MLN 1982 and MLN 1983 - COMBINED ANNUAL AND FINAL REPORT
30 May 2016

TitleHolder: Resource Bio Management Pty Ltd
ATF Resource Bio Management Unit Trust

Project: Finniss River Peat Project 0452-01

Target commodity: Tropical sedge peat

Date of Compilation: 30 May 2016

Report Compiled by: Resource Bio Management Pty Ltd

Contact Details: Carl Hermiston, Director.
Ph: 0488775586
Email: carl@resbioman.com.au
Abstract

MLN 1982 and MLN 1983 were granted to FogSearch Ltd on 18 May 1990. Small scale extraction of a peat-like commodity was sporadically conducted by FogSearch between 1991 and 2007. From 2007, extractive activities were conducted under authorisation by Territory Peat which subsequently underwent a change of business name to Resource Bio Management Pty Ltd. Resource Bio Management Pty Ltd (RBM) was operational on MLN 1982 up until the end of 2012. RBM has never conducted any operational activities on MLN 1983.

Both tenements were purchased by RBM from FogSearch in 2014. Due to changes in legislation the tenements are no longer considered the correct tenure for operations of an extractive nature. Conversion of the tenements to the currently applicable EMP tenure would be prohibitive due to the large size of the two MLN's. Furthermore, RBM has been granted several EMP's immediately adjacent to MLN 1982 which satisfy their current requirements. Therefore RBM wishes to relinquish MLN 1982 and MLN 1983.

Following inspection by Mines and Energy Officers in September 2015, RBM considers that all rehabilitation and revegetation works on MLN 1982 have been satisfactorily completed.

Background

**Timeline**


2009 – Extraction of approx 2500 m$^3$ of peat by RBM from MLN 1982.

2010 – Nil extraction

2011 – Extraction of approx. 3500 m$^3$ of peat by RBM from MLN 1982

2012 – Extraction of approx. 3000 m$^3$ of peat by RBM from MLN 1982. Cessation of extraction by RBM on MLN 1982. Retirement of MLN 1982 and MLN 1983 by RBM (extraction has never been carried out on MLN 1983 by RBM)

2013 – Nil activity on MLN 1982 or MLN 1983


2015 – Nil extraction of peat.
Summary of Extracted Volumes from MLN 1982 by Resource Bio Management

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity Extracted m$^3$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>1000</td>
</tr>
<tr>
<td>2008</td>
<td>800</td>
</tr>
<tr>
<td>2009</td>
<td>2500</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>3500</td>
</tr>
<tr>
<td>2012</td>
<td>3000</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
</tr>
<tr>
<td>Total Volume</td>
<td>10800</td>
</tr>
</tbody>
</table>

The target resource on the MLN tenements (and on adjacent current EMP tenements 29162, 29174 and 29175) is a silty loam peat-like commodity derived from the breakdown of tropical wetland sedge plants, predominantly *Scleria poaeformis* and *Eleocharis dulcis*. Pedologically the peat is similar to organosol soil types from the Finniss River Floodplain as described by Hill, Fett and Perrett 2002 and by Hill and Edmeades 2008. Thickness of the peat varies from 200mm to 1m. The resource is primarily used as a quality soil amendment in major horticultural enterprises in the Top End of the Northern Territory.

RBM has been the authorised operator of MLN 1982 and MLN 1983 since 2008. RBM has also been granted three EMPs immediately adjacent to MLN1982 (EMP29162, EMP29174 and EMP 29175). RBM is also the title holder for two EMPs granted primarily for stockpiling purposes (EMP30034 and EMP30035).

**Location and Physiography**

MLN 1982 and MLN 1983 are situated in the Fog Bay area, approx 5kms from Dundee Beach. The land on which the tenements are situated is a Pastoral Lease - Finniss River Station, managed by Input Pty Ltd. Access to the tenements is by a private road belonging to Finniss River Station and any tracks used to access the tenements are pre-existing station tracks. No new tracks or roads have been created by RBM. RBM assists with maintaining all and any roads that it uses on Finniss River Station.

The area within which the tenements lie is the northern portion of the Finniss River coastal floodplain of Fog Bay..

Floodplain deposits are extensive in the southern half of Fog Bay. They consist of black to brown humic sands and clays, which are deposited by sheet wash during flood periods and seasonal heavy rains. The grassy plains formed by the deposits dry out during the dry season and surfaces become broken by networks of wide dessication cracks. The sediments consist of sand, silt and clay, which are repeatedly transported and redeposited by sheet wash. (NTGS Explanatory Notes FOG BAY 4972.)
These sediments, along with the decaying organic matter (principally *Eleocharis dulcis* and *Scleria poaeformis*), accumulate into a tropical sedge peat above the clay base.

The topography of the MLN tenements is generally flat and lowlying with dense wetland vegetation. Nearby banks are flat to gently undulating with a laterite base and sparse open woodland and/or pasture vegetation.

Location of MLN 1982 and MLN 1983 are indicated on the following map:
Pictorial History of Extraction on MLN 1982 2008 - 2015:

nb: No extraction was conducted in 2010, 2013, 2014 or 2015 on MLN 1982. Final year of extraction on MLN1982 was 2012

Summary of Extractive Program

Extraction of peat on the tenements is restricted to a very short window of opportunity each year, typically for a period of 4-6 weeks sometime between late September and November. Any earlier in the year and the site is usually still too wet (from the previous wet season) to be accessible and after November the likelihood of heavy rainfall and storms increases the risk of machinery and/or trucks becoming bogged.

Extraction methods are outlined as follows:

A small excavator (approx 20 tonne) equipped with swamp tracks is used to excavate and rehabilitate the peat site. Swamp mats are also used where considered appropriate. Small test pits are dug into the peat to determine depth and extent of peat at potential locations. Only those areas where the average depth of peat in the test pits exceeds 300mm are considered for extraction. This prevents many areas from being disturbed unnecessarily. The maximum depth to which extraction has occurred is 600mm.

Where depth and extent are considered adequate, peat is then excavated in a strip fashion. The size of each mined area is related to accessibility, thickness of peat and the peat quality. Sizes of mined areas average approximately 1500m² each.
Rehabilitation of Excavated Areas

In earlier years (2008/2009), surface vegetation was removed and stockpiled and then spread back over the area once the peat had been extracted. Experimentation yielded better rehabilitation outcomes when excavated strips were alternated with strips which were not mined at all. The unmined strips constitute approximately 25% of the mined area. These undisturbed areas form nuclei from which the vegetation is able to readily colonise the adjacent mined strips.

The dominant vegetation types regenerate primarily from corms and rhizomes. The maintenance of undisturbed clumps of corms and rhizomes enables much more rapid regeneration. Peat extraction is carried out immediately prior to the commencement of the wet season and this technique enables rapid re-establishment of vegetation cover over the subsequent wet season. By the end of the following wet season (15-18 months later), significant expansion of vegetation cover has occurred. After 2 or 3 years the fringing vegetation of Melaleucas has also become well re-established. (see Figs 1-22)

The stripline method of extraction outlined above also enables virtually all rehabilitation of excavated areas to be completed at the time of extraction. There is no requirement for replanting. Where necessary, roadway verges have been resown with existing pasture species and fertilised to repair any damage by heavy vehicles. Previous stockpile areas on the banks have become rapidly re-colonised by the original vegetation comprised of mainly Melaleuca spp, with an understorey of Themeda, Bothriochloa and other native grasses and forbs.

Once extracted, peat is either transported away from the location immediately or else stockpiled at nearby designated storage areas (EMP30034 and EMP30035) to dry out for a period of time. No processing or handling takes place on or near the mine site. There is no need for any infrastructure on or near the mine site. It has not been necessary to create new tracks or roadways as suitable tracks already existed on the Pastoral Lease. RBM takes responsibility for annual maintenance of those tracks that it uses. The main access road to the Pastoral Lease is graded in consultation with other stake holders.

Officers from Department of Mines and Energy have conducted two field inspections, firstly in September 2013 and more recently in September 2015. On both occasions the officers have been extremely satisfied with the successful rehabilitation of excavated areas.
Excavation of Peat and Rehabilitation

Fig 1. Excavation of peat, showing excavator travelling on logs to minimise compaction.

Fig 2. Reversal of bucket allows more accurate removal of peat without disturbing clay underlayer.

Fig 3. Excavation of strips approx 3m wide, leaving undisturbed strips between.
Fig 4. Immediately after excavation, showing undisturbed strips

Fig 5. 8 days after extraction, showing resprouting vegetation.

Fig 6. Reshooting material 2 weeks after excavation
Fig 7.  
Photo taken shortly after extraction of area in 2011 showing undisturbed strips.  
Debris of fringing woody vegetation (*Melaleuca spp*) placed on margins to prevent erosion in subsequent wet season.

Fig 8.  
Same area as above two years later in 2013 showing regeneration of swamp vegetation from the undisturbed nucleus strips and regeneration of fringing Melaleucas from the woody debris.

Fig 9.  
2011 extraction area.  
Photo taken July 2015.
Fig 10. Area extracted Oct 2012. Final extraction area for MLN 1982. Photo taken mid 2013, showing extent of regeneration of swamp vegetation and fringing *Melaleuca spp.* after less than 1 year.
Fig 11. Same view as above. Photo taken in May 2016

Fig 12. Edge of same final extraction area as Figs 10 and 11. Photo taken July 2013, approx 8 months after extraction.

Fig 13. Same view as Fig 12. Photo taken May 2016 four years after extraction
Fig 14. Closer view of Melaleuca regeneration on banks of final extraction area of MLN 1982. Former stockpile area in foreground. Same location as Figs 10, 11, 12, 13.

Fig 15. Photo taken from same location as Fig 14. But looking opposite direction over former stockpile area.
Fig 16. Above and Fig 17 below, areas extracted 2009. Photos taken 2013, four years after extraction.
Fig 18 Above and Fig 19 Below. Area extracted 2009; photos taken May 2016
Fig 20. Former stockpile area for MLN 1982 in 2011 when peat had just been removed.

Fig 21. Looking from opposite direction. Former stockpile area in May 2016

Fig 22. Former stockpile area May 2016
Rehabilitation Expenditure

As outlined above, all rehabilitation of excavated areas is completed at the time of extraction and as part of the actual extraction process. Therefore no direct rehabilitation costs are incurred other than for seed and fertiliser to repair road edges on the Pastoral Lease. RBM considers the actual and final costing of closure activities for MLN 1982 is realistically reflected in the calculated costings detailed in the 2013-2014 Mine Management Plan:

COSTING OF CLOSURE ACTIVITIES (extracted from RBM 2013-2014 Mine Management Plan)

<table>
<thead>
<tr>
<th>Disturbance Type</th>
<th>Calculated Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure</td>
<td>$ NIL</td>
</tr>
<tr>
<td>Extractive Workings</td>
<td>$ NIL</td>
</tr>
<tr>
<td>Exploration</td>
<td>$ NIL</td>
</tr>
<tr>
<td>Access and Haul Roads</td>
<td>$ 750</td>
</tr>
<tr>
<td>Decommissioning &amp; Post Closure</td>
<td>$ 900</td>
</tr>
<tr>
<td>15% Contingency</td>
<td>$247.50</td>
</tr>
<tr>
<td>TOTAL COST</td>
<td>$1897.50</td>
</tr>
</tbody>
</table>

NOTE: Attach details of workings showing $/units of measure used.

RESOURCE BIO MANAGEMENT PTY LTD
Costing Closure for MLN 1982

1: Site Infrastructure $0.00 N/A Closing costs covered at time of extraction
2: Extractive Workings - Sand, Clay & Gravel $0.00 N/A
3: Hard Rock Pits & Quarries $0.00 N/A
4: Underground Workings $0.00 N/A
5: Tailings Storage Facilities and Dams $0.00 N/A
6: Stockpiles & Waste Rock Dumps 0.00 N/A
7: Exploration $0.00 N/A
8: Access and Haul Roads $750.00 grade roads 5 hours @ $150/hr
9: River Diversions $0.00
Decommissioning & Post Closure Management $900.00 site visits, cost of seed, herbicide etc
Sub-Total - All Domains $1650.00
CONTINGENCY @15% $247.50
TOTAL COST $1897.50
References cited:


*Northern Territory Geological Survey* Explanatory Notes FOG BAY 4972.