

STAFF REPORT: ENGINEERING AND PUBLIC WORKS DEPARTMENT

REPORT TO: Infrastructure and Recreation
 Committee
MEETING DATE: June 12th 2012
REPORT NO.: EPW.12.028
SUBJECT: Publishing Landfill Project
 Notice of Completion
PREPARED BY: Jeffery Fletcher, Manager of Solid
 Waste and Environmental Initiatives

A. Recommendations

THAT Council receive Staff Report EPW.12.028, entitled “Publishing Landfill Project Notice of Completion”, and

THAT Council direct Town Staff to proceed with publishing the Notice of Completion for the Landfill Environmental Screening Report.

B. Background

In 2008, the Town initiated an Environmental Screening Processes (ESP) to address the problem of diminishing disposal capacity, and provide a long-term environmentally safe solid waste disposal solution for the Town.

Golder Associates Ltd. (Golder) was retained to assist in completing these Environmental Screening Processes. The ESP is a comprehensive and environmentally sound planning procedure that incorporates a 12 step screening process including public consultation involving a wide variety of stakeholders.

The major areas of work for this project included the assessment of potential environmental effects, financial impacts and stakeholder consultation.

The environmental effects and impact mitigation measures are detailed in the “Expansion and Mining Environmental Screening Report” (ESR) prepared by Golder Associates. The Report involved a detailed study of 4 potential expansion and mining scenarios. Scenario 2 – vertical expansion and mining of the Thornbury and Blue Mountains areas – has developed as the environmentally preferable option. This Scenario 2 also maximizes the new landfill capacity and has the potential to provide capacity until 2037.

In addition to creating long term waste disposal infrastructure for the Town, this project works to improve the protection of the adjacent surface and groundwater. The Ministry of the Environment (MOE) has conducted a preliminary review of the Town’s ESR and with particular attention to the “Flow and Mass Transport Modeling”.

This modeling is an expert examination and calculation of how landfill related contaminants will move in the local groundwater. The MOE pre-review has concluded that MOE are “satisfied with the above-referenced modeling...particularly given the stated intention to fully line the facility”. This is a positive statement and indicates a preliminary level of support of the ESR and proposed design.

The next step in the ESP is publishing the ESR to the Environmental Registry for a 60 day review period. The Executive Summary of the ESR has been provided as Attachment #1 for review and understanding of the expansion option that is being proposed. Town staff recommends proceeding with publishing a Notice of Completion on the Ontario Environmental Registry.

Consultation

This project has included extensive public and stakeholder consultation. The Process dictates a number of mandatory consultation activities including a Notice of Commencement, establishing a project website and 3 public consultation meetings.

Another large focus of this project is aboriginal consultation. From the commencement of the project all identified First Nations groups were sent notices of the project. During the project, two separate Métis groups have been contacted and consulted with – the Métis Nation of Ontario and the Historic Saugeen Métis.

Extensive consultation has occurred with the Saugeen Ojibway Nation (SON) who considers The Blue Mountains to be a part of their traditional territory. Mayor Anderson and Town staff have had a series of technical and political meetings with SON. Following SON’s review of the preliminary ESR and on-site visits by their technical team, SON have outlined in a January 15, 2012 letter that the “proposed mining and landfill expansion is feasible” and “feel that this project can move forward”. This conclusion from SON is another significant step that supports moving to the final step of the ESP – publishing a Notice of Completion.

SON has provided the project with a number of comments relating to future design and monitoring. Many of the comments and recommendations from SON’s technical team will be addressed during the detailed design phase of the project.

Next Steps

A Notice of Completion will be distributed and published twice in a local newspaper to inform agencies and the public that the Environmental Screening Process is complete and a 60 day review period is commencing. As part of the ESP copies of the ESR will be made available at the Library, Town Office, and on the Town’s website. The ESR will also be forwarded to those parties expressing an interest in reviewing the report.

After publishing the Notice and following the review period, Town Staff will instruct Golder Associates to begin the development of a design and operations plan (DOP) and make application for a certificate of approval related to the DOP. This work was previously awarded to Golder Associates in Staff Report EPW.10.045, “Extension of Engineering Contract for Landfill Environmental Screening”, at a cost of \$40,000.

Following the completion of the certificate of approval application, the Town will tender for detailed design drawings and construction engineering work.

A project schedule that estimates the timeline required for the above next steps and other related activities can be seen in Attachment 2.

C. The Blue Mountains' Strategic Plan

This work will assist in addressing the Town's municipal infrastructure needs and addresses Strategic Action 2.5 "development of a strategy to meet diversion targets and address landfill capacity".

D. Environmental Impacts

Moving forward with a project designed to reflect Scenario 2 – vertical expansion and mining of the Thornbury and Blue Mountains disposal area – will work to protect the local water environment. Lining of the eastern areas of the Site (those adjacent to the Indian Brook) will act to protect the groundwater and surface water from contamination and create an improvement over the existing situation.

E. Financial Impact

Although the larger associated Landfill Project has high cost implications for the Town which have been discussed extensively with Council, the Notice of Completion stage of work is within existing budget allocations.

The original engineering services costs for the entire Environmental Screening Process as submitted by Golder Associates and approved by Council was for an upset limit of \$261,000. It is anticipated that the ESP will be completed for the amount as originally submitted. No new costs are anticipated to finalize the ESP.

The original engineering costs included an approved contingency of \$40,000 for any unanticipated related studies. No additional studies were required and the contingency of \$40,000 has since been reallocated through the above mentioned Staff Report. The cost of developing the design and operations plan and the associated certificate of approval application fees (\$22,700) are included in the 2012 approved budget.

F. In Consultation With

None

G. Attached

Attachment 1 – Environmental Screening Report Executive Summary
Attachment 2 – Landfill Project Schedule

Respectfully submitted,

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Executive Summary

In 2008, the Town of The Blue Mountains (the Town) initiated two Environmental Screening Processes (ESPs) to consider the expansion and mining of the Blue Mountains Landfill and former Thornbury Landfill (collectively referred to as the Site). The Town owns and operates the Site, which is located at 788090 Grey County Road 13 (south of Grey Road 40). The Site is licenced and operated under Provisional Certificate of Approval (C of A) No. A261401, dated November 26, 2002, as amended and issued by the Ontario Ministry of the Environment (MOE), and has a licensed waste disposal area of 10.1 hectares, comprising an estimated volume of 370,000 m³. The 2010 Annual Solid Waste Report (Golder, 2011a) estimated the remaining capacity for the Site to be approximately 16,100 m³ with an estimated remaining site life of approximately 1.4 years from the start of 2011. In 2011 it was noted that a significant portion of the surveyed licensed landfill still needed to be filled (i.e., greater than what had previously been calculated in the 2010). Better Measures of Flesherton, Ontario was subsequently retained to perform a detailed topographic survey of the entire Site (i.e., all waste filled areas), which was compared to the proposed final grades (top of waste) provided in the 2005 Design and Operation Plan (R.J. Burnside, 2004). From the available survey data it was determined that approximately 52,000 m³ of the licensed Site capacity remained as of November 2011. Based on the average annual capacity consumption for the last five years (~12,900 m³), the revised remaining Site Life is estimated to be approximately four years up to the end of 2015.

The objective of the proposed expansion and mining at the Site is to address the problem of diminishing solid waste disposal capacity and provide a long-term and environmentally safe solid waste disposal solution for the Town. The Town proposes to expand the existing landfill by 100,000 m³ and gain an additional 100,000 m³ of capacity through landfill mining. Landfill mining refers to the process whereby the existing waste fill of a landfill is excavated and screened to separate the fines fraction (soil component) from the previously landfilled waste. This estimated 200,000 cubic metres (m³) expansion and mining project represents between 11 and 21 years of additional capacity based on the selected landfill development alternative, population projections, current landfill disposal rates and new proposed waste diversion initiatives.

According to Ontario Regulation (O.Reg.) 101/07, made under the *Environmental Assessment Act (EAA)*, the Town is required to complete two separate ESPs for the (i) proposed *mining* and (ii) proposed *expansion* of the Site. An ESP is a comprehensive and environmentally sound planning and approvals procedure that incorporates public consultation involving a wide variety of stakeholders. Given that the mining of the Site would be directly dependent upon the expansion approval, the Town was granted permission from the MOE to undertake the two ESPs concurrently. As a result, one single ESP Report (presented herein) has been developed for the proposed mining and expansion of the Site.

Golder Associates Ltd. (Golder) has been retained by the Town to assist in completing both ESPs as required by O.Reg. 101/07. The primary objective of the ESP summarized herein is to identify, evaluate and investigate the potential environmental effects associated with the proposed mining and expansion of the Site. In addition, the ESP provides an evaluation of various mitigation measures and costs associated with each landfill mining and expansion scenario.

As outlined in O. Reg. 101/07, mandatory public consultation is required throughout the duration of the ESP. This includes consultation with the MOE and interested persons, including Aboriginal communities (First Nations and Métis) and government agencies. The purpose of public consultation is to obtain feedback on the following:



(i) the project problem or opportunity, (ii) project description, (iii) potential environmental effects, (iv) completed studies and assessments, and (v) proposed impact management measures including proposed mitigation measures.

The Town posted two Notices of Study Commencement in September 2008 – one for the proposed mining and one for the proposed expansion of the Site. These Notices were followed by three public consultation events (i.e., open houses) held respectively on January 22, 2009, January 29, 2009, and April 17, 2010. The majority of attendees indicated that they considered that the ESP would serve to adequately protect the natural environment from potential negative impacts. Following each event, project information packages containing information on the ESP were distributed to the MOE and potentially interested Aboriginal communities identified during the process. The MOE provided three sets of comments and questions on the proposed undertaking, each of which were addressed by Golder and the Town until the MOE was satisfied with the outcome and indicated that they did not have any further comments.

Additional engagement was undertaken with the Saugeen Ojibway Nation (SON) who has traditional territory in the vicinity of the Site. The SON, through funding support provided by the Town, appointed a technical review committee to independently assess the potential impacts and mitigation measures associated with the expansion and mining of the Site. The SON technical reviewers provided final comments on the ESP Report and outlined a number of recommendations to be considered during the detailed design and implementation stages of the project. The SON concluded that the proposed mining and expansion of the Site was feasible and did not object to moving the project forward based on the information provided. In addition, the Métis of Ontario and Historic Saugeen Métis were separately consulted in order to obtain feedback on the ESP. The Historic Saugeen Métis provided recommendations and conclusions to be incorporated into the final ESP Report and future Site development.

Based on present and historical information available for the Site, four proposed scenarios for expansion and mining were identified for detailed assessment. These scenarios include:

- **Scenario 1** – Northern Expansion and Mining of Thornbury Landfill / Blue Mountains Landfill;
- **Scenario 2** – Vertical Expansion and Mining of Thornbury Landfill / Blue Mountains Landfill;
- **Scenario 3** – Vertical Expansion and Mining of Thornbury Landfill; and
- **Scenario 4** – Landfill Expansion Only.

The scenarios were developed based on the following conditions set by O. Reg. 101/07:

- Landfill expansion is limited to a maximum of 100,000 m³; and
- Mining of previous waste disposal areas is permitted to gain a maximum 100,000 m³ *without* increasing the original total waste disposal volume of the landfill site.

In addition to these regulatory conditions, the following criteria were taken into account in the development of the four proposed scenarios:

- Potential air and noise effects;
- Existing Site conditions (Site topography and drainage, geology, hydrogeology and groundwater flow)



BLUE MOUNTAINS ENVIRONMENTAL SCREENING REPORT

- Proximity to environmentally sensitive receptor(s) (i.e., Indian Brook);
- Field investigations;
- Age of waste;
- Areas of the Site pre-dating landfill regulations; and
- Known exceedances of Reasonable Use Conditions (RUC).

The four proposed scenarios were assessed based on capacity and site life, potential groundwater and surface water impacts (which included solute transport modelling) and an assessment of Site topography and aesthetics. Preliminary cost estimates were developed for each scenario and included permitting costs, landfill engineering design and construction costs, and leachate management costs. In addition, mitigation measures were developed for all anticipated negative impacts. Findings from these assessments were presented to stakeholders during the ESP public consultation process and were also used to identify a preferred scenario that would provide the best long-term environmentally safe solid waste disposal solution for the Town. The scenario assessment process allowed the following conclusions to be made:

- Significant air and noise impacts outside current landfill operations are not anticipated for the expansion and mining process at the Site. A Best Management Practices plan was developed to mitigate future potential dust, odour and noise impacts associated with the operation of the Site.
- Based on the existing tree lines along the property boundaries, including the remote location and present land uses (i.e., agricultural and aggregate mining) around the Site, the proposed expansion and mining of the Site is not anticipated to have any significant visual impact over existing conditions.
- Based on historical water quality observations:
 - Slightly elevated concentrations of chloride are commonly observed at locations impacted by the Site, but are below the compliance limits defined by the RUC.
 - Elevated sulphate concentration associated with landfill leachate impact has been identified to the east of the Site and exceeds the RUC.
 - Elevated nitrate may be associated with the landfill impacts to the east and to the south, however agricultural sources cannot be ruled out. At some locations nitrate is considered to be associated with off-Site agricultural impacts.
- Scenarios 1 and 2 provide an estimated net capacity gain of 180,000 m³, and additional disposal capacity for a period of up to 21 years, which is estimated to extend the current remaining site life (i.e., 4 years) up to 2037 (i.e., 25 years) from the start of 2012.
- Scenario 3 provides an estimated net capacity gain of 151,000 m³, and additional disposal capacity for a period of up to 16 years, which is estimated to extend the current remaining site life (i.e., 4 years) up to 2032 (i.e., 20 years) from the start of 2012.
- Scenario 4 provides a capacity gain of 100,000 m³ and additional disposal capacity for a period of up to 11 years, which is estimated to extend the current remaining site life (i.e., 4 years) up to 2027 (i.e., 15 years) from the start of 2012.
- In all cases, the solute transport modeling for scenarios with new landfill cells without a proposed liner and leachate collection system resulted in an exceedance of groundwater compliance criteria (i.e., groundwater impacts). Therefore, all future new cells to be constructed at the Site should include a liner and leachate collection system as part of the future landfill design.

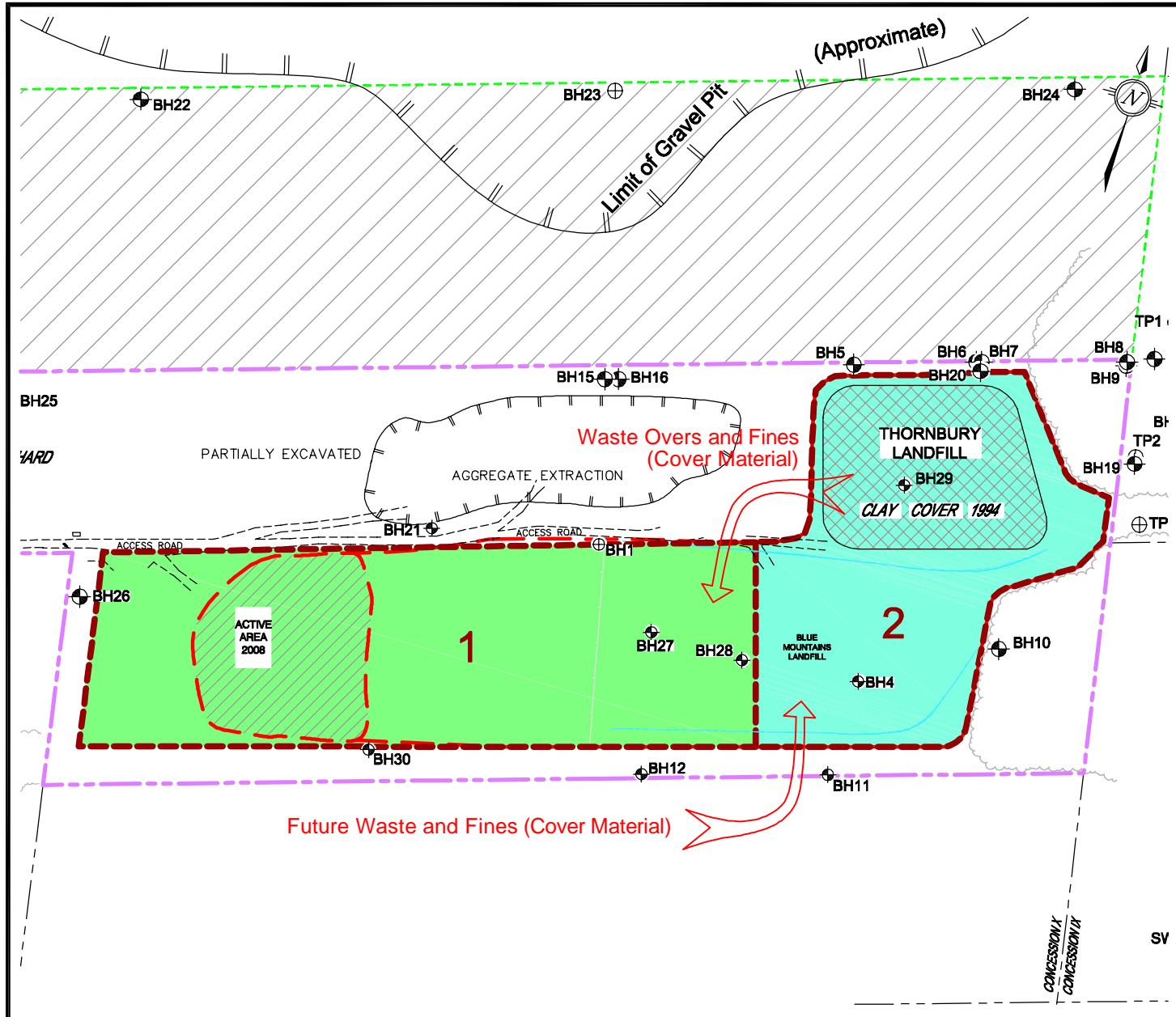


- Scenarios 1 and 2 will have greater construction costs compared to that of Scenarios 3 and 4. This is a direct result of the larger areas to be mined and provided with a liner and leachate collection system. Similarly, Scenarios 1 and 2 will have a greater leachate management costs as a result of the larger liner and leachate collection systems proposed for these scenarios. However, Scenarios 1 and 2 offer the greatest opportunity for groundwater protection including quality improvements over existing site conditions as a direct result of the proposed mining and engineered controls (i.e., liner and leachate collection system). In addition, Scenario 1 and 2 offers the greatest capacity and site life gain to address the Town's diminishing waste disposal capacity over that of Scenarios 3 and 4.
- An evaluation matrix was developed to compare scenarios 1 through 4 against an option of "Do Nothing", based on the surface and ground water, land use, air and noise, natural environment, resource, socio-economic, heritage and culture, economic, site life and site capacity impact criteria, including public and stakeholder acceptability. The scores presented in the matrix are based on the qualitative interpretation of probabilities and consequences or weights and impacts associated with the assessment criteria, with higher scores representing a higher risk/impact and lower scores representing a lower risk/impact.
- The evaluation matrix concluded that Scenario 2 offers the lowest risk/impact score on the assessment criteria, with the "Do Nothing" option scoring the highest risk/impact.

Based on the conclusions presented above and discussed in greater detail in this report, the following recommendations are provided:

- All future new landfill cells to be constructed at the Site should include a single composite liner and leachate collection system, designed in accordance with O.Reg. 232/98.
- That all future Site development be undertaken in accordance with the Best Management Practices plan developed to mitigate potential dust, odour and noise impacts associated with the Site operations.
- Future Site development should include landscaping to further soften any potential visual impacts from Site buildings and operations.
- Further, ongoing consultation with stakeholders (i.e., MOE, SON and Métis) is recommended throughout the future development of the Site.
- The Town proceed with Scenario 2 (Vertical Expansion and Mining of Thornbury Landfill / Blue Mountains Landfill) as the preferred option. Scenario 2 is presented on Figure ES-1. This recommendation is based on the scenario's ability to provide a higher level of environmental protection through the proposed landfill mining and construction of a liner and leachate collection system, in conjunction with waste disposal capacity and site life gain to address the Town's long-term waste disposal needs. Although similar to Scenario 1, Scenario 2 has a lower construction cost and limits landfill expansion / development to within the Site's existing landfill footprint. Scenario 2 also had the lowest risk/impact based on the scoring of the evaluation matrix within the assessment criteria described in Section 10 of this report.

PLOT DATE: August 5, 2010
 FILENAME: T:\Projects\2008\08-1182-0085 (Blue Mountains Landfill Investigations)\-CC-0811820085CCPLAN2.dwg



LEGEND:

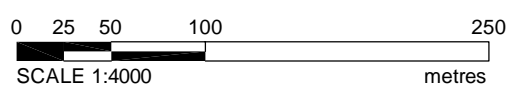
- SITE BOUNDARY
- APPROX. LIMIT OF LANDFILL
- ATTENUATION BOUNDARY
- SURFACE WATER
- SURFACE WATER SAMPLING LOCATION
- EXISTING MONITORING WELL
- ABANDONED MONITORING WELL
- PRIVATE WELL
- FINAL COVER
- ATTENUATION ZONE
- ACTIVE AREA

SCENARIO 1:

- 1 VERTICAL EXPANSION AREA
- 2 MINING AREA

REFERENCES:

1. AutoCAD BASE COURTESY RJ BURNSIDE ASSOCIATES LTD. 2007
2. STOCKPILE LOCATION & OTHER GENERAL FEATURES APPROXIMATE.



<p>Golder Associates Barrie, Ontario, Canada</p>	SCALE AS SHOWN	<h1>SCENARIO 2</h1>	
	DATE 05 AUG 2010		
	DESIGN		
	CAD J REGIER		
FILE No. 0811820085CCPLAN2.dwg	CHECK	THE BLUE MOUNTAINS LANDFILL MINING AND EXPANSION ENVIRONMENTAL SCREENING PROCESS	FIGURE
PROJECT No. 08-1182-0085 REV.	REVIEW		ES-1

The Blue Mountains Environmental Screening Process

Project Schedule - June 2012

Process	Timeline																							
	2012							2013													2014			
	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M		
Phase I - Completion of Environmental Screening Process																								
Draft Environmental Screening Report Submission	*																							
Report to I&R Committee on Notice of Completion	*																							
Report to Council on Notice of Completion	*																							
Publish Notice of Completion																								
Statement of Completion				*																				
Phase II - Environmental Protection Act (EPA) Approval																								
Design and Operations Plan																								
Certificate of Approval Application							*																	
Estimate MOE Review Period																								
Aboriginal Consultation																								
Phase III - Engineering Support Services																								
Develop Engineering RFP for Design and Construction Administration																								
Release Engineering RFP for Design and Construction Administration											*													
Engineering RFP Review & Award (incl. Committee and Council)																								
Engineering Design / Specifications / Drawings & Tender Package																								
Phase IV - Landfill Expansion & Mining Construction Services																								
Tender Landfill Reclamation and Cell Construction															*									
Construction Tender Review & Award (incl. Committee and Council)																								
2014 Start of Reclamation Work (Estimated)																					*			