

The Evolution of the Regulatory Function of Waste Management Facilities within the Western Cape by the Department of Environmental Affairs and Development Planning

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ABSTRACT:

The promulgation of the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA) assigned the waste management licensing function of general waste management facilities to the Department of Environmental Affairs and Development Planning (DEA&DP).

In preparation for the transfer of licensing function under the Environment Conservation Act 1989 (Act No. 73 of 1989), DEA&DP commissioned audits of 240 facilities to determine the state of compliance and management with regard to the Minimum Requirements and the permit conditions.

Audits conducted in 2007 revealed many shortcomings, such as limited technical capacity and knowledge, waste planning, management and a lack of funding to manage the facilities at the municipal level.

DEA decided to address the waste licensing function within NEM:WA. The DEA&DP used this period prior to promulgation of the NEM:WA to prepare for the licensing function, as various service delivery requirements by municipalities needed to be assessed and addressed.

1 INTRODUCTION

The waste disposal facility audits done in 2007 gave an indication as to the extent of non-permitted facilities and non-compliance of permits against its permit conditions. This information was used as a basis for the re-validation in 2010 which helped to inform the licensing process. There was a review of the permits issued by the Department of Environmental Affairs DEA and the Department of Water Affairs (DWA), together with the outcomes of audit project, compliance monitoring and enforcement, and the principles and requirements as set out in the National Environmental Management Act (NEMA), 1998 (Act No 107 of 1998), and the NEM:WA informed the type of conditions that needed to be incorporated in the new licences.

DEA&DP commissioned various projects to ensure synergy with the waste licensing function and the activities associated with waste management at the municipal level. The following projects undertaken by the DEA&DP intended to assist the municipalities with their licence applications and the operation of general waste management facilities, the project included the following:-

- The development of a waste management licensing plan to improve the regulation of waste management facilities within the Western Cape;
- Training of the operational and technical municipal staff at the waste disposal facilities with particular focus on the correct operational requirements;
- Conducting a survey to determine the available airspace (i.e. landfill capacity) of selected municipal waste disposal facilities within the Western Cape;
- Landfill gas monitoring at facilities within the Western Cape;
- Establishing of quantification systems at waste management facilities to improve recording and reporting of waste volumes in the absence of weight bridges; and
- Compliance promotion audits of these facilities to assist municipalities with compliance.
- This paper will evaluate the status quo and the impacts associated with the role out of these projects, as well as to share the lessons learnt in this process.

2 DEVELOPMENT OF THE WASTE MANAGEMENT LICENSING PLAN TO IMPROVE THE REGULATION OF WASTE MANAGEMENT FACILITIES WITHIN THE WESTERN CAPE;

The Waste Management Licensing Plan (WMLP) for the Western Cape “(DEA&DP Waste Licensing Plan 2012)” was developed in accordance with a number of legislative instruments, policies and guidelines that aim to minimise the impact of waste management activities and facilities on the environment and on the health and well-being of people in the Western Cape. The goals of the WMLP are to ensure effective waste management licensing in the province; to ensure effective and consistent compliance monitoring and enforcement of waste management facilities and to continually engage with stakeholders to raise awareness with respect to waste management.

A Project Plan was developed that provided guidance in terms of meeting the project milestones. The development of the WMLP was undertaken in 3 phases, which included stakeholder engagement.

The first entailed the gathering of information through a survey conducted by departmental officials in 2010 to establish the status quo of waste management facilities in the Western Cape.

The second phase, namely, stakeholder engagement involved the presentation of a draft discussion document at an internal workshop held on 27 September 2011, which solicited comment from various components within the Department. The Vision, Mission, Goals, Objectives and Legislative Framework for the WMLP were discussed at this workshop.

The third phase entailed the formulation of the Waste Management Licensing Plan. The Draft WMLP was workshopped at the Integrated Waste Management Forum on 25 November 2011 with external stakeholders. Comments received during the workshop were incorporated into the WMLP. Further consultation resulted in the finalisation of the prioritisation of waste disposal facilities that required waste management licences.

The Waste Management Licensing Plan set out the following strategic and supporting objectives in order to achieve the aforementioned aim and goals:-

2.1 Strategic objectives of the waste management licensing plan are to:-

2.1.1 Licence all waste management facilities

2.1.2 Prioritize the review of waste management licence applications

2.1.3 Review permits issued in terms of the Section 20 of ECA and NEM:WA waste facility authorizations

2.1.4 Identify, prioritise and address unlicensed activities and facilities categorised as illegal

2.2 To strengthen compliance monitoring and enforcement by:-

2.2.1 Conducting internal and external audits as determined by licence conditions

2.2.2 Monitoring progress of audit actions implemented

2.2.3 Monitoring contraventions of the NEM:WA

2.3 To remediate and rehabilitate contaminated land by:-

2.3.1 Enforcing protocol (NEMA Section 24G and directives) to rehabilitate contaminated land;

2.3.2 Identifying waste disposal facilities requiring site specific rehabilitation and end use plans;

2.3.3 Enforcing the rehabilitation and closure of waste disposal facilities not properly rehabilitated.

2.4 The National Government has agreed on 12 outcomes as a key focus of work between 2009 and 2014. Each outcome had a limited number of measurable outputs with targets and each output was linked to a set of activities to achieve the targets and contribute to the outcome. The National Strategic Outcome 10 to ensure that environmental assets and natural resources are valued, protected and continually enhanced was underpinned by a number of outputs, and sub-outputs. One of the outcome targets was to increase the number of licensed waste disposal facilities to 80% by 2014. Given the initial slow progress against this target due to limited funding at municipalities the DEA provided funding assistance to achieve this target. This funding has greatly assisted the Western Cape with the implementation of the Waste Management Licensing Plan through the process of licensing 75 unlicensed waste disposal facilities in the Western Cape.

- 2.5 The number of facilities as recorded in the Waste Management Licensing licenced during the 2013 / 2014 financial year was eleven as at 1 June 2014, which is quite an achievement as compared to previous years. This can only be ascribed to having a constructive plan that has had the buy-in of municipalities and the financial support for implementation. All applications for the 75 waste disposal facilities have been lodged with the Department, which is an achievement in itself.
- 2.6 The future of WMLP will be to ensure variation of permits and licences, the amendments to the NEMA Environmental Impact Assessment 2010 (EIA regulations) have an impact on how variation or amendment applications have to be managed the amended regulations will now require a basic assessment process to be followed by the applicant, this was not required previously and may impact on the number of applications submitted and processed.
- 3 TRAINING OF THE OPERATIONAL AND TECHNICAL MUNICIPAL STAFF AT THE WASTE DISPOSAL FACILITIES WITH PARTICULAR FOCUS ON THE CORRECT OPERATIONAL REQUIREMENTS

The development of the training course, that was initially conducted in February and March 2010 have subsequently been rolled out to many more municipal landfill staff, waste managers and other staff, including Environmental Health Practitioners.

The course was designed and focused on the proper operation of the landfill sites using the Department of Water Affairs Minimum Requirements for Disposal to Landfill second edition 1998 (Minimum requirements) as a basis specifically focussing on the operational requirements. The course was presented to appropriate municipal staff and officials associated with the waste management function. The training included the theoretical course work and the practical course which comprised of a site visit to an appropriate landfill site within the vicinity to where the course was held.

The course was presented in the West Coast (Saldanha Bay and Malmesbury), Eden and Central Karoo (George and Beaufort West) and the Overberg and Cape Winelands districts (Caledon and Stellenbosch).

- 3.1 The purpose of the training workshop was to:-
- 3.1.1 Educate and inform the municipal officials on the range of best operational procedures for managing the waste disposal sites and it addressed the maintenance of plant and equipment at the waste disposal facility. The principles of the minimum requirements for waste disposal on landfill was applied to the daily operation of the disposal facility; the challenges pertaining to waste salvaging, windblown litter, facility security and record keeping.
- 3.1.2 Design coursework "(DEA&DP Training Manual 2010)" the coursework also covered an overview and introduction to the legislative framework, landfill basics, operating at the landfill site, health and safety, waste collection, transfer and transport and integrated waste management, waste minimisation and resource recovery.
- 3.2 The total number of municipal officials trained since the implementation of this training intervention was 141 from six workshops held during February and March 2010, September and October 2010, and workshops conducted during the 2011 and 2012 financial years.
- 3.3 The constant turnover of staffs at the municipal landfill operator level requires that the training be conducted on at least a biennial basis to ensure some of the outcomes and successes with regard to:-
- 3.3.1 Increasing in operators' capacity and staff capacity in general;
- 3.3.2 Improving staff self-esteem and confidence by improving their technical knowledge
- 3.3.3 Improving the management on site since the operational staff can make more informed decisions on certain site management aspects around fire, health and safety and general requirements, management can be informed of the conditions on site which helps making informed choices to make the right decisions which then improves the conditions on site.

3.4 The manual was also translated into Afrikaans since the majority of the waste operators are Afrikaans speaking. The course work is continually updated to reflect the current legislative changes and best practices that supports DEA&DP's as they strive towards continuous improvement in the field of waste disposal facility management.

4 SURVEY TO DETERMINE THE AVAILABLE AIRSPACE (I.E. LANDFILL CAPACITY) OF SELECTED MUNICIPAL WASTE DISPOSAL FACILITIES WITHIN THE WESTERN CAPE

4.1 According to the "(DEA&DP Airspace determination 2011)" the Department embarked on a project which includes the surveying of selected waste management facilities in order to improve the baseline data at a municipal level. Nine waste disposal facilities were evaluated for airspace based on the needs by the municipalities. DEA&DP embarked on a project which entailed a landfill airspace determination survey at selected waste management facilities in order to improve the baseline data at a municipal level. This information will form the basis for effective waste management planning at a provincial and municipal level as well as future planning of each of the individual waste management facility. Although the need was greater to include more landfills in this landfill airspace determination survey, the funding was limited.

4.2 The scope of this project included the following:-

4.2.1 Determining the available airspace at selected municipal waste management disposal facilities;

4.2.2 Surveying the selected waste disposal facilities and the determination of the remaining lifespan of the waste disposal facilities using the existing data from waste management permits/licenses, waste management facilities audits and waste characterisation studies; A detailed baseline topographical survey of the selected waste disposal facilities, the current used airspace and the remaining available airspace in year. A comprehensive report containing the findings of the survey which detailed the contours of the facilities using the reference points that depict the X, Y and Z coordinates; and all calculations.

4.3 The densities for the waste from this report were used to input values into the airspace model. The data collected was then used to calculate the remaining airspace at the selected landfill sites, an airspace survey questionnaire was sent out to the Waste Management Officers of the various municipalities which assisted the collection of the required data.

4.4 Various methods of establishing the airspace were considered however the Department of Water Affairs and Forestry Minimum Requirements for Waste Disposal by Landfill, Third Edition, 2005 method was used to estimate the remaining airspace.

The results indicated that most facilities surveyed only had between two and three years of airspace left. To improve landfill management and planning the Department now include the condition to conduct an airspace determination at the waste disposal facilities at least every two years in the licence conditions so as to ensure adequate planning for future landfill airspace.

5 LANDFILL GAS MONITORING AT FACILITIES WITHIN THE WESTERN CAPE.

The aim of this project is to evaluate operational waste disposal facilities by conducting landfill gas monitoring at operational waste disposal sites per within the Western Cape Province.

5.1 The main objectives of this project are:-

5.1.1 To conduct gas monitoring at 40 waste disposal facilities within the Western Cape;

5.1.2 To facilitate capacity building at provincial and local municipal level by providing information of the status quo with regard to the waste disposal facility emissions, in particular, methane gas levels on site;

5.1.3 Establish methane background levels in municipalities where no such action is taking place at general licenced waste disposal sites;

5.1.4 Work with the Air Quality Management component in the Department to share data captured and methodology, with the view of establishing continuous monitoring in the future where applicable.

- 5.2 A baseline of the ambient waste disposal facility gas levels on site were conducted in combination with an, audit of the waste disposal facilities, capacity building of municipal officials and advising the municipalities with regard to the future planning and management of the Methane at the specified facilities was also done.
- 5.3 The methodology to determine the methane at sites has also included the following objectives:-
- 5.3.1 To audit the waste disposal facility, get the verified GPS co-ordinates of the entrance and the four corners of the site, compare the various facilities for compliance, and to build the capacity of the municipal officials.
- 5.3.2 To reduce the risk of explosions at the facility, minimise adverse environmental conditions related to greenhouse gases by reducing the impacts of Methane on the surrounding environment and to identify and plan for future waste management facility methane management needs and requirements. The Department has built up a record of the waste disposal facility gas data over the past two years and have now embarked on changing the methodology slightly in order to do some sub-surface monitoring, the results will be compared to the previous data records and a comparative analysis will be done.
- 6 ESTABLISH QUANTIFICATION SYSTEMS AT WASTE MANAGEMENT FACILITIES TO IMPROVE RECORDING AND REPORTING OF WASTE VOLUMES IN THE ABSENCE OF WEIGHT BRIDGES
- 6.1 The landfill airspace needs to be accurately managed and without good baseline data an accurate estimation of waste volumes could lead to the airspace being over or underutilised and the municipality needing to find alternative disposal facilities. Siting and establishing waste disposal facilities is an expensive process and needs to comply with a comprehensive legislative framework. It should be noted that land on which these facility are located is a resource and should be efficiently used, in the same efficient ways demanded from the utilisation of our other resources.
- 6.2 Improving the baseline information ensures that municipalities can allocate funds appropriately towards the waste management function within the municipality.
- 6.3 The lack of weigh bridges has a negative impact on the planning and adequate allocation of funds for the waste management function. The lack of planning then leads to an inferior quality of waste management services delivered. A good alternative quantification system in the absence of weighbridges is therefore key to get a handle on waste quantities which are the basis of good waste planning and management.
- 6.3.1 The Department developed a waste quantification tool “(DEA&DP Waste Calculator Guideline 2012)” using the Department of Environmental Affairs and Tourism’s guideline on implementing the South African Waste Information System documents.
- 6.3.2 The Microsoft Excel-based waste calculator, depicts the size of the vehicle, the number of loads and the density of the relevant waste types being disposed at the waste facility, estimates the approximate tonnage of the waste after the calculation of the waste densities.
- 6.3.3 The waste quantification system allows municipal officials to make a good estimation of the tonnage of waste being disposed of at the facility. It can also assist the municipality to obtain the volumes of waste from a particular waste stream which could for example be municipal, or business waste, organic, construction or recyclable waste.
- 6.3.4 Accurate records of vehicle routes could further assist the accuracy of the waste flow, various collection models or alternative waste management solutions can be instituted by the municipality.
- 6.4 Good data as an information source will ensure that the outcomes are constructive and key to adequate planning for the efficient utilisation of airspace, equipment, and staff at waste management facilities. An improved operation of facilities leads to improved service delivery.

7 COMPLIANCE PROMOTION AUDITS OF THESE FACILITIES TO ASSIST MUNICIPALITIES

- 7.1 The Department have been conducting audits at waste disposal facilities throughout the Western Cape. Currently the Annual Performance Plan target of the Department is to conduct 80 audits annually. These audits are managed according human resource utilisation within the Regulatory Services component so that 20 audits are conducted per quarter.
- 7.2 Protocols have developed as well as specific forms for the various types of facilities. Records of the permits and environmental management plans are reviewed to inform audits prior to them being conducted.
- 7.3 The audits are conducted using the permit or licence conditions as a reference against which the waste disposal facilities are audited for compliance.
- 7.4 Staffs have been exposed to training on ISO 14000 series (which includes Environmental Auditing) and have applied the principles to the audits associated with the waste disposal facilities.
- 7.4.1 In order to ensure that the auditing is done in an orderly manner and to ensure the quarterly targets are, a planned schedule is used to give structure to the audits and when quarterly residence monitoring committee meetings are held the staff can be aware of the status of current conditions at the various licenced waste disposal facilities. When waste disposal facilities are audited, there is usually a gas monitoring survey is conducted as well. The facility audit and the gas determination ensures a robust method which provides the municipality with dual feedback from the audit and the waste disposal site gas determination.
- 7.4.2 Municipalities are given adequate time to provide feedback to the department on the audit report when there is a requirement raised by the departmental audit to improve the management aspects of the particular waste disposal facility. Should the administrative time be exceeded and no further cooperative governance be applied then any non-compliance matters are then referred to the Directorate Environmental Governance, comprising of the Environmental Law Enforcement component, for further compliance and enforcement action.

The way forward with the auditing is to improve the methodology and the audit forms and check lists. The objective is to establish the percentage compliance with the set audit conditions and be able to compare the state of compliance of the various facilities within the Western Cape Province. It is envisaged that a dash board which depicts the state of compliance will be developed within the financial year to improve the methodology and the recording of the state of compliance. The audit status and history will also be linked to the Integrated Pollutant and Waste Information System creating easy access to historic information. Once again, having good audit data ensures good planning which ensure continuous improvement and compliance

8 CONCLUSIONS

The various projects implemented to drive the implementation of the legislative requirements w.r.t. the NEM:WA and its relevant regulations have been instrumental in ensuring synergies within the municipalities and the DEA&DP. The outcomes of the projects were communicated to all municipalities and the municipal officials actively involved in the projects, as well as shared and tabled at the Western Cape Waste Managers Officers Forum held quarterly.

The initiatives have ensured that the rate of compliance has increased in reporting and in the improvement in the management of the waste facilities. by improving record keeping and registering facilities on the Departments Integrated Pollutant and Waste Information System, and also addressing the compliance conditions so that they are sorted out readily by the municipalities putting mechanisms into place which address the non-compliances

More accurate data on waste volumes are being collected at waste disposal sites; Waste management operational staffs are more concerned about operational aspects at the various waste disposal facilities. Municipalities have their waste disposal facilities audited and monitored for gas by the Department. The provision for waste management activities have been considered more clearly in the integrated waste planning and the Integrated Development Planning (IDP) process. By improving the understanding of municipal officials and assisting the municipalities by constructive engagement and support of the waste management function at the municipal level, the DEA&DP has ensured the improvement in synergies and alignment of the waste management objectives of municipalities and DEA&DP in the Western Cape.

9 REFERENCES

Department of Environmental Affairs & Development Planning Training Manual for Operational and Technical Municipal Staff at the Waste Disposal Facilities within the Western Cape (DEA&DP Training Manual) 2010

Department of Environmental Affairs & Development Planning Survey to Determine the Available Airspace of Selected Municipal Waste Disposal Facilities within the Western Cape (DEA&DP Airspace determination) 2011

Department of Environmental Affairs and Development Planning Implementation of the Waste Management Licensing Plan (DEA&DP Waste Licensing Plan) March 2012

Department of Environmental Affairs and Development Planning Waste Calculator Guideline (DEA&DP Waste Calculator Guideline) 2012