13. FORM 2A BREAKDOWN OF FIXED CONSTRUCTION PRICE

All prices are in Canadian dollars as at the Closing Time.

1. Design, Permits, and Construction Management – including project development expenses, mobilization, and temporary utilities not including expenses incurred under the Early Works Agreement.

   Subtotal $_____

2. Site Work, including but not limited to: demolition, excavation, fill and grading, parking area and roadways (new and relocated), stormwater management system, and all utility installation at the Facility site.

   Subtotal $_____

3. Landscaping, including but not limited to fences, gates, lighting, grading, seeding, and planting.

   Subtotal $_____

4. Material Processing Equipment

   (a) Material Pre-Processing Equipment (if applicable) – including but not limited to, conveyors, trommels, shredders, dust collection, separation equipment. $_____

   (b) Material Processing Equipment - including but not limited to, conveyors, trommels, magnetic separation equipment. $_____

   (c) Miscellaneous Processing Equipment - including but not limited to ventilation, odour and dust control, weight equipment, overhead cranes. $_____

   (d) Freight $_____

   Subtotal $_____

5. Furnace and Steam Generator Equipment, including but not limited to:

   (a) furnace/grates charging hopper and feed equipment $_____

	(b)	boiler, superheater, economizer and/or air preheater		$_____
	(c)	residue collection and removal equipment (bottom ash and fly ash)		$_____
	(d)	process instrumentation and control equipment		$_____
	(e)	fans, water and wastewater treatment facility, feedwater heaters		$_____
	(f)	freight		$_____
			Subtotal	$_____
6.	Electrical Generation Equipment, including but not limited to:			
	(a)	turbine generators, switchgear and control, transformers, lubrication system		$_____
	(b)	substation, transmission lines, standby electric service		$_____
	(c)	turbine condenser(s) and dump condenser with connecting pipe		$_____
	(d)	freight		$_____
	(e)	backup diesel generator, if applicable		$_____
			Subtotal	$_____
7.	District Energy Equipment, including but not limited to turbine extraction capability, controls, heat exchangers, back-up boiler (if required) and other elements **[attach details]**.		Subtotal	$_____
8.	Buildings and Associated Structures, including but not limited to:			
	(a)	Concrete		$_____
	(b)	Structural		$_____
	(c)	electrical, mechanical and HVAC equipment		$_____
	(d)	administrative and maintenance requirements		$_____

	(e)	Refuse and Residue storage pits		$_____
	(f)	Base architectural treatment (include description)		$_____
	(g)	Freight and all related facilities		$_____
			Subtotal	$_____
9.	Electrical Interconnection		Subtotal	$_____
10.	Cooling System, Air-Cooled Condenser (ACC), and Ancillary Equipment, including variable frequency drives (VFDs)		Subtotal	$_____

11.	Air Pollution Control Equipment, to include but not be limited to:		
	(a) Stack, I.D. Fans		$_____
	(b) Fabric Filter Particulate Control System		$_____
	(c) Acid Gas Control System		$_____
	(d) DeNOx System		$_____
	(e) Mercury Control System		$_____
	(f) Continuous Emissions Monitoring System		$_____
	(g) Ducting, freight and all related facilities		$_____
12.	Waste Water Treatment Plant	Subtotal	$_____
13.	Spare Parts and Tools	Subtotal	$_____
14.	Mobile Equipment, including, but not limited to front-end loaders, bobcats, pick-up trucks, and other mobile equipment necessary to operate the EFW Facility.	Subtotal	$_____
15.	Facility Start-up and Acceptance Testing including start-up operation, personnel training, equipment testing and Acceptance Test	Subtotal	$_____
16.	Performance Bond and Labour & Material Bond		$_____
	(a) 50% Performance Bond (As per FORM 2D)		$_____
	(b) 50% Labour and Material Payment Bond (As per FORM 2E)		$_____
		Subtotal	$_____
17.	Other (not included above; specify on attachment)	Subtotal	$_____
18.	Insurance During Construction – in the amounts required in the contract		
	(a) Builders' Risk Insurance		$_____
	(b) Wrap Up Liability Insurance		$_____
	(c) Errors & Omissions (Professional Liability)		$_____

(d)	Automobile Liability Insurance		$_____
(e)	Other		$_____
		Subtotal	$_____

19. Goods and Services Tax (GST)

	Subtotal	$_____
TOTAL FIXED CONSTRUCTION PRICE as at the Closing Time		$_____

15. FORM 2C (REVISED) CONSTRUCTION MILESTONE AND PAYMENT SCHEDULE

The Lump Sum Price shall be paid to the Preferred Proponent in accordance with the Payment of Lump Sum Price procedures as defined in the Project Agreement and on the basis of Column 2 below.

		Percentage of Lump Sum Price to be Drawn-not-to-exceed	
Milestone Payment Number	Description of Milestone	Column 1 Percentage of Total Lump Sum Price (minimum 5% per milestone)	Column 2 [1] Total to be Paid (less 10% of Lump Sum Price)
1	Notice to Proceed	_____	_____
2	25% Completion and Review of Construction Specifications and Drawings	_____	_____
3	Completion of Site Preparation	_____	_____
4	Completion of Foundations	_____	_____
5	75% Completion and Review of Construction Specifications and Drawings	_____	_____
6	Completion of Superstructure	_____	_____
7	100% Completion and Review of Construction Specifications and Drawings	_____	_____
8	Completion of Equipment Installations and Start-up	_____	_____
9	Issuance of the Acceptance Test Certificate	_____	_____
	Sub Total	100%	90%

Note: The order of the above milestones definitions is not fixed and may vary based on the Design Build process, staging and seasonality of general construction scheduling.

1 10% withholding will be paid in accordance with Project Agreement.

FORM 2C (REVISED) CONSTRUCTION MILESTONE AND PAYMENT SCHEDULE

The following shall have the meaning ascribed to FORM 2C:

1. **Notice to Proceed -** This definition has the same meaning ascribed to that term in Section 8.30 of the RFP.

2. **25% Completion and Review of Construction Specification and Drawings –** will be deemed when sufficient design is completed to achieve the first level of construction permitting, including but not limited to:
   - site servicing permitting
   - clearing and grubbing permitting
   - storm water permitting
   - procurement schedule
   - project construction schedule
   - foundation permitting via staged building permit
   - site layout acceptance
   - review and approval by Owner.

   As part of the 25% Submittal, the DBO shall provide Basis of Design (BOD) report that depicts the major design parameters of the Project. The intent of the BOD is to serve as the basis from which the DBO will perform the engineering effort and will not be used to determine the final equipment sizing. The BOD should include at a minimum the combustion calculations, mass and energy balances for the entire system, performance and environmental guarantees, equipment schematics and conceptual layouts, artist renderings, etc. The BOD, along with the specifications, will set forth the minimum equipment procurement requirements for the Project. In addition to the BOD and permitting requirements, the DBO will provide their Technical Specifications for the Project.

3. **Completion of Site Preparation** - will be deemed complete when:
   - Construction site access road is installed with minimum 300 mm granular B and 150 mm granular A and 90 mm high density base course asphalt. This site access road must extend far enough into the site to provide access to all site offices and related construction trailers for subcontractors and owners engineers for the length of the project until the permanent access road and parking lot is installed.
   - Mud mat is installed adjacent to the asphalt access road and truck wash station is provided to prevent mud tracking onto Osbourne Rd., Courtice Rd. or the South Service Rd.
   - Clearing and grubbing is complete.
   - Stripping and stockpiling of existing topsoil on site is complete and available for reuse in final site landscaping.
   - Installation of permanent fencing and temporary barriers necessary to maintain site security and protect the public.

- Installation of all site silt control fencing and all other silt control systems including all temporary storm water management facilities required by the local municipality and conservation authorities.
- Installation and operation of site dewatering system as required by the project design and existing site conditions.
- Installation of project site board and all other related temporary site signage.

4. **Completion of Foundations** – will be deemed complete when all foundations required for all permanent buildings, structures and major equipment have been completed in accordance with the contract drawings and specifications including all required sub-drain systems and water proofing as required, and sufficient backfilling has been completed around these foundations to adequately protect them against damage from frost.

5. **75% Completion and Review of Construction Specification and Drawings –** will be deemed complete when sufficient design is completed to include, but not be limited to:
   - Process and Environmental P&ID's;
   - Site Plans and final layout;
   - Emission control design/waste receiving and handling/odor and noise control;
   - Civil/Structural;
   - Architectural treatments and safety systems;
   - Mechanical/Piping
   - Electrical/Instrumentation specifications

6. **Completion of Superstructure** – will be deemed complete when the building envelopes for all required buildings have been completed including all exterior walls and roofs so that these facilities are watertight and all exterior doors and windows are installed so that these facilities can be locked and made secure to prevent all unauthorized access inside these facilities and help prevent the possibility of theft.

7. **100 % Design Completion and Review of Construction Specifications and Drawings** – will be deemed complete when all required contract drawings and specifications described in #5 above (contract documents) for the entire project have been finalized and provided to the Regions in both hard copy and digital form to the Regions' latest document standards after the Regions' 100 % review comments have been incorporated into these contract documents to the complete satisfaction of the Regions, and these contract documents have been submitted to the local municipality as part of the final building permit application and also submitted to all regulatory authorities requiring a related submission including the Ministry of Environment, Ministry of Natural Resources and local conservation authority.

8. **Completion of Equipment Installations and Start-up –** shall be as per APPENDIX 10 PRE-ACCEPTANCE TESTING REQUIREMENTS AND ACCEPTANCE TEST PROCEDURES SCHEDULE, of the Project Agreement

9. **Issuance of the Acceptance Test Certificate –** shall be as per APPENDIX 15 ACCEPTANCE TEST CERTIFICATE of the Project Agreement.

19. FORM 3 TOTAL PRICE FOR OPERATION AND MAINTENANCE OF FACILITY [1]

1. The Total Annual Operating Fee (as calculated in FORM 3A), in Canadian dollars as at the Closing Time

_____ Dollars ($_____).

Write the Total Annual Operating Fee in Canadian dollars in words on the line provided. Use numbers to state the same price within the parenthesis.

The Total Annual Operating Fee will be escalated in accordance with the Section 37.6 Annual Fee Adjustments of the Project Agreement.

Payment of the Total Annual Operating Fee will be made to the Successful Proponent in accordance with the Project Agreement.

2. The Per Tonne Total Annual Operating Fee as at the Closing Time (the Operating Fee in 1. above) divided by 140,000 metric tonnes of processing capacity

_____Dollars per tonne ($_____/Tonne)

Write the Per Tonne Total Annual Operating Fee in words on the line provided. Use numbers to state the same per tonne Per Tonne Total Annual Operating Fee within the parentheses.

3. The Per Tonne Charge for Waste Processed in Excess of 140,000 Tonnes of Annual Throughput (as calculated in FORM 3B), as at the closing time

_____Dollars per tonne ($_____/Tonne)

Write the per tonne charge for waste processed in excess of 140,000 tonnes of annual throughput in Canadian dollars in words on the line provided. Use numbers to state the same charge within the parentheses.

_____
Name of Proposer

_____
Authorized Officer

_____
Signature

1 The Total Operating Fee will be adjusted annually in accordance with the Project Agreement.

20. FORM 3A ITEMIZED TOTAL ANNUAL OPERATING FEE

All prices are in Canadian dollars as at the Closing Time.

TOTAL ANNUAL OPERATING FEE (as defined at the bottom of this form)

1. Labour Costs (including fringe)

			# of Employees	
A.	Process Operators			
	a)	boiler operators	_____	$_____
	b)	refuse handlers/crane operators	_____	$_____
	c)	maintenance staff	_____	$_____
	d)	shift supervisors	_____	$_____
	e)	residue handlers	_____	$_____
	f)	others (specify functions and costs on a separate sheet)	_____	$_____
		Subtotal		$_____
B.	Administrative Staff			
	a)	managers	_____	$_____
	b)	administrative (accounting/clerical)	_____	$_____
	c)	scale operators	_____	$_____
	d)	other (specify functions and costs on a separate sheet)	_____	$_____
		Subtotal		$_____
C.	Others (specify function, number and cost on a separate sheet)			
		Subtotal		$_____
		TOTAL LABOUR COSTS		$_____

2. Maintenance Costs

A	Minor parts/supplies for process and other equipment	$_____
B	Minor Building maintenance and repair	$_____
C.	Minor Rolling stock maintenance and repair	$_____
D.	Miscellaneous supplies and spare parts	$_____
E.	Other (specify on separate sheet)	$_____
	TOTAL MAINTENANCE COSTS	$_____

3. Consumables (i.e. chemicals, reagents) specify quantity and cost of other materials not listed below on separate sheet

a) scrubber lime (_____kg /yr at $_____/kg)
b) ammonia or urea (_____kg /yr at $_____/kg)
c) activated carbon (_____kg /yr at $_____/kg)
d) boiler chemicals (_____kg /yr at $_____/kg)

TOTAL CONSTUMABLES COSTS $_____

4. Unitary Major Equipment Repair and Facility Refurbishments Costs

A. Unitary Major Equipment Repair and Facility Refurbishments Costs (provide detail in Schedule A – Proposal FORM 3) $_____

TOTAL UNITARY MAJOR EQUIPMENT REPAIR AND FACILITY REFURBISHMENTS COSTS $_____

5. Auxiliary Fuel Costs

A. Fossil Fuel

a) natural gas (_____ cu metres/yr at $_____/metre)
b) gasoline (_____litres/yr at $_____/litres)
c) diesel fuel [2] (_____ litres/yr at $_____/litres)
d) fuel oil (_____ litres/yr at $_____/litres) $_____

B. Other (specify quantity and cost for each on a separate sheet) $_____

TOTAL AUXILIARY FUEL COSTS $_____

6. Purchased Utilities

A. Electricity (_____ kW hr / yr at $_/kWhr)
B. Water (_____ litre/ / yr at $_____/litre)
C. Sewer (_____ litre/ / yr at $_____/litre)
D. Other (provide quantity details)

TOTAL PURCHASED UTILITIES $_____

2 Excludes diesel fuel costs related to residue haulage covered in Item 7, Residue Haulage Diesel Fuel Cost

7. Residue Disposal Costs (excluding Residue Haulage Diesel Fuel Cost)

Fly Ash
Tonnes per Tonne of Throughput _____
Tonnes per year_____
$ /T _____ $_____

Bottom Ash
Tonnes per Tonne of Throughput _____
Tonnes per year_____
$ /T _____ $_____

Bypass
Tonnes per Tonne of Throughput _____
Tonnes per year_____
$ /T _____ $_____

TOTAL RESIDUE DISPOSAL COSTS (EXCLUDING RESIDUE HAULAGE DIESEL FUEL COST) $_____

8. Residue Haulage Diesel Fuel Cost

Total Truck Kilometers _____ km
Total Litres Consumed _____ litres
Price / Litre of Diesel _____ $/litres

TOTAL RESIDUE HAULAGE DIESEL FUEL COST $_____

9. Contract, Rental or Lease Services

A. Specify on a separate sheet if necessary $_____

TOTAL CONTRACT, RENTAL OR LEASE SERVICES $_____

10. Administrative

A. Continuous/periodic monitoring and testing $_____
B. Administration of Project Agreements $_____
C. Other (specify on a separate sheet) $_____

TOTAL ADMINISTRATIVE COSTS $_____

11. Annual Guaranty Agreement Costs, if any

A. Insurance (Other than those policies specified in 10 below), specify policy types on a separate sheet $_____

B. Letters of Credit (specify proposed bank and amount) $_____

_____

_____

_____

C. Others (specify on a separate sheet) $_____

TOTAL ANNUALGUARANTEE AGREEMENT COSTS $_____

12. Insurance Costs – in the amounts required in the Project Agreement

A. Commercial General Liability $_____

B. Automobile Liability Insurance $_____

C. Environmental Liability Insurance $_____

D. Errors and Omissions (Professional Liability) Insurance $_____

E. All Risks $_____

F. Business Interruption Insurance $_____

TOTAL INSURANCE COSTS $_____

13. Taxes

A. Commodity Taxes (specify type) $_____

B. Other (specify on a separate sheet) $_____

.

TOTAL TAXES $_____

14. Overhead

D. Overhead

E. Other (specify on a separate sheet)

TOTAL OVERHEAD COSTS $_____

TOTAL ANNUAL OPERATING FEE (as at the Closing Time) $_____

21. FORM 3B PER TONNE CHARGE FOR THROUGPUT IN EXCESS 140,000 TONEES OF ANNUAL THROUGHPUT

ALLOCATION OF EXCESS PER TONNE OPERATING FEE

	Item	$ PER TONNE
1.	Labour Costs (including fringe)	$_____
2.	Maintenance Costs	$_____
3.	Consumables (i.e. chemicals, reagents) specify quantity and cost of other materials not listed below on separate sheet	$_____
4.	Unitary Major Equipment Repair and Facility Refurbishments Costs	$_____
5.	Auxiliary Fuel Costs	$_____
		$_____
6.	Purchased Utilities	$_____
7.	Residue Disposal Cost (excluding Residue Haulage Diesel Fuel Cost)	$_____
8.	Residue Haulage Diesel Fuel Cost	$_____
9.	Contract, Rental or Lease Services	$_____
10.	Administrative	$_____
		$
11.	Annual Guaranty Agreement Costs, if any	$_____
		$_____
12.	Insurance Costs – in the amounts required in the Project Agreement	$_____
13.	Taxes	$_____
14.	Overhead	$_____
		$_____
	PER TONNE CHARGE FOR THROUGHPUT IN EXCESS OF 140,000 TONNES THROUGHPUT (as at the Closing Time)	$_____

10. APPENDIX B FORMS

The Forms are now available in the secure Data Room in both MS Word and PDF files for use by the Proponents. Proponents are not permitted to change or alter anything contained within said Forms save and extent for the purpose of inputting their Proposal Submission Data. By downloading the MS Word Forms, the Proponent is hereby acknowledging and undertaking to the Regions that no change has been, or will be made to the Form or content of Forms.

12. FORM 2 FIXED CONSTRUCTION PRICE

FIXED CONSTRUCTION PRICE FOR DESIGN AND CONSTRUCTION OF FACILITY

Facility sized for 140,000 tonnes per year of processing capacity

_____ Dollars ($_____) as calculated at the bottom of FORM 2A.

Write the Fixed Construction Price in Canadian dollars in words; use numbers to state the same price within the parenthesis.

EXPIRY OF FIXED CONSTRUCTION PRICE

The Fixed Construction Price Expiry Date (as defined below) is the date upon which the Fixed Construction Price shall expire. After the Fixed Construction Price Expiry Date, the Fixed Construction Price will then be escalated based upon an agreed upon adjustment factor for a period of two (2) years or until the Notice-to-Proceed is issued, whichever occurs first. At the Notice-to-Proceed date the price will be fixed.

Expiry Date for Fixed Construction Price (day/month/year) _____
d/m/yr (the "Fixed Construction Price Expiry Date")

CONSTRUCTION INFLATION ADJUSTMENTS

The inflation indices noted below are based on the Engineering News Record for Toronto, Ontario. Write the percentage of the Fixed Construction Price that corresponds to each index:

Percentage	Index
_____	BCI
_____	MCI
_____	CCI

LUMP SUM PRICE

During the time of period that elapses between the Fixed Construction Price Expiry Date and the Notice to Proceed, the Fixed Construction Price will be adjusted for inflation (the "Construction Inflation Adjustment"). The Construction Inflation Adjustment noted in the following Lump Sum price section, will be the total of each nominal monthly variation to the Fixed Construction Price as determined by applying the percentages and indices noted above.

The Lump Sum Price on the Notice to Proceed date shall be the sum of the Fixed Construction Price; the Construction Inflation Adjustment and the Architectural Features and Changes (if any).

Administrative, Profit and Overhead Fee on Change Orders issued by the Regions _____%

_____
Name of Company

_____
Authorized Officer

_____
Signature

_____
Title

13. FORM 2A BREAKDOWN OF FIXED CONSTRUCTION PRICE

All prices are in Canadian dollars as at the Closing Time.

1. Design, Permits, and Construction Management – including project development expenses, mobilization, and temporary utilities not including expenses incurred under the Early Works Agreement.

   Subtotal $_____

2. Site Work, including but not limited to: demolition, excavation, fill and grading, parking area and roadways (new and relocated), stormwater management system, and all utility installation at the Facility site.

   Subtotal $_____

3. Landscaping, including but not limited to fences, gates, lighting, grading, seeding, and planting.

   Subtotal $_____

4. Material Processing Equipment

   (a) Material Pre-Processing Equipment (if applicable) – including but not limited to, conveyors, trommels, shredders, dust collection, separation equipment. $_____

   (b) Material Processing Equipment - including but not limited to, conveyors, trommels, magnetic separation equipment. $_____

   (c) Miscellaneous Processing Equipment - including but not limited to ventilation, odour and dust control, weight equipment, overhead cranes. $_____

   (d) Freight $_____

   Subtotal $_____

5. Furnace and Steam Generator Equipment, including but not limited to:

   (a) furnace/grates charging hopper and feed equipment $_____

	(b)	boiler, superheater, economizer and/or air preheater		$_____
	(c)	residue collection and removal equipment (bottom ash and fly ash)		$_____
	(d)	process instrumentation and control equipment		$_____
	(e)	fans, water and wastewater treatment facility, feedwater heaters		$_____
	(f)	freight		$_____
			Subtotal	$_____
6.	Electrical Generation Equipment, including but not limited to:			
	(a)	turbine generators, switchgear and control, transformers, lubrication system		$_____
	(b)	substation, transmission lines, standby electric service		$_____
	(c)	turbine condenser(s) and dump condenser with connecting pipe		$_____
	(d)	freight		$_____
	(e)	backup diesel generator, if applicable		$_____
			Subtotal	$_____
7.	District Energy Equipment, including but not limited to turbine extraction capability, controls, heat exchangers, back-up boiler (if required) and other elements **[attach details]**.		Subtotal	$_____
8.	Buildings and Associated Structures, including but not limited to:			
	(a)	Concrete		$_____
	(b)	Structural		$_____
	(c)	electrical, mechanical and HVAC equipment		$_____
	(d)	administrative and maintenance requirements		$_____

	(e)	Refuse and Residue storage pits		$_____
	(f)	Base architectural treatment (include description)		$_____
	(g)	Freight and all related facilities		$_____
			Subtotal	$_____
9.	Electrical Interconnection		Subtotal	$_____
10.	Cooling System, Air-Cooled Condenser (ACC), and Ancillary Equipment, including variable frequency drives (VFDs)		Subtotal	$_____

11.	Air Pollution Control Equipment, to include but not be limited to:			
	(a)	Stack, I.D. Fans		$_____
	(b)	Fabric Filter Particulate Control System		$_____
	(c)	Acid Gas Control System		$_____
	(d)	DeNOx System		$_____
	(e)	Mercury Control System		$_____
	(f)	Continuous Emissions Monitoring System		$_____
	(g)	Ducting, freight and all related facilities		$_____
12.	Waste Water Treatment Plant		Subtotal	$_____
13.	Spare Parts and Tools		Subtotal	$_____
14.	Mobile Equipment, including, but not limited to front-end loaders, bobcats, pick-up trucks, and other mobile equipment necessary to operate the EFW Facility.		Subtotal	$_____
15.	Facility Start-up and Acceptance Testing including start-up operation, personnel training, equipment testing and Acceptance Test		Subtotal	$_____
16.	Performance Bond and Labour & Material Bond			$_____
	(a)	50% Performance Bond (As per FORM 2D)		$_____
	(b)	50% Labour and Material Payment Bond (As per FORM 2E)		$_____
			Subtotal	$_____
17.	Other (not included above; specify on attachment)		Subtotal	$_____
18.	Insurance During Construction – in the amounts required in the contract			
	(a)	Worker's Compensation		$_____
	(b)	Employer's Liability		$_____
	(c)	Wrap up Liability		$_____

(d)	Excess Umbrella Liability		$_____
(e)	"All Risk" Property Damage and Builders Risk		$_____
(f)	Business Interruption		$_____
(g)	Automobile Liability		$_____
(h)	Other (if proposed)		$_____
		Subtotal	$_____

19. Goods and Services Tax (GST)

	Subtotal	$_____
TOTAL FIXED CONSTRUCTION PRICE as at the Closing Time		$_____

14. FORM 2B EARLY WORKS AGREEMENT PAYMENT

All prices are in Canadian dollars as at the Closing Time.

Part A – Lump Sum Fee for Enhanced Architectural Conceptual Design Options $____________

Part B – An Upset price based upon Hourly Rates and Expenses Schedule for Early Works, Excluding Part A related work

Title	**Hourly Rate**	**Hours**	**Total**
e.g. Project Manager			

Expenses

Total Upset Price for Part B

Regular monthly progress payments are to be made by the Regions to the Preferred Proponent according to invoices submitted by the Preferred Proponent.

Proponents should amend the number of payments included within this form to suit their proposed delivery schedule for the Early Works Agreement and their upset price for Part B work.

15. FORM 2C CONSTRUCTION MILESTONE AND PAYMENT SCHEDULE

The Lump Sum Price shall be paid to the Preferred Proponent in accordance with the Payment of Lump Sum Price procedures as defined in the Project Agreement and on the basis of Column 2 below.

		Percentage of Lump Sum Price to be Drawn-not-to-exceed	
Milestone Payment Number	Description of Milestone	Column 1 Percentage of Total Lump Sum Price (minimum 5% per milestone)	Column 2[1] Total to be Paid (less 10% of Lump Sum Price)
1	Notice to Proceed	_____	_____
2	Completion of Site Preparation	_____	_____
3	Completion of Foundations	_____	_____
4	Final Design Review and Modifications	_____	_____
5	100% Completion and Review of Construction Specifications and Drawings	_____	_____
6	Completion of Superstructure	_____	_____
7	Completion of Equipment Installations and Start-up	_____	_____
8	Issuance of the Acceptance Test Certificate	_____	_____
	Sub Total	100%	90%

[1] 10% withholding will be paid in accordance with Project Agreement.

FORM 2C CONSTRUCTION MILESTONE AND PAYMENT SCHEDULE

The following shall have the meaning ascribed to FORM 2C:

1. **Notice to Proceed -** This definition has the same meaning ascribed to that term in Section 8.30 of the RFP.

2. **Completion of Site Preparation** - Site preparation will be deemed complete when:
   - Construction site access road is installed with minimum 300 mm granular B and 150 mm granular A and 90 mm high density base course asphalt. This site access road must extend far enough into the site to provide access to all site offices and related construction trailers for subcontractors and owners engineers for the length of the project until the permanent access road and parking lot is installed.
   - Mud mat is installed adjacent to the asphalt access road and truck wash station is provided to prevent mud tracking onto Osbourne Rd., Courtice Rd. or the South Service Rd.
   - Clearing and grubbing is complete.
   - Stripping and stockpiling of existing topsoil on site is complete and available for reuse in final site landscaping.
   - Installation of permanent fencing and temporary barriers necessary to maintain site security and protect the public.
   - Installation of all site silt control fencing and all other silt control systems including all temporary storm water management facilities required by the local municipality and conservation authorities.
   - Installation and operation of site dewatering system as required by the project design and existing site conditions.
   - Installation of project site board and all other related temporary site signage.

3. **Completion of Foundations** – will be deemed complete when all foundations required for all permanent buildings, structures and major equipment have been completed in accordance with the contract drawings and specifications including all required sub-drain systems and water proofing as required, and sufficient backfilling has been completed around these foundations to adequately protect them against damage from frost.

4. **Final Design Review and Modifications –** see 5 below

5. **100 % Design Completion and Review of Construction Specifications and Drawings** – will be deemed complete when all required contract drawings and specifications (contract documents) for the entire project have been finalized and provided to the Regions in both hard copy and digital form to the Regions' latest document standards after the Regions' 100 % review comments have been incorporated into these contract documents to the complete satisfaction of the Regions, and these contract documents have been submitted to the local municipality as part of the final building permit application and also submitted to all regulatory authorities requiring a related submission including the Ministry of Environment, Ministry of Natural Resources and local conservation authority.

6. **Completion of Superstructure** – will be deemed complete when the building envelopes for all required buildings have been completed including all exterior walls and roofs so that these facilities are watertight and all exterior doors and windows are installed so that these facilities can be locked and made secure to prevent all unauthorized access inside these facilities and help prevent the possibility of theft.

7. **Completion of Equipment Installations and Start-up –** shall be as per APPENDIX 10 PRE-ACCEPTANCE TESTING REQUIREMENTS AND ACCEPTANCE TEST PROCEDURES SCHEDULE, of the Project Agreement

8. **Issuance of the Acceptance Test Certificate –** shall be as per APPENDIX 15 ACCEPTANCE TEST CERTIFICATE of the Project Agreement

16. FORM 2D PERFORMANCE BOND

Bond No. _____

Contract _____

Amount $ _____

KNOW ALL MEN BY THESE PRESENTS THAT WE _____ hereinafter called "the Principal", and _____ hereinafter called "the Surety" are jointly and severally held and firmly bond unto the Regional Municipality of Durham, hereinafter called "the Obligee", its successors and assigns in the sum of _____ _____ DOLLARS ($_____) of lawful money of Canada, to be paid unto the Obligee, for which payment well and truly to be made we the Principal and the Surety jointly and severally bind ourselves, our and each of our respective heirs, executors, administrators, successors and assigns by these presents.

WHEREAS the Principal has entered into a contract with the Obligee through acceptance of the Principal's tender dated _____ by the Obligee on _____ hereinafter called the "Contract" for the for _____ as in the Contract provided, which Contract is by reference herein made a part hereof as fully to all intents and purposes as though recited in full herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal shall at all times duly perform and observe the Contract or as the same be changed, altered or varied as hereinafter provided, to the satisfaction of the Obligee and shall at all times fully indemnify and keep indemnified the Obligee from and against all and any manner of loss, damage, expense, suits, actions, claims, liens, proceedings, demands, awards, payments and liabilities arising out of or in any manner based upon or attributable to the Contract and shall fully reimburse and repay the Obligee for all outlay, expense, liabilities, or payments incurred or undertaken to be made by the Obligee pursuant to the Contract, then this obligation shall be void, but otherwise it shall be and remain in full force and effect.

PROVIDED ALWAYS and it is hereby agreed and declared that the Obligee and the Principal have the right to change, alter and vary the terms of the Contract and that the Obligee may in its discretion at any time or times take and receive from the Principal any security whatsoever and grant any extension of time thereof or on any liability of the Principal to the Obligee.

PROVIDED FURTHER and it is hereby agreed and declared that the Principal and the Surety shall not be discharged or released from liability hereunder and that such liability shall not be in any way affected by any such changes, alterations, or variations, taking or receiving of security, or extension of time, as aforesaid, or by the exercise by the Obligee of any of the rights or powers reserved to it under the Contract or by its forbearance to exercise any such rights or powers, including (but without restricting the generality of the foregoing) any changes in the extent or nature of the works to be constructed, altered, repaired or warranted under the Contract, or by any dealing, transaction, forbearance or forgiveness which may take place between the Principal and the Obligee.

Whenever the Principal shall be, and declared by the Obligee to be, in default under the Contract, the Obligee having performed the Obligee's obligations thereunder, the Surety shall promptly remedy the default, or shall promptly complete the contract in accordance with its terms and conditions and shall

compensate the Obligee for any additional costs, expenses or damages. Notwithstanding the foregoing, the Obligee may, at its sole discretion, instruct the Surety in writing to obtain a bid or bids for submission to the Obligee for completing the contract in accordance with its terms and conditions and upon determination by the Obligee and the Surety of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as work progresses (even though there should be a default, or a succession of defaults, under the contract or contracts of completion, arranged under this paragraph) sufficient funds to pay the cost of the completion less the balance of the Contract price, but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price", as used in this paragraph, shall mean the total amount payable by the Obligee to the Principal under the Contract, less the amount properly paid by the Obligee to the Principal.

And is hereby declared and agreed that the Surety shall be liable as Principal, and that nothing of any kind or matter whatsoever that will not discharge the said Principal shall operate as a discharge or release of liability of the said Surety. Provided further and it is hereby agreed and declared that the Surety shall not be liable for a greater sum than that specified in this Bond.

Any suit under this bond must be instituted before the expiry of three (3) years from the date on which the final payment falls due.

IN WITNESS WHEREOF the Principal and the Surety have executed theses presents this _____ day of _____ 20_____.

SIGNED AND SEALED BY THE PRINCIPAL	)	
in the presence of	)	
_____	)	
Witness	)	_____
		Principal
Occupation: _____	)	
Address: _____	)	_____
		Surety

17. FORM 2E LABOUR AND MATERIAL PAYMENT BOND

Bond No. _____

Contract _____

Amount $

KNOW ALL MEN BY THESE PRESENTS THAT WE _____ _____hereinafter called "the Principal", and _____ _____ hereinafter called "the Surety", are jointly and severally held and firmly bound unto the Regional Municipality of Durham, hereinafter called "the Obligee", for the use and benefit of the Claimants, their and each of their heirs, executors, administrators, successors and assigns in the amount of _____ DOLLARS ($_____) of lawful money of Canada, for the payment of which sum well and truly to be made, we, the Principal and the Surety jointly and severally bind ourselves, our and each of our respective heirs, executors, administrators, successors and assigns by these presents.

WHEREAS by an agreement in writing dated the ___ day of _____, 20 __, the Principal has entered into a Contract with the Obligee, hereinafter called "the Contract", for the _____ which Contract is by reference herein made a part hereof as fully to all intents and purposes as though recited in full herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal shall make payment to all Claimants for all labour and material used or reasonably required for use in the performance of the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A Claimant for the purpose of this bond is defined as one having a direct Contract with the Principal for labour, material, or both, used or reasonably required for use in the performance of the Contract, labour and material being constructed to include that part of water, gas power, light, heat, oil, gasoline, telephone service or rental equipment, directly applicable to the Contract provided that a person, firm or corporation who rents equipment to the Principal to be used in the performance of the Contract under a contract which provides that all or any part of the rent is to be applied towards the purchase price thereof shall only be a Claimant to the extent of the prevailing industrial rental value of such equipment for the period during which the equipment was used in the performance of the Contract, labour and material.

2. The Principal and the Surety hereby jointly and severally agree with the Obligee, as Trustee, that every Claimant who has not been paid as provided for under the terms of his Contract with the Principal, before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's work or labour was done or performed or materials were furnished by such Claimant, may as a beneficiary of the trust herein provided for, sue on this Bond, prosecute the suit to final judgement for such sum or sums as may be justly due to such Claimant under the terms of the Contract with the Principal and have execution thereon. Provided that the Obligee is not obliged to do or take any act, action or proceeding against the Surety on behalf of the Claimants, or any of them, to enforce the provisions of this Bond. If any act, action or proceeding is taken either in the name of the Obligee or by joining the Obligee as a party to such proceeding, then such act, action or proceeding, shall be taken on the understanding and basis that the Claimants, or any of them, who take such act, action or proceeding, shall indemnity and save

harmless the Obligee against all costs, charges and expenses or liabilities incurred against all cost charges and expenses or liabilities incurred thereon and any loss or damage resulting to the Obligee by reason thereof. Provided still further that, subject to the foregoing terms and conditions, the Claimants or any of them may use the name of the Obligee to sue on and enforce the provisions of this Bond.

3. No suit or action shall be commenced hereunder by any Claimant:

(a) unless such Claimant shall have given written notice within the time limits hereinafter set forth to each of the Principal, the Surety and the Obligee, stating with substantial accuracy the amount claimed. Such notice shall be served by mailing the same by registered mail, or served in any manner in which legal process may be served in the Province of Ontario, to the Principal and Surety at any place where an office is regularly maintained for the transaction of business by such persons, and to the Obligee addressed to the attention of the Regional Clerk, the Regional Municipality of Durham, 605 Rossland Road, East, Whitby, Ontario.

Such notice shall be given:

(i) in respect of any claim for the amount of any portion thereof required to be held back from the Claimant by the Principal under either the terms of the Claimant's contract with the Principal or under the Construction Lien Act, 1983, and amendments thereto applicable to the Claimant's contact with the Principal, whichever is the greater within one hundred and twenty (120) days after such Claimant should have been paid in full under the Claimant's contract with the Principal.

(ii) in respect of any claim other than for the holdback, or portion thereof, referred to above, within one hundred and twenty (120) days after the day on which such Claimant did, or performed the last of the work or labour or furnished the last of the materials for which such claim is made, under the Claimant's contract with the Principal.

(b) After the expiration of one (1) year following the date on which the Principal ceased work on the Contract, including work performed under the guarantees provided in the Contract.

(c) Other than in a Court of competent jurisdiction in the Province of Ontario, and the parties hereto agree to submit to the jurisdiction of such Court.

4. The amount of this Bond shall be reduced by, and to the extent of any payment or payments made in good faith, and in accordance with the provisions hereof, inclusive of the payment by the Surety of claims under the Construction Lien Act, 1983, as amended, whether or not such claims be presented under and against this Bond.

PROVIDED ALWAYS and it is hereby agreed and declared that the Obligee and the Principal have the right to change, alter and vary the terms of the contract, and that the Obligee may in its discretion at any time or times take and receive from the Principal any security whatsoever and grant any extension of time thereon or on any liability of the principal to the Obligee.

PROVIDED FURTHER and it is hereby agreed and declared that the Principal and the Surety shall not be discharged or released from liability hereunder and that such liability shall not be in any way affected by any such changes, alterations, or variations, taking or receiving of security, or extension of time, as aforesaid, or by the exercise by the Obligee of any of the rights or powers reserved to it under the Contract or by its forbearance to exercise any such rights or powers, including (but without restricting the generality of the foregoing) any changes in the extent or nature of the works to be constructed, altered, repaired or maintained under the Contract, or by any dealing, transaction, forbearance or forgiveness which may take place between the Principal and the Obligee.

PROVIDED FURTHER and it is hereby agreed and declared that the Surety shall not be liable for a greater sum than that specified in this Bond.

IN WITNESS WHEREOF the Principal and the Surety have executed these presents this _____ day of _____ 20 _____.

SIGNED AND SEALED BY THE PRINCIPAL)
in the presence of)
)
_____)
Witness)

Occupation: _____)

Address: _____)

_____
Principal

_____
Surety

18. FORM 2F EARLY WORKS SCHEDULE

TO BE COMPLETED AND SUBMITTED BY PROPONENT

19. FORM 3 TOTAL PRICE FOR OPERATION AND MAINTENANCE OF FACILITY[2]

1. Operating Fee (as calculated in FORM 3A), in Canadian dollars as at the Closing Time

_____ Dollars ($_____).

Write the Operating Fee in Canadian dollars in words on the line provided. Use numbers to state the same price within the parenthesis.

The Operating Fee will be escalated in accordance with the Operating Cost Index, in accordance with the Project Agreement.

Payment of the Operating Fee will be made to the Successful Proponent in accordance with the Project Agreement.

2. The Base Operating Fee as at the Closing Time (the Operating Fee in 1. above) divided by 140,000 metric tonnes of processing capacity

_____Dollars per tonne ($_____/Tonne)

Write the dollars per metric tonne Base Operating Fee in words on the line provided. Use numbers to state the same per tonne Operating Fee within the parentheses.

3. The per Tonne Charge for Waste Processed in Excess of the Throughput (as calculated in FORM 3B), as at the closing time

_____Dollars per tonne ($_____/Tonne)

Write the per tonne charge for waste processed in excess of the throughput in Canadian dollars in words on the line provided. Use numbers to state the same charge within the parentheses.

_____
Name of Proposer

_____
Authorized Officer

_____
Signature

_____
Title

[2] The Operating Fee will be adjusted annually in accordance with the Project Agreement.

20. FORM 3A ITEMIZED ANNUAL OPERATING FEE

All prices are in Canadian dollars as at the Closing Time.

ANNUAL OPERATING FEE (as defined at the bottom of this form)

1. Labour Costs (including fringe)

			# of Employees	
A.	Process Operators			
	a)	boiler operators	_____	$_____
	b)	refuse handlers/crane operators	_____	$_____
	c)	maintenance staff	_____	$_____
	d)	shift supervisors	_____	$_____
	e)	residue handlers	_____	$_____
	f)	others (specify functions and costs on a separate sheet)	_____	$_____
		Subtotal		$_____
B.	Administrative Staff			
	a)	managers	_____	$_____
	b)	administrative (accounting/clerical)	_____	$_____
	c)	scale operators	_____	$_____
	d)	other (specify functions and costs on a separate sheet)	_____	$_____
		Subtotal		$_____
C.	Others (specify function, number and cost on a separate sheet)			
		Subtotal		$_____
		TOTAL LABOUR COSTS		$_____

2. Maintenance Costs

A	Minor parts/supplies for process and other equipment	$_____
B	Minor Building maintenance and repair	$_____
C.	Minor Rolling stock maintenance and repair	$_____
D.	Miscellaneous supplies and spare parts	$_____

E. Consumables (i.e. chemicals, reagents) specify quantity and cost of other materials not listed below on separate sheet $_____

a) scrubber lime (_____kg /yr at $_____/kg)
b) ammonia or urea (_____kg /yr at $_____/kg)
c) activated carbon (_____kg /yr at $_____/kg)
d) boiler chemicals (_____kg /yr at $_____/kg)

F. Other (specify on separate sheet) $_____

TOTAL MAINTENANCE COSTS $_____

3. Unitary Major Equipment Repair and Facility Refurbishments Costs

A. Unitary Major Equipment Repair and Facility Refurbishments Costs (provide detail in Schedule A – Proposal FORM 3) $_____

4. Auxiliary Fuel Costs

A. Fossil Fuel

a) natural gas (_____ cu metres/yr at $_____/metre) $_____
b) gasoline (_____litres/yr at $_____/litres) $_____
c) diesel fuel (_____ litres/yr at $_____/litres) $_____
d) fuel oil (_____ litres/yr at $_____/litres) $_____

B. Other (specify quantity and cost for each on a separate sheet)

TOTAL AUXILIARY FUEL COSTS $_____

5. Purchased Utilities Quantity

A. Electricity
B. Water
C. Sewer
D. Other

6. Residue Disposal Cost Subtotal

Fly Ash Tonnes per Tonne _____ Tonnes per year_____$ /T _____ $_____

Bottom Ash Tonnes per Tonne _____ Tonnes per year_____$ /T _____ $_____

Bypass Waste Tonnes per year_____$ /T _____ $_____

7. Contract, Rental or Lease Services

A. Specify on a separate sheet if necessary $_____

8. Administrative

A. Continuous/periodic monitoring and testing $_____
B. Administration of Project Agreements $_____
C. Other (specify on a separate sheet) $_____

TOTAL ADMINISTRATIVE COSTS $_____

9. Annual Guaranty Agreement Costs, if any

A.	Insurance (Other than those policies specified in 10 below), specify policy types on a separate sheet	$_____
B.	Letters of Credit (specify proposed bank and amount)	$_____
	_____	
	_____	
	_____	
C.	Others (specify on a separate sheet)	$_____
	TOTAL GUARANTEE COSTS	$_____

10. Insurance Costs – in the amounts required in the Project Agreement

A.	Worker's Compensation	$_____
B.	Employer's Liability	$_____
C.	Commercial General Liability	$_____
D.	Automobile Liability	$_____
E.	"All Risk" Property Damage	$_____
F.	Business Interruption	$_____
G.	Boiler and Machinery	$_____
H.	Excess Umbrella Liability	$_____
I.	Professional Liability	$_____
J.	Environmental Impairment	$_____
K.	Other (if proposed)	$_____
	TOTAL INSURANCE COSTS	$_____

11. Taxes

A.	Property Taxes (as provided by Durham)	$968,000.00
B.	Commodity Taxes (specify type)	$_____
C.	Other (specify on a separate sheet)	$_____

.

12. Overhead

D..	Overhead	
E.	Other (specify on a separate sheet)	
	TOTAL OTHER COSTS	$_____
	TOTAL ANNUAL OPERATING FEE (as at the Closing Time)	$_____

21. FORM 3B PER TONNE CHARGE FOR WASTE PROCESSED IN EXCESS OF THE THROUGHPUT

ALLOCATION OF EXCESS PER TONNE OPERATING FEE

	Item	$ PER TONNE
1.	Labour Costs (including fringe)	$_____
2.	Maintenance Costs	$_____
3.	Unitary Major Equipment Repair and Facility Refurbishments Costs	$_____
4.	Auxiliary Fuel Costs	$_____
		$_____
5.	Purchased Utilities	$_____
6.	Residue Disposal Cost	$_____
7.	Contract, Rental or Lease Services	$_____
8.	Administrative	$_____
		$
9.	Annual Guaranty Agreement Costs, if any	$_____
		$_____
10.	Insurance Costs – in the amounts required in the Project Agreement	$_____
11.	Taxes	$_____
12.	Overhead	$_____
		$_____
	PER TONNE CHARGE FOR WASTE PROCESSED IN EXCESS OF THE THROUGHPUT (as at the Closing Time)	$_____

22. SCHEDULE A TO FORM 3

CALCULATION OF ITEM 3, UNITARY MAJOR EQUIPMENT REPAIR AND FACILITY REFURBISHMENTS COSTS

All costs are in Canadian dollars as at the Closing Time.

Provide details for the replacement or major repairs to all major pieces of equipment or categories of equipment (including mobile equipment) included in Item 3, Unitary Major Equipment and Facility Refurbishments Costs of FORM 3A. For each item indicate the projected useful life, in years, and how many times the equipment must be replaced or rebuilt or overhauled during the term of the Project Agreement. Also provide the anticipated replacement year(s) for each item during the term of the Project Agreement providing for each listing the unit cost and total, project term cost for replacement in terms of Canadian dollars.

Item	Life Expectancy/ Number of Replacements During Term	Replacement Year	Replacement Cost Per Unit and Total in Canadian Dollars, as at the Closing Time

For each of the items noted above, provide annual costs by completing the Unitary Major Equipment Repair and Refurbishments Cost Schedule that follows below.

Unitary Major Equipment Repair and Refurbishments Cost Schedule

Major Repair or Refurbishment Item	**Cost in Each Operating Year ($Canadian as at Closing Time)**																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Sub Total																														

The Sub Total row should be converted to a unitary annual cost and inserted in Item 3, Unitary Major Repair or Refurbishment Cost of FORM 3.

23. FORM 4 PERFORMANCE GUARANTEES

Facility Guarantee

These performance guarantees will be incorporated into the Project Agreement.

1.	**Construction Period Guarantee**		
	Length of time from Notice to Proceed to Schedule Acceptance Date (days)		
2.	**Throughput Capacity Guarantee (140,000 tonnes per year)**		
	HHV	Tonnes per day	
	10.5 MJ/kg (4500 BTU/lb)		
	11.6 MJ/kg (5000 BTU/lb)		
	12.8 MJ/kg (5500 BTU/lb)		
	14.0 MJ/kg (6000 BTU/lb)		
	15.1 MJ/kg (6500 BTU/lb)		
3.	**Electricity Production Guarantee (Annual Average)**		
	Throttle Conditions Proposed (Bar)		
	Throttle Conditions Proposed (^{o}C)		
	Maximum Steam load (kg/hr)		
	HHV	Gross Electrical Output (kWh/tonne)	Net Electrical Output (kWh/tonne
	10.5 MJ/kg		
	11.6 MJ/kg		
	12.8 MJ/kg		
	14.0 MJ/kg		
	15.1 MJ/kg		

4.	**Residue Quality and Quantity Guarantee:** The Average monthly quality and quantity of Residue (to include bottom ash, fly ash, siftings, scrubber residue and all other process residue) from combustion of processible waste:	
	Unburned Combustible Matter (% dry weight – not exceed 3.0%)	
	Total Residue (bottom and fly ash) excluding ferrous and other materials (tonne of residue/tonne of processible waste – not to exceed 30%)	
	Percent Moisture in Bottom Ash Residue (tonne of residue/tonne of processible waste – not to exceed 25%)	
5.	**Metals Recovery Guarantee**	
	Tonne of recovered ferrous/tonne of residue or tonne of processible waste processed – expressed as %	
6.	**Other Material Recovery** (Specify material; tonne of material recovered/tonne of waste processed – expressed as %)	
	Material 1: Non-Ferrous	
	Material 2:	
	Material 3:	
7.	**Guaranteed Maximum Emission Limits** (mg/Rm^3 @ 11% O_2 and 25°C, 101 kPa) **[NTD: Insert Air Emissions Table]**	
	Particulate Matter	
	Sulphur Dioxide (SO_2)	
	NOx	
	Carbon Monoxide (CO)	
	Organic Matter as Methane (CH_4)	
	Hydrogen Chloride (HCl)	
	Dioxins/Furans (as ITEQ)	
	Mercury (Hg)	
	Cadmium (Cd)	
	Lead (Pb)	

24. FORM 5 DETAILED FACILITY AND EQUIPMENT DATA

This FORM 5 must be appended to Section A of the Project Proposal. (See Section 4.5 of this RFP.)

Unless otherwise specified in this Proposal form, variable quantities (i.e. temperature, pressures, mass and volumetric flows, gas and liquid velocities, heat duties, powers and efficiencies) are to be given for operating conditions which correspond with the Maximum Continuous Rating (MCR) operation of the unit of equipment assuming fuel HHV – 12.8 MJ/kg. The terms "design," and "maximum continuous rating (MCR)," are synonymous. Unless otherwise indicated, "percent" and "%" mean weight percent.

PART A – GENERAL

1. Drawings. Note drawing requirements identified in Section 4.5.1 of the RFP and the Technical Requirements.

2. Process Flow Diagram. The process flow diagram and called for in Section X will be found in Drawing No. _____

3. Mass Balance Diagrams for the same three (3) cases as in Item 4 below. See attached Drawings Nos. _____, through _____.

4. Process Energy Balances:

   Complete the following table for each column, corresponding to varying fuel HHV.

CASE A			
HHV, Processible Waste MJ/kg	11.2 **Low**	12.8 **MCR**	15.1 **High**
Furnace/Boiler Unit Feed Rate			
Excess air, %			
Furnace/boiler Losses per Unit (MJ/kg):			
Dry gas			
Sensible heat in dry gas			
H_2 and H_2O in fuel			
H_2O in combustion air			
H_2O from Residue pit & quench			
Unburned combustibles			
Radiation and convection			
Unaccounted (mfr.'s margin, max. 1.5%)			
Subtotal furnace/boiler losses			
(MJ/hr), per unit			
Total steam output:			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr (sum all units)			
Net efficiency of steam generating units, %			

Main Steam for each unit:			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr			
Process Flow:			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr			
Extractions:			
Feedwater Heater			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr			
Dearator			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr			
Plant Heat Rate			
Gross, HHV based			
Net, HHV based			
Turbine Heat Rate (average each unit)			
Energy Summary:			
Gross TG power output, MW, total			
In-plant electric consumption, MW			
Net Facility power output, MW			
Corresponding diagrams as described in Section 4.5.1 of the RFP Drawing Nos.:			
Furnace/Boiler MCR (each unit) in Tonne per hour of Processible Waste			

5. Facility Water Mass Balance Diagrams for: (a) average day and (b) peak day Facility Water Consumption conditions.

   a. 426 tonne/day Facility Throughput, average day of year with respect to Facility water consumption. See attached Drawing No. _____.

   b. 426 tonne/day Facility Throughput, peak summertime daily Facility Water Consumption for average climatological year. See Drawing No. _____.

   Basis for both a) and b) above is HHV = 12.8 MJ/kg and 426 tonne/day Throughput.

6. a. Line Diagram complete with protective relays and metering. See attached Drawing Nos. _____

   b. Electrical transmission structure detail. See attached Drawing No. _____.

7. Civil/Structural

The Company must acknowledge and certify, by checking the first blank below, that all civil/structural requirements specified in the Technical Requirements, are included in its Proposal.

Facility design and construction ☐conforms ☐does not conform (check one) to the Technical Requirements. If not, the Company must provide an itemized schedule of all exceptions to those items, if any, which do not conform to Section 4.0 of the Technical Requirements. Such schedule must be clearly labeled "Schedule of Exceptions to Civil/Structural Requirements," and must be attached to this Proposal form.

8. Facility Data

The Company must provide a rendering and brief description of the type of structure and materials of construction, along with approximate building size, for each building or enclosure proposed in the space below. Rendering No. _____.

9. Truck Unloading and Storage at Facility

a. Number of truck unloading positions _____

b. Dimensions of pit (length x width x depth x _____ x _____ x _____ from tipping floor), meters

c. Pit storage capacity, m^3_____

d. Pit storage capacity at tipping floor level, tonne _____
total tonne _____

e. Design density of refuse in storage pit, kg/m^3 _____

PART B – COMBUSTION PLANT EQUIPMENT

Parts B and C must be accompanied by a complete process flowsheet sufficiently detailed so as to indicate each of the stream flows for which data is requested in Parts B and C of this Proposal FORM 5. Each stream will be numbered, and these numbers will be inserted *in Parts* B and C where indicated by the heading "STM#" meaning "stream number".

1. Steam Generating Unit

a. Manufacturer/Number of Units _____ / _____

b. Furnace Volume, m^3 _____

c. Gross furnace heat liberation rate, volume basis, MJ/m^3) _____

d. Gross heat release per plan area grate, MJ/meter _____

e. Declared parameters (See Notes 1, 2 and 3 below): _____

1. MCTD Tonnes per hr [1] _____
2. MCR Tonnes per hr[2] _____
3. TOL_f Tonnes per hr [3] _____
4. Period, basis for TOL (hours) _____

Notes:

1. MCTD refers to "minimum continuous turndown" capability and means the lowest point each unit can safely operate for extended periods, without supplemental fuel firing. The required MCTD is 75%.. (See Technical Requirements, Subsection 3.3).

2. MCR refers to Maximum Continuous Rating. See note at top of this Proposal form.

3. TOL_f refers to "temporary overload" and means specifically the control point conditions with the furnace/boiler unit operating at its maximum temporary overload capacity. Company to indicate period (number of hours) as basis for TOL_f.

f. Steam Flow, kg/hr

	STM#	MCTD	MCR	TOL_f
Superheater outlet				
Boiler blowdown				
Economizer inlet				
Sootblowers				
Attemporator, if applicable				
Feedwater pump				

g.	Steam and Water Pressures, bars				
	Superheater outlet				
	Steam drum				
	Economizer inlet				
	Sootblowers				
h.	Steam and Water Temperatures, ^{o}C				
	Superheater outlet				
	Primary superheater outlet if app.				
	Economizer inlet				
	Economizer outlet				
i.	Steam Purity				
	Average solids in outlet steam, ppm				
	Maximum cation conductivity, Microhm/cm				
	Maximum silica, ppb				
j.	Flue Gas Flows leaving economizer kg/hr				
k.	Flue Gas Pressures, +/- mm H_2O				
	Furnace inlet				
	Furnace exit				
	Economizer exit				
	ID Fan inlet				
	ID Fan outlet				
	Stack inlet				
l.	Average Flue Gas Temperatures, ^{o}C				
	Furnace temperature, max.				
	Superheater (inlet)				
	Economizer exit				
	Baghouse (inlet)				
	APC outlet				
	Stack exit				
m.	Average flue Gas Velocities, meter/s				
	Through furnace pass				
	Through superheater section				
	Through Boiler section				

	Through economizer	_____	_____	_____	_____
	Through baghouse	_____	_____	_____	_____
	Maximum duct velocity	_____	_____	_____	_____
	Stack exit (> 60 meter/s)	_____	_____	_____	_____
n.	Air Flows, kg/hr		_____	_____	_____
	Secondary air inlet		_____	_____	_____
	Primary air inlet		_____	_____	_____
	Excess air for fan sizing, %		_____	_____	_____
o.	Air Pressures, mm H_2O (in H_2O) FD fan outlet		_____	_____	_____
	Air heater pressure drop		_____	_____	_____
	Pressure drop through grate		_____	_____	_____
	Secondary fan outlet		_____	_____	_____
p.	Air Temperatures, ^oC		_____	_____	_____
	Design ambient, min. ^oC		_____	_____	_____
	Air temperature to forced draft fan and Secondary air fan, ^oC (for boiler performance Evaluation)		_____	_____	_____
q.	Design humidity		_____	_____	_____
	Primary air heater inlet		_____	_____	_____
	Primary air heater outlet		_____	_____	_____
r.	Raw Gas Loadings		_____	_____	_____
	Portion of total Residue leaving boiler with Flue gas, weight percent Typical concentration of particulate in flue Gas leaving boiler, mg/Rm^3 @ 11% O_2		_____	_____	_____
	Typical size of particulate in flue gas. %		_____	_____	_____
	pm 2.5-<10 microns		_____	_____	_____ pm
	10		_____	_____	_____
	> 10 microns		_____	_____	_____
s.	Design clean Gas Loadings		_____	_____	_____
	Portion of total particulate matter leaving Stack with flue gas, %		_____	_____	_____
	Particle size distribution in flue gas, %		_____	_____	_____
	pm 2.5-<10 microns		_____	_____	_____pm
	10		_____	_____	_____
	> 10 microns		_____	_____	_____

t. Estimated stack emissions based on an installed capacity of 213 tonnes per day per unit (for a two unit system) of Reference Waste at 12.8 MJ/kg and plant Operating conditions corrected in order to Generate an equivalent flue gas rate @ 11% O_2 Dry, 101 kPa and 25^o C.

	Uncontrolled mg/Rm^3	Controlled mg/Rm^3
POLLUTANTS:		
Sulfur Dioxide (SO_2)	_____	_____
Hydrogen Chloride (HCl)	_____	_____
Hydrogen Fluoride (HF)	_____	_____
Oxides of Nitrogen (NO_x)	_____	_____
Carbon Monoxide (CO)	_____	_____
Mercury (Hg)	_____	_____
Cadmium (Cd)		
Cadmium and Thallium (Cd + Th)	_____	_____
Lead (Pb)		
Sum of (As, Ni, Co, Pb, Cr, Cu, V, Mn, Sb)	_____	_____
Dioxins (as TEQ Toxic Equivalents)	_____	_____
Total Particulate Matter_____		_____
Organic Matter (as CH_4)__	_____	_____
OTHER POLLUTANTS[3]:	_____	_____
Trace Metals:		
Chromium (hexavalent)	_____	_____
Total Chromium (and compounds)	_____	_____
Aluminum Oxide	_____	_____
Arsenic	_____	_____
Barium	_____	_____
Phosphorus Pentachloride	_____	_____
Selenium	_____	_____
Respirable Silica (less than 10 micrometres)	_____	_____
Ammonia Slip (at stack)	_____	_____
Polycyclic Organic Matter:	_____	_____
Acenaphthylene		
Acenaphthene	_____	_____
Anthracene	_____	_____
Benzene	_____	_____
Benzo(a)anthracene	_____	_____
Benzo(b)fluoranthene	_____	_____
Benzo(k)fluoranthene	_____	_____
Benzo(a)fluorene	_____	_____
Benzo(b)fluorene	_____	_____
Benzo(ghi)perylene	_____	_____
Benzo(a)pyrene	_____	_____
Benzo(e)pyrene	_____	_____
2-chloronaphthalene	_____	_____
Chrysene	_____	_____

[3] As stipulated in the latest revisions to Ontario Regulation 419/05, or as stipulated by the Ontario Ministry of Environment in the Certificate of Approval.

Coronene	_____	_____
Dibenzo(a,c)anthracene	_____	_____
9,10 – dimethylanthracene	_____	_____
7,12 – dimethylbenzo(a)anthracene	_____	_____
Fluoranthene	_____	_____
Fluorine	_____	_____
Indeno(1,2,3 – cd)pyrene	_____	_____
2 – mehtylanthracene	_____	_____
3 – methylcholanthrene	_____	_____
1 – methylnaphthalene	_____	_____
2 – methylnaphthalene	_____	_____
1 – methylphenanthrene	_____	_____
9 – methylphenanthrene	_____	_____
Naphthalene	_____	_____
Pentachlorophenol	_____	_____
Perylene	_____	_____
Phenanthrene	_____	_____
Picene	_____	_____
Polychlorinated Biphenyls	_____	_____
Pyrene	_____	_____
Tetralin	_____	_____
1,2,4 – Trichlorobezene		
Triphenylene	_____	_____
Dibenzo(a,h)anthracene	_____	_____
Dibenzo(a,e)pyrene	_____	_____
Quinoline	_____	_____
Biphenyl	_____	_____
O-terphenyl	_____	_____
M-terphenyl	_____	_____
P-terphenyl	_____	_____
Other Volatile Organic Matter:		
Acetaldehyde	_____	_____
Acetone	_____	_____
Acrolein	_____	_____
Bromodichloromethane	_____	_____
Bromoform	_____	_____
Bromomethane	_____	_____
Butadiene, 1,3 -	_____	_____
Butanone, 2 -	_____	_____
Carbon tetrachloride	_____	_____
Chloroform	_____	_____
Cumene	_____	_____
Dibromochloromethane	_____	_____
Dichlorodifluoromethane	_____	_____
Dichloroethane, 1,2 -	_____	_____
Dichloroethane, trans – 1,2 -	_____	_____
Dichloroethene, 1,1 -	_____	_____
Dichloropropane, 1,2 -	_____	_____

Ethylbenzene	_____	_____
Ethylene Dibromide	_____	_____
Formaldehyde	_____	_____
Mesitylene	_____	_____
Methylene chloride	_____	_____
Styrene	_____	_____
Tetrachloroethene	_____	_____
Toluene	_____	_____
Trichloroethane, 1,1,1 -	_____	_____
Trichloroethene	_____	_____
Trichloroethylene, 1,1,2 -	_____	_____
Trichlorofluoromethane	_____	_____
Trichlorotrifluoroethane	_____	_____
Vinyl chloride	_____	_____
Xylenes, m-, p- and o-	_____	_____

u. Estimated Fugitive Emissions:

	Emissions tonne/yr
1. Waste Handling and Storage	_____
2. Residue Handling, Storage Treatment	
(a) Bottom Ash System	_____
(b) Fly Ash (include. boiler fly ash	_____
3. On-Site Fuel Storage	_____
4. Sorbent Handling, Storage and Preparation	_____
5. Ammonia Slip, Handling, Storage and Preparation (if applicable)	_____
6. Other: _____	_____

v. Describe method used to estimate uncontrolled fugitive emissions and measures to be used to control these emissions:

w. Describe measures to be used to control odours resulting from waste handling and storage during normal operations:

x. Describe measures to be used to control odours resulting from waste handling and storage during normal operations:

_____

_____

_____

_____

_____

y.

Residue	MCTD	MCR	TOL_f
Bottom ash, kg/hr (dry)			
Fly ash, kg/hr (dry)			
Moisture of Residue (combined ash)			
Weight percent			
Weight of Residue (combined ash) kg/hr			

z. Gas Side Design Data

Furnace Design Pressure, mm H_2O _____
Boiler Design Pressure, mm H_2O _____
Ductwork Design Pressure, mm H_2O _____
Scrubber, mm H_2O (if appl.) _____
Baghouse Design Pressure, mm H_2O _____

aa. Boiler Data

	Steam Drum/Mud Drum	
	Inside dia. and thickness of drum, mm	
	Boiler section heat transfer surface are, m^2	
	Boiler tube O.D./wall thickness, mm	/
	Boiler tube spacing, mm	
	Waterwall tube O.D./wall thickness, mm	/
	Tube arrangement, check one	____ in line, ____ staggered
	Design Pressure, bars	

bb.	Superheater Data	Primary	Reheat (if applies)
	Design pressure, bars		
	Primary superheater surface, m^2		
	Size and material of superheater outlet header		
	Type of attemperator		
	Superheater tube O.D./wall thickness, mm	/	/
	Superheater tube spacing, mm		
	State tube arrangement: inline or staggered		
	Superheater pressure drop at GL and Over pressure flow, bars		

cc.	Economizer Data	
	Type of economizer	
	Design pressure, bars	
	Effective heat transfer surface, m^2	
	Size/material of economizer inlet nozzle	/
	Tube O.D. wall thickness, mm	/
	Tube spacing, mm	
	Tube arrangement, check one staggered	____ in line, ____ staggered

dd.	Main steam line pressure drop at TOL_f and 5% over pressure flow, bars (excluding boiler stop check valve)	
ee.	Boiler stop check valve pressure drop at furnace TOL_f and over pressure flow, bars	

2. Refuse Handling Cranes

a.	Manufacturer, Model No.	
b.	Quantity (primary/spare)	
c.	Crane Capacity, tonne	
d.	Grapple Size, m^3	
e.	Grapple Type	

f. Crane design handling rate, tonne/hr _____

g. Speeds at full load _____

1. Hoist, m/min _____
2. Bridge travel, meter/min _____
3. Trolley travel, meter/min _____

h. Maximum hoist lift, meter _____

i. Controls, type _____

j. CMAA Rating _____

k. Description of Controls and Stationary Operator and degree of automation:

_____

_____

3. Pit Fire Safety Features (See also the Technical Requirements)

a. Describe smoke and heat handling features: _____

_____

b. Describe safety features for protection of crane operator: _____

_____

c. Describe pit fire control equipment: _____

_____

d. Justification as to the sufficiency of proposed fire water provisions as called for in the Technical Requirements. See attached sheets numbered _____ through _____.

4. Refuse Hoppers and Feed Chutes

a. Manufacturer, Model _____ / _____

b. Hopper Capacity, volume/density m^3 @ kg/m^3 _____ @ _____

c. Hopper Material/Plate Thickness, mm _____

d. Feed Chute

1. Dimensions, LxW, meter _____ x _____
2. Size of largest item which will pass Through chute, LxWxH, meter _____ x _____ x _____
3. Chute cooling system _____
4. Shut off damp, size, meter x meter _____ x _____

e. Level Indicators, qty. and type _____

5. Refuse Feeders

a. Type and Manufacturer _____

b. Capacity (24 hr. maximum), tonne/hr _____

6. Stokers and Grates

a. Type and Manufacturer _____

b. Grate Area, m^2 _____

c. Grate Material Type _____

d. Grate bar life, hours (20,000 hr min) _____

e. Cross-sectioned area of grate bar(s), m^2 _____

f. End/Side Seal Material _____

g. Sifting Handling Description _____

h. No. Siftings Hoppers _____

i. Capacity Control Method _____

j. Grate Cooling System (i.e. air, water) _____

7. Fans

	FD	SA	ID
a. Manufacturer			
b. Type of Wheel			
c. Diameter of Wheel			
d. Net Operation Requirements:			
Capacity, kg/hr, m^3/min			
Gas/Air temperature, °C			
Static pressure, kPa			
Efficiency, %			
Power to fan coupling, kW			
e. Test Block Requirements:			
Capacity, kg/hr, m^3/min			
Gas/Air temperature, °C			
Static pressure, kPa			
Efficiency, %			
Power to fan coupling, kW			

f. Motor Data:

	Manufacturer			
	Motor size, kW			
	Frame Size			
	Enclosure Type			
	Service Factor			
	Volts/phase/Hz			
	Full load current, amp			
g.	Variable Frequency Drive Data:			
	Manufacturer			
	Other			
h.	Type/Manufacturer of bearings			
i.	Materials			
	Wheel			
	Shaft			
	Scroll			
j.	Operating speed, rpm			

8. Air Preheaters

a.	Manufacturer, Type, Model No.			
b.	Number, Size, mm x mm	/	/	x
c.	Duty, MJ/hr			
d.	Design Conditions			
	Inlet temperature, ^{o}C			
	Outlet temperature, ^{o}C			
e.	Heat transfer medium			

9. Residue Handling System

a.	Bottom Ash System: Primary/Standby			
	Manufacturer		/	
	Type		/	
	Capacity, tonne/hr		/	
	Residue Pit Dimensions, ((LxWxD) from Bottom ash inlet point) in meters			
		x	x	

	Design density of bottom ash for storage/Structural design, kg/m^3	_____ / _____
	Type of drive for conveyance system	_____
	Capacity of drive mechanism (i.e. if Motor drive, kW	_____
	Size of largest item passable through System, LxWxH, meter	_____ x _____ x _____
b.	Air Pollution Control Equipment Ash System	
	Manufacturer	_____
	Type	_____
	Capacity, tonne/hr	_____
	Dimensions, mm	_____
	Design density for Storage/structural design, kg/m^3	_____
	Type of drive for conveyance system	_____
	Capacity of drive mechanism i.e. if motor drive, kW	_____
c.	Boiler Fly Ash System	
	Manufacturer	_____
	Type	_____
	Capacity, kg/hr	_____
	Dimensions, mm	_____
	Design density of fly ash for storage/Structural design, kg/m^3	_____

Type of drive for conveyance system _____

Capacity of drive mechanism (e.g., if motor drive, kW) _____

Compatibility with separate APC fly ash collection _____

d. Fly Ash Storage Silo _____

Manufacturer _____

Type _____

Capacity, tonne and No. of days _____

Dimensions, mm _____

Type of unloading system _____

Dust control/collection system _____

e. Maximum water use, total Residue handling system, lpd _____

10. Stack

a. Manufacturer _____

b. Number of Flues _____

c. Diameter of Flues _____

d. flue Material/Thickness, mm _____

e. Height, meters _____

f. Insulation Properties _____

11. Soot Removal System

a. Manufacturer _____

b. Type (e.g., steam sootblower, rapping) _____

c. Description of System and Controls: _____

_____

12. Fabric Filter Data

a. Air-to-Cloth Ratio:

Net _____

Gross _____

b. Number of Compartments _____

c. Manufacturer _____

d. Flue Gas Data (per unit)

Maximum Flow, actual m^3/min _____

Maximum Temperature, ^oC _____

Flange-to-Flange Pressure Drop, mm Hg _____

e. Particulate Removal Efficiency

Efficiency, % _____

Inlet loading at 11% O_2, mg/Rm^3 _____

Outlet Loading at 11% O_2, mg/Rm^3 _____

f. Item Descriptions

Number of Bags/Compartment _____

Diameter and length of each Bag, mm _____ / _____

Service Life (minimum), hours _____

Bag Frames, if applicable _____

Shell material, ASTM _____

Hoppers

Quantity, number _____
Capacity, tonne each _____
Storage Capacity, hours @ GL _____
Material Type _____

g. Description of System for Removing Collected Material:

_____

_____

_____

h. Power Consumption

Connected, kW _____

Operating, kW _____

i. Compressed Air Consumption (annual average), m^3/min _____

j. Insulation

Materials _____

Thickness, mm _____

Areas covered _____

Cladding _____

k. Shell

Materials _____

Thickness, mm _____

l. Accessories (Description)

Hopper Heaters _____

Hopper Vibrators _____

Poke Holes _____

Air Tight Connection at Hopper Outlet _____

Temperature Control for Reverse Air Or Pulse Jet Air _____

m. Monitoring System (Description)

Type and Quantity of Sensors /

Type and Quantity of Signal Processors /

Type of Control Unit

Type of Alarm

13. Acid Gas Scrubbing Equipment (Spray-dry, Dry injection or wet scrubber)

a. Type (e.g. semi-dry, dry, or wet)
b. Number of Units
c. Manufacturer
d. Flue Gas Data (per unit)

Maximum Flow, ACMM

Maximum Temperature, ^{o}C

Flange-to-Flange Pressure Drop, mm Hg

Maximum Outlet Temperature, ^{o}C

Minimum Outlet Temperature, ^{o}C

Average Outlet Temperature, ^{o}C

e. Removal Efficiencies

1. HCl
   a. Efficiency, %
   b. Inlet Concentration, mg/Rm^3 @11% O2
   c. Outlet Concentration, mg/Rm^3 @11% O2

2. SO_2
   a. Efficiency, %

b. Inlet Concentration, mg/Rm^3 @11% O_2 _____

c. Outlet Concentration, mg/Rm^3 @11% O_2 _____

f. Chemical Used for Neutralization (e.g. pebble lime, hydrated lime, etc.)

g. Average Neutralization Chemical Use (per unit), kg/hr _____

h. Average Water Use (per unit), lpm _____

i. Electric Power (Total)

Connected, KW _____

Operating (Annual Average), KW _____

j. Compressed Air Use (Average Annual Consumption per Unit), dry std m^3/min _____

k. Atomization System

Type _____

Manufacturer _____

l. Control and Instrumentation

HCl _____

SO_2 _____

Outlet Temperature _____

m. Materials of construction and description

Chemical Storage _____

Chemical Slaker _____

Chemical Pump _____

Chemical/Water Solution % at Atomizer _____

Scrubber Shell Material and Thickness _____

n. Describe Neutralization Chemical Loading, Storage, Slaking or Slurry injection, and atomization system (include number of units and spares)

o. Atomization System Replacement (Describe expected equipment downtime associated with each replacement and number of replacements per year)

If dry injection is proposed:

p. Materials of construction and description

Reagent Storage

Scrubber Shell Material and Thickness

q. Describe Loading, Storage, Powder injection, and water atomization system (include number of units and spares)

r. Atomization System Replacement (Describe expected equipment downtime associated with replacement)

PART C - BALANCE OF FACILITY SYSTEMS

14. Turbine-Generator System:

a. Manufacturer _____

b. Model No. _____

c. Nameplate Capacity, MW (each unit) _____ / _____

d. High Pressure Throttle Flow at TOL_1 and 5% Over Pressure, kg/hr (See Note 3 below) _____

		STM#	MCTDTG[1]	MCR[2]	TOL_1[3]
e.	High Pressure Throttle Flow, kg/hr				
f.	Throttle Steam Pressures, bars				

NOTES:

[1] MCTDTG above refers to "maximum continuous turndown-turbine/generator" and above means specifically the control point conditions at maximum permissible turndown of the turbine/generator set.

[2] MCR refers to Maximum Continuous Rating. See note at top of this Proposal form.

[3] TOL_1 above refers to "temporary (one hour) overload" and means specifically the control point conditions with the turbine/generator set unit operating at its maximum one hour overload capacity. (See the Technical Requirements).

g.	Throttle Steam Temperatures, ^oC				
h.	Extraction Steam Pressures, bars				
i.	Extraction Steam Temperatures, ^oC				
j.	Turbine Exhaust Pressures, mmHg abs				
k.	Turbine Generator Heat Rates, MJ/kWh, High Pressure Turbine				

l. Governing System Type _____

m. Generator Voltage, kV _____

n. Gland Steam Condenser

1. Manufacturer _____
2. Capacity, kg/hr and/or MJ/hr _____ / _____

o. Generator Cooling System, description: _____

_____

_____

_____

15. Air Cooled Steam Condenser

a. Manufacturer, Model _____ / _____

		STM#	MCTDTG[1]	MCR[2]	TOL_1[3]
b.	Operating pressures, mm Hg abs (in Hg abs)				
c.	Steam flows, kg/hr(kg/hr)				
d.	Heat duties, MJ/hr				
e.	Design dry bulb temperature, ^{o}C				
f.	Quantity, no. of cells				
g.	Design Range, ^{o}C				
h.	Design Approach, ^{o}C				
i.	Condensate Tank, size liters				
j.	Condensate Pump number and type				
k.	Condensate Pump, kW each				
l.	Ductwork, diameter, mm				
m.	Ductwork, length, meter				
n.	Ductwork pressure drop, mm Hg				
o.	Gas Removal System				
	1. Gas Removal System				
	2. Pump kW, each				
	3. Collection Tank, size, litters				

p.	Fan(s), number and type				
q.	Fan motor kW each				
r.	Variable Frequency Drive Data:				
	Number				
	Type				
s.	Fan electrical consumption (with VFDs), kW each				

t. Fan Flow control, description:

16. Feedwater System (Provide a description of the feedwater cycle, with equipment arrangements)

17. Boiler Feed Pumps

a.	Manufacturer, Model No.		
b.	Quantity		
c.	Design capacity, m^3/min		
d.	Design total head, meter		
e.	Design inlet pressure, bars		
f.	Design outlet pressure, bars		
g.	Design temperature, ^oC		
h.	Efficiency at design conditions, %		
i.	Type of seals		
		Electric Drive	Steam Drive

j.	Drive horsepower, kW		
k.	Cooling method		N/A
l.	Energy consumption at design capacity		
	1. Electric, KW		N/A
	2. Steam, kg/hr	N/A	
m.	Steam inlet pressure, bars	N/A	
n.	Steam outlet pressure, bars		

18. Condensate Pumps

a.	Manufacturer, Model No.	
b.	Quantity	
c.	Design capacity, m^3/min	
d.	Design total head, meter	
e.	Motor horsepower, kW	
f.	Electrical power at design capacity, kW	

19. Circulating Water Pumps

a.	Manufacturer, Model No.	/
b.	Quantity	
c.	Design capacity, m^3/min	
d.	Design total head, mm	
e.	Motor horsepower, kW	
f.	Electrical consumption at design capacity, kW	

20. Auxiliary Cooling Water Pumps (Bearing Cooling Water Pumps)

a.	Manufacturer, Model No.	/
b.	Quantity	
c.	Design capacity, m^3/min	
d.	Design total head, mm	
e.	Motor horsepower, kW	

f. Electrical consumption at design capacity, kW _____

21. Miscellaneous Pumps

a.	Service	_____	_____	_____
b.	Manufacturer, Model	_____	_____	_____
c.	Quantity	_____	_____	_____
d.	Design capacity, m^3/min	_____	_____	_____
e.	Design total head, meter	_____	_____	_____
f.	Motor horsepower, kW	_____	_____	_____
g.	Electrical consumption at design capacity, kW	_____	_____	_____

22. Air Compressors

a.	Manufacturer, model, type	_____ / _____ / _____
b.	Quantity	_____
c.	Operating/design pressure, bars	_____
d.	Air dryer, manufacturer, model	_____ / _____
e.	Receiver, pressure/capacity	_____ bars/ _____ m^3

23. Miscellaneous Heat Exchangers

a.	Manufacturer	_____	_____	_____
b.	Service, number	_____ / _____	_____ / _____	_____ / _____
c.	Type, tube material	_____ / _____	_____ / _____	_____ / _____
d.	Heat duty, MJ/hr.	_____	_____	_____
e.	Surface area, m^2	_____	_____	_____

24. Makeup Water Treatment/Demineralizer

a. Manufacturer _____

b. Description of system: _____

_____

_____

_____

c. Design flow rate, m^3/min and m^3/day _____ / _____

d. Redundancy in equipment number and capacity, description:

_____

_____

_____

e. Water quality monitor, description: _____

_____

_____

Wastewater Treatment

a. Manufacturer: _____

b. Description of system: _____

_____

_____

Deaerating Feedwater Heater and Storage Tank

a. Manufacturer _____

b. Quantity _____

c. Tray material (if used) _____

d. Storage tank capacity, liters _____

e. Outlet capacity, kg/hr _____

f. Oxygen content of water, cc/L _____

g. Operating pressure, bars _____

Feedwater Heaters

a. Manufacturer _____

b. Quantity _____

c. Heater duty, MJ/hr _____

d. Heater steam-side pressure, temperature and stream number; bars, ^{o}C , STM# _____ / _____ / _____

e. Heater terminal temperature difference, ^{o}C _____

f. Heater drain cooler approach ^{o}C _____

g. Tube material/type/no. passes _____ / _____ / _____

h. Tube diameter and gauge, mm BWG _____ / _____

i. Cleanliness factor, % _____

Tanks, Demineralized Water and Condensate

	Service	DMW	Cond.
a.	Manufacturer		
b.	Design pressure and temperature, bars, ^{o}C		
c.	Size, liters		
d.	Material		

	Tanks, Other	DMW	Cond.
a.	Manufacturer, Type	/	/
b.	Service		
c.	Design pressure and temperature, bars, ^{o}C		
d.	Size, liters		
e.	Material		

Turbine Room Crane

a. Hoist Ratings

1. Main hoist rating, tonnes _____
2. Auxiliary hoist rating, tonnes _____

b. Speeds at full load

1. Main hoist, meter/min _____
2. Bridge travel, meter/min _____

c. Maximum hoist lift, meter _____

d. Controls, type _____

e. CMAA rating _____

Miscellaneous Hoists and Cranes
(Other than those associated with railhaul system)

a.	Manufacturer, Model	/	/
b.	Location		
c.	Type and function	/	/
d.	Capacity, tonne		

Elevator(s)

a.	Manufacturer, Model	/	/
b.	Location		
c.	Type and function	/	/
d.	Capacity, tonne		

Fire Protection other than Pit

Building/Area	Type/Description

Heating and Ventilation

Building/Area	Capacity. m^3/MJ/hr	Description/Function

Mobile Equipment

Mfr/Model	No./Type	Description/Function

PART D - ELECTRICAL AND INSTRUMENTATION AND CONTROL DATA

1. Generator

Manufacturer, Model _____

Cooling System, description:

_____

_____

Capacity, MW _____

Power Factor _____

Voltage _____

Frequency/Short Circuit Ratio _____

Insulation Class _____

Overspeed Limitation _____

No. Terminal Leads _____

Type Fire Protection _____

Exciter Type, Voltage Controls, describe: _____

_____

_____

Generator Protective Relays

Type _____

Manufacturer _____

Model _____

Displays, meters and recorders, list on attached sheet by manufacturer, type and range

compatibility with telemetry requirements, describe: _____

_____

_____

2. Transformers

a.	Service	_____	_____	_____
b.	Manufacturer	_____	_____	_____
c.	Type, KVA Rating	_____	_____	_____
d.	Voltage, No. Phases	_____	_____	_____
e.	Taps	_____	_____	_____
f.	Impedance	_____	_____	_____
g.	Protective Relays (Type, Manufacturer, Model)			

_____

_____

_____

3. Metal-Clad Switchgear

Manufacturer	_____	_____	_____
Service	_____	_____	_____
Voltage	_____	_____	_____
Materials of Construction	_____	_____	_____
Description	_____	_____	_____

4. DC System

Battery Charger, (Type, Manufacturer, Model)	_____	_____	_____
Batteries (Type, Manufacturer, Model)	_____	_____	_____
Description	_____	_____	_____

5. Essential AC System

Invertor (Type, Manufacturer, Model)	_____	_____	_____

Description

6. Power Factor Correction

Description, Type

7. Synchronization and Paralleling Systems

Description of systems for generator synchronization and paralleling which allow all power sources to function either independently or in unison, using whatever generators are available. The requested description shall be written specifically for this Project. The manufacturer's standard descriptions which refer only to typical operation are not acceptable.

8. Back-up Power (if applicable)

Diesel or gas turbine generator manufacturer, size /

Description of back-up power system (type, controls, logic):

Description of interface with mainpower system, especially with regard to priority circuitry and load shedding devices.

9. Control Hierarchy for Power Distribution Systems

Briefly describe the overall approach towards electrical systems reliability identifying major circuits and their priorities. Explain how the systems will respond to electrical failures by automatically shedding loads on a priority basis. Discuss the order by which alternate power sources will be activated. The requested description shall be written specifically for this project. The manufacturer's standard descriptions which refer only to typical operation are not acceptable.

Provide the outline, on a separate page, for a complete protective device and circuit study starting with utility incoming to the largest breaker in first downstream panel fed from switchgear[1].

Furnish composite one-line diagram of the power distribution systems, showing all power transformers, disconnect switches, circuit breakers, fuses, positive relays, current transformers, power sources and other essential devices. See attached Figure _____.

Name specialty subcontractor to be selected for this task.

Fire Alarm and Detection System

Furnish a description of the basic system including the method of operation and supervision of each type of circuit, sequence of automatic and manual operation.

10. Lighting

Description of Outdoor and Indoor Systems:

Lumens (Foot-candles) at Control Room Panels

Lumens (Foot-candles) at top of Pit

11. Emergency Lighting

Outline the type of emergency lighting to be used demonstrating that system shall be independent of all other wiring and shall be energized at all times:

12. Instrumentation and Controls

Control Room Facilities

1. Manufacturer
2. Description (refer to the attached sheets)

Description of Panel and Local Instrumentation and Controls (manufacturers, types, logic).

Description of control logic, auto/manual controls, main and remote control stations, primary instrumentation and metering.

Description of Data Display and Storage Capabilities.

Description of Compatibility with connectivity to the Regions' Offices

PART E - MISCELLANEOUS INFORMATION

1. Spare Parts and Tools

Itemize the spare parts required and/or recommended for operation of the Project. Each item must show Quantity, Size, Model, Output, Rating, etc., and other pertinent information necessary for Procurement. See attached sheets _____.

2. Mobile Equipment

Furnish an additional list of all rolling stock and other mobile equipment not elsewhere listed. Provide manufacturer, size data, and description. See attached sheets _____.

3. Additional Equipment

Furnish an additional list of Project Equipment not previously included in this Proposal FORM 10. Provide manufacturer, size data and description information.

4. Additional Information

Furnish additional information for items requested where adequate space was not provided in this Proposal form. Reference these sheets in the proposal form.

25. FORM 6 GUARANTEED MAXIMUM UTILITIES / REAGENTS UTILIZATION DURING OPERATION

1. Utilities

   a. Electricity Power (includes backup)

      i. Usage (kWh/yr)_____

      ii. Demand (peak kW) / (no. months/yr.) ____/____

   b. Water Consumption (m^3/yr.) _____

   c. Wastewater Discharge (m^3 / yr.) _____

   d. Auxiliary Fuel (specify type)

      Type (e.g., natural gas, propane, etc.) _____

      Usage (m^3/yr.) _____

2. Reagents

   a. Scrubber Lime (kg/tonne)

   b. Ammonia or Urea (kg/tonne)

   c. Powdered Activated Carbon (kg/tonne)

   d. Others (list)

26. FORM 7 REQUEST FOR INFORMATION FORM

REQUEST FOR INFORMATION Regional Municipality of Durham Energy from Waste Facility Request for Proposals	
Proponent Request Number **Proponent Team Name** **Contact Person** **E-mail** **Phone No.**	Date

Request (one request per sheet)

☐ **Tick this box to request consideration that this query be treated as "Commercial in Confidence".**

INTERNAL USE ONLY					
Communication Log Reference No.					
Commercial In Confidence Request		**Approved/Return to Proponent**			
Team Responsibility	○	**Design/Consultant**	○	**Financial/Commercial**	
	○	**Operations/Maintenance**	○	**Other**	
Date response returned to Proponent /Posted					

27. FORM 8 PROPONENT COMMENTS ON PROJECT AGREEMENT

Regional Municipality of Durham
Energy From Waste Facility
Request For Proposals

Proponent Team		**Date**	
Submitted by		**E-mail Address**	

Section	Proposed Change (including detailed drafting)	Reasons for Proposed Change

28. FORM 9 REPRESENTATIONS AND WARRANTIES OF PROPONENT

1. This Proposal Declaration should be executed by the Proponent and each member of the Proponent Team.

By executing this Proposal Declaration, you agree to the provisions of the RFP and this Proposal Declaration.

Capitalized terms are defined in Section 8 of the RFP.

[RFP Proponent's Letterhead]

To: **[Insert name of entity]**

Attention: **[Insert name and address of person]**

The Proponent hereby agrees and acknowledges that:

7. This Proposal Declaration form has been duly authorized and validly executed.

8. The Proponent is bound by all statements and representations made or contained in its Proposal;

9. Its Proposal conforms with the RFP subject to any clearly articulated qualification contained in the Proposal;

10. Its Proposal is in all respects a fair Proposal made without collusion, fraud, the offer or giving of any gratuity and without lobbying;

11. Its Proposal is irrevocable until the expiry of the period of two (2) years from the planned date of Closing Time and the Proponent will not revoke its Proposal until the expiry of that period or , in the event that the Region has notified the Proposer that it is still considering the Proposer's Proposal, until such extended time as delineated in such notice;

12. The Proponent has disclosed, in FORM 10, any relationship which could constitute a conflict of interest or unfair advantage; and

13. The Region reserves the right to verify in formation in its Proposal and conduct any background investigations including criminal record investigations, verification of the Proposal, credit enquiries, litigation searches, bankruptcy registrations and taxpayer information investigations or other investigations on all or any of the Proponent Team Members and by submitting a Proposal, the Proponent agrees that they consent to the conduct of all or any of those investigations by the Region.

Acknowledgements with Respect to the RFP

1. The Proponent has received, read, examined and understood the entire RFP including all of the terms and conditions, all documents listed in the RFP "Table of Contents" made available in the Data Room, and any and all Addenda;

2. The Proponent agrees to be bound by the entire RFP including all of the terms and conditions, all documents listed in the RFP "Table of Contents" and/or available in the Data Room and any and all Addenda;

3. The Proponent's representative identified below is fully authorized to represent the Proponent in any and all matters related to its Proposal, including but not limited to providing clarifications and additional information that may be requested in association with the RFP; and

4. The Proponent has disclosed all relevant relationships, in accordance with the instructions and format outlined in the Relationship Disclosure form.

Proponent Team consists of:

Name	Address	Prime Member, Equity Member, or Key Individual

Proponent	Proponent Representative
Name of Firm	Name
Address	E-mail Address
Name of Authorized Signatory	Telephone
Signature	Fax Number

29. FORM 10 RELATIONSHIP DISCLOSURE FORM

Regional Municipality of Durham
Energy From Waste Facility
Request For Proposals

This is to be completed by each Proponent Team Member (including firms and individuals)

The Proponent declares that:

1. The Proponent has reviewed the list of Ineligible Team Members found in Section 4 of the RFP.

2. The following is a full disclosure of all relationships that the Proponent has with:

   (a) any Ineligible Team Member or their current or former employees, shareholders, dirctors or officers; or

   (b) employees (both current or former) of the Region or individuals of firms who have been involved in the Selection Process or the design, planning or implementation of the Project

that could constitute a conflict of interest or unfair advantage.

Name of Restricted Party/Person	**Details of the nature of the Proponent's relationship with the listed Restricted Party/Person** (e.g. Proponent was an advisor to the Ineligible Team Member from 2003 – 2004)

30. FORM 11 REQUEST FOR GEOTECHNICAL INVESTIGATION

Regional Municipality of Durham
Energy from Waste Facility
Request for Proposals

Proponent Request Number	Date
Proponent Team Name	
Contact Person **E-mail** **Phone No.**	

The Proponent hereby requests that the Geotechnical Consultant perform the following further geotechnical investigation:

INTERNAL USE ONLY

Communication Log Reference No.

Approved/Return to Proponent

Team Responsibility	○	**Design/Consultant**	○	**Financial/Commercial**
	○	**Operations/Maintenance**	○	**Other**

Date response returned to Proponent /Posted

23. FORM 4 PERFORMANCE GUARANTEES

Facility Guarantee

These performance guarantees will be incorporated into the Project Agreement.

1.	**Construction Period Guarantee**		
	Length of time from Notice to Proceed to Schedule Acceptance Date (days)		
2.	**Throughput Capacity Guarantee (140,000 tonnes per year)**		
	HHV	Tonnes per day	
	11.0 MJ/kg		
	12.0 MJ/kg		
	13.0 MJ/kg *		
	14.0 MJ/kg		
	15.0 MJ/kg		
	* = Design waste HHV		
3.	**Electricity Production Guarantee* (Annual Average)** ***Not including the Future District Energy System component (See Part 9 to this form, below)**		
	Throttle Conditions Proposed (Bar)		
	Throttle Conditions Proposed (^{o}C)		
	Maximum Steam load (kg/hr)		
	HHV	Gross Electrical Output (kWh/tonne)	Net Electrical Output (kWh/tonne
	11.0 MJ/kg		
	12.0 MJ/kg		
	13.0 MJ/kg		
	14.0 MJ/kg		
	15.0 MJ/kg		

4.	**Residue Quality and Quantity Guarantee:** The Average monthly quality and quantity of Residue (to include bottom ash, fly ash, siftings, scrubber residue and all other process residue) from combustion of processible waste:	
	Unburned Combustible Matter (% dry weight – not exceed 3.0%)	
	Total Residue (bottom and fly ash) excluding ferrous and other materials (tonne of residue/tonne of processible waste – not to exceed 30%)	
	Percent Moisture in Bottom Ash Residue (tonne of residue/tonne of processible waste – not to exceed 25%)	
5.	**Metals Recovery Guarantee (recovery efficiency test)**	
	Measured as tonnes ferrous recovered/tonnes ferrous in residue pre-processing – expressed as a percentage	
6.	**Other Material Recovery** (Specify material; tonne of material recovered/tonne of material recoverable – expressed as %)	
	Material 1: Non-Ferrous	
	Material 2:	
	Material 3:	
7.	**Guaranteed Facility Availability**	
	the proportion of time the Incinerator Unit is available to process the Regions' waste within a calendar year time period, expressed as a percentage (minimum requirement is 90% availability or 7,884 hours available in a year)	

8. Guaranteed Maximum Emission Limits

Pollutant	Units	YD EFW Proposed Limits	Guaranteed Limit	Environmental Demerit Points
Exceed any Certificate of Approval Limit and Operator cannot receive any bonus payments for that year. Further violations will increase demerit points and demerit points for specific emissions are cumulative with CEM or Stack test demerits listed below. Operator can receive both a negative Performance Adjustment and MOE fines.				75
Continuous Emission Monitoring (CEM) Parameters Excludes exceedances during Normal Start-up and Shutdown conditions and Emergency Shutdowns				
Sulphur Dioxide (SO_2) 24 hour geometric mean exceeds CEM guarantee	mg/Rm^3	35		10
Hydrogen Chloride (HCl) 24 hour arithmetic mean exceeds CEM guarantee	mg/Rm^3	9		10
Hydrogen Fluoride (HF) 24 hour arithmetic mean exceeds CEM guarantee	mg/Rm^3	0.9		10
Nitrogen Oxides (NOx) 24 hour arithmetic mean exceeds CEM guarantee	mg/Rm^3	180		10
Carbon Monoxide (CO) 24 hour arithmetic mean exceeds CEM guarantee	mg/Rm3	45		10
Stack Test Parameters				
Mercury (Hg) Stack Test result exceeds Emission Guarantee	$\mu g/Rm^3$	15		20
Cadmium (Cd) Stack Test result exceeds Emission Guarantee	$\mu g/Rm^3$	7		20
Cadmium + Thallium (Cd + Th) Stack Test result exceeds Emission Guarantee	$\mu g/Rm^3$	46		20
Lead (Pb) Stack Test result exceeds Emission Guarantee	$\mu g/Rm^3$	50		20
Sum of (As, Ni, Co, Pb, Cr, Cu, V, Mn, Sb) Stack Test result exceeds Emission Guarantee	µg/Rm3	460		20

Dioxins Stack Test result exceeds Emission Guarantee	pg/Rm3	60		20
Total Particulate Matter Stack Test result exceeds Emission Guarantee	mg/Rm^3	9		20
Organic Matter (as methane) Stack Test result exceeds Emission Guarantee	mg/Rm3	49		20
Operational Parameters Excludes exceedances during Normal Start-up and Shutdown conditions and Emergency Shutdowns				
Continuous Emission Monitor Monthly Availability	percent	95 %		5
Opacity exceeds CEM guarantee	percent	TBD		5
Any other MOE C of A imposed criteria	TBD	TBD		TBD

1 The Owner will assign environmental performance points for guaranteed operating level exceedances during operation, but will exclude exceedances during Normal Start-up and Shutdown conditions and Emergency Shutdowns.

9. **Future District Heating System Energy Output Guarantee**

	Provide a guaranteed maximum reduction in electrical output resulting from the implementation of the district heating loop. Vendor's guarantee shall be at peak load conditions of 3.5 MW thermal to the future office buildings in the Energy Park and 3.9 MW thermal load to the Courtice WPCP.		
	Maximum anticipated Extraction Steam load for district heating system (kg/hr)		
	Extraction Steam Conditions Proposed for district heating system (^{o}C)		
	Extraction Steam Conditions Proposed for district heating system (Bar)		
	HHV	Gross Electrical Output (kWh/tonne)	Net Electrical Output (kWh/tonne
	11.0 MJ/kg		
	12.0 MJ/kg		
	13.0 MJ/kg		
	14.0 MJ/kg		
	15.0 MJ/kg		

24. FORM 5 DETAILED FACILITY AND EQUIPMENT DATA

This FORM 5 must be appended to Section A of the Project Proposal. (See Section 4.5 of this RFP.)

Unless otherwise specified in this Proposal form, variable quantities (i.e. temperature, pressures, mass and volumetric flows, gas and liquid velocities, heat duties, powers and efficiencies) are to be given for operating conditions which correspond with the Maximum Continuous Rating (MCR) operation of the unit of equipment assuming fuel HHV – 13.0 MJ/kg. The terms "design," and "maximum continuous rating (MCR)," are synonymous. Unless otherwise indicated, "percent" and "%" mean weight percent.

PART A – GENERAL

1. Drawings. Note drawing requirements identified in Section 4.5.1 of the RFP and the Technical Requirements.

2. Process Flow Diagram. The process flow diagram and called for in Section X will be found in Drawing No. _____

3. Mass Balance Diagrams for the same three (3) cases as in Item 4 below. See attached Drawings Nos. _____, through _____.

4. Process Energy Balances:

   Complete the following table for each column, corresponding to varying fuel HHV.

CASE A			
HHV, Processible Waste MJ/kg	11.0 **Low**	13.0 **MCR**	15.0 **High**
Furnace/Boiler Unit Feed Rate			
Excess air, %			
Furnace/boiler Losses per Unit (MJ/kg):			
Dry gas			
Sensible heat in dry gas			
H_2 and H_2O in fuel			
H_2O in combustion air			
H_2O from Residue pit & quench			
Unburned combustibles			
Radiation and convection			
Unaccounted (mfr.'s margin, max. 1.5%)			
Subtotal furnace/boiler losses			
(MJ/hr), per unit			
Total steam output:			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr (sum all units)			
Net efficiency of steam generating units, %			

Main Steam for each unit:			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr			
Process Flow:			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr			
Extractions:			
Feedwater Heater			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr			
Dearator			
Pressure, bars			
Temperature, ^{O}C			
Mass flow, kg/hr			
Plant Heat Rate			
Gross, HHV based			
Net, HHV based			
Turbine Heat Rate (average each unit)			
Energy Summary:			
Gross TG power output, MW, total			
In-plant electric consumption, MW			
Net Facility power output, MW			
Corresponding diagrams as described in Section 4.5.1 of the RFP Drawing Nos.:			
Furnace/Boiler MCR (each unit) in Tonne per hour of Processible Waste			

5. Facility Water Mass Balance Diagrams for: (a) average day and (b) peak day Facility Water Consumption conditions.

   a. 426 tonne/day Facility Throughput, average day of year with respect to Facility water consumption. See attached Drawing No. _____.

   b. 426 tonne/day Facility Throughput, peak summertime daily Facility Water Consumption for average climatological year. See Drawing No. _____.

   Basis for both a) and b) above is HHV = 13.0 MJ/kg and 426 tonne/day Throughput.

6. a. Line Diagram complete with protective relays and metering. See attached Drawing Nos. _____

   b. Electrical transmission structure detail. See attached Drawing No. _____.

7. Civil/Structural

The Company must acknowledge and certify, by checking the first blank below, that all civil/structural requirements specified in the Technical Requirements, are included in its Proposal.

Facility design and construction ☐conforms ☐does not conform (check one) to the Technical Requirements. If not, the Company must provide an itemized schedule of all exceptions to those items, if any, which do not conform to Section 4.0 of the Technical Requirements. Such schedule must be clearly labeled "Schedule of Exceptions to Civil/Structural Requirements," and must be attached to this Proposal form.

8. Facility Data

The Company must provide a rendering and brief description of the type of structure and materials of construction, along with approximate building size, for each building or enclosure proposed in the space below. Rendering No. _____.

9. Truck Unloading and Storage at Facility

a. Number of truck unloading positions _____

b. Dimensions of pit (length x width x depth x _____ x _____ x _____ from tipping floor), meters

c. Pit storage capacity, m^3_____

d. Pit storage capacity at tipping floor level, tonne _____
total tonne _____

e. Design density of refuse in storage pit, kg/m^3 _____

PART B – COMBUSTION PLANT EQUIPMENT

Parts B and C must be accompanied by a complete process flowsheet sufficiently detailed so as to indicate each of the stream flows for which data is requested in Parts B and C of this Proposal FORM 5. Each stream will be numbered, and these numbers will be inserted *in Parts* B and C where indicated by the heading "STM#" meaning "stream number".

1. Steam Generating Unit

a. Manufacturer/Number of Units _____ / _____

b. Furnace Volume, m^3 _____

c. Gross furnace heat liberation rate, volume basis, MJ/m^3) _____

d. Gross heat release per plan area grate, MJ/meter _____

e. Declared parameters (See Notes 1, 2 and 3 below): _____

1. MCTD Tonnes per hr [1] _____
2. MCR Tonnes per hr[2] _____
3. TOL_f Tonnes per hr [3] _____
4. Period, basis for TOL (hours) _____

Notes:

1. MCTD refers to "minimum continuous turndown" capability and means the lowest point each unit can safely operate for extended periods, without supplemental fuel firing. The required MCTD is 75%.. (See Technical Requirements, Subsection 3.3).

2. MCR refers to Maximum Continuous Rating. See note at top of this Proposal form.

3. TOL_f refers to "temporary overload" and means specifically the control point conditions with the furnace/boiler unit operating at its maximum temporary overload capacity. Company to indicate period (number of hours) as basis for TOL_f.

f. Steam Flow, kg/hr

	STM#	MCTD	MCR	TOL_f
Superheater outlet				
Boiler blowdown				
Economizer inlet				
Sootblowers				
Attemporator, if applicable				
Feedwater pump				

g.	Steam and Water Pressures, bars				
	Superheater outlet				
	Steam drum				
	Economizer inlet				
	Sootblowers				
h.	Steam and Water Temperatures, ^{o}C				
	Superheater outlet				
	Primary superheater outlet if app.				
	Economizer inlet				
	Economizer outlet				
i.	Steam Purity				
	Average solids in outlet steam, ppm				
	Maximum cation conductivity, Microhm/cm				
	Maximum silica, ppb				
j.	Flue Gas Flows leaving economizer kg/hr				
k.	Flue Gas Pressures, +/- mm H_2O				
	Furnace inlet				
	Furnace exit				
	Economizer exit				
	ID Fan inlet				
	ID Fan outlet				
	Stack inlet				
l.	Average Flue Gas Temperatures, ^{o}C				
	Furnace temperature, max.				
	Superheater (inlet)				
	Economizer exit				
	Baghouse (inlet)				
	APC outlet				
	Stack exit				
m.	Average flue Gas Velocities, meter/s				
	Through furnace pass				
	Through superheater section				
	Through Boiler section				

	Through economizer	_____	_____	_____	_____
	Through baghouse	_____	_____	_____	_____
	Maximum duct velocity	_____	_____	_____	_____
	Stack exit (> 60 meter/s)	_____	_____	_____	_____
n.	Air Flows, kg/hr		_____	_____	_____
	Secondary air inlet		_____	_____	_____
	Primary air inlet		_____	_____	_____
	Excess air for fan sizing, %		_____	_____	_____
o.	Air Pressures, mm H_2O (in H_2O) FD fan outlet		_____	_____	_____
	Air heater pressure drop		_____	_____	_____
	Pressure drop through grate		_____	_____	_____
	Secondary fan outlet		_____	_____	_____
p.	Air Temperatures, ^oC		_____	_____	_____
	Design ambient, min. ^oC		_____	_____	_____
	Air temperature to forced draft fan and Secondary air fan, ^oC (for boiler performance Evaluation)		_____	_____	_____
q.	Design humidity		_____	_____	_____
	Primary air heater inlet		_____	_____	_____
	Primary air heater outlet		_____	_____	_____
r.	Raw Gas Loadings		_____	_____	_____
	Portion of total Residue leaving boiler with Flue gas, weight percent Typical concentration of particulate in flue Gas leaving boiler, mg/Rm^3 @ 11% O_2		_____	_____	_____
	Typical size of particulate in flue gas. %		_____	_____	_____
	pm 2.5-<10 microns		_____	_____	_____ pm
	10		_____	_____	_____
	> 10 microns		_____	_____	_____
s.	Design clean Gas Loadings		_____	_____	_____
	Portion of total particulate matter leaving Stack with flue gas, %		_____	_____	_____
	Particle size distribution in flue gas, %		_____	_____	_____
	pm 2.5-<10 microns		_____	_____	_____pm
	10		_____	_____	_____
	> 10 microns		_____	_____	_____

t. Estimated stack emissions based on an installed capacity of 213 tonnes per day per unit (for a two unit system) of Reference Waste at 12.8 MJ/kg and plant Operating conditions corrected in order to Generate an equivalent flue gas rate @ 11% O_2 Dry, 101 kPa and 25^o C.

	Uncontrolled mg/Rm^3	Controlled mg/Rm^3
POLLUTANTS:		
Sulfur Dioxide (SO_2)		
Hydrogen Chloride (HCl)		
Hydrogen Fluoride (HF)		
Oxides of Nitrogen (NO_x)		
Carbon Monoxide (CO)		
Mercury (Hg)		
Cadmium (Cd)		
Cadmium and Thallium (Cd + Th)		
Lead (Pb)		
Sum of (As, Ni, Co, Pb, Cr, Cu, V, Mn, Sb)		
Dioxins (as TEQ Toxic Equivalents)		
Total Particulate Matter		
Organic Matter (as CH_4)		
OTHER POLLUTANTS:[3]		
Trace Metals:		
Chromium (hexavalent)		
Total Chromium (and compounds)		
Aluminum Oxide		
Arsenic		
Barium		
Phosphorus Pentachloride		
Selenium		
Respirable Silica (less than 10 micrometres)		
Ammonia Slip (at stack)		
Polycyclic Organic Matter:		
Acenaphthylene		
Acenaphthene		
Anthracene		
Benzene		
Benzo(a)anthracene		
Benzo(b)fluoranthene		
Benzo(k)fluoranthene		
Benzo(a)fluorene		
Benzo(b)fluorene		
Benzo(ghi)perylene		
Benzo(a)pyrene		
Benzo(e)pyrene		
2-chloronaphthalene		
Chrysene		

[3] As stipulated in the latest revisions to Ontario Regulations 419/05, or as stipulated by the Ontario Ministry of Environment in the Certificate of Approval.

Coronene	_____	_____
Dibenzo(a,c)anthracene	_____	_____
9,10 – dimethylanthracene	_____	_____
7,12 – dimethylbenzo(a)anthracene	_____	_____
Fluoranthene	_____	_____
Fluorine	_____	_____
Indeno(1,2,3 – cd)pyrene	_____	_____
2 – mehtylanthracene	_____	_____
3 – methylcholanthrene	_____	_____
1 – methylnaphthalene	_____	_____
2 – methylnaphthalene	_____	_____
1 – methylphenanthrene	_____	_____
9 – methylphenanthrene	_____	_____
Naphthalene	_____	_____
Pentachlorophenol	_____	_____
Perylene	_____	_____
Phenanthrene	_____	_____
Picene	_____	_____
Polychlorinated Biphenyls	_____	_____
Pyrene	_____	_____
Tetralin	_____	_____
1,2,4 – Trichlorobezene		
Triphenylene	_____	_____
Dibenzo(a,h)anthracene	_____	_____
Dibenzo(a,e)pyrene	_____	_____
Quinoline	_____	_____
Biphenyl	_____	_____
O-terphenyl	_____	_____
M-terphenyl	_____	_____
P-terphenyl	_____	_____
Other Volatile Organic Matter:		
Acetaldehyde	_____	_____
Acetone	_____	_____
Acrolein	_____	_____
Bromodichloromethane	_____	_____
Bromoform	_____	_____
Bromomethane	_____	_____
Butadiene, 1,3 -	_____	_____
Butanone, 2 -	_____	_____
Carbon tetrachloride	_____	_____
Chloroform	_____	_____
Cumene	_____	_____
Dibromochloromethane	_____	_____
Dichlorodifluoromethane	_____	_____
Dichloroethane, 1,2 -	_____	_____
Dichloroethane, trans – 1,2 -	_____	_____
Dichloroethene, 1,1 -	_____	_____
Dichloropropane, 1,2 -	_____	_____

Ethylbenzene	_____	_____
Ethylene Dibromide	_____	_____
Formaldehyde	_____	_____
Mesitylene	_____	_____
Methylene chloride	_____	_____
Styrene	_____	_____
Tetrachloroethene	_____	_____
Toluene	_____	_____
Trichloroethane, 1,1,1 -	_____	_____
Trichloroethene	_____	_____
Trichloroethylene, 1,1,2 -	_____	_____
Trichlorofluoromethane	_____	_____
Trichlorotrifluoroethane	_____	_____
Vinyl chloride	_____	_____
Xylenes, m-, p- and o-	_____	_____

u. Estimated Fugitive Emissions:

	Emissions tonne/yr
1. Waste Handling and Storage	_____
2. Residue Handling, Storage Treatment	
(a) Bottom Ash System	_____
(b) Fly Ash (include. boiler fly ash	_____
3. On-Site Fuel Storage	_____
4. Sorbent Handling, Storage and Preparation	_____
5. Ammonia Slip, Handling, Storage and Preparation (if applicable)	_____
6. Other: _____	_____

v. Describe method used to estimate uncontrolled fugitive emissions and measures to be used to control these emissions:

w. Describe measures to be used to control odours resulting from waste handling and storage during normal operations:

x. Describe measures to be used to control odours resulting from waste handling and storage during normal operations:

_____
_____
_____
_____
_____

y.

Residue	MCTD	MCR	TOL_f
Bottom ash, kg/hr (dry)			
Fly ash, kg/hr (dry)			
Moisture of Residue (combined ash)			
Weight percent			
Weight of Residue (combined ash) kg/hr			

z. Gas Side Design Data

Furnace Design Pressure, mm H_2O	
Boiler Design Pressure, mm H_2O	
Ductwork Design Pressure, mm H_2O	
Scrubber, mm H_2O (if appl.)	
Baghouse Design Pressure, mm H_2O	

aa. Boiler Data

Steam Drum/Mud Drum	
Inside dia. and thickness of drum, mm	
Boiler section heat transfer surface are, m^2	
Boiler tube O.D./wall thickness, mm	/
Boiler tube spacing, mm	
Waterwall tube O.D./wall thickness, mm	/
Tube arrangement, check one	____ in line, ____ staggered
Design Pressure, bars	

bb. Superheater Data

	Primary	Reheat (if applies)
Design pressure, bars		
Primary superheater surface, m^2		
Size and material of superheater outlet header		
Type of attemperator		
Superheater tube O.D./wall thickness, mm	/	/
Superheater tube spacing, mm		
State tube arrangement: inline or staggered		
Superheater pressure drop at GL and Over pressure flow, bars		

cc. Economizer Data

Type of economizer	
Design pressure, bars	
Effective heat transfer surface, m^2	
Size/material of economizer inlet nozzle	/
Tube O.D. wall thickness, mm	/
Tube spacing, mm	
Tube arrangement, check one staggered	____ in line, ____ staggered

dd. Main steam line pressure drop at TOL_f and 5% over pressure flow, bars (excluding boiler stop check valve) _____

ee. Boiler stop check valve pressure drop at furnace TOL_f and over pressure flow, bars _____

2. Refuse Handling Cranes

a. Manufacturer, Model No. _____

b. Quantity (primary/spare) _____

c. Crane Capacity, tonne _____

d. Grapple Size, m^3 _____

e. Grapple Type _____

f. Crane design handling rate, tonne/hr _____

g. Speeds at full load _____

1. Hoist, m/min _____

2. Bridge travel, meter/min _____

3. Trolley travel, meter/min _____

h. Maximum hoist lift, meter _____

i. Controls, type _____

j. CMAA Rating _____

k. Description of Controls and Stationary Operator and degree of automation:

_____

_____

3. Pit Fire Safety Features (See also the Technical Requirements)

a. Describe smoke and heat handling features: _____

_____

b. Describe safety features for protection of crane operator: _____

_____

c. Describe pit fire control equipment: _____

_____

d. Justification as to the sufficiency of proposed fire water provisions as called for in the Technical Requirements. See attached sheets numbered _____ through _____.

4. Refuse Hoppers and Feed Chutes

a. Manufacturer, Model _____ / _____

b. Hopper Capacity, volume/density m^3 @ kg/m^3 _____ @ _____

c. Hopper Material/Plate Thickness, mm _____

d. Feed Chute

1. Dimensions, LxW, meter _____ x _____

2. Size of largest item which will pass Through chute, LxWxH, meter _____ x _____ x _____

3. Chute cooling system _____

4. Shut off damp, size, meter x meter _____ x _____

e. Level Indicators, qty. and type _____

5. Refuse Feeders

a. Type and Manufacturer _____

b. Capacity (24 hr. maximum), tonne/hr _____

6. Stokers and Grates

a. Type and Manufacturer _____

b. Grate Area, m^2 _____

c. Grate Material Type _____

d. Grate bar life, hours (20,000 hr min) _____

e. Cross-sectioned area of grate bar(s), m^2 _____

f. End/Side Seal Material _____

g. Sifting Handling Description _____

h. No. Siftings Hoppers _____

i. Capacity Control Method _____

j. Grate Cooling System (i.e. air, water) _____

7. Fans

	FD	SA	ID
a. Manufacturer			
b. Type of Wheel			
c. Diameter of Wheel			
d. Net Operation Requirements:			
Capacity, kg/hr, m^3/min			
Gas/Air temperature, ^oC			
Static pressure, kPa			
Efficiency, %			
Power to fan coupling, kW			
e. Test Block Requirements:			
Capacity, kg/hr, m^3/min			
Gas/Air temperature, ^oC			
Static pressure, kPa			
Efficiency, %			
Power to fan coupling, kW			

f. Motor Data:

	Manufacturer			
	Motor size, kW			
	Frame Size			
	Enclosure Type			
	Service Factor			
	Volts/phase/Hz			
	Full load current, amp			
g.	Variable Frequency Drive Data:			
	Manufacturer			
	Other			
h.	Type/Manufacturer of bearings			
i.	Materials			
	Wheel			
	Shaft			
	Scroll			
j.	Operating speed, rpm			

8. Air Preheaters

a.	Manufacturer, Type, Model No.	
b.	Number, Size, mm x mm	/ / x
c.	Duty, MJ/hr	
d.	Design Conditions	
	Inlet temperature, ^{o}C	
	Outlet temperature, ^{o}C	
e.	Heat transfer medium	

9. Residue Handling System

a.	Bottom Ash System: Primary/Standby	
	Manufacturer	/
	Type	/
	Capacity, tonne/hr	/
	Residue Pit Dimensions, ((LxWxD) from Bottom ash inlet point) in meters	x x

	Design density of bottom ash for storage/Structural design, kg/m^3	_____ / _____
	Type of drive for conveyance system	_____
	Capacity of drive mechanism (i.e. if Motor drive, kW	_____
	Size of largest item passable through System, LxWxH, meter	_____ x _____ x _____
b.	Air Pollution Control Equipment Ash System	
	Manufacturer	_____
	Type	_____
	Capacity, tonne/hr	_____
	Dimensions, mm	_____
	Design density for Storage/structural design, kg/m^3	_____
	Type of drive for conveyance system	_____
	Capacity of drive mechanism i.e. if motor drive, kW	_____
c.	Boiler Fly Ash System	
	Manufacturer	_____
	Type	_____
	Capacity, kg/hr	_____
	Dimensions, mm	_____
	Design density of fly ash for storage/Structural design, kg/m^3	_____

	Type of drive for conveyance system	
	Capacity of drive mechanism (e.g., if motor drive, kW)	
	Compatibility with separate APC fly ash collection	
d.	Fly Ash Storage Silo	
	Manufacturer	
	Type	
	Capacity, tonne and No. of days	
	Dimensions, mm	
	Type of unloading system	
	Dust control/collection system	
e.	Maximum water use, total Residue handling system, lpd	
	10. Stack	
a.	Manufacturer	
b.	Number of Flues	
c.	Diameter of Flues	
d.	flue Material/Thickness, mm	
e.	Height, meters	
f.	Insulation Properties	
	11. Soot Removal System	
a.	Manufacturer	
b.	Type (e.g., steam sootblower, rapping)	
c.	Description of System and Controls:	

12. Fabric Filter Data

a. Air-to-Cloth Ratio:
   Net _____
   Gross _____

b. Number of Compartments _____

c. Manufacturer _____

d. Flue Gas Data (per unit)
   Maximum Flow, actual m^3/min _____
   Maximum Temperature, ^oC _____
   Flange-to-Flange Pressure Drop, mm Hg _____

e. Particulate Removal Efficiency
   Efficiency, % _____
   Inlet loading at 11% O_2, mg/Rm^3 _____
   Outlet Loading at 11% O_2, mg/Rm^3 _____

f. Item Descriptions
   Number of Bags/Compartment _____
   Diameter and length of each Bag, mm _____ / _____
   Service Life (minimum), hours _____
   Bag Frames, if applicable _____
   Shell material, ASTM _____
   Hoppers
   Quantity, number _____
   Capacity, tonne each _____
   Storage Capacity, hours @ GL _____
   Material Type _____

g. Description of System for Removing Collected Material:

_____

_____

_____

h. Power Consumption

Connected, kW _____

Operating, kW _____

i. Compressed Air Consumption (annual average), m^3/min _____

j. Insulation

Materials _____

Thickness, mm _____

Areas covered _____

Cladding _____

k. Shell

Materials _____

Thickness, mm _____

l. Accessories (Description)

Hopper Heaters _____

Hopper Vibrators _____

Poke Holes _____

Air Tight Connection at Hopper Outlet _____

Temperature Control for Reverse Air Or Pulse Jet Air _____

m. Monitoring System (Description)

Type and Quantity of Sensors /

Type and Quantity of Signal Processors /

Type of Control Unit

Type of Alarm

13. Acid Gas Scrubbing Equipment (Spray-dry, Dry injection or wet scrubber)

a. Type (e.g. semi-dry, dry, or wet)
b. Number of Units
c. Manufacturer
d. Flue Gas Data (per unit)

Maximum Flow, ACMM

Maximum Temperature, ^{o}C

Flange-to-Flange Pressure Drop, mm Hg

Maximum Outlet Temperature, ^{o}C

Minimum Outlet Temperature, ^{o}C

Average Outlet Temperature, ^{o}C

e. Removal Efficiencies

1. HCl

a. Efficiency, %

b. Inlet Concentration, mg/Rm^3 @11% O2

c. Outlet Concentration, mg/Rm^3 @11% O2

2. SO_2

a. Efficiency, %

	b. Inlet Concentration, mg/Rm^3 @11% O_2	
	c. Outlet Concentration, mg/Rm^3 @11% O_2	
f.	Chemical Used for Neutralization (e.g. pebble lime, hydrated lime, etc.)	
g.	Average Neutralization Chemical Use (per unit), kg/hr	
h.	Average Water Use (per unit), lpm	
i.	Electric Power (Total)	
	Connected, KW	
	Operating (Annual Average), KW	
j.	Compressed Air Use (Average Annual Consumption per Unit), dry std m^3/min	
k.	Atomization System	
	Type	
	Manufacturer	
l.	Control and Instrumentation	
	HCl	
	SO_2	
	Outlet Temperature	
m.	Materials of construction and description	
	Chemical Storage	
	Chemical Slaker	
	Chemical Pump	
	Chemical/Water Solution % at Atomizer	
	Scrubber Shell Material and Thickness	

n. Describe Neutralization Chemical Loading, Storage, Slaking or Slurry injection, and atomization system (include number of units and spares)

o. Atomization System Replacement (Describe expected equipment downtime associated with each replacement and number of replacements per year)

If dry injection is proposed:

p. Materials of construction and description

Reagent Storage

Scrubber Shell Material and Thickness

q. Describe Loading, Storage, Powder injection, and water atomization system (include number of units and spares)

r. Atomization System Replacement (Describe expected equipment downtime associated with replacement)

PART C - BALANCE OF FACILITY SYSTEMS

14. Turbine-Generator System:

a. Manufacturer _____

b. Model No. _____

c. Nameplate Capacity, MW (each unit) _____ / _____

d. High Pressure Throttle Flow at TOL_1 and 5% Over Pressure, kg/hr (See Note 3 below) _____

		STM#	MCTDTG[1]	MCR[2]	TOL_1[3]
e.	High Pressure Throttle Flow, kg/hr				
f.	Throttle Steam Pressures, bars				

NOTES:

[1] MCTDTG above refers to "maximum continuous turndown-turbine/generator" and above means specifically the control point conditions at maximum permissible turndown of the turbine/generator set.

[2] MCR refers to Maximum Continuous Rating. See note at top of this Proposal form.

[3] TOL_1 above refers to "temporary (one hour) overload" and means specifically the control point conditions with the turbine/generator set unit operating at its maximum one hour overload capacity. (See the Technical Requirements).

g.	Throttle Steam Temperatures, ^oC				
h.	Extraction Steam Pressures, bars				
i.	Extraction Steam Temperatures, ^oC				
j.	Turbine Exhaust Pressures, mmHg abs				
k.	Turbine Generator Heat Rates, MJ/kWh, High Pressure Turbine				

l. Governing System Type _____

m. Generator Voltage, kV _____

n. Gland Steam Condenser

1. Manufacturer _____
2. Capacity, kg/hr and/or MJ/hr _____ / _____

o. Generator Cooling System, description: _____

_____

_____

_____

15. Air Cooled Steam Condenser

a. Manufacturer, Model _____ / _____

		STM#	MCTDTG[1]	MCR[2]	TOL_1[3]
b.	Operating pressures, mm Hg abs (in Hg abs)				
c.	Steam flows, kg/hr(kg/hr)				
d.	Heat duties, MJ/hr				
e.	Design dry bulb temperature, ^{o}C				
f.	Quantity, no. of cells				
g.	Design Range, ^{o}C				
h.	Design Approach, ^{o}C				
i.	Condensate Tank, size liters				
j.	Condensate Pump number and type				
k.	Condensate Pump, kW each				
l.	Ductwork, diameter, mm				
m.	Ductwork, length, meter				
n.	Ductwork pressure drop, mm Hg				
o.	Gas Removal System				
	1. Gas Removal System				
	2. Pump kW, each				
	3. Collection Tank, size, litters				

p.	Fan(s), number and type				
q.	Fan motor kW each				
r.	Variable Frequency Drive Data:				
	Number				
	Type				
s.	Fan electrical consumption (with VFDs), kW each				

t. Fan Flow control, description:

16. Feedwater System (Provide a description of the feedwater cycle, with equipment arrangements)

17. Boiler Feed Pumps

		Electric Drive	Steam Drive
a.	Manufacturer, Model No.		
b.	Quantity		
c.	Design capacity, m^3/min		
d.	Design total head, meter		
e.	Design inlet pressure, bars		
f.	Design outlet pressure, bars		
g.	Design temperature, ^oC		
h.	Efficiency at design conditions, %		
i.	Type of seals		

j.	Drive horsepower, kW		
k.	Cooling method		N/A
l.	Energy consumption at design capacity		
	1. Electric, KW		N/A
	2. Steam, kg/hr	N/A	
m.	Steam inlet pressure, bars	N/A	
n.	Steam outlet pressure, bars		

18. Condensate Pumps

a.	Manufacturer, Model No.	
b.	Quantity	
c.	Design capacity, m^3/min	
d.	Design total head, meter	
e.	Motor horsepower, kW	
f.	Electrical power at design capacity, kW	

19. Circulating Water Pumps

a.	Manufacturer, Model No.	/
b.	Quantity	
c.	Design capacity, m^3/min	
d.	Design total head, mm	
e.	Motor horsepower, kW	
f.	Electrical consumption at design capacity, kW	

20. Auxiliary Cooling Water Pumps (Bearing Cooling Water Pumps)

a.	Manufacturer, Model No.	/
b.	Quantity	
c.	Design capacity, m^3/min	
d.	Design total head, mm	
e.	Motor horsepower, kW	

f. Electrical consumption at design capacity, kW _____

21. Miscellaneous Pumps

a.	Service	_____	_____	_____
b.	Manufacturer, Model	_____	_____	_____
c.	Quantity	_____	_____	_____
d.	Design capacity, m^3/min	_____	_____	_____
e.	Design total head, meter	_____	_____	_____
f.	Motor horsepower, kW	_____	_____	_____
g.	Electrical consumption at design capacity, kW	_____	_____	_____

22. Air Compressors

a.	Manufacturer, model, type	_____ / _____ / _____
b.	Quantity	_____
c.	Operating/design pressure, bars	_____
d.	Air dryer, manufacturer, model	_____ / _____
e.	Receiver, pressure/capacity	_____ bars/ _____ m^3

23. Miscellaneous Heat Exchangers

a.	Manufacturer	_____	_____	_____
b.	Service, number	____ / ____	____ / ____	____ / ____
c.	Type, tube material	____ / ____	____ / ____	____ / ____
d.	Heat duty, MJ/hr.	_____	_____	_____
e.	Surface area, m^2	_____	_____	_____

24. Makeup Water Treatment/Demineralizer

a. Manufacturer _____

b. Description of system: _____

_____

_____

_____

c. Design flow rate, m^3/min and m^3/day _____ / _____

d. Redundancy in equipment number and capacity, description:

e. Water quality monitor, description:

Wastewater Treatment

a. Manufacturer:

b. Description of system:

Deaerating Feedwater Heater and Storage Tank

a. Manufacturer

b. Quantity

c. Tray material (if used)

d. Storage tank capacity, liters

e. Outlet capacity, kg/hr

f. Oxygen content of water, cc/L

g. Operating pressure, bars

Feedwater Heaters

a. Manufacturer

b. Quantity

c. Heater duty, MJ/hr

d. Heater steam-side pressure, temperature and stream number; bars, ^{o}C , STM# / /

e. Heater terminal temperature difference, ^{o}C

f. Heater drain cooler approach ^{o}C

g. Tube material/type/no. passes / /

h. Tube diameter and gauge, mm BWG /

i. Cleanliness factor, % _____

Tanks, Demineralized Water and Condensate

		Service	DMW	Cond.
a.		Manufacturer		
b.		Design pressure and temperature, bars, ^{o}C		
c.		Size, liters		
d.		Material		

	Tanks, Other	DMW	Cond.
a.	Manufacturer, Type	/	/
b.	Service		
c.	Design pressure and temperature, bars, ^{o}C		
d.	Size, liters		
e.	Material		

Turbine Room Crane

a. Hoist Ratings

1. Main hoist rating, tonnes _____
2. Auxiliary hoist rating, tonnes _____

b. Speeds at full load

1. Main hoist, meter/min _____
2. Bridge travel, meter/min _____

c. Maximum hoist lift, meter _____

d. Controls, type _____

e. CMAA rating _____

Miscellaneous Hoists and Cranes
(Other than those associated with railhaul system)

a.	Manufacturer, Model	/	/
b.	Location		
c.	Type and function	/	/
d.	Capacity, tonne		

Elevator(s)

a.	Manufacturer, Model	/	/
b.	Location		
c.	Type and function	/	/
d.	Capacity, tonne		

Fire Protection other than Pit

Building/Area	Type/Description

Heating and Ventilation

Building/Area	Capacity. m^3/MJ/hr	Description/Function

Mobile Equipment

Mfr/Model	No./Type	Description/Function

PART D - ELECTRICAL AND INSTRUMENTATION AND CONTROL DATA

1. Generator

Manufacturer, Model _____

Cooling System, description:

_____

_____

Capacity, MW _____

Power Factor _____

Voltage _____

Frequency/Short Circuit Ratio _____

Insulation Class _____

Overspeed Limitation _____

No. Terminal Leads _____

Type Fire Protection _____

Exciter Type, Voltage Controls, describe: _____

_____

_____

Generator Protective Relays

Type _____

Manufacturer _____

Model _____

Displays, meters and recorders, list on attached sheet by manufacturer, type and range

compatibility with telemetry requirements, describe: _____

_____

_____

2. Transformers

a.	Service	_____	_____	_____
b.	Manufacturer	_____	_____	_____
c.	Type, KVA Rating	_____	_____	_____
d.	Voltage, No. Phases	_____	_____	_____
e.	Taps	_____	_____	_____
f.	Impedance	_____	_____	_____
g.	Protective Relays (Type, Manufacturer, Model)			

_____

_____

_____

3. Metal-Clad Switchgear

Manufacturer	_____	_____	_____
Service	_____	_____	_____
Voltage	_____	_____	_____
Materials of Construction	_____	_____	_____
Description	_____	_____	_____

4. DC System

Battery Charger, (Type, Manufacturer, Model)	_____	_____	_____
Batteries (Type, Manufacturer, Model)	_____	_____	_____
Description	_____	_____	_____

5. Essential AC System

Invertor (Type, Manufacturer, Model)	_____	_____	_____

Description _____ _____ _____

_____ _____ _____

6. Power Factor Correction

Description, Type _____

_____

_____

7. Synchronization and Paralleling Systems

Description of systems for generator synchronization and paralleling which allow all power sources to function either independently or in unison, using whatever generators are available. The requested description shall be written specifically for this Project. The manufacturer's standard descriptions which refer only to typical operation are not acceptable.

_____

_____

_____

_____

_____

8. Back-up Power (if applicable)

Diesel or gas turbine generator manufacturer, size _____ / _____

Description of back-up power system (type, controls, logic):

_____

_____

_____

Description of interface with mainpower system, especially with regard to priority circuitry and load shedding devices.

_____

_____

_____

9. Control Hierarchy for Power Distribution Systems

Briefly describe the overall approach towards electrical systems reliability identifying major circuits and their priorities. Explain how the systems will respond to electrical failures by automatically shedding loads on a priority basis. Discuss the order by which alternate power sources will be activated. The requested description shall be written specifically for this project. The manufacturer's standard descriptions which refer only to typical operation are not acceptable.

Provide the outline, on a separate page, for a complete protective device and circuit study starting with utility incoming to the largest breaker in first downstream panel fed from switchgear[1].

Furnish composite one-line diagram of the power distribution systems, showing all power transformers, disconnect switches, circuit breakers, fuses, positive relays, current transformers, power sources and other essential devices. See attached Figure _____.

Name specialty subcontractor to be selected for this task.

Fire Alarm and Detection System

Furnish a description of the basic system including the method of operation and supervision of each type of circuit, sequence of automatic and manual operation.

10. Lighting

Description of Outdoor and Indoor Systems:

Lumens (Foot-candles) at Control Room Panels

Lumens (Foot-candles) at top of Pit

11. Emergency Lighting

Outline the type of emergency lighting to be used demonstrating that system shall be independent of all other wiring and shall be energized at all times:

12. Instrumentation and Controls

Control Room Facilities

1. Manufacturer
2. Description (refer to the attached sheets)

Description of Panel and Local Instrumentation and Controls (manufacturers, types, logic).

Description of control logic, auto/manual controls, main and remote control stations, primary instrumentation and metering.

Description of Data Display and Storage Capabilities.

Description of Compatibility with connectivity to the Regions' Offices

PART E - MISCELLANEOUS INFORMATION

1. Spare Parts and Tools

Itemize the spare parts required and/or recommended for operation of the Project. Each item must show Quantity, Size, Model, Output, Rating, etc., and other pertinent information necessary for Procurement. See attached sheets _____.

2. Mobile Equipment

Furnish an additional list of all rolling stock and other mobile equipment not elsewhere listed. Provide manufacturer, size data, and description. See attached sheets _____.

3. Additional Equipment

Furnish an additional list of Project Equipment not previously included in this Proposal FORM 10. Provide manufacturer, size data and description information.

4. Additional Information

Furnish additional information for items requested where adequate space was not provided in this Proposal form. Reference these sheets in the proposal form.