GRANGE RESOURCES TASMANIA PTY LTD

NOTICE OF INTENT

Construction of South Deposit Tailings Storage Facility

16 September 2012
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The NOI will be submitted to:

The Chairperson
Board of Environmental Management and Pollution Control
Tasmanian Environment Protection Authority
GPO Box 1751
Hobart TAS 7001
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INTRODUCTION

Grange Resources Tasmania (GRT) is proposing to construct a new tailings storage facility to be called South Deposit Tailings Storage Facility, (SDTSF) in Main Creek at South Deposit in conjunction with a cutback to the South Deposit pit. The proposal does not involve an increase in production for GRT at Savage River. It involves:

- Utilising South Deposit as a 2nd ore source to provide risk mitigation against further pit wall failures.
- Hauling segregated waste rock from South Deposit to Main Creek and constructing an alkaline flow through waste rock dump in Main Creek.
- Constructing an impermeable face to the waste rock dump to allow tailings and associated slurry water to be impounded upstream of the dump.
- Capturing legacy aid rock drainage seeps from the Old Tailings Dam and B dump and directing these to facilitate neutralisation utilising alkalinity associated with GRT tailings.

This Notice of Intent is provided in sufficient detail to allow the EPA to initially review the project, determine the appropriate level of assessment, and provide the proponent with guidelines by which they can prepare a Development Proposal and Environmental Management Plan to accompany the eventual development application to the Waratah Wynyard Council.

The Proponent

GRT is a subsidiary company of Grange Resources Limited (GRL). GRL is a company limited by shares that is incorporated and domiciled in Australia. GRL is an Australian public company listed on the Australian Stock Exchange (ASX). GRT owns and operates Australia’s largest integrated iron ore mining and pellet production business located in the North West region of Tasmania.

Scope and History of the Proposal

Open cut magnetite mining has been undertaken at the Savage River Mine site since 1967. This was initially operated by Savage River Mines (SRM) which, between 1990 and 1996, was owned and operated by Pickands Mather & Co. International (PMI).

GRT lodged a Notice of Intent with the Director of the EPA in November 2008 for the construction and use of a new tailings storage facility in Main Creek, along with an expansion of mining rate to 3.5 Mtpa. GRT received project specific guidelines from the EPA Board on 14 December 2008. After carrying out various studies and surveys in relation to this project, GRT advised the Director on 6 November 2009 that the project would not proceed at that time.

GRT has now reviewed its life of mine plan and has developed a mining schedule which includes a cutback of South Deposit commencing in 2013. A consequence of this plan is that GRT will be able to construct a large flow-through waste dump with a sealed upstream face that will provide a cost-effective tailings storage facility in Main Creek near South Deposit.

Legislative Approval

GRT obtained approvals to operate in 1996 and 1997 under the Land Use Planning and Approvals Act (LUPA) and the Environmental Management and Pollution Control Act
EMPCA) as well as the Goldamere Act and the Mineral Resources Act. This approval covered an expected 15 – 20 year mine and processing life using open cut mining at Savage River, gangue removal at Savage River, and pelletising beneficiation at Port Latta.

GRT’s original EMP, incorporating the ERP and study results, was provided to the (now) Department of Environment, Parks, Heritage and the Arts (DEPHA) for approval in September 1997. Following refurbishment and approval, operations commenced in October 1997. A review of the documents on 15 May 1998, resulted in DEPHA issuing EPNs 248/1 and 302/1 to replace the environmental permit conditions for Savage River and Port Latta respectively. These documents were reissued on 6 October 2000 as EPNs 248/2 and 302/2, with additional justification to ensure validity following legal questions. These conditions define some aspects of BPEM and require compliance with the EMP and the EPN conditions. EPN 7304/1 was issued in early 2006 to approve the construction of an upstream raise at the Main Creek tailings dam to RL 328.

GRT obtained approval to extend the operational life until 2021 in early 2007 through an approved EMP amendment.

Commonwealth Assessment Process

Under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), actions that have, or are likely to have, a significant impact on a matter of national environmental significance require approval from the Australian Government Minister for Sustainability, Environment, Water, Population and Communities (SEWPaC). The minister will decide whether assessment and approval is required under the EPBC Act.

The proposal was referred to the Australian Department of Environment and Heritage (now SEWPaC) in 2008 and was not deemed to be a controlled action. Since this time, Tasmanian Devils have been listed as a nationally threatened native species. Consequently the area to be inundated has been surveyed for devils’ dens (and other matters of national environmental significance) and re-referred to SEWPaC on 17 May 2012.

On 10 September 2012 the Federal; Environment Minister decided that the proposal would be a controlled action under the EPBC Act.


Relevant Legislation, Regulations, Codes and Policies

GRT operates under and complies with a variety of Acts, regulations, policies and guidelines that are likely to be significant for this development, including:

• Threatened Species Protection Act 1995.
• Water Management Act 1999 and associated regulations.
• Aboriginal Relics Act 1975.
• Environment Protection and Biodiversity Conservation Act 1999.
• National Environmental Protections Council (Tasmania) Act 1995.
• Native Forestry Agreement Act 1980.
• Historical Cultural Heritage Act 1995.
• Weed Management Act 1999.
• Land Use Planning Act 1993
• Native Title (Tasmania) Act 1994.

Goldamere Act

The Goldamere Act limits the Company's liability under Tasmanian law for remediation of contamination to that caused by the Company's operations, and indemnifies the Company for certain environmental liabilities arising from past operations:

- Where pollution is caused or might be caused by previous operations and this may be impacting on GRT’s operations or discharges, GRT is indemnified against that emission and the State cannot set emission limits on GRT.
- GRT is, however, required to operate to Best Practice Environmental Management (BPEM) which is defined by the Environmental Management & Pollution Control Act and effectively described in GRT’s approved EMPs.

The Goldamere Act provides overriding legislation against all other Tasmanian legislation.
Mining Lease

GRT also operates under the conditions of Mining Lease 2M/2001 which consolidates and expands the previous lease 11M/97. This lease stands for 30 years from 2001 unless surrendered earlier.

Mine lease extension 14M/2007 has been granted. This lease covered the town area and the Waterfall Dump. Lease extensions have been obtained to accommodate increased inundation of the inner Main Creek Valley if a new tailings storage facility is constructed adjacent to South Deposit.

Goldamere Agreement

The Goldamere Agreement provides the contractual mechanism by which GRT and the EPA manage the Savage River Rehabilitation Project (SRRP) and for GRT to carry out contracted works in lieu of paying the purchase price of the operation to the Government. This agreement allows GRT to integrate its rehabilitation obligations with those of the State under the SRRP.

SITE DESCRIPTION AND EXISTING ENVIRONMENT

Location of Site, Land Use and Tenure

The Savage River Mine is located in northwest Tasmania (latitude 41°29’25”S, longitude 145°12’03”E) at an elevation of 100-350 m. The surrounding terrain is rugged and mountainous, and covered with either dense rain forest or button grass plains. The mine and concentrating plant are both in the Savage River Valley, with the Savage River flowing through the mine site and ultimately discharging into the Pieman River, which then flows westwards to the coast. Broderick Creek and Main Creek each flow through the mining lease and discharge into the Savage River.
The mine is relatively isolated, being situated 45 km off the Murchison Highway, which links the northwest and western coasts of Tasmania. The nearest localities are Corinna (population 6), 24 km to the southwest and Waratah (population 380), 38 km to the northeast. The nearest major town by road is Burnie (population of ~20,000), located on the northwest coast, about 100 km distant.

Access to the Savage River village and the mine site is via the Waratah-Corinna Road, which is sealed as far as Savage River. Product from the mine is pumped via pipeline to Port Latta 83 km to the north. The pipeline track is on mining lease 2M/2001, which continues in a strip north to Port Latta. The lease then covers the off shore jetty and safe harbour through an inverted wedge shape. As a result, the lease boundaries extend into Bass Strait.
South Deposit Tailings Storage Facility

The proposed SDTSF is to be located downstream of the existing Main Creek Tailings Dam in Main Creek.

Figure 2  South Deposit Tailings Dam Location

Site Use and Process Descriptions

Following open cut mining, magnetite ore is crushed in the pit and transported via conveyor to the reclaim stockpile on the western side of the concentrator. A second gyratory crusher is also situated just below and adjacent to the concentrator. Ore is concentrated in the milling circuits, with gangue material reporting to the tailings dam. Concentrate is pumped to Port Latta via an 83 km pipeline where it is indurated to form Haematite pellets. The pellets are then shipped directly to customers via the GRT’s own off shore loading structure.

The Transend power grid meets electrical power requirements. Approximately 21 MW is used at the mine site daily.

GRT has a licence under the Water Management Act 1999 to extract water from the Savage River at a rate of up to 23ML per day and a maximum of 8400 ML per annum.

All supplies are delivered by road, and all product is transported from the site via the concentrate pipeline to Port Latta.

Facilities at the mine site include the primary crushers, conveyors, ore stockpiles, pebble crushers and the main concentrator. The main compound includes stores, mobile plant workshops, and the fitting and machining, and linatex workshops.

The Savage River village is comprised of various levels of accommodation including a converted school which provides single accommodation, demountable accommodation
units, flats off Reece Court, the GRT Lodge (which provides meals and a wet mess), and a private light vehicle fuel station.

GRT’s tailings have a high sulphur content (between 2 and 9% Total S), a limited acid neutralising capacity (ANC), a strong net acid producing potential (NAPP) and a positive net acid generation (NAG). The tailings are potentially acid forming but a period of exposure (> 24 months) is required before acid conditions develop. Hence sub aqueous deposition is required to prevent oxidation of the pyrite and to prevent long term development of acid rock drainage with consequent acidity and dissolved heavy metal production.

The proposed dam will be used to store tailings from the Savage River mining operation under water and will also be used to neutralise legacy acid rock drainage (ARD) (owned by the Tasmanian Government under the auspices of the Goldamere Act) from B Dump and the Old Tailings Dam (OTD), and store the hydroxide sludges formed by the neutralisation reactions. Additional alkalinity is expected to be needed in the tailings stream to neutralise the legacy ARD loads.

Local Meteorology

The climate of the area is characterised by cool temperatures, and consistently high annual rainfall. Data from the Bureau of Meteorology station at the Savage River Mine (latitude 41°29'25" S, longitude 145°12'03" E, elevation 229 m) has been used to describe local climatic conditions. The station commenced operation in January 1966 and for 23 years, recorded temperature, evaporation, cloud cover, sunshine and wind speed; to this day, rainfall continues to be recorded.

Rainfall distribution in western Tasmania is generally high throughout the year, with June to September being the wettest months, and December to March the driest. Drought conditions are rare. Average annual rainfall at the Savage River mine site is 1,948 mm.

Although not exposed to extreme and persistent winter conditions, the Savage River mine area is subject to an average of 24.6 days of frost and 5.5 days of snow per year. The mean annual evaporation rate at the mine site (i.e. 921 mm), is greater than that at other sites in northwest Tasmania (e.g. 713 mm in Queenstown and 526 mm at Henty Canal) but still remains amongst the lowest in Australia (Bureau of Meteorology, 1996). Rainfall exceeds evaporation by a factor of approximately 2.1.

At Savage River, mean monthly minimum and maximum temperatures range from 3.3°C to 9.4°C in July, to 9.9°C to 20.1°C in February.

Average daily sunshine in the region is low by Australian standards, as Savage River only experiences 4.8 daily hours of sunshine annually.

The mine is located in the pathway of the strong westerly winter winds. On average, there are annually 17.9 days of strong winds and 1.4 days of gales.

Surrounding Physical Characteristics

The mining lease is located within the Municipality of Waratah-Wynyard. A Crown Reserve—the Arthur Pieman Protected Area—is located 10 km to the west of the lease and State Forests are located 13 km southwest and 9 km northwest of the lease. The Savage River National Park is a wilderness region to the immediate northwest of the lease. The park protects a significant tract of cool temperate rainforest. Unlike most national parks,
Savage River National Park remains inaccessible. A National Parks State Reserve is located 16 km southwest. The area surrounding the lease has been zoned ‘rural’ by the Waratah-Wynyard Council Section 46 Planning Scheme 1993, a zone in which extractive industries are a permitted land use.

The northern and north-eastern boundaries of the original lease adjoin the Savage River National Park of 17785 ha. This was designated as a National Park following the Regional Forest Agreement in 1997.

**Savage River Mine**

The Savage River Mine is located in a valley incising the easternmost extension of the Western Ranges physiographic region of central west Tasmania, and lies between the Baretop Range to the northeast and the Norfolk Ranges to the west. The area is characterised by erosional and depositional glacial landforms.

The mine site lies at an elevation of between 100 and 350 m in the Savage River Valley. The immediate surrounds are a series of sub-parallel ridges to the northwest and southeast. Mount Bertha, which peaks at 703 m and is the highest mountain in the northwest of Tasmania, is located north of the mine site. Further to the northwest and southeast, the ridges give way to more mountainous terrain with peaks of 700 to 800 m.

**Main Creek**

The altitude of the Main Creek valley in the proposed dam location varies from 150m to 250m along Main Rivulet but extends up the valley side to link with the eastern side of South Deposit at approximately 320m asl. The proposed dam location is extremely steep and characterised by dense forest inhibiting access and limiting the opportunities for comprehensive coverage of the area.

**Hydrology**

The Savage River flows downstream of the mine area into the Pieman River 25 km, which in turn flows into the southern ocean at Hardwicke Bay, 15 km to the west.

Main Creek is impounded by the Main Creek Tailings Dam and above that the Old Tailings Dam. Flow in Main Creek is essentially restricted to overflow from the Main Creek Tailings Dam and seepage flow from B Dump. Decant overflow water from this dam runs down Main Creek rivulet and enters the Savage River some 13 kms downstream.

Runoff from the mine area discharges into:

- Broderick Creek, to the west of the South Lens and North Pit.
- Main Creek, to the south of B Dump and Main Creek Tailings Dam.
- The Savage River itself, which flows northeast to southwest across the site.

The Savage River catchment upstream of the mine has an area of some 120 km$^2$, which is about 40% of the total catchment area of approximately 283 km$^2$. The Pieman River catchment has a total area of 3,800 km$^2$. The Savage River upstream of the junction with Broderick Creek has a catchment area of 152 km$^2$ and a stream length of 30 km. The river’s hydrograph is one of rapid rise and rapid fall, with peak flows being reached in less than 10 hours.
Fauna and Flora

A flora and fauna habitat survey undertaken by North Barker Ecosystem Services in April 2006 revealed 74 native plant species of which 3 are introduced. Of these, only 1 is endemic to Tasmania. No plant species listed by the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 were recorded in the study area or thought likely to occur. No plant species listed by the Tasmanian Threatened Species Protection Act 1995 were recorded in the study area and there is only moderate likelihood of such listed species occurring there.

A single individual of white goshawk was observed on one occasion within the valley.

North Baker Ecosystem Services conducted a second botanical survey and fauna habitat assessment in March 2012.

Vegetation

The native vegetation communities recorded within the study area were:

• Nothofagus-Phyllocladus short rainforest (RMS) – Not threatened
• Nothofagus-Atherosperma rainforest (RMT) – Not threatened
• Eucalyptus nitida forest over rainforest (WNR) – Not threatened
• Eucalyptus obliqua forest over Leptospermum (WOL) – Not threatened
• Eucalyptus nitida forest over Leptospermum (WNL) – Not threatened
• Acacia melanoxylon swamp forest (NAF) – Not threatened

The risk to threatened flora was considered remote. Furthermore all habitat types within the study area are widespread outside so that any impacts are very unlikely to be significant.

No species listed under the schedule of the Tasmanian Threatened Species Protection Act 1995 (TSPA) was recorded from the study area.

No species listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBCA) was recorded from the study area.

Fauna

Spotted-tailed quoll
The spotted-tailed quoll is listed as vulnerable on the EPBCA and rare on the TSPA and is present within the study area.

Tasmanian devil
The Tasmanian devil is listed as endangered on both the EPBCA and the TSPA and is present within the study area. All populations of endangered species are considered to be important in the context of legislation.
None of the vegetation communities within the proposed inundation area are threatened and all are adequately represented in reserves.

The Tasmanian devil is likely to be present on site based on scats observed during the survey. The proposed SDTSF would result in the loss of Tasmanian devil habitat, potentially
including dens. However, there are extensive areas of similar habitat within the surrounding landscape.

While potential quoll habitat will be cleared for the SDTSF, that habitat is likely to have a low density of prey and also a low quoll density. The study area is outside the core range of the species. Impact on threatened species individuals is considered to be highly unlikely for all species as the habitat within the impact zone is restricted to foraging habitat rather than breeding habitat.

**Aboriginal Heritage**

GRT commissioned an aboriginal heritage assessment of the proposed inundation areas along the Main Rivulet from Steve Stanton Pty. Ltd., Aboriginal Heritage Consultancy in May 2006. The results of the assessment were discussed with the Manager of the Tasmanian Aboriginal Land and Sea Council (TALSC). The recommendations of the report were endorsed by TALSC:

> “Notwithstanding principal comments in relation to land contained in the Statement of Aboriginal Significance (Section 8 of this report), there can be no objection on Aboriginal archaeological grounds to construction of a new tailings dam on the Main Rivulet. It is recommended therefore that the proposed development be allowed to proceed without further Aboriginal archaeological investigation.

As contained under Section 14 (1) of the Aboriginal Relics Act 1975; *Except as otherwise provided in this Act, no person shall, otherwise than in accordance with the terms of a permit granted by the Minister on the recommendation of the Director: destroy, damage, deface, conceal, or otherwise interfere with a relic.*

Accordingly, in the unlikely event that any Aboriginal cultural material associated with any sites is inadvertently encountered during surface or sub surface disturbances arising from works associated with the proposed tailings dam, then the activity creating the disturbance should cease immediately, and the TALSC (Ph. 6231 0288) and the Manager, Aboriginal Heritage Office at DTPHA in Hobart (Ph. 6233 3927), should be informed to enable further assessment.”

**Historic Heritage**

GRT commissioned an historic heritage assessment of the proposed inundation areas along the Main Rivulet from Anne Mc Connell Pty. Ltd., in May 2006.

Overall, 19 historic heritage sites were identified in and near the study area. All are mining heritage related. The sites range from moveable objects (e.g., a spade) to isolated features (e.g., tunnels, sections of tracks, costeans), to sites and site complexes that are relatively small, individual alluvial workings or underground workings and which have a range of elements. The more significant sites include the main mine at Golden Ridge (Weetman & Crockfords Mine) which is the only underground mine identified in the area; Smiths Mine which is an alluvial workings in Smiths Creek which was the richest creek on the Long Plains Mineral Field and the site of the second rush to the field; and the Big Duffer Creek Mine, which may be the location of the first gold found, and the first gold rush, on the field.

Twelve of the sites identified by the study are confirmed sites (i.e., have been re-located in the last c.20 years) and seven are identified places (i.e., they are recorded historically as places where some activity occurred, but are not known to have been recently re-located).
All sites/features identified are previously unrecorded and hence are not included on any historic heritage site listing or register.

Only 4 sites occur within the area to be inundated by the five dam options, but another 5 sites occur on the edge or within c.25m of this area. Because of the unconfirmed nature of most of these sites, they may be within or partly within the study area. The assessed level of impact of the dam options on the identified historic heritage is, in order of increasing impact – dam 5, dam 4, dam 3, dams 1 & 2.

PROJECT DESCRIPTION

GRT currently stores tailings in the Main Creek Tailings Dam (MCTD) above the proposed SDTSF. This is a water holding dam which allows for sub aqueous storage of sulphidic tailings and thus prevents sulphide oxidation and consequent ARD formation.

The SDTSF will comprise a long flow-through rock dump (similar to Grange’s highly successful Broderick Creek flow-through) and an upstream filter face. As the filter face grows it will become an embankment across the valley. The filter face will be designed and constructed to retain the tailings upstream of the face, whilst still allowing decant waters to penetrate through the filter directly into the coarse rock flow-through behind and below it. This will prevent migration of tailings into the flow-through rock drain and provide a lower permeability structure to ensure that tailings are stored in a saturated state.

Due to the mining schedule, the dam will be completed relatively quickly as mining is scheduled for approximately two years. A waste rock dump will be constructed to the south of the embankment using alkaline rock to provide long-term stability to the embankment and filter face. The flow-through drain will run the horizontal length of the waste rock dump. During operation water will flow through the filter face at a controlled rate and enter the alkaline flow thorough.

Although not strictly a classical dam structure it will be designed to appropriate ANCOLD standards; with designs submitted to the Assessment Committee for Dam Construction via the Development Application process.

The proposed storage facility will be used to store tailings from the Savage River mining operation under water and will also be used to neutralise legacy ARD (owned by the Tasmanian Government under the auspices of the Goldamere Act) from B Dump and the Old Tailings Dam (OTD) and store the hydroxide sludges formed by the neutralisation reactions. The Broderick Creek Flow-through has been very successful in providing alkalinity in the river for the treatment of legacy ARD issues.

Development Schedule

A DPEMP will be developed following receipt of guidelines from the EPA. It is anticipated that a draft DPEMP submitted to EPA staff for comments in October 2012. Construction would commence following project approval.

Mining Plan

Table 1 below provides the current GRT life of mine plan. The plan provides concentrate to GRT’s Port Latta operation until December 2029. The plan centres on mining in North Pit and also includes mining in South Deposit from January 2013 until January 2015, and
mining in Centre Pit South from October 2014 until July 2017 then again from May 2023 until June 2025. The plan produces 98.417M tonnes of magnetite ore and 48,965M tonnes of magnetite concentrate. Wastes produced are: 49.848M tonnes of tailings occupying 31.155 M$^3$ as well as 73.234M BCM of PAF waste (labelled D type) and 79.9M BCM of alkaline water (labelled A type).
### Table 1  Life of Mine Mining Schedule

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### Table 2  Life of Mine Concentrate Production Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Daily concentrate throughput (DRT) Tonnes</th>
<th>Daily concentrate throughput (WET) Tonnes</th>
<th>Daily concentrate production Tonnes</th>
<th>Daily tails production (wet tails to TSF) Cubic metres</th>
<th>Daily tails production (wet tails to TSF) to TSF Tonnes</th>
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<td>2012</td>
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<td>17,112</td>
<td>6,191</td>
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</tr>
</tbody>
</table>

### Tables

**Table 1** Life of Mine Mining Schedule

**Table 2** Life of Mine Concentrate Production Schedule
**Potential Dam Sites**

GHD has carried out preliminary work on 5 potential dam sites (see Figure 3) as reported in the GHD report “Tailings Management - Report on Future Tailings Strategy”, dated November 2005. At present GRT is most interested in –Option 3. The flow-through dump buttressing the tailings restraining barrier would fill much of the area between Options 3 and 4 and would be constructed from alkaline waste rock mined out of South Deposit.

*Figure 3  Potential SDD Sites*

GRT intends to develop the flow-through dump with its upstream face; behind which tailings will be restrained. The tailings would be placed from the upstream end closest to the mill and gradually be extended downstream as required. As the upper Main Creek waters are polluted by ARD seeps the alkaline tailings would provide treatment during placement and would drown out much of the immediate historic ARD flow. Operational procedures are being developed to eventually transport the remaining ARD flows to South Deposit for long term neutralization once the TSF has been filled.

Where practically and economically possible, the works will be carried out by GRT’s mining group. This may however prove to be only the bulk movements of materials from the mining of South Deposit.
Alternatives to Dam Construction

Tailings volumes and available capacity of the MCTD are shown in Figure 4 below. For continued operation of the Savage River mine, additional tailings capacity will be needed by December 2016.

Figure 4  MCTD Capacity

Alternatives to construction of the SDTSF include:

- Closure of the Savage River operation by December 2016. The current Savage River tailings facility has a maximum life out to December 2016 utilising the current Main Creek Tailings Dam (MCTD) upstream lift strategy. This includes the proposed upstream dam wall raise to RL338. Figure 5 shows filling rate for the MCTD with an upstream dam raise to RL 338 complete. Without additional tailings disposal capacity the operation would need to close at this time.

- Increase the height of the MCTD to RL 346. This would mean that additional dams would be needed to prevent decant water from reporting to the Heazelwood River to the east of the site. Additional pumping capacity to raise the tailings to RL 346 would be required.

- Deposition and storage of tailings on alternate sites above Broderick Creek waste rock dump, and North Dump Valley. For each of these cases, clearing and inundation of existing vegetation would occur. Additional pipelines and pumping capacity would also be required. The Broderick Creek TSF would flood the upper Broderick Creek and Armstrong Creek valleys to RL 252.

- Development of thickened tailings and placement over the MCTD and OTD. This provides the opportunity to develop a saturated tailings layer over the OTD and subsequently reduce or stop oxidation of sulphides with the OTD. This option requires that a desulphurised layer is placed over the thickened tailings so that the thickened tailings themselves do not oxidise after closure. Grange and the SRRP are currently funding a study evaluating the viability and cost of switching to thickened tailings. The technical ability to produce both desulphurised tailing and thickened
Tailings has been demonstrated at a laboratory level at this time however the indicative capital and operating costs make this the non preferred option. For non thickened tailings, the cost of options becomes a balance between pumping costs (operational) and the unit cost of storage capacity versus the cost of TSF dam wall construction. The SDTSF provides a low operating cost with no need to replace pumps, lower pumping costs and minimal pipeline additions. For thickened tailings, the capital costs include significant process changes including replacement of the current tailings thickener with a deep cone thickener, addition of advanced flocculation systems, replacement of tailings pipelines and pumps and provision of a float plant for desulphurisation.

A pre-feasibility level cost estimate indicates that the SDTSF once discounted for waste rock placement becomes the preferred option for development (Table 1).

Table 3 Pre Feasibility Cost Tailings Disposal Options

<table>
<thead>
<tr>
<th>Option</th>
<th>PF Cost</th>
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</thead>
<tbody>
<tr>
<td>MCTD Raise to RL 346</td>
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<tr>
<td>Upper Broderick Creek TSF</td>
<td>$18,460,634.00</td>
</tr>
<tr>
<td>Thickened Tailings</td>
<td>$19,870,000.00</td>
</tr>
<tr>
<td>SDTSF</td>
<td>$2,500,000.00</td>
</tr>
</tbody>
</table>

The ability to cost effectively treat and dispose of acidity and dissolved metals generated in B Dump over a long period of time (>30 years) is an important aspect in the development of SDTSF.

SAVAGE RIVER REHABILITATION PLAN

B dump produces approximately 40% of the site’s copper load while the OTD produces approximately 50% of the site’s acidity. GRT has been working with the SRRP to develop cost-effective, long-term solutions to these two sources of legacy ARD pollution. The development of the SDTSF provides a good opportunity to mitigate these sources for the next 20 years.

The conceptual plan for this is:

1. Divert all acidic seepage from the OTD to the Main Creek valley adjacent to the base of B dump.
2. Capture acidic seepage from B Dump in the Main Creek valley.
3. Ensure that the maximum water level of the SDTSF water/tailings is below the relative height of the captured seeps in 1 & 2 above.
4. Calculate the acidity contained within the two ARD sources.
5. Provide sufficient neutralisation capacity in the GRT tailings line.
6. Provide a mixing system such as venturi access flow into the tailings pipeline.
7. Neutralise the acidity with the deposited tailings in the dam.
8. Storage of resultant metal hydroxide sludges within the deposited tailings.

Once the SDTSF is full or the operation has ceased (estimated 2030), the captured seeps can be pumped to a separate neutralisation plant, potentially at South Deposit where there will be a significant settlement pond.
POTENTIAL ENVIRONMENTAL IMPACTS

Key Issues

The project-specific guidelines issued by the EPA in 2008 provide guidance on key issues and surveys required to complete a Development Proposal and Environmental Management Plan (DPEMP). The key issues that were identified for consideration in relation to the proposal, and which should be the principal focus of the DPEMP, are provided in **Table 3** below.

**Table 4  2008 Key Issues**

<table>
<thead>
<tr>
<th>Key issue</th>
</tr>
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<tbody>
<tr>
<td>1</td>
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<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

**Table 4** below details the studies and surveys required for completion of the DPEM at that time.
In proposing the development of the SDTSF, GRT has:

- Conducted (in conjunction with the SRRP) ambient surface water quality surveys which have quantified acid, metal and other pollutant mass loads from legacy ARD in Main Creek.
- Together with the SRRP and the University of SA, assessed the long term benefits of the alkaline flow troughs GRT has constricted on B Dump to transfer alkaline water into the dump and into Main Creek.
- Determined the acid neutralisation capacity of the tailing stream and any additional alkalinity required to treat legacy ARD.
- Quantified the nature and distribution of potentially acid forming minerals to be placed in the TSF through geochemical test work and predictive modelling.
- Conducted terrestrial flora and fauna surveys of all areas to be disturbed including an assessment of devil habitat.
- Conducted Aboriginal and Historic Heritage surveys of all areas to be disturbed.
- Identified the location and area of the Meredith Range Regional Reserve to be affected.
- Completed the preliminary designs for transferring legacy pollution from the OTD to the SDTSF and mixing it therein with GRT tailings.
• Determined that the "high priority wetland identified (at the time of the initial NOI) within the dam footprint on the Conservation of Freshwater Ecosystem Values database and of the wetland’s values" does not exist.
• Designed the flow-through dump and the upstream TSF filter face.
• Updated the tailings neutralisation work incorporating the new mine schedule.
• Updated the Surface Water Quality Report including legacy ARD production
• Integrated the new TSF into the current and future tailings management plans.
• Assessed the integration potential for thickened tailings and legacy ARD with the SDTSF.
• Completed groundwater hydrology and hydrogeology studies to ascertain the potential impact of the SDTSF on groundwater and also on ARD seepage from B dump in the upper Main Creek valley

To complete its internal assessment of this GRT intends to:
• Continue stakeholder communications and liaison including:
  ▪ Forestry Tasmania
  ▪ Waratah Wynyard Council
  ▪ SEWPaC
  ▪ Tasmanian Conservation Trust
  ▪ National Tarkine Association
  ▪ Cradle Coast Authority
  ▪ Circular Head Council
  ▪ Environment Protection Authority
  ▪ Minerals Resources Tasmania
  ▪ Department of Economic Development and Tourism.
  ▪ Environment Tasmania
REFERENCES


Grange Resources Tasmania (2001). Environmental Management Plans Savage River & Port Latta


Mr Wayne Bould  
Chief Operations Officer  
Grange Resources Tasmania Pty Ltd  
PO Box 659  
BURNIE  TAS  7320

Dear Mr Bould

Decision on referral  
Construction on South Deposit Tailings Dam, Savage River Mine, Tasmania

Thank you for submitting a referral under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). This is to advise you of my decision about the proposed action, to construct a new Tailings Storage Facility in Main Creek approximately 3 kilometres south of the existing Main Creek Tailings Dam.

As the Minister for Sustainability, Environment, Water, Population and Communities, I have decided that the proposed action is a controlled action and, as such, requires assessment and a decision on approval under the EPBC Act before it can proceed.

It appears that the proposed action is likely to have a significant impact on the following matters protected by the EPBC Act:

- threatened species and communities (sections 18 & 18A).

For example, based on the information available in the referral, the proposed action is likely to have a significant impact because it involves the clearing and inundation of 130 ha of native vegetation that is known to provide important feeding habitat and possibly breeding habitat for the nationally threatened Tasmanian Devil and Spotted-tailed Quoll. There are also likely impacts to mature trees that may provide nesting habitat for the Tasmanian Wedge-tailed Eagle.

- Please note that this decision only relates to the potential for significant impact on the specific matters protected by the Australian Government under Chapter 2 of the EPBC Act.
**Notification of**
**REFERRAL DECISION AND DESIGNATED PROPONENT – controlled action**

**Construction of a Tailings Storage Facility, Savage River Mine (EPBC 2012/6393)**

This decision is made under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

<table>
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<th>To construct and operate a new tailings storage facility on Main Creek, downstream of the existing tailings dam at the Savage River Mine in the Tarkine region of Tasmania [See EPBC Act referral 2012/6393].</th>
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<tbody>
<tr>
<td>decision on proposed action</td>
<td>The proposed action is a controlled action. The project will require assessment and approval under the EPBC Act before it can proceed.</td>
</tr>
<tr>
<td>relevant controlling provisions</td>
<td>Listed threatened species and communities (sections 18 &amp; 18A)</td>
</tr>
</tbody>
</table>
| designated proponent | Grange Resources (Tasmania) Pty Ltd  
ABN 30 073 634 581 |
| assessment approach | To be advised |

**Decision-maker**

- **Name and position**: Tony Burke
- **Signature**: [Signature]  
- **date of decision**: 18.9.12