Executive Summary

Background

eThekwini Cleansing and Solid Waste DSW (DSW) proposes to develop a Waste Transfer Station (WTS) in Electron Road, in the Springfield Park area of Durban. The WTS will essentially comprise a building, approximately four storeys high, in which waste will be off-loaded, compacted, and containerised for bulk transportation. Associated infrastructure will include access roads, car park, security post, truck weighbridges, and a separate building where compost will be made from organic waste. The WTS will facilitate the economical transfer of waste from Durban's central region to the Northern Region Buffelsdraai Landfill Site when the Bisasar Road Landfill Site, currently serving the central region, is closed.

The proposed project is a scheduled activity in terms of the relevant South African environmental legislation, and is therefore subject to the Environmental Impact Assessment (EIA) process. In order for the project to proceed it will require authorisation from the Department of Agriculture and Environment Affairs (DAEA). WSP Environmental (WSP) was appointed by DSW to undertake the function of independent Environmental Assessment Practitioner to facilitate the EIA process in accordance with the environmental regulations. The EIA process commenced with the undertaking of a scoping study, the objectives of which were:

- To describe the proposed project and the environment that may be affected by its implementation,
- To identify feasible and reasonable alternatives;
- To identify environmental issues and potential impacts; and,
- To involve the public, authorities and interested organisations by conducting a public participation

In accordance with Section 21 (2) of the Environment Conservation Act (No 73. of 1989) an environmental scoping assessment was undertaken for the proposed WTS at a site in Electron Road, Springfield Park, Durban, during the period from January 2005 to June 2006. The scoping report was submitted to the Department of Agriculture and Environmental Affairs (DAEA) on 26 June 2006.

Summary of the Scoping Process

A number of socio-economic and environmental issues were identified during the public participation process, these related primarily to the social and environmental implications associated with noise, air, water, health, traffic, and the surrounding ecology. Recommendations were made in order to mitigate the majority of potential impacts to a level of low significance. However, in the absence of sufficient information regarding the characteristics of potential airborne emissions, it was not possible to accurately evaluate associated potential air quality impacts. Furthermore, in their review of the scoping report, the DAEA requested further investigations of alternative locations for the proposed facility to augment the alternatives site assessment process carried out during the scoping phase.

EIA Phase Objectives

The EIA process aimed to provide the DAEA with sufficient information to make an informed decision as to whether the project should be authorised, and to determine the conditions of authorisation. In order to meet this aim the EIA process focused on the following key objectives:

- Identification and environmental assessment of feasible additional site alternatives beyond the Springfield Park Area;
- Evaluation of the economic and logistical implications associated with potential alternative sites, as well as the effect on waste vehicle fleet carbon (CO_2) emissions; and,

- Quantitative assessment of potential air quality impacts arising from the operation of the WTS.

Initial Identification of Alternative Sites / Areas

The major industrial districts within the eThekwini Municipal Area were plotted in relation to the central waste catchment, and assessed in terms of the fundamental criteria of proximity to the centroid of the waste generation area and road and services infrastructure / area accessibility. The only potentially feasible alternatives were found to be the industrial areas of Springfield Park, Riverhorse Park, and Maydon Wharf. Due to the absence of suitable sites in these areas the project reverted to the Electron Road site.

Summary of Transportation Modelling and Associated CO_2 emissions

The transportation modelling revealed that the Electron Road alternative is the most viable option from a transportation and cost perspective. The cost per ton of waste ranges from R158.30 (year 1) to R194.30 (Year 20). Riverhorse Park is 9% more expensive than Electron Road (Average over 20 years) and is thus a less desirable option than Electron Road. The cost per ton of waste ranges from R158.00 (year 1) to R201.30 (Year 20). Maydon Wharf is 18% more expensive than Electron Road (Average over 20 years) and is thus the least desirable option. The cost per ton of waste ranges from R158.30 (year 1) to R216.20 (Year 20).

In addition to the cost per ton of waste analysis, the carbon dioxide (CO_2) emission implications associated with transportation differences in the scenarios was quantified. CO_2 emission factors were based on eThekwini State of Energy Report 2006 (0.25kg of CO_2 per kWh at 38.1 megajoules per litre). Over the project lifespan it was found that the alternative scenarios will have the following CO_2 emission implications in relation to the Electron Road site:

- Riverhorse will generate an additional ~38 000 tons of CO_2
- Maydon Wharf an additional ~81 000 tons of $C0_2$

The relative scenario cost comparison concluded that the Electron Road alternative is the most economically viable option. In addition it is also the best environmental option in terms of it's CO_2 emission implications.

Comparative Environmental Assessment of Alternatives

Feasible areas alternatives were evaluated in terms of land zoning/planning; ecological aspects; surface water; noise and air quality; and socio-economic factors. None of the sites were deemed to have significant advantages or disadvantages in relation to one another. Therefore, environmentally, there was no basis for the identification of a '**preferred environmental option**' that is, the sites were generally considered to be of equal environmental stature.

Summary of the Air Quality Study

The study methodology entailed the following key steps:

- Identification of the best practical environmental option on which to focus the air quality study;
- Selection of applicable pollutant species;
- Monitoring of applicable pollutant species at two existing WTSs in the Durban Area;
- Baseline Air Quality Monitoring at Electron Road;
- Development of an Emissions Inventory; and,
- Dispersion Modelling.

On the basis of the comparative logistical, financial and environmental assessments of the alternative areas, there were reasonable grounds to limit the detailed air quality impact assessment to the Electron Road Site.

The study quantitatively assessed the potential for the release of hazardous air pollutants and associated adverse health impacts on the surrounding population. Extensive modelling predicted that concentrations at all receptor points will be well within the prescribed annual ambient concentration guidelines.

Conclusion

None of the potential impacts associated with the proposed facility at the Electron Road Site were predicted to exceed the magnitude of low to medium significance. The following potential impacts were regarded as being most prominent:

- Surface water degradation and associated ecological and human health impacts associated with accidental releases from the WTS effluent capture system.
- Ground and groundwater contamination associated with potential releases from the effluent system, either slowly over a long period of time (e.g. from small cracks) or in a single major event (such as rupture or failure of a vessel or structure).
- Traffic congestion associated with a change in transportation dynamics associated with the re-directing of waste away from Bisasar Road Landfill site to the WTS.
- Potential for property devaluation associated with real or perceived and environmental impacts associated caused by the WTS.
- Release of hazardous air pollutants and associated adverse health impacts on the surrounding population. Extensive modelling in this regard has predicted concentrations at all receptor points will be well within the prescribed annual ambient concentration guidelines.

It was recommended that all impact mitigation factors, of which the environmental impact assessment took cognisance, are legally enforced. These include:

- Informed planning in the design phase of the project e.g. in relation to potential flood inundation of the site and the installation of appropriately designed air scrubbers at all air vents.
- Implementation of an environmental management plan (EMP) in the construction phase; and an Environmental Management System (EMS) in the operational phase.
- Undertaking of verification studies (viz. Air Quality and Traffic) that are only possible during the detailed design phase, and continued feedback to the Environmental Authorities.
