ALCOA

australia's aluminium

B20 on trial

Anglesea's mine fleet trials a new biodiesel fuel

alcoa anglesea

2010

environment report

may

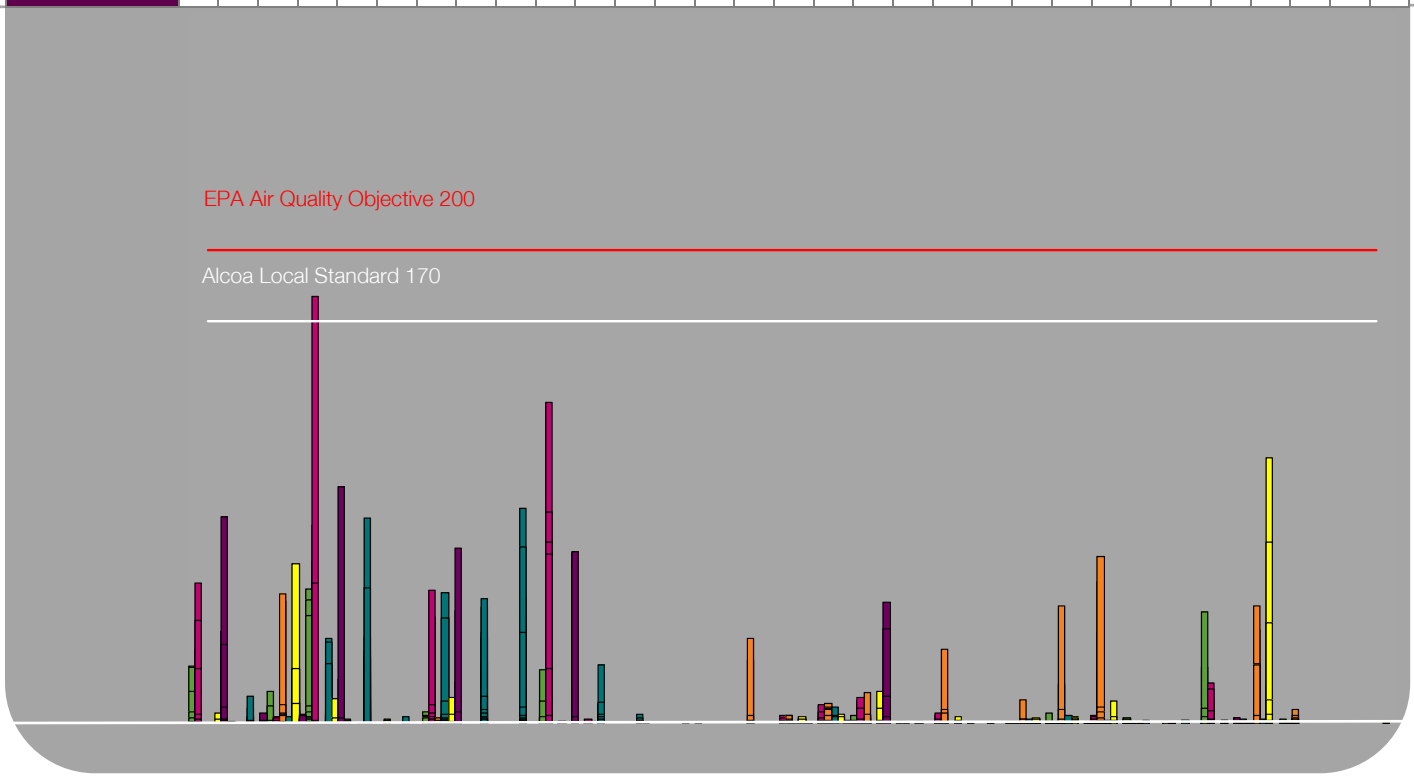
air

Air Monitoring **Stack Monitors**	**Average**	**Maximum**
Opacity g/min 10-minute average	0.072	0.193
Stack SO2 kg/min 1-hour average Licence limit 100kg/min	69.85	77.32

Ambient Monitors **SO_2 1 hour ppb**	**Average**	**Maximum**
Community Centre	1	57
Primary School	2	180
Mt Ingoldsby	2	71
Scout Camp	4	91
Camp Wilkin	1	112
Camp Road	1	100

Ambient Monitors
SO2 Maximum 1 hour averages (ppb)

Date	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Comm Centre	24	1	14	57	2	2	5	0	0	23	0	1	0	0	0	0	0	4	0	1	1	1	5	1	2	1	47	2	2	0	0
Primary School	59	1	3	180	0	0	56	0	0	135	2	0	0	0	0	3	8	11	1	5	0	1	1	4	1	0	17	1	0	0	0
Mt Ingoldsby	0	0	55	0	0	0	2	0	0	0	0	0	0	0	36	3	8	13	0	32	0	10	50	71	0	0	0	50	6	0	0
Scout Camp	1	12	3	36	87	3	55	53	91	1	25	4	-	-	-	0	7	-	-	-	1	2	4	2	1	2	1	2	-	-	-
Camp Wilkin	4	0	67	10	0	0	11	0	0	0	0	1	0	0	0	3	4	13	1	3	0	2	3	9	0	0	0	112	0	0	0
Camp Road	87	4	3	100	0	0	74	0	0	73	0	0	0	0	0	0	2	51	0	0	0	0	0	0	0	0	2	0	0	0	0



water

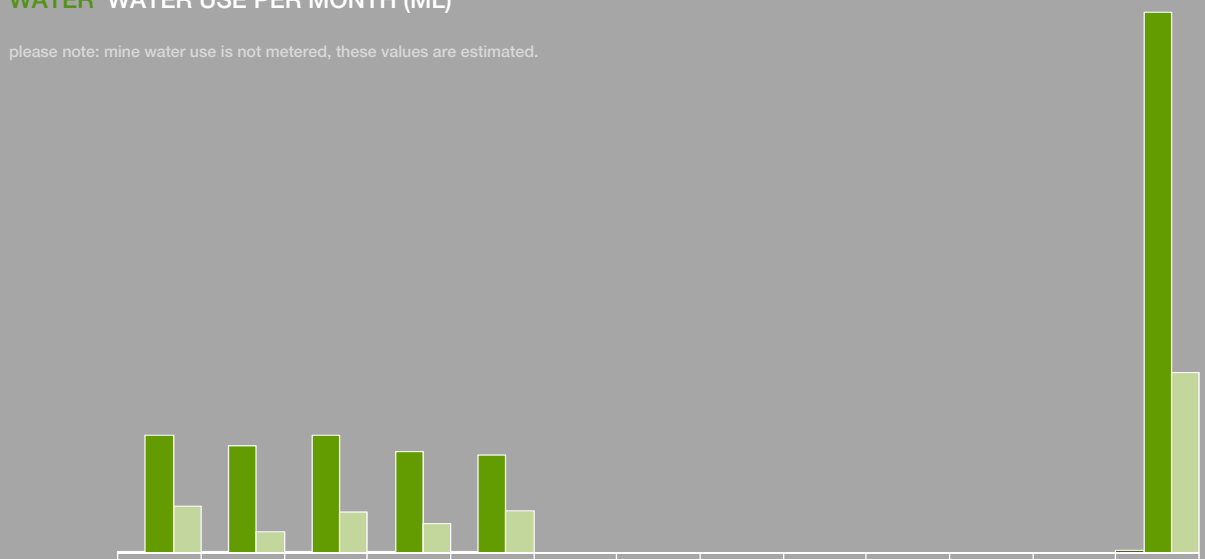
Water Storage
Barwon Water storage levels for the Geelong system are at 29% capacity. Stage 3 restrictions apply with a Winter exemption to permit limited residential garden watering.

Water discharge ML	**May**	**Total**
Ashponds (SP1)	117	606
Mine (SP4)	0	0

Water Monitoring 18/05/2010	**SP1 – Ashpond**		**SP4 – Mine**		**SP3 – Final**	
	EPA Limit	Lab Result	EPA Limit	Lab Result	EPA Limit	Lab Result
pH	4 - 10	7.4	3 – 9	No	5 – 9	7.3
Susp Solids	100	<4	100	discharge	30	<4
Colour	50	4	50	at	50	4
Aluminium	10	0.27	10	time	5.5	0.30
Iron	10	0.26	20	of	4.0	0.14
Zinc	0.4	0.084	2.0	sampling	0.3	0.013

WATER WATER USE PER MONTH (ML)

please note: mine water use is not metered, these values are estimated.



	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Town Water	1.2	1.0	2.7	0.8	0.8								6.5
Bore Water	284	258	283	244	237								1305.5
Mine Water	112	52	98	72	102								436.0

Biodiesel trial

Alcoa Anglesea is trialling a soy-based biodiesel product to operate all of the major equipment at its coal mine in a bid to reduce greenhouse emissions across the site.

As part of Alcoa Anglesea's commitment to environmental improvements, the mine is undertaking a four-month trial of the diesel product for all of its earthmoving equipment fleet.

Biodiesel is a renewable alternative to petroleum based diesel fuel. It is manufactured from virgin vegetable oils such as soy and canola; tropical seeds such as palm and coconut oil; used cooking oils and animal fats.

High quality Biodiesel can be directly substituted for petroleum diesel. It is simple to use, non-toxic and essentially free of sulphur and aromatics.

Using a high quality Biodiesel will require no modifications to the engine or to existing storage and delivery infrastructure. Biodiesel is proven to reduce harmful emissions associated with petroleum diesel.

What is Soybiodiesel?

Soybiodiesel® is the direct result and by-product of soybean processing. It is made from soyoil removed as a by product during the processing of soybean into high-protein animal feed (soybean meal).

B100 Soybiodiesel is a 100% soy oil based product. Alcoa Anglesea is trialling B20 Soydiesel. This is a blend of 20 percent B100 Soybiodiesel and 80 percent Ultra low Sulphur Diesel. Soy biodiesel may be blended up to B20 while remaining within the petroleum diesel specification. As a result this product still qualifies for all Commonwealth rebates.

Soybiodiesel (B100) has the potential to deliver substantial reductions in emissions:

- 95% elimination of sulphur dioxide
- 46% less carbon monoxide
- 68% less particulate matter
- 37% less un-burnt hydrocarbons

The product is also biodegradable, non-toxic and is a sustainable and renewable fuel source.

In addition to the environmental benefits of using B20 Soydiesel, there are numerous Health and Safety and Performance benefits associated with its use. These include:

- Classified as a Non-Hazardous Material
- Not classified as an eye or skin irritant
- Reductions in carcinogenic emissions
- Minimum flash point of 130oC
- Competitive fuel efficiency
- Improves lubricity and engine life
- Major reductions in smoke and particulate emissions
- Similar power and torque to ultra low sulphur diesel

Based on the 1.7 million litres of fuel used by Alcoa Anglesea for its mining operations each year, this would result in an offset of over 900 tonnes of carbon dioxide equivalents (CO2-e).

If the trial is successful, the mine's equipment will permanently switch to B20 Soydiesel.

PLANT OF THE ANGLESEA HEATH

BLUNT EVERLASTING (Argentipallium obtusifolium)

Argentipallium…from Latin, *argenteus*, sliver, and *pallium*, mantile, in reference to the silvery covering of fine hairs that covers the leaves and branches.

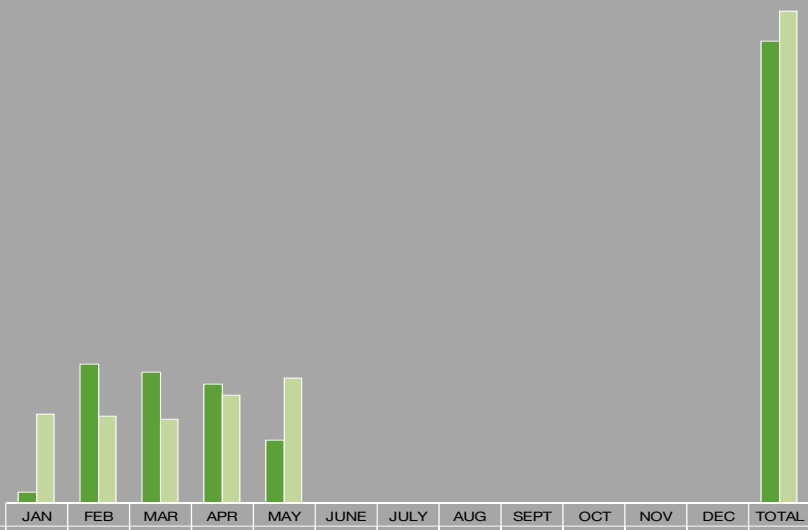
obtusifolium…from Latin, *obtus*, blunt, and *folium*, leaf, referring to the blunt leaves

Size:	10 - 30 cm high
Form:	twiggy multibranched perennial herb
Habitat:	widespread in sandy soils in heathland, mallee-heathland and stringybark woodland
Foliage:	leaves narrow-oblanceolate 0.4—2.5 cm long, 1—2 mm wide upper surface glabrous* + green lower surface silvery-white + woolly
Flowers:	daisy-like flowers with a central yellow button surrounded by white papery petals August to November

*glabrous = smooth without hairs

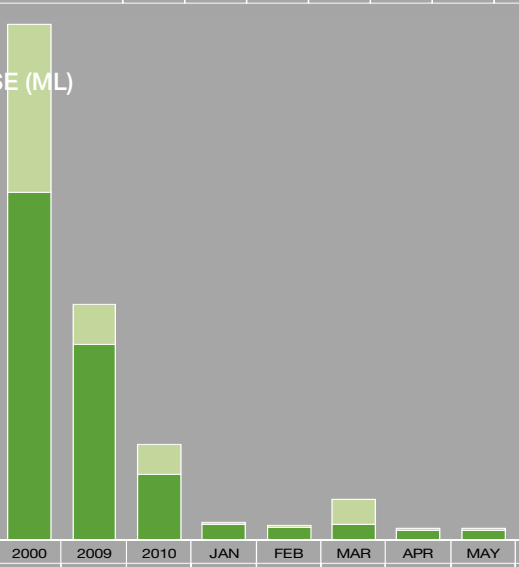
… ARGENTIPALLIUM OBTUSIFOLIUM

LAND
RAINFALL (mm)



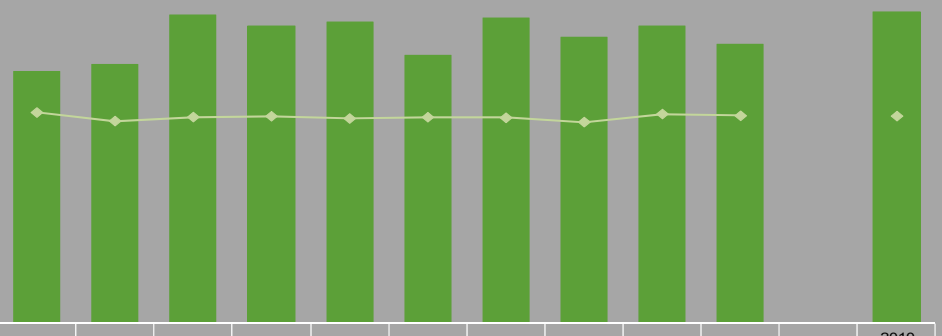
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Monthly Rainfall	5.0	67.0	63.0	57.0	30.2								222.2
Monthly Long Term Average Rainfall	42.9	41.6	40.2	51.9	59.9								236.5

WATER
TOWN WATER USE (ML)



	2000	2009	2010	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Amenity Water Use	11.6	2.7	2.1	0.1	0.1	1.7	0.1	0.1							
Process Water use	23.9	13.5	4.5	1.1	0.9	1.1	0.7	0.7							

AIR
GREENHOUSE GAS (GHG) TOTAL (Mt) & GHG EMISSION EFFICIENCY (t/mwH)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009		2010 forecast
GHG t	1227846	1265103	1504860	1448793	1468098	1309674	1491486	1396713	1452351	1361632		1518694
GHG t/MWh	1.24	1.19	1.21	1.21	1.20	1.21	1.20	1.18	1.23	1.22		1.21

environmental improvement

Environmental Management Targets	May	2010 Total	2010 Forecast	2010 Target
Reportable Environmental Incidents	0	0	0	0
Env Near Miss vs Env Incident Run Rate (ratio)	1	4.8	54.8	2.5
Monthly EHS ASAT Audit Completion (%)	100	100	100	90

Air Emission Targets	May	2010 Total	2010 Forecast	2010 Target
Ambient SO2 (no. readings > 200ppb)	0	0	0	0
Stack SO2 (no. hrs > 100kg/min)	0	0	0	0
SO2 Load Reductions (lost MWh)	18	61	146	NA
GHG Efficiency (t CO2 e/MWh)	1.21	1.21	1.21	1.20
Opacity (10 min av > 0.25g/m3 norm ops)	0	0	0	0

Water Targets	May	2010 Total	2010 Forecast	2010 Target
Town Water (ML)	0.8	6.4	13.3	14.2
Bore Water (ML)	237	1306	3133	4000

Waste Targets	May	2010 Total	2010 Forecast	2010 Target
Waste to Landfill (t)	0	0	0	8
Solid Prescribed Waste to Landfill (t)	0	0	0	0

Mine Rehabilitation Targets	2010 Total		2010 Target
2010 Area to Clear (ha)	0		TBC
2010 Area to Rehabilitate (ha)	0		TBC

OUR ENVIRONMENT AND OUR EMPLOYEE

... SIMON GANDOLFO

Hi Simon. Tell us a little about your role in securing a new supply of biodiesel.
As biodiesel is a relatively new product in Australia we needed to research the market to find potential suppliers who share our values and who were able to supply the product at a competitive price.

Why did our first supply of biodiesel end and what did we need to do before contracting another supplier?
The previous supplier withdrew from Victoria as their business became unsustainable and we ran into some quality issues during the final stages with them. As we use a large volume of fuel, the process steps required to contract a new supplier required significant detail to work through quality, price, taxation, legal and environmental aspects to ensure we achieved the right outcome.

What were some of the environmental considerations taken into account before contracting to a new supplier?
One of the key considerations was the type of 'feedstock' the product is made from, such as canola, used cooking oil, tallow or soy. We particularly wanted to avoid any products containing palm oil as these supplied often originate from clear felled rainforests where local orang-utan populations can be wiped out in the process.