant with what EnvIS requires. This ensures that data confidence and data quality

is assured. The frequency of the information being updated is where EnvIS has only partial capability. Network Management (area) data is required to be submitted on an annual basis. Scheme data is submitted at a predetermined milestone which may or may not be an annual submission.

5.1.2 DDMS Application Criteria Performance

DDMS demonstrated 4 out of 8 criteria to full capability and 1 criterion to partial capability. DDMS demonstrated no capability in 4 criteria in the application criteria.

The DDMS Data Collection Method provided full capability in method access to the HA and SP, data format, contractually bound data transfer requirement and ease of use. However, it is not known whether the data is owned by the HA as the system is operated through an internet interface by Mott MacDonald. There is no advice provided on often to update the data but confidence in data has been rated as Partial Capability.

5.1.3 HAPMS Application Criteria Performance

HAPMS has demonstrated 4 out of 8 criteria to full capability and 4 criteria to partial capability in the application criteria. There is no allocation for Unknown or No Capability which shows that the system can meet the aspect of the application Criteria.

The system is fully accessible to the HA and Sp and data transfer is contractually bound. The data is owned by the HA and there is full reporting interrogation of data transfer. There is the potential for data gaps which raised issues with the assurance of data. The system also requires training and some of the data held on the system may be current but not updated frequently. SP are required to update construction history and inventory whenever a change is made.

5.1.4 SMIS Application Criteria Performance

SMIS has demonstrated 3 out of 8 criteria to full capability and 5 criteria to a partial capability in the application criteria. There is no allocation for Unknown or No Capability which shows that the system can meet the aspect of the application Criteria.

This data recorded within SMIS is owned by the HA and the system allows reporting interrogation. Further to this the system is fully accessible to HA staff and Service Providers. Data transfer requirements are variable and is dependant upon the contract employed by the HA, this is due to the absence of a there is no standard contractual requirement to use SMIS. The Data Collection Method does require training to navigate and the level of manipulation and interpretation is dependent upon the user's familiarity and training of the system.

5.2 Data Quality Performance Assessment

This section outlines the performance of each methods performance against the data quality assessment.

5.2.1 EnvIS Data Quality Criteria Performance

EnvIS was assessed as having the greatest performance capability, demonstrating full capability in 8 criteria out of 27 criteria. EnvIS demonstrated partial capability and no capability in 10 criteria respectively.

EnvIS is well aligned to the technical waste management aspects with Site Waste Management. However EnvIS does not record the administrative aspects of waste e.g. licensing, registration, permits and note references.

EnvIS does not have any capability under energy and does not have a standard for recording data on construction and material resource use. It does record information relating to material class (primary, secondary, and reused material) quantity and origin (on site, off site, recycled.) This suggests that there is scope to develop EnvIS further to meet the targets and drivers discussed.

EnvIS records data to full capability in:

- The record of waste quantities of waste types produced (by EWC).
- Record of waste management action (re-use, recycle, and disposal).
- The record of waste type removed (by EWC code)
- The record of waste types produced (by EWC code)
- Record of waste to landfill in tonnes
- Material resource use

EnvIS has partial capability in:

- Record of Principal Contractor
- Record of the Project Value
- Record of the person who drafted the SWMP
- Record of site location
- Record of comparison of actual and planned waste quality.

EnvIS has no capability in

- Record of waste type removed
- Record of waste destination by WML/PPC
- Record of plan deviation explanation
- Record of waste carriers licence
- Record of consignment/waste transfer note code
- record of Registration Number of exempt activity
- Record of cost savings from SWMP
- Record of exemption commencement and expiration
- Record of performance against Carbon Indicator

In summary the data quality criteria assessment of EnvIS demonstrated the following performance as shown in Figure 6.1:

- 29% of the application criteria fell under the heading of Full Capability
- 33% of the application criteria fell under the heading of Partial Capability
- 37% of the application criteria fell under No Capability
- 0% of the application criteria fell under Unknown Capability

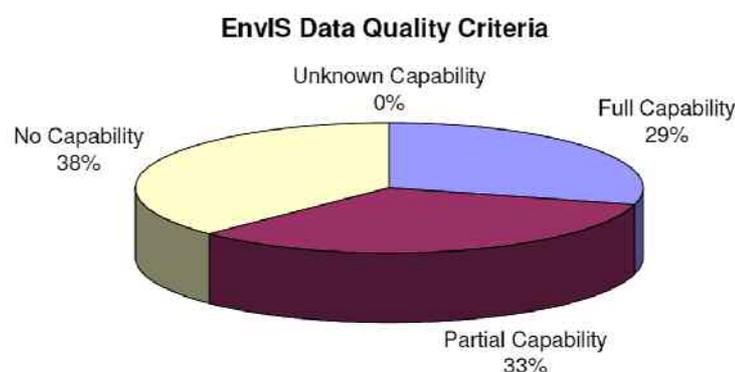


Figure 6.1 – EnvIS Data Quality Criteria Performance

5.2.2 DDMS Data Quality Criteria Performance

DDMS has demonstrated 3 criteria to full capability, 2 to partial capability and no capability in 22 criteria. DDMS captured general administrative responses in reference to the identity of a client, principal contractor and the site location. Data in relation to resource use and work commencement dates is partially captured. Data in relation to construction type of drainage asset, referring to brick, pre cast concrete, insitu concrete and bolted segments. Information relating to material type is also included referring to vitrified clay, concrete, MDPE, PVC, HPPE, cast iron, asbestos and pitch fibre. There was no demonstrated capability in all other requirements.

In summary the data quality criteria assessment of DDMS demonstrated the following performance as shown in Figure 6.2:

- 1% of the application criteria fell under the heading of Full Capability (1)
- 2% of the application criteria fell under the heading of Partial Capability (2)
- 82% of the application criteria fell under the heading of No Capability (3)
- 0% of the application criteria fell under the heading of Unknown Capability (4)

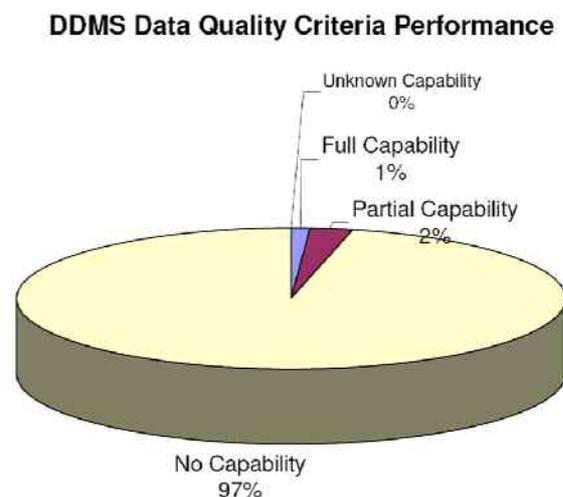


Figure 6.2 – DDMS Data Quality Criteria Performance

5.2.3 HAPMS Data Quality Criteria Performance

HAPMS demonstrated 3 criteria to full capability, 2 to partial capability and no capability in 22 criteria.

HAPMS captured details of the client, the site location and the date when work commenced and it has partial capability to record the project value and the principal contractor. There was no demonstrated capability in all other requirements.

In summary the data quality criteria assessment of HAPMS demonstrated the following performance, as shown in Figure 6.3:

- 11% of the application criteria fell under the heading of Full Capability (1)
- 7% of the application criteria fell under the heading of Partial Capability (2)
- 82% of the application criteria fell under the heading of No Capability (3)
- 0% of the application criteria fell under the heading of Unknown Capability (4)

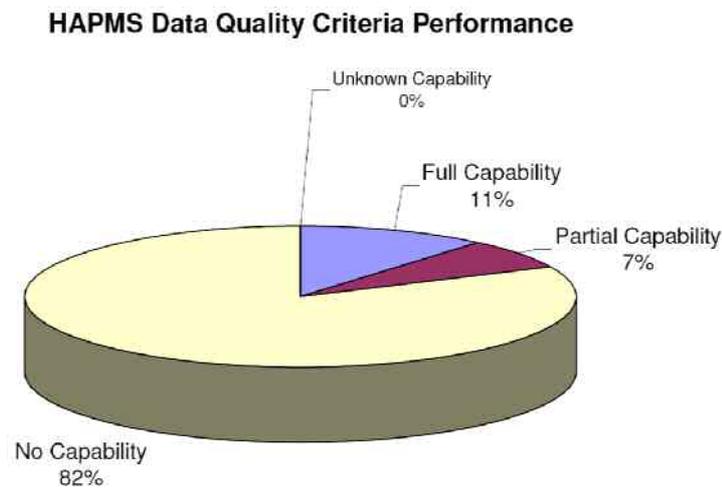


Figure 6.3 – HAPMS Data Quality Criteria Performance

5.2.4 SMIS Data Quality Criteria Performance

SMIS demonstrated 2 criteria to full capability, 2 to partial capability and no capability in 23 criteria.

SMIS has Full Capability to record client data and the site location. It has Partial Capability to record the principal contractor but it is not name specific. SMIS also has Partial Capability to record the date when the work commenced. However, this is limited as the date can be held but is not always completed.

In summary the data quality criteria assessment of SMIS demonstrated the following performance as shown in Figure 6.4:

- 7% of the application criteria fell under the heading of Full Capability (1)
- 7% of the application criteria fell under the heading of Partial Capability (2)
- 86% of the application criteria fell under the heading of No Capability (3)
- 0% of the application criteria fell under the heading of Unknown Capability (4)

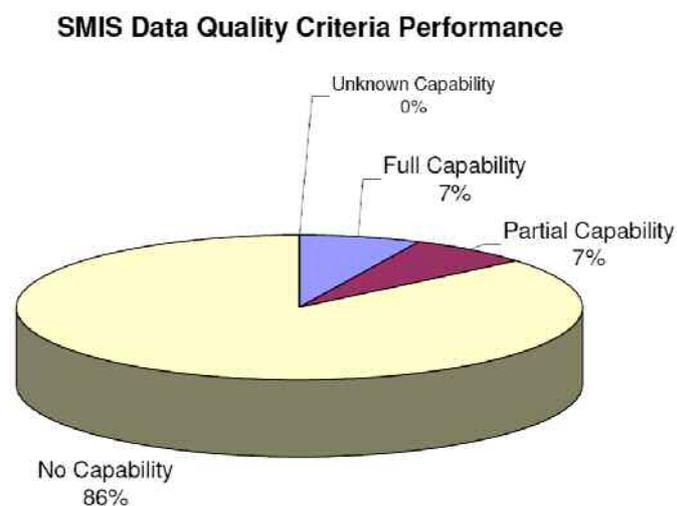


Figure 6.4 – SMIS Data Quality Criteria Performance

5.3 Comparative Assessment Conclusion

This section draws conclusions from the comparative assessment undertaken for the following short listed data collection methods:

- EnvIS – Environmental Information System
- HAPMS – Highways Agency Pavement Management System
- HADDMS – Highways Agency Drainage Data Management System
- SMIS – Structures Management Information System

The following data collection methods were scoped out of the comparative assessment due to their lack of application for data collection.

- HAGDMS – Highways Agency Geo-technical Database Management System
- SUMIS – Scheme Update Management Information Systems
- Scoping Tool – Environmental Assessment Scoping Tool
- SWISH – Spatial Web Information System for Highways
- RK11 – Designers Environmental Impact Checklist

GDMS has been previously ruled out because it did not meet the scope of the project. However it is understood that GDMS is undergoing a review and as a result could help to meet the requirements of the legislation.

5.3.1 Application Criteria Assessment Conclusions

The application criterion tests the system functionality. Performance against this criterion demonstrates the adequacies of the data management practices and functionality. The Highway Agency requires data collection methods to provide accurate data which is easily accessible for the interpretation to determine and measure environmental performance.

EnvIS, HAPMS and SMIS met all application assessment criterions to a full or partial capability. Therefore these methods provide or are capable of providing:

- Full accessibility to the Highways Agency and Service Provider,
- Data in transferable formats,
- Contractually bound minimum update frequency of 12 months,
- Data ownership to the Highways Agency,
- Reporting actions,
- Assured data, and
- Ease of use.

EnvIS demonstrated the most responsive capability with all criteria meeting a full capability standard with the exception of data update frequency. Data relating to the design of the network is submitted at predetermined milestones which could exceed 1 year. Network Managers are contractually bound to provide data annually.

The DDMS is the only method which did not demonstrate that it has the capability to respond to meet method functionally required to enable performance reporting. DDMS reported the following function aspects which could potentially hinder performance reporting:

- Minimum update frequency of 12 months could not be guaranteed as not advice is provided on the frequency of submission, data is provided on an as and when basis.
- Data ownership is unknown, the method is operated through a Service Providers internet interface
- Reporting actions are not known

The performance of EnvIS, HAPMS and SMIS demonstrates the management of data and system functionality is capable of responding to performance based enquires in which the Highways Agency may undertake. The limited capability indicated by DDMS in these areas pose the Highways Agency potentially significant risks surrounding data access and interpretation.

In considering the performance against the application criteria of the EnvIS, HAPMS and SMIS there is no evidence of significant operational gaps in the methods capability.

5.3.2 Data Quality Criteria Assessment Conclusions

The Data Quality Criteria is focused upon testing the scope and quality of data capture within each data collection method. The role of the data collection methodologies is to capture data with respect to the Highways Agencies performance. This performance data can then be used to demonstrate the Highways Agency is managing the estate and conducting its operations in a manner which is compliant to legislative requirements and meeting commitments made in policy in relation to waste, resource use and energy.

The Data Quality Criteria constitutes 27 separate criteria principally relating to:

- Information requirements on site waste management performance and regulation implemented within the Site Waste Management Plans Regulations 2008, Hazardous Waste Regulations 2005, the National Waste Strategy 2007, Waste Management Licensing Regulations 1994
- Waste volumes to landfill implemented by the National Waste Strategy 2007 and the Department for Trade and industry (2006) Sustainable Construction Strategy.
- Material resource use and licences implemented by National Waste Strategy, Water Resources Regulations 2006, Department for Trade and industry (2006) Sustainable Construction Strategy and the EU Thematic Soil Strategy.
- Energy or carbon indicator implemented by the Department for Trade and industry (2006) Sustainable Construction Strategy

EnvIS, HAPMS, DDMS and SMIS were tested against the data quality criteria. Each data collection method demonstrated gaps in information capability to enable the HA to report against legislative and policy commitments and demonstrate environmental performance.

HAPMS, DDMS and SMIS demonstrated significant data capture gaps. These methods only demonstrated either full or partial capability in 4 or 5 of the 27 criteria, recording an identified:

- Client,
- site location,
- Principal Contractor,
- date of construction commencement, and
- HAPMS and DDMS demonstrated a partial capability in recording the project value and construction material resource respectively.
- DDMS records the material used to construct drainage infrastructure

EnvIS demonstrated the largest capability demonstrating full capability in 8 of the 27 data quality criteria relating to the record of an identified:

- Client
- Waste Quantity
- Waste Management Actions and location
- person removing the waste
- Waste type by EWC code
- Waste to landfill
- Material resource use

EnvIS demonstrated a partial capability in 9 of the 27 data quality criteria. The partial capability assessment demonstrated that the method enable the identified of the required information, however it was with elements of interpretation or further investigation. Partial capability was determined relation to the record of an identified:

- Principal Contractor
- Project Value
- date construction commenced
- person drafting the SWMP
- Site location
- waste management decision made prior to SWMP
- Comparison of planned and actual waste quantities
- abstraction licence number
- contractual performance measurement

The remaining Criteria EnvIS demonstrated no capability to record an identified:

- waste type removed by EWC code
- waste destination by WML or PPC number
- deviation from SWMP explanation
- Waste carriers licence number
- consignment note code
- exemption registration number and dates of application
- Cost savings from SWMP
- Carbon /energy indicator

The application of the Data Quality Criteria has highlighted gaps in data capture to demonstrate environmental performance against legislative and policy commitments. HAPMS, DDMS and SMIS show an extremely limited capability to capture data in response to legislation and policy.

EnvIS demonstrates the largest capability demonstrating a full or partial capability to 60% of the information capture requirements. However, as EnvIS is a new method a baseline data capture has not been undertaken. EnvIS is therefore not able to respond to environmental performance enquires requiring retrospective assessment. EnvIS is unlikely to establish a baseline data set prior to 2010.

The Highways Agency is not currently capturing data against the following 10 criteria in relation to legal compliance (administrative) issues pertaining to SWMP, carbon/energy indication and construction material resources:

- waste type removed by EWC code
- waste destination by WML or PPC number
- deviation from SWMP explanation
- Waste carriers licence number
- consignment note code
- exemption registration number

- date exemption commenced
- date exemption expired
- Cost savings from SWMP
- Carbon /energy indicator

This is potentially due to the fact that the SWMP Regulations 2008, the National Waste Strategy 2007 and Climate Change Bill are relatively and did not have these issues written into the scope of their programmes.

6 Future Research Needs

An assessment of EnvIS, HAPMS and SMIS method functionality demonstrated the management of data and system functionality is capable of responding to performance based enquires. There is no evidence of significant operational gaps in EnvIS, HAPMS and SMIS methods capability.

The Highways Agency is not currently capturing data against 11 criteria in relation to legal compliance (administrative) issues pertaining to SWMP, carbon/energy indication and construction material resources adequately. The remaining 17 data quality captures requirements by EnvIS to a full or partial capacity.

The data quality criteria not adequately met indication a future potential development need are those records identifying:

- waste type removed by EWC code,
- waste destination by WML or PPC number,
- deviation from SWMP explanation,
- Waste carriers licence number,
- consignment note code,
- exemption registration number and dates of application,
- Cost savings from SWMP, and
- Carbon /energy indicator.

Although the EnvIS method demonstrates the largest amount of required data capture, the method is new and is currently undergoing testing. It is anticipated that EnvIS is not likely to be comprehensively populated and therefore be unable to provide baseline data for the network until 2010. Performance assessment including a baseline assessment is required for demonstrating performance against a number of indicators including those within the Waste Strategy. This provides a potential to work with Service providers to explore data sharing opportunities with the aim of filling baseline data capture requirements.

All of the above criteria, with the exception of the Carbon/energy indicator and construction material resources, are legal compliance issues relating to commitments implemented by the SWMP Regulations 2008. It is important to give due consideration to the purpose of a data collection methods. It may be considered that data relating to legal compliance is not technical performance information and therefore is outside the scope of a data collection method. Therefore there is a clear need to establish the scope of data collection methodologies prior to development data capture to legal compliance issues.

It is evident that there is no data capture in relation to carbon/energy indication. Data capture in response to this issue is a clear gap in the Highways Agency's data collection methods that requires future research and development need.

The Highways Agency as demonstrated as an organisation it is progressive in the area data management. However to date the development of data collection methods have been undertaken in a degree of isolation and in response to clear project needs.

The Highways Agencies data collection methods would benefit from a co-ordinated and integrated development approach to data collection strategies. This should recognise organisational information management strategies and legislative and policy commitments

at a strategic level. This approach would ensure development needs are focused and responsive to the organisational needs including response to corporate and legislative targets in terms of data capture and data interrogation and interpretation methods.

7 Recommendations

The outcome of this report is to identify gaps and make recommendations for future development needs of the Highways Agency's (HA) Data Collection Methods to ensure data capture is undertaken in response to targets and drivers contained within the legislation on waste, material resource use and energy.

A number of conclusions are made from the review which are addressed in section 6 of this report and inform the following recommendations:

Develop a framework for a co-ordinated data collection method strategy in response to organisation a targets and legislative commitments. This would ensure the Agencies data collection methods are development in a co-ordinated and integrated manner designed specifically to undertake performance measurement. This action is outside the scope of this commission (BRO3) but has been identified to assist the HA in implementing a consolidated and integrated approach to achieve best value.

In mitigation of the delivery of EnvIS baseline data, investigation opportunities to work with Service providers to explore data sharing opportunities with the aim of filling baseline data capture requirements and supporting Government strategy commitments.

It is evident that there is a data capture gap in relation to carbon and energy, and construction material resources. The Development of Data capture methods specifically in response to material resource and carbon and energy requires future research and development need to enable the Highways Agency to deliver to legislation and policy targets. It is recommended that the research and development need is explored as an output of the EnvIS project and in conjunction with the Project Sponsor of BRO2.

Determine the role of EnvIS in relation to data capture of legal compliance information responding to the requirements of the Site Waste Management Plans Regulations 2008. Explore issues and risks of decision options in addressing the record legal compliance issues relating to the regulations within a supporting mechanism outside but complementary to EnvIS

Investigate mechanisms for data interrogation and manipulation to enable performance measurement in response to legislative and policy targets to which the Highways Agency is required to respond.

8 References

1. Clean Neighbourhoods and Environment Act 2005. Retrieved from http://www.opsi.gov.uk/ACTS/acts2005/ukpga_20050016_en_1
2. Clean Neighbourhoods and Environment Bill. Retrieved from <http://www.publications.parliament.uk/pa/cm200405/cmbills/011/2005011.pdf>
http://www.opsi.gov.uk/ACTS/acts2005/en/ukpgaen_20050016_en_1
3. Control of Pollution (amendment) Act 1989 c.14 Retrieved from http://www.opsi.gov.uk/acts/acts1989/Ukpga_19890014_en_1.htm
4. Council Directive (1999/31/EC) on the Landfill of waste. Retrieved from <http://www.defra.gov.uk/environment/waste/topics/landfill-dir/>
5. Council Directive (94/31/EC) on Hazardous Waste (as amended) Retrieved from <http://www.defra.gov.uk/environment/waste/topics/hazwaste/index.htm#hazwdir>
Temporary Internet Files\OLK1\Directice94_31.htm
<http://www.netregs.gov.uk/netregs/275207/276386/925078/1507154/>
6. Council Directive 91/689/EEC on Hazardous Waste. Retrieved from Temporary Internet Files\OLK1\Directive91_689.htm
7. Environmental Protection (Duty of Care) Regulations 1994 Retrieved from http://www.opsi.gov.uk/si/si1991/uksi_19912839_en_1.htm
8. Environmental Protection Act (as amended) 1990. Retrieved from http://www.opsi.gov.uk/acts/acts1990/Ukpga_19900043_en_1.htm
9. Hazardous Waste Regulations (England and Wales) 2005 Retrieved from <http://www.opsi.gov.uk/sr/sr2005/20050461.htm>
10. HM Government (2005) Securing the Future, Delivering UK Sustainable Development Strategy, United Kingdom, The Stationary Office. Retrieved from <http://www.sustainable-development.gov.uk/publications/uk-strategy/index.htm>
11. Integrated Pollution Prevention Control (IPPC) Directive (2008/1/EC). Retrieved from <http://ec.europa.eu/environment/ippc/index.htm> <http://www.environment-agency.gov.uk/business/1745440/444663/1788268/>
12. Landfill Regulations (England and Wales) 2002 Retrieved from <http://www.opsi.gov.uk/si/si2002/20021559.htm>
13. Pollution Prevention and Control Act 1999. Retrieved from http://www.opsi.gov.uk/acts/acts1999/ukpga_19990024_en_1
14. Pollution Prevention Control (England and Wales) Regulations 2000. Retrieved from http://www.opsi.gov.uk/si/em2004/uksiem_20043276_en.pdf
http://www.opsi.gov.uk/si/em2005/uksiem_20051640_en.pdf
15. Site Waste Management Plans Regulations (2008). Retrieved from <http://www.environmentagency.gov.uk/business/444304/502508/1952646/>
<http://www.netregs.gov.uk/netregs/legislation/380525/1555007/>
16. The Climate Change Bill (Draft). Retrieved from <http://www.defra.gov.uk/news/latest/2007/climate-0313.htm>
<http://www.defra.gov.uk/environment/climatechange/uk/legislation/pdf/govt-amendment-package.pdf>
<http://www.defra.gov.uk/environment/climatechange/uk/legislation/index.htm>

17. The Department for the Environment Food and Rural Affairs, The National Waste Strategy 2007 For England, DEFRA Publication Cm7086 May 2007, United Kingdom, The Stationary Office. Retrieved from <http://www.defra.gov.uk/environment/waste/strategy/factsheets/targets.htm>
18. The Department for the Environment, Food and Rural Affairs, the National Waste Strategy 2007 for England, DEFRA Publication Cm7086 May 2007, Annex C3: Construction, Demolition and Excavation Waste, United Kingdom, the Stationary Office. Retrieved from <http://www.defra.gov.uk/environment/waste/strategy/factsheets/targets.htm>
19. The Department for Trade and Industry Sustainable Construction Strategy (draft) (2006. Retrieved from <http://www.berr.gov.uk/files/file21326.pdf>
20. The Energy Bill 2007-2008. Retrieved from <http://www.berr.gov.uk/energy/whitepaper/page39534.html> .
<http://www.berr.gov.uk/energy/bill/page40931.html> .
<http://services.parliament.uk/bills/2007-08/energy.html>
21. The EU Thematic Strategy for Soil Protection (COM (2006) 231). Retrieved from <http://www.defra.gov.uk/ENVIRONMENT/land/soil/europe/index.htm#intro>
http://ec.europa.eu/environment/soil/index_en.htm
22. The Highways Agency (2003) 'Building Better Roads: Towards Sustainable Construction.' Retrieved from <http://www.highways.gov.uk/aboutus/1136.aspx>
23. The Highways Agency (2007) 'Achieving Sustainability, the Highways Sustainable Development Action Plan 2007-2008.' Retrieved from http://www.highways.gov.uk/aboutus/documents/SDAP_Jun_07.pdf
24. The Kyoto Protocol 1997. Retrieved from http://unfccc.int/kyoto_protocol/items/2830.php
http://unfccc.int/kyoto_protocol/background/items/2879.php
25. The Lists of Wastes (England) Regulations 2005 Retrieved from http://www.opsi.gov.uk/si/si2005/uksi_20050895_en.pdf
26. The Soil Framework Directive (Proposed). Retrieved from <http://www.defra.gov.uk/ENVIRONMENT/land/soil/europe/index.htm#intro>
27. The Sustainable Energy Act (2003). Retrieved from http://www.opsi.gov.uk/Acts/acts2003/ukpga_20030030_en_1 .
<http://www.berr.gov.uk/energy/bill/page40931.html>
28. The Sustainable Energy Act 2003 Retrieved from http://www.opsi.gov.uk/si/si2004/uksi_20041203_en.pdf
29. The Waste Framework Directive (2006/12/EC) of the European parliament and of the Council, 5th April 2006. Retrieved from <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:114:0009:0021:EN:PDF> . http://ec.europa.eu/environment/water/water-framework/index_en.html
30. The Water Act 2003. Retrieved from <http://www.defra.gov.uk/environment/water/legislation/default.htm>
http://www.opsi.gov.uk/acts/acts2003/ukpga_20030037_en_1
31. The Water Bill (2003) Regulatory Impact Assessment, Environmental and Equal Treatment Appraisals. Retrieved from http://www.defra.gov.uk/environment/water/legislation/pdf/riaupdate_030722.pdf

32. The Water Resources (Abstraction and Impounding) Regulations 2006 Retrieved from <http://www.opsi.gov.uk/si/si2006/20060641.htm>
33. United Nations (1987) Report of the World Commission on Environment and Development Our Common Future Retrieved http://www.reset.it/documenti/1000/1800/1850/1856/brundtland_reportpdf.pdf
34. Waste Management Licensing Regulations (as amended) 1994 Retrieved from http://www.opsi.gov.uk/si/si1994/Uksi_19941056_en_1.htm

9 Appendices

Appendix A – Data Collection Methods Scoping Comparison Summary

AMS	HADDMS	HAGDMS	HAPMS	EnvIS	EMaRS	SUMIS	SMIS	Scoping Tool
General Information								
Objective	Inventory of HA drainage data.	Inventory of HA geotechnical data.	Provides current and historic information on HA pavement network.	Have 4 objectives; 1) enable design and implementation of improvements 2) Provide design data and performance requirements 3) enable scheme or network data to be handed to managing agents. 4) Enable environmental data to be used in analysing interactions with other technical data.	Designed to be a complete management system. This has not yet been implemented by the HA.	To provide a central network storage area for project issues.	Provides current and historic information on HA structures network.	Alert project leaders to potential issues in the schemes. Assist in production of project scoping tools. Introduce a level of uniformity to the reports produced.
Description	Captures drainage management system, maintenance, and construction responses to DMRB Volume 5.	We based system. Based on a mapping interface which includes databases containing information on the geotechnical assets of the HA.	Manages information pertaining to the construction and management of pavements.	Designed to help meet the DfT objective of improving environmental performance of transport.	System is an SQL database. Information can be updated at anytime. It will have the ability to communicate with to transfer project information.	Access database	Manages information pertaining to construction and management of highways structures.	Internal tool to alert project leaders of issues at stages during project schemes.
Implementation	2004	2002	2000	Interim Advice Note (84/07) July 2007.	TBC	2007	2001-2002	Unknown
Sponsor	Santi Santhalingham	David Patterson	Annette Pass	Peter Groutage	Ian Le Fevre	Internal – SSR Environment Group	Awtar Jandu	David Leach
Developer	Tim Spinks	Tim Spinks	Pitney Bowes	Nick Mitchard	Rob Beaumont, Monica Tetlow, James Mason.	Will Spurr/Mark Pellowe	Highways Agency bespoke.	Paul Tomlinson, Dan Rapson, Rob Beaumont, Dean Kerwick-Chrisp
User Frequency	Internal and External. User frequency is intermittent.	Internal and External	Used daily.	Intended for internal & external use. Data submitted at environmental assessment, detailed design & as built stage.	Not yet implemented.	Continually	Continuous. Requirement to update information.	Used throughout phases of the project.
Development	Likely to be developed further.	Unknown	Network definition, network maintenance.	Probable for continual use.	Likely to be adopted by the Environment Group of the HA.	Unknown	Unknown	Unknown
Contractual Application	Contractually bound.	Standard – Mandatory	Requirement for schemes to be analysed using HAPMS.	Parts 1-4 are mandatory. Part 5 is for advice.	HA internal only.	Unknown	Part of agents duties to update SMIS	Unknown
Data Capture Capabilities								
Waste	No specific waste data capture facility.	Provides information pertaining to the geotechnical features of the HA network. Data could be used to determine the nature of waste as a result of maintenance but no specific account of waste.	No specific waste information captured. Construction details are recorded so can identify nature of waste.	Holds detailed waste data. It does not record any detail on water as a waste.	Issues recorded that will require action from the Environment Group. There could be the potential to specify details on waste after further development.	Possible ad hoc data.	No waste data captured.	Information captured in response to particular questions. Information is dependent upon the question routing.
Materials	No specific waste data capture facility.	As above	No specific material resource use captured.	Material resource use data is collected.	Issues recorded that will require action from the Environment Group. There could be the potential to specify details on material resource use after further development.	Possible ad hoc data	Types of materials used in construction are entered by agents/SSR/TO. May be in terms of identification of reusable materials.	Not applicable
Energy	No specific waste data capture facility.	As above.	No energy data recorded. Potential to develop this area.	No current energy data captured. Does record waste sent to energy from waste facility.	Issues recorded that will require action from the Environment Group. There could be the potential to specify details on energy after further development.	Possible ad hoc data	No energy data captured.	Not applicable
Data capture and Transfer Process								
Format	Unknown	Unknown	Details stored in database form.	Data held in service providers own systems. Then submitted to the HA.	Free text.	Access database	Structured database	Data is in the form of yes/no/responses.
Frequency	Unknown	Unknown	Constantly modified.	Continual updates.	Ad hoc.	Continual updates	Continuously updated.	As required by the system.
Process	Entered via web-based database system.	Entered via a web-based database system.	Not known.	Not known.	No defined data capture process.	Web	Agents required to update.	
Data Confidence	Unknown	Unknown	HAPMS holds the master HA network referencing.	Good	Good	Good	Unknown. No measure.	Good
Reporting Capabilities	Data can be viewed on GIS map.	Data can be viewed on GIS map.	Many tools for reporting quite advanced user interface.	Bespoke and ad hoc reporting.	Good, potential for generating trends and analysis.	Generates 'issues' report automatically.	Text/graphical reporting.	Potential to extract information once scoped, no built in facility to interrogate the system.
Ease of Use	Unknown.	Unknown.	Simple – requires some training.	Some training will be required.	Little training required.	Simple – requires basic training.	Simple.	Basic training required – system is easy to use.

Appendix B Legislative and Policy Framework discussion

Legislative Framework

The next section of this report discusses the Legislative and Regulatory Reform Bills that have an impact upon waste, material resource use and energy.

Legislative Regulatory Reform Bills

The Energy Bill 2007-2008 was introduced on the 10th of January 2008 with the aim to implement the legislative aspects of the Energy White Paper, 'Meeting the Energy Challenge'.² The bill provides a legislative framework by putting in place new legislation to: 1) Reflect the availability of new technologies (such as Carbon Capture and Storage (CCS)) and emerging renewable technologies) 2) Correspond with the changing requirements for security of supply infrastructure 3) To ensure adequate protection for the environment and the tax payer as our energy market changes³. A key element of the bill is CCS which looks to create a regulatory framework which will enable private sector investment with the potential to reduce the carbon emissions from fossil fuel power stations by up to 90%.⁴ The Sustainable Energy Act 2003 looks primarily at energy efficiency within residential accommodation but this could be an area that may be subject to further development.⁵

The Clean Neighbourhoods and Environment Bill received Royal Assent on the 7th of April 2005. This bill then became the Clean Neighbourhoods and Environment Act 2005 which the Site Waste Management Regulations 2008 have been formed under. The Clean Neighbourhoods and Environment Bill looked to give a framework for primarily nuisance offences such as abandoned vehicles and gave power to give fixed penalty notices for nuisance parking offences⁶. More relevant to this report, it also looked at the unlawful deposit of waste and failure to furnish documentation relating to the carrying of waste. These are enacted through the Environmental Protection (Duty of Care Regulations) 1994.

The Climate Change Bill sets out clear targets including a UK target for a 60% reduction by 2050 (on 1990 levels) and a 26% to 32% reduction (of carbon levels) by 2020 legally binding⁷. The Government will be asking The Committee on Climate Change to increase the 60% reduction to 80%.⁸ The Bill looks to give a clear, credible, long-term framework for the UK to achieve reducing carbon dioxide emissions. The proposals the Government implemented to enact these changes would be required to contribute to sustainable development⁹. To aid in the delivering of this target five – year carbon budgets are proposed. These carbon budgets will set binding limits on carbon dioxide emissions.

The Water Bill was published on the 20th of February 2003¹⁰. The Bill aims to ensure that water as a resource is protected through abstraction licensing and managing the demand for water resources. Through preventing over abstraction and ensuring that control is gained for controlling the environmental effects of abstracting water, the abstraction

² <http://www.berr.gov.uk/energy/whitepaper/page39534.html> accessed 17/03/08

³ The Energy Bill 2007-2008 <http://www.berr.gov.uk/energy/bill/page40931.html> accessed 13/03/08

⁴ Ibid.

⁵ http://www.opsi.gov.uk/Acts/acts2003/ukpga_20030030_en_1

⁶ <http://www.publications.parliament.uk/pa/cm200405/cmbills/011/2005011.pdf>

⁷ The Climate Change Bill <http://www.defra.gov.uk/news/latest/2007/climate-0313.htm> Accessed 13/03/08

⁸ The Climate Change Bill <http://www.defra.gov.uk/environment/climatechange/uk/legislation/pdf/govt-amendment-package.pdf> Accessed 13/03/08

⁹ Ibid.

¹⁰ <http://www.defra.gov.uk/environment/water/legislation/default.htm> accessed 17/03/08

licensing system works in conjunction with sustainable development¹¹. The Bill has four main benefits; 1) Abstraction and Impounding, 2) New regulatory arrangements 3) Extending opportunities for competition 4) A number of improvements in the regulatory system¹².

Directives and Regulations

The Government have implemented a number of Acts under these Bills (and others) which look to ensure that targets are met. Further to this, at a European level a number of Directives have been implemented which look to enact a common approach across the EU. One of the aims of this is to ensure fairness within the various markets. These directives include, The Waste Framework Directive, The Landfill Directive, The Hazardous Waste Directive, The Integrated Pollution Prevention and Control Directive and The Water Framework Directive. These Directives will now be discussed alongside the legislation and regulations that enact them.

Regulatory Framework for Waste

The Waste Framework Directive (Council Directive 2006/12/EC) establishes a European definition of waste which states, 'waste shall mean any substance or object in the categories set out in Annex I which the holder discards or intends or is required to discard.'¹³ The following waste is excluded from the scope of the directive: gaseous effluents emitted into the atmosphere, where they are already covered by other legislation radioactive waste, waste resulting from prospecting, extraction, treatment and storage of mineral resources and the working of quarries, animal carcasses and the following agricultural waste: faecal matter and other natural, non-dangerous substances used in farming, waste waters, with the exception of waste in liquid form and decommissioned explosives.¹⁴ Annex I consists of a long list of different waste types which fall under the control of the directive with the catch all category of Q16 which states, 'Any materials, substances or products which are not contained in the above mentioned categories.'

The WFD provides a framework for Member States to provide a high level of protection and to take responsible action when dealing with the disposal and recovery of waste whilst reducing the need for movements of waste produced. Through the WFD a regulatory framework is required to ensure that when waste is managed it is done with regard to the environment and specifically to prevent pollution of the environment and to reduce harm to human health. The WFD has been encompassed into legislation through the Environmental Protection Act 1991, the Clean Neighbourhoods Act 2005, and the Control of Pollution (amendment) Act 1989. It is then further enacted through the Waste Management Licensing Regulations 1994 and the Pollution Prevention Control Regulations (England and Wales) 2000, the Landfill Regulations (England and Wales) 2002, The Hazardous Waste Regulations (England and Wales) 2005, and the Environmental Protection (Duty of Care Regulations) 1994. Through these regulations a regulatory framework is developed which allows for the effective management of the waste industry.

¹¹ http://www.defra.gov.uk/environment/water/legislation/pdf/riaupdate_030722.pdf
accessed 17/03/08

¹² Ibid.

¹³ The Waste Framework Directive -
<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:114:0009:0021:EN:PDF>
Accessed 13/03/08

¹⁴ Ibid.

Regulatory Framework for Landfill

The Landfill Directive (Council Directive 1999/31/EC) states that the 'prevention, recycling and recovery of waste should be encouraged as should the use of recovered materials and energy so as to safeguard natural resources and obviate wasteful use of land.'¹⁵ This Directive clearly puts prevention, recycling and recovery of waste at the top of its agenda. It also calls for the quantity and hazardous nature of waste for landfill to be reduced and to improve the handling of waste so that its recovery can be enhanced thus again reducing waste to landfill.¹⁶ The Directive also calls for waste to be classified as hazardous, non-hazardous and inert to further reduce the harmful effect of waste on the environment. This Directive is enacted through a number of key pieces of environmental legislation. The Landfill Regulations (England and Wales) 2002 is one of the key regulatory provisions to enable this Directive. Other pieces of legislation include the Lists of Waste (England) Regulations 2005, the Waste Management Licensing Regulations (as amended) 1994 and the Pollution Prevention Control Regulations (as amended) 1994.

Regulatory Framework for Hazardous Waste

The Hazardous Waste Directive (Council Directive 91/689/EC) puts a requirement upon Member States (MS) to handle hazardous waste in a manner that will not cause harm to the environment or to human health. It states that MS must record where hazardous waste is tipped it is recorded, hazardous waste must not be mixed with other types of waste and hazardous waste is collected, transported, packaged and labelled in accordance with the international and Community Standard in force¹⁷. Hazardous Wastes are listed in the List of Waste Regulations (England) 2005 and is further enacted through the Hazardous Waste (England and Wales) Regulations 2005. The List of Waste Regulations (England) 2005 provide a comprehensive list of all waste types and clearly states which waste types are hazardous. To aid the correct identification of waste and reduce the amount of hazardous waste going to landfill the Hazardous Waste Regulations stipulate that Hazardous Waste is correctly identified and managed. Producers of hazardous waste are required to register with the Environment Agency and produce a consignment note which states the hazardous nature and the volume of the waste produced as well as its final disposal point.

Regulatory Framework for Integrated Pollution Prevention and Control

The Integrated Pollution Prevention and Control Directive (Council Directive 2008/1/EC) (IPPC) has the primary aim of the IPPC Directive is to prevent, reduce and eliminate pollution at source through the efficient use of natural resources and taking account of the environment as a whole¹⁸. The Directive refers to the objectives and principles of the EC's environmental policy which looks at 'giving priority to intervention at source and ensuring the prudent management of natural resources.'¹⁹ Through IPPC there has been the identification of a move towards a sustainable balance between human activity and socio-economic development and the resources and regenerative capture of the environment²⁰. The IPPC Directive has been enacted through the Pollution Prevention and Control Act 1999²¹ and then subsequently the Pollution Prevention Control Regulations (England and Wales) 2000 which gives regulatory bodies the power to enforce the IPPC Directive and the PPC Act. To encompass the IPPC Directive complex waste installations are required to apply for a PPC permit and surrender the older Waste Management Licence.

¹⁵ The Landfill Directive (Council Directive 1999/EC>???)

¹⁶ *ibid*

¹⁷ Temporary Internet Files\OLK1\Directive91_689.htm

¹⁸ <http://ec.europa.eu/environment/ippc/index.htm> accessed 17/03/08

¹⁹ Integrated Pollution Prevention Control (IPPC) Directive.

²⁰ *Ibid*.

²¹ Pollution Prevention and Control Act 1999 http://www.opsi.gov.uk/acts/acts1999/ukpga_19990024_en_1

Regulatory Framework for Soils

The EU Soil Framework Directive was proposed on the 22nd of October 2006²². However Environment Ministers have failed to reach a political agreement on EC proposal for the directive. As a result it is not yet known how this will be taken forward. The Soil Thematic Strategy has the overall objective of the protection and sustainable use of soil. There are two principles to guide this. These are: 1) preventing further soil degradation and preserving its functions and 2) restoring degrading soils to a level of functionality consistent at least with current and intended use. This will also consider the cost implication of the restoration of soil.²³ This framework is still undergoing proposals.

Regulatory Framework for Water as a Resource

The Water Framework Directive (2000/60/EC) looks to integrated protection and sustainable management of water into policy in areas such as agriculture, energy and transport.²⁴ The primary aim of the WFD is to set the objectives for the protection of water. Some of the most important key aims of the WFD are; to expand the scope of water protection to all waters, surface waters and groundwater, introduce a 'combine approach' of emission limit values and quality standards and the streamlining of legislation. This Directive should provide a basis for continued dialogue and for the development of strategies towards a further integration of policy areas.²⁵ This Directive is enacted through the Water Act 2003 which has four aims; 1) The sustainable use of water resources; 2) Strengthening the voice of consumers; 3) a measured increase in competition; 4) The promotion of water conservation. Prior to the Water Act 2003 the WFD was enacted through the Water Resources Act 1991. The primary within these acts is to place regulatory controls on the abstraction and impounding of water as a resource. The Acts give powers to the relevant regulatory body to issue licences so volumes of water abstracted for activities such as construction are regulated. This Act also makes it an offence to cause pollution of controlled water.

Policy Drivers

The National Waste Strategy 2007²⁶ produced by the Department for Environment Food and Rural Affairs, builds upon the work from the National Waste Strategy that was completed in 2001. The 2007 strategy states that construction waste accounts for 32%²⁷ of total waste arising for 2004. This is the highest volume of waste from all the sectors identified. As a result of this and because of European drivers waste and construction waste in particular has been targeted with a view to reduce the amount of waste produced and specifically to look at reducing the amount of waste produced on construction sites.

The National Waste Strategy 2007 is a governmental report which states targets to reduce the amount of construction waste currently going to landfill. The strategy proposes an encompassing target of reducing the amount of waste going to landfill from 22.3 million tonnes in 2000 to 12.2 million tonnes in 2020 with an intermediary target of 15.9 million tonnes by 2010. The strategy also places a reduction in the amount of municipal waste going to landfill with a target of 1) 2010 to reduce to 75% of 1995 level, 2) 2013 to reduce to 50% of 1995 level 3) 2020 reduce to 35% of 1995 level²⁸. Targets from commercial waste are not yet published but the policies required to meet the expected

²² <http://www.defra.gov.uk/ENVIRONMENT/land/soil/europe/index.htm#intro>

²³ <http://www.defra.gov.uk/ENVIRONMENT/land/soil/europe/index.htm#intro>

²⁴ http://ec.europa.eu/environment/water/water-framework/index_en.html

²⁵ The Water Framework Directive

²⁶ The National Waste Strategy 2007 For England 2007, DEFRA Publication Cm7086 May 2007, Annex C3: Construction, Demolition and Excavation Waste

²⁷ *ibid*

²⁸ <http://www.defra.gov.uk/environment/waste/strategy/factsheets/targets.htm> accessed on the 17/03/08

targets are already in place. During the 2004-2010 a 20% drop is anticipated due to the policies already in place²⁹.

For the Construction and Demolition Sector there were no targets set in the National Waste Strategy 2000. The Construction and Demolition Sector creates more waste overall and more hazardous waste than any other sector³⁰ and the National Waste Strategy 2007 has looked to combat this. The Construction and Demolition sector produces the largest amount of hazardous waste per sector at 32% which equates to 1.7 million tonnes. The sector also produces 1 million tonnes of plasterboard which goes to landfill with only 70,000 tonnes being sent for recycling.

The report proposes that the volume of construction waste going to landfill needs to reduce by half, by 2012 (potentially against 2005 figures) and this will be done by waste reduction, re-use and recycling.³¹ The final figures and targets for the reduction will be by the end of 2008. The Government are also proposing an interim objective of zero net waste (at construction site level) by 2015 leading to zero waste to landfill by 2020.

To facilitate these targets being met fiscal and policy measures have been instigated. There will be an increase in Landfill Tax for waste going to landfill. Currently the standard rate of tax is £24 per tonne for non-hazardous and non inert wastes. From the 1st of April 2008 and until at least 2010-11 the standard rate of Landfill Tax will increase by £8 per tonne each year and a lower rate of £2 per tonne will apply to inert wastes listed in the Landfill Tax (Qualifying Material) Order 1996. However, from the 1st of April 2008 this will increase to £2.50 per tonne.

A further fiscal measure was introduced in 2002. The Aggregates Levy looks to ensure that the environmental impact in extracting a primary aggregate is reflected in the price. The aim is to encourage the use of recycled and secondary aggregates. There will be an increase in the price of virgin aggregate from £1.60 per tonne to £1.95 per tonne from the 1st of April 2008.

The Government have introduced the Site Waste Management Plans (SWMP) which are due to come into force in April 2008 which are a key mechanism for reducing the amount of waste on site and ensuring good resource management. SWMP have been in force since 2004 but have been voluntary from April 2008 they will be a legal requirement on projects over £300,000. The SWMP require a certain amount of pre-planning which will reduce costs on site (in regard to waste management) and reduce waste arisings. There will also be an increase in re-use and recycling through effective forecasting. The SWMP manages how waste is managed on site by looking at how the building materials can be managed³² to reduce the amount of waste being produced. The SWMP also looks to combat illegal waste carriers through ensuring that waste carrier checks are conducted.

There are further protocols being developed by the Environment Agency and WRAP. There has been the identification of ten waste streams including: flat glass, pulverised fuel ash (PFA), contaminated soils, and blast furnace slag. Clarification on and guidance will be developed on best practice for the processing and use of recycled products.

There are a number of other publications giving guidance on sustainability that have been produced by the Government: 'Securing the future, Delivering UK Sustainable Development Strategy'³³. 'The strategy focuses upon four agreed priorities, these are; 1) Sustainable Consumption and production, 2) Climate Change, 3) Natural Resource

²⁹ Ibid.

³⁰ The National Waste Strategy 2007 Annex C3

³¹ Ibid

³² <http://www.environment-agency.gov.uk/business/444304/502508/1952646/>

³³ Securing the Future, Delivering UK Sustainable Development Strategy

Protection 4) Sustainable Communities³⁴. The document sets out how the Government aims to meet these priorities, the guiding principles and the indicators to allow an overview of sustainable development³⁵. The Department for Trade and Industry produced, 'Sustainable Construction Strategy' (2006) which highlights the progress made in the last five years. This report is currently in draft and the findings have not yet been finalised.

Highways Agency Policy

The Highways Agency has produced, 'Achieving Sustainability, The Highways Sustainable Development Action Plan 2007-2008.' Within this document are a number of key priorities including the investigation of the Highways Agency's GHG/carbon footprint from construction, maintenance and network operations and identify future actions for reduction³⁶. A further target is to develop a waste resource use and recycling strategy for construction and maintenance work to allow for the identification of benchmarks for future target setting. An energy efficiency strategy for road lighting with the aim to reduce carbon emissions has also been identified as an area for development³⁷.

The Highways Agency have also published, 'Building Better Roads: Towards Sustainable Construction' which details the Highways Agency's approach to sustainability as well as its expectations for suppliers and information for stakeholders. The report looks at the management of natural resources and states that 'between 20,000 and 60,000 tonnes of aggregate is used to construct a mile of motorway'³⁸. The report also states that there is 70 million tonnes of construction products and demolition arisings wasted and 13 million tonnes of this is material which is delivered to sites and thrown away unused³⁹. The Highways Agency wants to address this and implement a design for minimum waste relating to residual material and recyclable material.

³⁴ Ibid.

³⁵ Ibid pg21.

³⁶ The Highways Agency (2007) 'Achieving Sustainability, the Highways Sustainable Development Action Plan 2007-2008.'

³⁷ Ibid.

³⁸ The Highways Agency 'Building Better Roads: Towards Sustainable Construction.'

³⁹ Ibid.

Appendix C – Legislation and Policy Extracts and Defined Data Quality Criteria

RELEVANT LEGISLATION/POLICY/ACT	EXTRACT	DATA QUALITY CRITERIA	FURTHER INFORMATION
1 - European Commission - 'Sustainable Construction; Final Report' May 2001	<p>Priority Action ' to develop a strategy for the use and promotion of, 1) Environmentally friendly construction materials, 2) Energy efficiency, 3) Construction and demolition of waste management.</p>	Relevant criteria not applicable	<ul style="list-style-type: none"> • Aim – provides an overview of sustainability for EU member states • Implementation – not directly implemented but indirectly through various legislation (discussed in report)
2 - Waste Framework Directive (Council Directive 2006/12/EC)	<p>Section (6) In order to achieve a high level of environmental protection, Member States should, in addition to taking responsible action to ensure the disposal and recovery of waste, take measures to restrict the production of waste.</p> <p>Section (10) Movements of waste should be reduced and Member States may take the necessary measures to that end in their management plans.</p>	Relevant criteria not applicable.	<ul style="list-style-type: none"> • Aim -The Waste Framework Directive aim is to provide a framework for the regulation and management of waste. • Implementation – The Waste Framework Directive is implemented through Waste Management Licensing Regulations 1994, The Environmental Protection Act 1991, The Site Waste Management Plan Regulations 2008
3 - Landfill Directive (Council Directive 1999/31/EC)	<p>Point (3) Whereas the prevention, recycling and recovery of waste should be encouraged as should the use of recovered materials and energy so as to safeguard natural resources and obviate wasteful use of land; Point (4) Whereas further consideration should be given to the issues of incineration of municipal and non-hazardous waste, composting, biomethanisation, and the processing of dredging sludges; Point (8) Whereas both the quantity and hazardous nature of waste intended for landfill should be reduced where appropriate; whereas the handling of waste should be facilitated and its recovery enhanced; whereas the use of treatment processes should therefore be encouraged to ensure that landfill is compatible with the objectives of this Directive; whereas sorting is included in the definition of treatment; Point (20) Whereas, in order to prevent threats to the environment, it is necessary to introduce a uniform waste acceptance procedure on the basis of a classification procedure for waste acceptable in the different categories of landfill, including in particular standardised limit values; whereas to that end a consistent and standardised system of waste characterisation, sampling and analysis must be established in time to facilitate implementation of this Directive; whereas the acceptance criteria must be particularly specific with regard to inert waste; Article 6 (a) only waste that has been subject to treatment is landfilled. This provision may not apply to inert waste for which treatment is not technically feasible, nor to any other waste for which such treatment does not contribute to the objectives of this Directive, as set out in Article 1, by reducing the quantity of the waste or the hazards to human health or the environment; (b) only hazardous waste that fulfils the criteria set out in accordance with Annex II is assigned to a hazardous landfill; (c) landfill for non-hazardous waste may be used for: (i) municipal waste; (ii) non-hazardous waste of any other origin, which fulfill the criteria for the acceptance of waste at landfill for non-hazardous waste set out in accordance with Annex II; (iii) stable, non-reactive hazardous wastes (e.g. solidified, vitrified), with leaching behavior equivalent to those of the non-hazardous wastes referred to in point (ii), which fulfill the relevant acceptance criteria set out in accordance with Annex II. These hazardous wastes shall not be deposited in cells destined for biodegradable non-hazardous waste, (d) inert waste landfill sites shall be used only for inert waste.</p>	Relevant criteria not applicable	<ul style="list-style-type: none"> • Aim - Reduce the amount of waste going to landfill and to ensure that waste classification is established allowing correct type of waste to be sent to the correct landfill. • Implementation - the Landfill Directive is implemented through the Landfill Regulations 2002. The Hazardous Waste Regulations 2005 and the Lists of Wastes Regulations 2005 also impact indirectly on the Directive.

<p>4 - Hazardous Waste Directive (Council Directive 91/689/EC)</p>	<p>Article 2 1. Member States shall take the necessary measures to require that on every site where tipping (discharge) of hazardous waste takes place the waste is recorded and identified. 2. Member States shall take the necessary measures to require that establishment and undertaking which dispose of, recover, collect or transport hazardous waste do not mix different categories of hazardous waste or mix hazardous waste with non-hazardous waste. 3. By way of derogation from paragraph 2, the mixing of hazardous waste with other hazardous waste or with other waste, substances or materials may be permitted only where the conditions laid down in Article 4 of Directive 75/442/EEC are complied with and in particular for the purpose of improving safety during disposal or recovery. Such an operation shall be subject to the permit requirement imposed in Articles 9, 10 and 11 of Directive 75/442/EEC. 4. Where waste is already mixed with other waste, substances or materials, separation must be effected, where technically and economically feasible, and where necessary in order to comply with Article 4 of Directive 75/442/EEC.</p>	<p>Relevant criteria not applicable.</p>	<ul style="list-style-type: none"> • Aim – The Hazardous Waste Directive provides the framework for the regulation of Hazardous Waste. • Implementation - Hazardous Waste Directive is implemented through the Hazardous Waste Regulations 2005. The List of Waste Regulations 2005 will also indirectly impact.
<p>5 - Integrated Pollution Prevention Control Directive</p>	<p>Paragraph (2). Whereas the objectives and principles of the Community's environment policy, as set out in Article 174 of the Treaty, consist in particular of preventing, reducing and as far as possible eliminating pollution by giving priority to intervention at source and ensuring prudent management of natural resources, in compliance with the 'polluter pays' principle and the principle of pollution prevention; Paragraph (4). Whereas the Fifth Environmental Action Programme, the broad outline of which was approved by the Council and the Representatives of the Governments of the Member States, meeting within the Council, in the resolution of 1 February 1993 on a Community programme of policy and action in relation to the environment and sustainable development (4), accords priority to integrated pollution control as an important part of the move towards a more sustainable balance between human activity and socio-economic development, on the one hand, and the resources and regenerative capacity of nature, on the other.</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Aim – The primary aim is to prevent, reduce, and eliminate pollution at source through the efficient use of natural resources. • Implementation – This is implemented through the Pollution Prevention Control Regulations 2000.
<p>6 - Water Framework Directive</p>	<p>Paragraph (16) Further integration of protection and sustainable management of water into other Community policy areas such as energy, transport, agriculture, fisheries, regional policy and tourism is necessary. This Directive should provide a basis for a continued dialogue and for the development of strategies towards a further integration of policy areas. This Directive can also make an important contribution to other areas of cooperation between Member States; inter alia, the European spatial development perspective (ESDP). Paragraph (41) For water quantity, overall principles should be laid down for control on abstraction and impoundment in order to ensure the environmental sustainability of the affected water systems.</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Aim – To provide a framework for the management of water as a resource. • Implementation - through the Water Act 2003 and the subsequently through the Water Resources (Abstraction and Impounding) Regulations 2006.
<p>7- The Soil Directive</p>	<p>This is proposed and not yet implemented.</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Not yet in force.
<p>8 - The Energy Bill 2007-2008</p>	<p>Key areas of the Bill 1) Strengthens the regulatory framework for offshore gas supply infrastructure to enable private sector investment. 2) Creates a regulatory framework to enable private sector investment in Carbon Capture and Storage projects. 3) Strengthens the Renewable Obligation to drive greater and more rapid deployment of renewable in the UK. 4) Strengthens statutory decommissioning provisions for offshore renewable and oil and gas installations to minimise the risk of liabilities falling to the Government. 5) Improves the offshore oil and gas licensing regime in response to changes in the commercial environment and enable the Department for Business Enterprise and Regulatory Reform to carry out its regulatory functions more effectively. 6) Ensures the operators of new nuclear power stations accumulate funds to meet the full costs of decommissioning and their full share of waste management costs. 7) Introduces amending powers such that Ofgem is able to run the offshore electricity transmission licensing regime more effectively⁴⁰.</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Aim – to establish a legislative framework that will; reflect the availability of new technologies; ensure adequate protection for the environment and the tax payer; correspond with our changing requirements for security of supply infrastructure.⁴¹ • Implementation – through the Sustainable Energy Act 2003
<p>89- The Clean Neighbourhoods and Environment Bill 2005</p>	<p>Informative of the Bill In 2002 a review of the legislative framework for providing and maintaining a clean and safe local environment was carried out by DEFRA to accompany the cross-Government report <i>Living Places - Cleaner, Safer, Greener</i>. The review found that the powers, duties and guidance for dealing with problems associated with local environmental quality were not working as effectively as they should be, and produced options for delivering changes. These options were contained in the consultation paper <i>Living Places - Powers, Rights, and Responsibilities</i> launched at the Urban Summit on 31 October 2002. Some were introduced into legislation in Part 6 of the Anti-social Behaviour Act 2003. The majority of the options were developed further and included as proposals for legislative action within the Clean Neighbourhoods consultation launched on 25 July 2004.⁴²</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Aim – Gives a proposed regulatory framework for The Clean Neighbourhoods and Environment Act 2005. • Implementation – This is implemented through the Clean Neighbourhoods and Environment Act 2005 and the Site Waste Management Plans Regulations 2008.
<p>10 - The Climate Change Bill</p>	<p>Targets Target 1 - This Bill puts into statute the UK's targets to reduce carbon dioxide emissions through domestic and international action by at least 60 per cent by 2050 and 26-32 per cent by 2020, against a 1990 baseline. Target 2 - This target will be reviewed, based on a report from the new independent Committee on Climate Change on whether it should be even stronger still, and the implications of including other greenhouse gases and emissions from international aviation and shipping, in the target. Target 3 -Five-year carbon budgets, which will set binding limits on carbon dioxide emissions ensuring every year's emissions count. Three successive carbon budgets (representing 15 years) will always be in law – providing the best balance between predictability and flexibility. These budgets will be backed by strong annual accountability and independent scrutiny. Target 4 -Emission reductions purchased overseas may be counted towards the UK's targets, consistent with the UK's international obligations. This ensures emission reductions can be achieved in the most cost effective way, recognising the potential for investing in low carbon technologies abroad as well as action within the UK to reduce the UK's overall carbon footprint</p>	<p>Relevant criteria not applicable.</p>	<ul style="list-style-type: none"> • Implementation - This has not yet been fully implemented. There are proposals to look at a Carbon Reduction Programme, an increase in recycling at households and, the Renewable Transport Fuels Obligation.
<p>11 - The Water Bill</p>	<p>Informative of the bill Parts 1 and elements of Part 3: provide the Environment Agency with additional tools for managing water resources and stronger powers to take action against abstractions causing environmental damage. They also introduce provisions to increase the scope and public availability of information on water resources, intended to enable abstractors to plan ahead in an environmentally responsible manner; and to increase the flexibility, accountability and administrative efficiency of the abstraction and impounding licensing system, with the intended result of increasing</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Aim gives the regulatory framework for the abstraction and licensing of water. • Implementation – Implemented through the Water Act 2003 and the Water Resources (Abstraction and Impounding Regulations)

<p>12- Environmental Protection Act 1990 (c.43)</p>	<p>the ease of access to sustainable water resources</p> <p>Section 33 Prohibition on unauthorised or harmful deposit, treatment or disposal etc. of waste (1) Subject to subsection (2) and (3) below and, in relation to Scotland, to section 54 below, a person shall not— (a) deposit controlled waste, or knowingly cause or knowingly permit controlled waste to be deposited in or on any land unless a waste management licence authorising the deposit is in force and the deposit is in accordance with the licence; (b) treat, keep or dispose of controlled waste, or knowingly cause or knowingly permit controlled waste to be treated, kept or disposed of— (i) in or on any land, or (ii) by means of any mobile plant, except under and in accordance with a waste management licence; (c) treat, keep or dispose of controlled waste in a manner likely to cause pollution of the environment or harm to human health. (2) Subsection (1) above does not apply in relation to household waste from a domestic property which is treated, kept or disposed of within the curtilage of the dwelling by or with the permission of the occupier of the dwelling. (3) Subsection (1)(a), (b) or (c) above do not apply in cases prescribed in regulations made by the Secretary of State and the regulations may make different exceptions for different areas. (4) The Secretary of State, in exercising his power under subsection (3) above, shall have regard in particular to the expediency of excluding from the controls imposed by waste management licences— (a) any deposits which are small enough or of such a temporary nature that they may be so excluded; (b) any means of treatment or disposal which are innocuous enough to be so excluded; (c) cases for which adequate controls are provided by another enactment than this section. (5) Where controlled waste is carried in and deposited from a motor vehicle, the person who controls or is in a position to control the use of the vehicle shall, for the purposes of subsection (1)(a) above, be treated as knowingly causing the waste to be deposited whether or not he gave any instructions for this to be done.</p>	<p>Relevant criteria not applicable</p>	<p>2006</p> <ul style="list-style-type: none"> • Aim – One of the primary regulatory tools used in the regulation of waste. The EPA 1990 sets the relevant offences for when waste is managed illegally. This would include taking waste for treatment and/or disposal to a site that does not have a valid WML or PPC permit. • Implementation - Waste Management Licensing, Pollution Prevention and Control Regulations 2000 and the Environmental Protection (Duty of Care) Regulations 1994.
	<p>Section 34 Duty of care etc. as respects waste (1) Subject to subsection (2) below, it shall be the duty of any person who imports, produces, carries, keeps, treats or disposes of controlled waste or, as a broker, has control of such waste, to take all such measures applicable to him in that capacity as are reasonable in the circumstances— (a) to prevent any contravention by any other person of section 33 above; (b) to prevent the escape of the waste from his control or that of any other person; and (c) on the transfer of the waste, to secure— (i) that the transfer is only to an authorised person or to a person for authorised transport purposes; and (ii) that there is transferred such a written description of the waste as will enable other persons to avoid a contravention of that section and to comply with the duty under this subsection as respects the escape of waste. (2) The duty imposed by subsection (1) above does not apply to an occupier of domestic property as respects the household waste produced on the property. (3) The following are authorised persons for the purpose of subsection (1)(c) above— (a) any authority which is a waste collection authority for the purposes of this Part; (b) any person who is the holder of a waste management licence under section 35 below or of a disposal licence under section 5 of the Control [1974 c. 40.] of Pollution Act 1974; (c) any person to whom section 33(1) above does not apply by virtue of regulations under subsection (3) of that section; (d) any person registered as a carrier of controlled waste under section 2 of [1989 c. 14.] the Control of Pollution (Amendment) Act 1989; (e) any person who is not required to be so registered by virtue of regulations under section 1(3) of that Act; and (f) a waste disposal authority in Scotland. (4) The following are authorised transport purposes for the purposes of subsection (1)(c) above— (a) the transport of controlled waste within the same premises between different places in those premises; (b) the transport to a place in Great Britain of controlled waste which has been brought from a country or territory outside Great Britain not having been landed in Great Britain until it arrives at that place; and (c) the transport by air or sea of controlled waste from a place in Great Britain to a place outside Great Britain; and “transport” has the same meaning in this subsection as in the Control of Pollution (Amendment) Act 1989. (5) The Secretary of State may, by regulations, make provision imposing requirements on any person who is subject to the duty imposed by subsection (1) above as respects the making and retention of documents and the furnishing of documents or copies of documents. (6) Any person who fails to comply with the duty imposed by subsection (1) above or with any requirement imposed under subsection (5) above shall be liable— (a) on summary conviction, to a fine not exceeding the statutory maximum; and (b) on conviction on indictment, to a fine. (7) The Secretary of State shall, after consultation with such persons or bodies as appear to him representative of the interests concerned, prepare and issue a code of practice for the purpose of providing to persons practical guidance on how to discharge the duty imposed on them by subsection (1) above. (8) The Secretary of State may from time to time revise a code of practice issued under subsection (7) above by revoking, amending or adding to the provisions of the code. (9) The code of practice prepared in pursuance of subsection (7) above shall be laid before both Houses of Parliament. (10) A code of practice issued under subsection (7) above shall be admissible in evidence and if any provision of such a code appears to the court to be relevant to any question arising in the proceedings it shall be taken into account in determining that question. (11) Different codes of practice may be prepared and issued under subsection (7) above for different areas.</p>	<p>Relevant criteria not applicable</p>	
<p>13- Clean Neighbourhoods and Environment Act 2005</p>	<p>Section 54 Site waste management plans (1) The appropriate person may by regulations make provision requiring persons of a specified description— (a) to prepare plans for the management and disposal of waste created in the course of specified descriptions of works involving construction or demolition; (b) to comply with such plans.</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Aim – To provide criteria for the implementation of the draft Site Waste Management Plans. The Act also gives regulatory provision for issues such as illegally parked cars; abandoned cars and litter. However these are potentially outside the

	<p>(2) Descriptions of works that may be specified under subsection (1)(a) include in particular description by reference to the cost or likely cost of such works.</p> <p>(3) Regulations under this section may make supplementary and incidental provision, including in particular provision as to—</p> <p>(a) the circumstances in which plans must be prepared;</p> <p>(b) the contents of plans;</p> <p>(c) enforcement authorities in relation to plans and the powers of such authorities;</p> <p>(d) the keeping of plans and their production to enforcement authorities;</p> <p>(e) offences in relation to a failure to comply with a requirement under the regulations;</p> <p>(f) penalties for those offences;</p> <p>(g) the discharging of liability for an offence under the regulations by the payment of a fixed penalty to an enforcement authority;</p> <p>(h) the uses to which such payments may be put by enforcement authorities.</p> <p>(4) Regulations under this section may make different provision for different purposes.</p> <p>(5) Regulations under this section making provision under subsection (3)(h) may in particular make different provision relating to different enforcement authorities or different descriptions of enforcement authority (including provision framed by reference to performance categories under section 99(4) of the Local Government Act 2003 (c.26).</p> <p>(6) Regulations under this section are to be made by statutory instrument.</p> <p>(7) A statutory instrument containing regulations made by the Secretary of State under this section is subject to annulment in pursuance of a resolution of either House of Parliament.</p> <p>(8) The appropriate person may give guidance to persons who are enforcement authorities under subsection (3)(c) in relation to the powers conferred on them under that provision.</p> <p>(9) In this section—</p> <p>1. “appropriate person” means—</p> <p>(a) in relation to works in England, the Secretary of State;</p> <p>(b) in relation to works in Wales, the National Assembly for Wales;</p> <p>“specified” means specified in regulations under this section.</p>		<p>scope of this study.</p> <ul style="list-style-type: none"> Implementation – This will be implemented through The Site Waste Management plans Regulations 2008.
<p>14 - Control of Pollution (Amendment) Act 1989 (c.14)</p>	<p>Section 1 Offence of transporting controlled waste without registering</p> <p>(1) Subject to the following provisions of this section, it shall be an offence for any person who is not a registered carrier of controlled waste, in the course of any business of his or otherwise with a view to profit, to transport any controlled waste to or from any place in Great Britain.</p> <p>(2) A person shall not be guilty of an offence under this section in respect of—</p> <p>(a) the transport of controlled waste within the same premises between different places in those premises;</p> <p>(b) the transport to a place in Great Britain of controlled waste which has been brought from a country or territory outside Great Britain and is not landed in Great Britain until it arrives at that place;</p> <p>(c) the transport by air or sea of controlled waste from a place in Great Britain to a place outside Great Britain.</p> <p>(3) The Secretary of State may by regulations provide that a person shall not be required for the purposes of this section to be a registered carrier of controlled waste if—</p> <p>(a) he is a prescribed person or a person of such a description as may be prescribed; or</p> <p>(b) without prejudice to paragraph (a) above, he is a person in relation to whom the prescribed requirements under the law of any other member State are satisfied.</p> <p>(4) In proceedings against any person for an offence under this section in respect of the transport of any controlled waste it shall be a defence for that person to show—</p> <p>(a) that the waste was transported in an emergency of which notice was given, as soon as practicable after it occurred, to the disposal authority in whose area the emergency occurred;</p> <p>(b) that he neither knew nor had reasonable grounds for suspecting that what was being transported was controlled waste and took all such steps as it was reasonable to take for ascertaining whether it was such waste; or</p> <p>(c) that he acted under instructions from his employer.</p> <p>(5) A person guilty of an offence under this section shall be liable on summary conviction to a fine not exceeding level 5 on the standard scale.</p> <p>(6) In this section “emergency”, in relation to the transport of any controlled waste, means any circumstances in which, in order to avoid, remove or reduce any serious danger to the public or serious risk of damage to the environment, it is necessary for the waste to be transported from one place to another without the use of a registered carrier of such waste.</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> Aim – The Control of Pollution (Amendment) Act 1989 establishes the offence of transporting controlled waste illegally. Implementation – This is implemented through the Environmental Protection (Duty of Care) Regulations 1994.
	<p>Section 2 Registration of carriers</p> <p>(1) Subject to section 3 below, the Secretary of State may by regulations make provision for the registration of persons with disposal authorities as carriers of controlled waste and, for that purpose, for the establishment and maintenance by such authorities, in accordance with the regulations, of such registers as may be prescribed.</p> <p>(2) Regulations under this section may—</p> <p>(a) make provision with respect to applications for registration;</p> <p>(b) impose requirements with respect to the manner in which disposal authorities maintain registers of carriers of controlled waste;</p> <p>(c) provide for the issue of a certificate of registration free of charge to a registered carrier of controlled waste both on his registration and on the making of any alteration of any entry relating to him in a register of such carriers;</p> <p>(d) provide for such a certificate to be in such form and to contain such information as may be prescribed;</p> <p>(e) provide that the provision by a disposal authority to a registered carrier of such copies of a certificate of registration as are provided in addition to the certificate provided free of charge in pursuance of provision made by virtue of paragraph (c) above is to be made subject to the payment of a charge imposed under the regulations.</p> <p>(3) Provision contained in any regulations under this section by virtue of subsection (2)(a) above may, in particular, include provision which—</p> <p>(a) prescribes the manner of determining the disposal authority to which an application is to be made;</p> <p>(b) prescribes the form on which and other manner in which an application is to be made;</p> <p>(c) prescribes the period within which an application for the renewal of any registration which is due to expire is to be made;</p> <p>(d) imposes requirements with respect to the information which is to be provided by an applicant to the authority to which his application is made;</p>	<p>Relevant criteria not applicable</p>	

	<p>(e) requires disposal authorities to impose charges in respect of their consideration of applications. (4) Provision contained in any regulations under this section by virtue of subsection (2)(b) above may, in particular, include provision— (a) specifying or describing the information to be incorporated in any register maintained by a disposal authority in pursuance of any such regulations; (b) requiring a registered carrier of controlled waste to notify a disposal authority which maintains such a register of any change of circumstances affecting information contained in the entry relating to that carrier in that register; (c) requiring a disposal authority, to such extent and in such manner as may be prescribed, to make the contents of any such register available for public inspection free of charge; and (d) requiring such an authority, on payment of such charges as may be imposed under the regulations, to provide such copies of the contents of any such register to any person applying for a copy as may be prescribed. (5) Subsections (2) to (4) above are without prejudice to the generality of subsection (1) above.</p>		
	<p>Section 7 Further enforcement provisions (1) Subject to subsection (2) below, the provisions of sections 91 to 94 of the [1974 c. 40.] Control of Pollution Act 1974 (powers of entry, power to obtain information and duty not to disclose information) shall have effect as if the provisions of this Act were provisions of that Act and as if, in those sections, references to a relevant authority were references to a disposal authority. (2) Nothing in section 94 of the Control of Pollution Act 1974 (prohibition on disclosure of information) shall prohibit the disclosure of information in pursuance of such arrangements for the exchange of information between different disposal authorities or between disposal authorities and the Secretary of State or other local authorities as— (a) are entered into for the purpose of facilitating the carrying out by disposal authorities of their functions by virtue of this Act or any regulations under this Act; and (b) are approved by the Secretary of State; and no person shall be liable to another in respect of any disclosure in pursuance of any such arrangements. (3) A person shall be guilty of an offence under this subsection if he— (a) fails, without reasonable excuse, to comply with any requirement in pursuance of regulations under this Act to provide information to the Secretary of State or a disposal authority; or (b) in complying with any such requirement, provides information which he knows to be false in a material particular or recklessly provides information which is false in a material particular; and in paragraph (a) above the words "without reasonable excuse" shall be construed in their application to Scotland, as in their application to England and Wales, as making it a defence for a person against whom proceedings for the failure are brought to show that there was a reasonable excuse for the failure, rather than as requiring the person bringing the proceedings to show that there was no such excuse. (4) A person guilty of an offence under subsection (3) above shall be liable on summary conviction to a fine not exceeding level 5 on the standard scale. (5) Where the commission by any person of an offence under this Act is due to the act or default of some other person, that other person shall also be guilty of the offence; and a person may be charged with and convicted of an offence by virtue of this subsection whether or not proceedings for the offence are taken against any other person. (6) Where a body corporate is guilty of an offence under this Act (including where it is so guilty by virtue of subsection (5) above) in respect of any act or omission which is shown to have been committed with the consent or connivance of, or to be attributable to any neglect on the part of, any director, manager, secretary or other similar officer of the body corporate or any person who was purporting to act in any such capacity, he, as well as the body corporate, shall be guilty of that offence and shall be liable to be proceeded against and punished accordingly. (7) Where the affairs of a body corporate are managed by its members, subsection (6) above shall apply in relation to the acts and defaults of a member in connection with his functions of management as if he were a director of the body corporate. (8) Section 97 of the [1974 c. 40.] Control of Pollution Act 1974 (default powers) shall apply in relation to any functions of a disposal authority in England and Wales by virtue of this Act or any regulations under this Act as it applies in relation to the functions of a relevant authority under that Act.</p>	<p>Relevant criteria not applicable</p>	
<p>15 - The Water Act 2003</p>	<p>Part 1 Abstraction and Impounding , Section 1 - Licences to abstract water (1) After section 24 of the Water Resources Act 1991 (c.57) (in this Act referred to as the WRA) there is inserted – "24A Abstraction licences (1) Each licence to abstract water shall be one of the following three types – (a) a licence to abstract water from one source of supply over a period of twenty –eight days or more for any purpose (a full licence) (b) a licence to abstract water from one source of supply over a period of twenty eight days or more for the purpose of – (i) transferring water to another source of supply; (ii) transferring water to the same source of supply, but at another point, in the course of dewatering activities in connection with mining, quarrying, engineering, building or other operations (whether underground or on the surface), in either case without intervening use (a "transfer licence") (c) A licence to abstract water from one source of supply over a period of less than twenty-eight days ("a temporary licence."</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Aim – to ensure the sustainable management of water. • Implementation – The Water Resources (Abstraction and Impounding) Regulations 2006
<p>16 – The Sustainable Energy Act 2003</p>	<p>An Act to make provision about the development and promotion of a sustainable energy policy; to amend the Utilities Act 2000; and for connected purposes.</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Aim – development and promotion of a sustainable energy policy. Not fully implemented at this stage.
<p>17- The Pollution Prevention and Control Act 2003</p>	<p>An Act to make provision for implementing Council Directive 96/61/EC and for otherwise preventing and controlling pollution; to make provision about certain expired or expiring disposal or waste management licences; and for connected purposes.</p>	<p>Relevant Criteria not applicable</p>	<ul style="list-style-type: none"> • Aim – To implement the IPPC Directive • Implementation – Implemented through the PPC Regulations 2000
<p>18 - Waste Management Licensing Regulations 1994 (as amended)</p>	<p>Section 17 - Exemptions from waste management licensing 17.—(1) Subject to the following provisions of this regulation and to any conditions or limitations in Schedule 3, section 33(1)(a) and (b) of the 1990 Act shall not apply in relation to the carrying on of any exempt activity set out in that Schedule. (2) In the case of an exempt activity set out in paragraph 4, 7, 9, 11, 13, 14, 15, 17, 18, 19, 25, 37, 40 or 41 of Schedule 3, paragraph (1) above only applies if— (a) the exempt activity is carried on by or with the consent of the occupier of the land where the activity is carried on; or (b) The person carrying on the exempt activity is otherwise entitled to do so on that land. (3) Unless otherwise indicated in Schedule 3, paragraph (1) above does not apply to the carrying on of an exempt activity insofar as it involves</p>	<p>DQC16 – Record of registration number of exempt activity. DQC22 – Record of date the exemption begins. DQC23 – Record of date the exemption expires.</p>	<ul style="list-style-type: none"> • Aim – States that a Waste Management Licence (WML) is required to keep/treat and dispose of controlled waste (unless it meets relevant exemption criteria.) • Implementation - WML allows for the legal treatment, storage and disposal of waste. WML have licence conditions set against them. Related to the WML Regulations 1994 are the Hazardous Waste Regulations2005 and the

	<p>special waste. (4) Paragraph (1) above only applies in relation to an exempt activity involving the disposal or recovery of waste by an establishment or undertaking if the type and quantity of waste submitted to the activity, and the method of disposal or recovery, are consistent with the need to attain the objectives mentioned in paragraph 4(1) (a) of Part I of Schedule 4. (5) For the purposes of Schedule 3, a container, lagoon or place is secure in relation to waste kept in it if all reasonable precautions are taken to ensure that the waste cannot escape from it and members of the public are unable to gain access to the waste, and any reference to secure storage means storage in a secure container, lagoon or place.</p>		<p>Landfill Regulations 2002.</p>
	<p>Section 18 - Registration in connection with exempt activities 18.—(1) Subject to paragraph (7) below, it shall be an offence for an establishment or undertaking to carry on, after 31st December 1994, an exempt activity involving the recovery or disposal of waste without being registered with the appropriate registration authority. (2) It shall be the duty of each appropriate registration authority to establish and maintain a register for the purposes of paragraph (1) above of establishments and undertakings carrying on exempt activities involving the recovery or disposal of waste in respect of which it is the appropriate registration authority. (3) Subject to paragraph (4) below, the register shall contain the following particulars in relation to each such establishment or undertaking— (a) the name and address of the establishment or undertaking; (b) the activity which constitutes the exempt activity; and (c) The place where the activity is carried on. (4) The appropriate registration authority shall enter the relevant particulars in the register in relation to an establishment or undertaking if it receives notice of them in writing or otherwise becomes aware of those particulars. (5) For the purposes of paragraph (4) above, the appropriate registration authority shall be taken to be aware of the relevant particulars in relation to an exempt activity mentioned in paragraph (10) (a), (b) or (c) below. (6) A person guilty of an offence under paragraph (1) above shall be liable on summary conviction to a fine not exceeding level 2 on the standard scale. (7) The preceding provisions of this regulation shall not apply in the case of an exempt activity to which paragraph 7(3) (c) of Schedule 3 applies, but the appropriate registration authority shall enter in its register the particulars furnished to it pursuant to that provision. (8) Each appropriate registration authority shall secure that any register maintained by it under this regulation is open to inspection at its principal office by members of the public free of charge at all reasonable hours and shall afford to members of the public reasonable facilities for obtaining, on payment of reasonable charges, copies of entries in the register. (9) Registers under this regulation may be kept in any form. (10) For the purposes of this regulation, the appropriate registration authority is— (a) in the case of an exempt activity falling within— (i) paragraph 1, 2, 3 or 24 of Schedule 3; or (ii) paragraph 4 of Schedule 3 if it involves the coating or spraying of metal containers as or as part of a process within Part B of Section 6.5 (coating processes and printing) of Schedule 1 to the 1991 Regulations and the process is for the time being the subject of an authorisation granted under Part I of the 1990 Act, or if it involves storage related to that process; or (iii) paragraph 12 of Schedule 3 if it involves the composting of biodegradable waste as or as part of a process within paragraph (a) of Part B of Section 6.9 (treatment or processing of animal or vegetable matter) of Schedule 1 to the 1991 Regulations, the compost is to be used for the purpose of cultivating mushrooms and the process is for the time being the subject of an authorisation granted under Part I of the 1990 Act, or if it involves storage related to that process, the local enforcing authority responsible for granting the authorisation under Part I of the 1990 Act for the prescribed process involving the exempt activity, or to which the exempt activity relates; (b) in a case falling within paragraph 16 of Schedule 3, the issuing authority responsible for granting the licence under article 7 or 8 of the Diseases of Animals (Waste Food) Order 1973 under which the exempt activity is carried on; (c) in a case falling within paragraph 23 of Schedule 3— (i) where the exempt activity is carried on by virtue of a licence under article 5(2)(c) or 6(2)(d), or an approval under article 8, of the Animal By-Products Order 1992 the Minister; (ii) where the exempt activity is carried on by virtue of a registration under article 9 or 10 of that Order, the appropriate Minister; (iii) where the exempt activity is carried on at a knacker's yard in respect of which the occupier holds a licence under section 1 of the Slaughterhouses Act 1974 authorising the use of that yard as a knacker's yard or, in Scotland, in respect of which a licence has been granted under section 6 of the Slaughter of Animals (Scotland) Act 1980 the local authority; and in this sub-paragraph "the Minister" and "the appropriate Minister" have the meaning given by section 86(1) of the Animal Health Act 198, and "knacker's yard" and "local authority" have the meaning given by section 34 of the Slaughterhouses Act 1974 or, in Scotland, have the meaning given by section 22 of the Slaughter of Animals (Scotland) Act 1980; (d) in any other case, the waste regulation authority for the area in which the exempt activity is carried on.</p>	<p>Relevant criteria not applicable</p>	
	<p>Section 20 Registration of Brokers (3) Paragraph (1) above shall not apply in relation to an arrangement for the disposal or recovery of controlled waste made by a person who is registered as a carrier of controlled waste, or who is registered for the purposes of paragraph 12(1) of Part I of Schedule 4, if as part of the arrangement he transports the waste to or from any place in Great Britain. (4) Paragraph (1) above shall not apply to an establishment or undertaking which— (a) is a charity; (b) is a voluntary organisation within the meaning of section 48(11) of the Local Government Act 1985 or section 83(2D) of the Local Government (Scotland) Act 1973; (c) is an authority which is a waste collection authority, waste disposal authority or waste regulation authority; or (d) applies before 1st January 1995 in accordance with Schedule 5 for registration as a broker of controlled waste but only whilst its application is pending (and paragraph 1(4) and (5) of Part I of Schedule 5 shall apply for the purpose of determining whether an application is pending). (5) A person guilty of an offence under this section shall be liable on summary conviction to a fine not exceeding level 5 on the standard scale. (6) Section 157 of the 1990 Act shall apply in relation to an offence under this section as it applies in relation to an offence under that Act. (7) Schedule 5 (which makes provision for the registration of brokers of controlled waste) shall have effect. (8) Sections 68(3) to (5), 69 and 71(2) and (3) of the 1990 Act (power to appoint inspectors, powers of entry and power to obtain information) shall have effect as if the provisions of this regulation and Schedule 5 were provisions of Part II of that Act..</p>	<p>Relevant criteria not applicable</p>	
<p>19 - Pollution Prevention and Control (England)</p>	<p>Section 10 – Permits – general provisions. 10. - (1) An application for a permit to operate an installation or mobile plant shall be made to the regulator in accordance with paragraphs 1 to 3</p>	<p>DQC12 – Record of waste</p>	<p>• Aim – The PPC Regulations 2000 provide a</p>

<p>and Wales) Regulations 2000</p>	<p>of Part I of Schedule 4 and shall be accompanied by any fee prescribed in respect of the application under section 41 of the Environment Act 1995 or regulation 22. (2) Subject to paragraphs (3) and (4), where an application is duly made to the regulator, the regulator shall either grant the permit subject to the conditions required or authorised to be imposed by regulation 12 or refuse the permit. (3) A permit shall not be granted if the regulator considers that the applicant will not be the person who will have control over the operation of the installation or mobile plant concerned after the grant of the permit or will not ensure that the installation or mobile plant is operated so as to comply with the conditions which would be included in the permit. (4) In the case of an application for a permit that will authorise the carrying out of a specified waste management activity at an installation or by means of mobile plant, the permit shall not be granted unless – Aim – The PPC Regulations provide a regulatory framework for the regulation of installations such as landfill sites. Implementation – The PPC regulations are primarily enacted through the local government and the Environment Agency.(a) the regulator is satisfied that the applicant is a fit and proper person to carry out that activity; and (b) in the case of an installation where the use of the application site for the carrying out of that activity requires planning permission granted under the Town and Country Planning Act 1990, such planning permission is in force in relation to that use of the land.(5) For the purpose of paragraph (4)(b), a certificate under section 191 of the Town and Country Planning Act 1990 (certificate of lawful use or development) in relation to the use of the application site for the carrying out of the specified waste management activity, and an established use certificate under section 192 of that Act, as originally enacted, in relation to that use which continues to have effect for the purpose of subsection (4) of that section, shall be treated as if it were a grant of planning permission for that use.. (6) A permit may authorise the operation of – (a) more than one Part A installation or Part A mobile plant on the same site operated by the same operator; (b) more than one Part B installation on the same site operated by the same operator; or (c) more than one Part B mobile plant operated by the same operator, but may not otherwise authorise the operation of more than one installation or mobile plant. (7) A permit authorising the operation of a Part A mobile plant may only authorise the operation of that plant on a site specified in the permit and only one site may be specified in each such permit (accordingly, the operation of the plant on a different site shall require a distinct permit). (8) A permit authorising the operation of an installation or Part A mobile plant shall include a map or plan showing the site of the installation or plant covered by the permit and, in the case of an installation, the location of the installation on that site. (9) A permit shall be transferred only in accordance with regulation 18 and shall cease to have effect only in accordance with regulation 19 or 20 (surrender) or regulation 21 (revocation) or paragraph (10) (consolidation). (10) Where - (a) the conditions of a permit have been varied under regulation 17 or affected by a partial transfer, surrender or revocation under regulations 18 to 21; or(b) there is more than one permit applying to installations on the same site operated by the same operator or to mobile plant operated by the same operator, the regulator may replace the permit or permits, as the case may be, with a consolidated permit applying to the same installations or mobile plant and subject to the same conditions as the permit or permits being replaced.</p>	<p>destination by WML number or PPC number.</p>	<p>regulatory framework for the regulation of complex installations such as Landfills.</p> <ul style="list-style-type: none"> Implementation - Allows for PPC permits. These allow for the regulation of complex waste sites. Some waste sites are now surrendering their WML and going across to the PPC regime.
<p>20 - Landfill (England and Wales) Regulations 2002</p>	<p>Section 9 Prohibition of acceptance of certain wastes at landfills 9. - (1) The operator of a landfill shall not accept any of the following types of waste at the landfill - (a) any waste in liquid form (including waste waters but excluding sludge); (b) waste which, in the conditions of landfill, is explosive, corrosive, oxidising, flammable or highly flammable; (c) hospital and other clinical wastes which arise from medical or veterinary establishments and which are infectious; (d) chemical substances arising from research and development or teaching activities, such as laboratory residues, which are not identified or which are new, and whose effects on man or on the environment are not known; (e) as from 16th July 2003, whole used tyres other than - (i) tyres used as engineering material; (ii) bicycle tyres; and (iii) tyres with an outside diameter above 1400mm; (f) as from 16th July 2006, shredded used tyres other than - (i) bicycle tyres; and (ii) tyres with an outside diameter above 1400mm; and (g) Any waste which does not fulfil the relevant waste acceptance criteria. (2) The operator of a landfill shall ensure that the landfill is not used for landfilling waste which has been diluted or mixed solely to meet the relevant waste acceptance criteria. (3) For the purposes of this regulation, waste is - "corrosive" if it consists of substances and preparations which may destroy living tissue on contact; "explosive" if it consists of substances and preparations which may explode under the effect of flame or which are more sensitive to shocks or friction than dinitrobenzene; "flammable" if it consists of liquid substances and preparations having a flash point equal to or greater than 21°C and less than or equal to 55°C; "highly flammable" if it consists of - (a) liquid substances and preparations having a flash point below 21°C (including extremely flammable liquids); (b) substances and preparations which may become hot and finally catch fire in contact with air at ambient temperature without any application of energy; (c) solid substances and preparations which may readily catch fire after brief contact with a source of ignition and which continue to burn or to be consumed after removal of the source of ignition; (d) gaseous substances and preparations which are flammable in air at normal pressure; (e) substances and preparations which, in contact with water or damp air, evolve highly flammable gases in dangerous quantities; "infectious" if it consists of substances containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms; or "Oxidising" if it consists of substances and preparations which exhibit highly exothermic reactions when in contact with other substances, particularly flammable substances.</p> <p>Schedule 1 - Criteria for acceptance of waste which apply to all kinds of landfill. 1. - (1) The following criteria shall apply to the acceptance of waste at any landfill. (2) Waste may only be accepted at a landfill where its acceptance would not -</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> Aim – These regulations provide a regulatory framework for landfills management, waste acceptance and pollution control. Implementation - enacts Waste Acceptance Criteria, The list of Waste Regulations (England) 2006.

	<p>(a) result in unacceptable emissions to groundwater, surface water or the surrounding environment;</p> <p>(b) jeopardise environment protection systems (such as liners, leachate and gas collection and treatment systems) at the landfill;</p> <p>(c) put at risk waste stabilisation processes (such as degradation or wash out) within the landfill; or</p> <p>(d) endanger human health .Additional criteria for acceptance of waste at landfills for hazardous waste</p> <p>2. Waste may only be accepted at a landfill for hazardous waste if -</p> <p>(a) it is listed on the Hazardous Waste List of the European Waste Catalogue[11] or has similar characteristics to those so listed; and</p> <p>(b) its total content or leachability –</p> <p>(i) Does not present a short term occupational risk or an environmental risk; and</p> <p>(ii) would not prevent the stabilisation of the landfill within its projected lifetime taking account of its after care period following closure. Additional criteria for acceptance of waste at landfills for non-hazardous waste3. - (1) Waste may only be accepted at a landfill for non-hazardous waste if -</p> <p>(a) it is listed on the Hazardous Waste List of the European Waste Catalogue or has similar characteristics to those so listed (and its deposit at the landfill otherwise meets the requirements of regulation 10(3) (c) and (4)); or</p> <p>(b) it is any other waste listed on the European Waste Catalogue or has similar characteristics to those so listed.</p>		
	<p>Section 35 Completion of consignment notes</p> <p>35. - (1) Where hazardous waste is removed from any premises - (a) a consignment note shall be completed in accordance with paragraph (3) of this regulation and the requirements of the relevant regulation if one of the following regulations applies - (i) regulation 36 (standard procedure); (ii) regulation 39 (removal of ship's waste to reception facilities); (iii) regulation 40 (removal of ship's waste other than to reception facilities); (iv) regulation 41 (removal of waste by pipeline); or</p> <p>(v) where the consignment or any part thereof is rejected by the consignee, in accordance in each case with regulation 42 and 43;(b) if regulation 37 (Schedule of carriers) applies, a schedule of carriers shall be completed in accordance with that regulation and paragraph (3) of this regulation; or</p> <p>(c) if regulation 38 (multiple collection) or regulation 44 (multiple collection procedure for rejected consignments) applies, a multiple collection consignment note shall be completed in accordance with the applicable regulation and paragraph (4) of this regulation. (2) The form of consignment note set out in Schedule 4, or a form requiring the same information in substantially the same format, shall be used and shall be completed so as to contain (in the place indicated in the form) all the information provided for in that Schedule which is applicable to the case. (3) The form of the schedule of carriers set out in Schedule 5, or a form requiring the same information in substantially the same format, shall be used and shall be completed so as to contain (in the place indicated in the form) all the information provided for in that Schedule which is applicable to the case. (4) The form of multiple collection consignment note set out in Schedule 6, or a form requiring the same information in substantially the same format, shall be used and shall be completed so as to contain (in the place indicated in the form) all the information provided for in that Schedule which is applicable to the case. (5) In this Part, a reference to a part of a consignment note, schedule of carriers or multiple collection consignment note by its number or description is a reference to that part as it is required to be so numbered or described as the case may be in the form in Schedule 4, 5 or 6 as the case may require.</p> <p>Section 36 Standard procedure</p> <p>(1) This regulation applies in all cases where a consignment of hazardous waste is to be removed from premises except in cases to which any of regulations 38 to 41 apply.</p> <p>(2) Before the consignment is removed –</p> <p>(a) the hazardous waste producer, or holder, as the case may be, shall –</p> <p>(i) prepare a copy of the consignment note for each of the following: the hazardous waste producer or holder, where different from the consignor; the consignor; the carrier; and the consignee;</p> <p>(ii) complete Parts A and B on each copy; and</p> <p>(iii) give every copy to the carrier;</p> <p>(b) the carrier shall complete Part C on each copy and give every copy to the consignor;</p> <p>(c) the consignor shall –</p> <p>(i) complete Part D on each copy;</p> <p>(ii) where the hazardous waste producer or holder, as the case may be, is not the consignor, give one copy to him;</p> <p>(iii) retain one copy; and</p> <p>(iv) give every remaining copy to the carrier.</p> <p>(3) The carrier shall ensure that every copy which he has received - (a) travels with the consignment; and (b) is given to the consignee on delivery of the consignment.</p> <p>(4) Subject to regulation 42, on receiving the consignment the consignee shall –</p> <p>(a) complete Part E on both copies; and</p> <p>(b) give one copy to the carrier</p>		
<p>21- Hazardous Waste (England and Wales) Regulations 2005</p>	<p>Section 37 Schedule of carriers</p> <p>37. - (1) This regulation applies in all cases (whether under regulation 36 or regulation 40) where more than one carrier transports, or is to transport, the consignment.</p> <p>(2) Before the consignment is removed -</p> <p>(a) the consignor shall-</p> <p>(i) prepare a copy of the schedule of carriers for the hazardous waste producer or holder (where different from the consignor), the consignor, every carrier and the consignee; and</p> <p>(ii) give every copy to the first carrier;</p> <p>(b) the first carrier shall ensure that every copy he has received travels with the consignment;</p> <p>(c) on delivery of the consignment to each subsequent carrier -</p> <p>(i) the previous carrier shall give the subsequent carrier every copy of the schedule which he has received;</p> <p>(ii) the subsequent carrier shall complete the relevant certificate on each copy, give one to the previous carrier who shall retain it, and ensure that every remaining copy which he has received travels with the consignment; and</p>	<p>DCQ16 – Record of registration number of exempt activity.</p>	<ul style="list-style-type: none"> • Aim – These regulations ensure the correct classification and management of hazardous waste. • Implementation - This is enacted through the Hazardous Waste Consignment Notes.

	<p>(d) When the consignment is delivered to a consignee, the carrier shall retain one copy of the carriers schedule and give every remaining copy to the consignee.</p> <p>(3) Where -</p> <p>(a) arrangements for the transport of the consignment have not been made with all carriers intended to be involved before transport commences; or</p> <p>(b) there is a change in any such arrangements after transport commences for any reason, paragraph (2) applies as if the carrier in possession of the consignment when further arrangements are made, in the case of paragraph (a), or take effect, in the case of paragraph (b), were the consignor and the next carrier were the first carrier.</p> <p>(4) Where this regulation applies, other than in the case of a rejected consignment of hazardous waste, regulation 36 has effect as if -</p> <p>(a) a reference to the hazardous waste being removed includes reference to its possession being transferred to the next carrier;</p> <p>(b) in paragraph (2)(a)(i), the reference to "the carrier" were a reference to "every carrier";</p> <p>(c) in paragraphs (2)(a)(iii), (2)(b) and (2)(c)(iv), the reference to "the carrier" were a reference to "the first carrier";</p> <p>(d) In paragraph (3) (b), in relation to a carrier who is not the final carrier, the reference to "the consignee" were a reference to "the subsequent carrier"; and</p> <p>(e) in paragraph (4) (b), the reference to "the carrier" were a reference to "the final carrier".</p> <p>Section 38 Multiple collections</p> <p>38. - (1) This regulation applies to a journey made by a single carrier which meets the following conditions -</p> <p>(a) The carrier collects more than one consignment of hazardous waste in the course of the journey.</p> <p>(b) each consignment is collected from different premises (none of which is a ship);</p> <p>(c) all the premises from which a collection is made are in England; and</p> <p>(d) all consignments collected are transported by that carrier in the course of the journey to the same consignee, and a journey which meets these conditions is referred to in these Regulations as a "multiple collection".</p> <p>(2) Where the carrier elects to apply the multiple collection procedure set out in this regulation to a multiple collection, the requirements of this regulation apply to the carrier, and to the producers, holders and consignors of the consignments collected in the course of the round.</p> <p>(3) Before the first collection, the carrier shall -</p> <p>(a) prepare two copies of the multiple consignment collection note, plus one copy for each hazardous waste producer or holder, as the case may be, from whom waste is to be collected during the round, and one copy for each consignor, in cases where the hazardous waste producer, or holder, as the case may be, is not the consignor; and</p> <p>(b) complete Parts A and B on each copy.</p> <p>(4) Before the removal of waste from each set of premises from which a collection is made -</p> <p>(a) the producer, or holder, must complete the annex to the multiple collection consignment note on each copy;</p> <p>(b) the consignor and carrier must sign their respective declarations to the annex to the multiple collection consignment note on each copy of the note; and</p> <p>(c) the carrier must pass a completed copy to the producer or holder in each case (and where the producer or holder is not the consignor, the consignor).</p> <p>(5) After collection of the last consignment but before delivery to the consignee, the carrier must complete the particulars for completion by the carrier in section C on both remaining copies of the consignment note.</p> <p>(6) Subject to regulation 42, on delivery of the waste -</p> <p>(a) The carrier must pass to the consignee both remaining copies of the note;</p> <p>(b) the consignee must complete the particulars for completion by the consignee in Section C and complete the certificate in part D of the note on both copies; and</p> <p>(c) the consignee must return one copy of the completed note to the carrier.</p>	<p>Relevant criteria not applicable</p>	
<p>22 - The Environmental Protection (Duty of Care) Regulations 1991</p>	<p>Section 1 Citation, commencement and interpretation</p> <p>(2) In these Regulations- "the 1990 Act" means the Environmental Protection Act 1990; "Transferor" and "transferee" mean respectively, in relation to a transfer of controlled waste by a person who is subject to the duty imposed by section 34(1) of the 1990 Act, the person who in compliance with that section transfers a written description of the waste and the person who receives that description.</p> <p>Section 2 Transfer notes</p> <p>(1) The transferor and the transferee shall, at the same time as the written description of the waste is transferred, ensure that such a document as is described in paragraph (2) ("a transfer note") is completed and signed on their behalf.</p> <p>(2) A transfer note shall-</p> <p>(a) identify the waste to which it relates and state-</p> <p>(i) its quantity and whether on transfer it is loose or in a container;</p> <p>(ii) if in a container, the kind of container; and</p> <p>(iii) the time and place of transfer; (b) give the name and address of the transferor and the transferee;</p> <p>(c) state whether or not the transferor is the producer or importer of the waste and, if so, which;</p> <p>(d) if the transfer is to a person for authorised transport purposes, specify which of those purposes; and</p> <p>Section 3 Duty to keep copies of written descriptions of waste and transfer notes</p> <p>3. The transferor and the transferee shall each keep the written description of the waste and the transfer note or copies thereof for a period of two years from the transfer of the controlled waste.</p> <p>Section 4 Duty to furnish documents</p> <p>4. A person who has been served by a waste regulation authority with a notice in writing specifying or describing any document and requiring its production shall, if the document is one which at that time he is under a duty to keep under regulation 3, furnish the authority with a copy of it at the authority's office specified in the notice and within the period (not being less than 7 days) so specified.</p>	<p>DCQ15 – Record of consignment note code or waste transfer note reference for waste removed.</p> <p>The waste transfer note would also include –</p> <p>DCQ8 – Record of waste quantities of waste types produced (state the EWC code.)</p> <p>DCQ10 – Record of identity of person removing the waste.</p> <p>DCQ 11 – Record of waste types produced (state the EWC code).</p> <p>DCQ 12 – Record of waste destination by WML or PPC number.</p> <p>DCQ14 – Record of waste carriers licence number.</p>	<ul style="list-style-type: none"> • Aim – Duty of Care Regulations look to ensure that waste is carried in accordance with legislation ant the EPA 1990. • Implementation – Enacted through Waste Transfer Notes.

<p>23- The Lists of Wastes (England) Regulations 2005</p>	<p>Section 2 – Interpretation (b) “the List of Wastes” means the list of wastes set out in the Annex to the List of Wastes Decision, as it is set out in Schedule 1, being a list drawn up— (i) in relation to wastes belonging to the categories listed in Annex I (Categories of Waste) of the Waste Framework Directive, by the Commission, acting in accordance with the procedure laid down in Article 18 of that Directive; (ii) in relation to hazardous waste, in accordance with the procedure laid down in Article 18 of the Waste Framework Directive on the basis of— (aa) Annex I (Categories or generic types of hazardous waste listed according to their nature or the activity which generated them) to the Hazardous Waste Directive; and (bb) Annex II (Constituents of the wastes in Annex 1.B. which render them hazardous when they have the properties described in Annex III) to the Hazardous Waste Directive, and a reference to the List of Wastes includes a reference to the Introduction thereto (“the Introduction to the List”).</p> <p>Section 3 Effect of the List of Wastes 3.—(1) Subject to regulation 2(3)(d) and the following provisions of this regulation, the List of Wastes has effect for purposes connected with the regulation of waste and hazardous waste, and in particular for the purposes of— (a) the determination of whether a material or substance is a waste or a hazardous waste, as the case may be; (b) the classification and coding of wastes and hazardous waste, and accordingly the List of Wastes and the codes and chapter headings shall be recognised and used for those purposes. (2) Paragraph (1) is without prejudice to any regulations made under section 62A (1) of the Environmental Protection Act 1990(a) or any determination under regulations 8 or 9 of the Hazardous Waste Regulations. (3) Subject to regulation 2(3)(c), the notes set out in the</p>	<p>Relevant criteria not applicable</p>	<ul style="list-style-type: none"> • Aim – These regulations enable the Hazardous Waste Regulations 2005 and the Landfill Regulations 2002 to be consistent when classifying waste. • Implementation - Enacts the European Waste Catalogue Code
<p>24 - The Water Resources (Abstraction and Impounding) Regulations 2006</p>	<p>Part 1 - Citation and commencement 1. — (1) These Regulations may be cited as the Water Resources (Abstraction and Impounding) Regulations 2006. Information to be included in an application Part 2 – Information to be included in an application 3. — (1) An application for an abstraction licence or an impounding licence—(a) must include such information, including maps, and (b) must be accompanied by such reports, as the Agency reasonably requires in order to determine it. Part 2 - Manner of application 4. —(1) An application for an abstraction licence or an impounding licence—(a) must be made to the Agency on a form issued by the Agency for the purpose of the application being made; (b) must be accompanied by any fee payable under section 41(1)(a) of the Environment Act 1995[9] in relation to making the application; and (c) may be made electronically in a form accessible by the Agency.(2) The information and reports referred to in regulation 3 and the form referred to in paragraph (1)(a) of this regulation must be provided in duplicate unless—(a) the Agency agrees to accept a single copy; or(b) they are provided electronically.</p>	<p>DQC25 – Record of construction material resource. DQC26 – Record of abstraction licence number.</p>	<ul style="list-style-type: none"> • Aim – The Water Resources (Abstraction and Impounding) Regulations 2006 are there to ensure that water as a resource is correctly managed through licensing. • Implementation - Enacts water licensing process. Water abstraction and impounding is regulated predominantly by the Environment Agency.
<p>25 - Draft Site Waste Management Plans (2008)</p>	<p>Section 4 (1) A client who intends to use one or more contractors for any project to which these Regulations apply must appoint a contractor as the principal contractor. (2) If a client does not use a contractor, all obligations placed on the principal contractor under these Regulations must be carried out by the client?</p> <p>Section 5 (1) Any Client who intends to carry out a project on any one construction site with an estimated cost greater than £300,000 excluding VAT must prepare a site waste management plan conforming to these regulations before work begins. (2) For these purposes the cost is the price in the accepted tender or, if there is no tender, the cost of the labour, plant and materials, overheads and profit.</p> <p>Section 6 (1) A site waste management plan must identify (a) client; (b) principal contractor, (c) person who drafted it (2) It must describe the construction works proposed including, (a) the location of site, and (b) estimated cost of project. (3) It must record any decision taken before the site waste management plan was drafted on the nature of the project, its design, construction method or materials employed to minimise the quantity of waste produced on site. (4) It must (a) describe each waste type expected to be produced in the course of the project (b) estimate the quantity of difference waste types that will be produced, and (c) identify the waste management action proposed for each difference waste type including re-using, recycling and disposal</p> <p>Section 7 (1) If the project has an estimated cost of £500,000 or less, whenever waste is removed from the site the principal contractor must record on the site waste management plan (a) the identify of the person removing the waste (b) the types of waste removed; and (c) the site that the waste is being taken to.</p> <p>Section 7</p>	<p>DQC2 – Record of principal contractor. DQC3 – Record of the project value.</p> <p>DQC5 – Record of person who drafted SWMP. DQC4 – Record of date work commenced.</p> <p>DQC2 – Record of principal contractor. DQC3 - Record of the project value. DQC8 – Record of waste quantities of waste produced. DQC1 - Record of client. DQC5 – Record of person who drafted SWMP. DQC6 – Record of site location. DQC12 – Record of waste destination by WML number or PPC number. DQC13 – Record of deviation explanation. DQC14 – Record of waste carriers licence.</p> <p>DQC5 – Record of person who drafted SWMP. DQC20 – Record of cost savings from SWMP. DQC15 – Record of consignment note code or waste transfer note reference for waste removed. DQC18 – Record of waste management action.</p> <p>DQC11 – Record of waste types</p>	<ul style="list-style-type: none"> • Aim – SWMP will allow project managers to effectively manage the amount of waste produced at a site through looking at resource use and waste minimisation. • Implementation – These will be implemented at site and regulated by the Environment Agency through the Clean Neighbourhoods and Environment Act 2005.

	<p>(2) Within 3 months of the work being completed the principal contractor must add to the plan; (a) confirmation that the plan has been monitored on a regular basis to ensure work is progressing according to the plan and that the plan was updated in accordance with this regulation, (b) an explanation of any deviation from the plan.</p> <p>Section 8 1) If the project has an estimated cost greater than £500,000 the principal contractor must update the site waste management plan in accordance with this regulation. 2) When any waste is removed the principal contractor must record on the plan – (a) identity of the person removing the waste (b) the waste carrier (c) a copy of or reference to the written description of the waste required by section 34 of the Environmental Protection Act 1990 (d) the site that the waste is being taken to and whether the operation of that site holds a permit under the Environmental Permitting (England and Wales) Regulations 2007 or is registered under those Regulations as a waste operation exempt from the need for such a permit. 3) As often as necessary to ensure that the plan accurately reflects the progress of the project, and in any event not less than 6 months, the principal contractor must (a) review the plan (b) record the types of waste produced (c) record the types of quantities of waste that have been (i) re-used (and whether on or off site) (ii) recycled and whether on or off site (iii) sent for another form of recovery and whether on or off site (iv) sent to landfill or (v) otherwise disposed of, and (d) update the plan to reflect the progress of the project.</p> <p>Section 8 (3) Within three months of the work being complete the principal contractor must add to the plan (a) confirmation that the plan has been monitored on a regular basis to ensure that work is progressing according to the plan and that the plan was updated in accordance with this regulation (b) a comparison of the estimated quantities of each waste type against the actual quantities of each waste type (c) an explanation of any deviation from the plan; and (d) an estimate of the cost savings that have been achieved by completing and implementing the plan</p>	<p>removed (state EWC codes.)</p> <p>DQC5 – Record of person who drafted SWMP. DQC20 – Record of cost savings from DWMP. DQC17 – Record of waste types produced (state EWC code.) DQC16 – Record of registration number of exempt (from waste management licensing regulations) activity. DQC18 (Record of waste management action) DQC21 – Record of waste to landfill in tonnes. DQC12 – Record of waste destination by WML number of PPC number. DQC7 – Record of decisions made to minimise waste prior to SWMP. DQC10 – Record of identity of person removing the waste. DQC11 – Record of waste type removed (state the EWC code.) DQC18 – Record of waste management action.</p>	
26 - The National Waste Strategy 2007	<p>The National Waste Strategy 2007 - outlines the Government's vision for sustainable waste management. The Government's key objectives are to: Paragraph ix (page 11) - decouple waste growth (in all sectors) from economic growth and put more emphasis on waste prevention and re-use; waste in 2010, 2013 and 2020.</p> <p>Paragraph ix (page 11) - increase diversion from landfill of non-municipal waste and secure better integration of treatment for municipal and non-municipal waste.</p> <p>Paragraph ix (page 11) - secure the investment in infrastructure needed to divert waste from landfill and for the management of hazardous waste.</p> <p>Paragraph ix (page 11) - get the most environmental benefit from that investment, through increased recycling of resources and recovery of energy from residual waste using a mix of technologies.</p> <p>Paragraph xiv (page 11) – The Government is considering in conjunction with the construction industry, a target to halve the amount of construction, demolition and excavation waste going to landfill by 2012 as a result of waste reduction, re-use and recycling.</p> <p>Paragraph xv (page 12) – The main elements of the new strategy are to: Incentives efforts to reduce, re-use, recycle waste and recover energy from waste. See paragraph xvi below.</p> <p>Paragraph xv (page 12) – Reform regulation to drive the reduction of waste and diversion from landfill while reducing costs to compliant businesses and regulators.</p> <p>Paragraph xv (page 12) – Target action on materials, products and sectors with the greatest scope for improving environmental and economic outcomes.</p> <p>Incentives: Paragraph xvi (page 13) – increasing the landfill tax escalator so that the standard rate of tax will increase by £8 per year from 2008 until at least 2010/2011 to give greater financial incentives to businesses to reduce, re-use and recycle waste (from £24 now to £48 in 2010.)</p> <p>Further changes to landfill (1) Ban on the landfilling of liquid waste from October 2007. (2) Requirement for the pre-treatment of non-hazardous waste from October 2007 (Box 3.3 Page 48)</p>	<p>Relevant criteria not applicable</p> <p>DQC21 – Record of waste management action. DQC9 – Record of waste management action.</p>	<ul style="list-style-type: none"> Aim – The aim of the National Waste Strategy is to reduce waste by making products with fewer natural resources (Paragraph iii, page 9). Implementation – The implementation of the strategy is dependent upon the sector. For construction sites, Site Waste Management Plans has been listed as one of the primary tools for the reduction of waste at construction sites
27 - The National Waste Strategy 2007 Annex C3	<p>Informative - Among the targets that the Government intends to put forward for consideration by industry stakeholders will be an interim objective of zero net waste at construction site level by 2015 leading up to zero waste to landfill by 2020. (Paragraph 66)</p> <p>Proposed Target 1 Responding to the Strategic Forum for Construction, the sector's Sustainability Forum – together with WRAP – has called for the construction industry to achieve the 50% cut in waste to landfill by 2012 and is working on an action plan to demonstrate how the target is best achieved. (Box C3.2)</p> <p>Proposed Target 2 – For Construction clients to include contractual requirement for measurement and improvement of materials resource efficiency in one-half of Construction projected in England over £1 million in value by 2009. (Box C3.3 Page 15)</p> <p>Proposed Target 3 – Government to achieve waste-neutral construction in its major construction projects by 2012. (Box C.34 pg 16)</p>	<p>DQC21 – Record of waste to landfill in tonnes.</p> <p>DQC27 – Record of contractual performance measurement with respect to waste and materials resource efficiency. DQC25 – Record of construction material resource.</p>	<ul style="list-style-type: none"> Aim – This document looks specifically at the construction industry and proposes targets for the reduction of construction and demolition of waste. Implementation – These targets can be implemented and met through SWMP.
28 - Securing The Future – UK Government Sustainable Development Strategy	<p>There are four agreed priorities. Those relevant are listed below. Priority 1. Sustainable consumption and production,</p>	<p>Not Applicable</p>	<ul style="list-style-type: none"> Aim – The aim of this document is to outline the Government's priorities.

	<p>Sustainable consumption and production is about achieving more with less. This means not only looking at how goods and services are produced, but also the impacts of products and materials across their whole lifecycle and building on people's awareness of social and environmental concerns. This includes reducing the inefficient use of resources which are a drag on the economy, so helping boost business competitiveness and to break the link between economic growth and environmental degradation. (Page 17)</p> <p>Priority 2. Climate change, The effects of a changing climate can already be seen. Temperatures and sea levels are rising, ice and snow cover are declining, and the consequences could be catastrophic for the natural world and society. Scientific evidence points to the release of greenhouse gases, such as carbon dioxide and methane, into the atmosphere by human activity as the primary cause of climatic change. We will seek to secure a profound change in the way we generate and use energy, and in other activities that release these gases. At the same time we must prepare for the climate change that cannot now be avoided. We must set a good example and will encourage others to follow it. (Page 17)</p> <p>Priority 3 Natural resource protection Natural resources are vital to our existence and that of communities throughout the world. We need a better understanding of environmental limits, environmental enhancement and recovery where the environment is most degraded to ensure a decent environment for everyone, and a more integrated policy framework. (Page 17)</p>		<ul style="list-style-type: none"> Implementation – These priorities will be implemented through the various pieces of legislation discussed above.
<p>29 - The Department for Trade and Industry 'Sustainable Construction Strategy (2006)'</p>	<p>Target 1. Climate Change and Energy – Industry Vision 'Zero Co2 emissions (in m2/yr). Government Targets 'CO2 emissions 20% below 1990 levels by 2010. 1990 level was 165mt so target is 132mt.' (Page 4)</p> <p>Target 2. Waste – 'Zero waste. Final achievement date of 2020. Mechanism for delivering this is through legislation; regulations; enforcement; demolition protocol; taxes; incentives; CSR; awareness.' (Page 4)</p> <p>Target 3. Materials – 'Use of sustainable materials/reduced materials consumption. Use of recovered materials. 50% reduction by 2015; annual review. Currently 13 MT of construction materials annually delivered remain on site unused. The final achievement date is 90% by 2025. Mechanism for achieving this is regulation; codes; green guide; supply chain monitoring.' (Page 4)</p>	<p>DQC24 – Record of performance energy carbon indicator.</p> <p>DQC13 – Record of deviation explanation.</p> <p>DQC19 – Record of comparison of actual and planned waste quantity.</p> <p>DCQ25 – Record of construction material resource.</p>	<ul style="list-style-type: none"> Aim – The aim of this document is to outline the priorities for sustainable construction. Implementation – These targets can potentially be implemented through ensuring compliance against relevant legislation.
<p>30- The EU Thematic Soil Strategy</p>	<p>Provides a strategy for the protection and sustainable use of soil as a resource. Awaiting the proposed Soil Directive.</p>	<p>DCQ25 - Record of construction material resource</p>	<ul style="list-style-type: none"> Aim – protection of soil. Implementation – pending.
<p>31 - The Highways Agency (2007) 'Achieving Sustainability, The Highways Sustainable Development Action Plan 2007-2008'</p>	<p>Action (1); Develop the overall vision, objectives and long term targets for the Agency's sustainability journey. (No. 1 Page 7)</p> <p>Action (2) Implement a Programme Management Board to steer the development and implementation of the vision described at Action 1 above. (No. 2 Page 7)</p> <p>Action (3) Develop a tool for the analysis of sustainability for all Board papers. (No. 3 Page 7)</p> <p>Action (5) Develop waste, resource use and recycling strategy for maintenance and construction operations seeking to establish a benchmark for future target setting. Continue research and development in sustainable construction. (No. 5 Page 7)</p> <p>Action (20) – Investigate the Agency's GHG/carbon footprint from construction, maintenance and network operations and identify potential future actions for reduction. (No. 20 Page 8)</p> <p>Action (22) – Develop an energy efficiency strategy for road lighting that will identify ways to reduce emissions and pollution of the night sky. (No. 22 Page 9)</p> <p>Action (23) – Produce a new whole life cycle Code of Practice for road lighting, for improved overall lighting efficiency. (No. 23 Page 9)</p> <p>Action (24) – Identify alternative safety measures to road lighting to reduce costs, carbon emissions and pollution of the night sky. (No. 24 Page 9)</p>	<p>Relevant criteria not applicable.</p> <p>DQC24 – Record of performance carbon indicator.</p> <p>DQC24 – Record of performance carbon indicator.</p>	<ul style="list-style-type: none"> Aim - The Highways Agency are looking to embed the Governments principles and policies of sustainability are within the operations of the business. Implementation – The priorities of the Highways Agency can be implemented through ensuring compliance of relevant regulations such as Site Waste Management Plans.
<p>32- Highways Agency (2003) 'Building Towards Better Roads: Towards Sustainable Construction'</p>	<p>Document has identified key areas to improve performance;</p> <p>Improvement Area - Management of Natural Resources – designing for minimum waste, lean construction, recycling, and reuse (Page 1).</p> <p>Improvement Area - Design for minimum waste – relates to the fate of any residual material as well as the sources of potentially recyclable material that can be used at the site or elsewhere.' (Page 3-4)</p> <p>Improvement Area - Reducing Energy Consumption – minimising energy consumption during construction and use. (Page 1).</p> <p>Improvement Area - Highways goal is to take practical steps to minimise emissions and indirectly, energy consumption. (Page 9)</p> <p>Improvement Area - Highways Agency state that the transport of materials for road construction and maintenance is a major energy issue. Want to encourage the use of local materials for highway constructions.</p> <p>Improvement Area - Reduce emissions to water. Research is being conducted to develop an understanding of highway runoff and its environmental impacts (Page 7).</p>	<p>Relevant criteria not applicable.</p>	<ul style="list-style-type: none"> Aim – The aim of this document is to outline the main areas for improvement in performance in relation to sustainability. Implementation – The primary aims of this document can be implemented through the Site Waste Management Plans

Appendix D – Data Collection Method Criteria Assessments

Data Information System Name		Environmental Information System (EnvIS)		
Performance Assessment Rating Scale		Performance Assessment Rating 1 - 4	Performance Comment	
5- Full Capability 6- Partial Capability (must comment) 7- No Capability 8- Unknown Capability (must Comment)			Current Performance Capability	Development Future Capability
Application Criteria				
AC1	System accessible to Highways Agency and Service Providers	1	System is available on HAGIS	
AC2	Information held in data format or able to produce data format	1	Data is held and transferred on flat file format in accordance with file specifications outlined in Vol. 10 Section 0 which are uploaded onto HAGIS.	
AC3	Minimum annual update frequency	2	Network Management data is submitted annually. Designer data is submitted at predetermined milestones that could be beyond a year.	
AC4	Data transfer contractually bound	1	EnvIS is a mandatory requirement.	
AC5	Data owned by Highways Agency	1	EnvIS is a HA system. Service Provider supplied data is owned by the HA. 3 rd Party data remains the property of the 3 rd Party but this is not relevant to waste)	
AC6	Enable reporting interrogation	1	Bespoke and adhoc reporting is available to HA and Service Providers.	
AC7	Full data confidence, quality assured	1	Governance process is in place to ensure data is compliant with EnvIS.	
AC8	Easy to use (include navigation, manipulation and interpretation).	1	EnvIS is not an application however; EnvIS data is uploaded onto HAGIS and subject to manipulation, interpretation function supported by HAGIS.	
Data Quality Criteria				
DQC 1	Record of client	1	All information submitted is based on HA schemes and therefore by default the client is always HA.	
DQC 2	Record of principal contractor	2	Information is submitted with an 'Agent Unique Identifier' which is a number assigned to each Service Provider, centrally in the HA, identifying the Area/Scheme.	At present the process is to identify the Area/Scheme (e.g. area 14 or M6 Carlisle to Gaurdsmill). Whilst this information can be used to identify the principal contractor it is not directly recorded as such. Future amendments could incorporate this if required.
DQC 3	Record of the project value.	2	Information on Project Identification Number (PIN) is currently submitted with all management records. Through interrogation of this PIN in Oracle the value of works (not necessarily the project value) can be assessed	Unlikely to be included as a requirement in EnvIS.
DQC 4	Record of date work commenced.	2	There is a requirement when submitting information to include the date that actions were undertaken. As the majority of actions are completed within the same day that the action commenced, the commenced and completed date is normally the same.	Unlikely to be included in EnvIS, as the focus on the completion of tasks (on time) as opposed to when they started.
DQC 5	Record of person who drafted SWMP	2	EnvIS currently includes <i>some</i> information that is related to SWMPs (quantity, waste class etc). A requirement of EnvIS is for information submitted to include the name of the person who has submitted the data who may or may not be the same person who drafted the SWMP.	EnvIS is to be used as the basis to support the implementation of SWMP guidance in DMRB Volume 10. At present there are no plans to include this information. However, this requirement could easily be included in the current format.
DQC 6	Record of site location	2	At present the location of sites is only submitted if the Service Provider wants to attach important docs to Areas/Schemes.	
DQC 7	Record of decisions made to minimise waste prior to SWMP	2	There is the ability to attach important documents (such as SWMPs) to Areas/Schemes.	Unlikely to be included in EnvIS beyond the attachment of docs.
DQC 8	Record of waste quantities of waste types produced (state the EWC code)	1	EWC code, Waste Type (aligned to SHW) and Waste Class (Inert, Non Hazardous and Hazardous) are recorded.	
DQC 9	Record of waste management action (re-using, recycling and disposal)	1	Quantity and Waste Destination (Reuse on/off site, Recycle on/off site, Waste Transfer Site, WML Exempt Site, Landfill Site, Treatment Centre and Energy from Waste Facility) are recorded which identifies waste management action in terms of reuse, recycle and disposal.	
DQC 10	Records of identity of person removing the waste	3		
DQC 11	Record of waste type removed (state the EWC code.)	1	See DQC 8.	
DQC 12	Record of waste destination by WML number or PPC number	3	Could be provided in additional notes requirement.	
DQC 13	Record of deviation explanation	3	Could be provided in additional notes requirement.	
DQC 14	Record of waste carriers licence number	3	Could be provided in additional notes requirement.	
DQC 15	Record of consignment note code or waste transfer note reference for waste removed.	3	Could be provided in additional notes requirement.	
DQC 16	Record of registration number of exempt (from waste management licensing regulations) activity.	3	Could be provided in additional notes requirement.	
DQC 17	Record of waste types produced (state the EWC code).	1	See DQC 8.	
DQC 18	Record of waste management action(re-use off/onsite, recycle off/onsite, recovered off/on site, landfilled or otherwise disposed of)	1	See DQC 9.	
DQC 19	Record of comparison of actual and planned waste quantity	2	Submission of waste data for Network Management Agents is twice annually. At the beginning of the year planned waste to be generated for the year is submitted. At the end of the year actual quantities are submitted.	
DQC 20	Record cost savings from SWMP	3	Could be provided in additional notes requirement.	
DQC 21	Record of waste to landfill in tonnes.	1		
DQC 22	Record of date the exemption began	3	Could be provided in additional notes requirement.	
DQC 23	Record of date the exemption expires	3	Could be provided in additional notes requirement.	
DQC 24	Record of performance of energy carbon indicator	3		
DQC 25	Record of construction material resource.	2	Information is submitted relating to Material Class (Primary, Secondary, and Reused Materials), Quantity, and Origin (On Site, Off Site, Recycling Centre)	
DQC 26	Record of abstraction licence number	2	Records water abstraction points but not licensing.	
DQC 27	Record of contractual performance measurement with respect to waste and materials resource efficiency	2	EnvIS includes HA Objectives relating to Waste and Material Resource usage. Information submitted could be used to support contractual targets (indeed this is one of the objectives of EnvIS) as long as the information is collected through EnvIS.	There is an opportunity to develop area/scheme objectives to assess performance.

Data Information System Name		Drainage Data Management System (DDMS)		
Performance Assessment Rating Scale		Performance Comment		
9- Full Capability 10- Partial Capability (must comment) 11- No Capability 12- Unknown Capability (must Comment)		Performance Assessment Rating 1 - 4	Current Performance Capability Development Future Capability	
Application Criteria				
AC1	System accessible to Highways Agency and Service Providers	1	System is provided through web browser (and passwords) to HA and Service Providers/	
AC2	Information held in data format or able to produce data format	1	Information is required to be submitted in a specified format as detailed in DMRB Volume 4 Section 2 Part 4.	
AC3	Minimum annual update frequency	4	No advice is provided as to data submission frequency. It is assumed that data is provided 'as and when' an asset is constructed or inspected.	
AC4	Data transfer contractually bound	1	DDMS is a mandatory requirement.	
AC5	Data owned by Highways Agency	4	System is operated through an internet interface by Mott MacDonald's. Assume through contracts that data is owned by the HA	
AC6	Enable reporting interrogation	4	Reporting capabilities of DDMS are not known.	
AC7	Full data confidence, quality assured	2	Requirement to provide details of source of data records within the 'Origin of Data' field. The purpose of this is to enable future users to associate a level of confidence with data. The 'Other Source' field is populated in cases where data has been obtained from other validated sources. It is unknown as to internal governance procedure in HA to assist with data confidence.	
AC8	Easy to use (include navigation, manipulation and interpretation).	1	A series of files are completed identifying the location and components of each geotechnical asset. Guidance on completing each file is provided in DMRB Volume 4 Section 2 Part 4.	
Data Quality Criteria				
DQC 1	Record of client	1	All data submitted is wrt the HA Trunk Road Network. In this respect the HA is 'the Client'.	
DQC 2	Record of principal contractor	1	Data is submitted to the HA by Service Providers required to comply with the standard. In this context Service Providers can be regarded as the 'Principal Contractor'.	
DQC 3	Record of the project value.	3		Unlikely to be part of future enhancement work.
DQC 4	Record of date work commenced.	2	There is a requirement to submit the date of when a survey/inspection is undertaken.	
DQC 5	Record of person who drafted SWMP	3		Unlikely to be part of future enhancement work.
DQC 6	Record of site location	1	Geospatial information is submitted identifying the location of each asset.	
DQC 7	Record of decisions made to minimise waste prior to SWMP	3		Unlikely to be part of future enhancement work.
DQC 8	Record of waste quantities of waste types produced (state the EWC code)	3		Unlikely to be part of future enhancement work.
DQC 9	Record of waste management action (re-using, recycling and disposal)	3		Unlikely to be part of future enhancement work.
DQC 10	Records of identity of person removing the waste	3		Unlikely to be part of future enhancement work.
DQC 11	Record of waste type removed (state the EWC code.)	3		Unlikely to be part of future enhancement work.
DQC 12	Record of waste destination by WML number or PPC number	3		Unlikely to be part of future enhancement work.
DQC 13	Record of deviation explanation	3		Unlikely to be part of future enhancement work.
DQC 14	Record of waste carriers licence number	3		Unlikely to be part of future enhancement work.
DQC 15	Record of consignment note code or waste transfer note reference for waste removed.	3		Unlikely to be part of future enhancement work.
DQC 16	Record of registration number of exempt (from waste management licensing regulations) activity.	3		Unlikely to be part of future enhancement work.
DQC 17	Record of waste types produced (state the EWC code).	3		Unlikely to be part of future enhancement work.
DQC 18	Record of waste management action(re-use off/onsite, recycle off/onsite, recovered off/on site, landfilled or otherwise disposed of)	3		Unlikely to be part of future enhancement work.
DQC 19	Record of comparison of actual and planned waste quantity	3		Unlikely to be part of future enhancement work.
DQC 20	Record cost savings from SWMP	3		Unlikely to be part of future enhancement work.
DQC 21	Record of waste to landfill in tonnes.	3		Unlikely to be part of future enhancement work.
DQC 22	Record of date the exemption began	3		Unlikely to be part of future enhancement work.
DQC 23	Record of date the exemption expires	3		Unlikely to be part of future enhancement work.
DQC 24	Record of performance of energy carbon indicator	3		Unlikely to be part of future enhancement work.
DQC 25	Record of construction material resource.	2	Information on DDMS is provided wrt Construction Type of drainage assets (Brick, Pre Cast Concrete, <i>In situ</i> Concrete, and Bolted Segments) and Material Type (Vitrified Clay, Concrete, MDPE, PVC, HPPE, Cast Iron, Asbestos, Cement, and Pitch Fibre).	Unlikely that this data will be expanded on to record any additional material resource information.
DQC 26	Record of abstraction licence number	3		Unlikely to be part of future enhancement work.
DQC 27	Record of contractual performance measurement with respect to waste and materials resource efficiency	3		Unlikely to be part of future enhancement work.

Data Information System Name		Highways Agency Pavement Management System (HAPMS)		
Performance Assessment Rating Scale		Performance Comment		
13- Full Capability 14- Partial Capability (must comment) 15- No Capability 16- Unknown Capability (must Comment)		Performance Assessment Rating 1 - 4	Current Performance Capability	Development Future Capability
Application Criteria				
AC1	System accessible to Highways Agency and Service Providers	1		
AC2	Information held in data format or able to produce data format	2	Probably need to clarify the 'data format' reference here. Assumed to mean a numerical, 'quantitative' figure rather than a descriptive 'qualitative' statement. Rated '2' as cannot be certain that all data is numerical.	
AC3	Minimum annual update frequency	2	Data is 'current' but may not be updated say, every year; this is determined by the maintenance and condition survey frequencies. Service Providers are required to update construction history and inventory whenever a change is made.	
AC4	Data transfer contractually bound	1		
AC5	Data owned by Highways Agency	1		
AC6	Enable reporting interrogation	1		
AC7	Full data confidence, quality assured	2	There are some gaps in the data dependent on whether Service Providers have fulfilled their obligations to update and the surveys completed.	
AC8	Easy to use (include navigation, manipulation and interpretation).	2	Requires training to navigate and the level of manipulation and interpretation is dependent upon the users familiarity/training on the system.	
Data Quality Criteria				
DQC 1	Record of client	1	The client would ultimately be the Highways Agency	
DQC 2	Record of principal contractor	2	Records maintenance area but not name of specific contractor – this changes every few years but could be found elsewhere given the date and the Area number. Some data is identified by a user (i.e. an individual) so is known.	
DQC 3	Record of the project value.	2	Maintenance cost is estimated in the WLC analysis and this must match the money bid for but the outturn is not recorded.	
DQC 4	Record of date work commenced.	1		
DQC 5	Record of person who drafted Site Waste Management Plan (SWMP)	3		
DQC 6	Record of site location	1		
DQC 7	Record of decisions made to minimise waste prior to Site Waste Management Plan (SWMP)	3		
DQC 8	Record of waste quantities of waste types produced (state the European Waste Catalogue (EWC) code)	3		
DQC 9	Record of waste management action (re-using, recycling and disposal)	3		
DQC 10	Records of identity of person removing the waste	3		
DQC 11	Record of waste type removed (state the EWC code.)	3		
DQC 12	Record of waste destination by WML number or PPC number	3		
DQC 13	Record of deviation explanation	3		
DQC 14	Record of waste carriers licence number	3		
DQC 15	Record of consignment note code or waste transfer note reference for waste removed.	3		
DQC 16	Record of registration number of exempt (from waste management licensing regulations) activity.	3		
DQC 17	Record of waste types produced (state the EWC code).	3		
DQC 18	Record of waste management action(re-use off/onsite, recycle off/onsite, recovered off/on site, landfilled or otherwise disposed of)	3		
DQC 19	Record of comparison of actual and planned waste quantity	3		
DQC 20	Record cost savings from SWMP	3		
DQC 21	Record of waste to landfill in tonnes.	3		
DQC 22	Record of date the exemption began	3		
DQC 23	Record of date the exemption expires	3		
DQC 24	Record of performance of energy carbon indicator	3		
DQC 25	Record of construction material resource.	3		
DQC 26	Record of abstraction licence number	3		
DQC 27	Record of contractual performance measurement with respect to waste and materials resource efficiency	3		
Data Information System Name		Structures Management Information System (SMIS)		
Performance Assessment Rating Scale		Performance Comment		
17- Full Capability 18- Partial Capability (must comment) 19- No Capability 20- Unknown Capability (must Comment)		Performance Assessment Rating 1 - 4	Current Performance Capability	Development Future Capability
Application Criteria				
AC1	System accessible to Highways Agency and Service Providers	1		
AC2	Information held in data format or able to produce data format	2	Probably need to clarify the 'data format' reference here. Assumed to mean a numerical, 'quantitative' figure rather than a descriptive 'qualitative' statement. Rated '2' as cannot be certain that all data is numerical.	
AC3	Minimum annual update frequency	2	Data is 'current' but may not be updated say, every year; this is determined by the maintenance and condition survey frequencies. Service Providers are required to update construction history and inventory whenever a change is made.	
AC4	Data transfer contractually bound	2	Dependant on the contract	
AC5	Data owned by Highways Agency	1		
AC6	Enable reporting interrogation	1		
AC7	Full data confidence, quality assured	2	There are some gaps in the data dependent on whether Service Providers have fulfilled their obligations to update and the surveys completed.	
AC8	Easy to use (include navigation, manipulation and interpretation).	2	Requires training to navigate and the level of manipulation and interpretation is dependent upon the users familiarity/training on the system.	
Data Quality Criteria				
DQC 1	Record of client	1	The client would ultimately be the Highways Agency	
DQC 2	Record of principal contractor	2	Records maintenance area but not name of specific contractor – this changes every few years but could be found elsewhere given	

			the date and the Area number.	
DQC 3	Record of the project value.	3		
DQC 4	Record of date work commenced.	2	Date can be held but is not always completed.	
DQC 5	Record of person who drafted SWMP	3		
DQC 6	Record of site location	1		
DQC 7	Record of decisions made to minimise waste prior to SWMP	3		
DQC 8	Record of waste quantities of waste types produced (state the EWC code)	3		
DQC 9	Record of waste management action (re-using, recycling and disposal)	3		
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