



HAZELWOOD

19 October, 2012

Mr. Dieter Melzer
Regional Manager
Environment Protection Authority
PO Box 1332
Traralgon 3844

REF	EM30856	30856
DATE	19/10/12	025849
DISTRIBUTION	REPLY	NOTE
Met AB		

Dear Dieter

EPA LICENCE EM30856 - FINANCIAL ASSURANCE FOR LANDFILLS

With respect to licence condition G6 of EPA accredited licence EM30856, International Power GDF SUEZ Hazelwood is re-assessing its requirements for provision of financial assurance for landfill for compliance with this condition.

The assessment has been based on EPA publication 777 September 2001, current site monitoring costs, bore interpretation costs and local earth moving costs (RTL). We have undertaken the review based on the previous submission covering the site for asbestos tips 1,2,3 and Hard rubbish dumps 1 & 2. All but asbestos tip3 have already been rehabilitated.

During the licence reform process in 2011, EPA indicated that it was having discussions with respect to rehabilitation bonds with the Department Of Primary Industries (DPI) and any cross influences with the mining rehabilitation bonds.

Section 67B(1) of the Environment Protection Act states that a financial assurance may be provided as;

- A letter of credit from a bank;
- Certificates of title;
- Personnal and bank guarantees;
- Bonds;
- Insurance; and
- any other form of security that the Authority considers appropriate

In order for us to provide suitable landfill assurance, we require EPA to confirm that the need for landfill assurance is still required, and the provision of the assurance meets EPA's requirements.

Hazelwood

IPR - GDF SUEZ Australia

Brodribb Road, Hazelwood, Victoria
PO Box 195, Morwell, Victoria 3840, Australia
Tel. +61 3 5135 5000 Fax +61 3 5135 5044

www.iprplc-gdfsuez-au.com

HAZELWOOD POWER ABN 40 924 759 557, a partnership comprising National Power Australia Investments Limited ABN 51 075 257 537 (incorporated in England & Wales), Australian Power Partners BV ARBN 075 477 208 (incorporated in the Netherlands), Hazelwood Pacific Pty Ltd ABN 19 074 351 376, CISL (Hazelwood) Pty Limited ABN 37 074 747 185 and Hazelwood Investment Company Pty Limited ABN 92 075 041 360

Therefore we propose the issue of a Parent Company Guarantee under GDF SUEZ as acceptable form of collateral. GDF SUEZ has an A rating, better than most banks (and similar to ANZ) and therefore as the global company parent of the Hazelwood site, such a guarantee should be acceptable collateral to meet EPA requirements. Attached is an updated calculation document, to the estimated value required for the landfill assurance, which is calculated to be in the order of \$1,837,398.

Should you require further information, please contact me on 03 51355595 or email david.froud@gdfsuezau.com .

Yours sincerely



David Froud
Chemical & Environment Manager
IPR GDF SUEZ Hazelwood

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Hazelwood Power –updated September 2012

Determination of Financial Assurance for Landfills

1. Introduction

The Environment Protection Authority has triggered section 19A(2A) and 21 of the Environmental protection Act 1970 (“the Act”) to require organisations to commit to established mechanisms approved by the EPA to meet the requirements of providing Financial Assurance for their landfill. This includes both the rehabilitation of active sites and the ongoing after care should the organisation become unable to meet its liability to the community.

Financial assurance must be provided in accordance with section 67B of the Act. Now part of the reformed licence EM30856 required under condition G6.

Hazelwood Power has a number of rehabilitated Landfills on site and one active Asbestos landfill. Although financial assurance may not be required for closed (rehabilitated) landfills, the need to provide financial assurance and its level will be determined in consultation with the EPA.

The Asbestos Landfills at Hazelwood are low risk, based on their location on top of the level 1 of the eastern overburden dump, which places them about 15 m above original ground level and above flooding. They are also located more than 500m from the nearest receptor (residence located on Nadenboushes road. The following dates are provided as a guide to the rehabilitation history of the site

Landfill	Status	Date of rehab
Asbestos Tip 1	Rehabilitated	1996
Asbestos Tip 2	Rehabilitated	1999
Hard Rubbish Dump 1	Rehabilitated	1993
Hard Rubbish Dump 2	Rehabilitated	2004
Asbestos Tip 3	Active-two cells at a time	Active since 1998

All landfills have been included within the certified EMS audit program for an annual inspection of each landfill, which has been conducted annually since Feb 2002. Maintenance of rehabilitated landfills has only required annual grass slashing, some sapling tree removals, blackberry bush spraying and on four occasions minor application of top soil/stabilised sand to surface cracking (drought related).

All 5 landfills are located on the eastern overburden dump, which is inside the mining licence boundary. The groundwater in this area is monitored through a network of ground water monitoring bores, sampled 6 monthly, including the annual interpretation report. The costing in each landfill aftercare calculation are based on a proportion of bores within close proximity to the landfill, However the landfills were for inert wastes and not pretruciabile or industrial waste.

2.1 Hazelwood Power Rehabilitated Landfills

2.1.1 Asbestos Tip 1.

Asbestos Tip no. 1 is located on the first level of the Eastern Overburden dump and is situated approximately 300m to the north of the power station site and covers approximately 12,000 m².

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This landfill was rehabilitated (1996) with the importation of clay to establish effective drainage levels, covering with top soil, sowing of grass cover and installation of half concrete pipe drains along the north and west sides. The area is maintained through grass cutting, followed by annual landfill inspection and is secured by a cyclone mesh fence and gates. Warning signs are in place.

The site is perched above internal access roads and there has been no history of embankment slippage or deterioration. Drainage at the site is adequate.

2.1.2 Asbestos Tip 2.

Asbestos Tip no. 2 is located on the first level of the Eastern Overburden dump and is situated approximately 400m to the north/east of the power station site and covers an area of around 11,000 m².

This landfill was rehabilitated (1999) with the importation of clay to establish effective drainage levels, covering with top soil, sowing of grass cover and installation of half concrete pipe drains along the north sides. The area is maintained through grass cutting, followed by annual landfill inspection and is secured by a cyclone mesh fence and gates. Warning signs are in place.

The site is boarded by internal access road along the north and western sides. Drainage at the site is adequate, with surface levels orientated to direct surface water towards the roadside drains.

2.1.3 Hard Rubbish Tip 1.

Hard Rubbish Tip no. 1 is located on the first level of the Eastern Overburden dump and is situated approximately 300m to the north/east of the power station site covering an area of some 6,000m².

This landfill was rehabilitated (1993) with the importation of clay to establish effective drainage levels, covering with top soil, and sowing down with grass cover. The area is maintained through grass cutting, followed by annual landfill inspection.

The site is boarded by internal access road along the western sides. Drainage at the site is adequate, with surface levels orientated to direct surface water towards the northern side drain. This limits water soaking through the dump and erosion of the fill embankment on the southern and western sides and reduce potential for water transport through the dump.

2.1.4 Hard Rubbish Tip 2.

Hard Rubbish Tip no. 2 is located on the second level of the Eastern Overburden dump and is situated approximately 1200m to the north of the power station site.

This limits water soaking through the dump and erosion of the fill embankment on the southern and western sides.

Weekly due diligence inspections of the Hard rubbish tip were conducted by the Environmental Officer(Mine) who also controlled access to the locked tip and supervised its operation. The landfill was rehabilitated in 2004 and is now part of the agistment land for cattle and undergoes an annual landfill inspection. Remedial works to date has only been required for weed eradication with a few blackberry bushes sprayed.

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2.2 Routine / After care

The four landfills above are essentially covered by the same after care processes described below;

- Grass at all rehabilitated landfills is cut;
- A site inspection for settling, pests and grass coverage is undertaken annually;
- Low areas are filled as required (identified by the annual inspection); minor surface works
- Quarterly Groundwater monitoring is routinely undertaken across the whole overburden dump. Annual groundwater reports by qualified third parties have indicated that there is no impact from the overburden dump on ground water beyond the site boundaries.

Although groundwater monitoring is carried out as part of an overall monitoring plan, the proportion of costs to cover the area of hard rubbish/asbestos landfills would be in the order of \$10000 per annum across all sites.

3.1 Hazelwood Power, Active / non- Rehabilitated Landfill

3.1.1 Asbestos Tip 3. (active site)

This tip is licensed to receive both Asbestos containing materials including contaminated steel/wood/cladding etc and Synthetic Mineral Fibre (SMF). Contaminated Ash or Refractory would be sent off site for encapsulation and disposal at a landfill prescribed to receive wastes

Asbestos Tip no. 3 is located on the first level of the Eastern Overburden dump and is situated approximately 800m to the north east of the power station site and covers an area estimated to be 6000 m². the landfill is sited on the first level of the overburden dump and is above original groundwater elevations.

This landfill has been in service for approximately 13 years and were established for the containment of Hard/Soft asbestos contaminated materials. Drainage levels have been established to direct surface water towards the north boundary and around the landfill. The area is maintained through grass cutting, followed by annual inspection and is secured by a cyclone mesh fence and gates. Warning signs are in place.

The site is located adjacent to the internal access road and there has been no history of embankment slippage or deterioration. Drainage at the site is adequate.

All material deposited to trenches at the landfill are recorded and deliveries supervised by a member of the Chemical & Environment Group.

The site is operated with two cells open, one for Hard asbestos contaminated materials (wrapped sheet/steel) and soft (bagged) asbestos contaminated materials. As each new trench is excavated, the spoil removed is used to cap the previous cell.

This is expected to result in a partial rehabilitation, which would require action as each 30 % of the total landfill volume has been utilised. At present levels this would be expected every 15 years.

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Therefore the risk is that up to 3,800 m² may require top soil coverage and rehabilitation as a worst case, as clay from the landfill cell excavation is left on site for cell capping.

3.2 Estimation of Rehabilitation costs.

As determined under the attached appendix in line with EPA publication 777 dated September 2001

3.2.1 Summary – One active landfill

Remedial Action	\$204,960 (EPA calculation)(\$200,000 + (16 x 310)
Site Rehabilitation	\$127,038 (close 2 active trenches, use spoil on site, add topsoil & grass)
Site aftercare	\$450,000 (30 years after rehab)

3.2.2 Summary – all 4 rehabilitated landfills

The financial assurance, and the forms in which it is provided, is summarised as follows:

Remedial Action	\$0
Site Rehabilitation	\$0
Site aftercare	\$1,055,400

Total Aftercare Cost as of June 2011	=>	\$1,055,400
Comprised of		
Asbestos Tip 1 (remaining 15 years)		\$208,800
Asbestos Tip 2(remaining 18 years)		\$273,600
Hard Rubbish Tip 1(remaining 15 years)		\$234,000
Hard rubbish Tip 2(remaining 23 years)		\$339,600

3.3 Total liability under these estimates

The total liability for rehabilitation/remedial action of the active landfill and associated after care costs of both the active landfill and the four rehabilitated landfills is estimated in accordance with the EPA format to be in the order of **\$1,837,398**.

The areas of concern are outside the power station area and final rehab would have to be included within the overall allocation for site rehabilitation and aftercare as covered by the mining rehab bond, and must according to the state regulations be rehabilitated to the standards acceptable to the minister.

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Appendix 1. Asbestos Tip No. 3 rehabilitation Calculation

The site is situated in accordance with best practice siting measures and the site requires clay and topsoil for rehabilitation.

Clay is available at the site as cell material excavated for each cell is used to cap the previous cell. The site has never been prosecuted for a licence breach.

1.1 Remedial action cost

Calculated as $\$200,000 + (16 \times \text{tonnage pa.}) = \$200,000 \text{ plus } (16 \times 310) = \$204,960$

1.2 Site rehabilitation

Calculated as below = \$80,000

Total Landfill Area (m2)	6,000 (0.6 Ha)		
Open Landfill Area (m2)(disturbed)	3,800		
Annual Rainfall (m)			
Landfill immediate cover(m3)	0.3	1140 m3 achieved with spoil	
Landfill Low permability cap(m3)	0.6	2280 m3 achieved with spoil	
Soil Sub-base	0.5	1900m3 clay cap from within premises	
Landfill Cap Topsoil(m3)	0.3	1140m3	
Cost per m3 soil (clay)	\$9 relocated from mine		
Cost per m3 soil (topsoil)	\$40		
Cost per m2 geomembrane	Not applicable		
Cost of clay	\$0		
Cost of topsoil-caping		\$45,600	
Total cost of soil			\$45,600
Construct cap(cart,compact & topsoil)(\$/m2)\$9		\$54,000	
Install geomembrane	Not applicable		
Total cost to construct earthen cap		\$99,600	
Quality Control (10% of construction cost)		\$ 9,960	
Cost of Cap			\$109,560
Cost of gas collection well	\$8,000	Not applicable	
Number of gas wells	0		
Cost of gas wells		\$0.00	
Supply/Installation of gas collection system	\$40	Not Applicable	
Pipe length (meters)	0		
Cost of flare		\$0.00	
Total Gas collection costs			\$ 00
Grass per ha	\$20,000		
Total Revegetation Costs			\$12,000
Remove facilities and decommission services			\$ 0.00
Design & supervision of works(5 % of rehab cost)			\$ 5,478
Total Landfill Rehabilitation Costs			\$127,038

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1.3 Site aftercare (Asbestos Tip No. 3)

Calculated on the actual costs to manage a landfill for 30 years, and summarised below.

Aftercare period (years)	30		
Number of Groundwater bores (34/5)	7		
Bore maintenance/bore/year	\$500		
Total annual bore maintenance		\$3,500	
Sampling frequency/year	2		
Analytical Costs per bore- 7 bores	\$400		
Total analytical costs		\$5,600	
Annual sampling & reporting (per bore ave)	\$500	\$3,500	
Total analytical costs			\$378,000
Number of gas collection wells(2/ha total area)	0		
Maintain gas collection well (\$/well/yr)	\$400		
Annual gas collection well maintenance		\$0	
Total gas collection well maintenance			\$0
Cost per cap inspection and vegetation maintenance(\$/ha/yr)	\$600		
Cost of inspections			\$18,000
Restoration of partial settlement of cap			
Volume of additional soil(m3)(10% of area) 200m3			
Soil Costs per cubic metre	\$40		
Total soil costs		\$24,000	
Transport costs per cubic metre (incl excavation + placement)	\$50		
Total transport costs		\$30,000	
Total cap restoration costs			\$54,000
Leachate treatment and disposal per Ml	\$0		
Volume of leachate extracted over 10 years	0		
Cost of treating leachate over 10 years		\$0	
Monthly inspection of leachate ponds	\$0		
Inspection over aftercare period		\$0	
Pump Replacement		\$0	
Total Aftercare Cost(30 years)			\$450,000

1.4 Summary

The financial assurance, and the forms in which it is provided, is summarised as follows:

Remedial Action	\$204,9600 (EPA calculation)
Site Rehabilitation	\$ 127,038 (close 2 active cells, use spoil on site, add topsoil & grass)
Site aftercare	\$450,000 (30 years after rehab)

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3.0 Aftercare costs associated with Rehabilitated Landfills

3.1 Asbestos Tip No.1 (rehab 1996)

Calculated on the actual costs to manage a landfill for 30 years, and summarised below.

Aftercare period (years)	15		
Number of Groundwater bores (34/5)	7		
Bore maintenance/bore/year	\$500		
Total annual bore maintenance		\$3,500	
Sampling frequency/year	2		
Analytical Costs per bore- 7 bores	\$400		
Total analytical costs		\$ 5,600	
Annual sampling & reporting (per bore ave)	\$500	\$3,500	
Total analytical costs			\$189,000
Number of gas collection wells(2/ha total area)	0		
Maintain gas collection well (\$/well/yr)	\$400		
Annual gas collection well maintenance		\$0	
Total gas collection well maintenance			\$0
Cost per cap inspection and vegetation maintenance(\$/ha/yr)	\$600		
Cost of inspections			\$9,000
Restoration of partial settlement of cap			
Volume of additional soil(m3)(1% of area)	120		
Soil Costs per cubic metre	\$40		
Total soil costs		\$4,800	
Transport costs per cubic metre (incl excavation + placement)	\$50		
Total transport costs		\$6,000	
Total cap restoration costs			\$10,800
Leachate treatment and disposal per Ml	\$0		
Volume of leachate extracted over 10 years	0		
Cost of treating leachate over 10 years		\$0	
Monthly inspection of leachate ponds	\$0		
Inspection over aftercare period		\$0	
Pump Replacement		\$0	
Total Aftercare Cost(30-15 years)			\$208,800

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3.2 Asbestos Tip No.2 (rehab 1999)

Calculated on the actual costs to manage a landfill for 30 years, and summarised below.

Aftercare period (years)	18		
Number of Groundwater bores (34/5)	7		
Bore maintenance/bore/year	\$500		
Total annual bore maintenance		\$3,500	
Sampling frequency/year	2		
Analytical Costs per bore- 7 bores	\$400		
Total analytical costs		\$5,600	
Annual reporting (per bore ave)	\$500	\$3,500	
Total analytical costs			\$226,800
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Number of gas collection wells(2/ha total area)	0		
Maintain gas collection well (\$/well/yr)	\$400		
Annual gas collection well maintenance		\$0	
Total gas collection well maintenance			\$0
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Cost per cap inspection and vegetation maintenance(\$/ha/yr)	\$600		
Cost of inspections			\$10,800
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Restoration of partial settlement of cap			
Volume of additional soil(m3)(1% of area)	400		
Soil Costs per cubic metre	\$40		
Total soil costs		\$16,000	
Transport costs per cubic metre (incl excavation + placement)	\$50		
Total transport costs		\$20,000	
Total cap restoration costs			\$36,000
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Leachate treatment and disposal per Ml	\$0		
Volume of leachate extracted over 10 years	0		
Cost of treating leachate over 10 years		\$0	
Monthly inspection of leachate ponds	\$0		
Inspection over aftercare period		\$0	
Pump Replacement		\$0	
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Total Aftercare Cost(30-12 years)			\$273,600

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3.3 Hard Rubbish Tip No. 1 (rehab 1996)

Calculated on the actual costs to manage a landfill for 30 years, and summarised below.

Aftercare period (years)	15		
Number of Groundwater bores (34/5)	7		
Bore maintenance/bore/year	\$500		
Total annual bore maintenance		\$3,500	
Sampling frequency/year	2		
Analytical Costs per bore- 7 bores	\$400		
Total analytical costs		\$ 5,600	
Annual sampling & reporting (per bore ave)	\$500	\$3,500	
Total analytical costs			\$189,000
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Number of gas collection wells(2/ha total area)	0		
Maintain gas collection well (\$/well/yr)	\$400		
Annual gas collection well maintenance		\$0	
Total gas collection well maintenance			\$0
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Cost per cap inspection and vegetation maintenance(\$/ha/yr)	\$600		
Cost of inspections			\$9,000
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Restoration of partial settlement of cap			
Volume of additional soil(m3)(1% of area)	400		
Soil Costs per cubic metre	\$40		
Total soil costs		\$16,000	
Transport costs per cubic metre (incl excavation + placement)	\$50		
Total transport costs		\$20,000	
Total cap restoration costs			\$36,000
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Leachate treatment and disposal per Ml	\$0		
Volume of leachate extracted over 10 years	0		
Cost of treating leachate over 10 years		\$0	
Monthly inspection of leachate ponds	\$0		
Inspection over aftercare period		\$0	
Pump Replacement		\$0	
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Total Aftercare Cost (30-15 years)			\$234,000

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3.4 Hard Rubbish Tip No.2

The landfill received bulk inert materials and did not accept prescribed / putrescibles wastes. The site was rehabilitated in 2004.

The site is situated in accordance with best practice sitting measures and has been fully capped and grass established. Annual landfill inspection have been conducted since 2002.

The site has never been prosecuted for a licence breach.

Site aftercare (HRD no. 2)

Calculated on the actual costs to manage a landfill for remaining 23 years (2011-2004=> 30-7=23 years), and summarised below.

Aftercare period (years) from 2011	23		
Number of Groundwater bores (34/5)	7		
Bore maintenance/bore/year	\$500		
Total annual bore maintenance		\$3,500	
Sampling frequency/year	2		
Analytical Costs per bore- 7 bores	\$400		
Total analytical costs		\$ 5,600	
Annual sampling & reporting (per bore ave)	\$500	\$3,500	
Total analytical costs			\$289,800
Number of gas collection wells(2/ha total area)	0		
Maintain gas collection well (\$/well/yr)	\$400		
Annual gas collection well maintenance		\$0	
Total gas collection well maintenance			\$0
Cost per cap inspection and vegetation maintenance(\$/ha/yr)	\$600		
Cost of inspections			\$13,800
Restoration of partial settlement of cap			
Volume of additional soil(m3)(1% of area)	400		
Soil Costs per cubic metre	\$40		
Total soil costs		\$16,000	
Transport costs per cubic metre (incl excavation + placement)	\$50		
Total transport costs		\$20,000	
Total cap restoration costs			\$36,000
Leachate treatment and disposal per MI	\$0		
Volume of leachate extracted over 10 years	0		
Cost of treating leachate over 10 years		\$0	
Monthly inspection of leachate ponds	\$0		
Inspection over aftercare period		\$0	
Pump Replacement		\$0	
Total Aftercare Cost (30-7 years)			\$339,600

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4.0 History of works following annual landfill inspections

Landfill	Asbestos Tip 1	Asbestos Tip 2	Hard rubbish 1	Hard Rubbish 2	Asbestos Tip 3
Years					Active landfill
2002	Sapling removal Clear drains.	Saplings and weed spraying, fill hole with stabilised sand. Clear boundary drain	Installation of signage, removal of saplings and blackberries	Clean up of debris outside of cell.	Improve bunding around edge of active cells in future & use Pole as vehicle stop log in future
2003	No action required	No action required			
2004	No action required	No action required		Rehabilitated.	
2005	Sapling tree removal, blackberry spraying.	Tree pruning and weed spraying	Bamboo to be sprayed	None-recently rehabilitated	Partial rehab -level excess spoil Prune trees along boundary.
2006	No action required	North drain to be cleared, early signs of cracking in surface	Removal of some self set wattle trees. Length of poly pipe to be moved	Install signage to mark boundaries of landfill location	Fence impacted by falling tree branches
2007	Sapling tree removal, blackberry spraying.	Partial blockage along north drain from grass.	Some blackberries sprayed	Some minor water pools, but no actions required	Sapling tree removal,
2008	Spray blackberries	Spray blackberries	Spray blackberries and bamboo	No actions	No actions
2009	Remove saplings- small low spot to be filled with topsoil <20m ²	Remove saplings- small low spot to be filled with topsoil <20m ²	No actions required	Some weeds to be addressed.	No actions
2010	Sapling tree removal, blackberry spraying.	Sapling tree removal, blackberry spraying Apply top soil to fill cracking	Remove dead wattle trees, spray weeds	No actions	Clear drain and remove long grass around tank-refill with water
2011	Remove small trees along fence(north)	Remove small pine tree along fence, Hole near centre south side filled.	Sign on east embankment to be erected. Spray weeds	No actions, Keep monitoring cattle bog hole	Repair east fence, Remove pine trees along fence, spray weeds.



Designates time when topsoil/stabilised sand has been used for crack remediation

