



# Plant Development & Waste Management Proposal

*Submitted To:*

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## Cover Letter

**Jennifer Garner**

This is in reference to our meeting on Wednesday, April 13, 2011 regarding the Engineering & Plant Development Services for Kronn Chemicals Ltd. The discussion has given us a very clear thought line as to your specific requirements and the course that the project would take. We look forward to assist you on the project and make this project a success.

Attached is the detailed proposal for Kronn Chemicals Ltd., with specific focus on Waste Management and recycling. The proposal is valid for 1 month starting from April 13, 2011. Thus the expiry date of the proposal is May 13, 2011.

We look forward to discuss the proposal and finalization of the modules as per your interest and requirement.

The modules that we will cover are mentioned below:

- General background
- Scope of Services
- Execution Plan
- Budgeting & Controlling

Yours sincerely,

Gary Watson



## Executive Summary

Solid Waste Management (SWM) is one of the major challenges that developing countries are facing today. Outbreak of various epidemics and deteriorating environmental conditions are examples of the growing need of proper and scientific sanitation for urban and rural areas. SWM in developing countries remains an issue of concern for the masses and governments alike. It is often non-existent or unsatisfactory. On the other hand most developed countries have adopted effective SWM policies, plans and measures to achieve objectives and targets at national and local levels. Typically SWM comes under the preview of municipal services and most of the municipal as well as city administrations neither have the technical competence nor the financial resources to provide this vital service on their own. Resultantly, SWM services are now being provided with the assistance of private sector throughout the world. The involvement of private sector has brought remarkable changes in SWM systems, dumping and burning of solid wastes in open pits is not encouraged now a days and waste can now be recycled. The recent trends include, waste segregation and collection at source, material recovery, composting, waste - energy conversion, environment friendly landfills etc. In fact efficient waste management system not only complements clean environment, but it has now evolved as a profitable business, creating employment and enhancing income generation opportunities for the communities involved. However a waste management system cannot be successful without active participation and involvement of the communities, who are the main source of waste generation. Communities have the prime responsibility to reduce the quantity of waste generated, segregation of waste at source, financial contribution to waste management system and last but not the least monitoring of the service levels being provided.

### **The main objectives and goals of the project are:**

1. Collection and disposal of existing waste littered throughout the project area.
2. Achievement of 90% waste collection efficiency within 18 months of commercial operations of the project.
3. Public participation.
4. Enforcement of strict environmental and municipal laws.
5. Collection and transportation of solid waste.
6. Waste reduction through extraction of recyclable material (Material Recovery) and composting.
7. Final disposal at the landfill site.
8. Improvement in city's environment and aesthetics.

## Company Background

Delisle Engineering, a leading US waste management and energy recovery company, is part of EPCC the international environmental services, infrastructure and energy group.

Delisle is focused on delivering integrated waste management and energy recovery solutions to meet national, regional and local needs for local authorities and private commercial companies. The Company operates facilities for the reception, recycling and disposal of waste, including a network of waste transfer and recycling centers and a regional network of landfill sites, and also manages a wide range of recycling sites on behalf of local authorities for use by the general public.

The profile of the US's waste management industry has never been higher, the pressures on local authorities and the economy to reduce waste and maximize re-use and recovery, never greater. Through innovation, service and expertise - cornerstones of the Company's approach - Waste Recycling Group is committed to working with our local authority partners and industry customers to respond to often complex and far-reaching waste management strategies, to react to increased regulation from the US and Europe, and to meet demanding waste management targets.

We manufacture and supply world's best waste management equipment to several countries across the globe. Our profits have increased tremendously owing to the great market demand of our product, which has now become a brand name in itself.

We make sure that our employees are trained on the latest trends, tools, and technologies. Another endeavor is to have the latest machines and tools so that our product is latest and cost effective.

Training sessions are conducted by experts to train our staff on new skills and technical facts. Such sessions have proved useful in the past and we plan to conduct them on a regular basis. To make sure that our staff works with complete dedication, we offer them various incentive and other schemes.

### **Mission**

Delisle Engineering feels proud of its innovative technology that helps recycle e-waste. An ISO 14001 accredited company, it is rich in process driven operations, with emphasis on environment, health and safety.

Added feather in its cap is that, the 'Total Termination Process' is completely Pollution Free. There is no contamination of water or air and, no sound pollution either, with all compliances in place.



## Project Processes and Operations

### Recycling & Reuse

The processes, by which materials otherwise destined for disposal are collected, reprocessed or remanufactured and are reused. The separation for recycling takes place at households, community bins, open dumps and even in final disposal yards.

### Non-engineered disposal

This is the most common method of disposal in low-income countries, which have no control, or with only slight or moderate controls. They tend to remain for longer time and environmental degradation could be high, include mosquito, rodent and fly breeding, air, and water pollution, and degrading of the land.

### Sanitary landfilling

Sanitary landfill is a fully engineered disposal option, which avoids harmful effects of uncontrolled dumping by spreading, compacting and covering the wasteland that has been carefully engineered before use. Through proper site selection, preparation and management, operators can minimize the effects of leachates (polluted water which flows from a landfill) and gas production both in the present and in the future. This option is suitable when the land is available at an affordable price. Human and technical resources available are to operate and manage the site.

### Biogas

Biogas contains approximately 60:40 mixture of methane (CH<sub>4</sub>), and carbon dioxide (CO<sub>2</sub>) produced by the anaerobic fermentation of cellulose biomass materials - simultaneously generating an enriched sludge fertilizer - with an energy content of 22.5 MJ/m<sup>3</sup>, clean gaseous fuel for cooking, for running engines for shaft and electrical power generation with little or no pollution.

### Composting

Composting is a biological process of decomposition carried out under controlled conditions of ventilation, temperature, moisture and organisms in the waste themselves that convert waste into humus-like material by acting on the organic portion of the solid waste. If carried out effectively, the final product is stable, odor-free, does not attract flies and is a good soil conditioner. Composting is considered when biodegradable waste is available in considerable fraction in the waste stream and there is use or market for compost. Centralized composting plant for sector may only be undertaken if adequate skilled manpower and equipment are available, hence at household level and small level composting practices could be effective which needs the people's awareness.

### Incineration

Incineration is the controlled burning of waste in a purpose built facility. The process sterilizes and stabilizes the waste. For most wastes, it will reduce its volume to less than a quarter of the original. Most of the combustible material is converted into carbon dioxide and ash. An extensive sample program conducted in New York reveals that most of the waste had a calorific value of just 3350 joules/g compared with 9200 joules/g in high income countries. Incineration may be used as a disposal option, only when landfilling is not possible and the waste composition is of high combustible (ie self-sustaining combustible matter which saves the energy needed to maintain the combustion) paper or plastics. It requires an appropriate technology, infrastructure, and skilled manpower to operate and maintain the plant. In many cities, Incineration is generally limited to hospital and other biological wastes and mostly others are either landfilled or dumped.

## Gasification

Gasification is a flexible, reliable, and clean energy technology that can turn a variety of low-value feedstock into high-value products, help reduce our dependence on foreign oil and natural gas, and can provide a clean alternative source of baseload electricity, fertilizers, fuels, and chemicals.

It is a manufacturing process that converts any material containing carbon—such as coal, petroleum coke (petcoke), or biomass—into synthesis gas (syngas). The syngas can be burned to produce electricity or further processed to manufacture chemicals, fertilizers, liquid fuels, substitute natural gas (SNG), or hydrogen.

Gasification has been reliably used on a commercial scale worldwide for more than 50 years in the refining, fertilizer, and chemical industries, and for more than 35 years in the electric power industry.

### GASIFICATION IS AN ENVIRONMENTAL SOLUTION

The world is facing rapid growth in energy demand, persistently high energy prices, and a challenge to reduce carbon dioxide emissions from power generation and manufacturing. No single technology or resource can solve the problem, but gasification can be part of the solution along with renewable power sources such as wind and energy efficiency programs.

Gasification can enhance the world energy portfolio while creating fewer air emissions, using less water, and generating less waste than most traditional energy technologies. Whether used for power generation, for production of substitute natural gas, or for production of a large number of energy intensive products, gasification has significant environmental benefits over conventional technologies.

### Gasification: Environmental Benefits

1. Gasification plants produce significantly lower quantities of criteria air pollutants.
2. Gasification can reduce the environmental impact of waste disposal because it can use waste products as feedstock—generating valuable products from materials that would otherwise be disposed as wastes.
3. Gasification's byproducts are non-hazardous and are readily marketable.
4. Gasification plants use significantly less water than traditional coal-based power generation, and can be designed so they recycle their process water, discharging none into the surrounding environment.
5. Carbon dioxide (CO<sub>2</sub>) can be captured from an industrial gasification plant using commercially proven technologies.
6. Gasification offers the cleanest, most efficient means of producing electricity from coal and the lowest cost option for capturing CO<sub>2</sub> from power generation, according to the U.S. Department of Energy.

### TURN W2E GASIFICATION

There are many carbonaceous materials that are suitable for gasification. These include wood, paper, peat, lignite, coal, including coke derived from coal, saw-dust and agro-residues. All of these solid fuels are composed primarily of carbon with varying amounts of hydrogen, oxygen, and impurities, such as sulfur, ash, and moisture. Municipal Solid Waste (MSW) is also a good candidate for gasification; however, it poses a special challenge for waste processors, due its non-homogenous characteristics, high moisture content and unpredictable calorific value.



## Project Cost Synopsis

### Example:

<b>Deliverable</b>	<b>Cost</b>
Base Analysis	\$12,000
Hardware Installation	\$19,500
Software Development	\$11,000
Quality Check	\$1,500
Final report	\$350
<b>Total Unit Cost:</b>	<b>\$44,350</b>

3. Project costs can be quantified in a number of ways. For categories, consider:
- Time (costs per hour, day, etc.)
  - Components (material acquisition, outsourcing, resource fees, labor, etc.)
  - Modules or units of work (Chapter 1, Chapter 2)
  - Natural divisions of work (“building one, building two, “etc.)
  - Conceptual divisions

Note when your numbers are merely estimates and when/how they might be subject to change as contributing costs or other variables change. Note also if the rates might change before a formal contract is signed and under what circumstances.

In identifying costs, your best approach is to do the research and present your cost breakdown in categories that are familiar and meaningful to your prospect. Try to find sample proposals in their area to use as guidelines. If you are interacting with the prospect during the development of the proposal, it’s fair to ask, “How would you like us to break out the costs?” \*\*



## Project Budget

Here is the budget classification of the entire project spread over the 3 year period.

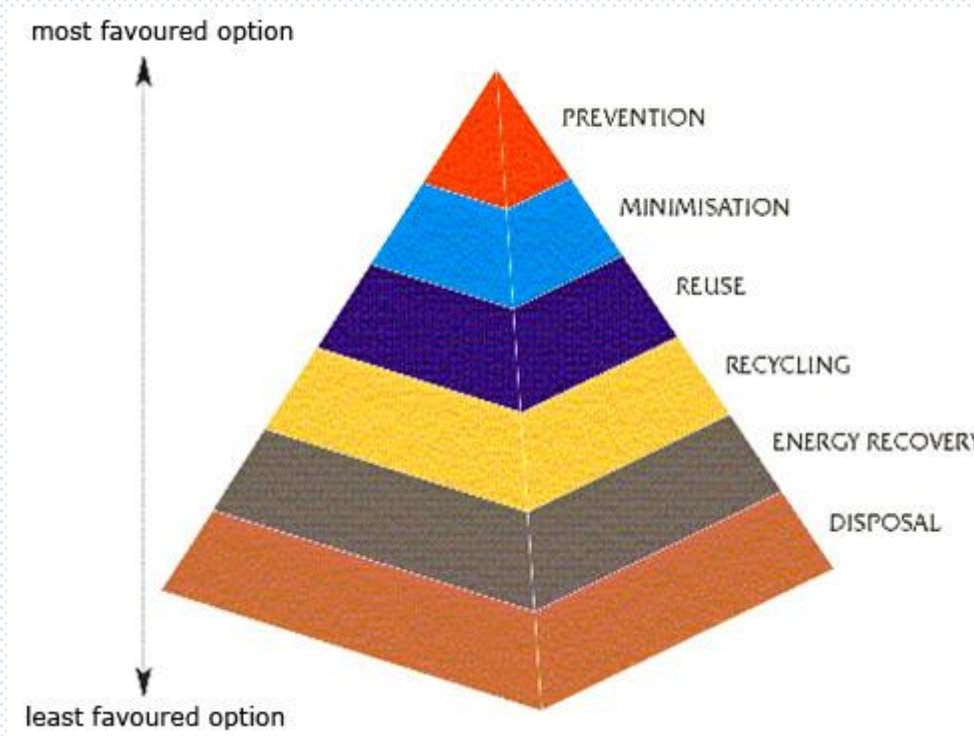
<b>Item</b>	<b>Estimated Cost</b>
Facility Construction	\$26,287.00
Labor (Facility)	\$15,492.00
Portable Machinery	\$1,020.00
Electricity	\$3,500.00
Building Maintenance	\$2,500.00
Administration	\$1,500.00
Waste Disposal	
Facility	\$78,000.00
Miscellaneous	\$3,000.00

## Operational Flow:

Environmental Engineering is the need of today. Delisle Engineering, believes in being efficient in the way resources are used, creating savings for our business and adding value for our customers. At Delisle we continue to drive environmental best practice throughout all our operations. Waste to energy projects, Waste water treatment projects and consultancy for efficient management of energy.

Environmentally sound practices for the Management of Wastewater are one of the major issues that need to be addressed for maintaining the quality of Earth's environment and for achieving sustainable development.

To attain a healthy environment, Wastewater has to be disposed of as permitted by a license under the **US Environmental Act 1992**, administered by the Environmental Protection Agency.



## Executive Resumes

Director

CEO

Marketing/Sales Director

Project Manager (Projects)

Project Manager

Customer Care Head



## Financial Statement

Balance Sheet	----- in USD. (Million). -----				
	Jun '06	Jun '07	Jun '08	Jun '09	Jun '10
	12 mths	12 mths	12 mths	12 mths	12 mths
<b>Sources Of Funds</b>					
Total Share Capital	40.46	40.46	51.74	51.74	53.74
Equity Share Capital	36.46	36.46	47.74	47.74	49.74
Share Application Money	0.00	0.00	0.00	0.00	1.91
Preference Share Capital	4.00	4.00	4.00	4.00	4.00
Reserves	16.88	23.46	80.35	81.01	101.24
Revaluation Reserves	0.60	0.60	0.60	0.60	0.60
<b>Networth</b>	<b>57.94</b>	<b>64.52</b>	<b>132.69</b>	<b>133.35</b>	<b>157.49</b>
Secured Loans	8.47	15.92	13.21	19.53	42.27
Unsecured Loans	1.70	0.00	123.25	134.75	134.75
<b>Total Debt</b>	<b>10.17</b>	<b>15.92</b>	<b>136.46</b>	<b>154.28</b>	<b>177.02</b>
<b>Total Liabilities</b>	<b>68.11</b>	<b>80.44</b>	<b>269.15</b>	<b>287.63</b>	<b>334.51</b>
	Jun '06	Jun '07	Jun '08	Jun '09	Jun '10
	12 mths	12 mths	12 mths	12 mths	12 mths
<b>Application Of Funds</b>					
Gross Block	22.40	25.28	85.07	150.51	148.30
Less: Accum. Depreciation	5.97	6.98	8.88	13.25	23.42
<b>Net Block</b>	<b>16.43</b>	<b>18.30</b>	<b>76.19</b>	<b>137.26</b>	<b>124.88</b>
Capital Work in Progress	28.32	30.36	0.27	0.40	77.57
<b>Investments</b>	<b>0.01</b>	<b>2.72</b>	<b>2.72</b>	<b>2.72</b>	<b>3.72</b>
Inventories	5.15	13.47	28.99	45.48	60.04
Sundry Debtors	7.74	8.17	16.62	7.97	8.18
Cash and Bank Balance	2.12	0.88	5.01	4.38	16.00
Total Current Assets	15.01	22.52	50.62	57.83	84.22
Loans and Advances	11.60	11.25	142.47	140.10	56.80
Fixed Deposits	0.00	0.00	0.00	0.00	0.00
Total CA, Loans & Advances	26.61	33.77	193.09	197.93	141.02
Deffered Credit	0.00	0.00	0.00	0.00	0.00
Current Liabilities	3.39	4.94	12.26	53.71	14.75
Provisions	0.13	0.12	0.40	0.58	0.35
Total CL & Provisions	3.52	5.06	12.66	54.29	15.10
<b>Net Current Assets</b>	<b>23.09</b>	<b>28.71</b>	<b>180.43</b>	<b>143.64</b>	<b>125.92</b>
Miscellaneous Expenses	0.25	0.34	9.55	3.61	2.40
<b>Total Assets</b>	<b>68.10</b>	<b>80.43</b>	<b>269.16</b>	<b>287.63</b>	<b>334.49</b>
Contingent Liabilities	0.00	0.00	0.27	1.36	1.92
Book Value (Rs)	14.63	16.44	26.83	26.97	30.35

## Industry Trends

Waste management industry is highly fragmented. There is stiff competition and high barriers to entry. In United States, the current economic slowdown has affected the market but this industry has bright prospects to grow in coming years. New technologies have made the industry structure more wide and now recycling is playing an important role. Non-hazardous waste management is a mature market which has a strong hold in the overall waste management industry.

The majority of waste management industry in the US is engaged in the collection, transportation, and disposal of solid and non-hazardous waste products in landfills. By holding a large share of the industry, private companies are enjoying the maximum profit from the industry.

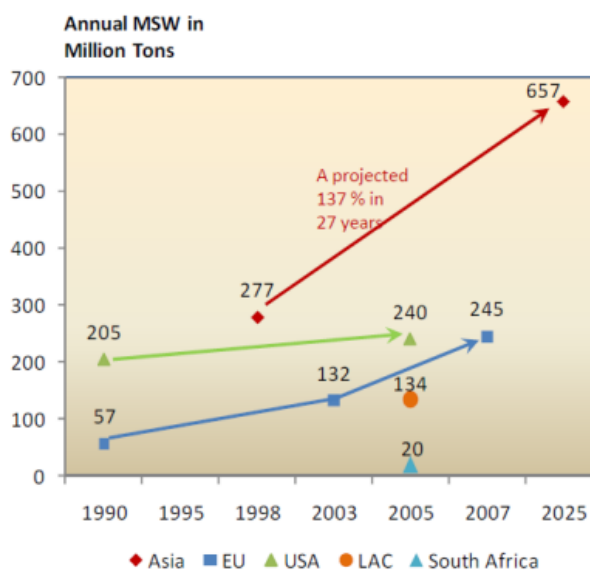
The market is mainly driven by quantity of waste generated and waste recycled. The other factors which contribute to the growth of the industry are gross domestic product, increasing environmental concerns and illegal dumping cases. Any changes in these factors may impact the industry accordingly.

By combining SPSS Inc.'s data integration and analysis capabilities with our relevant findings, we have predicted the future growth of the industry. We employed various significant variables that have an impact on this industry and created regression models with SPSS Base to determine the future direction of the industry. Before deploying the regression model, the relationship between several independent or predictor variables and the dependent variable was analyzed using standard SPSS output, including charts, tables and tests.

This report analyses the waste management industry in the US, with focus on solid waste treatment. The report covers all the stages of waste management including waste collection, disposal and recycling. The industry trends section discusses the regulatory environment and opportunities prevailing in the industry. The report also gives an overview of the market competition and profiles the major players, with discussion of their business strategies.

### Globally, 2.5 to 4 billion tons of waste was generated in 2006

MSW	Worldwide: 1.84 billion tons (2004) 25 OECD countries: > 610 million tons (2006)
Industrial non-hazardous waste	Typically 1.1 – 1.8 billion tons in countries like EU, USA, China (2006)
C&D	10-15% of total waste in developed countries (2006)
Hazardous waste	338 million tons (2001)
E waste	20 – 50 million tons world wide (2005)
Automobile	8 – 9 million tons in EU (2006)



Source: Arunprasad, Swati. (2009) "Waste Management as a Sector of Green Economy," Presentation at International Forum on Green Economy, Beijing.

## **Clients Testimonials For Delisle Engineering**

Delisle Engineering has been a successful business partner with our company because of their ability to handle the multiple development and construction tasks related to our specific needs. Providing us with instant solutions allowing us to make decisions quickly and efficiently. Most importantly, they operate in much the same way we do-with honesty and customer service being the number 1 priority. They have a reputation of delivering first class projects on schedule and their expertise and ability to control costs, makes Delisle Engineering the perfect fit for our design-build projects.

**Director- GRF Group**

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We focus on working with key suppliers who deliver a professional level of service that complements and enhances our way of working. We have worked with a number companies in the past and the results have often been expensive and poorly thought out leading to customer dissatisfaction. I am pleased to say that is no longer the case. Delisle Engineering Engineers Limited has delivered several projects and the quality, consistency, speed of delivery and creativity has at all times been at a level I would expect from a top company. As a result of this we are now using Delisle Engineering Engineers Limited services for most of our future projects. Thank you again for a great job and I would have no hesitation in recommending Delisle Engineering Services to other people.

**Director - SKJL**



## Project Direction and Control

We at Delisle Engineering see the challenge of effective project management to be that of achieving all project objectives while, at the same time, addressing any anticipated obstacles or restraints. We will attempt to meet this standard while managing and integrating all of the resources needed to meet those same objectives.

### Traditional Project Management Approach

Delisle Engineering will undertake the Kronn Chemicals Ltd. project using a traditional approach, unfolding in the following sequence. Subtasks are identified in the table below.

<b>Project Stage</b>	<b>Tasks</b>
<b>Project initiation stage</b>	RFP and/or initial data collection, proposal, refinement of proposal, contract negotiation, final agreements and contract.
<b>Project planning or design stage</b>	Preparation of all the planning and process documents described in this proposal, acceptance and buy-in by our client, confirmation and completion of initial project design.
<b>Project execution or production stage</b>	Project execution as described in the following sections of this proposal: Process Management, Quality Control, Handling Restraints, Operational Challenges, and others
<b>Project monitoring and controlling systems</b>	Data collection, process monitoring, feedback, revision, and process-oriented reporting as described in this proposal. May involve flow charts, project management software, Gantt Charts, timelines, and/or custom-developed monitoring and control systems that are familiar to Client, or compatible with systems currently in use by Client.
<b>Project completion stage</b>	Final reports, analysis, discussion with key personnel, and follow up as needed. Final sign-off by Client on all project deliverables. Final project evaluation.

# Appendices

