

## **Mount Laura Conservation Reserve Works August 2009 to May 2010.**

### **Introduction**

“During high intensity short duration storm events sandy clays on hill slopes and within watercourses in the Whyalla region are prone to various forms of natural erosion over time. Factors such as high usage of tracks coupled with improper driving techniques eg. wheel spin and bogging, exacerbate and trigger new forms of erosion events in terrain not naturally prone to erosion.

Directly linked to erosion is the infestation and spread of weeds which favour disturbed ground and seed can be transported over considerable distances during peak storm events and deposited in sediment on the flood plain.

Erosion of tracks will be addressed [by such methods as] track closure and rationalisation by a variety of methods including: backfilling with rubble, multiple diversion drains and contour ripping / banking.

Large erosion heads in old BHP diversion drains will be rehabilitated with corrective battering followed by armouring with A34 geotextile overlain with graded rip rap. Upstream and downstream sections of eroded drains adjacent to rehabilitated erosion heads will be protected by energy dissipating structures (grade control structures) constructed of graded rip rap over A34 geo textile. These works will be supervised by Larry Bebbington who is a practicing erosion control contractor (International Erosion Control Association - IECA) who has successfully implemented these techniques in other areas for various agencies.

As the old diversion drains are no longer required by Onesteel wherever possible they will be breached and rehabilitated to reduce the amount of run off collected and discharged into downstream environs. [An old BHP retention dam and two old quarries] will be cleaned of silt and utilised to reduce the amount of stormwater run-off entering urban environments downstream along McBryde Tce.

Due to the scale of the area and erosion problems erosion control requirements will be assessed and prioritised based on parameters such as: likelihood of accelerated upslope migration, downstream / downslope issues associated with environment and infrastructure and danger to workers and community members utilising area. Following assessment and prioritisation procedures erosion works will be scheduled into a works program budget over the following 5 years.” Bebbington, L. 2007. City of Whyalla Mount Laura Conservation Reserve Native Vegetation Management Plan. p.21



Above is a map of the area we developed to stop water rushing down established 4WD tracks, washing them out as they go. This map shows where rock piles are strategically dumped to reduce flow velocity of water down the tracks (that are acting as drains), and redirecting it back down the slope as it once did before the establishment of the tracks.

This water can now be collected in the newly cleaned out dam, where the fauna of the area can get the benefits of it, rather than the water flowing through the drains under Iron Knob road, and into the residential areas on the other side of McBryde Terrace.

**This work began in August 2009, working in the area as mapped out in the previous map.**



The above picture shows the old BHP storage dam.



The above picture shows the same dam cleaned out, with armoured spillways leading into and out of it.



The picture above shows the Dams new armoured spill way.



Picture above shows the 4WD track that used to run into the dam, ripped.



Picture above shows water that used to run down this track, which acts as a drain during heavy rainfall, will now pond behind these piles of ballast, and finally 'bleed out' into the surrounding vegetation.



## **Work at Mt Laura resumed in the first week of May 2010.**

The big problem was getting trucks to the various worksites, carrying the material required for the various erosion and track closure jobs that are required to be carried out.

Due to limited budgets, and council staff availability, contractors were also utilised to get materials in quickly and cost effectively.

Once on site, it was determined at a tool box meeting that we should:

Complete a Job Safety Analysis (JSA), and everybody sign it.

Those present included :

- Sam Bourne Supervising Council Officer
- Larry Bebbington Contracted Works Overseer
- Des Dunstall Excavator and Tipper driver
- Les Wilkinson Grader

As works began to proceed, it was clear that a water truck was required to reduce dust levels, and to help with compacting the soil in the tracks and new banks. A decision was made to control fugitive dust and aid in soil compaction requirements. Council's water truck was used once the driver had completed a site induction.

All work team members were required to wear wide brimmed hats, safety glasses, high visibility vests, and type 1 safety boots. All vehicle flashing lights were also required to be operational while vehicles were entering, working and leaving the site.

Initial works included repairing and making safe a section of the track that we will be able to utilise to cart material and machinery into, and around the reserve safely.

Works required included drain rehabilitation and where to divert water. As well as track rationalisation, including the compaction of bull dust. There is a potential to divert this water into two 'Borrow Pits' located just outside the Heritage Area, to provide water and habitat for the Reserves fauna.



Photo above shows where the works were concentrated in May 2010. Sites are marked with a cross.

The main aim of the works in May 2010 was to make a safe section of the track through the Conservation Reserve, to allow for the safe passage of civil construction equipment, to fix the issues of erosion and track rationalisation that are required in the reserve.



The photo above shows the first section of track that needs attention. Because it's so badly eroded, people have stopped using this track, and made a new one next to it. Unfortunately, this situation is repeated all too often in the Conservation reserve.



Above is the same section of track, after rehabilitation. Rocks have been strategically placed to stop any further use of this track, confining authorised users to the new track.



Above is a picture of an excavator with a rock screening bucket attached. The work of this excavator was essential to provide us with graded 400mm – 700mm rock that's required for the erosion control work. This rock will from now on be referred to as 'Rip Rap'.



The above picture shows the piles of rip rap ready for loading to be transported to the work site.



This was dusty work. With the help of Council's water truck, we were able to control dust levels, as well as compact the soil in the tracks as we drove over them, leaving them less prone to future erosion.



The above picture shows how important water is in preparing this dirt mound for compaction, before it was covered in A34 geotextile, and a final layer of ballast (40mm – 60mm) rock. This procedure ensures a permanent solution to the above erosion issue, leaving us free to move on to the next problem area when works are next scheduled to occur.



Pictured above is a drain being armoured with geotextile and rip rap.



Above and below shows a before and after of the track and drain rehabilitation work. While this work can be time consuming and expensive at times, if done properly, it will provide a permanent solution to the initial problem, that will only get worse and increasingly dangerous if left untreated.



## 2.4 – Action Timetables

ACTION	Seasonal Timing	YEAR					
		1	2	3	4	5	Ongoing
<b>Public Awareness</b>	Immediately following approval from NVC	x	x	x	x	x	Updates will be available on the City of Whyalla website and ongoing media release of events will be released in the local media. Community involvement in monitoring and small scale management programs will be ongoing.
<b>MOU's</b>		x					MOU's for major users such as the Whyalla 4WD Club Inc will be ratified and implemented immediately following approvals from the NVC. Community groups such as orienteer groups will be incorporated under the user permit system and formal MOU's to a lesser degree.
<b>Track Closure / Repair</b>	Spring Summer	x	x	x	x	x	Track closure will commence following the ratifying of the HA and community awareness campaigns. Track rehabilitation will commence in 2008 (budget dependant) and will be ongoing but reducing over following 5 years.
<b>Pest Plant &amp; Animal</b>	Winter Spring	x	x	x	x	x	Initial assessments and mapping of weeds. Implementation of weed control strategies linked to existing programs. Weed control will be ongoing. Cat / Fox trapping implemented in Summer 2007 – ongoing. Rabbit control programs implemented and ongoing as opportune distribution mapping compiled.
<b>Erosion Control</b>	Spring Summer	x	x	x	x	x	Erosion control assessments and prioritisation will be implemented in 2008 following ratifying of HA. Prioritised erosion control will be implemented late 2008 and reducing over next 5 years.
<b>Monitoring &amp; Review</b>	Change of seasons x 4	x	x	x	x	x	Monitoring will commence following identification of sites and installation of photo points. Monitored sites will be entered into data base for compliance reporting.
<b>Reporting to NVC</b>		x	x	x	x	x	Annual

**Cost Estimates / Schedules for Mt Laura Conservation Area Management – 2008-2013**

**2.5**

ACTION	Plant / Rates	Hours	Sub-Total	Contractor Supervision		TOTAL	SCHEDULE
				Hours	S-Total		
<b>Signage</b>	100 signs @ \$50ea		5000				1 <sup>st</sup> Year – immediately following public announcement of conservation reserve
	100 Steel posts @ \$50ea		5000				
	Erecting with Bobcat @ \$65/hr	16	1040	8	680		
			<i>11040</i>		<i>680</i>	<b>11720</b>	
<b>Track Closure</b>	Access Barriers		1500				1 <sup>st</sup> year – following notification
Ripping and benching hill tracks and gully tracks to divert run off across slope into vegetation and to restrict access	Bobcat @ \$65/hr	24	1560	8	680		1 <sup>st</sup> & 2 <sup>nd</sup> year – maintenance thereafter
	Ripping tracks – 4.5t excavator @ \$86/hr	150	12,900				
	Erosion repairs – 4.5t excavator @ \$86/hr	150	12,900				
	Rubble 200t @15.50		3100	100	8500		
			<i>31960</i>		<i>9180</i>	<b>41140</b>	
<b>Stormwater Retention</b>	25t excavator @ \$137.50 /hr	32	4400				1 <sup>st</sup> & 2 <sup>nd</sup> year – maintenance 3 <sup>rd</sup> year
Utilise and enlarge existing dams to pond water, reduce velocities and volumes entering downstream urban environs	100t 600/900mm rock at \$21/t plus cartage		2441	16	1360		
			<i>6841</i>		<i>1360</i>	<b>8201</b>	

ACTION	Plant / Rates	Hours	Sub-Total	Contractor Supervision		TOTAL	SCHEDULE
				Hours	S-TOTAL		
<b>Erosion Heads</b>							
Large active erosion heads are causing serious problems in some of the old BHP drainage channels. Up to 6 <sup>1</sup> E. Heads will need rehabilitation. Work includes installation of grade control structures upstream/downstream.	A34 Geotextile – 10 rolls @\$600 ea + freight		\$7000				1 <sup>st</sup> & 2 <sup>nd</sup> year budgets due to sedimentation downstream, migration of erosion heads upslope, safety issues with undercut roads adjacent to drains. 3 <sup>rd</sup> year on additional grade control structures.
	100t 600/900 graded rock + \$341 cartage		12600 (6 <sup>1</sup> )				
	25t excavator @\$137.50/hr	60	8250	60	5100		
			27850		5100	32,950	
<b>Weed Control</b>							
Dominant weed problems are: Carrion Flower, Prickly Pear, Salvation Jane, Onion Weed.	Approved herbicides		500				To be carried out by council ranger from year 1 – <i>ongoing</i> on a minimum basis of 8 hrs / week during peak growing periods (5 mnths / year).
	Knapsack sprayer		250				
	Lockable toolbox, Gloves, Weed bags, hand tools		1500				
		160					
			2250			2250	
<b>Pest Animals</b>							
Predominately Fox and Feral Cat control using cage traps under supervision of C of W Environment Unit staff.	10 cat / Fox traps @ \$200ea		2000				1 <sup>st</sup> year – <i>ongoing</i> wages and baits only
			2000			2000	
				<b>TOTAL</b>	<b>\$98,261</b> gst incl.		

