

Energy from Waste and Anaerobic Digestion

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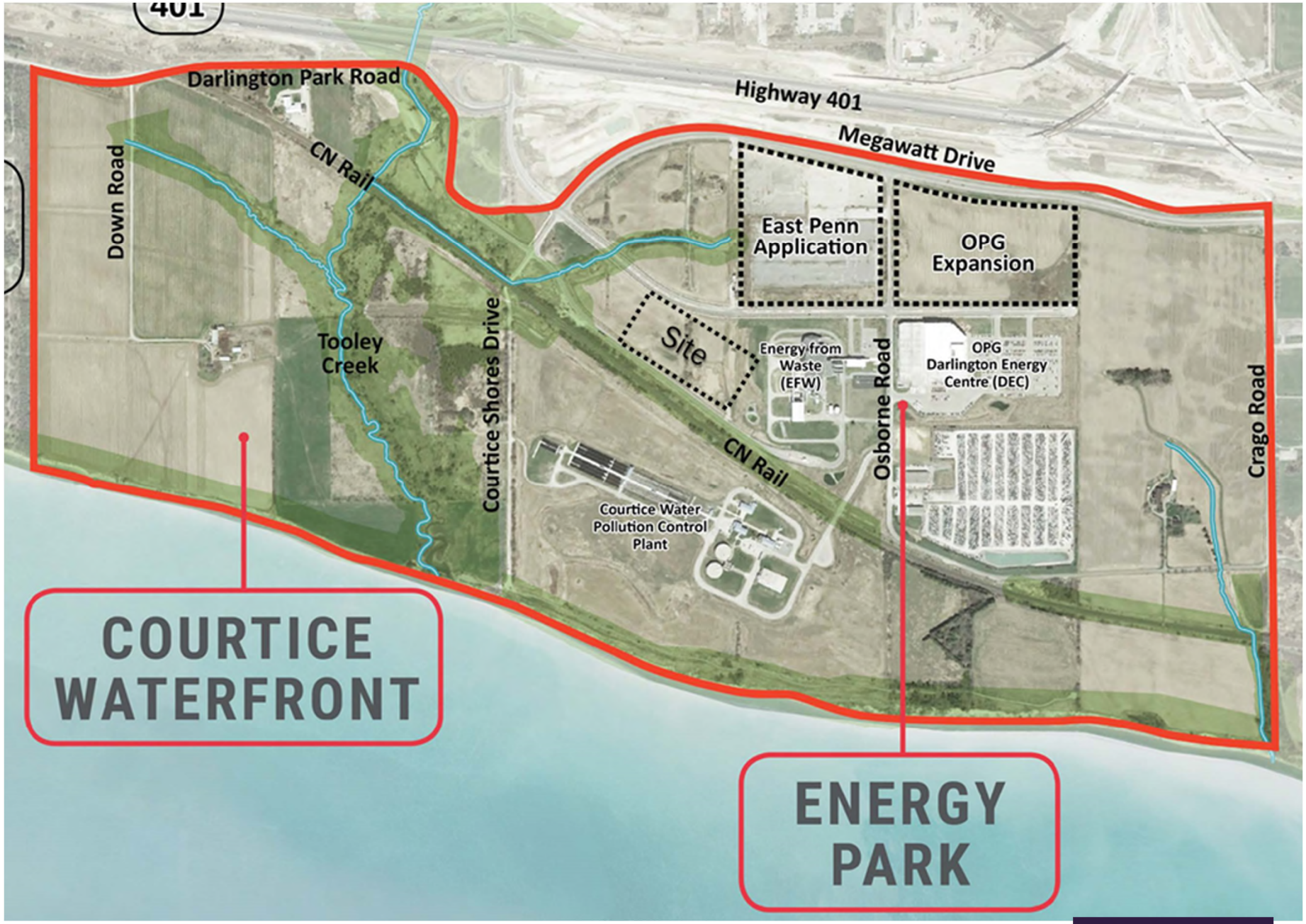
Overview

- Durham York Energy Centre Highlights
- Council Approval
- Procurement
- Construction
- Commissioning & Acceptance Testing
- Operation
- Questions & Discussion



DYEC Project Highlights

- Co-Ownership with York Region with joint Management Committee
- DBOM Contract
- Construction Price Fixed at RFP
- Monthly operating fee
- Electricity Revenues (Power Purchase Agreement)
- Annual Reconciliation
- https://www.durhamyorkwaste.ca/en/index.aspx


401
Darlington Park Road
Highway 401
Megawatt Drive
Down Road
CN Rail
East Penn Application
OPG Expansion
Site
Tooley Creek
Courtice Shores Drive
Energy from Waste (EFW)
OPG Darlington Energy Centre (DEC)
Osborne Road
Crago Road
CN Rail
Courtice Water Pollution Control Plant
COURTICE WATERFRONT
ENERGY PARK

Council Approval

Sustainable, Reliable Long Term Waste Solution

$235M

Electricity revenue

Emissions

Host Community Agreement

Co-Ownership with York



DYEC Procurement

- Pre-Project Stage
  - Facility Tours
  - Waste Studies (HHV)
  - Consultant
  - Site Selection
- Environmental Assessment
- RFP Drafting
- Fairness Monitor
- **Contract B Negotiations**

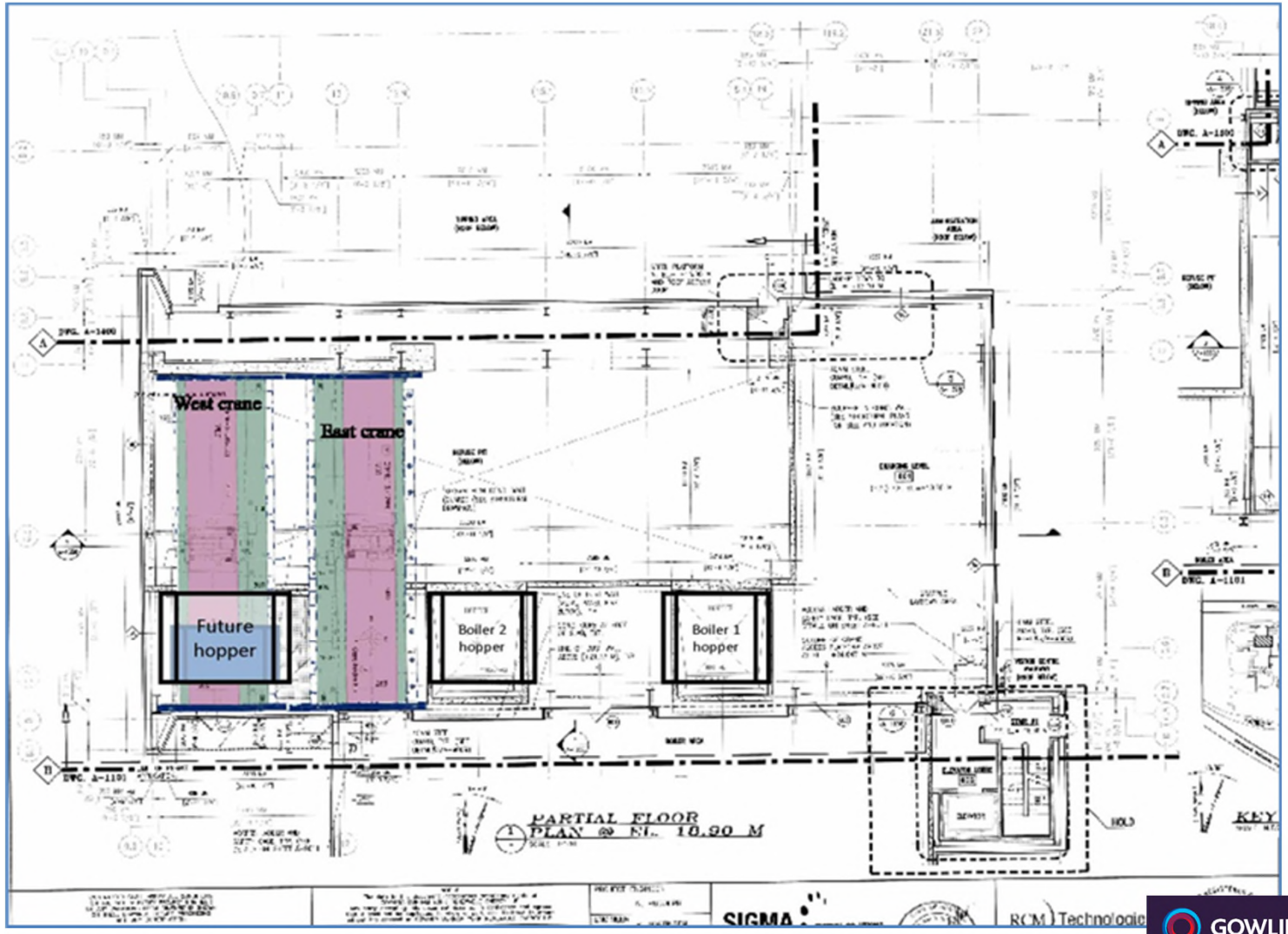


DYEC Construction

- Design – Build Dilemma
- West Crane Laydown Area
- Tipping Floor
- Reverse Osmosis



West Crane Laydown Area



West Crane Laydown Area

"Each crane must be capable of continuous operation in the handling of solid waste . . . ***The cranes must be used to feed refuse to each steam generator and for refuse management in storing and receiving refuse for the 761 tonne per day facility***."

Tipping Floor



Tipping Floor

The tipping floor and refuse storage pit will be large enough to accommodate four days of storage at the expanded Facility capacity of 250,000 tonnes per year (761 tpd) of MSW. The bottom ash storage area and fly ash storage system will be sized for a minimum of 4 days storage for the 761 tonne per day facility.

Four (4) tipping bays will be provided. The tipping floor will have a minimum open span distance of 30.5 meters from the front of the storage tip dumping bays to the exterior wall of the tipping floor, to accommodate turning requirements of transfer trailers and all other vehicles.

Reverse Osmosis – Water Polisher

The source of potable water for the Facility will be the Clarington Municipal Water Supply. In the case that the actual potable water quality is significantly different from the water quality identified in Ontario Drinking -Water Quality Standards, Ontario Regulation 169/03, made pursuant to the *Safe Drinking Water Act. 2002.* as of April 2009 as attached as Exhibit B to these Technical Requirements (the "Water Standards"). If the quality of the potable water provided to the Facility differs from the Water Standards such that additional pre-treatment equipment, additives, treatments or other special handing is required, such matter shall be handled under the provisions of Article 15 of the Project Agreement.

Commissioning & Acceptance Testing

- Test Requirements
- Continuous Testing
- Residual Ash Limits
- Payment during testing period

Commissioning Timeline

- January 2015 - Construction Complete, Facility Operational
- January – October - Commissioning
- October 25, 2015 - 30 Day Acceptance Test begins
- Acceptance Test Pass Feb 2016

Facility operating and processing waste during this period!

LDs of $10,000/day

Penalty in monthly operating fee – ½ Contract fee during commissioning (as an incentive to move quickly)

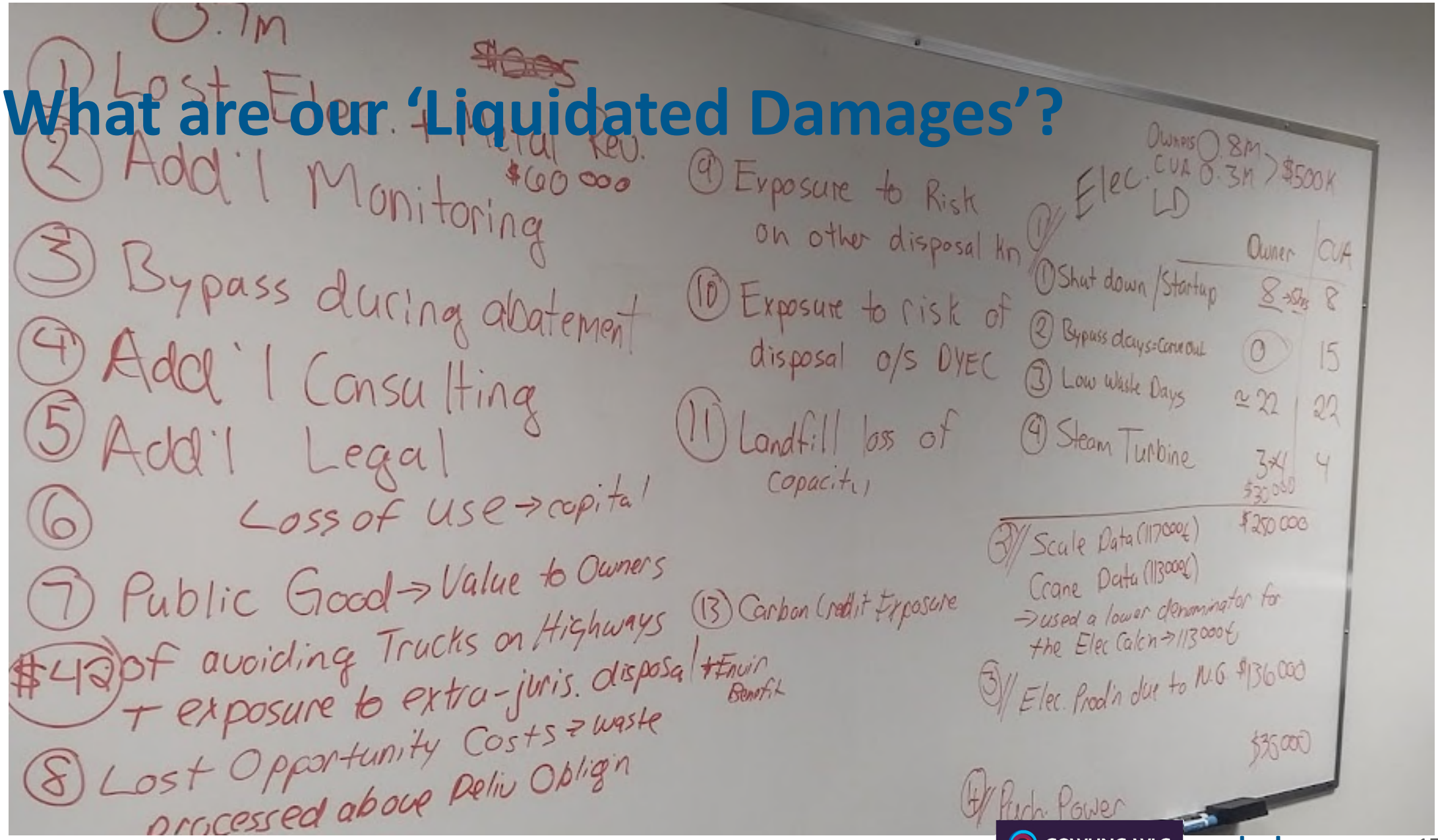
Schedule Liquidated Damages

- If the DBO Contractor does not achieve Service Commencement by the Target Date as may be adjusted under this Agreement, then the DBO Contractor shall pay to the Owner liquidated damages (the "Schedule Liquidated Damages") in respect thereof, in the amount of ten thousand dollars ($10,000.00) per day for each day or part day after the 30th day following the Target Date, until the DBO Contractor achieves Service Commencement, as evidenced by the issuance of an Acceptance Certificate by the Owner.
- $3.5M in Schedule LDs

Reduced Operating Fee

For each month during the period of time between the Start-up Operations and Shakedown Protocol and the issuance by the Owners of the Acceptance Test Certificate as outlined in Appendix 15, the Owner will pay to the DBO Contractor, 50% of the Per Tonne Total Annual Operating Fee for each tonne processed at the Facility.

What are our 'Liquidated Damages'?



Owner's Loss Estimates

$700,000	Lost Electrical Revenue
$480,000	HDR Consulting
$200,000	Extra Monitoring
$ 50,000	Legal Fees
$500,000	Bypass During Abatement
$2,000,000	Owner Losses
$3.5m - $2.0m	
$1.5m negotiating room	

Acceptance Test Requirements

- Reliability Test (continuous 30 day operation)
- Emissions Test (eg MOE CO2 limits)
- Stack Test (8 hr test for Dioxins & Furans)
- Throughput capacity test – 5 days simultaneous
- Residual ash quality test – 5 days simultaneous
- Residual ash quantity test – 5 days simultaneous

ACCEPTANCE TEST SCHEDULE

28-day Seasoning Period	30-Day Acceptance Test Period																													7-Day Extension to Acceptance Test Period						
Startup Operations & Shakedown	9/27	9/28	9/29	9/30	10/1	10/2	10/3	10/4	10/5	10/6	10/7	10/8	10/9	10/10	10/11	10/12	10/13	10/14	10/15	10/16	10/17	10/18	10/19	10/20	10/21	10/22	10/23	10/24	10/25	10/26	10/27	10/28	10/29	10/30	10/31	11/1	11/2
CEMS RATA Time and Temperature	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20	Day 21	Day 22	Day 23	Day 24	Day 25	Day 26	Day 27	Day 28	Day 29	Day 30	Day 31	Day 32	Day 33	Day 34	Day 35	Day 36	Day 37
Reliability Test	Reliability Test																														Reliability Test 7-Day Extension						
Residue Quantity Test	Residue Quantity Test																																				
Residue Quantity Test						2nd Residue Quantity Test																																	
8-hour Energy Tests																																					
Throughput Capacity Test	Throughput Capacity Test																														Throughput Capacity Test						
Residue Quantity Test	Residue Quantity Test																									Residue Quantity Test						Residue Quantity Test						
Residue Quality Test	Residue Quality Test																														Residue Quality Test						
FE and Non-FE Testing										FE and Non-FE Testing																											
Fly ash TCLP Testing			Fly ash TCLP Testing																							Fly ash TCLP Testing											
Dioxin Tests					Dioxin Tests																				Dioxin Tests							Dioxin Tests					
Stack Compliance Testing			Stack Compliance Testing																																		
Bottom Ash Testing																			Bottom Ash Enviro Test																		
Acoustic Audit										Acoustic Audit																											
Odour Testing																																					

Continuous Testing

Test Requirement	Covanta	Owners
Can Covanta re-run failed 5 day test	Yes	Yes, as long as concurrent with other tests
Can Covanta re-run failed 5 day test after 30 day test	Yes	No. 30 day test requirements must be met concurrently.
Can Covanta fail one part of the test and re-run that later	Yes	No. Failure of one part of the test is a fail on the test.

Acceptance Test Requirements



Incinerator fails test

Test results reveal some emissions from the stack of the Durham/York waste incinerator in Courtice exceed the allowable limit. Regional staff reported on-Wednesday that dioxin and furan levels are four times higher than permit limits.

Covanta, the U.S. based company contracted by the regions to build and operate the waste incinerator are currently in the 30 day Acceptance Testing phase. This the last phase before the plant can begin commercial operation. During this phase, Covanta has

ACCEPTANCE TEST REQUIREMENTS - OVERVIEW

TEST REQUIREMENT	TEST CRITERIA
30-Day Reliability Test	Steam Flow (MCR) & Availability ≥ 95%
5-Day Throughput Capacity Test	Throughput ≥ 100%(1)
Three (3) – 8-hour Energy Recovery Tests	767 kWh/tonne @ HHV of 13 MJ/kg (1)
5-Day Residue Quality Test	<25% Moisture & <3% Unburned Carbon
Residue Quantity Test-5-Day Residue Quantity Test-30-Day	Total Residue (Bottom Ash + Fly Ash) of <30% (1)
Three (3) – 8-hour Metals Recovery Tests	Ferrous ≥ 80% ; Non-Ferrous ≥ 60%
Environmental Compliance Tests	Meet all ECA requirements
Noise, Odour	Meet all EA and ECA requirements

(1) = Adjusted based on waste higher heating value (HHV) measured during test.

SUMMARY OF ACCEPTANCE TEST RESULTS

	Covanta	HDR
30-Day Reliability Test	PASS	PASS
5-Day Throughput Capacity Test	PASS	PASS
Three (3) – 8-hour Energy Recovery Tests	PASS	PASS
5-Day Residue Quality Test	PASS	PASS
Residue Quantity Test-5-Day Residue Quantity Test-30-Day	PASS (1) PASS (1)	FAIL FAIL
Three (3) – 8-hour Metals Recovery Tests	PASS	PASS
Environmental Compliance Tests (Source Test, Ash Tests)	PASS	HOLD(2)
Noise, Odour	PASS	HOLD(2)

(1) = Based on Covanta assertion that Pozzolan/Cement is excluded from the calculation for fly ash quantity.
(2) = Pending review and approval of MOECC of Source Test Report.

Residual Ash Quantity

- Residual Ash exceeded limits according to Owner
- Covanta disputed Cement/Pozzolan, an additive to stabilize
- PA silent, but Acceptance Protocol included Cement/Pozzolan in calculation of Residual Ash
- Contract vs Policy
- Re-Running the test would produce same result
- PA required/allowed Covanta to ‘buy’ their way out with no change to operations

Residual Ash Quantity

It is hereby resolved by Regional Council:

1) That the residue Quantity guarantee in the Project Agreement be revised from 30 per cent to 35 per cent at the High Heat Value (HHV) of 13 Megajoules per kilogram (MJ/kg) and the appropriate definition(s) be amended to reflect the environmental benefit of the inclusion of cement, pozzolan, and water as a stabilizing agent for fly ash.

Operations

- Helpful Project Agreement Clauses
- Annual Reconciliations
- Shut Down and Start up – Industry Standard
- Maintenance Periods
- Lifecycle Replacement Schedules

DYEC Project Agreement Clauses

- **Work To Continue**

No Dispute of any nature, including with respect to the amount of a progress payment Acceptance Certificate or in respect of any amount withheld by Owner pursuant to the provisions of this Agreement shall entitle the DBO Contractor to delay the **Design Build Work** and the DBO Contractor shall prosecute the **Design Build Work** as if there were no disagreement . . .

DYEC Project Agreement Clauses

- **Payment of Undisputed Amounts**
- **. . . where there is any Dispute as to the amount of monies owing by any Party to any other Party hereunder including Milestone Payments, the portion of the amount owing that is not in dispute or otherwise contested or challenged, if any, shall be paid**

DYEC Project Agreement Clauses

- **Dispute Resolution**

(a) Negotiation – The Parties shall first attempt in good faith to promptly resolve the Dispute by negotiation between the Owner Representative and the Project Manager. If, following good faith negotiation between them, resolution of the Dispute has not been reached, upon the request of either Party, executive officers of each Party shall attempt to resolve, in good faith, such Dispute. If the Dispute is resolved, such resolution will be evidenced by an instrument in writing.

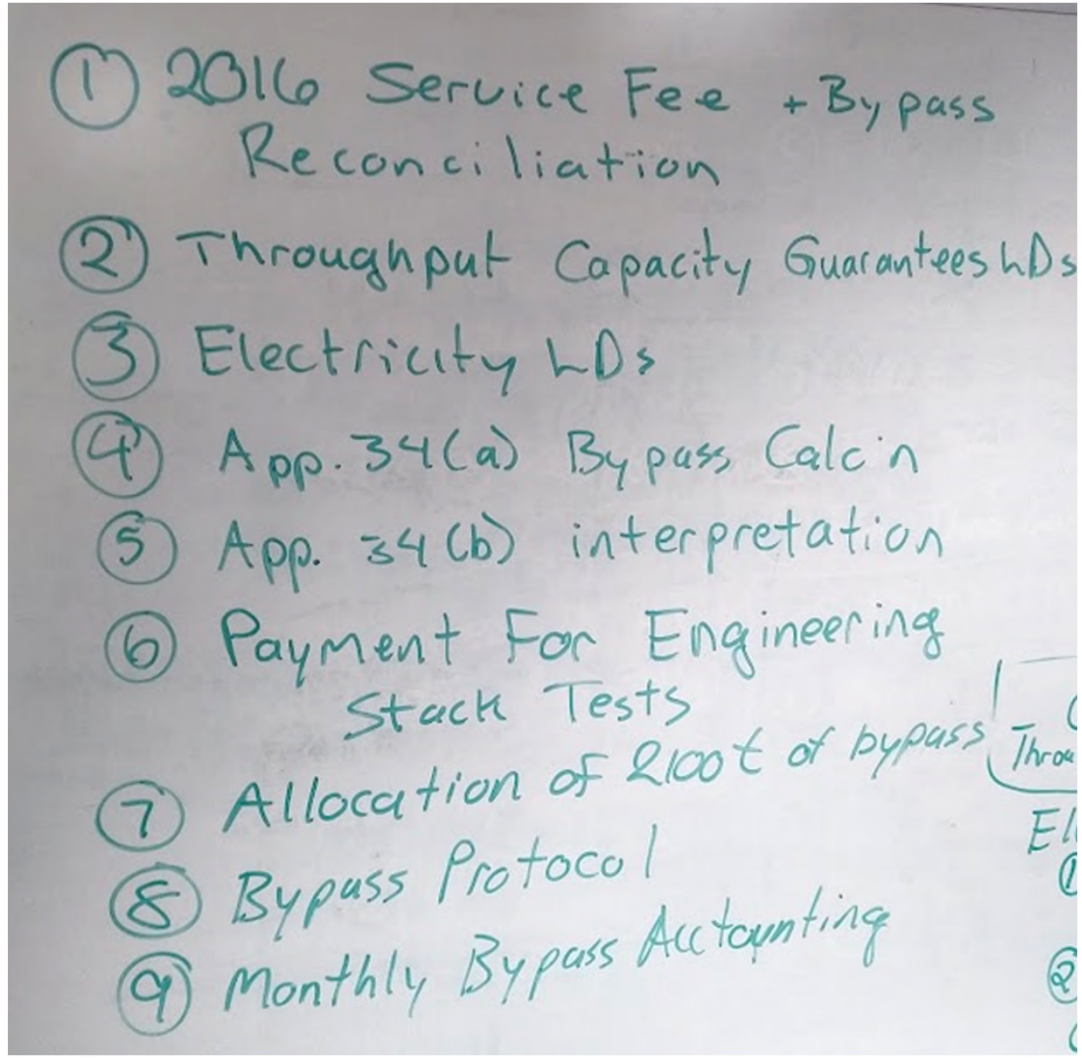
DYEC Project Agreement Clauses

- **Dispute Resolution (continued . . .)**

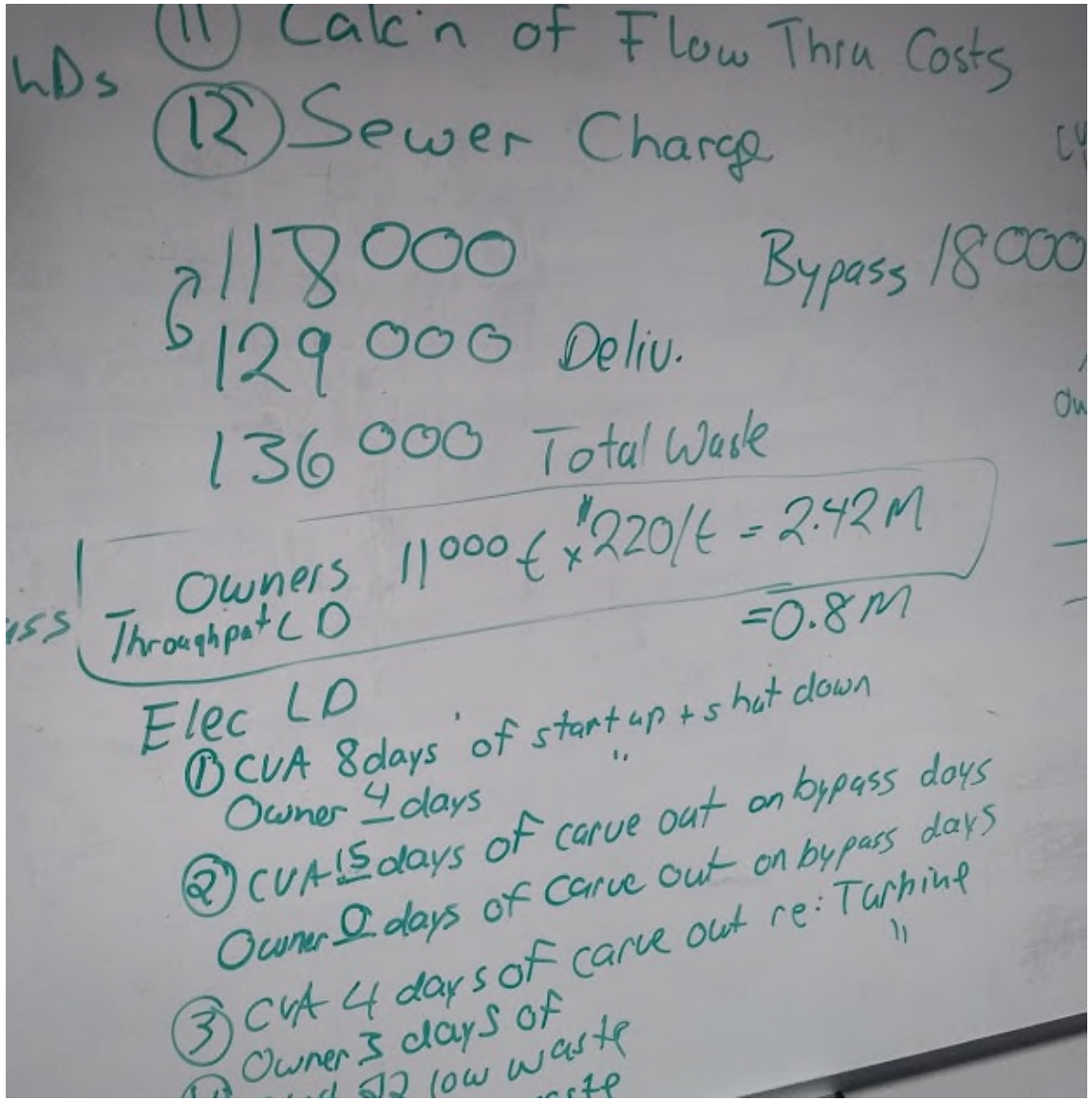
(b) Mediation – If the Dispute has not been resolved within fifteen (15) days of a Party's request for executive officer negotiation, the Parties may agree to submit the Dispute to mediation. If the matter is resolved through mediation, such resolution will be evidenced by an instrument in writing. Mediation shall be considered to have failed if a Party, at any time, gives written notice to such effect to the other Party.

Annual Reconciliation

Within sixty (60) days of the end of each quarter during the term, DBO Contractor shall provide Owner with a reconciliation invoice setting forth (a) the amount owed by the Owner to DBO Contractor for By-pass Waste transportation and disposal attributable to Owner's account pursuant to **Appendix 34**



Annual Reconciliation



Common Issues

- Competing Priorities for Regional Funds
- Complexity
- Project Cost Escalation
- Correct Solution vs Inexpensive Solution
- Lumpiness of Workload for Project Team
- ProjectCo Relationship
- Co-owner Relationship
- GHG Acceleration
- Inability to Predict the Future!

Common Success Factors

- High Quality Consultants – Legal and Technical
- Cohesive Project Team
- Transparency
- Council Support / Ownership
- Incremental Project Development
- Scheduling of Project and Council Approvals
- Fairness Monitor & Procurement Process
- Project Champions

Foundational Agreements / Documents

- Project Agreement
- https://www.durhamyorkwaste.ca/en/facility-approvals/project-agreement.aspx
- Co-Owners Agreement
- https://www.durhamyorkwaste.ca/en/facility-approvals/durham-york-co-owners-agreement.aspx
- Host Community Agreement
- https://www.durhamyorkwaste.ca/en/facility-approvals/host-community-agreement.aspx
- Environmental Compliance Approval
- https://www.durhamyorkwaste.ca/en/facility-approvals/environmental-compliance-approval-and-amendments.aspx

Resources

- Council Approval
- https://www.durhamyorkwaste.ca/en/education-and-resources/council-reports.aspx

- Procurement

- Construction

Resources

- Acceptance Testing Summary
- https://www.durhamyorkwaste.ca/en/operations-documents/facility-acceptance-testing.aspx?_mid_=1061#Reports

- Operation

Project Champions – DYEC

Roger Anderson
Former Chair & CEO



Matt Gaskell
Former Regional Solicitor





Questions

DURHAM REGION

GOWLING WLG



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