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DEFRA

**DEVELOPING A BUSINESS CASE FOR THE APPRAISAL OF
THE WIP DATA STRATEGY**



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EXECUTIVE SUMMARY

The Government released a consultation document in October 2004 titled 'A consultation Document on the Development and Implementation of a Three-year Strategy to Improve Data across All Waste Streams in the UK'. Following receipt of the responses, the Government decided to undertake an assessment of the proposed strategy against existing systems in order to develop a robust business case from which to move the strategy forward.

The evaluation has been carried out against defined criteria developed from the original brief to:

- ◆ Deliver consistent and reliable information on waste streams;
- ◆ Provide a sound evidence base for policy development, implementation, monitoring and evaluation;
- ◆ Develop a coherent dissemination process to ensure wider and more timely access to information;
- ◆ Deliver consistency of classification across the different data providers; and
- ◆ Produce a national picture in a timely manner.

In all, fifteen evaluation criteria were agreed with Defra. It was found that the proposed system would have significant advantages over the existing systems including the:

- ◆ Ability to produce more accurate and complete data across all sectors and to meet Defra's reporting requirements as set out in the Waste Data Strategy;
- ◆ Collection of better quality data. This would in turn support regional and national planning and policy decisions particularly with regard to infrastructure development;
- ◆ Ability to produce a national picture of waste arisings, movements and infrastructure on a timely basis;
- ◆ Development of a strong reporting tool which would improve stakeholder access and the speed of access to the information; and
- ◆ Ability to provide validated data with consistency of classification of this data and to improve the consistency of this data between waste streams and sectors.

Many of the advantages of the proposed system revolve around the development of a Central Hub for data storage and reporting. These include improved data integrity, improved reporting functionality, improved reporting scope and improved access to complete data by stakeholders.

An initial cost benefit analysis of the proposed system has shown that developing the systems as proposed in the Waste Data Strategy could yield significant saving to both the public and private sectors. These include:

- ◆ Reduced need for public and private sector surveys to support planning enquiries etc.;



- ◆ Reduced risk to both the public and private sector in procuring and operating PFI/other contracts;
- ◆ Savings to the public sector in removing the need for the Environment Agency's Triennial Survey, the ODPM Survey and regional infrastructure surveys; and
- ◆ Savings to the private sector in completing these surveys.

Annual savings are estimated at between £480,000 and £880,000 per annum.

Potential savings over 20 years are estimated at between £22m and £46m. These figures assume year on year savings associated with reduced risk, due to the availability of better quality data, in procuring major waste infrastructure projects (linked to Private Finance Initiatives). However, even without these PFI savings, the assessment shows a potential saving of between £5.8m and £12.6m over 20 years. While these figures are only indicative at this stage, they demonstrate that savings could potentially more than cover development and operational costs.

1. INTRODUCTION

The Government's Waste Implementation Programme (WIP), with the Environment Agency, has been charged to:

- ◆ Deliver consistent and reliable information on waste streams;
- ◆ Provide a sound evidence base for policy development, implementation, monitoring and evaluation; and
- ◆ Develop a coherent dissemination process to ensure wider and more timely access to information.

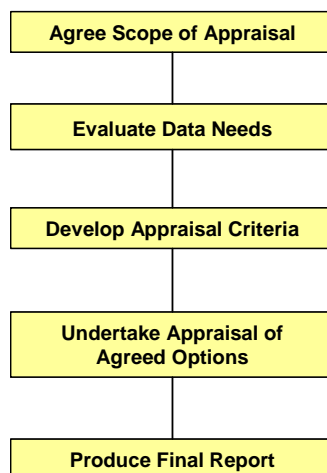
In order to deliver these objectives a three-year strategy to improve data across all waste streams in the UK has been developed. A consultation document was released in October 2004 'A Consultation Document on the Development and Implementation of a Three-year Strategy to Improve Data across All Waste Streams in the UK'. The consultation paper invited comments on the data strategy by the 7th January 2005, with the feedback being published in March 2005.

In order to proceed with confidence and develop a sound business case for the data strategy, Defra wish to appraise the primary options for data collection and management. These are:

- ◆ Current methods of data collection;
- ◆ Methodology outlined in the WIP Waste Data Strategy; and
- ◆ Any other methodologies deemed viable.

The methodology for completing the appraisal is outlined in Figure 1.

Figure 1 Appraisal Methodology



The scope of the appraisal was confirmed with Defra at the Project Inception Meeting and finalised at the Project Interim Meeting. The agreed scope was to

compare existing and proposed waste data collection against their ability to deliver the data required by the WIP Waste Data Strategy, assuming that Environment Agency systems would be developed to gather the data for the proposed system. Clarification on the scope of the appraisal is included at various stages in the report.

Once the scope had been agreed with Defra, a data needs evaluation was undertaken (See Section 2). This is an important first step to clearly define what data is required by the system users (the users being defined as central government, local and regional government, the waste industry and the devolved administrations of Northern Ireland, Scotland and Wales). The data needs and system reporting requirements have been provisionally outlined in the October 2004 Waste Data Strategy and it is these that have been used for the purposes of this appraisal.

In order to appraise the systems for data collation and reporting clear appraisal criteria have been developed and agreed with Defra. Key appraisal criteria include:

- ◆ Ability to collect the information agreed for the core data-set;
- ◆ Ability to achieve the required data standards of accuracy, completeness etc. as set out in the WIP Data Strategy (Table 1: Primary Data Standards page 41 of consultation paper);
- ◆ Consistency of classification;
- ◆ Ability to meet desired timeframes; and
- ◆ Ability to produce the required reports to all system users.

A range of appraisal criteria were developed around these key areas. The full list of appraisal criteria is detailed in Section 3 along with the appraisal of the different data collection and reporting systems.

A series of conclusions based on the appraisal of the different data collection and reporting systems is provided in Section 4.

2. DATA NEEDS EVALUATION

In order to undertake an appraisal of the data collection options it is first necessary to clearly understand the data needs for the systems. For the purposes of this evaluation the data needs have been split into the following categories:

- ◆ Data requirements:
 - Data quality;
 - Granularity of data; and
 - Timeframes for the collection of data.
- ◆ Reporting requirements

The data needs described in this section have been drawn from the WIP Waste Data Strategy released by Defra in October 2004 '*A Consultation Document on the Development and Implementation of a Three-year Strategy to Improve Data across All Waste Streams in the UK*'.

The data requirements for Phase 1 of the WIP Waste Data Strategy are effectively a collated package of data from the Environment Agency which is then transferred to a central data hub and combined with the data from WasteDataFlow (which has been operational since April 2004).

2.1 Data Requirements

The data requirements in the WIP Waste Data Strategy are split into three broad categories:

1. Waste Arisings (i.e. the quantities of different waste types generated by sector and location);
2. Waste Infrastructure (i.e. the type, capacity and location of the facilities available to manage the waste arisings) ; and
3. Waste Management (i.e. the quantities of waste managed at the different facilities broken down by waste type, management method, location and sector of waste arising etc).

The data requirements for each are summarised in Table 1.

Table 1 Data Requirements as outlined in Defra's Waste Data Consultation Document

Data Requirements
Waste Arisings (quarterly)
Quantity of waste produced
Type of Waste (EWC)
Producing sector (SIC)
Location of waste production
Waste Infrastructure (annual)
Site/facility type (R&D code)
Location of facility (postcode)
Operator/permit holder
Waste types handled
Permitted input capacity (total)
Permitted input capacity by waste type (EWC)
Maximum input capacity by waste type (EWC)
Previous years throughput by waste type (EWC)
Waste Management (quarterly)
Site/facility type (R&D code)
Source facility type (R&D code)
Type of waste transported (EWC code)
Producing sector (SIC code)
Original source locations (postcode)
Quantity of waste received (EWC code)
Quantity rejected by waste type (EWC code)
Quantity of waste stored (EWC code)
Quantity of residual waste produced (EWC code)
Receiving facility type (R&D code)
Receiving facility location (postcode)

For municipal waste the data will be collected and collated by WasteDataFlow.

For all other controlled wastes, the WIP Waste Data Strategy envisages that this data will be collected and collated by systems developed by the Environment Agency through it's developing IT Data Strategy. It is understood that the Environment Agency are planning two new systems for collecting and managing waste data:

1. Permitting Administration System (PAS) (2004/5)
2. New Waste Management Compliance System (WMCS) (2005/7)

It is possible that all the data needs identified above could be acquired through the new Core Regulation System.

The data needs identified in Table 1 are somewhat repetitive and Table 2 contains a summary of all data requirements.

Table 2 Summary of data requirements as outlined in Defra's Waste Data Consultation Document

Total Data Requirements
Quantity of waste produced by sector (SIC)
Quantity produced by type (EWC) linked to producing sector
Location of waste produced (postcode) linked to producing sector and waste type
Facility type (R&D code)
Name of operator or permit holder
Site permitted input capacity (by EWC code)
Maximum input capacity (by EWC code)
Quantity of waste rejected and stored (by EWC code)
Quantity of residual waste produced (by EWC code)
Receiving facility type (or other final destination?) (R&D code)
Receiving facility location (postcode)

This data set would meet all the data needs as outlined in the WIP Waste Data Strategy.

2.2 Reporting Requirements

The reporting and data requirements are intrinsically linked. Reports can only be generated if the system collects the appropriate data. Appendix 4 of the WIP Waste Data Strategy highlights a range of proposed reporting requirements. These are detailed in Table 3.

Table 3 Reporting Requirements as outlined in Defra's Waste Data Consultation Document

Reporting Requirements
Waste Arisings
Quantity of waste produced (by EWC code)
Quantity of waste produced by sector (SIC code)
Location waste was produced by Region or Country (postcode)
Waste Infrastructure
Number of facilities (by R&D code)
Permitted capacity of facilities
Maximum capacity of facilities
Location of facilities (postcode)
Types of waste handled (EWC code)
Waste Management
Quantity of waste recovered by type (EWC code)
Quantity of waste disposed by type (EWC code)
Process type (R&D code)
Quantity reused, recovered, disposed, stored and exported (by EWC, SIC and R&D type)
Source location



In addition the WIP Waste Data Strategy indicates that the reports should allow for trending graphs over quarters and annually.

It is likely that with time the reporting requirements of the system will increase significantly over what is specified in the WIP Waste Data Strategy.

2.2.1 Compatibility of Data and Reporting Requirements

The data and reporting requirements outlined in the WIP Waste Data Strategy are reasonably straightforward (i.e. not very complex reporting requirements providing data is delivered). The data needs outlined will generally meet the reporting requirements of the system as defined in the WIP Waste Data Strategy.

The evaluation of data collection options in Section 3 assumes that these data needs will be met by:

- ◆ WasteDataFlow for municipal wastes; and
- ◆ For other controlled wastes, the systems developed under the Environment Agency's emerging IT Data Strategy.

3. APPRAISAL OF DATA STRATEGY OPTIONS

It was envisaged that the following data collection options would be assessed in this appraisal:

1. Current methods of data collection;
2. The methodology outlined in the Data Strategy proposals; and
3. Any other methodologies deemed viable.

However, following some initial analysis it became clear that no other viable options could be identified that would provide a meaningful alternative to the two primary management options. Appraisal of the existing data management systems has clearly shown that modifications to the existing systems to supply data directly to the Central Hub, or development of discrete systems with no Central Hub, would not meet the basic data and reporting requirements outlined in the October 2004 Consultation Document.

Therefore the following section contains a detailed appraisal of the current methods of data collection and the methodology outlined in the WIP Waste Data Strategy proposals.

3.1 Appraisal Criteria

A range of appraisal criteria were developed to reflect the ability of the different data collection methodologies to deliver the Government's objectives to:

1. Deliver consistent and reliable information on waste streams;
2. Provide a sound evidence base for policy development, implementation, monitoring and evaluation; and
3. Develop a coherent dissemination process to ensure wider and timelier access to information.

In light of discussions with Defra, the following criteria were agreed to evaluate the different data collections methodologies. The criteria have been grouped under a series of generic headings.

◆ Accuracy of data:

- Can the data collection system provide accurate data to meet reporting requirements?
- Can the data collection system produce complete data across all sectors?
- Can the data collection system provide the quality of data to inform policy making and decisions on infrastructure development by Government, local authorities or private sector?

◆ Completeness of data

- Can the data collection system provide a complete data-set without the need for additional surveys?

- Will the data collection system produce a national picture of waste management activities?
- Will the data collection system allow GIS mapping and flow modelling?
- ◆ Timeliness of data
 - Will the data collection system provide the reporting requirements within the required time-scales (i.e. 3 months after quarter or year end)?
- ◆ Accessibility of data
 - Will the data collection system allow access to all Stakeholders?
- ◆ Consistency of data
 - Will the data collection system ensure consistent classification of waste?
 - Can the data collection system provide more consistent data within and between waste streams?
- ◆ Dependencies
 - Will the data collection system require regulation to meet the data requirements?
 - Will the data collection system assist effective monitoring and enforcement by Agency?
- ◆ Costs
 - What are the development costs/risks?
 - What are the on-going operational and maintenance costs?
 - What resource demands does the data collection system place on the sector/industry?

Against each appraisal criterion, the potential benefits and barriers/issues associated with the delivery of data needs are considered. The ability of the Environment Agency's developing IT data strategy to deliver the required information is not within the scope of this study to assess. It has therefore been assumed for the purposes of evaluating the future data collection options that the Environment Agency will implement data collection systems that will meet Defra's data needs (the risks of the Environment Agency not meeting Defra's data needs is covered in Section 3).

3.2 Existing Data Collection Methods

There are currently a range of different methods and systems used to collect waste management data. Table 4 provides a summary of the current data collection methodologies for the information identified by the data needs evaluation:

Table 4 Summary of the current data collection methodologies

Data Requirements	
Waste Arisings (by type, producing sector and production location)	
Municipal	WasteDataFlow – would need minor modifications to report by EWC codes. The SIC code particularly for trade waste collection and arising locations are assumed to be the local authority area. Intended data availability 6 months after end of data reporting period
Commercial	EA triennial waste production survey Data availability approx 18 months after survey
Industrial	EA triennial waste production survey Data availability approx 18 months after survey
C&D	ODPM survey (Symonds) Biennial – which does not report EWC, the SIC code or production locations. Annually reported 6-12 months after reporting period
Special/Hazardous	SWAT data on consignments – includes EWC and production locations but does not include SIC details. Annually reported 9-12 months after reporting period
Non-organic Agricultural	No regular data collection
Non-mineral M&Q	No regular data collection
Waste Infrastructure (R&D code, operator/permit holder, facility location, input/design capacities by EWC)	
PPC permitted	EA PI systems – holds limited data on inputs Information is not easily accessible by stakeholders
WML	EA REGIS and RATS systems – most of required data (except capacities) held between the two systems but can be difficult to extract. Information is not easily accessible by stakeholders
Exempt Activity	EA Exemption register but limited information on capacities Information is not easily accessible by stakeholders.
Other (e.g. reprocessors)	EA accredited reprocessors information – holds data on operator and location. Spreadsheet readily available via internet
Waste Management (methods, R&D code, waste quantities by EWC, producing sector and original source locations, residual waste)	
PPC permitted	EA PI systems – holds limited data on inputs Information is not easily accessible by stakeholders
WML	RATS systems – records a lot of the waste management information in terms of quantities. However does not record: <ul style="list-style-type: none"> the original source locations to the level of detail identified in the data needs; or the producing sector as there is no requirement at present collect that information. Information is not easily accessible by stakeholders
Exempt Activity	There is very limited data on the waste managed at exempt sites as there are limited requirements on the reporting of the data.

3.2.1 Municipal Waste Data

In terms of municipal waste data, the majority of the data on **arising** and **waste management** methods is now gathered and collated by WasteDataFlow, the web based data collection system developed by Defra and other partners. WasteDataFlow is designed to collect data on municipal waste management from local authorities in the UK on a quarterly basis. WasteDataFlow has replaced and improved existing government surveys and provide an evidence base for developing and monitoring policies and programmes. In addition it will be the source of data

for the Environment Agency's validation and authorisation of BMW diversion under LATS.

3.2.2 Other Controlled Waste

Data on other controlled wastes is gathered from a range of sources, using a range of methods, including arisings surveys and operator returns.

Most data on **waste arisings** is gathered via surveys which vary in sample, waste streams covered and survey frequency, for example the EA triennial waste production survey and the ODPM Biannual survey on C&D waste.

Data on **waste management infrastructure** is gathered through two main routes:

- ◆ Environment Agency regulatory systems; and
- ◆ Waste planning surveys undertaken by Regional Technical Advisory Bodies (RTABs), which are undertaken periodically depending on information needs.

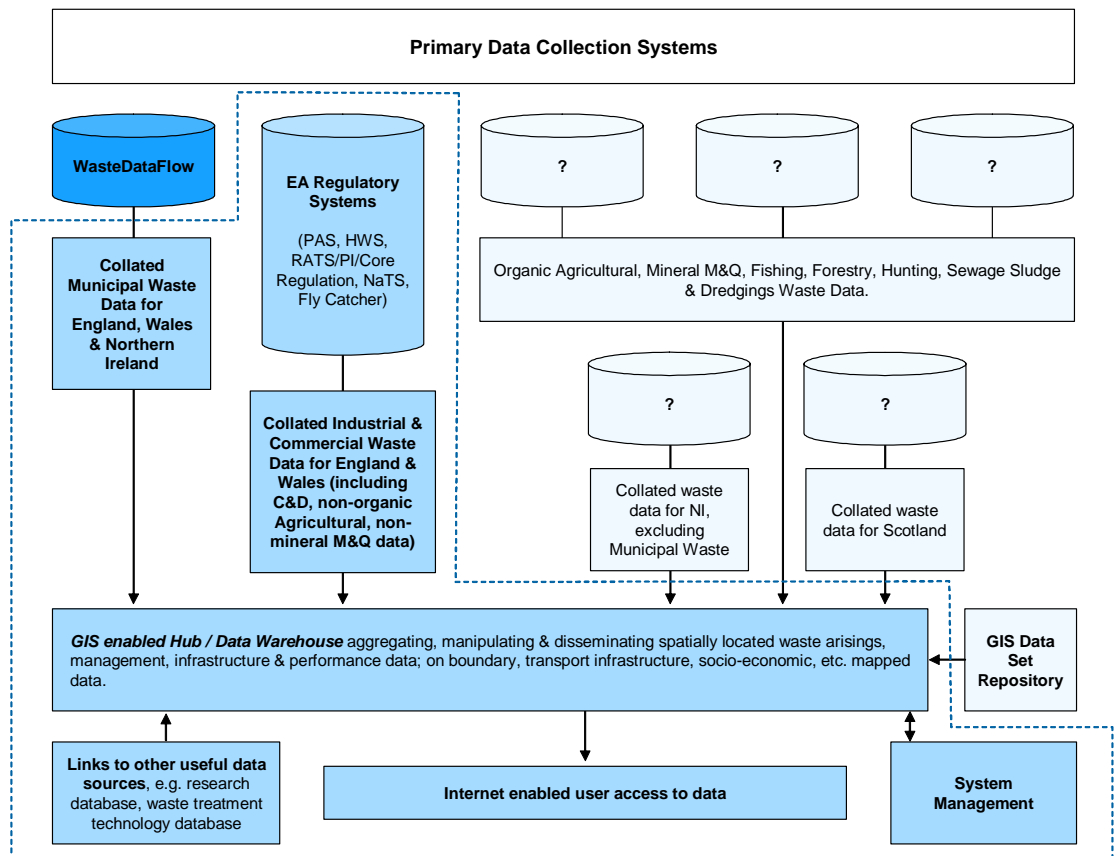
Final, **waste management** data is generally gathered by the systems developed to support the Environment Agency's regulatory activities. Currently the Environment Agency has a number of discrete systems for the collection of data to support their regulatory activities. These are:

- ◆ REGIS (Regulation Information System) – this system supports the licensing process. Data is inputted on application. It stores data on all licensed and registered exempt sites. It is not a national system but area based;
- ◆ RATS (REGIS Attached Tonnage System) – Stores tonnages in/out for each Waste Management License permitted site. Data is inputted quarterly or annually depending on the type of facility. It is an area based system linked to REGIS;
- ◆ REGINSP (Regulatory Inspection System) – Stores WML compliance data. Data is inputted following site inspections. It is an area based system linked to REGIS;
- ◆ SWaT (Special Waste Tracking System) – Supports control and tracking of all hazardous/special waste movements & deposits in England and Wales. Data is manually inputted. It is a national system with data inputted by areas;
- ◆ PI (Pollution Inventory System) – this system is used for monitoring compliance under PPC and providing PPC infrastructure and waste management data;
- ◆ NaTS (National Transfrontier Shipment System) – Tracks and controls movement of hazardous waste in England and Wales. Central team enters data nationally supplied by regions using paper or electronic (Access database) systems; and
- ◆ Flycapture (National Fly-tipping Reporting System) – Monitors Environment Agency and local authority progress in tackling fly-tipping. LAs submit monthly electronic returns. It does not record waste quantities.

3.3 Proposed WIP Data Strategy System

The WIP Waste Data Strategy as outlined in the October 2004 Consultation Document describes a phased development. Figure 2 details the proposed system architecture and the scope of the two phases of development.

Figure 2 Conceptual outline of proposed waste data strategy system architecture



----- Phase 1 Project Scope



Existing System



Phase 1 Development



Phase 2 Development

WasteDataFlow has been operational since April 2004. The system collects municipal waste data for England, Wales and Northern Ireland and will collect data for Scotland from January 2006.

The new Environment Agency Regulatory Systems, which will replace the likes of REGIS and RATS, are all in the initial stages of development apart from Flycapture and the import/export tracking system (NaTS) which are now operational. This appraisal covers the Phase 1 development, including the proposed Environment Agency systems but does not cover the Phase 2 development. The Phase 1 development would comprise the following:

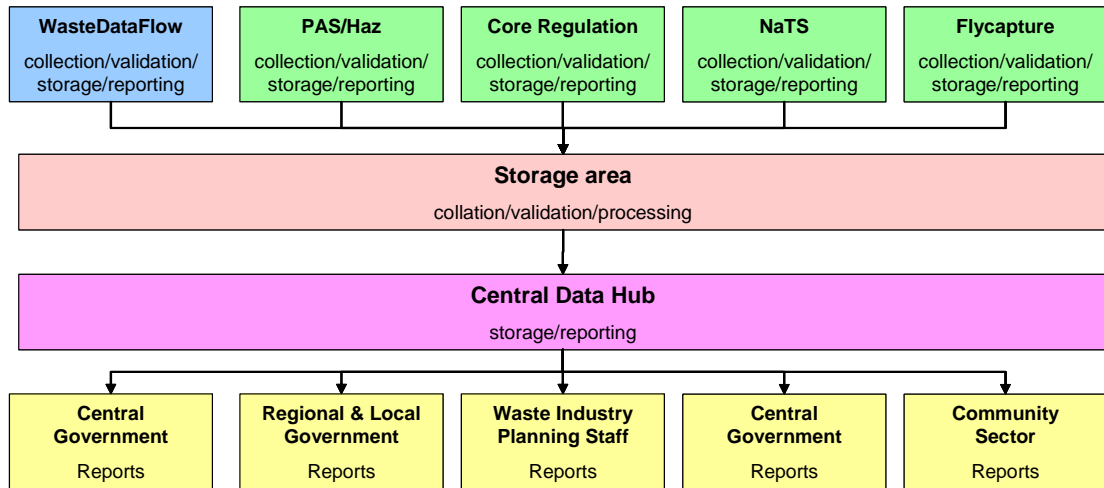
1. Upgrade of WasteDataFlow to allow the capture of additional data and the collation and transfer of data to a central Hub.
2. Development of the Environment Agency primary data collection systems:
 - i. The Permitting Administration System (PAS); and
 - ii. The new Core Regulation System
3. Upgrade of the existing Environment Agency Flycapture and NaTS to allow collation and transfer of data to the central Hub.
4. Development of a central Hub for data storage and reporting.
5. Development of system management infrastructure and procedures.
6. Development of links to other systems.

The primary data collection systems for the Phase 1 development would therefore be:

1. WasteDataFlow;
2. EA Permitting Administration System (PAS);
3. EA Core Regulation System;
4. Import/export tracking systems (NaTS); and
5. EA Fly tipping recording system.

These systems would collect, validate and store data as required by the system operators. For WasteDataFlow this would be Defra and for the other Phase 1 systems this would be the Environment Agency. Figure 3 describes the Phase 1 system schematic and how data may move from the primary systems to the Central Hub for stakeholder reporting.

Figure 3 Phase 1 System Schematic



Selected data from the five primary systems would be collated and held in a storage area. Each would have a separate interface with the central system. Further validation of this data may then take place within a storage area prior to its transfer onto the central hub. Further processing may also take place at this point to eliminate duplication of data. The data would then be transferred to the central hub for long-term storage (estimated at 10 yrs).

Once the data has been transferred onto the Central Hub it would be available for the production of reports. The key stakeholders listed in the Waste Data Strategy are shown in Figure 3 . It is estimated that the system would allow approximately 25,000 users from these stakeholder groups to produce reports or download data.

It is intended that the system would provide up-to-date data no more than 3 months after the relevant period be it quarterly or annual data. This would apply to waste arisings, management and infrastructure data. The ability of the system to actually achieve these timeframes is evaluated in Section 3.4.

Table 5 summarises which systems would collect which data within the proposed WIP Waste Data Strategy. It is understood that waste arisings and management methods would be collected solely or primarily through the new Core Regulation System. Waste infrastructure data would be collected through the PAS. It is not yet clear what data would be required from Flycapture or NaTS but it is likely that this will be supplementary data to fill in gaps of data provision not covered by Core Regulation and PAS.

Table 5 Summary of proposed waste data collection methodologies

Data Requirements	
Waste Arisings (by type, producing sector and production location)	
Municipal	WasteDataFlow – – would need minor modifications to report by EWC codes. The SIC code particularly for trade waste collection and arising locations are assumed to be the local authority area. Intended data availability 6 months after end of data reporting period.
Commercial	Core Regulation through electronic site returns (although it is unclear whether producer details would be captured, the assumption for the appraisal is that they would be).
Industrial	
C&D	
Special/Hazardous	PAS/Haz
Non-organic Agricultural	Core Regulation through electronic site returns.
Non-mineral M&Q	
Waste Infrastructure (R&D code, operator/permit holder, facility location, input/design capacities by EWC)	
PPC permitted	PAS (although it is unclear whether all exemptions would be covered under PAS, the assumption for the appraisal is that they would be).
WML	
Exempt Activity	
Other (e.g. reprocessors)	
Waste Management (methods, R&D code, waste quantities by EWC, producing sector and original source locations, residual waste)	
PPC permitted	Core Regulation (although it is unclear whether all exemptions would be covered under Core Regulation, the assumption for the appraisal is that they would be).
WML	
Exempt Activity	

3.4 System Appraisal

The following section contains a full appraisal of the of the existing and proposed data systems.

The following Appraisal Criteria have been agreed with Defra and used for the appraisal:

1. Will the system provide accurate data to meet reporting requirements?
2. Will the system produce complete data across all sectors?
3. Will the system provide the quality of data required to inform planning and policy making and decisions on infrastructure development?
4. Will the system provide a complete data-set without the need for surveys?
5. Will the system produce a national picture of waste management activities?
6. Will the system allow GIS mapping and enable users to model waste flows?
7. Will the systems provide the necessary reports within the specified timescales?
8. Will the data stored within the systems be accessible to all stakeholders?
9. Will the system ensure consistent classification of waste?
10. Will the system provide more consistent data within and between waste streams?
11. Will the system require additional regulation to meet defined data requirements?
12. Will the system promote effective monitoring and enforcement by the Environment Agency?
13. What are the development costs/risks for the system
14. What are the on-going operational and maintenance costs for the system
15. What are the resource demands placed on the waste management sector by the strategies.



DEVELOPING A BUSINESS CASE FOR THE APPRAISAL OF THE WIP DATA STRATEGY

Appraisal Criterion 1: Ability to provide accurate data to meet reporting requirements		
Existing Data Collection	<p>In terms of waste arisings none of the existing data systems collect all the data in the required timescales (See Appraisal Criterion 7 for discussion on timeliness) to meet the reporting requirements identified in the Waste Data Strategy. Key areas where the current system can not provided accurate data are:</p> <ul style="list-style-type: none"> • WasteDataFlow does not use EWC codes directly, although most of the required data is collected and should be able to achieve close to the target accuracy standard of 100%; although WDF does not specifically require wastes to be coded against waste to EWC, EWC codes are contained within in the WDF programming which would allow data to be extracted by EWC codes. • C&I waste arising data is produced by a triennial survey which reports an accuracy of $\pm 2.5\%$ at a national level. However the frequency of the survey means estimates of arisings are often based on waste deposits from which it is not possible to accurately assess source location, producing sector or waste movements. In addition quantities managed at exempt activities are not generally included in deposit figure; • C&D arisings data is produced by a survey which claims an overall confidence level of 90%, although it is lower for some sub-categories and at regional levels. In addition a lot of the arisings are managed via exempt activities meaning data quality is poor; • Although not collecting SIC information, data on special/hazardous waste provides accurate data on the special/hazardous waste consigned. However there is an element of double counting of waste moving through transfer stations due to the consignment system, which means it is difficult to obtain an accurate picture of source location and waste movements; • Systems are not in place for the collection of data on non-organic agricultural and non-mineral M&Q because historically they have not been controlled wastes. <p>In terms of waste infrastructure and waste management methods:</p> <ul style="list-style-type: none"> • None of the systems (REGIS/RTAB surveys) can provide accurate data on maximum capacities with most data focused on throughput. In addition there is very little data on input or design capacities at exempt facilities; • The data to relate deposits to producing sector or original source location is not collected; and • Lack of data on exempt activities means it is not possible to produce accurate picture of all waste management method. 	Benefits
		N/a
		Risks/Barriers
	<p>Data currently collected in incomplete.</p> <p>Systems are unable to deliver all the data as there are no requirements for all the data to be collected.</p> <p>Much of the data on waste arising is gathered via surveys and therefore can not meet the accuracy called for by the WIP Waste Data Strategy</p>	



DEVELOPING A BUSINESS CASE FOR THE APPRAISAL OF THE WIP DATA STRATEGY

Appraisal Criterion 1: Ability to provide accurate data to meet reporting requirements		
Proposed WIP Data Strategy Collation Systems	<p>The proposed systems would meet the reporting requirements identified within the WIP Waste Data Strategy for waste arisings, waste infrastructure and waste management as detailed in Section 2.2.</p> <p>In terms of waste arisings:</p> <ul style="list-style-type: none"> • WasteDataFlow would need minor upgrades to include EWC codes etc; • C&I arisings assumed to be collected through the Core Regulation system; • C&D arisings assumed to be collected through the Core Regulation system; • Non-mineral agricultural and non-mineral M&Q assumed to be collected through the Core Regulation system. <p>The system would collect data on arisings by EWC code, SIC code and location on a quarterly basis.</p> <p>For waste infrastructure annual data would be collected:</p> <ul style="list-style-type: none"> • The system would provide data on maximum capacities and types handled by EWC code. <p>Storing data within a Central Hub means that anomalous data from the differing primary systems can be more readily identified and resolved. A central Hub also means that data integrity between systems can be better enforced for reporting. Even if the individual data collection systems are internally consistent, the data they hold may be inconsistent with other systems' data. The data can go through a cleansing and standardisation process as part of the transfer to the Hub.</p> <p>It is envisaged that the Hub will act as a Data Warehouse, specifically designed to meet waste data reporting requirements. This design of system is known as an Online Analytical Processing (OLAP) system which stores data in a denormalised format.</p> <p>The Primary Data Collection Systems, however, are designed as Online Transaction Processing (OLTP) systems with data stored in a normalised format. Normalised systems are less effective at producing reports than denormalised systems, they are often slower and the complexity of the reports that can be produced within specific timeframes is reduced.</p>	Benefits
		<p>Accurate data over defined time periods to allow evidence based policy and decision making.</p> <p>Should provide robust data to allow the waste sector to make informed investment decisions on waste management infrastructure.</p> <p>Should help reduce the investment risks associated with decisions made on poor quality data.</p> <p>Single data collection method eliminating the need for surveys, allowing more accurate data to be gathered.</p>
		Risks/Barriers
		<p>The Environment Agency systems are developed to meet Environment Agency needs only and not to deliver the data needs as outlined in the WIP Waste Data Strategy.</p> <p>The ability to gather data on or from all waste management facilities (particularly exempt activities see Appraisal Criterion 11 on the need for regulation to meet the data requirements)</p> <p>The Environment Agency systems are not designed to gather data on producing sector or original source location.</p> <p>Likely to require more detailed site returns by facility operators.</p> <p>Any collection system will struggle to produce accurate data on producing sector or original source location where waste is collected in a single vehicle from multiple locations.</p> <p>Data from exempt facilities is not collected.</p>



DEVELOPING A BUSINESS CASE FOR THE APPRAISAL OF THE WIP DATA STRATEGY

Appraisal Criterion 2: Ability to produce complete data across all sectors		
Existing Data Collection	<p>None of the existing data collection systems provide a complete data set across all sectors:</p> <ul style="list-style-type: none"> • C&I arising data collected by survey therefore can not be a full data set. Also it is not possible to break C&I waste arising data down to the local authority level to the accuracy required. • C&D arising data collected by survey therefore can not be a full data set. • Data on source location and a method of avoiding double counting is required to produce a complete data set for special/hazardous waste. • Systems are not in place for the collection of data on non-organic agricultural and non-mineral M&Q • There is currently no method of obtaining a full data set on waste infrastructure because the required data is not collected for all facilities (e.g. design capacities) and no data is collected from certain facilities/activities (e.g. exempt activities) • It is not possible to collect a full data set on waste management because certain data is not collected on all facilities (e.g. producing sector or original source location) and no data is collected from certain facilities/activities (e.g. exempt activities) 	Benefits
		N/a
		Risks/Barriers
		<p>The current systems were not designed to collect the data required by the Waste Data Strategy and as a result are not able to produce a complete data set.</p> <p>The ability to gather a complete data set without additional regulation (particularly exempt activities see Appraisal Criterion 11 on the need for regulation to meet the data requirements)</p>
Proposed WIP Data Strategy Collation Systems	<p>The proposed systems would provide a complete data-set across all sectors:</p> <ul style="list-style-type: none"> • WasteDataFlow could be easily upgraded to collect EWC code information. • C&I and C&D arisings would be collected quarterly through the Core Regulation system. • Infrastructure data would be collected through PAS/Haz. • Recording arisings and throughput by SIC, region and EWC type for all sectors. <p>The collation of data from all primary systems on a Central Hub would be of significant benefit in producing a complete dataset across all sectors. Storing all data on the Hub would allow detailed interrogation of the data from all Primary Data Collection Systems.</p> <p>Regular reporting periods, quarterly and annually, should ensure that complete datasets are available for sectors over clearly defined time periods allowing direct comparison of waste data between sectors.</p>	Benefits
		<p>Systems should allow policy and decisions to be made based on an understanding of all waste streams.</p> <p>System would eventually produce complete data for all sectors over comparable time periods.</p> <p>Storage on a Central Hub will allow detailed analysis and comparison of this data.</p>
		Risks/Barriers
		<p>Environment Agency do not collect data as outlined in the WIP Waste Data Strategy (See Appraisal Criterion 1).</p> <p>The ability to gather a complete data set without additional regulation (particularly exempt activities see Appraisal Criterion 11 on the need for regulation to meet the data requirements)</p>



DEVELOPING A BUSINESS CASE FOR THE APPRAISAL OF THE WIP DATA STRATEGY

Appraisal Criterion 3: Ability to provide the quality of data to inform planning and policy making and decisions on infrastructure development		
Existing Data Collection	<p>The key information required to inform policy making and decisions on infrastructure development is:</p> <ul style="list-style-type: none"> • Timely, complete and accurate data on arisings trends; and • Complete and accurate data on capacity/deposits and their locations. <p>The combined data from the current data collection systems does not provide this information, examples that demonstrate this point include:</p> <ul style="list-style-type: none"> • The Hazardous Waste Forum's efforts, in 2004, to estimate hazardous waste landfill capacity and need was based on 2002 arising data and limited data on capacity; • Capacity planning at all levels is based on incomplete and inaccurate existing capacity data (which is particularly true for certain waste streams e.g. C&D and metal recycling); and • Planning for C&I waste is based on 2 to 3 year old survey data. 	Benefits
		N/a
		Risks/Barriers
		<p>Inappropriate policy decisions guided by incomplete and inaccurate data.</p> <p>Inappropriate capacity developed in terms of location and need.</p> <p>Investment decision made based on out of date and inaccurate information.</p>
Proposed WIP Data Strategy Collation Systems	<p>The proposed system would deliver accurate data on the key information required to inform planning and policy decisions, namely:</p> <ul style="list-style-type: none"> • Accurate and timely data (for timeliness see Appraisal Criterion 7) on arisings trends; and • Accurate data capacity/deposits and its locations. <p>The system would provide additional information on capacities by EWC code. Infrastructure capacity could be calculated by R&D and EWC codes.</p> <p>The system would provide arisings information by region, sector and EWC code. The system would be able to trend this data which would provide additional assistance to regional and national planning and policy bodies and the waste management industry.</p> <p>Access to this data through the Central Hub would improve ease of access to this information by planning and policy bodies. Detailed reports could be developed within the system to provide planning and policy guidance.</p>	Benefits
		<p>Should provide the necessary information to inform planning and policy decisions at regional and national level.</p> <p>Should provide robust data to allow the waste sector to make informed investment decisions on waste management infrastructure.</p>
		Risks/Barriers
		<p>Environment Agency do not collect data as outlined in the WIP Waste Data Strategy (See Appraisal Criterion 1)</p>



DEVELOPING A BUSINESS CASE FOR THE APPRAISAL OF THE WIP DATA STRATEGY

Appraisal Criterion 4: Ability to provide a complete data-set without the need for surveys		
Existing Data Collection	<p>Much of the existing data on arisings and capacity is collected through surveys and therefore the current data collection methods cannot gather a complete data-set without surveys. However it should be noted that:</p> <ul style="list-style-type: none"> • many of the systems and approaches were not designed or intended to provide a complete data-set without the need for surveys; and • systems were not readily available to collect the data without surveys. 	Benefits
		N/a
		Risks/Barriers
		<p>Currently data collection systems were not designed to provide a complete data set without surveys.</p> <p>Inappropriate policy decisions guided by incomplete and inaccurate data.</p> <p>Inappropriate capacity developed in terms of location and need.</p> <p>Investment decision made based on out of date and inaccurate information.</p>
Proposed WIP Data Strategy Collation Systems	<p>The proposed systems would potentially negate the need for a number of regional and national surveys. Examples include:</p> <ul style="list-style-type: none"> • Surveys on regional capacity undertaken by RDAs/RTABs etc. • Environment Agency surveys • Surveys by WRAP and Regional Market Development Programmes on regional and national arisings and reprocessing capacity. • Surveys by Defra • Surveys by specialist bodies e.g. The Compost Association <p>The new system could replace some of the existing surveys and meet some of the reporting requirements of national and regional organisations.</p> <p>It is possible that the data needs outlined in the WIP Waste Data Strategy would meet many of the data needs of the organisations listed.</p>	Benefits
		<p>Should reduce the need for a number of industry surveys that currently place a burden on the facility operators.</p> <p>More coordinated approach to regional survey work.</p> <p>Ability to compare regional like for like figures because a consistent methodology would be used across regions.</p>
		Risks/Barriers
		<p>Environment Agency do not collect data as outlined in the WIP Waste Data Strategy (See Appraisal Criterion 1)</p> <p>Quality and quantity of returns is poor, requiring additional surveys to fill in data gaps at both national and regional level (regulation may negate this risk).</p> <p>Likely to require more detailed site returns by facility operators.</p> <p>Data is not made accessible to all groups.</p> <p>Data collected is not sufficient to meet the needs of the various stakeholders.</p>



DEVELOPING A BUSINESS CASE FOR THE APPRAISAL OF THE WIP DATA STRATEGY

Appraisal Criterion 5: Ability to produce a national picture of waste management activities		
Existing Data Collection	<p>Under Appraisal Criterion 2 (the ability to produce complete data across all sectors) it was highlighted that none of the existing data collection systems provide a complete data set across all sectors. The key shortfalls that affect the production of a national picture of waste management activities are:</p> <ul style="list-style-type: none"> • lack of data on producing sector or original source location; • incomplete and inaccurate data on existing capacity • little or no data on exempt activities. • Differing timetables for the various surveys make it difficult to develop a national picture for any given year. 	Benefits
		N/a
		Risks/Barriers
		<p>Inappropriate policy decisions guided by incomplete and inaccurate data.</p> <p>Inappropriate capacity developed in terms of location and need.</p> <p>Investment decision made based on out of date and inaccurate information.</p>
Proposed WIP Data Strategy Collation Systems	<p>The proposed systems would collect quarterly information on waste arisings and management and annual information on waste infrastructure. This information would be collected, validated and collated before being transferred to the Central Hub. The system described would allow a national picture to be developed of waste management activities at any given time (for timeliness see Appraisal Criterion 7). The system will allow a detailed analysis of arisings and infrastructure and the basic modelling of waste flows.</p> <p>The collation of data onto a central storage and reporting Hub should significantly improve the users ability to create this national picture and the frequency at which this picture can be produced. The Hub should make it possible to compare data from many data sources instantly and produce integrated reports.</p>	Benefits
		<p>Should provide a detailed picture of waste management activities which would allow evidence based policy and decision making.</p> <p>Should provided robust data to allow the waste sector to make informed investment decisions on waste management infrastructure on a national and regional basis.</p>
		Risks/Barriers
		<p>The speed at which the national picture becomes available may exceed the target of 3 months after each defined reporting period (see Appraisal Criteria 7).</p> <p>The Environment Agency does not collect quarterly and annual data or the required data as defined in the WIP Waste Data Strategy.</p>



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Appraisal Criterion 6: Ability to allow GIS mapping and flow modelling		
Existing Data Collection	<p>As previously highlighted there is limited data on producing sector or original source location and the data on location is often incompatible with GIS systems. Therefore from the current systems it would not be possible to carry out GIS mapping and flow modelling to any real quality or detail or to the standards required by the WIP Waste Data Strategy.</p>	Benefits
		N/a
		Risks/Barriers
<p>Decisions made without a detailed understand of points of arising and waste movements.</p>		
Proposed WIP Data Strategy Collation Systems	<p>The proposed systems would allow GIS modelling of the waste data. It would also allow basic waste flow modelling by EWC code or region. However, it is unlikely that the system would allow detailed waste flow modelling by producing sector or original source location. This is because of the difficulties of tracking producing sector and original source location for where:</p> <ul style="list-style-type: none"> ◆ waste moves through transfer stations or ◆ waste is collected in a single vehicle from multiple locations. <p>For the GIS modelling for all collated data to be possible, collation of data on a central Hub is necessary. The Hub would connect to the GIS Dataset Repository. GIS mapping from the discrete primary systems would be possible but only against the data collected by the primary system. GIS modelling of national and regional waste flows, by waste type and sector would only be possible through a central Hub.</p>	Benefits
		<p>Basic GIS modelling of waste flows will be possible supporting policy and planning decisions.</p> <p>Should provided robust data to allow the waste sector to make informed investment decisions on waste management infrastructure on a national and regional basis.</p>
		Risks/Barriers
<p>Data is collected in a way that allows GIS mapping to take place.</p> <p>The Environment Agency systems are not designed to gather data on producing sector or original source location.</p>		

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Appraisal Criterion 7: Ability to provide the reporting requirements within the required timescales (i.e. 3 months after quarter/ year end)		
Existing Data Collection	<p>None of the existing systems can provide the data within the required time scales (i.e. 3 months after quarter/ year end) because the majority of data is not collected at the necessary frequency.</p> <p>WasteDataFlow is the closest to providing the data to the required timescales. However it would be difficult for WasteDataFlow to meet the timescales with the WIP Waste Data Strategy. This is because, in England, Local Authorities have three months to input their data following the end of a reporting period and before the data could be made available on the Hub it requires validation which should take a further three months.</p>	Benefits
		N/a
		Risks/Barriers
		Decisions guided by out of date information.
Proposed WIP Data Strategy Collation Systems	<p>The WIP Waste Data Strategy sets a target of making data available 3 months after any given reporting period. These targets have been set under the following assumption.</p> <p>“That mandatory and consistent requests for data returns are included in all relevant regulations for all waste management facilities”.</p> <p>It is unlikely that the timescales would be achievable without regulation on waste management facilities and local authorities.</p> <p>Without regulation it is likely that collecting, validating and collation of data for any given period and to an acceptable accuracy and completeness, would take at least 6 to 9 months:</p> <ul style="list-style-type: none"> • 3 months to gather returns following a given reporting period (potentially could be shortened e.g. local authorities in Wales have 1 month to input their data following the end of a reporting period); • 3 months primary validation, collation and transfer to Hub; and • 2-3 months secondary validation and storage on Central Hub. <p>It should be noted that the actual process of producing reports from data gathered from the differing Primary Data Collection Systems would be significantly improved by transferring collected data onto a central hub.</p>	Benefits
		Policy and investment decisions can be made on current date and trends.
		Risks/Barriers
		<p>The ability to ensure data is inputted in a timescale that would allow it to be validated and available on the Hub within the required timescale.</p> <p>Resource are available to validate data in the required timeframes</p>



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Appraisal Criterion 8: Ability to allow access to all Stakeholders		
Existing Data Collection	<p>Direct access to the data in the current systems is limited and the data is often only available to all stakeholders over a year after the period it relates to. In addition data is generally not in a format that allows stakeholders to analyse and interrogate the information themselves.</p> <p>An example of where stakeholders can analyse and interrogate data is the EA Hazardous Waste Interrogator.</p>	Benefits
		N/a
		Risks/Barriers
		Stakeholders are unable to access the information they need to make decisions in an easy and timely manner.
Proposed WIP Data Strategy Collation Systems	<p>The proposed system would enable defined stakeholders to access all or part of the data stored within the Hub through a web based access system.</p> <p>As a system specially designed for storage and reporting of data, the Hub would be a powerful reporting tool to all users. The physical act of bringing waste data from many collection systems into a central repository will mean that UK waste data would be more easily accessible. Currently if there are any reporting requirements that need data from more than one Primary Data Collection System it is necessary to access different data stores, which are located in different parts of the country within different organisations.</p>	Benefits
		<p>Enables relatively quick access by all users/stakeholders. Once the data is within the Central Hub users will be able to access the data directly through the web based interface.</p> <p>Users could potentially define their own reports or download data.</p> <p>Could reduce time spent by Defra and the Environment Agency on requests for information arising from the Freedom of Information Act.</p>
		Risks/Barriers
		Ensuring appropriate levels of access for different stakeholders.



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Appraisal Criterion 9: Ability to ensure consistent classification of waste		
Existing Data Collection	<p>At present there is inconsistent classification in and between the different data collection systems. This is due to a number of factors, including:</p> <ul style="list-style-type: none"> • historic classification systems; • terminology used within a sector; • the data needs from a particular system; • knowledge base of the data holders; and • data gathering methods. <p>However the existing systems could use consistent classification of waste.</p>	Benefits
		N/a
		Risks/Barriers
		The ability to ensure common interpretation of definitions and classification methods
Proposed WIP Data Strategy Collation Systems	<p>There is an opportunity to use a common set of definitions, classifications and coding for waste types. The development of new systems should focus attention on this issue and it is a key assumption of the Waste Data Strategy:</p> <p>“That a common set of definitions and classifications and coding systems for waste types, facility types, source sectors and locations are agreed and adopted”.</p>	Benefits
		<p>Consistent classification of waste and its management resulting in policy and investment decisions being made on clearly defined parameters.</p> <p>Should prevent different areas and regions interpreting definitions in different way, allowing better like for like comparisons and benchmarking.</p>
		Risks/Barriers
		The ability to ensure common interpretation of definitions and classification methods



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Appraisal Criterion 10: Ability to provide more consistent data within and between waste streams		
Existing Data Collection	At present, information for each waste stream (municipal, C&I and C&D) is collected and stored separately. There is no common set of definitions and classifications. Movement of waste from one waste stream to another is difficult to track, for example C7I waste collected within the municipal waste stream.	Benefits
		N/a
		Risks/Barriers
		Inappropriate policy decisions made of incomplete and inaccurate data. Inappropriate capacity developed in terms of location and need because of poor understanding of the interrelationship between different waste streams.
Proposed WIP Data Strategy Collation Systems	The proposed system would provide a full picture of waste arisings, movement and destination for municipal, C&I and C&D wastes across the UK. Common classifications and a more complete dataset will also assist.	Benefits
		Ability to track wastes between sectors and streams. Will promote more joined up thinking and better inform planning and policy decisions, especially with regard to infrastructure development.
		Risks/Barriers
		Environment Agency does not collect data as outlined in the WIP Waste Data Strategy.



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Appraisal Criterion 11: Requirement for regulation to meet the data requirements		
Existing Data Collection	<p>Appraisal Criterion 1 (Ability to provide accurate data to meet reporting requirements) and Appraisal Criterion 2 (Ability to produce complete data across all sectors) highlights that the current systems can not meet the data requirements. In order for the current systems to gather the required data it is likely that regulation would be required in a number of areas, including:</p> <ul style="list-style-type: none"> To obtain accurate and consistent data on producing sector or original source location, potentially through amendments to the Duty of Care Regulations (similar to the requirement to include EWC codes on transfer notes);and Regulation to require reporting of R&D code, throughput/capacities, waste quantities by EWC, producing sector and original source locations, residual waste from exempt activities. 	Benefits
		N/a
		Risks/Barriers
<p>Without some level of additional regulation it is unlikely that the required data would be captured. Could place a burden on waste management industry in terms of additional reporting requirements</p>		
Proposed WIP Data Strategy Collation Systems	<p>The need for regulation is a key assumption of the WIP Waste Data Strategy in defining system operation, benefits and performance. It is likely that without some regulation the following elements of the system will be compromised:</p> <ul style="list-style-type: none"> Data completeness – the number of returns may reduce without regulation Data quality – the quality of data returns may reduce Timeliness – the number of returns within defined reporting periods is likely to reduce significantly. <p>Experience from WasteDataFlow has shown that regions where returns have been made statutory (Wales) have received 100% of returns within defined reporting periods and regions that have not made returns statutory (England and Northern Ireland) have performed poorly in comparison.</p> <p>Requiring permitted/licensed waste facility operators to provided additional information on site returns would not necessarily require additional regulation as the requirements could be included in permit/license conditions. However additional regulation is likely to be required to ensure:</p> <ul style="list-style-type: none"> accurate and consistent data on producing sector or original source location is obtained; and, data is obtained from exempt activities. 	Benefits
		<p>Provides statutory basis for the collection of the information identified as necessary by the WIP Waste Data Strategy (which is deemed to be the information required to achieve the Government's aims).</p> <p>Provides consistent data reporting requirements on all waste management facilities, ensuring a "level playing field".</p>
		Risks/Barriers
<p>Without some level of additional regulation it is unlikely that all the required data would be captured. Could place a burden on waste management industry in terms of additional reporting requirements.</p>		



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Appraisal Criterion 12: Ability to assist effective monitoring and enforcement by Agency		
Existing Data Collection	<p>The Consultation Paper on the Waste Data Strategy (Appendix 2) highlighted a number of observations on the current EA waste data systems, including:</p> <ul style="list-style-type: none"> • Range of obsolete and modern systems with poor compatibility between systems. • Limited systems integration: multiple data entry • A number of systems are area based, not national with data aggregation difficult, subsequent 'mining' back to Area data not possible. • Much manual input of data (rather than direct electronic input): transcription errors, huge effort invested. <p>Consultation responses highlight significant risks of gathering data through the Environment Agency.</p>	Benefits
		N/a
Proposed WIP Data Strategy Collation Systems	<p>The Environment Agency has recognised many of the issues and is in the process of developing new systems. It is envisaged that the new systems will enhance the monitoring and enforcement by Environment Agency.</p>	Risks/Barriers
		N/a
		Benefits
		Better quality data to support the monitoring and enforcement by Environment Agency.
		Risks/Barriers
		Increased burden on the Environment Agency in terms of data collection requirements



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Appraisal Criterion 13: Development costs/risks		
Existing Data Collection	For the existing systems there are no major development costs as the approaches are already developed. On-going operational and maintenance costs are discussed in Appraisal Criterion 14.	Benefits
		N/a
		Risks/Barriers
		Policy and investment decisions made based on incomplete data.
Proposed WIP Data Strategy Collation Systems	The development costs for the proposed systems are outlined in the WIP Waste Data Strategy. Phase 1 development costs have been estimated at £1.9m - £3.0m (scope of Phase 1 development defined in Figure 2). These costs do not include developing the Environment Agency's IT systems (Core Regulation System, PAS/HAZ). There are risks in developing any complex integrated IT systems and the systems proposed in the WIP Waste Data Strategy are no different.	Benefits
		Development of a system that allows evidence based policy making and investment decisions on high quality data.
		Risks/Barriers
		Cost escalation over and above defined budget. Risks of not meeting development timescales. For some facility operators there is likely to be a one-off cost to adapt their existing systems to collect the additional data required by the WIP Waste Data Strategy. This is unlikely to be a problem for the larger companies.



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Appraisal Criterion 14: On-going operational and maintenance costs		
Existing Data Collection	<p>Limited information is available on the on-going operational and maintenance costs of the existing systems. However current costs would include:</p> <ul style="list-style-type: none"> • Environment Agency triennial waste production survey- no cost estimate available; • ODPM biennial secondary aggregates survey - cost estimate £50k to £70k per survey; • Regional planning surveys – assuming 1 survey every 2 to 3 years per RTAB at £50k per survey gives and estimated cost of £500k every 2 to 3 years. However this does not included the cost to the waste industry in supporting such surveys. 	Benefits
		N/a
Proposed WIP Data Strategy Collation Systems	<p>Additional costs would be incurred in operating and maintaining the Central Hub. Costs would be incurred for:</p> <ul style="list-style-type: none"> • Collation, processing and validation of primary data • General maintenance of the database • Software maintenance • Materials, seminars and system guidance <p>The total costs are estimated at £520-£800k in the first year and £240k-£520k in subsequent years.</p> <p>These costs do not include operational and maintenance costs for the Environment Agency systems.</p> <p>If a single repository for dispersing waste data is used it is possible to invest in Information Management Systems (IMs) at a single location, rather than at many Primary Data Collection Systems around the country. These IMs may include web-enabling technologies, business reporting tools (such as Business Objects) and specialist information systems such as Geographic Information Systems. Whilst many of these systems are charged on a “per user” basis there are generally economies of scale to be had with a single large repository. Furthermore installation and maintenance costs will be reduced.</p> <p>The Hub will provide a buffer against technological or design changes of individual systems, i.e. if an individual system is replaced, all reports do not need to be redefined, instead the new system must ensure data are correctly transferred to the Hub.</p>	Risks/Barriers
		N/a
Proposed WIP Data Strategy Collation Systems	<p>Additional costs would be incurred in operating and maintaining the Central Hub. Costs would be incurred for:</p> <ul style="list-style-type: none"> • Collation, processing and validation of primary data • General maintenance of the database • Software maintenance • Materials, seminars and system guidance <p>The total costs are estimated at £520-£800k in the first year and £240k-£520k in subsequent years.</p> <p>These costs do not include operational and maintenance costs for the Environment Agency systems.</p> <p>If a single repository for dispersing waste data is used it is possible to invest in Information Management Systems (IMs) at a single location, rather than at many Primary Data Collection Systems around the country. These IMs may include web-enabling technologies, business reporting tools (such as Business Objects) and specialist information systems such as Geographic Information Systems. Whilst many of these systems are charged on a “per user” basis there are generally economies of scale to be had with a single large repository. Furthermore installation and maintenance costs will be reduced.</p> <p>The Hub will provide a buffer against technological or design changes of individual systems, i.e. if an individual system is replaced, all reports do not need to be redefined, instead the new system must ensure data are correctly transferred to the Hub.</p>	Benefits
		<p>Operation of a system that allows evidence based policy making and investment decisions on high quality data.</p>
Proposed WIP Data Strategy Collation Systems	<p>Additional costs would be incurred in operating and maintaining the Central Hub. Costs would be incurred for:</p> <ul style="list-style-type: none"> • Collation, processing and validation of primary data • General maintenance of the database • Software maintenance • Materials, seminars and system guidance <p>The total costs are estimated at £520-£800k in the first year and £240k-£520k in subsequent years.</p> <p>These costs do not include operational and maintenance costs for the Environment Agency systems.</p> <p>If a single repository for dispersing waste data is used it is possible to invest in Information Management Systems (IMs) at a single location, rather than at many Primary Data Collection Systems around the country. These IMs may include web-enabling technologies, business reporting tools (such as Business Objects) and specialist information systems such as Geographic Information Systems. Whilst many of these systems are charged on a “per user” basis there are generally economies of scale to be had with a single large repository. Furthermore installation and maintenance costs will be reduced.</p> <p>The Hub will provide a buffer against technological or design changes of individual systems, i.e. if an individual system is replaced, all reports do not need to be redefined, instead the new system must ensure data are correctly transferred to the Hub.</p>	Risks/Barriers
		<p>Cost escalation over and above defined budget. There could be increased operation cost to facility operators as a result of recording additional data.</p>

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Appraisal Criterion 15: Resource demands place on the sector/industry by the data collection system		
Existing Data Collection	<p>The existing data collection systems place a limited burden on the sector/industry other than that defined by regulatory or permit requirements.</p> <p>However due to the inadequacies of the current systems particularly with regard to waste management infrastructure, numerous surveys of waste management companies are undertaken at national, regional and local levels in order to obtain information of capacities, throughput etc for planning purposes. Such surveys place a burden on the sector/industry and often receive poor response rate as much of the sector/industry believe the information should be readily available and accessible for regulatory sources.</p>	Benefits
		N/a
		Risks/Barriers
		<p>Inappropriate policy decisions made of incomplete and inaccurate data.</p> <p>Inappropriate capacity developed in terms of location and need.</p> <p>Investment decision made based on out of date and inaccurate information.</p> <p>Waste industry is often asked for the same information from multiple sources.</p>
Proposed WIP Data Strategy Collation Systems	<p>The proposed systems will:</p> <ul style="list-style-type: none"> • Increase the information required on site returns from permitted/licensed facilities. (As noted under Appraisal Criteria 13 & 14 this result in some one-off development cost and increased operational costs); • Introduce new reporting requirements on exempt activity; and • Potentially a limited increase the information provided by waste producer i.e. inclusion of SIC codes on waste documentation such as transfer and consignment notes. <p>These increased demands would be offset by:</p> <ul style="list-style-type: none"> • Potentially removing the need for waste management companies to provide effort and resources to support national, regional and local surveys; and • Providing easy access to high quality waste management data to support planning applications, facility expansions, investment decisions and marketing activities. 	Benefits
		<p>Access to a system that allows evidence based policy making and investment decisions on high quality data.</p> <p>Waste management industry should only need to input/report the data once.</p>
		Risks/Barriers
		<p>Increased requirement may place a burden on small operators/facilities.</p>

4. CONCLUSIONS

Enviros were asked to appraise the following data management strategies:

- ◆ Current methods of data collection;
- ◆ The methodology outlined in the Waste Data Strategy; and
- ◆ Any other methodologies deemed viable.

However, following some initial analysis it became clear that no other viable options could be identified that would provide a meaningful alternative assessment to the two primary management options. No alternatives have been made available as a consequence of the consultation process and therefore the assessment covered the two primary options of continuing with the existing systems or developing new systems as outlines in the WIP Waste Data Strategy.

Table 6 details the assessment criteria and broadly summarises the results for each option (full details can be found in Section 3.4).

Table 6 Summary of data collection systems appraisal

Evaluation Criteria	Existing Systems	Proposed Systems
1. Will the system produce accurate data to meet reporting requirements (as outlined in the WIP Waste Data Strategy)?	No	Yes
2. Will the system produce complete data across all sectors?	No	Yes
3. Will the system provide the quality of data required to inform planning and policy making and decisions on infrastructure development.	No	Yes
4. Will the system provide a complete dataset without the need for surveys?	No	Potentially
5. Will the systems produce a national picture of waste management activities?	No	Yes
6. Will the system allow GIS mapping and enable users to model waste flows?	No	Yes
7. a. Will the system provide the necessary reports?	No	Yes
b. Will the system provide the reports within the specified timescales?	No	Potentially
8. Will the data stored within the system be accessible to all stakeholders?	No	Yes
9. Will the system ensure consistent classification of waste?	Potentially	Potentially
10. Will the system provide more consistent data within and between waste streams?	No	Yes



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Evaluation Criteria	Existing Systems	Proposed Systems
11. Will the system require additional regulation to meet defined data requirements?	Yes	Yes
12. Will the system promote effective monitoring and enforcement by the Environment Agency?	Potentially	Enhanced
13. What are the development costs/risks to the system?	None	Medium Risk
14. What are the on-going operational and maintenance costs?	Low	Medium
15. What are the resource demands placed on the waste management sector by the strategies?	Low	Increased but potentially offset by benefits of new system

From this summary (and the detailed appraisal in Section 3.4) it is clear that the existing data collection systems, when compared to the data needs identified in the WIP Waste Data Strategy, **cannot** provide:

- ◆ the data required;
- ◆ the quality/accuracy of data required;
- ◆ the data in a timely manner to allow evidence based policy making and investment decisions.

The WIP Waste Data Strategy does have the ability to deliver the data needs identified, however there are a number of potential barriers:

- ◆ Most critically, the Environment Agency do not collect sufficient data to meet Defra's reporting needs. Particular elements of concern are:
 - data on producing sector or original source location; and
 - data on exempt activities.
- ◆ Without some level of additional regulation it is unlikely that all the required data would be captured;
- ◆ The proposed system could place additional demands on the waste management sector. However this could be overcome by the WIP Waste Data Strategy delivering access to high quality and timely waste management data to support:
 - planning applications;
 - facility expansions,
 - investment decisions; and
 - marketing activities.

Many of the advantages of the proposed system would be attained through the development of a central waste data hub. The primary benefits of developing this centralised storage system are discussed within Section 3, but are summarised here:

- ◆ **Improved data integrity** – having a centralised system means that data integrity between systems can be better enforced. This will also result in improved consistency of the data collected from the primary systems.
- ◆ **Improved reporting functionality** – the central Hub would be specifically designed for data storage and reporting rather than for data collection (as is the case for the primary systems). The central system would be able to produce more complex reports more quickly than the primary systems.
- ◆ **Improved reporting scope** – the collation of data from the primary systems onto a central Hub would significantly improve the process of producing a complete dataset for all sectors. Storing data on the Hub would allow complete interrogation of collated, validated and processed data supplied by the primary data systems.
- ◆ **Improved access by Stakeholders** – Access to data through a central Hub would improve ease of access to this information by planning and policy bodies. Detailed reports could be developed within the system to provide planning and policy guidance.
- ◆ **Creating a national picture** – collation of the data within a single system would significantly improve the users ability to create a national picture of the waste management sector.
- ◆ **Waste flow modelling** – a centralised Hub would be necessary if national modelling of waste flows is to be developed and linked to the GIS data-set repository. The level of waste flow modelling that the new system could achieve is still to be fully assessed but there may be problems of developing systems that would track movement of waste in great detail due to the movement of wastes through transfer stations for onward recovery, treatment or disposal.
- ◆ **Potential operational and maintenance savings** – developing a single centralised system may produce savings if the number of decentralised data storage systems were reduced as a result. The Hub would certainly provide a buffer against technological or design changes on the primary collection systems as any changes in these would need to be compatible with the central Hub.

The proposed system will therefore yield significant benefits over existing systems against nearly all of the defined assessment criteria. Further benefits will be realised following implementation of the Phase 2 development programme with data collection systems being developed for Organic agricultural, Fishing and Forestry wastes etc.

4.1 Cost Benefit Analysis

This section details estimates for the costs and benefits of implementing the proposed WIP Waste Data Strategy. The costs of developing the system have been taken from the WIP Waste data Strategy consultation document. In order to quantify the potential benefits it has been necessary to make a number of assumptions and

it is accepted that these are provisional at this stage. The analysis has tried to err on the side of caution with regard to these assumptions.

Table 7 below details the assumed expenditure and savings.

Table 7 Assumed Waste data Strategy Phase 1 Expenditure & Savings

	Expenditure		Savings	
	Low	High	Low	High
System costs				
Development costs	£1,900,000	£3,000,000		
Operational costs (1 st year)	£520,000	£800,000		
Industry development costs	£500,000	£1,000,000		
Potential Cost Savings				
Planning enquiry research			£100,000	£100,000
Private sector data gathering savings			£50,000	£50,000
PFI data needs savings			£90,000	£90,000
PFI cost savings			£62,500	£125,000
Savings in existing industry surveys				
Triannual survey			£50,000	£50,000
ODPM survey			£30,000	£30,000
RTAB/RDA survey			£150,000	£150,000
Industry time savings in completing surveys				
Triannual survey			£470,000	£470,000
ODPM survey				
RTAB/RDA survey			£21,000	£21,000
Freedom of Information Act response savings			£35,000	£35,000
Year 2 operational cost/benefits	£240,000	£520,000	£1,058,500	£1,121,000

The system development and operational costs are estimated at between £2.4m and £3.8m in the first year. These costs include the higher operational costs anticipated for the first year. The costs to industry of upgrading their reporting systems have been estimated at between £0.5m and £1.0m. This assumes 50 to 100 companies need to upgrade their systems and that each upgrade costs £10k in capital and revenue expenditure. Combining these cost estimates gives development and operational costs for the first year (including private sector system upgrades) of between £2.9m and £4.8m.

The estimated savings have been estimated as follows:

1. Planning enquiry research – assume £500 per day, 10 days research per study and 20 studies per year.
2. Private sector data gathering savings – assume £500 per day, 20 days research per study, 5 studies per year.
3. PFI data needs savings – assume £10k per study, 3 studies per PFI tender invitation, 3 PFI's per year.

4. PFI annual cost savings – Assume contract value of £25m, reduction in risk associated with each due to better quality data at 0.0025% and 0.005% of total value.
5. Savings on existing surveys:
 - i. Triennial survey – assume £150k every three years
 - ii. ODPM Survey – assume £50k to £70k per survey
 - iii. RTAB/RDA infrastructure surveys – assume 3 per annum, £50k per survey
6. Industry time savings in completing surveys:
 - i. Triennial survey – assume 20,000 returns, 2hrs per return, £35/hr cost to industry.
 - ii. ODPM Survey – no figures available
 - iii. RTAB/RDA Surveys – assume 3 surveys per annum, 100 companies per survey, 2hrs per return, £35/hr cost to industry.
7. Savings in supplying data by public sector – assume 1,000 requests per annum, all requests referable to central hub, 1hr per request to process, £35/hr public sector cost.

Potential annual savings have been estimated at between £1m and £1.12m per annum. This compares to an estimated operational cost of £240k to £520k per annum. This yields a potential annual saving of between £480k and £880k per annum.

Savings associated with reduced risk in developing Private Finance Initiatives will be realised year on year for the duration of the contract. Potential savings over 20 years are detailed in Table 8. It is assumed that a total of 15 PFI contracts (three a year for the first five years) with an average value of £25m per annum are let and run over the 20 year period.

Table 8 Estimated expenditure and savings over 20 years

	Expenditure		Savings	
	Low	High	Low	High
Year 1	£2,920,000	£4,800,000	£1,183,500	£1,371,000
Year 2	£240,000	£520,000	£1,371,000	£1,746,000
Year 3	£240,000	£520,000	£1,558,500	£2,121,000
Year 4	£240,000	£520,000	£1,746,000	£2,496,000
Year 5	£240,000	£520,000	£1,933,500	£2,871,000
Year 6	£240,000	£520,000	£1,933,500	£2,871,000
Year 7	£240,000	£520,000	£1,933,500	£2,871,000
Year 8	£240,000	£520,000	£1,933,500	£2,871,000
Year 9	£240,000	£520,000	£1,933,500	£2,871,000
Year 10	£240,000	£520,000	£1,933,500	£2,871,000
Year 11	£240,000	£520,000	£1,933,500	£2,871,000



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	Expenditure		Savings	
	Low	High	Low	High
Year 12	£240,000	£520,000	£1,933,500	£2,871,000
Year 13	£240,000	£520,000	£1,933,500	£2,871,000
Year 14	£240,000	£520,000	£1,933,500	£2,871,000
Year 15	£240,000	£520,000	£1,933,500	£2,871,000
Year 16	£240,000	£520,000	£1,933,500	£2,871,000
Year 17	£240,000	£520,000	£1,933,500	£2,871,000
Year 18	£240,000	£520,000	£1,933,500	£2,871,000
Year 19	£240,000	£520,000	£1,933,500	£2,871,000
Year 20	£240,000	£520,000	£1,933,500	£2,871,000
TOTAL	£7,480,000	£14,680,000	£36,795,000	£53,670,000

The assessment shows that the savings resulting from implementing the proposed system over 20 years could be between £22m to £46m. The main saving is associated with reduced risk in developing Public Private Partnership contracts with savings realised by both the public and private sectors. Taking out the savings from PFI contracts will still results in potential savings of between £5.8m and £12.6m.

Expenditure over 20 years is estimated at between £7.5m and £14.7m compared to savings of between £36.8m and £53.7m. These figures assume no significant IT development is required after the initial development phase.