Sustainable Health Care Waste Management in Gauteng

Gauteng Waste Information System - GWIS
Framework Document

2003-12-08

FINAL

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Glossary of terms

DACEL	Department of Agriculture, Conservation, Environment and Land Affairs
DEAT	Department of Environmental Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
GW	General waste
GWIS	Gauteng Waste Information System
HCRW	Health care risk waste
HCWIS	Health care waste information system
HW	Hazardous waste
IIMS	Incinerator Information Management System
NWIS	National Waste Information System
NWMS	National Waste Management Strategy
SoER	State of Environment Reporting
WIO	Waste Information Officer
WIS	Waste Information System

1 INTRODUCTION

This framework document forms part of a Danida and GDACEL funded project to establish a Gauteng Provincial Waste Information System - GWIS.

The framework document has been prepared to identify:

- The waste information and data needs of the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (GDACEL);
- The possible waste reporting requirements to Government Departments, such as Department of Environmental Affairs and Tourism (DEAT) and Department of Water Affairs and Forestry (DWAF);
- The role players in terms of data collection, submission, verification and reporting.
- The institutional requirements on GDACEL to successfully implement a provincial GWIS.

The development of the GWIS is an extension of the existing Gauteng Health Care Waste Information System (HCWIS) developed, piloted and implemented during 2001-2003 as part of the Danida funded Sustainable Health Care Waste Management Project.

2 OBJECTIVE OF THE GWIS

The major objectives of the GWIS are outlined in the draft Provincial Waste Information Regulations (Notice 3002 of 2003) gazetted in September 2003. The objectives include:

- To compile and make available to the public and other organs of state, data and information regarding waste in Gauteng in order to:
    - Further the protection of the environment and the
    - Continuous improvement of integrated waste management throughout the Gauteng Province.
- To make waste information available to organs of state and the public for:
    - Education, research and development
    - Spatial planning and environmental impact assessments
    - Public safety and disaster management
    - The development of waste streaming and assessment of the quantities of various waste streams for the monitoring of government strategies with regard to waste management; and
    - State of Environment Reporting
- To create a uniform reporting method which incorporates secure internet reporting formats, and monitoring intervals.

To further determine the requirements of GDACEL, a meeting was held with representatives of GDACEL on the 16 October and 11 November 2003 to assess their goals and objectives regarding waste management within the Province and to establish the Departments requirements regarding the GWIS. The above objectives of the GWIS were re-confirmed.

3 INFORMATION NEEDS

In order to ensure the optimum benefit of money spent on data collection and handling it is important to:

- Collect only urgently needed data;
- Collect those data from the fewest, most relevant role players in the waste generation, transport, disposal and recycling system, where the necessary level of detail exists;
- Make sure that the collected data are utilised effectively.

The GWIS will focus on hazardous waste (HW) and general waste (GW). It was agreed that a further classification of both hazardous and general waste would be required for reporting, i.e. for general waste, subcategories of paper, glass, plastic, etc. would be required, while for hazardous waste, subcategories on the basis of SABS Class (1-9). Hence, HCRW will be a subcategory of HW. The GWIS would in addition allow for reporting on either general or hazardous waste recycled within the Province.

3.1 TARGET GROUPS

In addition to GDACEL, the GWIS should where possible meet certain information requirements of other government departments. The needs of DEAT, DWAF and DoH, including the anticipated national waste information system (NWIS) were also considered.

3.1.1 DEAT

Discussions were held with the representatives of National DEAT on the 24 October and 12 December 2001 and in October 2003. DEAT are currently involved in establishing a NWIS, which will be operated and managed by DEAT. The NWIS is planned for development during 2004-2006. The project is expected to begin in January 2004.

Very little information is currently available regarding the role players in reporting to the NWIS. The development of the NWIS will focus initially on HCRW and recycling of waste. As such, it was requested by GDACEL that recycling also be included in the GWIS to allow for reporting to the NWIS in the short to medium-term [(1)]. It is recognised that much of the information collected by GDACEL will not be immediately required for reporting to the NWIS, when it becomes available.

The detailed requirements for the NWIS will be collected during an upcoming Pilot Project, planned to begin in early 2004. Due to the magnitude of the NWIS and the expected time duration, it is most probable that the GWIS will be implemented before finalisation of the NWIS. As such the framework for the NWIS may not yet be in place by the time the GWIS is implemented. It is important however, to continue discussions with DEAT, throughout the development of the GWIS, to ensure consistency in thinking with the NWIS.

3.1.2 DWAF

With the responsibility of permitting of landfills moving from Department of Water Affairs and Forestry (DWAF) to DEAT, it is likely that DWAF will have no particular waste information reporting requirements from Province. The information reported to the GWIS will however be made available to DWAF if and when required.

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(1) The existing GDACEL HCWIS will allow for reporting of HCRW information to the NWIS in the short to medium-term.

4 ASSUMPTIONS

In developing the GWIS, the following assumptions are made.

4.1 LEGAL ASSUMPTIONS

The major issue is to make it obligatory for identified generators, transporters, treatment facilities and disposal facilities of HCRW, HW and GW in Gauteng to register with GDACEL and to report information to the GWIS as described in Section 7. Legislation should also include measures to be taken on non-compliances.

The legislation must ensure that:

- Waste is weighed.
- GMB, GLB, H:H, H:h landfill operators report quarterly to GDACEL on monthly waste type and tonnages received per generator.
- Waste treatment facilities report quarterly to GDACEL on waste type and monthly waste tonnages received per Municipality/Province/Country.
- Waste recyclers report quarterly to GDACEL on monthly waste type and tonnages received per Province/Country.
- Waste transporters report quarterly to GDACEL on monthly waste type and tonnages removed from the Province for treatment/disposal in another Province.
- Minimum waste tonnages are defined which requires reporting to the GWIS.
- The required level of waste classification per reporter type is defined, e.g. recyclers may be required to report to a level 2, i.e. general waste (level 1), paper (level 2).
- Measures are defined to enforce reporting.
- All HCRW containers received by transporters, treatment facilities and landfills, are clearly marked with the generator name and registered unique number.

Legal aspects relating to health care risk waste, landfills and hazardous waste transporters are addressed in the draft Provincial Waste Information Regulations gazetted for comment in September 2003. The Regulations will be finalised in early 2004. Hazardous and general waste treatment facilities and recyclers are not addressed in the existing Waste Information Regulations and as such should be included in a future amendment to the Schedules.

4.2 TECHNICAL ASSUMPTIONS

Through legislation, the following requirements are enforceable:

- Data is submitted to GDACEL (preferably electronically), according to a strictly adhered to format or template for data capture and reporting.
- The GWIS is managed and operated by suitably qualified GDACEL personnel assigned the responsibility of GWIS Officer.

These assumptions have been addressed in the draft Provincial Waste Information Regulations gazetted for comment in September 2003. The Regulations will be finalised by early 2004.

5 LIMITATIONS OF THE GWIS

The proposed framework for the GWIS is based on the requirements for information for GDACEL, as presented in Section 2. It is not the aim of the GWIS to capture all possible information on hazardous and general waste within the province, or the environmental and human health impacts arising from waste generation, transportation, treatment and disposal. The proposed framework for the GWIS has certain limitations. These limitations include:

- The GWIS is not a tracking system, tracking waste from generator to transporter to final treatment and disposal.
- The GWIS does not incorporate the waste manifest system, although the manifest system will provide much of the information required by the GWIS.
- Verification or auditing of data is limited to a simple crosscheck of serviced generators against registered generators (applicable to HCRW only).
- Information on incidences, illegal disposal, injuries, effectiveness of treatment/disposal, the quality of waste transportation etc, is not captured within the GWIS.

The GWIS captures tonnages of hazardous and general waste, with a second level of classification expected. Level 2 classification is expected to include the recyclables paper, glass, plastic etc. for general waste, and SABS Class for hazardous waste.

Many additional 'nice-to-haves' were identified in developing the framework document. It must be emphasised that the current GWIS framework allows for the capturing of data, which will address the most critical questions facing GDACEL. It is however recognised that the current development of the GWIS would be a Phase 1 development, with additional components being added if and when required.

6 WASTE INFORMATION REGULATIONS

Draft Waste Information Regulations were gazetted on the 11 September 2003 (Government Notice 3002 of 2003).

The Waste Information Regulations outline:

- Role players required to register with the GWIS
- Role players required to report to the GWIS
- Frequency of reporting
- Data required for reporting
- Fines and penalties for non-compliance

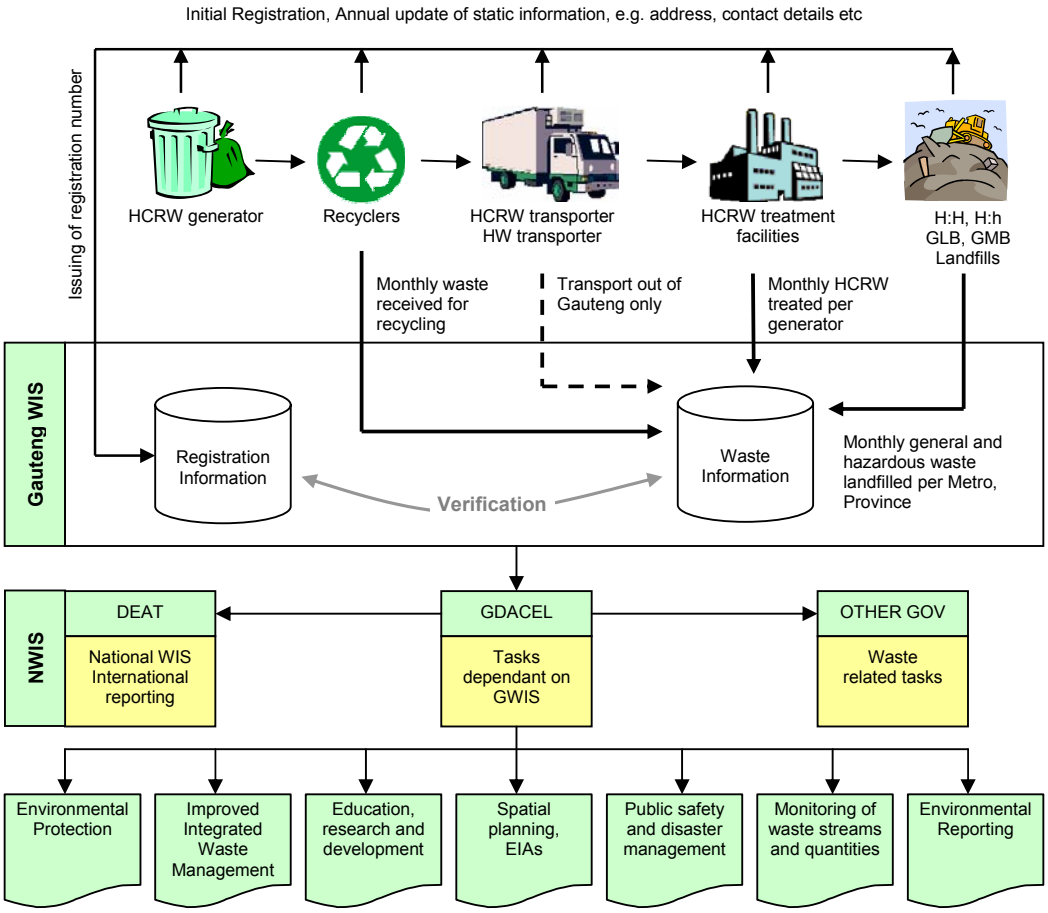
Following an initiation meeting with GDACEL on the 16 October 2003, it was realised that certain of the requirements outlined in the Regulations were unnecessary for the successful implementation of a Provincial Waste Information. As such recommended changes to the Waste Information Regulations have been made to GDACEL, by the project team. The proposed framework and information requirements presented in this document are based upon the revised reporting requirements.

7 INFORMATION SYSTEM CONCEPTS

7.1 OVERVIEW OF SYSTEM

Information in the GWIS is collected, processed and disseminated as illustrated below (Figure 1). The main principles are that each piece of information is collected only once, validated close to the source of information, and disseminated to all relevant bodies.

Figure 1. Overall principles of the GWIS



7.2 REGISTRATION

The following role players will be required to register with the GWIS:

- Major HCRW generators (producing > 20 kg of HCRW per day)
- HCRW transporters (transporting > 10 kg of HCRW per day)
- HW transporters (transporting > 10 kg of HW per day)
- HCRW treatment facilities
- HW landfill sites (H:H, H:h)
- GW landfill sites (GMB^+, GMB^-, GLB^+, GLB^-)
- HW, GW recyclers [(2)]

[(2)] See Definition of recyclers who will be required to report.

To facilitate quick and efficient registration of identified role players, it is envisaged that the GWIS will contain an on-line registration component.

The following registration codes will be assigned from the GWIS:

- GP**G**-00-001 – Generator
- GP**T**-00-001 – Transporter
- GP**F**-00-001 – Treatment Facility
- GP**L**-00-001 – Landfill
- GP**R**-00-001 – Recycler

The on-line registration component will allow for a new reporter to identify their reporter type (generator, transporter, treatment facility, landfill, recycler). Based on the reporter type selection, the new reporter will be required to complete the corresponding static information applicable to the specific reporter, e.g. address, telephone number, email, etc.

On submitting the information, a message will appear on screen notifying them that their information has been submitted to GDACEL for approval. The information will be stored in a temporary database for verification by the Waste Information Officer (WIO). Upon verification, a registration number will be issued and a certificate of registration (e.g. pdf file) emailed to the new reporter. If no email address has been supplied, the certificate of registration will be emailed to the WIO who can then print it out and forward it by post. Only upon successful registration can the new reporter begin reporting to the GWIS.

For reporters without internet access, forms will be available from GDACEL, which can be completed and faxed back for registration.

7.3 DATA COLLECTION

As indicated in Figure 1, treatment facilities, landfills, recyclers and to a lesser degree HCRW and HW transporters, are the sources of information for the GWIS. Static data will be collected on registration (Section 7.2) and thereafter verified and/or updated annually or bi-annually. Dynamic data will be collected as a minimum quarterly, on monthly tonnages, but reporters may wish to report more frequently on a monthly basis.

The value of the GWIS depends on the reliability of its data. It is therefore required that all HW and GW be weighed and that the amounts reported in kilograms (kg) (units standardised for single reporting unit). Inclusion of measures in e.g. boxes, m^3, litres would make calculation of tonnages unreliable.

The request for transporters, treatment facilities, landfills and recyclers to report on tonnages of waste received is not felt to add additional costs to their operations. In most instances the level of detail of generators will be either Municipality or Province name, with the exception of HCRW which will require specific generator ID's. Tonnages of waste per generator may either be recorded by the transporter and submitted to the treatment facility, landfill or recycler with the load, or by the treatment facility, landfill, recycler on receipt of the waste. The recording of tonnages of waste per generator and the transfer of information on generators from transporter to treatment facility to landfill, is a requirement of the Manifest System (National Road Traffic Act, Act 93 of 1996; SABS 0231), and is as such already a legislative requirement (commencement 3 August 2001, Government Gazette No 22553).

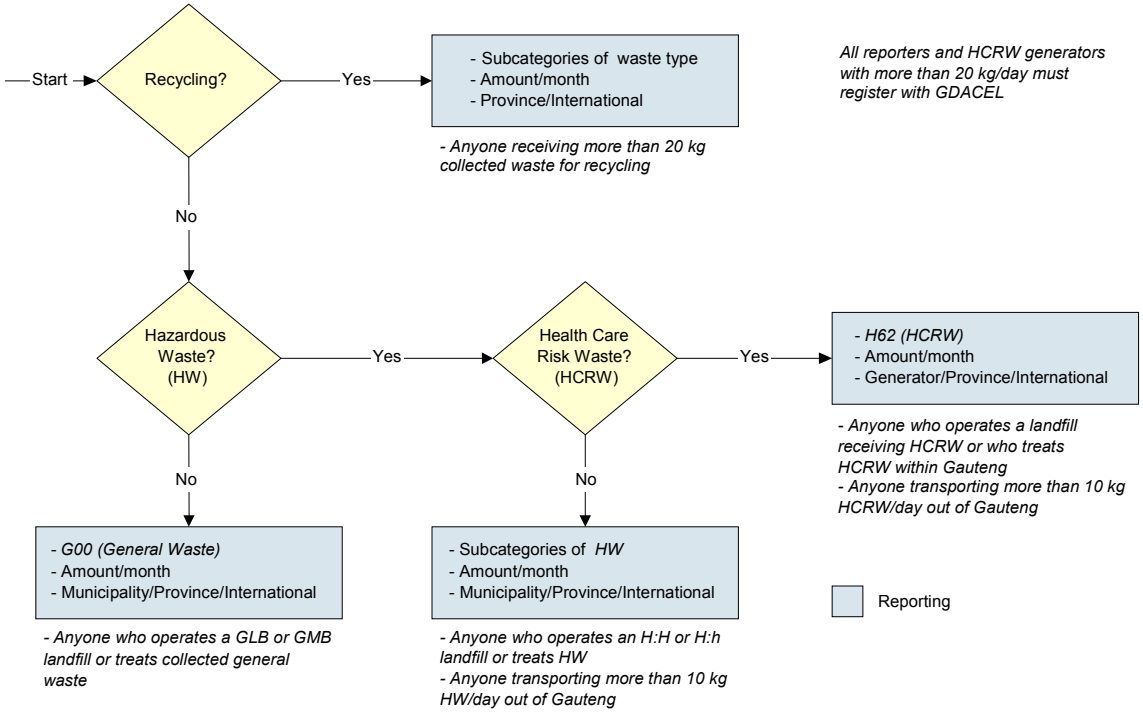
The method used to weigh the waste either by the transporter, treatment facility, landfill or recycler is not prescribed here. Similarly the means of capturing generator information, whether it be labels, bar codes or transponder systems is not prescribed in the framework document. The only stipulation with regards to labelling is that each and every HCRW container be clearly marked with the generators name and unique number.

7.4 DATA SUBMISSION

Data submission to GDACEL must be designed to cope with different reporting media, either as online reporting using the Internet, or reporting in computer file on diskette or via e-mail. The submission of data in paper format is not recommended. The GWIS will be designed to allow for capturing of data in the required format using commercially available software, such as Microsoft Excel, Notepad, Novel Quattro Pro etc. In this way no additional software will be required by reporters to capture the information in the required format, for easy upload into the database.

Figure 2 outlines the various reporters to the GWIS and the specific information required for reporting.

Figure 2. Data to be reported to the GWIS



Reporting by a transporter, treatment facility, landfill site or recycler would have the following content:

- Reporter registration number (automatic at on-line login)
- Month and year
- Amount (kg/month)
- Waste type
- Identification of source or destination as shown above (Figure 2).

Sample reports are shown below.

Table 1 Sample report from Health Care Risk Waste treatment facility

Reporter: GPF-00-001

Amount (kg)	Generator	Waste type	Date
12	GPG-00-003	H06.02	2003/12
18	GPG-00-004	H06.02	2003/12
27	GPG-00-022	H06.02	2003/12
54	GPG-00-023	H06.02	2003/12
18	GPG-00-064	H06.02	2003/12
23	GPG-00-073	H06.02	2003/12

Table 2 Sample report from Hazardous Waste landfill

Reporter: GPL-00-005

Amount (kg)	Generator	Waste type	Date
12	Ekurhuleni	H02.02	2004/02
18	Ekurhuleni	H07.00	2004/02
27	Johannesburg	H02.03	2004/02
54	Tshwane	H05.02	2004/02
18	Sedibeng	H03.00	2004/02
23	Mpumalanga	H01.00	2004/02

Table 3 Sample report from General Waste landfill

Reporter: GPL-00-003

Amount (kg)	Generator	Type	Date
12	Metsweding	G	2004/02
18	Metsweding	G52	2004/02
27	Sedibeng	G	2004/02
54	Johannesburg	G	2004/02
18	Johannesburg	G53	2004/02
23	Free State	G57	2004/02

The sample reports for both a treatment facility and landfill are the same. The report allows for the capture of information on the generator producing the waste and the treatment facility or landfill receiving the waste.

The content of *Date* (Year and Month) should be obvious as the content of *Amount (kg)*. The *Waste type* column can only contain entries from a fixed list. Right now only Hazardous and General Waste will be valid level 1 entries (See Section 7.5).

The sample report for a transporter removing HCRW or HW for treatment in another province is however different and requires both generator and treatment facility also be reported on as indicated in Table 4 below.

Table 4 Example report from Hazardous Waste transporter

Reporter: GPT-00-005

Amount (kg)	Generator	Facility	Type	Date
14	GPG-00-001	North West	H02.02	2004/01
72	GPG-00-002	North West	H07.00	2004/01
27	GPG-00-003	North West	H02.03	2004/01
34	GPG-00-007	Limpopo	H05.02	2004/01
28	GPG-00-010	Limpopo	H04.01	2004/01

Amount (kg)	Generator	Facility	Type	Date
19	GPG-00-031	Free State	H01.00	2004/01

For waste removed from Gauteng to another Province, only the Province name is listed under *Treatment facility*, since these treatment facilities will not be registered with GDACEL, and as such will not have a registered unique identifier. Similarly for waste received for treatment in Gauteng from neighbouring Provinces, only the Province name is listed under the *Generator* field.

The sample report for a recycler of either hazardous or general waste is indicated in Table 4 below.

Table 5 Example report from Recycling Facility

Reporter: GPT-00-005

Amount (kg)	Generator	Type	Date
270	Gauteng	G50.02	2004/01
321	Gauteng	G51	2004/01
257	Gauteng	G52.01	2004/01
89	Gauteng	G56	2004/01
138	Kwa-zulu Natal	G57	2004/01
210	International	G77	2004/01

In the case of a reporter not being able to upload information directly into the GWIS via the internet, the WIO must log in as the reporter and submit the data on their behalf. No data should be submitted while logged in as the Administrator as necessary fields will be lost (i.e. reporter ID on log in).

7.5 WASTE LEVELS

The following waste classification is proposed. However, the GWIS will be designed to allow the WIO to add to the list at any future point in time. The existing classification may also be changed by the WIO but this will result in data being lost or poor correlation between old and new data sets with different classifications.

Varying levels are proposed to allow for increasing detail in waste types to be captured by the GWIS. An example of a possible classification is given below, but this must be confirmed.

Level 1	Level 2	Level 3	Level 4
(G) General	(50) Paper & cardboard	(50.01) Newspaper and magazines	
		(50.02) Corrugated cardboard	
		(50.03) Good paper qualities	
		(50.04) Other paper and cardboard	
	(51) Glass		
	(52) Plastic	(52.01) PETE	
		(52.02) HDPE	
		(52.03) PVC	
		(52.04) LDPE	
		(52.05) PP	

Level 1	Level 2	Level 3	Level 4
		(52.06) PS	
		(52.07) Other plastics	
	(56) Metal		
	(57) Tyres		

(H) Hazardous	(01) Class 1: Explosives		
	(02) Class 2: Gases	(02.01) Subclass 2.1	
		(02.02) Subclass 2.2	
		(02.03) Subclass 2.3	
	(03) Class 3: Flammable liquids	(03.01) Subclass 3.1	
		(03.02) Subclass 3.2	
		(03.03) Subclass 3.3	
	(04) Class 4: Flammable solids	(04.01) Subclass 4.1	
		(04.02) Subclass 4.2	
		(04.03) Subclass 4.3	
	(05) Class 5: Oxidising	(05.01) Subclass 5.1	
		(05.02) Subclass 5.2	
	(06) Class 6: Poisonous and infectious	(06.01) Subclass 6.1	
		(06.02) Subclass 6.2	
	(07) Class 7: Radioactive		
	(08) Class 8: Corrosive		
	(09) Class 9: Miscellaneous		

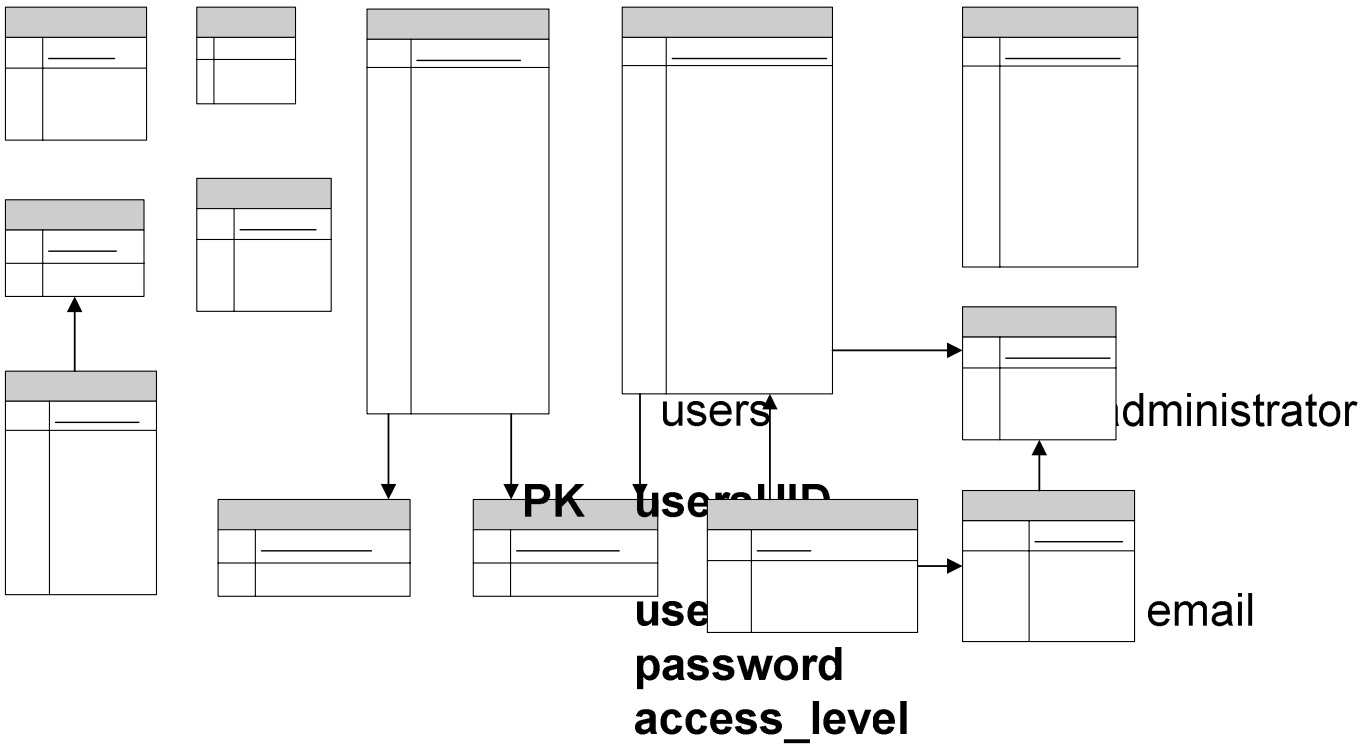
Note:

(1) General waste codes based on Danish Environmental Protection Agency Statutory Order No 619 of 27 June 2000 on Waste (pg 62)

(2) The reader is referred to SABS 0228 or the DWAF Minimum Requirements (Appendix 6.1) for detail of each Hazardous Waste Class.

7.6 DATA STRUCTURES

The following database structure for the GWIS is proposed:



The required changes to convert the HCWIS into the GWIS, to include all waste types, only implies changes to the “treatmentfacilities” table. The changes are implemented through three supporting tables:

- Facilitytype
- Infolabel
- Info

The software must support full add / update / delete function for all three tables.

Facilitytype

Facilitytype is a lookup table for the new “facilitytypeid” field in the “treatmentfacilities” table. Facilitytype will hold one record for each type of reporting waste receiver like treatment facility, landfill, recycler, and whatever else.

Apart from the **name** that could be “Recycler” the table describes how the reporter must report given as a “**waste_level**” that will be 1 if the reporter can report “General waste” or “Hazardous waste”. The value 2 in this field would require the reporter to use level 2 in the waste classification system, and so forth.

The required identification of the waste generator is specified in the “**generator_level**” field that will contain a character from the following list:

G: Waste generators within the province must be identified with a unique GWIS generator number
M: Waste generators within the province must be identified with the municipality name
P: Waste generators within the province must be identified with the province name
N: Waste generators within the country must be identified with the word “National”

For the first three options waste coming from other provinces will be identified with the name of the province. For all four options waste from other countries will be identified by the word "International".

FacilitytypeUID	Name	Waste_level	Generator_level
12	Recycler	2	P

The shown example would require any reporters of type "Recycler" to report with waste classification level two, e.g. "Paper", "Metal", … and with waste producer relaxed to name of province if waste is produced within SA. As always waste produced outside SA must be labeled "International".

Infolabel

For each facility type described in the above table the user can specify any number of additional information to be captured in the database. This information is described in the Infolabel table. Apart from identification of facility type and a serial number the additional information is described with a **label** to show on screen during edits and a field **size**. Example content could be like this:

InfolabelUID	Facilitytypeid	Serialno	Label	Size
712	12	1	Capacity, kg/day	20
713	12	2	Price, R/kg	10

That would require the software to add two fields to the standard fields for editing treatmentfacilities, namely one field with the label "Capacity, kg" and a width of 20 and a field with the label "Price, R" and a width of 10. Results from editing these fields will be stored in the table described below.

Info

This table will capture any values entered into the additional fields described above. Identified by treatmentfacilityUID and the InfolabelUID the "**info**" field will carry the value. Hence, all additional information will be stored as strings and the information is not used in any form for calculation or filtering. Example content could be:

InfoUID	TreatmentfacilityUID	InfolabelUID	Info
6113	71	712	400
6114	71	713	24

The example shows that the capacity of treatment facility with the UID 71 can receive 400 kg waste per day and that they charge 24 R per kg received waste.

7.7 ADMINISTRATIVE ROUTINES

For each reporting cycle a number of administrative routines will be needed:

- Before each reporting cycle an email or letter should go to all reporters reminding them of their reporting obligations.
- Reminder letters to all reporters not meeting the stated deadline for reporting. The GWIS will be designed to send out three reminder letters before fines, as outlined in the Waste Information Regulations, are implemented.
- Quality assurance or verification of information

- Calculation of statistics
- Dissemination of information to all relevant functions within the government and the public.
- Backup of data on a regular basis, e.g. weekly, two-weekly etc.

The outlined tasks must be supported and preferably automated through the use of the GWIS. That is, the GWIS would facilitate automatic generation of reminder letters, support for any quality assurance activities, calculation of statistics etc., and where available forward by email.

7.8 QUALITY ASSURANCE AND FEEDBACK

Quality assurance of the received information is essential to the success of the GWIS. It will therefore be necessary to establish a training program that will enable the GDACEL staff to perform high quality data verification.

Common verification routines will help increase the total value of the GWIS. Only a few erroneous reports will be enough to jeopardise the value of the GWIS.

Initially, verification of information will be quite difficult, but as the GWIS gets established and contains information from previous reporting cycles the options for data verification will improve. Verification can take place on the basis of:

- Information from previous years and previous reporting cycles, e.g. based on automatic calculation of regression lines with accepted bandwidth
- Knowledge of the reporter
- Experience from DACEL EOs
- Comparison with similar reporters
- Common sense
- Generator information

Education and training of the verification staff is very important, both initially and on an on-going basis to compensate for job rotations and new employees etc. The following rules are used to validate a report:

- *Reporter* must be registered
- *Month* and *year* must of course identify months for which we expect reporting. So e.g. month 01 in year 1854, month 14 in 2002 or month 3 in 2007 should be rejected.
- *Amounts* must be positive integer numbers. Zero numbers are not reported and negative numbers does not make sense.
- *Unit* must be *kg*.
- Generator field must be filled in.
- Content of Generator must either be a
    - registered generator
    - Municipality name for GW or HW generators inside Gauteng.
    - Province name to signify generators outside Gauteng,
    - International for generators outside of South Africa.
- Content of Treatment Facility and Landfill must either be a registered treatment plant or landfill respectively OR the Province name to signify treatment plant outside Gauteng.

If the reported amounts are far from the average amount of previous reports, say 20% smaller or bigger, it should flag the reporting for further investigation.

No matter if the report is accepted or rejected by the system a feedback to the reporter is essential. Either thanking them for good co-operation or asking them to clarify the matters of concern in the report.

A training course and manual will be developed as part of the project, to allow GDACEL to continue with training of new reporters in future. Continued training of reporters will ensure that reliable information is reported to the GWIS in the future.

7.9 REPORTING

Reporting to national level will have to follow the directions given by the future NWIS. Based on any directions from DEAT at this stage a preliminary reporting system will be included in the GWIS, of course subject to further revisions as the NWIS materialises.

The following Pre-Defined Reports are suggested:

- Monthly tonnages of *waste* treated/disposed/recycled within Gauteng
    - Further option to select:
        - Month
        - Waste type – Level 1, 2, 3
        - Treated, Disposed or Recycled, All

- Monthly tonnages of *waste* generated within Gauteng
    - Further option to select:
        - Month
        - Waste type – currently only for HCRW (H06.02)

- Annual tonnages of *waste* exported out of Gauteng
    - Further option to select:
        - Year
        - Waste type – Level 1, 2, 3

- Annual tonnages of *waste* imported into Gauteng
    - Further option to select:
        - Year
        - Waste type – Level 1, 2, 3
        - Treated, Disposed or Recycled, All

- Annual tonnages of *waste* treated/disposed per metropolitan municipality
    - Further option to select:
        - Year
        - Waste type – Level 1, 2, 3
        - Treated, Disposed or Recycled, All

- Annual tonnages of *waste* treated/disposed/recycled per facility in Gauteng
    - Further option to select:
        - Year

        - Waste type – Level 1, 2, 3
        - Facility ID

- Annual tonnages of *waste* generated per metropolitan municipality
    - Further option to select:
        - Month
        - Waste type

- Registered *waste* generators with no reported waste for reporting cycle
    - Further option to select:
        - Year
        - Waste type – currently only for HCRW (H06.02)

The option to generate and export custom reports will also be made available, allowing the administrator to query on:

- Year
- Report category – generator, transporter, treatment, landfill, recycler
- Waste type – Level 1, 2, 3

7.10 DISSEMINATION

Formats for reporting to other government bodies will be developed in co-operation with the affected parties. Of course, the agreed formats will be an integrated export format of the GWIS.

An export format from the GWIS to e.g. dbf file which will allow for easy upload into a GIS platform will be included, to allow GDACEL to update the spatial coverages of the location of treatment facilities, landfills, recyclers and HCRW generators.

7.11 VERIFICATION

Verification of data captured within the GWIS is an important aspect of the system. Verification may take place in a number of ways:

- Generators are requested to submit data on kg's of waste generated, to check against kg's of waste treated or landfilled;
- Manifest documents are submitted to track waste generated, transported, treated and disposed;
- Check of serviced generators against the total list of registered generators.

It is recognised that the first two points would have huge cost implications and capacity requirements, which are unlikely to be realised within the short to medium term. It is therefore recommended at this stage, that the registration database be used as a verification tool for the GWIS (applicable only to HCRW at this stage).

The registration database will immediately identify HCRW generators which are not serviced by a registered transport company or treatment facility (in the case of onsite treatment). These generators may be approached to determine how they are dealing with their waste. Detailed verification by generator can not be made for HW or GW since the generator ID, other than Municipality or Province, is not required.

Further verification may include:

HCRW - information on the number of beds per generator and the occupancy rate, ranges in expected HCRW generated will be available. Reported tonnages of waste per generator may be checked against these ranges to assess possible under or over reporting.

HW – information from the National Baseline Studies may be used as a point of departure for verification of HW tonnages reported to the GWIS per Municipal District.

GW – information on the population per Municipal District and the average waste generation per capita for that District may be used to verify information reported to the GWIS.

7.12 DATA SECURITY AND BACKUP PROCEDURES

Measures must be put in place to ensure frequent backup of the database supporting the GWIS. Currently this responsibility is delegated to the GSSC responsible for the hosting and operation of the HCWIS. It is however recommended that the WIO also make backup of the data to CD or external hard drive on a regular basis, i.e. weekly or after each quarterly reporting cycle.

It is envisaged that the database for the GWIS as with the HCWIS will be stored on the central Gauteng server, making the information available to those within the Waste Directorate. The issue of security of this system will be addressed.

The GWIS must allow for a simple backup function where the database(s) can be exported and saved to disk. The database(s) should be in a format which will allow for the quick replacement of the database on the GSSC system, should the original database be lost or damaged. A backup of the GWIS software (excluding updated database) should be kept by GDACEL and the CSIR.

7.13 ACCESS TO INFORMATION

The issue of confidentially of information submitted to the HCWIS was raised at a stakeholder workshop on the 27 November 2001. It was felt that information on ones client base and tonnages collected per generator could be used by the 'competition', to 'steal' business. Data and information stored within the GWIS is subject to the National Access to Information Act. As such this information may be made available after a review by GDACEL, of any request made for such information.

Since only HCRW is captured per unique generator ID, the issue of confidentially for the other waste reporters should not be an issue of concern.

8 EXISTING SYSTEMS

DACEL currently has 3 waste information systems:

- Health Care Waste Information System (HCWIS) – internet based system
- Incinerator Information Management System (IIMS) – access database
- Waste Information Management System (WIMS) – access database

The proposed GWIS is an extension of the HCWIS. As such, the HCWIS will be integrated into the GWIS to form a single Provincial Waste Information System. The IIMS was replaced by the HCWIS and as such will also be incorporated into the GWIS. The WIMS includes a lot of information which will not be collected by the GWIS, such as borehole locations at landfill sites. As such, components of the WIMS may still want to be retained by GDACEL, but it is recommended that all Gauteng waste information systems in the longer-term be integrated into the GWIS.

9 INSTITUTIONAL REQUIREMENTS

9.1 GDACEL

9.1.1 Staff

GDACEL has a Waste Information Officer (WIO) tasked with ensuring the continued operation of the HCWIS. The time required to administer the HCWIS is small thereby freeing the Environmental Officer up to manage other Departmental functions. The expansion of the HCWIS to a GWIS will add additional administrative responsibilities to the WIO current responsibilities. This will require more time spent on the GWIS. However, many of the functions of the GWIS will be automated, so as to ensure that the WIO is not solely busy with the administration of the GWIS.

The roles and responsibilities of the WIO in the functioning of the GWIS are outlined in Appendix 1.

9.1.2 Equipment/Computers

The GWIS will remain active on the Gauteng network. However, the Waste Information Officer should have direct access to the system. A computer with email and internet access, for use by the Waste Information Officer, is required.

9.1.3 Financial implications

The financial implications for GDACEL, of developing a GWIS, include:

- Cost of staff member dedicated to management and operation of the GWIS, which includes data capturing, verification, reporting, and system maintenance. Since a WIO is already employed by GDACEL to oversee the HCWIS, no additional cost is expected here.
- Site visits by EO's to request and collect outstanding quarterly data, if not received from transporters/treatment facilities (part of existing duty).
- Annual training of reporters through e.g. training workshops.

The only costs envisaged for the continued operation of the GWIS is the human resource cost and minimal routine maintenance and upgrade costs. All additional costs, such as site visits, are already included in GDACEL activities.

It is envisaged that the Waste Information Officer will occupy a similar staffing level as a Principal Environmental Officer or Assistant Director.

Note: With the existing IIMS and WIMS (Section 8) not fully operational within GDACEL it is recommended that the GWIS be audited at least two years after implementation to verify the success of the system and whether the system is meeting the requirements of GDACEL. This activity will require funding from GDACEL.

9.2 INFORMATION SUPPLIERS

Those role players capturing information, such as the HCRW treatment facilities, GW and HW landfill sites, will incur additional costs in obtaining the information required for the GWIS.

Such costs may include:

- If treatment facilities request transporters to weigh the HCRW at the generator, transporters will need to purchase scales, if they do not already have. The cost of scales may vary from a few hundred to a few thousand Rand.
- Treatment facilities and landfill sites will need to install weigh bridges, if they do not already have, at a cost of approximately R140 000 (pers comm..).
- Reporters (transporters, treatment facilities, landfills) will need to purchase a computer on which to capture this information, if they do not already have.
- Reporters will need preferably internet access or email so as to directly upload information to the GWIS or email information to the WIO.
- Literate staff, with a certain level of understanding of the operation and the data capture routines are required by the reporters to capture this information and submit to GDACEL. Such staff typically require higher wages, than would the average worker.
- Staff would need to be trained, to ensure accurate capture and recording of information, which would involve additional cost. These costs may however be recovered by the employer through the SAQA structure or the training may be offered free of charge by GDACEL.

10 OBSTACLES

A number of obstacles face the proposed GWIS model. These include:

- Not all generators, transporters, treatment facilities or landfills currently weigh waste generated or received.
- The predominant means of recording of HCRW is in terms of number of boxes, rather that tonnes or kilograms.
- There is currently limited identification of generators of HCRW on the containers.
- Waste loads delivered by transporters to treatment facilities and landfills, contain multi loads from a number of generators.
- There is presently no or limited tracking systems in place to ensure that waste generated is ultimately treated and disposed of.
- Liquid hazardous waste is typically recorded by volume and not mass, particularly for multi-loads.

As mentioned in Section 4, legislation will need to be put in place and enforced to ensure that these obstacles are overcome, and that the required data is collected to populated the GWIS.

11 NEXT STEPS

Task	Due Date	Progress
• Draft GWIS reporting requirements made available to the public (Waste Information Regulations)	Sept 2003	Completed
• GDACEL requirements of GWIS	Oct 2003	Completed
• Make corrections and modifications to draft Waste Information Regulations	Oct - Nov 2003	Input provided
• Present draft framework to GDACEL	Nov 2003	Completed
• Finalise GWIS framework document	Dec 2003	Completed
• Approval by GDACEL of GWIS framework	Dec 2003	Current
• Programming of GWIS	Jan 2003 – Feb 2004	Current
• Waste Information Regulations finalised and gazetted	Jan 2004	Current
• Present GWIS framework to key stakeholders	28 January 2004	Completed
• Train and inform users of the GWIS in Gauteng	Feb – Mar 2004	Current
• Testing of GWIS as part of the pilot project	Mar – Apr 2004	Current
• Review of GWIS by GDACEL and project team	Mar – Apr 2004	Current
• Make adjustments to the HCWIS where required;	Apr 2004	Current
• Implement GWIS in Gauteng	May 2004	
• Monitor efficiency of GWIS	Ongoing	

APPENDIX 1

Job Description of GDACEL Waste Information Officer

On Implementation of the HCWIS (2003)

Duty	Time Required per Month [hours]
Capturing of Basic Data (registration)	2
Notification of reporters	1
Verify and commit submitted data	6
Reminders to reporters	1
External Meetings with Reporters	8
Internal Meetings with EOs, ADs	8
Produce reports and disseminate information	12
Backup of data	4
Total (hrs/month)	42

It was estimated that initially the duties of the Waste Information Officer would take approximately one week of his/her time. As the HCWIS is expanded into a GWIS, which includes other waste types such as hazardous and general waste, the duties of the WIO will require more time, as outlined below.

On Implementation of the GWIS (2004)

Duty	Time Required per Month [hours]
Capturing of Basic Data (registration)	10
Notification of reporters	4
Verify and commit submitted data	12
Reminders to reporters	2
External Meetings with Reporters	8
Internal Meetings with EOs, ADs	12
Produce reports and disseminate information	16
Backup of data	4
Total (hrs/month)	68

A significant increase in time required by the WIO to manage the GWIS is not expected, since many of the functions are automated within the system to allow for quick and efficient capturing and reporting of information.

The job description and time requirements will need to be revised as the GWIS develops.