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Dyno Nobel Asia Pacific Limited

Moranbah Ammonium Nitrate Project

Nature Conservation - Potential Impacts and Mitigation

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INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

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1. Introduction

1.1 The project proposal

Dyno Nobel Asia Pacific Limited (DN) is a leading global producer of ammonium nitrate with six plants in North America. DN produces and markets explosives and detonation devices for coal, metals quarry, tunneling, construction and seismic industries. DN's strategy combines growth through incremental expansion of existing operations with acquisitions and the development, commercialisation and marketing of new products.

A consortium of investors led by Macquarie Bank acquired DN's Australasian and North American operations in 2005 for $US1.7 billion. DN was listed on the Australian Stock Exchange on 7 April 2006. DN has over 3,500 employees and 33 manufacturing facilities in the United States, Australia, Canada and Mexico, which have a combined capacity of over a million tons of ammonium nitrate per year.

DN, together with its joint venture partner CSBP Limited, a subsidiary of Wesfarmers Limited, operate an ammonium nitrate plant at the existing Queensland Nitrates ("QNP") production facility at Moura, Queensland.

DN currently provides explosives for many of the mining operations in Central Queensland. To support the provision of explosives DN is proposing to develop an ammonium nitrate plant in Moranbah. This plant will provide permanent employment for 70 staff for the operation of the facility and during construction a peak of up to 550 construction personnel.

DN is seeking to construct and operate an ammonia plant, a nitric acid plant, an ammonium nitrate plant and an emulsion manufacturing plant in the Moranbah area. The combined plant would service the rapidly expanding demand for ammonium nitrate from mining in Queensland. The current concept is to construct a nominal 350,000 tonnes per annum (tpa) plant making ammonium nitrate prill (solid) and ammonium nitrate emulsion (viscous liquid).

The project represents a value-adding downstream processing facility from the utilisation of the significant gas reserves in the Moranbah region. With a total capital investment of approximately $500 million, the project will provide significant benefits for the local and regional economy.

The DN ammonium nitrate plant was declared a significant project by the Queensland Coordinator-General (CG) pursuant to Section 26 of the Queensland *State Development and Public Works Organisation Act 1971* (the SDPWO Act). This declaration requires Dyno Nobel to prepare an Environmental Impact Statement (EIS) for the project under the SDPWO Act.

1.2 This report

The following report answers section 4.7.2 of the Terms of Reference for the Dyno Nobel EIS (referred to here-after as the EIS). Preparation of the site will involve the clearing of approximately 60 ha of native vegetation. Primarily, the impacts from this project will relate to the removal of native vegetation and potential fauna habitat. In addition, noise, vibration and human activity once the plant has been constructed is likely to exert minor impacts upon fauna species present within the local area and may cause some species to avoid the area in the future.

Legislative requirements and the baseline condition of flora and fauna on the site have been discussed in the flora and fauna reports prepared in response to 4.7.1 and 4.7.2 of the Terms of Reference for the EIS.

2. Potential Impacts

The potential impacts on native flora and fauna species discussed in this report are those predicted to occur should no mitigation measures at all be undertaken.

2.1.1 Loss of habitat

The proposed development process would result in the clearing of approximately 60 ha of native woodland to open woodland vegetation mapped as Not of Concern regional ecosystem (RE) 11.5.3 and containing vegetation meeting the description of Not of Concern RE 11.7.2. Large areas of identical habitat will be available after clearing in land directly adjacent to the site.

In addition, increased levels of human impacts to the surrounding remnant vegetation can be expected. This process will result in the removal of many large eucalypt trees (some containing hollows), hollow ground debris and clumps of shrubs that are currently likely to provide habitat for local bird, bat, reptile, amphibian and mammal species.

This process will also fragment the current block of existing vegetation and may act as a deterrent to faunal movements currently occurring through the area. The opening up of woodland habitat, and increased human presence in the area, may possibly cause a shift in species composition toward common native species such as crows, magpies and mynas. Smaller woodland bird species may become less common as these more aggressive colonists drive them from the edges of the cleared area.

2.1.2 Direct injury or mortality

The proposed clearing process will likely involve the use of large earth moving machinery in order to remove large trees, flatten out the construction area and build the dam site. These activities may possibly cause injury and/or mortality to sedentary, nocturnal and less mobile species of fauna that are unable to escape the area during the clearing process.

The increased presence of vehicles and people in the area during the plant construction process and following establishment of the plant may increase the occurrence of road mortality and injury to local fauna.

2.1.3 Disturbance to fauna

An increased level of disturbance to native fauna is likely to occur as a result of the plant establishment. Human and vehicular movements, in addition to noise and vibration created by the plant could possibly cause various species of fauna to avoid the development area. However, the site is currently within earshot of industrial activity, and is located beside a busy highway, so that background noise and some vibration is already a feature of the site.

2.1.4 Spread of exotic weeds

The site currently contains prickly pear and harrisia cactus, both of which are Class 2 weeds under the *Land Protection (Pest and Stock Route Protection) Act 2002*. These weeds are not widespread within the subject lot or in any way dominant within the vegetation communities they are found in. It is unlikely that the proposed development will alter this status. However, increased traffic during the construction process may result in the deposition of weed seeds or vegetative material.

There is a particular risk of parthenium (*Parthenium hysterophorus*) entering the site via seed-encrusted machinery. Parthenium is a weed that is toxic to stock and humans, and presents a particular threat to semi-arid areas and dry woodlands such as that found on this site. With an ability to lay dormant and viable for long periods, it may arrive and remain undetected on sites for many years.

2.1.5 Increased turbidity of Grosvenor Creek

Clearing of the woodland on site will increase the potential for soil erosion, particularly if soil disturbed during the clearing operations is not adequately protected. Increased soil deposition in Grosvenor Creek could be expected should the site experience heavy rainfall after clearing, but before the site has been hardened. Heavy winds may remove topsoil and deposit it in the immediate environs (in which case other watercourses may also be affected).

Should turbidity increase in Grosvenor Creek, expected impacts would include a lowered ability for aquatic plants to function, with negative impacts for organisms that rely on such plants for food and shelter.

3. Objectives for conservation of natural values

The following objectives are recommended to guide mitigation measures:

1. To minimise the loss of regional ecosystem diversity on the site and for the Brigalow Belt generally;
2. To ensure clearing and operational activities are conducted in accordance with legislation. This includes the objectives of the *Vegetation Management Act 1999* and the requirements of the *Nature Conservation Act 1992,* the *Aboriginal Cultural Heritage Act 2003* and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth);
3. To minimise the loss of top soil and associated water quality issues during construction;
4. To minimise the loss of habitat trees and habitat resources;
5. To minimise the impact of the project on habitat of the little pied bat;
6. To maximise movement possibilities for fauna across the lot during the operational stage of the project;
7. To avoid causing or contributing to existing land degradation on the site, in particular gully erosion occurring in the eastern section of the lot;
8. To minimise the impacts of construction activities on natural values, including reducing distress for fauna directly impacted by clearing activities; and,
9. To restore areas affected by construction, and effectively manage the operational stage.

4. Mitigation Measures

The following mitigation measures are recommended to meet the nature conservation objectives identified in section 3:

4.1.1 Minimise the loss of regional ecosystem diversity on the site and for the Brigalow Belt generally

The north-eastern section of the lot contains stands of *Acacia catenulata* and *A. shirleyii*, which meet the description of Not of Concern RE 11.7.2, dotted within the *Eucalyptus populnea* woodland mapped as RE 11.5.2. This area has the highest floral diversity on the lot.

The local indigenous people have identified an area in the north-western section of the lot as an area of cultural heritage value. This area should be avoided in order to exercise due care under the *Aboriginal Cultural Heritage Act 2003.*

The western section of the lot, mapped as non-remnant vegetation, has been previously chemically thinned, and is relatively open. Therefore, infrastructure and associated clearing activities should be located in this area where possible (west of the study transects in the non-remnant vegetation).

4.1.2 Ensure clearing and operation is conducted in accordance with the objectives of the *Vegetation Management Act 1999,* the *Nature Conservation Act 1992* and the *Environment Protection and Biodiversity Conservation Act 1999*

A property vegetation management plan, outlining how the clearing for the infrastructure associated with the project will meet the requirements of the Brigalow Belt North Vegetation Management Code (and thus the objectives of the *Vegetation Management Act 1999*), will be lodged with DNRW. This application is subject to approval.

There is no essential habitat identified for this site. The only species listed in the *Nature Conservation (Wildlife) Regulation (1994)* for which direct evidence was gathered is the little pied bat. Habitat values for this bat are predicted to be highest in the north-eastern section of the lot. This area would likely form the core area for little pied bat in the study area and may support small numbers of squatter pigeon on occasion (Yakka skink and red goshawk are less likely).

Large areas of vegetation of the same regional ecosystem status as that in which the little pied bat was recorded by the survey (REs 11.5.2 and 11.7.2) surround the site – these areas will not be affected by the project. Therefore, despite the proposed clearing, large areas of suitable habitat for this species will be accessible directly adjacent to the project area during construction and operation.

Habitat within the area to be cleared (such as canopy trees, shrubs, grasses, hollow logs, rocks etc) should be thoroughly inspected by a qualified ecologist for fauna

species prior to construction activities commencing[1]. Any animals found should be salvaged and translocated to an appropriate area of habitat in accordance with a salvage and translocation protocol that should be developed in conjunction with this proposed project and prior to construction commencing.

No protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* will be significantly affected by this project.

4.1.3 Minimise top soil loss and lowered water quality in Grosvenor Creek

As discussed in 2.1.5 above, the clearing of vegetation to prepare the site for construction will render the topsoil highly vulnerable to erosion from water and wind until the surface is hardened or otherwise protected.

It is recommended that the period between clearing and site hardening be kept to the minimum possible, and be timed to avoid predicted wet weather or heavy wind events. The soil surface should be kept damp if heavy winds are expected in order to 'bed' the surface soil down. Obstacles to run-off should be installed before clearing commences – this may include construction of bund walls down-slope of clearing activities using hay bales or like material that will decompose on site. Landscape planting of thick, shrubby native vegetation with a ground cover of grasses and sedges down-slope of the construction site should be considered as a more permanent measure to collect suspended soil particles after construction is finished.

4.1.4 Minimise the loss of habitat trees and habitat resources

As stated in 4.1.2 above, habitat within the area to be cleared (such as canopy trees, shrubs, grasses, hollow logs, rocks etc) should be thoroughly inspected by a qualified ecologist for fauna species prior to construction activities commencing[2]. Animals found should be salvaged and translocated to an appropriate area of habitat in accordance with a salvage and translocation protocol that should be developed in conjunction with this proposed project and prior to construction commencing.

It is recommended that the eastern section of the lot, which contains numerous large hollow trees and dead hollow stag trees, should not be cleared, and that any activities should avoid this area. Clearing should be conducted in areas of non-remnant vegetation where possible. Large hollow logs in the area to be cleared should be retained and redistributed randomly among the retained vegetation in order to increase available habitat for local terrestrial fauna species.

Peripheral lighting should be kept to that necessary for a minimal level of security and safety, and should not be directed into remnant vegetation.

[1] This investigation should preferably occur one day prior to any clearing activities commencing.

[2] This investigation should preferably occur one day prior to any clearing activities commencing.

4.1.5 Minimise the impact of the project on the Little Pied Bat

The little pied bat was found in the north-eastern corner of the study site, on the border of two vegetation communities, meeting the descriptions of Not of Concern REs 11.5.3 and 11.7.2.

Large areas of both REs 11.5.3 and 11.7.2 will remain after clearing. These areas are contiguous with the site. It is recommended that clearing on the lot should not be conducted in the north-eastern corner, as this area contains a large number of hollow trees and dead hollow stag trees.

Impacts on the little pied bat as a result of this project will be minimal, with large areas of suitable habitat and abundant roosting opportunities remaining after proposed clearing and during the operational stage.

4.1.6 Maximise movement opportunities for fauna across the lot during the operational stage of the project

This project involves the clearing of approximately 60 ha of Not of Concern remnant vegetation. After clearing, large areas of the regional ecosystem involved, RE 11.5.3, will remain and will be located directly adjacent to the project area.

It is recommended that in order to minimise disruption to movement opportunities for fauna across the site, infrastructure be preferably located in the western section of the lot, in the non-remnant vegetation. This non-remnant vegetation lacks the diversity of the vegetation on the eastern side. With infrastructure located in this section disruption to movement possibilities for fauna will be minimal.

4.1.7 Land degradation management

The gentle slopes characteristic of the site suggest that any clearing associated with the project will not result in land degradation. However, the existing vegetation community should be retained wherever possible in order to minimise the risk of gully erosion developing. In order to prevent exacerbation of existing gully erosion in the east of the lot, it is recommended that clearing does not occur in or within at least 100m of the ephemeral watercourse which is forming as a result of gully erosion.

Salinity issues as a result of the proposed clearing are not anticipated – potential intake or discharge zones were not observed during the field investigations except for the ephemeral stream riparian zone in the east of the lot, which may act a discharge zone during heavy rain. As recommended elsewhere, clearing should avoid the eastern section of the lot.

It was observed during the field investigation that soils rapidly degrade into bull dust even after light traffic usage. It is recommended that any roads used during construction be hardened and/or watered to reduce dusting of adjacent foliage. Exposed areas of the plant during the operational stage should be adequately hardened wherever possible.

4.1.8 Minimise the impact of construction on natural values

The removal and/or damage of native vegetation should be restricted to the development footprint. Clearing will be strictly delineated in consultation with DNRW (as assessment manager for the operational works development application to clear vegetation), and vegetation outside this area will not be damaged. The area to be retained must be clearly marked for clearing contractors, who must also be provided with a copy of the approval permit and associated vegetation clearing permit maps.

The boundaries of the construction zone should be clearly marked prior to works commencing with brightly coloured fencing, and construction workers must be clearly instructed on the requirement to protect retained woodland.

Access roads should be hardened, and at least kept watered, to reduce dusting of adjacent foliage and dust air pollution in general.

A qualified fauna handler should be present on-site during the site preparation (clearing) process in order to salvage and translocate fauna disturbed during tree, shrub and ground debris removal. The fauna handler should be present to inspect the hollows of trees and logs cleared from the site and salvage any animals injured during the development activities.

4.1.9 Restoration of areas affected by construction, and effective management of the operational stage

An opportunity exists to enhance the remaining un-cleared habitat within the study area for indigenous fauna values. A conservation management plan should be prepared and incorporated into the Environmental Management Plan – Operations and should include (but not be limited to) the following actions:

» Use of locally endemic species in any rehabilitation and landscaping works;

» Protection of the retained areas of vegetation from unsuitable fire regimes, contamination and weed infestation;

» Retain large hollow logs from the clearing process and redistribute randomly among the retained vegetation in order to increase available habitat for local terrestrial fauna species;

» Fence off retained native vegetation and exclude grazing from domestic stock such as cattle. This procedure will improve soil structure within the retained areas and allow regeneration of ground layer, shrub and canopy vegetation. Local species of kangaroo should maintain the open woodland structure through low-impact grazing;

» Pest animals and plants should be actively controlled by a coordinated pest management approach in accordance with the Moranbah Shire Pest Management Strategy. In particular, control of rabbits and foxes within the retained habitat areas is desirable, with a likely resulting increase in the abundance and diversity of reptiles, amphibians, mammals and birds;

» The possibility that long-distance vehicles entering or leaving the site may introduce or spread new weed and pest species must be managed. Parthenium weed, fire ants and crazy ants are examples of weed and pest species that can be spread via

vehicles. Workers on the site should be familiar with the pest and weed species that may potentially occur on or around the site should such species be trans-located there. Staff should be encouraged to report any observations of unusual plants or insects to the Belyando Shire Council or DNRW. Wash-down facilities should be provided; and,

» Any spill response and major incident plans should consider the implications of such events for nature conservation objectives.

4.2 Ongoing ecological monitoring

A program of ongoing ecological monitoring should be implemented, to determine whether the condition of the lot on which the Dyno Nobel ammonium plant is situated changes from the baseline condition. Baseline condition is defined as the condition described in the flora and fauna reports undertaken for the EIS.

The ongoing ecological monitoring program should have the following objectives:

» To document over time the health of the flora and fauna populations and ecological communities in the woodland on the lot;

» To gather data that can be used to make effective management decisions on environmental issues for the land;

» To determine whether gully erosion to the stream in the east of the property is ongoing or has stabilised;

» To determine whether any pest or weed species declared under the *Land Protection (Pest and Stock Route Management) Act 2002* or controlled under the Belyando Shire weed and pest management strategy are present on the lot; and,

» To determine the effects, if any, of the ammonium nitrate plant on Grosvenor Creek.

4.2.1 Woodland health

The health of the adjoining woodland should be monitored over four days within two years of the cessation of construction activities. Ongoing monitoring should then be implemented every three years. The following indicators of woodland community health should be measured:

» Abundance of key woodland bird species: grey-crowned babbler (*Pomatostomus temporalis*), brown treecreeper (*Climacteris picumnus*), varied sitella (*Daphoenositta chrysoptera*) – counts should be undertaken over 16 person-hours both at sunrise and throughout the day by suitably qualified zoologists or ecologists during clement weather, with the data compared against observations made in the EIS fauna report;

» Abundance of 'increaser' bird species: magpie (*Gymnorhina tibicen*), galah (*Cacutua roseicapilla*), sulphur crested cockatoo (*Cacatua galerita*), magpie lark (*Grallina cyanoleuca*) and masked lapwing (*Vanellus miles*), myna (*Acridotheres tristis*). Counts should be undertaken over 16 person-hours both at sunrise and throughout the day by suitably qualified zoologists or ecologists during clement

weather, with the data compared against observations made in the EIS fauna report;

- Small to medium mammal abundance, to be measured by a suitably qualified and experienced zoologist or ecologist (with the appropriate ethics permits). Survey design is to incorporate the following requirements:
  - at least three trapping lines of 20 mixed type A and B Elliot traps per line should be set over four nights, with one cage trap at the extremity of each line;
  - three pitfall trap lines with drift fences should be established for four trapping nights, with a minimum of four pits per line set at least 10 m apart; and,
  - all species trapped should be identified to species level and marked in the event of re-capture.
- Reptile abundance to be measured by a suitably qualified and experienced zoologist or ecologist – targeted habitat searches should be conducted over at least 16 hours;
- Presence of bat species: northern freetail bat (*Chaerephon jobensis*), eastern freetail bat (*Mormopterus* species 2), Gould's wattled bat (*Chalinolobus gouldii*), hoary wattled bat (*Chalinolobus nigrogriseus*), eastern cave bat (*Vespadelus troughtoni*) and especially the little pied bat (*Chalinolobus picatus*). Presence should be measured using an ultrasonic call recording device such as the Anabat II over at least 10 recording hours, and preferably 20. The recordings must be analysed by a suitably qualified technician or zoologist;
- Presence of weed and pest species is to be noted. In particular, the presence and abundance of weeds or pests declared under the *Land Protection (Pest and Stock Route Management) Act 2002* or listed in the Belyando Shire weed and pest management strategy should be noted and reported where required;
- Presence of die-back in woodland vegetation layers: tree layers (layer one and two) and shrub layer. This should be a visual check conducted by a suitably qualified botanist or ecologist, and should aim to identify patterns of mortality or ill-health in mature plants, especially dominant species such as poplar box (*Eucalyptus populnea*) and Clarkson's bloodwood (*Corymbia clarksoniana*) in the tree layers, and false sandalwood (*Eremophila mitchellii*), *Flindersia dissosperma* and *Carissa ovata* in the shrub layers. If die-back is observed, further investigation into the cause will be required; and,
- Confirmation that vegetation community canopy cover is being retained within a range of 15% to 35% using the Queensland Herbarium methodology for stratifying vegetation at a site, established by Nelder and Wilson (EPA 2005). Should the woodland have thickened or thinned, the cause should be investigated and discussed in the report.

The background data to be used as a baseline is that reported in the EIS Flora and Fauna reports. It is noted that the measurements taken during the field investigation for these reports represent only one point in time, and are a reflection of factors such as the weather and season at the time, as well as stochastic or chance factors. Variables

such as these should be taken into account when considering the results of any monitoring effort.

A report outlining the results of each study should be generated by a suitably qualified ecologist. Results should be examined for patterns of change, such as an increase or decrease in a pest or indicator species. An action list should be generated where further investigation or action is warranted. Reports should be collated and considered where management decisions concerning land use are made.

4.2.2 Gully erosion

The ephemeral stream in the east of the lot should be monitored at least annually, preferably after the wet season, to determine whether gully erosion is increasing or has stabilised. Every effort should be made to arrest any erosion should an ongoing process of soil loss be detected. Landscaping and engineering measures should be considered as part of the annual inspection report, which should be compiled by a suitably qualified hydrologist or engineer.

4.2.3 Monitoring of Grosvenor Creek

It is noted that Grosvenor Creek is an ephemeral creek with sporadic flow. However, it is highly recommended that should the creek be flowing or full, a background water quality assessment be conducted prior to the commencement of any construction work. The objective is to obtain baseline data before construction begins. This assessment should sample and report on water quality both up- and down-stream of the point at which any run-off from the Dyno Nobel site could be expected to influence the creek.

During construction, and if Grosvenor Creek is flowing or containing pools, water quality assessments both up- and down-stream of the site should be conducted every three months until complete. All assessments should consider the full suite of water quality parameters considered appropriate under the Australia and New Zealand Environment and Conservation Council (ANZECC)/Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ)Guidelines for fresh water quality (ANZECC/ARMCANZ, 2000), and should be conducted in the manner prescribed in the Guidelines.

A report outlining all findings and identifying and discussing any trends detected from previous findings should be an outcome of each monitoring study. Prompt action should be taken to correct any significant negative trends in water quality detected by this monitoring program.

5. Conclusion

5.1 Summary of impacts

In conclusion, the greatest impacts expected on the site from the project are:

» Loss of 60 ha of Not of Concern RE 11.5.3;

» Loss of habitat for the little pied bat, listed as Rare under the *Nature Conservation (Wildlife) Act 1994*; and,

» Increased human activity in the project area.

Regional ecosystem 11.5.3 has a current extent of greater than 10000 ha, and more than 30% of its pre-clearing extent remains. The approximately 60 ha proposed to be cleared for this project is a small fraction of this total area. Within the Brigalow Belt bioregion this regional ecosystem is included in six protected areas, mostly National Parks (see Table 1 in the Flora report), and so is well protected from threatening processes occurring within the bioregion.

In addition, clearing of this 60 ha area will be subject to the proponent meeting the requirements of the Brigalow Belt North Regional Vegetation Management Code, and hence the objectives of the *Vegetation Management Act 1999*. A Property Vegetation Management Plan, demonstrating how the proposed clearing will meet this Code, has been prepared and submitted to DNRW for consideration.

One possible impact associated with clearing may be increased turbidity of the already turbid Grosvenor Creek. Appropriate sediment control measures and clearing practices have been recommended in this report. Provided these are observed, impacts on Grosvenor Creek should be negligible. A water quality monitoring program has been recommended, to detect any issues in relation to increased soil erosion during construction and take action should increased sedimentation be detected.

The little pied bat is presumed to roost only in caves, buildings or mine-shafts, none of which will be affected by this proposal. Clearing of remnant vegetation may affect hunting opportunities for this species, however the continued existence of very large areas of remnant vegetation of RE 11.5.3 and similar open woodland regional ecosystems, in direct proximity to the project area, suggests this bat will be little affected.

Increased human activity on the lot will reduce its value as habitat for some species. However, the site has a history of grazing, is adjacent to a busy highway and another industrial site, and is within earshot of other human activities, all suggesting that the site may already have reduced habitat value for native animals. This is certainly supported by the findings of the field investigation, which found very few mammals on the site. It is also unlikely that the mere presence of humans will affect the birds identified by the survey.

The conclusion of this investigation is that the proposal for clearing 60 ha of remnant vegetation and the operation of an industrial plant on the site will not have a significant impact on the natural values of the lot, or of the Moranbah area. The intensification of use of an area already characterised by existing industrial activity would be preferable to locating the site in a 'greenfield' site.

5.2 Summary of recommendations

In summary, the following recommendations are made:

- Site infrastructure should be preferentially located in the non-remnant vegetation in the western half of the lot, and remnant vegetation in the centre of the lot, to take advantage of existing cleared areas and avoid areas of higher habitat value in the north-eastern section of the lot;
- Hollow logs and other movable habitat features should be relocated in areas of remnant vegetation that are to be retained;
- Areas approved to be cleared by DNRW must be clearly delineated on the ground so that clearing contractors do not clear excess remnant vegetation. Clearing contractors must be given a copy of the clearing permit and be aware of any conditions or requirements;
- A qualified fauna handler should be present immediately before and during clearing activities to ensure animals in the area to be cleared are relocated or, if injured, are dealt with humanely;
- Habitat trees, whether dead or alive, should be identified and retained wherever possible;
- Clearing should not occur in or within at least 100 m of the watercourse in the east of the lot;
- Clearing activities should be planned where possible for a dry period when strong winds are least likely. Site hardening should commence as soon as practicable after clearing is completed;
- Bunding walls should be constructed downslope of all clearing activities so that soil loss from water-suspension is minimised;
- Water quality of Grosvenor Creek should be determined both up- and down-stream of the ammonium nitrate site before, during and after clearing and construction activities. Water quality should be determined according to ANZECC/ARMCANZ guidelines;
- Construction areas should be fenced off in an obvious manner and workers made aware that remnant vegetation is to be retained;
- Access roads should be suitably hardened and/or watered to prevent dust pollution and dusting of adjacent foliage;
- Feral animals and pest species should be dealt with as part of a coordinated management approach that takes into consideration the Moranbah Shire pest management strategy;

- A conservation management plan should be developed within the Environmental Management Plan – Operations to manage the remnant vegetation remaining on the lot – this should consider hazard reduction burning regimes, landscaping and native vegetation management, fencing strategies and habitat enhancement opportunities. Any spill response and major incident plans should consider the implications of such events for nature conservation objectives; and,
- An ongoing program of ecological health monitoring should be implemented with the objectives of:
  - measuring any changes in the woodland flora and fauna community on the lot on which the ammonium nitrate plant is located; and,
  - monitoring gully erosion in the east of the lot.

Appendix A

References

References

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