Sub. No.	Date	Submitter	Issue No.	Ref Section Supplementary Report	Major Issues - General	Major issues - details	Address in Supplementary Report?	Relevant Section of EIS	Comments to GHD / Dyno Nobel
1	1/11/06	Department of Mines and Energy	1		No comments		N/A		
2		Department of Natural Resources and Water and Department of Mines and Energy	NRW1	Section 12	Coal resources	Some figures showing the location of coal seams have been incorrectly drawn. The in-situ tonnage of raw coal in the Dysart Lower Seam located beneath the project area (plant site and buffer zone) will be considerably greater than the amount of coal estimated by the proponent in this seam. In terms of the potential impact on the future mineability of coal seams in the Moranbah area, the location of the proposed plant is not considered to be ideal as it will contribute to making a substantial quantity of coal inaccessible for mining for a very long and potentially indefinite period of time. The amount of coal in the Dysart Lower Seam located beneath the site is estimated at between 10 and 30 million tonnes (raw coal in-situ).	Yes		During the course of the project's development Dyno Nobel need to communicate directly with DME officers based in Brisbane.
			NRW2	Section 12	Typing Error	Minor typographical error in the last sentence on page 91. "…volume of coal affected provided in Table 4 should read …tonnage of coal affected provided in Table 22.	Yes	4.1.1	Correct relevant errors in the EIS
			NRW3	Section 8.13	Water	The EIS states the water requirements for the construction phase is 66.5ML but does not specify where this water will be sourced from. If the proponents wish to access groundwater or surface water resources, an appropriate approval under the *Water Act 2000* will be required. Please be advised that the Fitzroy Basin moratorium will affect any such applications.	Yes	3.5.3	GHD to provide clarification of water source for construction phase.
			NRW4	Section 8.1.3	Vegetation	An application for clearing of native vegetation was accepted as an ongoing purpose as per section 22A of the Vegetation Management Act 1999(VMA), on the 16th October 2006. The Development Approval/Refusal will not be issued until after the following has been finalised:The EIS has been approved by the Coordinator General and the deed has been issued by NRW to secure the tenure of the lots. If a Development Permit is issued as a result of this application, conditions may be set to ensure the purpose of the VMA are met. A Development Permit will not be required, as per Schedule 8 of the Integrated Planning Act1997, for the clearing of native vegetation in the mapped non-remnant areas on the EPA Version 5.0 Regional Ecosystem map once the freehold tenure has been finalised.	Yes		
3	3/11/06	Department of Local Government, Planning, Sport and Recreation	1		No comments		N/A		
4	6/11/06	Local resident	R1	Section 4.5	Air Quality	Insufficient baseline data on existing pollutants.	Yes		Suplementary report to address these matters
			R2	Section 4.5		The potential human health risk is not adequately addressed.			
			R3	Section 4.5		The EIS did not address worst case and upset conditions and did not incorporate all factors in air quality monitoring, therefore not demonstrating it achieves all EPP(Air) NEPM 1997 and national guidelines for control of emissions from stationary sources 1985 Air Quality Standards.			
			R4	Section 4.5		There did not apear to be any information on any continuos air quality monitoring if the plant is approved e.g. when the plant is operational.			
			R5	Section 3.1	Housing	The EIS did not provide details of a housing strategy including accomodation and childcare.	No		This is adequately addressed in the EIS
			R6, R7 & R8	Section 10.3	Water	Does not address how storm run off will be contained. Does not address long term monitoring of the evaporation pond.	No		This is adequately addressed in the EIS
			R9	Section 8.1.4	EMP	Compliance after 1 or 6 months is not adequate.	Yes		GHD to clarify compliance monitoring.
			R10	Section 3.1	Consultation	Responses to community questions and concerns are not adequate.	Yes		This should be addressed. Responses should be more specific.
5	9/11/06	Department of State Development, Trade and Innovation	1		No comments				
6	10/11/06	Department of Primary Industries and Fisheries	DPI 1 and DP2		Grosvenor Creek	There is a potential for increased turbidity in the creek. If the creek is flowing during the construction phase of the project DPI&F would like to receive a copy of any reports for the proposed monitoring.	Yes	7.5	EIS details mitigation methods and monitoring methods.
7	10/11/06	Environmental Protection Agency	EP1	Section 8.1.1	Flora and Fauna	This section includes reference to section 5 work (fauna and flora), however section 5 contains only recommendations prepared by the consulting ecology group and does not include any firm commitments by the proponent. It is recommended that the EPA request an addendum to the EIS which outlines the proponents commitments to adopting recommendations provided in section 7.5; Potential Impact and Mitigation.	Yes	Flora and Fauna 7.15	GHD to provide clarification.
			EP2	Section 4.2	Air Quality	Figure numbering in text does not match numbers on specific figures. It is recommended that the report is checked and figure numbering in the text is corrected.	Yes	Air Quality	GHD to check figure numbering.
			EP3	Section 4.2	Air Quality	The report refers to total mass emission rates for NOx and AN vent and reformer stack, however these rates were not included in the report. It is recommended that the EIS report includes the total mass emission rates of NOx for the AN vent and reformer stack that were provided by Dyno Nobel.	Yes	Air Quality 2.2.2	GHD to add this data.
			EP4	Section 4.2	Air Quality	In Table 2 of the report emission rates for PM10 are estimated. However no detail is provided on how the estimated figures were derived. It is recommended that the EIS report provides an explanation for the estimated PM10 emission rates in Table 2.	Yes	Air Quality 2.2.2	GHD to provid explanation for emission rates.
			EP5	Section 4.2	Air Quality	It is recommended that the EIS report provides an explanation on how the NO2 emission rate for the NA vent in Table 2 was calculated.	Yes	Air Quality 2.2.2	GHD to provide explanation for calculations.
			EP6	Section 4.2	Air Quality	In Table 3, it is not strictly correct to interpret the Environmental Protection (Air) Policy 1997 1-hour goal for NO2 as allowing 9 exceedences per year. The Environmental Protection (Air) Policy 1997 goals were not defined as modelling criteria or given any statistical basis. However for impact assessment purposes, EPA accepts the predidicted 99.9th percentile one-hour concentrations from air dispersion modelling can be compared to one-hour Environmental Protection (Air) Policy 1997 goals. It is recommended that the Environmental Protection (Air) Policy 1997 goal is quoted without qualifying it with allows 9 exceedences per year. Use the predicted 99.9th percentile 1-h concentrations to compare the goal.	Yes	Air Quality 3	GHD to update section.
			EP7	Section 4.2	Air Quality	It is recommended that the report is corrected to include Figure 10.	Yes	Air Quality 6.4.1	GHD to add Figure 10.
			EP8	Section 4.2	Air Quality	The section doesn't offer any description of model inputs and model configurations used to perform the predictions of deposited nitrogen. It is recommended that the EIS report is adjusted to include an outline of the modelling methods.	Yes	Air Quality 7.2.3	GHD to provide outline of modelling methods.
			EP9	Section 4.2	Air Quality	This section incorrectly abbreviates the unit grams as 'gm'. It is recommended that the references to grams, when abbreviated, within the report be changed to 'g'.	Yes	Air Quality 7.2.3	GHD to update abbreviations for grams.
			EP10	Section 4.2	Air Quality	In Table 7, first row, 49.3+45=89.3 doesn't add up. The table also includes the 9 exceedences per year interpretation on the goal. It is recommended that Table 7 is adjusted to reflect changes.	Yes	Air Quality 7.2.8	GHD to check and update calculations.
			EP11	Section 10.2	Water Quality	Overtopping of the evaporation dam could have serious impacts on Grosvenor Creek. The water in the dam is likely to contain very high levels of ammonia and nitrate (over 2000 times the Australian and New Zealand Guidelines for Fresh and Marine Water Quality). Even when diluted or dissipated these compounds are likely to cause significant mortality of aquatic flora and fauna. Levels of copper and zinc will exceed the national guidelines, though it is likely dilution the level of copper may not be of concern. Other compounds could be present that are not found inthe Moura dam. While the dam is unlikely to overtop if the weather is similar to or drier the that of the past fifty years, the high levels of toxic compounds likely to be present in the dam water mean that any possibilty of overtopping should be minimised to the greatest extent possible. The environmental management plan needs to contain a contingency plan to prevent or furthur reduce the likelihood of overtopping. For example, when the dam reaches 80% capacity, actions such as work cessation or removal of water to other locations (such as mine pits) may need to be considered.	Yes	Water Quality 4.3.2.1	GHD to clarify likelihood of overtopping by clarifying the '1 in 50 year' data used. GHD to add contingency plans.
			EP12	Section 10.2	Water Quality	Page 119, there is discrepancy between the design and modelling depth of the dam in paragraphs 3 and 9 (1m vs. 0.8m). It is recommended that the discrepancy in depth be explained.	Yes	Water Quality 4.3.2.1	GHD to explain discrepancy.
			EP13	Section 10.2	Water Quality	Paragraph 6 p 123, "*…a significant volume of this material would remain within the pond…* ". There is no evidence to support why this would be the case. What design features or what mechanisms are in place to ensure this? What volume or proportion of capacity does a "*significant volume*" equate to? Please elaborate upon, or modify the statement.	Yes	Water Quality 4.3.2.1	GHD to provide details of the dam design.

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			EP14	Section 10.2	Water Quality	Furthur investigation of aquatic flora & fauna is needed. Section7.1 of theTOR: "*the EIS should describe existing environmental values for nature conservation that may be affected by the proposal*" & "*should describe the occurence and significance of any rare or threatened flora or fauna species & habitat for these species within the area affected by the construction and operatn of the facility*". While ephemeral waterbodies within the site were not flowing at the time of the study, Grosvenor Ck contained standing water & this should've been sampled for aquatic flora and fauna. The creek is likely tobe impacted by constructn and operation (p122-4) & overtopping of the evap. dam could have large impacts (issue11).	Yes	Water Quality 4.7	GHD to conduct testing as described when the opportunity arises.
						Standing waterbodies can act as important refuge for rare or endangered species. Sampling of the waterbody could also give an indication of the species that may be present whenthe waterway isflowing. Studies of aquatic flora and fauna should be carried out in Grosvenor Ck at the earliest opportunity (I.e. the first significant flow event). This should not be carried out during the period of first flush. This may need to be repeated if flows in the creek do not allow developmt of aquatic communities (eg hatching & growth of macroinvertebrates & migration of fish).			
			EP15	Section 10.2	Water Quality	Paragraph 8 (p 138), It is not clear why the last 50 years were used. Was this all the data that was available or is this the life expectancy of the plant? Was a safety factor built into the sizing modelling and if so, what was it? It is recommended that the mass balance conceptual design figure be named as such and listed in the table of figures, and that consistency be maintained in the terms used between overflow and overtop. It is also recommended that more detail be provided on the likelihood of the dam overflowing (re: "would not be expected to overtop").	Yes	Water Quality 4.5.2	GHD to clarify data and explain model.
			EP16	Section 10.2	Water Quality	A stormwater management strategy (SMS) is mentioned in Paragraph 1 (p. 105) and Paragraph 6 (p. 122), directing the reader to Section 5, but there is no SMS there. The term "*stormwater management*" is only mentioned once in all of Section 5 (p. 250). There only seems to be a SMS outline presented in 3.5.3 *Water Supply and Management* , *Stormwater management (operational phase)* (p. 69), and *Stormwater management (construction phase)* (p. 70). It is recommended all cross-referencing for stormwater be checked and updated. Figure 31 should show the stormwater collection points, diversionary earth wall bunding and the run-off pond (or equalisation basin) illustrated in the conceptual plan (Figure 17). Figure 31 should also be more widely cross-referenced.	Yes	Water Quality 3.5	GHD to fix references to SMS.
			EP17	Section 10.2	Water Quality	Paragraph 1 (p. 71). *"Raw water reservoir evaporation..."* Is raw water storage in roofed tank's) not feasible? Raw water storage is shown as a tank in Figure 17 and that is misleading. It is recommended that the feasibility of roofed-tank raw water storage be considered and the advantages and disadvantages be presented along with the outcome. Figure 17 should be modified to show a raw water storage dam (and not a tank) unless the storage facility is changed.	Yes	Water Quality p71	DN to consider the feasibility of a roofed tank raw water storage.
			EP18	Section 10.2	Water Quality	The percentage breakdown of water usage in the "*Permanent Facilities"* and "*Temporary Facilities (with Composting Toilets)* " columns do not total 100%. If it was the consultant's intention to demonstrate reductions in total water usage through having the stated columns total less that 100%, then volumes (L/EP/day) and not percentages (of the 180 L/EP/day) should have been presented. Alternatively, explain why these columns don't total 100%. "L/EP/day" should appear in the glossary.	Yes	Water Quality 7.12	GHD to update data.
			EP19	Section 10.2	Water Quality	It is unusual that the most likely wastewater treatment system as presented in the EIS (paragraph 2, p. 72) is not mentioned here (i.e. preference for the Biolytix system). It is recommended that the MBR option be adopted (due to the system producing both lower wastewater volume and nutrient loads in the effluent directed toward irrigation.	Yes	Water Quality 7.12	GHD to clarify .
			EP20	Section 11.2	Cultural Heritage	The EIS fails to address the Terms of Reference in relation to the *Queensland Heritage Act 1992* and identification of Non-Indigenous cultural heritage. It is recommended that the EIS report is adjusted in order to address the Terms of Reference in relation to the *Queensland Heritage Act 1992* and identification of Non-Indigenous cultural heritage.	Yes	Cultural Heritage	GHD to clarify.
			EP21	Section 9.2.1	Contaminated Land	The stormwater pond must be designed and operated with a fail safe mode that will prevent overtopping in all situations. In order to ensure that the overtopping in adverse circumstances does not occur (ie if rainfall and evaporation exceeds conditions of the past 50 years) or in the event of containment structure failure, an alternative containment and response plan that can be readily implemented must be prepared to prevent environmental harm.	Yes	Contaminated Land	See issue 13.
			EP22	Section 9.2	Contaminated Land	The pond area will accumulate large quantities of available nitrogen over time and result in a contaminated area of 20-25 ha requiring secure containment and monitoring. It is not an environmentally desirable approach to permanently store large quantities of a highly mobile contaminant of this type. Exhaustion of the pond's storage capacity will require its effective closure with low permeability capping and long term environmental and structural monitoring and repair to capping and walls as required under the conditions of a Site Management Plan. Other options may need to be considered to reduce the long term liability and cost to the proponent and regulatory burden.	Yes	Contaminated Land	GHD to clarify.
			EP23	Section 9.2	Contaminated Land	The total nitrogen load on the evaporation ponds appears to be of the order of 2.5-3 T/day. The wastewater also carries a number of other contaiminants from parts of the plant that could contaminate any fertiliser product. Consideration needs to be given to potential options and their economic viability for the use of this material as a resource. It may be feasible to use the waste in a concentrated form as fertilizer directly or by addition to other soil conditioning materials. Considering the comparitively large volumes of liquid waste, this may involve options such as downsizing the evaporation area and using fan evaporators to reduce water volumes followed by trasportating thickened wastewater/sludge nearer to agricultural areas for further processing and final use. If the other contaminantns in the wastewater are a concern, these contaminants may be able to be segregated and managed separated from the main nitrogen bearing waste streams as part of the plant operation to control fertilizer product quality. Economic analysis of any resource use options should consider the long term cost of managing the evaporation ponds during plant life a	Yes	Contaminated Land	GHD to comment on viability.
8	10/11/06	Anglo Coal	A1		Sterilisation of Coal Resource	proposed buffer zone (page 90 of the EIS second paragraph) covers reserves within the Harrow Creek (Goonyella Middle) seam and will limit Anglo's ability to extract this resource. To access these resources by underground mining methods Anglo requires unimpeded access to not only the			Explain results of meeting with Anglo Coal.
			A2		Sterilisation of Coal Resource	The proposed infrastructure within the lease is east of the Dysart (Goonyella Lower) Seam subcrop line thus within the subsidence zone following extraction by underground mining methods. This will limit the ability of Anglo to cost effectively extract this coal at any point in the future unless the proposed infrastructure is capable of being subsided.			
9	10/11/06	Office of Aboriginal And Torres Straight Islander Policy			No comments				
10	10/11/06	Belyando Shire Council	BSC1	Section 5.1	Chemical Discharges	The EIS provides some comment on the possibility of chemical and gas discharges; however the EIS does not clearly annunciate the strategies proposed to maintain the safety and well being of the residents of Moranbah and inform the community of events which pose a danger to health and safety. The EIS does not propose a method of informing the community as a whole and this is clearly an opportunity missed. It would be most beneficial if the proponent would commit to a regular forum of communication with the community to allow the fostering of mutual understanding and cooperation in the community.	Yes		GHD to address in supplementary report.
			BSC2	Section 6.1	Noise & Vibration	The EIS does not provide a clear time line assessment of the noise impacts of the proposal for the expansion of the existing compressor station. The EIS should clearly specify the background noise levels prior to the development commencing on the site and examine the cumulative effects of subsequent expansions of the compressor station to the first base line data. Without the rigorous assessment of the noise levels to the base line data the noise levels are affected by bracket creep and will result in unsatisfactory environmental impacts in the locality. The EIS should be amended and have supplementary details to provide updated information on these outstanding points.	Yes	Noise & Vibration	GHD to address in supplementary report.
			BSC3	Section 7.3	Transport	The EIS does not provide any clear indication on the location of the product transport vehicles when not in use. The location of a transport depot wherever it may be needs to be fully detailed and assessed as part of the project. The amount of product to be moved from the site clearly involves significant amounts of transport movements and the location of these vehicles is fundamental to a rigorous assessment of the proposal. A failure to detail the location will lead to adhoc management of the impacts after the event. This is a totally unacceptable outcome for the community. The impacts of transport movements beyond the site have not been clearly described and the EIS needs to be rigorous in this area to avoid cumulative impacts with other expansion programs in the region. The EIS clearly needs more detail and should be amended prior to further consideration by Council and the community.	Yes	Transport	If DN considers the depot facilities for the transportation of AN to be outside of the project scope because it is primarily the reponsibility of its costomers, then separate approvals processes will need to be sought for these facilities.

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			BSC4	Section 10.5	Water Usage	Water consumption through the plant operations is predisposed to evaporation loss. The EIS does not clearly describe the analysis of capturing the water vapour and recycling the material through the process. The evaporation ponds are proposed to evaporate a significant proportion of the total water consumption in the operations of the plant, as a result the EIS needs to explore in more detail the opportunities to have the high nitrate water processed and used in other spheres of industrial and agricultural applications. The EIS does not explore the opportunities of reprocessing the waste to alternative uses and in particular the maximization of the water allocation for the industrial process which is out of step with the expectations placed upon urban users.	Yes		GHD to comment on in the supplementary report.
			BSC5	Section 3.4	Water Allocation for Moranbah	The EIS fails to acknowledge the multiplier effect of the economic stimulant of the proposal on generating additional water demand in the community. A sincere and unbiased appraisal of the total water demand needs to be undertaken. The process of allocating water directly to urban use in the residential corner ignores the broader economic stimulant that will eventuate as a result of the proposal. Subordinate industries and residential functions will follow and will place greater pressure on the existing allocation of water to the community. By focusing solely upon the direct link between employers and their families and water consumption, the proposed allocation is deficient and will not meet the community needs and will result in greater pressure on existing users in an environment of constrained supply.	Yes		DN to consider.
			BSC6	Section 3.4	Social Impact	The EIS does not detail a multiplier effect in terms of the additional demand for housing and accommodation. While consideration is given to direct links of the proposal which is commendable, broader impacts are not detailed. In the constrained housing market, additional demand will result in pressure to provide temporary accommodation. This outcome is not a sustainable position for the community which has in excess of 21% of the popn in Single Persons Quarters. The EIS needs to detail a commitment to delivering affordable housing for all the impacts of the project and not avoid the dire social consequences of a fractured community. The EIS needs to reflect the full impacts of the project within the local constraints of Moranbah. It is clearly unacceptable for additional pressure to continue to be applied to the local market. The social fabric of the community is under considerable duress and it is unsustainable for weekly rental costs for housing to exceed the gross incomes of general service industry workers within the community, or as in some cases more than the two combined gross incomes of young workers.	Yes		DN to consider.
			BSC7	Section 3.4	Construction Camps	A construction camp is proposed to be located on adjacent site to the project construction site. The EIS position is supported by Council and represents a more defined and logical needs based approach to meeting accommodation demand other than the stimulation of further works camp outcomes within the residential township of Moranbah that go beyond the life of the project.	No		n/a
			BSC8	Section 5.1	Emergency Services Response	A detailed response to the issue of impacts on emergency services is missing from the EIS and needs to be addressed as the potential for a combination of emergency responses needs to be quantified and a response formulated. The EIS does not acknowledge the incomplete service provision to Moranbah of Police and the Fire and Rescue services. A clear needs analysis of the proposal should be included in the EIS and the implications worked through at a local level to ensure that the service provision to Moranbah is not compromised or reduced from the current standard.	Yes		DN to consider..
			BSC9	Section 3.4	Max Design Capacity of Plant	The EIS does not clearly detail the maximum production capacity of the plant and the future growth and expansion of the facility to this level. The EIS should clearly detail the maximum capacity of the plant and the potential production capacities and how these volumes will affect waste discharges and all the impacts associated with the operation. It is clearly unacceptable to have an EIS not providing this vital information as the compounding of production growth impacts will be far reaching and need to be quantifiably described to allow a fair assessment of the project and the defined site for the development. It would be grossly deficient to have a plant installed and production capacity increase over time compounding impacts on the locality and community.	Yes		GHD to explain in supplementary report.
			BSC10	Section 9.1	Waste Volumes	There is confusion in the EIS as to the exact volume of solid waste to be produced during construction and operation of the facility. The EIS needs to clearly define the amount of wastes to be produced to allow the local facilities to prepare to accept additional wastes for disposal. The defining of long term waste disposal volumes is critical in allowing Council to sustainably manage the provision of waste disposal capacity for the community and industry in Moranbah. In addition the EIS does not identify the requirement of de-sludging the evaporation pond and the production of intractable waste from the process. If disposal is required longer term the provision and identification of suitable sites will need to be clearly spelt out and quantified in the EIS.	Yes		GHD to clarify in supplementary report.
			BSC11	Section 3.1		In addition the EIS does not identify the requirement of de-sludging the evaporation pond and the production of intractable waste from the process. If disposal is required longer term the provision and identification of suitable sites will need to be clearly spelt out and quantified in the EIS.	Yes		GHD to clarify in supplementary report.
			BSC12	Section 4.4	Cumulative effects of emissions and local atmospheric conditions	The EIS does not detail any potential of the Plant emissions (Nitrogen Oxide and Nitrogen Dioxide) reacting with local atmospheric compounds including dust which may produce a precipitate, cumulative impacts or photochemical wastes. There are significant amounts of Nitrogen compounds being discharged from the facility and the EIS needs to background the chemical reactions anticipated from the site wastes. The EIS provides information on the discharges of Nitrogen oxide and Nitrogen dioxide from the plant, however provides no details on cumulative effects of the safe exposure levels for the materials and the concentrations anticipated at ground level inside the site and at the boundary. With Nitrogen Oxide being a relatively reactive compound additional detail needs to be spelt out on the concentrations and exposure levels anticipated. A full detailed description of the Ausplume modeling for the project needs to be provided for referencing. The EIS needs to clearly detail all the modeling data to allow a full disclosure of the inherent risks to plant workers and the community.	Yes		GHD to comment on this in the supplementary report.
			BSC13	Section 4.4	Air Quality	The EIS provides information on the discharges of Nitrogen oxide and Nitrogen dioxide from the plant, however provides no details on cumulative effects of the safe exposure levels for the materials and the concentrations anticipated at ground level inside the site and at the boundary. With Nitrogen Oxide being a relatively reactive compound additional detail needs to be spelt out on the concentrations and exposure levels anticipated.	Yes		GHD to comment on this in the supplementary report.
			BSC14	Section 4.4	Air quality	A full detailed description of the Ausplume modelling for the project needs to be provided for referencing. The EIS needs to clearly detail all the modelling data to allow a full disclosure of the inherent risks to plant workers and the community.	Yes		GHD to comment on this in the supplementary report.
			BSC15	Section 11.1	Native Title	The EIS states Native title has been extinguished by the lease hold land title. Further clarification is sought on the context of this statement as the understanding of the wider community is that lease hold title does not extinguish the provisions of native title.	Yes		GHD to clarify in supplementary report.
			BSC16	Section 5.1	Site Security	The EIS document does not provide any clear links to maintaining a secure boundary to the plant on the property / allotment boundary. It is acknowledged that the need for vegetation management will see grazing of the site as a preferred option. However the security of the plant will be compromised by the close proximity of the security fence at the rear of the site. A closer management regime needs to be put in place to guarantee safety and deliver an uncompromised outcome for both functions on the site.	Yes		DN to clarify.
			BSC17	Section 8.1.2	Ecological Disturbance	The EIS contains no information on the ecological disturbance anticipated from the extensive lighting of the site during construction or operations. The effects of the lighting in the locality will dramatically affect local insect populations and act as an attractant for a vast area. This will redistribute the ecological balance of the locality. A clear assessment of this impact needs to be undertaken to ensure the proposed operations will not impact the resident insect, bat, bird or reptile populations and the influx of insects from lighting will not adversely affect the operations of the plant through either direct influences or altering the food chain causing higher order species populations to increase in response to food sources and inhabiting the plant confines.	Yes		GHD to address in supplementary report.

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			BSC18	Section 8.1.2	Flora & Fauna	The EIS identifies the reptile Major Skink (Egernia frerei) as being present on the site during the assessment. The normal range of this species is considered to be more costal and linked to areas of higher rainfall in well watered forest country or seasonally dry woodlands where strong ground vegetation is present. It would appear that the identification of this species is an error. The EIS also identifies the bird Rufus Fantail (Rhipidura rufifrons) as being observed on the site. The normal range of this species is more closely linked to dense foliage areas of rainforest gullies in coastal regions. It would appear that the identification of this species is in error. The EIS identifies the mammal Greater Broad Nosed Bat (Scoteanax Ruepellii) as being present on the site during the assessment. The normal range of this species is limited to the cool temperate to tropical wet sclerophyll forests and rain forests of northern NSW and Southern QLD. It would appear that the identification of this species is in error.	Yes		GHD to comment on this submission.
			BSC19	Sections 8.1.2		The EIS also identifies the bird Rufus Fantail (Rhipidura rufifrons) as being observed on the site. The normal range of this species is more closely linked to dense foliage areas of rainforest gullies in coastal regions. It would appear that the identification of this species is in error.			
			BSC20	Sections 8.1.2		The EIS identifies the mammal Greater Broad Nosed Bat (Scoteanax Ruepellii) as being present on the site during the assessment. The normal range of this species is limited to the cool temperate to tropical wet sclerophyll forests and rain forests of northern NSW and Southern QLD. It would appear that the identification of this species is in error.			
11	10/11/06	CHEM Services	EM1	section 5.3	Risk & Safety	The impact on the adjacent mine workings from an explosion event at the facility should be explored. This study should consider the potential for collapse of underground workings from ground vibration. Additionally, potential impacts from the mining operations including extraction caving practices on the AN plant, particularly as the mine develops toward the AN plant site, should be identified and considered in the design of the plant.	Yes		Meeting with Anglo Coal
			EM2	section 5.3	Risk & Safety	Measures to reduce the potential for knock-on events (through both missile impact and overpressure) between Ammonium Nitrate (including Ammonium Nitrate Emulsion) explosion events and the Ammonia storage tank, should be considered and implemented where practicable.	Yes		GHD to address in supplementary report.
			EM3	section 5.3	Risk & Safety	Measures to protect the control room and administration building, where the majority of site personnel will be located, from overpressure effects should be implemented to ensure the risk is as low as reasonably practicable.	Yes		DN to consider.
			EM4	section 5.3	Risk & Safety	CHEM Services support the Explosives Inspectorate's view on the siting of the construction camp. CHEM Services recommend that the construction camp is located outside of the 1x10^-6 per year LSIR contour.	Yes		GHD to provide updated location and layout of camp in supplementary report.
			EM5	section 5.3	Risk & Safety	Consideration should be given to locating administration staff and other non-operational staff off-site. The risk to non-operational staff from the hazards the plant presents may be effectively eliminated by locating them off-site. A number of Major Hazard Facilities in Queensland are planning to, or are currently relocating non-operational staff to offices off-site.	Yes		DN to consider.
			EM6	section 5.3	Risk & Safety	The ERPG values as published in The American Industrial Hygiene Association (AIHA), Emergency Response Planning Guideline values and Workplace Environmental Exposure Level Guides Handbook, Fairfax , VA , 2005 for ammonia are; ERPG-1: 25 ppm, ERPG-2: 150 ppm and ERPG-3: 750ppm. These levels should be adopted in place of the values documented in the Hazard and Risk Assessment report.	Yes		GHD to update in supplementary report.
12	10/11/06	Enertrade	E1 to E2	section 5.2	Hazard and Risk Assessment	The *Hazard and Risk Assessment* included in the EIS does not recognise the manned Enertrade's Moranbah Compressor Station and fails to acknowledge the Moranbah to Townsville High Pressure Gas Pipeline	Yes	app 7.7	GHD and Chem services to comment on safety.
			E3	section 4.1	Air Quality Assessment	Air dispersion modelling not prepared for upset conditions. The air quality assessment has not addressed emissions of some pollutants, even though these emissions are likely to occur (CO and ammonia).	Yes		GHD to comment on air safety for staff at Enertrade's compressor station.
			E4	section 4.1	Air Quality Assessment	Air dispersion modelling not prepared for upset conditions.	Yes		GHD to comment on air safety for staff at Enertrade's compressor station.
			E5	section 4.1	Air Quality Assessment	Unable to assess air quality impacts on the Enertrade Pty Ltd (Enertrade) site.	Yes		GHD to comment on air safety for staff at Enertrade's compressor station.
			E6	section 4.1	Air Quality Assessment	There is no predicted deposition rate of AN at the Enertrade Compressor station.	Yes		GHD to comment on air safety for staff at Enertrade's compressor station.
			E7	section 4.1	Air Quality Assessment	Assumption of NO2 conversion that only 30% of NOx is converted to NO2. It is good modelling practice to assume that 100% is converted from NOx to NO2.	Yes		GHD to comment on air safety for staff at Enertrade's compressor station.
			E8	section 4.1	Air Quality Assessment	Needs to quantify corrosive potential of AN particulates on the Enertrade site.	Yes		GHD to comment on air safety for staff at Enertrade's compressor station.
			E9	section 4.1	Air Quality Assessment	Deposition and contamination of drinking water supplies of water collected in tanks on the	Yes		GHD to comment on air safety for staff at Enertrade's compressor station.
13	14/11/06	Queensland Health	H1		Local Health Service Impact	The impact of an additional 500 workers (and their families) during the construction period on the local health service will be significant and has been acknowledged in the EIS. With the already stretched health services in rural areas it will be important to liaise with the Moranbah Health Service District early to assist in the planning of general and emergency health services.	Yes		DN to liaise with the Health Service District.
			H2	Section 4.3	Air Quality	There appears to be discrepancy in the air quality report. In Section 7.1 of Appendix 7.8 the report indicates that the 24 hour average offsite PM10 level during construction is expected to be a maximum of 75 µg/m3 above the estimated background of 45.3 µg/m3, however the contours on Figure 11 indicate that the 24 hour average offsite PM10 level will be a maximum of 50 µg/m3 above background. The former value could result in the ambient 24 hour average offsite PM10 level being approximately 120 µg/m3 which exceeds the National Environment Protection Measures health based standard of 50 µg/m3. Clarification is requested on why the information differs and if there will be any impacts on sensitive receptors.	Yes	Section 7.1 of Appendix 7.8	GHD to clarify.
14	10/11/06	Explosives Inspectorate of the Department of Mines and Energy	DME1	section 5.4	Siting of the plant	Issues of communication (explosive) between ammonium nitrate and ammonium nitrate emulsions for both storage and manufacture (in all those combinations between products and activities) was discussed and needs to be understood. This applies to donors and receptors from the initiating event. I believe that the influence of ANE as donor was discussed/highlighted with respect to AN as the receptor during the meeting of 27 October 2006 for the knock on effects.	Yes		GHD to address.
			DME2	section 5.4	Future Mining	The risk and impacts to underground miners from an explosion should also be considered in the context of the hazard and risk assessment for existing and future underground mining activities.	Yes		GHD to address.
			DME3	section 5.4	Security Threat	Security Sensitive Ammonium Nitrate (SSAN) has been declared an explosive and is regulated under national guidelines for SSAN. The terrorist threat (i.e. other than industrial accident) should also be included in the scenarios for the risk analysis. This will include consequence and impact based upon the scenarios and also the frequency which should be influenced by the control measures in place. As explained at the meeting, this scenario is now a credible scenario and should be put into the risk analysis and assessment of risk.	Yes		GHD to address.
			DME4	section 5.4	PRA and SRA	The issue of conducting the SRA at the concluding phase of the project was discussed during the meeting. It is essential to get the issues of separation distances for items of plant resolved as soon as possible rather than identifying the issues when it difficult to resolve the matter	Yes		GHD to address.
			DME5	section 5.4	Technical Information for ammonium nitrate	In order to effectively set the separation distances and storage quantities, more information on industrial (explosive) grade ammonium nitrate was needed for the hazard and risk assessment It was noted that agricultural grade AN rather than industrial (explosive) grade AN has been quoted and referenced and used in the basis and discussion in the report. The behaviour of the agricultural (higher density) can be different and this needed to be understood in the findings and conclusions of the report. The likely differences and impacts need to be understood. We understand that Ian Smith undertook at the meeting on 27 October 2006 to approach TNO with respect to these matters. I understood that these findings would be added to the report	Yes		GHD to address.
			DME6	section 5.4	Off site Critical Infrastructure	Have the impacts of an explosion on other critical infrastructure, both on site and off site, been evaluated. The off site impacts referred to include the proposed power stations and other adjacent proposed developments.	Yes		GHD to address.

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			DME7	section 5.4	Construction Camp	While the construction camp may fall outside the 1 x 10^{-6} risk contour, this risk contour is not believed to be reflecting the risk during commissioning of the plant but rather for a fully operational plant. It appears that the siting may not be optimal from a risk perspective and needs to be reviewed to see if there is acceptable risk during commissioning to fully understand the exposure to risk during commissioning which is a higher risk activity. To this end, a construction safety study as per one of the HIPAPs from the NSW Department of Urban Affairs and Planning would be useful for the project particularly in the commissioning phase.	Yes		GHD to address.
			DME8	section 5.4	Transport	Transport of ammonium nitrate and ammonium nitrate emulsions through built up/ populated areas of Moranbah. If it did occur, whether route selection of alternative routes of lower risk had been addressed.	Yes		GHD to address.
			DME9	section 5.4	Storage	During the meeting of 27 October 2006, Mr Ian Smith undertook to consider alternative storage arrangements. These alternative storage requirements for ammonium nitrate could include storage in shipping containers in lieu of the two 6000 tonne bulk stores.	Yes		DN to consider.
			DME10	section 5.4	General	There has been a lack of consistency of recognition of the role and application of the Explosives Act 1999 for ammonium nitrate and ammonium nitrate emulsions within the EIS and hazard and risk assessment. For example, on page 4 of the hazard and risk assessment, prilled ammonium nitrate is quoted as being under the Queensland Workplace Health and Safety Act 1995.	Yes		GHD to address.
			DME11	section 5.4	General	Chemical Spill Management Guidelines in Section 4.12 of the EIS. Dyno Nobel already has processes in place for these issues eg ammonium nitrate and ammonium nitrate emulsions, yet reference is made to developing these from the MSDS. The problem is that there is no information in the MSDS to effectively develop emergency response and spill clean up plans.	Yes		GHD to address.
			DME12	section 5.4	General	There is conflict between the information in the MSDS and that quoted in the EIS and HARA. Eg melting point of ammonium nitrate	Yes		GHD to address.
			DME13	section 5.4	General	Hazards identified in the body of the EIS and hazard and risk assessment are not consistent with those in the MSDS.	Yes		GHD to address.
			DME14	section 5.4	General	The report states that "the sensitivity of ammonium nitrate to detonation is largely dependent on three variables present namely high temperature, confinement and contamination. Without any of these three being present, ammonium nitrate requires a strong initiation charge (an example being high explosives) to detonate.". This is inaccurate and overly simplistic. The 3 variables are not essential for ammonium nitrate to detonate.	Yes		GHD to address.
15	15/11/06	Robert Hutchison (Loyds Register)	RH1	section 5.5	Risk & Safety	The assessment makes no distinction between Fertilizer Grade AN (FGAN) and Technical Grade AN (TGAN). The plant will produce TGAN, which is more sensitive to explosion than is FGAN. TGAN has a lower density, which makes it more susceptible to explosion. This is a necessary property of AN that is designed to be used as an explosive precursor but is not a requirement of FGAN. The main implication of the report not making the distinction is that the report applies FGAN explosion history and FGAN recommended methodologies to a plant making the more sensitive TGAN.	Yes		GHD to address.
			RH2	section 5.5	Risk & Safety	The assessment is not clear on what were the modelled explosion scenarios. The assessment identifies the storage scenarios as being based on 2 x 6000 te stockpiles. It is not clear whether these stockpiles are of bulk prill or of FIBC (bulka bags). The report identifies various involvement fractions (10% of stockpile, 100% of stockpile) and TNT equivalence factors (32%, 55%) but is not explicit what is being modelled. This lack of clarity makes a review more difficult to undertake but can be easily overcome through the regulator asking questions of the applicant.	Yes		GHD to address.
			RH3	section 5.5	Risk & Safety	The report considers the potential for the entire stockpile to be contaminated and rightly states that this is an extremely unlikely scenario. However, the following more likely scenario is not identified or assessed. The scenario is developed from the Cherokee accident which is discussed in the report. A vehicle accident near the stockpile (say involving a front end loader) could cause a small portion of the stockpile (say 2 tonnes) to be contaminated by fuel from the vehicle. If the accident also causes a fire, as occurred during the Cherokee accident, it is credible that the contaminated small portion of the stockpile could explode. This also happened at Cherokee. However, the report does not identify the scenario where the explosion of 2 tonnes of contaminated ammonium nitrate could propagate to involve the rest of the stockpile. Recent work by Kersten, et al. [RJA Kersten, EIV van den Hengel and AC van der Steen 2006, Safety testing of ammonium nitrate products, International fertiliser society, Proceedings 580, 6 April, 2006, London.] has shown that uncontaminated, non-confined and non-heated AN can be exploded by a large nearby booster charge. I suggest that the e	Yes		GHD to address.
			RH4	section 5.5	Risk & Safety	The report states that "The UK HSE specifies 25% efficiency and 55% TNT equivalency (NEQ 13.75%) for the determination of an overall TNT equivalence however these are primarily based on small scale stockpiling facilities with potentially less robust quality control mechanisms to prevent contamination." (p25). The reference was not given in the reference list, so I could not check exactly where the information came from. However, I suspect that it came from HSE 2002, Explosions in warehouses, Extract from HSE document SRAG – Chemical Warehouses Version 6, 26 June 2002, which states: "The consensus of opinion on ammonium nitrate hazards is that, in the event of a large fire at an fertiliser store, a pool of liquid ammonium nitrate will be formed at the side of the stack that is nearest to the fire. If this pool is struck by a high speed missile (e.g. something falling or part of a drum that has exploded) then a local explosion will occur sending a shock wave into the main fertiliser stack that has not melted.	Yes		GHD to address.
				section 5.5		If this stack contains just less than 300 tonnes it will not support a detonation but will deflagrate and, in doing so, will release an amount of energy equivalent to 41 tonnes of TNT. This figure is calculated on the basis of a TNT equivalence of AN of 55% and an efficiency of 25%." The quotation given above suggests that a stockpile containing greater than 300 tonnes may support a detonation, which may cause the efficiency of the reaction to be greater than 25%. This implication of the HSE is not reflected in the risk assessment report. In addition, there are no reasons given for the 25% efficiency figure. Furthermore, other HSE documents suggest other equivalence values. The 2002 HID Safety Report Assessment Guide – Chemical Warehouses Criteria recommended the TNT equivalence of ammonium nitrate to be 14% but gave no other details. The 1990 Port Risks in Great Britain from Marine Transport of Dangerous Goods in Bulk: A Risk Assessment, for The UK Health and Safety Executive, advised that for bulk piles above 2 m high, 80% would contribute to the explosion.	Yes		GHD to address
				section 5.5		The report gives undue authority to the values given in a single UK HSE document. In addition, the quotation suggests that a large scale stockpile would have a lower explosion potential due to the more robust mechanisms to prevent contamination. This incorrectly suggests that contamination of the stockpile is a dominant factor affecting the efficiency of explosion.	Yes		GHD to address
			RH5	section 5.5	Risk & Safety	The report uses an overpressure correlation that produces lesser effect distances for an explosion. I suggest that this correlation is not conservative but is optimistic. Other correlations give significantly greater effect distances.	Yes		GHD to address.
			RH6	section 5.5	Risk & Safety	The report does not consider recent publications by Kersten et al, TNO and the French government, which are less optimistic than earlier publications and reports. As these recent publications report on significant changes in thinking on the potential for explosion of ammonium nitrate, it is important that they be considered.	Yes		GHD to address.
			RH7	section 5.5	Risk & Safety	The estimation of the number of fragments produced by an explosion is stated to be conservatively assumed to be three (p.41). This number of fragments is consistent with the number of fragments produced by typical BLEVE incidents but not from explosions involving ammonium nitrate. The Port Neal explosions produced 569 identified pieces of shrapnel of various sizes. The Texas City explosions of the ships High Flyer and Grand Camp produced a large number of pieces of shrapnel and a number of these were large and travelled great distances. It is not accurate to use a shrapnel model developed for BLEVEs for ammonium nitrate explosions.	Yes		GHD to address.
			RH8	section 5.5	Risk & Safety	The report states "A worst-case scenario for the AN facilities has been identified as the detonation of 10% of an entire 6,000 tonne stockpile." (p 87) This is not correct as in point 3 above a credible scenario is developed that could result in the detonation of virtually the entire stockpile.	Yes		GHD to address.
			RH9	section 5.5	Risk & Safety	I have restricted the comments above to the explosion modelling but note that the ERPG 3 value used for ammonia is 1000 ppm, whereas I think that the current value is 750 ppm.	Yes		GHD to address.
16	15/11/06	Department of Communities	1		No comments		N/A		

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17	16/11/06	Department of Main Roads	MR1	Section 7.1	Intersection	Main Roads believes that the findings of traffic analysis understate the impact of project traffic on the Moranbah Access Road intersection with the Peak Downs Highway. Main Roads is concerned safety impacts of 200 000 to 250 000 tonnes of ammonium nitrate transported through the intersection have not been fully accounted for. Main Roads notes that the assessment of the project's operational traffic impacts on the Moranbah Access Road intersection with the Peak Downs Highway recommends a existing Type AUR treatment would be sufficient (refer page 180 of the EIS). However, Main Roads advises that, while recommending an AUR intersection is consistent with the traffic analysis, it no longer provides an adequate level of safety for the intersection, as the Type AUR treatment has recently been removed from Main Roads' Road Planning and Design Manual due to its inadequate road safety performance. A more appropriate treatment for the intersection is required on safety grounds as follows.	Yes		Dyno Nobel to state its position.
						To maintain the road safety and efficiency of the Moranbah Access Road intersection with the Peak Downs Highway, the proponent will provide a Type CHR raised channelised right turn seagull treatment and a Type CHL raised channelised left turn treatment in accordance with Chapter 13 of the Main Roads – Road Planning and Design Manual (RP&DM) October 2006. The design shall include the following requirements: • a minimum 5.0m wide raised median to separate right turning traffic from the opposing eastbound traffic stream. • a minimum 3.5m wide auxiliary right turn lane in the through road.• a 3.5m wide through lane and a 1.5m wide shoulder for the westbound traffic on the Peak Downs Highway.• a raised concrete median in the side road generally in accordance with figure 13.84 of the RP&DM. The raised median shall extend north around the horizontal curve to the northern tangent point of the curve to provide adequate approach visibility to the nose. • full intersection lighting in accordance with chapter 17 of the RP&DM.	Yes		Dyno Nobel to state its position.
			MR2	Section 7.1	Road Impact	A draft Road Impact Assessment Report is provided in Appendix 7.6 of the EIS. The report has nominated a number of road links which need to be assessed on a case by case basis. The proponent is committed to further communication regarding pavement impacts on these road links. Prior to the commencement of use of the Ammonium Nitrate Plant, the proponent shall: 1. Complete the assessment of the pavement impacts on all nominated project haul routes and amend the tables and associated figures to reflect the negotiated impact assessment; 2. Identify traffic management mitigation measures and any proponent contributions for road impacts once all road links have been considered under the RIA; and 3. Complete agreed works and pay MR the agreed contributions identified in the RIA to ensure safety and efficiency of the State-controlled network impacted upon by the project.	Yes	Pavement report 7.6	DN should accept these conditions.
						The proponent may enter into an Infrastructure Agreement with Department of Main Roads to formalise mitigation measures including annual payments to Main Roads for the amelioration of pavement impacts of the development traffic for a five year period. This agreement should be then completed prior to the commissioning of the Ammonium Nitrate Plant. At the 5 year anniversary of the commissioning of the Ammonium Nitrate Plant, the proponent should: • Review the haul routes, tonnages and the pavement impact assessment report for the next 5 year period. • An updated pavement impact assessment report shall be submitted to the Central Highlands District. • If necessary, submit a new schedule of mitigation measures including any contributions required, to the Emerald office of the Department of Main Roads for agreement by other affected Main Roads Districts.	Yes	Pavement report 7.7	DN should accept these conditions.
						During the operation of the Project, the proponent shall: • Inform the Emerald office of the Department of Main Roads of any proposed changes to the existing haulage routes, haulage volumes, vehicle impacts etc which may require significant variation of the road impact assessment report and any contribution to mitigating road impacts. • The Proponent shall revise the Road Impact Assessment and re-negotiate any contributions towards addressing road impacts with the Emerald office of the Department of Main Roads. • Pay any agreed increase in contribution to the Emerald office of the Department of Main Roads prior to amending any existing haulage route/s or haulage volumes.		Pavement report 7.8	
			MR3	Section 7.1	Road Use Management	The draft Road-use Management Plan (RMP) (referred to as a Transport/Traffic Management Plan) does not adequately cover the key issues identified by the proponent in the report. In particular, it needs to address mitigation measures such as monitoring, notification measures advising road users of traffic restrictions, roadside clean up measures for accidents involving AN accidents, and so on for both the construction and operational phases of the project. These impacts are to be monitored and managed by strategies defined in the RMP. To assist the development of this plan, a proforma outline of the report is available from the Emerald district office. The proponent shall complete the RMP in consultation with officers from Central Highlands office of Main Roads, and undertake any required actions. The proponent should also finalise plans for any operational works (eg any ancillary works and encroachments) to be undertaken on State-controlled roads affected by the project and submit them to the Emerald office in accordance with requirements of the Transport Infrastructure (SCR) Regulation 2006.	Yes	Transport Traffic Management Plan S 5.8	GHD to address in the supplementary report.
			MR4	Section 7.1	Construction camp access	The type BA intersection is inconsistent with the high speed and other intersections along the 100km/hr section of Goonyella Rd. A higher standard of treatment for the left turn is recommended due to the proximity of the adjacent horizontal curve. Recommended access is a type BAR righ turn and type AUL(S) short left turn. Refer chap 13 Main Roads - Road Planning and Design Manual (RPDM). Design shall include minimum 3.5m wide auxiliary turn in through road and temporary intersection lighting (refer chap 17 RPDM). Within 2 months of commissioning of the plant, temporary access works will be removed and vegetation cover reestablished.			DN to state its position
			MR5	Section 7.1	AN plant accces	Type AUR treatment for the plant access is not appropriate for the loads. It is recommended access to the plant be by a channelised, painted type CHR right turn with an AUL left turn (refer chap 13 RPDM). Also provide - min 1m wide painted median to separate right turning traffic from northbound traffic; min 3.5 m auxiliary right lane turn in the through road; 3.5m through lane and 1.5m shoulder for southbound traffic on Goonyella Rd; min 1.2m wide by 30m long raised concrete median in the side access road (refer fig 13.84 in RPDM) and full intersection lighting (refer chap 17 RPDM)			DN to state its position
			MR6	Section 7.1	Moranbah Access road / Mills Road intersection	EIS states that the existing AUR treatment at Mills Rd intersection should be retained, however, it is recommended that the interesection be upgraded to a type CHR painted, channelised right turn (chap 13 RPDM). Also provide - min 1m wide painted median to separate right turning traffic from southbound traffic; min 3.5 m auxiliary right lane turn in the through road; 3.5m through lane and 1.5m shoulder for northbound traffic on Moranbah Access Rd and provide/upgrade and full intersection lighting (refer chap 17 RPDM).			DN to state its position
18	16/11/06	Department of Education, Training and the Arts	1	Section 3.2		It is recommended that further analysis on the training opportunities that the Project may deliver be included in the environmental impact statement, including a detailed profile of skills requirements.	Yes		DN to discuss with Deta.
19	16/11/06	Queensland Transport		Section 7.2		3.2.5 Traffic and Access (Page 49) Access to the plant project site is to be provided by the adjacent Goonyella Road. The development of the access road onto the site will be undertaken early in the site works to ensure there is adequate infrastructure for the vehicle volume and size of vehicles accessing the site and to ensure that sufficient measures are adopted to mitigate impacts on the pipeline infrastructure that moves across the front of the site. This is appropriate	No		
			DoT 1	Section 7.2		The construction process of the plant will involve a component of prefabrication and modularisation. Some items will require oversize transport, comprising an estimated 15 to 20 vehicles, during construction. Specific routes, times and escorts will be arranged with the appropriate agencies Consultation with appropriate agencies in relation to these oversize transport movements should include consultation with Queensland Transport and Main Roads.	Yes		DN to agree
			DoT 2	Section 7.2		The last paragraph on Page 50 is poorly worded and confusing. The sentence, "A separate access track from Goonyella Road will be constructed to reduce traffic demand on the external transport network", seems to be misleading. The separate direct driveway access to the construction camp (by itself) would mainly reduce internal traffic pressure and congestion at the main project site entrance A better description may be as follows: A separate and direct access track will be constructed between the construction camp and the AN plant, which will reduce traffic demand on the external road network.	Yes		DN to clarify in supplementary report

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			DoT 3	Section 13.1		3.3.7 Heat Recovery (Page 57) The last sentence in paragraph 1 states: "However, it is discharged as CO2 and not as methane, which has a thirty times the CO2 GHG effect." The reference to 30 times is inconsistent with the Global Warming Potential (GWP) of methane indicated by its usual quoted rating as 21 times CO2, and as referenced previously in paragraph 4 on Page 27.	Yes		DN to clarify in supplementary report
			DoT 4	Section 7.2		3.5.1 Transport Infrastructure Construction Phase (Page 63) Buses will be used to transport construction staff to and from the construction site, with an average vehicle occupancy of 15 persons per vehicle originating from the campsite. This will be by the proposed internal access road between the construction camp and the AN plant, without need to access Goonyella Road. This will generally improve road safety and minimise demand on the external road network, namely Goonyella Road. This is appropriate.	No		
			DoT 5	Section 7.2		3.5.1 Transport Infrastructure Method of Movement (Page 65) In the operations phase, the finished AN product is to be delivered by the road network to a variety of regional mine sites. The average number of heavy vehicle movements generated per day during operations is likely to be eighteen. This to include: 13 B-Triples (65t load) and 4 B-Doubles (50t load) to deliver AN product, and 1 B-Double to remove waste. During construction, it is estimated that 2 B-Doubles per day would deliver construction materials and plant to the site, while 3 B-Doubles would remove waste. These estimates are consistent with other information provided on the construction and operational phase transport requirements.	No		
			DoT 6	Section 7.2		Proposed Routes (Page 65) The proposed roads to be used for transporting material from the plant to destination mines are to be limited to those that are designed to carry B-Triples and B-Doubles. The proposed routes have been discussed with Main Roads and are shown on Main Road Maps as per Figures 3-6 Pages 32-35 of the EIS. This is appropriate.	No		
			DoT 7	Section 7.2		Maintenance and Upgrading of Key Transport Infrastructure Elements (Page 66) Traffic studies have been conducted to assess the construction and operational impacts on the existing transport infrastructure (per Section 4.11). A Pavement Impact Study has also been undertaken to determine the impact on the existing road infrastructure and provision of contributions for maintenance to DMR and local authorities. This is appropriate.	No		
			DoT 8	Section 7.2		Rail Transportation (Page 66) The EIS states: "Rail infrastructure is located within 3km of the AN Plant on the Blair Athol Railway Line. In its current form however there are insufficient facilities to support transportation of AN product to the market. This may be a future opportunity for the AN Plant. At this stage however there is no intention to transport product by rail." The nearby rail network and rail services principally comprise a dedicated coal rail system. The end users of the AN product are multiple mining operations located relatively nearby in the Northern Bowen Basin and the North West Mineral Province. The movement of AN product in relatively small consignments, by rail would not be particularly cost effective or efficient. The use of road transport is understandable and appropriate.	No		DN to note.
			DoT 9	Section 13.1		3.5.2 Energy (Page 66) The energy requirements of the project will be provided through the development of an on-site gas-fired power generation facility. The generation facility will comprise nine (nominally 2MW) reciprocating gas engines (comprising total of 18MW capacity). Coal seam methane (CSM) will be used in electricity generation, as well as for manufacture of ammonia for emulsion and AN. This use of CSM in local power generation is a welcome development. It has the potential to also facilitate (longer-term) the expanded use of Coal Mine Methane (CMM) and CSM through pre-drainage of coal seams prior to underground and open-cut coal mining, in small-scale power generation. Methane is a potent greenhouse gas which is 21 times more effective as a contributor to global warming than an equivalent amount of CO2. Several Bowen Basin coal miners have already implemented similar CSM and power-generation facilities. Over time there is likely to be more coal miners and CSM operators seeking to supply methane to an expanding regional gas pipeline network for use in power generation or other industrial processes.	No		
			DoT 10	Section 7.2		4.11.2 Potential Impacts and Mitigation Measures Pavement (Page 173) A Pavement Impact Study has been prepared a part of the supporting documentation for the Traffic Impact Assessment Report. The assessment showed that the AN Plant will generate significant heavy vehicle traffic increases (> 5% increase in existing heavy vehicle volumes per year) on a number of roads. The broad proposal that the project make financial contribution to MR Districts and local government shires for road maintenance is appropriate.	No		
			DoT 11	Section 7.2		Traffic Assessment (Page 175) For the development of the AN Plant site and the construction campsite, two intersections will need to be developed. The EIS proposes a range of type-intersection forms. Consultation should be undertaken with DMR on the proposed intersection designs to determine their appropriateness and adequacy.	Yes		DN to make this undertaking
						Facility Description (Page 190) AN Dispatch AN Product is to be dispatched to customers in bulk. Prill is to be transported either (mainly) in truck tanks or 1.2t Bulka bags, both loaded from a conveyor and hopper. Bulka bags are loaded onto truck trays using a forklift. AN Product is not classified as an explosive. The chance of explosion is very low as the material requires the combination of contamination, heat and pressure. AN Prill and emulsion will be transported in accordance with the requirements of the National Code for Transport of Dangerous Goods. This is appropriate.	No		
			DoT 12	Section 13.1		4.14 Greenhouse Gas Emissions Energy Use (P201) Excluding natural gas emissions, the total CO2 emission is 431,000 tonnes pa, more than 15 million tonnes of CO2 over the 35 yr life of the project. This is a reasonably significant amount, given that CO2 has a 50-200 yr Atmospheric Lifetime. The 2nd last paragraph reports a maximum annual CO2 production of 469,000 tonnes, and states: "This is considered to be minor, approximately 0.08% of national emissions and approximately 0.27% of Queensland's annual emissions". The logic embedded in this conclusion is out-of-date. While these emissions are relatively small in comparison to total National and State emissions, the logic therein implies that individual projects don't contribute much to overall climate change and therefore shouldn't have to take significant measures now or in the future to reduce emissions. Acceptance of this logic means that most large Australian and Queensland stationary industrial emitters &medium-scale power stations would not be expected to have to reduce their emissions.	Yes		DN to clarify
						This is not sustainable. There is growing evidence that global warming is accelerating and its impacts are being amplified by a range of feed-back loops. The world's most authoritative body on climate change the Inter-governmental Panel on Climate Change (IPCC) has warned that we potentially face dangerous climate change within 50 years, and severe disruption to the earth's life-sustaining ecosystems. As a measure of the seriousness and magnitude of the challenge, the scientific consensus is that advanced countries like Australia will need to reduce their total greenhouse emissions by 60-80% below 1990 levels by 2050, to avoid dangerous climate change. The text should be amended to read: "On an annual basis this represents, approximately 0.08% of national emissions, and approximately 0.27% (maximum 0.3%) of Queensland's annual emissions. Over the 35 year life of the project however this represents in excess of 15 million tonnes of CO2, a reasonably significant amount."			
			DoT 13	Section 7.2		5.8 Transport/Traffic Management Plan Control measures for implementation during the construction phase include, the preparation of a Traffic Management Plan, measures to assist the safe movement of heavy/over-dimensioned loads to the project site, measures to acquire all appropriate permits from transport and related authorities, and measures to ensure the safe and secure transport of hazardous and dangerous goods. These measures are appropriate.	No		

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			DoT 14	Section 7.2		5.15.2 Draft Operations Environmental Management Plan Air and Noise (Page 253) Mitigation strategies in relation to greenhouse gas emissions include: • Public reporting of greenhouse emissions and progress on greenhouse mitigation measures. • Obtain and maintain membership of the Commonwealth Government Greenhouse Challenge Program. These measures are appropriate.	No		
			DoT 15	Section 7.2		Appendix 7.6 Pavement Impact Assessment In developing the EIS the proponents have prepared a Pavement Impact Assessment Report in accordance with the DMR publication "Guidelines for Assessment of Road Impacts of Development Proposals". Advice on the adequacy of this assessment and the proposed quanta of financial contributions to DMR and local authorities for road maintenance, should be sought from Main Roads and the relevant local authorities.	Yes		DN to confirm
			DoT 16	Section 13.1		Appendix 7.9 Greenhouse Assessment Report 3.6 Summary of Emissions Estimates (Page 6) Consistent with our previous comments in relation to 4.14 Greenhouse Gas Emissions, outlined above: The last sentence in Paragraph 2 should be replaced, with the following text: "On an annual basis this represents, approximately 0.08% of national emissions, and approximately 0.27% (maximum 0.3%) of Queensland's annual emissions. Over the 35 year life of the project however this represents in excess of 15 million tonnes of CO2, a reasonably significant amount."			GHD to clarify
20	15/11/06	Department of Housing	DoH 1	Section 3.3		The Department expects the Supplementary Environmental Impact Statement to clarify and provide firm commitments to the proponent's accommodation strategy that will ensure no further pressure is placed on the housing markets in Moranbah.	Yes		GHD to clarify in supplementary report.
21	10/11/06	Orica	1	Section 5.6	Safety - Ammonia storage and handling	Ammonia Storage & Handling Operation - Contradictory Assumptions: There are a number of contradictory assumptions relating to ammonia storage, within the Hazard and Risk Assessment (H&RA) and the main EIS document. In Section 4, Table 7, of the H&RA it states that there will be storage of anhydrous ammonia of up to 1,300 te. In Section 6, Table 6.1, the maximum inventory of the ammonia storage tank also appears to be 1,300 te. In Section 3.3.1 of the EIS it is described as a 2,000 te refrigerated tank. In Section 3.4.1, Table 12 (Chemical Storage) of the EIS it is also twice stated in the same table that it is a 2,000 te storage, but there is also "1 tank 60% concentrate". In Section 6.3 (p41) it states that the ammonia storage tank has a diameter of 50m. However, based on an assumed volumetric size of 2,000 cubic metres, this would mean that it is approx 1 metre in height. It is essential for valid modelling to use the correct inventories, otherwise the consequence distances of toxic releases involving the full inventory will almost certainly be understated.			
			2	Section 5.6	Safety - Ammonia storage and handling	Off-site Injury & Irritation: There are contradictory assumptions concerning the toxicity criteria associated with ammonia which could have a significant effect on the toxic gas dispersion distances from the site for specified reference concentrations. The published 2006 AIHA values are 150 ppm for ERPG- 2 and 750 ppm for ERPG-3. The ERPG-3 probit basis for ammonia basis is variously described in the H&RA as being 750ppm (the current value) and 1000ppm (an out-of-date value). In Table 21, Appendix C (p82) the ERPG-3 value is correctly stated as 750ppm (and is attributed to the TNO Purple Book CPR 18E Guidelines, 1999). In Table 22, Appendix C (p83) the ERPG values that are used in the risk assessment are documented, and attributed to the American Industrial Hygiene Association. The ERPG-2 and ERPG-3 are quoted as the obsolete values of 200 ppm and 1,000 ppm respectively. These superseded ERPG-2 and ERPG-3 values are also referenced in the footnotes to Table 14 in Section 6.1 (p 33). All the toxic gas dispersion calculations for ammonia conducted for the ammonia release scenarios summarized in Appendix A (Hazard Register) are therefore based on the outdated values of both the ERPG-2 and the ERPG-3. Table 18 (Appendix A consequences of a rupture of the product accumulator (based on ERPG-3 of 1,000 ppm) extend up scenario (p59), ERPG-3 concentrations of 1,000 ppm reach "distances up to 4 km". Toxic gas leaks pipework are also described as being based on 1,000 ppm ERPG-3			
				Section 5.6		concentrations. ERPG-2 values based on the incorrect value of 200 ppm are calculated as extending as far as 40 km for a 300 mm liquid leak from the ammonia tank. The risk assessment avoids the quantitative use of modelling and hence the determination of risk contours for injury and irritation, based on the fact that the ERPG-3 value (using the incorrect concentration of 1,000ppm) does not reach the local township. If the correct value of 750ppm was used, the township could be affected at the ERPG-3 value. All the quoted distances would be greater using the correct ERPG-3 and ERPG-2 values. Hence, any conclusions drawn from the quoted maximum effect distances for the various release cases may therefore be incorrect and, contrary to the finding made in the H&RA, there may in fact be a need to determine the injury and irritation risk contours.			
			3		Safety - Ammonia storage and handling	Choice Of ERPG Criteria for Injury & Irritation: The risk assessment states that it uses the NSW HIPAP 4 as the basis for assessing toxic Injury and Irritation risk. The H&RA selects the ERPG-3 value to designate Injury, and the ERPG-2 value to designate Irritation. However, at a Public Inquiry in Sydney in 2002, the then Department of Planning had objected to the use of the ERPG-3/ERPG-2 combination of values. Orica was obligated to change to ERPG-2 for Injury and ERPG-1 for Irritation. If ERPG-2 and ERPG-1 (25ppm) values were to be used instead of ERPG-3 and ERPG-2 respectively, then the offsite injury and irritation risks are likely to extend significant distances from the site. The selection of these values makes a large difference to the area which is potentially affected. However, it is suggested that this choice is not adequately justified in the H&RA, given the public concerns raised by the NSW Department of Planning in 2002. Choosing ERPG-1 and ERPG-2 would also drive the design further towards toxic event risk reduction. At present there is little evidence in the H&RA of any efforts made to reduce the toxic risks.			
			4		Safety - Ammonia storage and handling	Ammonia Storage - Risk Minimisation: The offsite consequence distances for ammonia release scenarios are strongly influenced by the 1,300 te ammonia storage conditions of 8 bar & 4 degC (Table 14, p34). The inventory in the ammonia product accumulator (19.3 te) is at 4 degC and 793 kPa (refer Table 18, p 58). Using a fully refrigerated ammonia storage (at atmospheric pressure, liquefied ammonia is at a temperature of minus 33 degC), as is the case at Orica's Yarwun Plant, substantially lessens the offsite impact of toxic gases from a major process equipment failure leading to a rapid loss of containment. In the case of the fully refrigerated vessel the mechanism of toxic vapour generation (apart from an initial burst release) is essentially from ammonia evaporation from a liquefied pool which greatly reduces consequence distances compared to similar pressurised storage releases. An obvious risk reduction option not discussed in the H&RA is therefore to refrigerate the ammonia storage so that it is liquid at atmospheric pressure.			
			5	Section 5.6	Safety - Ammonia storage and handling	Transport of Ammonia: In Section 3.4.1 of the EIS it states that, in addition to the outputs during the commissioning phase, that there "may be up to 20,000 te of ammonia transported from Moranbah to Gladstone over a period of 6 months." Loading and unloading pressurised toxic liquids from vehicles needs to be done in a suitably designed system with adequate safeguards, such as driveaway protection. There is no discussion of any of the risks associated with these operations in the H&RA. Nor are the risks associated with the transport of this ammonia addressed.			
			6	Section 5.6	Ammonium Nitrate Prill Storagte	Contradictory Assumptions: The risk analysis presents a set of Assumptions (Appendix B) and describes the basis of the Consequence Analysis (Appendix C). Both of these sections imply that GHD intended to use an Explosives TNT Equivalence of 32% in combination with a Yield (Efficiency) of 10%, giving an overall TNT "coefficient" of 3.2%. But having stated their approach, they do not apply it. Instead they use an overall 32% TNT coefficient. Having conflicting assumptions presented in the risk assessment results in confusion and potentially undermines the validity of the risk assessment methodology.			

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<tr><td></td><td></td><td></td><td>7</td><td>Section 5.6</td><td>Ammonium Nitrate Prill Storagte</td><td>Difference Between Fertiliser & Technical Grade Sensitivity: In their risk assessment GHD don't consider high density Fertiliser grade ammonium nitrate (FGAN) could have a significantly lower TNT equivalence to low density, porous ammonium nitrate prill (TGAN). The risk assessment does not reference any of the latest technical assessment of detonations, conducted by TNO, which were published at several conferences during 2006 (IFS Conference in the UK; AFA Technical Symposium in Lithuania; and the ANNA Conference in Canada). Nor is there any reference to the French Governments post-Toulouse land use planning guidelines. All of these sources indicate that there are significant differences in equivalence between FGAN and TGAN. For fertiliser grade AN (FGAN), TNO states that an overall TNT equivalence of 10-20% "appears appropriate". For Technical Grade AN (TGAN) they recommend values in the range 20-25%. The French Govt (in 2002) applied 10% overall TNT equivalent for technical grade AN for land use planning purposes and an overall 3% TNT equivalent for fertilizer grade AN.</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>8</td><td>Section 5.6</td><td>Ammonium Nitrate Prill Storagte</td><td>Claim of Conservative Risk Methodology:
They appear to have proceeded on the basis of 32% overall TNT equivalence as a "base case" (using the Ammonium Nitrate Guidance Note No. 4: Siting of New Facilities which specifies the use of a NEQ of 32% for prill with 100% yield). This approach is presented as being conservative. However, this conservatism is contradicted by the nonconservative assumptions made:
(a) how much inventory is involved;
(b) their explosion overpressure modelling;
(c) their consequence probit values.
These issues are addresses separately below.</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>9</td><td>Section 5.6</td><td>Ammonium Nitrate Prill Storagte</td><td>AN Storage Mass: The EIS and the H&RA both contain various statements as to what they have used as the AN prill total bulk mass. In the Introduction of the H&RA (Section 1, p4) the ammonium nitrate storage is claimed to be up to 14,000 te of AN distributed between bulk prill stockpiles, prill Bulka Bags
and emulsion tanks. Section 3.3.5 (Prill Storage) of the EIS states that the storage facility will contain 9,000 te of AN prill. It also states that a number of layout options were being investigated, including 2 x 6,000 te or 6 x 1500 te plus a small area for off-specification product. The distance to the 21 kPa overpressure is based on various AN quantity values, including 11,000 te, which is used in Table 18 of Appendix A (p66) and referred to as the "100%" quantity of the stockpile. Using a variety of storage values means it is difficult to determine whether the case selected for modelling does in fact represent the most conservative storage option possible.</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>10</td><td>Section 5.6</td><td>Ammonium Nitrate Prill Storagte</td><td>Basis of Risk Assessment: The risk analysis for AN storage is based on an overall TNT equivalence of 32% (100% yield) for one (i.e. not both) of the representative 6,000te AN piles. As stated in (9), the total storage is a range of amounts between 9,000te and 14,000te. There is no clear reason given for the arbitrary selection of a single AN storage pile for the basis of the risk assessment. While there is some indication that a 6m earthen mound ("an option of a 6 metre wide earth-filled wall or the equivalent") may be used, no details of the degree of robustness of the separation can be provided at this stage. Hence there is no assurance that that the piles are truly independent piles and are not potentially subject to sympathetic detonations. If both piles were close enough to explode simultaneously, then the consequence distances quoted would be too low. The AN piles were to be separated only in accordance with AS 4326 (The Storage and Handling of Oxidising Agents). Evaluating the risk of the AN piles as two independent sources for the purposes of the likelihood analysis, or allowing the total mass of the AN storage to be included in the NEQ cal</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>11</td><td>Section 5.6</td><td>Ammonium Nitrate Prill Storagte</td><td>Overpressure Modelling: In the risk assessment it is stated that they use an overpressure calculation algorithm, which "has proven to be a robust method of explosives consequence prediction", which was adopted by the US Army (p 90). In fact the equation used does not give conservative results compared to the highly regarded Kingery and Bulmash (US Army Ballistic Research Laboratory) correlation (refer F P Lees "Loss Prevention in the Process Industries, 2rd Edn, pp 17/130-134). There is also a good correspondence for the normally referenced explosion overpressure levels with the correlations provided in the draft IB53 document. The consequence distances are thus understated by at least 15% and in some cases up to 23% compared to the Kingery & Bulmash correlation. Section 6.2 Table 15: "Explosion Consequence and Likelihood" (Page 39) provides Distance to Overpressure Envelope in metres. Using these figures against the Kingery and Bulmash correlation gives:</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td>Section 5.6</td><td></td><td>
<table>
<tr><th colspan="2"></th><th colspan="5">Distance to (m)</th></tr>
<tr><th>Mass of AN</th><th>Overall TNT Coeff.</th><th>70 kPa</th><th>35 kPa</th><th>21 kPa</th><th>14 kPa</th><th>7 kPa</th></tr>
<tr><td>6000 tonnes</td><td>32% (H&RA)</td><td>414</td><td>583</td><td>792</td><td>1,057</td><td>1,919</td></tr>
<tr><td>As above</td><td>32% (K&B)</td><td>478</td><td>703</td><td>973</td><td>1,295</td><td>2,216</td></tr>
<tr><td></td><td>Difference (m)</td><td>64</td><td>120</td><td>181</td><td>238</td><td>297</td></tr>
<tr><td></td><td>% Difference</td><td>15</td><td>21</td><td>23</td><td>23</td><td>15</td></tr>
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</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>In Section 11, "Recommendations" of the H&RA (p 50) the largest explosive consequence due to 6,000te of prill is 21 kPa at 792m. The table above demonstrates the difference between the GHD calculated values and the Kingery and Bulmash correlation. It is evident that the GHD values understate the distance to the key explosion overpressure values by as much as 23%. If the real total of 12,000 tonnes of AN was used, then the distances would further increase to:
• 21 kPa (3% fatality in the open; 18% in a building) becomes 1,226 m.
• 14 kPa (1% fatality in the open; 8% in a building) becomes 1,630 m.
• 7 kPa (0.1% fatality in the open; 2% in a building) becomes 2,792 m. Note that in Appendix A, the Hazard Register, (Page 66), GHD refer to the "100% stockpile" which they state is 11,000 te; while the 25% stockpile is 2750 te. But the overpressure calculations in Appendix A are all based on 10% Efficiency (i.e. they are based on 10% of the quantity cited which conflicts with the approach used in the main section of the H&RA report).</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>12</td><td>Section 5.6</td><td></td><td>Fatality Probit Basis: The fatality limit for overpressure was set at 21kPa, which corresponds to 10% chance of fatality. In QRAs involving fatality analysis we would normally use the 1% fatality probit distance as a cut-off, and its use would undoubtedly result in larger risk contours. In fact there is a significant difference in the fatality probit that applies to "within buildings" compared with "in the open". However, GHD used 21kPa overpressure to screen out the lesser fatality events (ie on the assumption less than 21kPa at the boundary equalled "no offsite fatalities"). This is far too optimistic, particularly where off-site effects could be on people within buildings, and it could have an effect on the risk contours (which could currently be significantly underestimated).</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>13</td><td>Section 5.6</td><td></td><td>Quantities and Locations of AN Bag and Container Storages: It is difficult to get a clear picture from the EIS about whether the Moranbah AN plant will produce bagged AN along with their bulk AN prill (total of 285k te/yr). At several places in the document they refer to AN Bagged material (e.g. in Section 1, p4); but there is no description of a bagged store as such. Figure 12 of the EIS shows the site layout and it is apparent that there will also be storage of full containers and a 2,000 te container storage area. The risks associated with container storage inventory (and bagged storage if any) appear to not have been considered in the H&RA. If there is going to be bagged or containerized storage, then layout and gap separation distances between stacks and containers of AN are crucial to prevent sympathetic detonations. In any case, explosion in bag and container storages may have potential offsite effects and these have not been evaluated.</td><td></td><td></td><td></td></tr>
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			14	Section 5.6		Knock-On Events: The focus of Section 6.3 is the probability of an AN storage event (6,000 te AN prill) impacting upon the ammonia storage tank (Missile Generation and Strike, p41). This appears to be the only knock-on scenario considered in detail. There is discussion of the potential effects of AN solutions on stored AN solid, but these are not the only knock-on scenarios which need to be considered. The AN emulsion scenarios are not included in the off-site effects, due to the 10% fatality cut-off (based on the fatality probability of a person in the open). But there is the possibility that AN emulsion storage explosions could generate 'knock-on' impacts on the AN storages or other plant areas on the site such as the ammonia tank AN emulsion has 70% overall TNT equivalence, so the equivalent TNT value is significant for the two 140 cubic metre storage vessels.			
				Section 5.6		AN solution tanks could also explode and affect ammonia storages and/or detonate the Emulsion tanks. Details of the assumptions made in the missile generation study are said to be provided in Appendix 1, but this Appendix does not exist. We believe that they are referring to Appendix B (pp73-74), where the focus is on the number of projectiles and the distance likely to be covered by them (up to 600 m), based on the incident at Toulouse in 2001. This does not involve a consideration of projectiles emanating from the plant and impacting upon the AN storage. A recently published paper from the IFS (Shah, 2006) states that high velocity projectiles (such as those which may be produced in an explosion) can detonate stored AN. These scenarios have not been considered.			
						Please Note: Orica Limited's submission was received outside the submission period, and is not included in the submission register			