

**TERRAMIN ANGAS MINE PROPOSAL
SUMMARY OF ISSUES RAISED IN ALL SUBMISSIONS DURING PUBLIC CONSULTATION**

GUIDANCE NOTES

In accordance with Section 35A of the *Mining Act, 1971* a statutory consultation process was undertaken on the lease application made by Terramin on 2 November 2005. A public notice seeking written submissions on the proposal was advertised in "The Advertiser" on 10 November 2005 with a closing date for submissions of 23 December 2005. Copies of the lease application documentation were supplied directly to relevant Government Departments, the Alexandrina Council, affected landowners, and a number of other people who had notified PIRSA of their interest in commenting on the project.

Written submissions were received within the 6 week consultation period from the Alexandrina Council and relevant South Australian Government agencies and authorities (Environmental Protection Authority, Department of Water, Land, Biodiversity Conservation (River Murray), Murray-Darling Basin Natural Resource Management Board, Planning SA, Transport SA, Department of Health, Department of Aboriginal Affairs and Reconciliation, Department of Environment and Heritage, Office of the Technical Regulator). Individual submissions were also received from 95 members of the public and non-government organisations (NGOs).

This document summarises the issues raised in all submissions received during the statutory consultation period. Issues have been grouped by the environmental outcomes in the original mining proposal document submitted by Terramin in support of their Angas lease application (these are referenced by the numbering used in that document, and by restating the environmental outcomes used - columns 1 and 2 in this document).

Column 3 indicates the number of public and NGO submissions that referenced the issue summarised in column 5.

Column 4 references the particular issues raised by the Alexandrina Council and relevant South Australian Government agencies and authorities:

Alex Council = Alexandrina Council

Murray-Darling NRMB = Murray Darling Natural Resources Management Board

DWLBC = River Murray, Department of Water, Land and Biodiversity Conservation

Health = Department of Health

Planning = Planning SA, PIRSA

DEH = Department of Environment and Heritage

EPA = Environment Protection Agency

Transport = Transport SA, Department of Transport, Energy and Infrastructure

Technical regulator = Office of the Technical Regulator, Department of Transport, Energy and Infrastructure

Some interpretation of the submissions has been made to enable grouping of like issues raised in different submissions.

The names of private individuals and non-government organisations who made submissions have not been disclosed to Terramin nor will they be made available to the public.

The full text of the submissions made by the Alexandrina Council and South Australian Government agencies, and a summary of the public submissions has been forwarded to Terramin for their response to the issues raised. PIRSA have also formed a view of the issues raised in the consultation process, and have developed a number of actions relating to the progression of the lease assessment process, including issues that must be resolved as part of the lease assessment process (for example changes to the environmental outcomes to be achieved), and issues that may be deferred to the assessment and approval process for the final Mining and rehabilitation program should the lease be granted (for example, detailed designs of surface infrastructure).

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Outcome to be achieved (referenced as per original mining proposal)	Number of public submissions on this issue	Government agency submissions on this issue	Issue raised in submission
<p>17.2 Ground and surface water</p> <p><i>"Prevent the contamination of surface water and/or ground water and pressure loss to users of ground water"</i></p>	<p>2</p> <p>9</p> <p>10</p> <p>1</p>	<p>Alex Council</p> <p>Alex Council</p> <p>Alex Council Murray-Darling NRMB, DWLBC</p> <p>Planning</p> <p>Planning</p> <p>Health</p>	<p>Impact on watercourses from dragout after rain</p> <p>Security of underground water supplies</p> <p>Potential for contamination from chemical spill into ground water and watercourses</p> <p>Potential for contamination by unsealed exploration holes in effluent ponds area</p> <p>Need to consider requirements of Water Allocation Plan for mine dewatering and apply for water licence</p> <p>Need to ensure integrity of separate aquifers are maintained in mining operations and at closure</p> <p>EPA to confirm suitability of monitoring program</p> <p>Risk associated with mine dewatering if from effluent pond water seepage</p>
<p>17.3 Erosion</p> <p><i>"Stabilise current disturbed areas and prevent sediment from leaving the site"</i></p>			<p>No comments received</p>
<p>17.4 Topsoil</p> <p>" Ensure soil quality is protected"</p>		<p>DEH</p> <p>DEH</p>	<p>Need to clarify what depth top and sub soil will be collected and stored</p> <p>Need to monitor soil stockpiles to avoid seed sterilisation</p>
<p>17.5 Vegetation Clearance</p> <p><i>"Avoid loss of biodiversity through clearance of native vegetation. Significant environmental benefit (SEB) will</i></p>		<p>DEH</p> <p>DEH</p> <p>DEH</p> <p>EPA</p>	<p>Flora species of conservation significance do occur in lease area - need to survey and clarify species present</p> <p>If 2 Melaleuca trees are removed or any previous revegetation plantings, Significant Environmental Benefit must be paid</p> <p>Need to clarify if any clearance will occur for installing infrastructure (fig 35)</p> <p>Sealing or raise bores through aquifers should be an</p>

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	<i>be provided to increase the biodiversity"</i>			approval condition
17.6	Silt & storm water control <i>" Prevent contamination of storm water leaving site"</i>	2	Alex Council, Planning Planning, DEH Planning, DEH	No contaminated water to leave site More monitoring details of stormwater runoff from tailings dam Need to demonstrate stormwater diversion around TSF will be sufficient to cope with storm events and how runoff water will be disposed of Need to address stormwater runoff of stockpiles
17.7	Waste disposal/ Hazardous substances <i>"Prevent contamination and pollution from the management of waste products and spillages"</i>	1	Alex Council DEH	Detail hazardous waste management process to give confidence that risk can be managed Recycling strategies should be documented, including opportunities to recycle waste material currently onsite
17.8	Acid Mine drainage <i>" Prevent contamination of surface water, groundwater, and soils by acid mine drainage"</i>	32 1 2 2 1 12 4 2	Alex Council, Murray-Darling NRMB, DWLBC, Planning, DEH, EPA Alex Council, Planning Planning Alex Council, DWLBC Murray-Darling NRMB, EPA Planning, DEH DWLBC	Doubt leakage/contamination (groundwater and surface water) can be managed (risk rating is high) Risk of embankment failure Potential for seismic failure - must withstand 7 on Richter scale for 1 minute Potential for reactive soils to cause failure Design to be worlds best practice- specify design parameters and include monitoring facilities Risk of damage due to flooding underestimated (should be 500m from 100ARI flood level of Burnside Creek) Investigate alternate locations for Tailings dump AMD risk from temp storage of waste rock TSF to be designed to EPA "Guidelines for Solid waste landfills" and managed and de-commissioned in accordance with "Landfill Environmental Management Plan" (LEMP)

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	<i>"Prevent public nuisance impacts from noise emanating from the operating site"</i>	23 1 1 16 18 2 1 1 2 1 1 1	EPA Alex Council, Planning Health	Noise limit for night time (40db) too high wants no noise at night Definition of "daytime" is not 7am to 10pm What days of week will mine operate? Noise during daytime to be comparable with existing rural noise levels Doubts that noise can be controlled to stated/acceptable limits Concern crushing may be 24hr operation, not just 12 hr operation Doubts that EPA able to enforce noise limits Need to consider shift workers, not all are 9-5 Ventilation shaft location not known - doubts noise will be acceptable Suggest 55 or 43dB during day and 45-40dB at night, to account for schools Noise limits not clear Noise at night now from music, mine won't be any worse Limit crushing plant to 7am to 7pm Mon-sat, no crushing Sun and Pub Hols Noise limits suggested in MARP not appropriate WHO guidelines recommend 50dB during day, 45dB at night (some people will still be adversely affected by these levels eg shift workers, elderly)
17.12	Blasting <i>"Prevent public nuisance impacts from vibration caused by blasting"</i>	12 1 2	Alex Council	Damage to buildings Need to warn residents of blasting Limit blasting to after 7:30am, (or 7am-7pm) not 24hr nor 7days a week, no blasting Sundays or Pub Holidays
17.13	Public health Nuisance <i>"Prevent public health and nuisance impacts from the ingestion of dust and harmful substances and odour dust"</i>	24 31 24 1 16	EPA, Health EPA	Doubts /lack of detail over dust control measures No guarantees there will be no health impacts from chemicals or dust Lead dust in rainwater tanks Health impacts from ventilation of underground workings No Odour off site

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<i>associated with mining activities"</i>	19	EPA, Health	Suggest EPA standard limit of 2 odour units, Doubt/ more detail on how odours from tailings dam can be managed
	4	Alex Council	Dust to be contained on site
	13		Need for baseline blood and environmental lead level data
	2		Impacts on organic vegetable growing
	3		Transport and use of toxic chemicals (eg Xanthate)
	1	Alex Council	Monitoring of dust levels on boundary of operation
	1		Monitor CS2 levels -to be below 0.042ppm (WA PA)
	1		Risk of zinc metal or oxide dust ingestion
	2		Higher stress levels for residents due to noise, traffic, fear of contaminated rainwater
	1		Compensate affected landowners with double glazing, aircond, filters for rainwater tanks
	6		No compensation if outcomes not met - no confidence in ability of regulators to enforce requirements
	1		Dust/Lead concentration limit to be NEPM std : lead<0.5ug/m3 (no exceedences per yr) and (PM10)<50ug/m3(5 exceedences per yr)
	1	EPA	Need for odour / HCN modelling
	1	EPA	Need to demonstrate no risk from hydrogen cyanide volatilisation for flotation process
	1		Dust/emissions risk should also assess potential for PM10, CO, SOx, VOCs, Nox and asbestos,
	2		Risk is HIGH extensive monitoring required using modern technology
	1		Need to assess PM2.5 risk and set appropriate standards
	1		If adverse weather conditions, close down operations temp
		Health	More detail on ore composition required
		Health	Baseline monitoring of blood lead levels not required
	Health	Need to ensure lead bearing dust is not transported offsite by workers	
	Health	Baseline dust monitoring required	
	Health	Effluent ponds are incorrectly referred to as "grey water ponds", but present risks to public health due to pathogen content	

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		2 1	Health Planning, EPA	Appendix P (Blood lead Management Guidelines) is incomplete requires revision Demonstrate Cyanide and daughter products do not pose threat to humans or fauna No Odour outcome
17.14	Fire <i>"Prevent fires onsite, and if unavoidable, control to ensure no off site impacts"</i>	1	Alex Council	Risk posed by concentration of flammable/explosive chemicals
17.15	Seismic <i>" Prevent damage to public infrastructure, injuries/deaths and pollution of the environment resulting from seismic induced catastrophic failure of mine infrastructure"</i>	1		Risk of seismic action and reactive soils
17.16	Vertical openings/Site security <i>" Prevent public injuries/deaths resulting from unauthorised entry to the mine site"</i>			No comments received
17.17	Geotechnical stability <i>" Prevent damage to public infrastructure and injuries/deaths resulting from pillar failures both during and after mine closure"</i>	1 1	 Transport Planning	Risk of effluent pond collapse due to mining - who will be liable for repair of damage Risk acid generating tails will weaken cemented tailings underground Callington-Goolwa Rd integrity must be protected Potential for surface subsidence of TSF if located over ore extraction areas
17.18	Visual impact <i>" Minimise visual impact of site and operations"</i>	11 2 2 1	Planning Planning	Lighting at night to focussed down, or operations enclosed -so as to not be visible from town Screening of Tailings dam from town - if vegetation to be used, when will this be effective Locate plant in existing quarry, not on exposed sthn hillside, or locate away from town Need to clarify how large and visible the stockpiles will be

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		1		Visual aspects of large ugly trucks on road
		1		Plant visible to local residents - which roads will be used to determine if visible or not?
			Alex Council	Tailings dam not to be increased in height from initial approval
			Planning	Buildings to be painted in earth tones
			DEH	If plantings are used to screen, use local species to increase biodiversity in region
17.19	Fauna <i>" Prevent impact of site operations on native fauna"</i>	11	Murray- Darling NRMB	Threats to wildlife in general area and in Tucker's swamp area (esp frogs - sensitive to low level toxins). Swamp is breeding area for vulnerable birds. Need to consider implications of groundwater impacts on wetlands
		1	Murray-Darling NRMB, DWLBC	River black fish (protected), Mountain Galaxis, Carp Gudgeon in Angas river and not mentioned in MARP
		3	Planning, DEH	Risks to birds and fauna (especially rare and vulnerable) from cyanide, heavy metal toxins etc in TSF
			DEH, EPA	Fauna survey required especially migratory birds
			DEH	One weed species of national significance has been identified on site -weeds need to be managed
			DEH	Need to ensure infrastructure areas are designed to avoid traps for ground dwelling fauna
			DEH	Need to implement phytophthora management
17.20	Stakeholders <i>"Maintain good relationships with local community and minimise other negative impacts on public amenity and values"</i>	18		Will restrict future growth and development of town, impact existing business
		1		May cause labour shortage for other business (eg vineyards)
		47		Impact on quality of life (non specific)
		22		Lower property values
		22	Alex Council, Planning	Impacts on electricity and water supplies SA water and ETSA to confirm infrastructure sufficient
		20		Effect on heritage/wine/food tourism
		2		Better to mine now rather than later, before town expands
		4		Positive impacts on commerce, employment, education, health/hospital services, transport in the town
		1		Positive effect on community sponsorship
		1		Will improve ugly site
		1		Vermin control will improve environment for native

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				flora/fauna in area
		1		Mains water supply on Callington Rd will be upgraded
		1		May address environmental impacts of existing effluent ponds
		1		Employment only short term
		6		No certainty new jobs created will attract new residents
		1		Impact on Strath Model aircraft club - what happens to them?
		2		Use of effluent ponds for water source may leave recreation grounds without water
		1		Will the new substation the mine is proposing give benefit to residents (i.e. more secure supply?)
		1		Terramin promised sponsorship to clubs other than sport, but have only sponsored football club
		2		New residents may not contribute to social life in town due to long shift work
		2		Process to inform and deal with landowner access issues not good
		29	Alex Council, DEH	Need for more consultation including formation of consultative committee especially closure issues
		1		Want measurable outcomes (not world's best practice"
		1		Wants severe penalties for not meeting outcomes
		1		Want problems prevented, not punished after they occur
			Planning	Site already degraded due to presence of landfill, quarry and effluent ponds
			Planning	Location of mine in quarry will minimise off site impacts
			Planning	Management of issues critical to maintain amenity, given close proximity to Strathalbyn
				Section 7.1 on power supplies missing
			Technical Regulator	No evidence that grid capacity is sufficient
		2	Technical Regulator	Emergency services must be supplemented to respond to accident on site

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	Closure	11		Long term liability of tailings dam (may end up with the community to fix and monitor)
	No Outcome	1		Long term residual, liability re health effects
			Planning	Will vegetation grow on tailings dam given contamination
		4		Rehab required beyond working life of mine
		1		Potential to lower value/damage land post rehabilitation
		1		Post mine land use not clear (reopening as waste disposal may not be allowed)
		1	Alex Council	Establish trust fund to compensate for impacts
		1	Planning, DEH	Need to demonstrate TSF will be stable and non polluting,
		2	Planning	3yr post closure monitoring program may not be sufficient, need to model appropriate monitoring period
			Planning DEH	Proposed closure plan complies with Development Plan policies
			DWLBC	LEMP for TSF required to be developed, may require monitoring/bond for up to 25yrs
			DEH	Need to specify what native species will be used in rehab
			DEH	Need to monitor for soil erosion post closure

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	Other Issues	7	Potential for further future leases, or operation beyond 7 years, conversion to open cut, establishment of smelter
		3	Greenhouse gas emissions from power usage
		3	Uncertainty over size
		4	Environmental monitoring to be conducted by independent authority
		1	Monitor at High school on Callington rd - could be used as part of curriculum
		1	Risk of pollution if electricity supplies fail
		5	MARP should better characterise proximity to housing, (Burnside area) schools, hospital etc (section 3.3)
		10	Climate data at mine (especially wind directions) may differ from Strathalbyn due to local topographical effects or fails to account for predicted climate change
		2	Risk assessment inadequate - too many are still rated medium after control measures, (especially social impacts), some have not rating due to lack of information, risks should be assessed independently
		1	Increased lead impacts on residents of Port Pirie
		1	More baseline environmental sampling required (not specified)
		1	Contingencies for premature closure or sell off part way through