Dampier to Bunbury Natural Gas Pipeline Land Corridor Expansion Project

Gas Pipeline Sale Steering Committee

Advice to the Minister for the Environment and Heritage from the Environmental Protection Authority (EPA) under Section 16(e) of the *Environmental Protection Act 1986*

(This is not an assessment of the Environmental Protection Authority under Part IV of the *Environmental Protection Act 1986*)

Environmental Protection Authority
Perth, Western Australia
Bulletin 1019
July 2001

ISBN. 0 7307 6643 8
ISSN. 1030 - 0120

Summary and recommendations

This report provides the Environmental Protection Authority's (EPA's) advice to the Minister for the Environment and Heritage on the strategic assessment of the proposal by the Western Australian Government to expand the land corridor for the Dampier to Bullsbrook section of the Dampier to Bunbury Natural Gas Pipeline (DBNGP). The expansion is proposed in order to enable additional future gas pipeline capacity for the gas suppliers of the North West Shelf to service customers in the Pilbara and south-west of the State.

The Gas Pipeline Sale Steering Committee (GPSSC) on behalf of the Western Australian State Government requested early advice from the Environmental Protection Authority (EPA) on any constraints, from an environmental impact perspective, that have been identified with the expansion of the land corridor for the Dampier to Bullsbrook section of the DBNGP. The EPA's report also highlights areas where further work would be required by proponents prior to assessment of future pipeline developments under Section 38 of the *Environmental Protection Act 1986.*

Relevant environmental factors

Although a number of environmental factors were considered by the EPA in the strategic assessment, it is the EPA's opinion that the following are the environmental factors that would need to be addressed in detail in any assessment of an individual proposal:

(a) Terrestrial flora;

(b) Specially Protected (Threatened) Fauna;

(c) EPP lakes and other specially protected wetlands;

(d) Rivers and ephemeral streams;

(e) Rehabilitation;

(f) Surface water and groundwater;

(g) Construction pollution issues;

(h) Risk and hazards; and

(i) Culture and heritage.

Conclusions

The EPA has strategically assessed the proposal to widen the existing corridor for the Dampier to Bullsbrook section of the Dampier to Bunbury Natural Gas Pipeline (DBNGP) by 70m to enable future accommodation of up to six additional pipelines and system upgrades.

The EPA notes that no constraints that would preclude the use of the proposed widened corridor for the construction of future gas pipeline(s) have been identified on the basis of the information currently available.

The EPA also notes the commitments that will need to be made and implemented by future pipeline proponent(s) intending to construct new gas pipeline(s) within the widened land corridor for the DBNGP.

The EPA has concluded that all factors identified can be managed in an environmentally acceptable manner, and that it is unlikely that the EPA's environmental objectives would be compromised, subject to future pipeline proponent(s) agreeing to adopt the recommended commitments detailed in this report, and implementing them in a satisfactory manner.

Any specific proposal for the development of a new pipeline within the expanded corridor will require referral to the EPA under Section 38 of the *Environmental Protection Act 1986.*

Recommendations

The EPA submits the following recommendations to the Minister for the Environment and Heritage:

(1) That the Minister notes that the proposal on which advice is being provided is the widening of the existing corridor for the Dampier to Bullsbrook section of the Dampier to Bunbury Natural Gas Pipeline (DBNGP) by 70m to enable future accommodation of up to six additional pipelines and system upgrades.

(2) That the Minister considers the EPA's advice on relevant environmental factors as detailed in Section 3 of this report.

(3) That the Minister notes that the EPA has concluded that no constraints that would preclude the use of the proposed widened corridor for the construction of future gas pipeline(s) have been identified on the basis of the information currently available.

(4) That the Minister notes that the EPA has concluded that the intent of the commitments that will need to be adopted and implemented by future pipeline proponent(s) intending to construct new gas pipeline(s) within the expanded land corridor for the DBNGP is appropriate.

(5) That the Minister notes that future proposals for the development of new pipelines within the expanded pipeline corridor for the DBNGP would require referral to the EPA under Section 38 of the *Environmental Protection Act 1986.*

Contents

Figures

Appendices

1. Introduction

The Gas Pipeline Sale Steering Committee (GPSSC), on behalf of the Western Australian Government, requested the Environmental Protection Authority (EPA) to undertake a strategic assessment of the concept of expanding the land corridor for the Dampier to Bullsbrook section of the Dampier to Bunbury Natural Gas Pipeline (DBNGP).

As the concept to expand the land corridor for the DBNGP did not constitute a "proposal", it could not be subject to environmental impact assessment under Section 38 of the *Environmental Protection Act 1986* and associated Conditions imposed by the Minister for the Environment.

The EPA has assessed the proposed expansion of the land corridor for the Dampier to Bullsbrook section of the DBNGP and provides advice on the concept to the Minister for the Environment under Section 16(e) of the *Environmental Protection Act 1986.* The advice is provided to guide the expansion of the land corridor for the DBNGP, through identification of 'fatal flaws' early in the planning of the concept and to provide guidance to potential infrastructure developers on the type and extent of further work that will be required for environmental approval in order to address environmental issues of concern to the EPA.

The GPSSC prepared a Strategic Environmental Review (SER) document which was made available for a four week public review period commencing on 21 February 2000 and closing on 17 March 2000.

In May and August 2000, the EPA provided preliminary advice to the then Minister for the Environment on the northern section (Dampier to Dongara) and the southern section (Dongara to Bullsbrook) of the proposed expanded land corridor for the DBNGP respectively, to facilitate an early start for appropriate planning processes (such as land acquisition and Native Title). This report now contains the EPA's consolidated advice on the full extent of the Dampier to Bullsbrook section of the DBNGP corridor.

In compiling this report, the EPA has considered the relevant environmental factors associated with the proposal, issues raised in public submissions during the public review period, specialist advice from the Department of Environmental Protection (DEP) and other government agencies, the proponent's response to submissions and the EPA's own research and expertise.

Further details of the proposal are presented in Section 2 of this report while Section 3 discusses environmental factors relevant to the proposal. Commitments requiring management measures to be implemented by future pipeline proponent(s) are commented on in Section 4. The EPA provides general advice on other issues associated with the project in Section 5. Section 6 outlines the EPA's conclusions on the strategic assessment. The EPA's Recommendations regarding the proposal are included in Section 7.

A list of people and organisations that made submissions is included in Appendix 1 and References are listed in Appendix 2. A list of consolidated commitments that require management measures to be implemented by future pipeline proponent(s) is included in Appendix 3. Appendix 4 contains a summary of submissions and the proponent's response to submissions and is included as a matter of information only. It does not form part of the EPA's report and recommendations. The EPA has considered issues raised in public submissions and the response from the GPSSC to those issues when identifying relevant environmental factors.

2. The proposal

The GPSSC on behalf of the Western Australian Government proposes to widen the existing corridor for the DBNGP between Dampier to Bullsbrook by 70m to enable future accommodation of up to six additional pipelines and system upgrades. These pipelines will enable future increases in gas supply from the North West Shelf to customers in the Pilbara and south west of the State. Expansion of the gas supply system may also enable a different grade of gas to be piped south for industrial customers and may provide increased competition for the supply of natural gas throughout large areas of the State.

In order to meet predicted domestic and industrial growth in gas demand, the Government has initiated this project to ensure proponent(s) are able to obtain a cost efficient and environmentally acceptable alignment between Karratha and the outskirts of the Perth metropolitan area. This project will set aside a land corridor for future proponent(s), who will then have to obtain final construction and environmental approvals prior to development. The existing corridor and the originally proposed expanded corridor configuration are illustrated in Figure 1.

The existing pipeline is owned and operated by Epic Energy and is located on the eastern side of the DBNGP corridor. It is proposed that an additional 30m be acquired to the east and a further 40m be acquired to the west of the existing corridor to accommodate future pipeline construction and system expansions where this is achievable. Where this is not achievable the additional 70m of corridor may be located either side of, or away from the existing corridor. The proposal is therefore for an additional 70m, taking the width of the entire DBNGP corridor to 100m.

The additional 70m of corridor is required to provide for:

- additional pipelines;
- looping (duplication) of the DBNGP and associated additional pipelines; and
- safe separation distances between pipelines.

The SER indicated that, where possible, existing facilities will be utilised and the proposed corridor will abut both sides of the existing corridor. This parallel development is intended to reduce the sterilisation of land. In addition to logistic and economic efficiencies of keeping the two corridors adjacent, separate alignment of the proposed corridor would require a significantly larger overall area of land to accommodate supporting infrastructure, duplicating that which is already established along the existing DBNGP corridor (such as access roads, airstrips, compressor station sites, borrow pits, etc).

A corridor through freehold and leasehold land will be obtained through:

- a negotiated settlement where possible;
- invoking the powers of the *Land Administration Act 1997*; or
- the declaration of the widened corridor under the *Dampier to Bunbury Pipeline Act 1997*.

This widening proposal relates to approximately 1,300km of corridor, between Main Line Valve (MLV) 7 (south of Karratha) and MLV117 (Bullsbrook). This proposal does not consider corridor widening through the Perth metropolitan area south of Bullsbrook.

Currently located within the existing corridor is the DBNGP, a high pressure gas pipeline which acts as both a storage unit and transport pathway for natural gas. The gas is processed on the Burrup Peninsula and sent via the pipeline to markets in the south of the State. The existing pipeline was constructed in 1983 - 84 by the State Energy Commission of Western Australia (SECWA), and responsibility passed to AlintaGas in 1995 when SECWA was restructured to form Western Power and AlintaGas. In March 1998 the pipeline was purchased by Epic Energy who is the current owner and operator of the pipeline.

Management of the existing 30m DBNGP corridor and widened 70m corridor will be the responsibility of the DBNGP Land Access Minister, pursuant to Section 31 of the *Dampier to Bunbury Pipeline Act 1997*. Under Section 29 of the Act, as gazetted on 14 January 1998, the Minister for Lands has been appointed the DBNGP Land Access Minister.

The SER indicated that Native Title consultations and negotiations will be conducted where required with claimant groups in conjunction with the Native Title Unit of the Department of Premier and Cabinet and the office of the Crown Solicitor.

A more detailed description of the proposal can be found in the SER document (Dames & Moore Pty Ltd, 2000), which should be read in conjunction with this report.

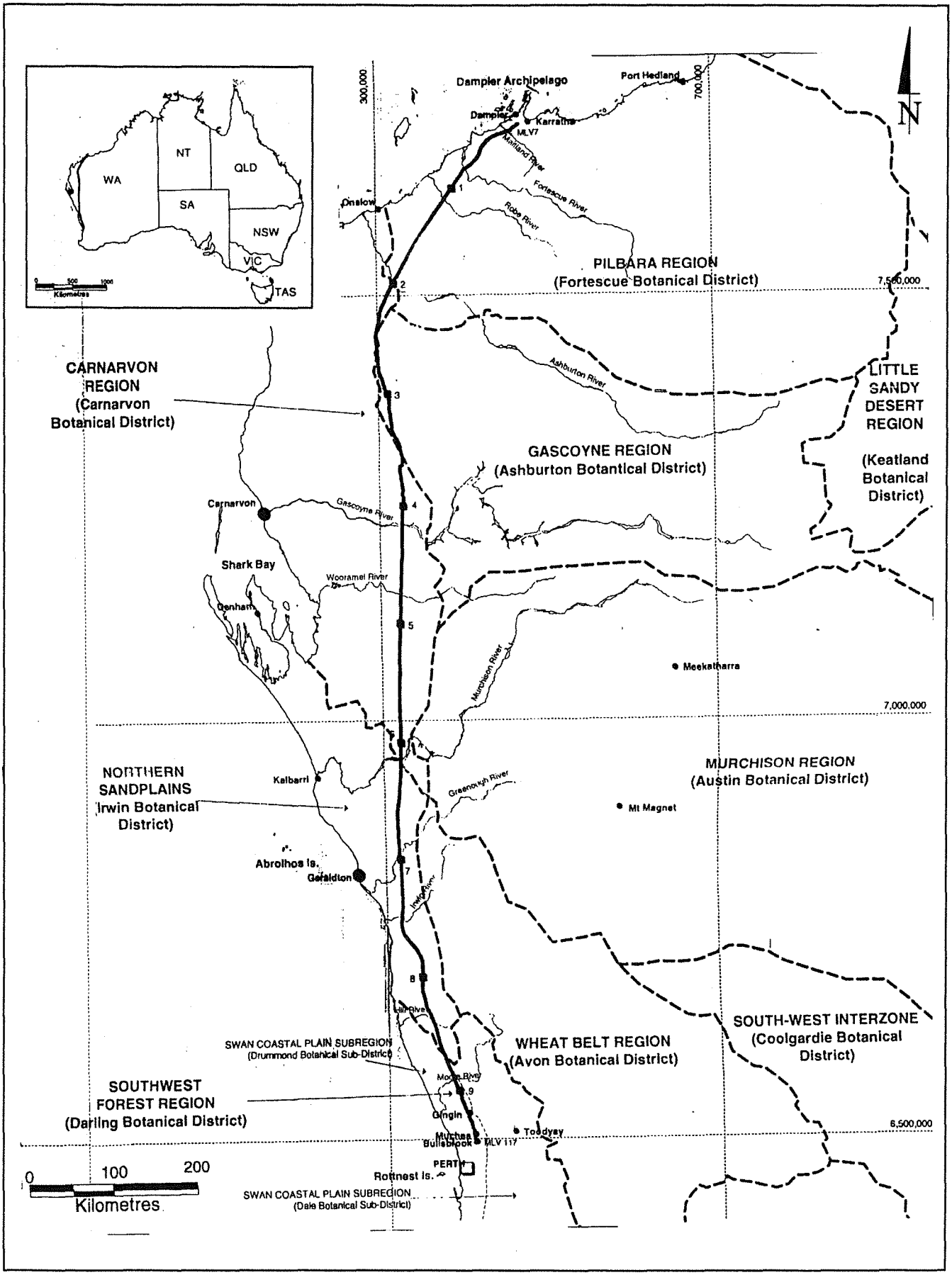

Figure 1. Project location - regional map (Source: Figure 1.1 Dames & Moore, 2000).

3. Relevant environmental factors

Appendix A of the SER contains a copy of the EPA's guidelines for the assessment and identifies the issues to be addressed during the assessment.

Having considered appropriate references, public and government submissions and the proponent's response to submissions, in the EPA's opinion, the following are the environmental factors relevant to the proposal:

(a) Terrestrial flora;

(b) Specially Protected (Threatened) Fauna;

(c) EPP lakes and other specially protected wetlands;

(d) Rivers and ephemeral streams;

(e) Rehabilitation programme

(f) Surface water and groundwater;

(g) Construction pollution issues;

(h) Risk and hazards; and

(i) Culture and heritage.

Details on the relevant environmental factors are contained in Sections 3.1 - 3.9. The description of each factor shows why it is important and how the expansion of the land corridor for the DBNGP, and the development of future natural gas pipelines within it, may impact upon the environment.

Due to its significant length, the DBNGP corridor traverses five major natural regions. These regions are the Pilbara region, the Carnarvon region, the Gascoyne region, the Northern Sandplains region, and the Southwest Forest region (Swan Coastal Plain subregion).

Accordingly, where appropriate, the description of each factor refers to each of the above regions and details the relevance of the factor to each region in terms of potential environmental impacts.

Objectives for each factor have been included to assist in providing guidance to any potential developers. Objectives for any or all factors may change for any subsequent proposal based on this strategic assessment and any subsequent information that becomes available.

Submissions on the SER are summarised before the EPA assessment for each relevant factor.

3.1 Terrestrial flora

3.1.1 Declared Rare and Priority Flora

Description

The presence of Declared Rare Flora (DRF) and Priority Flora (PF) within each natural region is discussed below. The locations at which these species have been recorded are shown in Figures 6.14, 6.15, and 6.16 of the SER, and a list of the species and their priority listing is presented in Appendix B of the SER.

In detailing DRF and PF for each region, records in surrounding areas were considered by the proponent to indicate a potential for the same to occur in the proposed corridor. The SER indicated that until a pipeline proponent conducts flora surveys along the route, the actual presence or absence within the corridor cannot be concluded.

Pilbara region

Within the Pilbara region there are no recorded populations of DRF species within a 10km zone along either side of the pipeline corridor. Seven PF species have been recorded within 10km of the proposed pipeline corridor, one of which occurs within 1km of the corridor.

Carnarvon region

Within the Carnarvon region there are no known populations of DRF species occurring within 10km of the proposed pipeline corridor. Eight Priority listed species have been recorded within 10km of the corridor, of which two occur within 1km of the corridor.

Gascoyne region

Within the Gascoyne region no DRF and PF species have been recorded within 10km of the pipeline corridor.

Northern Sandplains region

Within the Northern Sandplains region, 30 DRF species have been recorded within 10km of the pipeline corridor, with 13 of those species being recorded within 1km of the proposed corridor. This would suggest that it is highly likely that DRF species could be found within the corridor.

A further 207 PF species have been recorded within 10km of the corridor, of which 77 species have recorded within 1km of the corridor.

Southwest Forest region (Swan Coastal Plain subregion)

Within the Swan Coastal Plain section of the proposed pipeline corridor, 24 DRF species have been recorded within 10km of the corridor, of which three have been recorded within 1km. A further 97 PF species have been recorded within 10km of the corridor, of which 18 have been recorded within 1km of the corridor.

Submissions

The Department of Conservation and Land Management (CALM) advised that an early flora survey of the route well prior to construction and in the optimal season is necessary to avoid fatal flaws. If the flora survey is delayed until just prior to construction, it may give rise to the potential for delays.

CALM indicated that the first paragraph on page 11.1 in Section 11.2 of the SER which states that the document is intended to give "future proponents some degree of certainty that environmental approvals will be obtained within the defined pipeline corridor" may be somewhat erroneous, because in the event that DRF are located within the alignment:

- ministerial consent to take DRF under the *Wildlife Conservation Act 1950* cannot be presumed, and if there is the threat of extinction, then consent may not be possible; and
- an additional survey outside the easement may locate additional populations of DRF and assist in negating any need to change the alignment. Such a survey would also need to occur in the optimal season and well ahead of construction.

CALM considers that if surveys for all DRF and PF were conducted early during the optimal flowering period, the need for further survey work for future construction activities would most likely be minimal, and would generally only be required for specific habitats if additional taxa became listed.

EPA advice

The EPA's environmental objective for this factor is to protect Declared Rare and Priority Flora, consistent with the provisions of the *Wildlife Conservation Act 1950.*

The SER indicated that the GPSSC has committed to require future pipeline proponent(s) to undertake a detailed flora survey of the proposed pipeline corridor route in the appropriate season and well in advance of construction to establish the locations of DRF, PF and significant vegetation communities in order to avoid impacting upon important areas, consistent with the *Wildlife Conservation Act 1950,* on the advice of CALM and the DEP. Future pipeline proponent(s) will not remove any DRF without Ministerial approval, as required under the *Wildlife Conservation Act 1950.*

The SER also indicated that during this survey significant flora populations which occur within or adjacent to the corridor will be clearly marked during construction to avoid inadvertent disturbance to these areas. Disturbance to the habitats of significant flora will also be minimised. Should any DRF species be found during the vegetation survey, a Management Plan will be produced to try to avoid impacts on populations of DRF. In the event that these habitat types (populations of DRF) cannot be avoided, a further survey to determine the distribution and abundance to the significant flora species will be conducted prior to route finalisation so that the overall impacts on these species can be minimised and managed appropriately to ensure the conservation of the species.

The EPA considers that the main benefit in undertaking a detailed flora survey of the proposed pipeline corridor route well in advance of construction is that, should DRF be identified within the corridor, it provides time to review the impact of the pipeline on the population / species and to consider management options, or if necessary an alternative corridor route without causing undue delays to project schedules.

The EPA has recently been advised that the GPSSC are currently conducting a flora survey that would meet the requirements of the EPA and CALM, and would negate the necessity for a pipeline proponent to carry out further work, except where new rare and endangered species have been registered. Although the EPA supports this approach, it is the EPA's view that unless pipeline development occurs in the short term, the information gathered by the present survey may need to be updated in the long term.

The EPA notes that the GPSSC subsequently agreed to amend the commitment referred to above to include the requirement that future pipeline proponent(s) review existing flora and vegetation survey information (including the results of the GPSSC initiated survey undertaken in 2001), and / or undertake further survey work within the proposed pipeline corridor route, if appropriate at the time, to establish the locations of DRF, PF and significant vegetation communities, consistent with the *Wildlife Conservation Act 1950*, on advice from CALM and the DEP.

The EPA also understands that following the release of the SER, the GPSSC agreed to add an additional commitment pertaining to the preparation of an Environmental Management Plan (EMP) to the list of commitments detailed in Table 11.1 of the SER. Accordingly, future pipeline proponent(s) will be required to prepare a detailed EMP which adequately describes the various measures that will be implemented in order to ameliorate the environmental impacts associated with pipeline construction activities. The EMP will consolidate all of the various individual management plans, protocols, procedures and activities (such as surveys etc) discussed in this report, and included in the list of commitments that require management measures to be implemented by future pipeline proponent(s) in Appendix 3. The EMP will be made publicly available and will be prepared well in advance of construction.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.1.2 National parks and other nature reserves

Description

Pilbara region

Cane River Station is currently held as a pastoral lease by CALM, and has been de-stocked. The station is representative of the Pilbara pastoral area and is a proposed addition to the State's National Parks (S. van Leeuwen, pers. comm.). The station has an area of 1.5 million hectares. The proposed pipeline corridor crosses the westernmost portion of the station from the north-east to south-west for about 23km. An area of 166ha which represents 0.1% of the total station is potentially impacted by the proposed corridor. The SER indicated that a deviation of 70km would be required to avoid this area.

Carnarvon region

Toolonga Nature Reserve is a "C" Class Nature Reserve located north of Geraldton. The rangelands of the Carnarvon Basin are considered to be poorly represented in the conservation system and Toolonga Nature Reserve is the largest reserve representing these land systems. It was originally set aside for the conservation of flora and fauna of the region. The vegetation is typical of the Toolonga Plateau.

Within the reserve the proposed pipeline corridor runs parallel to the north-south axis of the Nature Reserve following the existing pipeline. Potential impacts of pipeline construction and operation within the proposed corridor arise from the removal of vegetation and disturbance to soil during construction of pipelines. This has the potential to affect the conservation value of the reserve if inappropriate clearing is undertaken and rehabilitation measures are inadequate. The proposed corridor will potentially impact an area of 504ha which represents 0.1% of the total Nature Reserve. The SER indicated that a deviation of 120km would be required to avoid this area.

Gascoyne region

The DBNGP corridor does not traverse any national parks or conservation areas within the Gascoyne region. However, the vegetation on the banks of the Gascoyne River is considered to be locally significant.

Northern Sandplains region

The proposed pipeline corridor crosses the westernmost tip of the "C' class Wandana Nature Reserve which was an area within System 5 recommended for conservation. This area of the reserve has previously been separated from the remainder of the reserve by the existing pipeline. This fragment of the reserve is an area of low open mallee woodland over low scrub, which has been affected by construction of the DBNGP, a nearby track and adjacent agricultural development. The understorey of this part of the reserve is significantly sparser than the vegetation in the remainder of the reserve to the east. The proposed pipeline corridor will extend 40m to the west of the existing pipeline into the fragment of bushland, and 30m to the east of the existing pipeline into the Wandana Nature Reserve. The total area of potential disturbance would be 2.1ha which represents less than 0.1% of the total reserve.

Burma Road Nature Reserve is jointly vested with the National Parks and Nature Conservation Authority (NPNCA) and the Tree Society. It is classified as an "A" Class nature reserve for the conservation of flora and fauna and is an area within System 5 recommended for conservation. The Burma Road Nature Reserve supports a wide variety of plant species. A Priority 3 species occurs within the Burma Road Nature Reserve and several other Priority and Declared Rare Flora species have been collected in this area in the past. The SER indicated that the proposed pipeline corridor route would traverse the eastern edge of the Burma Road Nature Reserve for about 8km.

The proposed pipeline corridor route also traverses a large block of natural bushland between the Irwin River and the Arrowsmith River, some of which is an unreserved soil type and has vegetation that is over 70% cleared. In order to avoid this bushland a large pipeline corridor route deviation would be required.

The proposed pipeline corridor route traverses the South-east Nature Reserve at Eneabba, the Coomallo Nature Reserve, the Hill River Nature Reserve, the northern part of the Twyata Nature Reserve, and the Badgingarra National Park.

Minyulo Nature Reserve is an A class nature reserve set aside for the conservation of flora and fauna. The reserve covers an area of 200ha and is located halfway between Cataby and Dandaragan. The principal value of the Minyulo Nature Reserve is as a feeding and breeding habitat for bush birds (Crook et al, 1982). However, it also provides a windbreak to neighbouring farms. The proposed pipeline corridor passes through 800m of the northern portion of the Minyulo Nature Reserve from the north-west to south-east. The proposed pipeline corridor route follows the existing DBNGP corridor route to minimise the impact of crossing the Minyulo Brook and effectively bisects the Minyulo Nature Reserve due to its

almost linear south-east to north-east configuration. The area potentially affected by the proposed pipeline corridor route is about 5ha (2.5% of the total area of the reserve).

Southwest Forest region (Swan Coastal Plain subregion)

The proposed pipeline corridor route traverses the proposed Moore River Nature Reserve near Red Gully Road.

Submissions

CALM considers that the loss to the conservation reserve system should be compensated at rates equivalent to mining compensation rates, and that the use of unimproved agricultural valuations undervalues the ecosystem services provided by biological resources. CALM suggested that funding should be provided to acquire additional conservation areas within the relevant bioregions for vesting in the National Parks and Nature Conservation Authority.

CALM indicated that Figure 6.14 of the environmental review document is not up to date as it does not include two other recent purchases by CALM adjacent to Cane River, namely the Mount Minnie Station (north-west boundary) and Range Block (southern boundary).

The Wildflower Society of WA Inc expressed concern about the damage that will be done to national parks, nature reserves and a Bushplan site. The Society indicated that the pipeline crosses entire reserves, impacting on most of their plant communities and it is likely to facilitate the spread of weeds, dieback and further disturbance. The Society expressed concern that while deviations to the pipeline route alignment are planned for a number of reasons, none have been proposed in order to conserve bushland, even if it occurs within national parks, nature reserves or Bushplan sites.

The DEP expressed concern about impacts to a number of conservation areas and requested the GPSSC to consider deviating the proposed pipeline corridor route around them to avoid these impacts.

The DEP also requested that a clearer outline of the options and obstacles considered when deciding to place the proposed pipeline corridor route through conservation reserves and road reserves be provided via suitable figures. The DEP indicated that images which give an indication of the latitude in an east-west direction would generally be appropriate.

EPA advice

The EPA's environmental objective for this factor is to protect the environmental values of national parks and other nature reserves.

The SER indicated that the proposed widened pipeline corridor has been aligned to avoid nature reserves and other areas of high conservation value where practicable. Where these areas cannot be avoided, the objective will be to minimise the loss of conservation values. In order to meet this objective future pipeline proponent(s) will be required to implement the following management techniques:

- minimise the extent of disturbance to vegetation and Declared Rare and Priority Flora species;
- locate the pipeline(s) as close as possible to the existing DBNGP;
- locate sites of temporary disturbance (such as vehicle parking areas, pipe laydown areas and borrow pits) outside the conservation areas where possible;
- undertake a dieback survey and implement management techniques to prevent the spread of the disease;
- undertake a weed survey and implement management techniques to prevent the spread of weeds;
- use existing access tracks where possible;
- minimise disturbance to surface hydrology;

- implement erosion control measures;
- implement fire prevention and control measures; and
- progressively rehabilitate disturbed areas.

The EPA understands that the GPSSC was requested by the DEP to investigate the possibility of deviating the proposed pipeline corridor route around twelve different conservation areas. These conservations areas are listed below, together with the respective outcomes of the DEP's request:

- Cane River Station - the requested deviation was deemed to be impractical due to the significant extra distance involved and the associated environmental impacts that would be incurred;
- Toolonga Nature Reserve - the requested deviation was deemed to be impractical due to the significant extra distance involved and the associated environmental impacts that would be incurred;
- Wandana Nature Reserve - as the proposed pipeline corridor passes close to the edge of the reserve, and in view of the fact that the reserve has already been subject to some disturbance in the past, the requested deviation was not warranted;
- Burma Road Nature Reserve - as the proposed pipeline corridor passes along the edge of the reserve and in view of the fact that the reserve has already been subject to some disturbance in the past, the requested deviation was not warranted. Additionally, the GPSSC indicated in their response to submissions that the proposed pipeline corridor will no longer be situated in the existing DBNGP buffer zone within the Burma Road Nature Reserve as detailed in the SER. As a result it will have no impact on this reserve;
- Large block of natural bushland between the Irwin River and the Arrowsmith River - it was concluded that such a deviation was not warranted due to the significant extra distance involved, and in view of the fact that the existing DBNGP corridor has already been disturbed;
- South-east Nature Reserve at Eneabba, Coomallo Nature Reserve, the Hill River Nature Reserve, the Twyata Nature Reserve, and the Badgingarra National Park - the GPSSC agreed to deviate the proposed pipeline corridor around the southern one third of the South-east Nature Reserve at Eneabba (i.e. from just south of Compressor Station 8), completely around the Coomallo Nature Reserve and the Hill River Nature Reserve, the majority of the Twyata Nature Reserve (less than 0.4ha will be affected near its eastern extremity where the corridor crosses the Hill River) and completely around the Badgingarra National Park (Figures 2 and 3);
- Minyulo Nature Reserve - due to the configuration of this reserve it was deemed impractical to deviate the proposed pipeline corridor around it. The DEP subsequently agreed that the originally proposed pipeline corridor which follows the existing DBNGP corridor through this reserve would be acceptable (Figure 4); and
- Proposed Moore River Nature Reserve near Red Gully Road - the GPSSC agreed to deviate the proposed pipeline corridor around the proposed Moore River Nature Reserve near Red Gully Road (Figure 5). The implementation of this deviation will effectively eliminate any potential impact to this nature reserve.

The EPA notes that the GPSSC has agreed to deviate the proposed pipeline corridor around nature reserves in the Northern Sandplains and Southwest Forest (Swan Coastal Plain) regions which have high conservation value and are likely to contain significant flora species and vegetation communities. The EPA understands that there will be minimal impact on those nature reserves within the Northern Sandplains region where it was not possible to deviate the proposed pipeline corridor route around them.

In relation to the concerns expressed by CALM, the EPA understands that the GPSSC's response to submissions indicated that their maps have been updated to reflect CALM management of Mount Minnie Station and Range Block. The EPA is also aware that CALM and the Department of Land Administration (DOLA) recently reached an agreement in principle

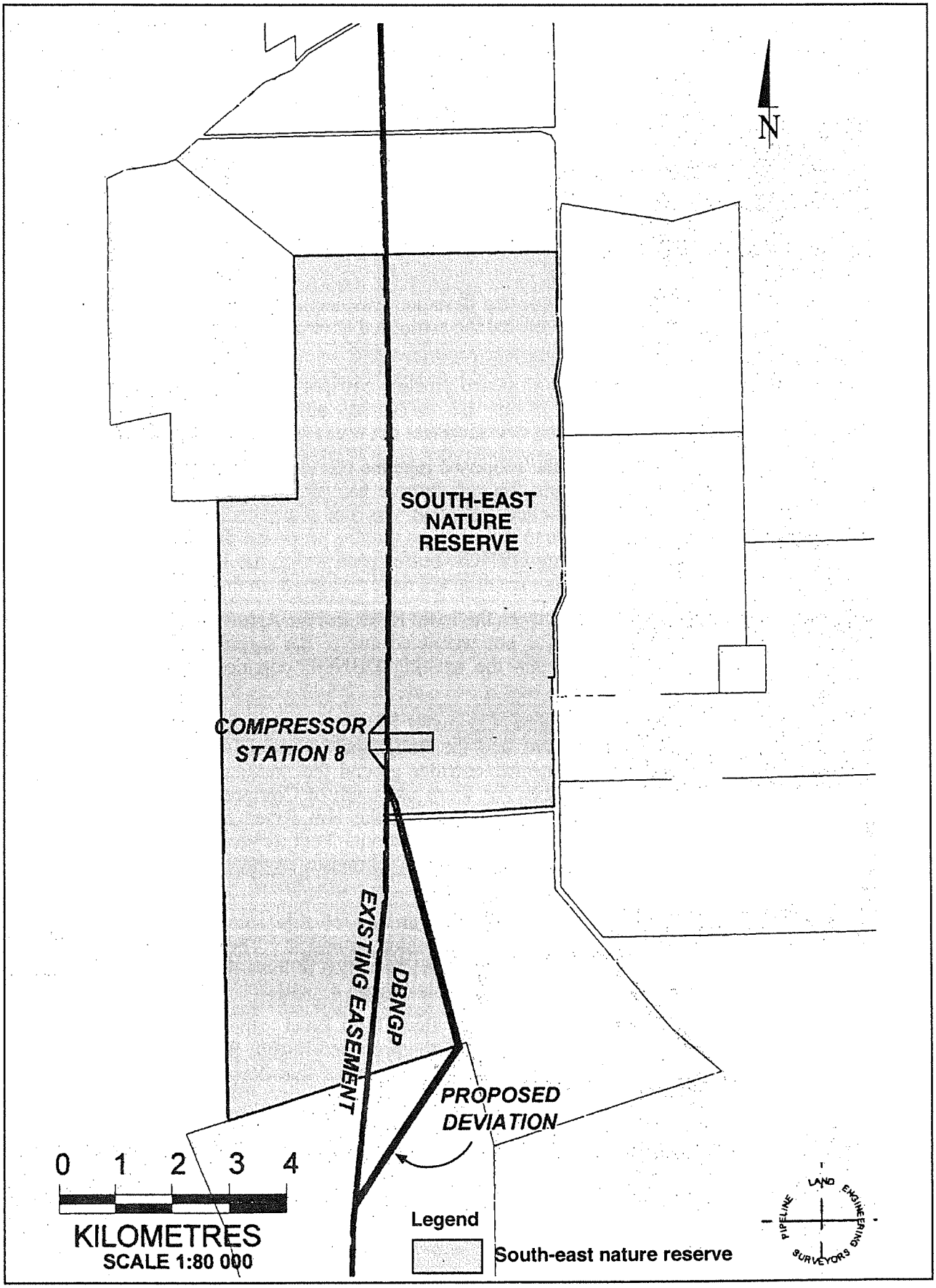

Figure 2. Pipeline corridor route deviation at the South-east Nature Reserve Eneabba (Source: Mr D Austin-Gas Pipeline Working Group 2.4.01).

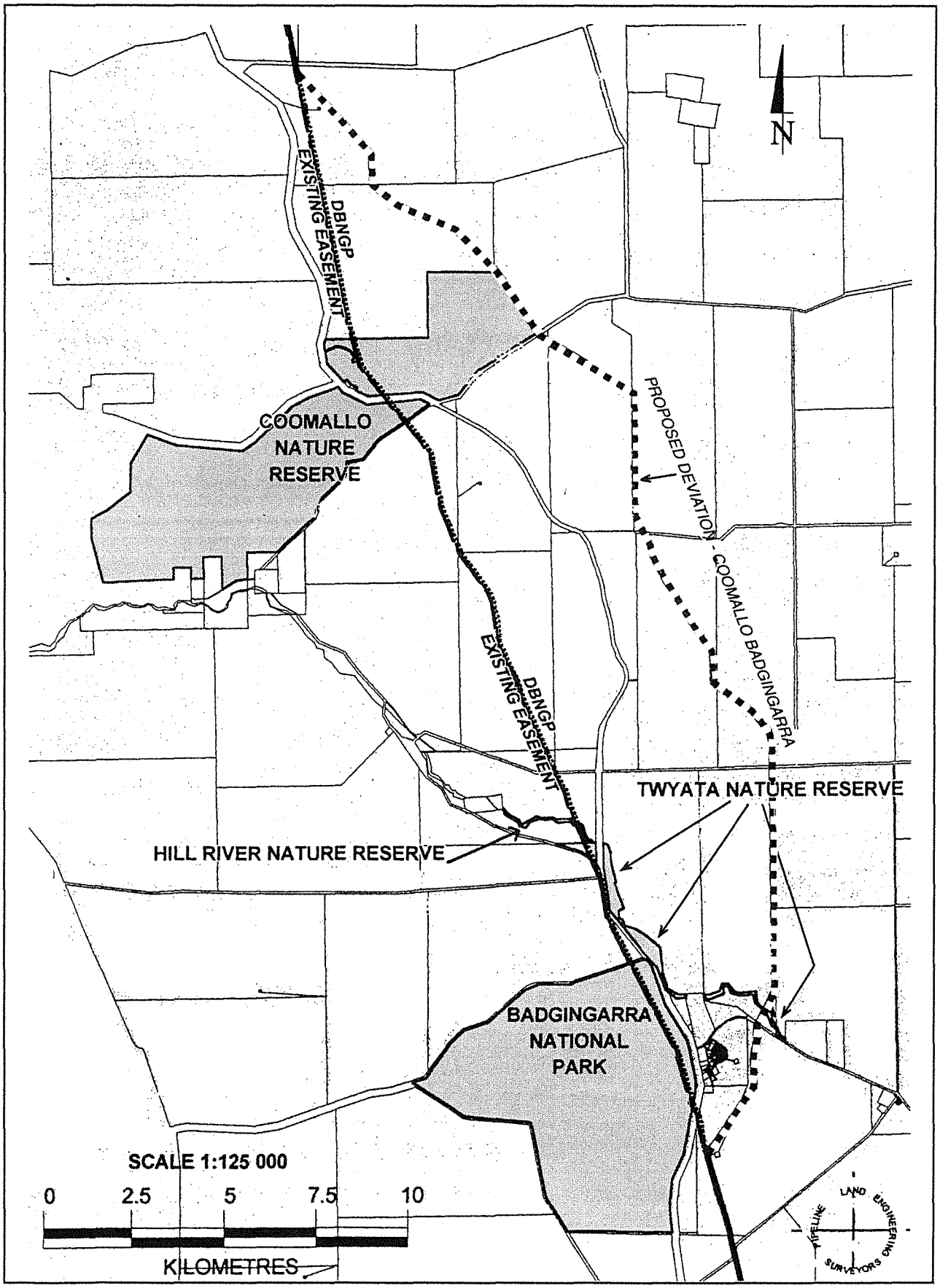

Figure 3. Pipeline corridor route deviation around Coomallo Nature Reserve, Hill River Nature Reserve, Twyata Nature Reserve, and Badgingarra National Park (Source: Mr D Austin-Gas Pipeline Working Group 2.4.01).

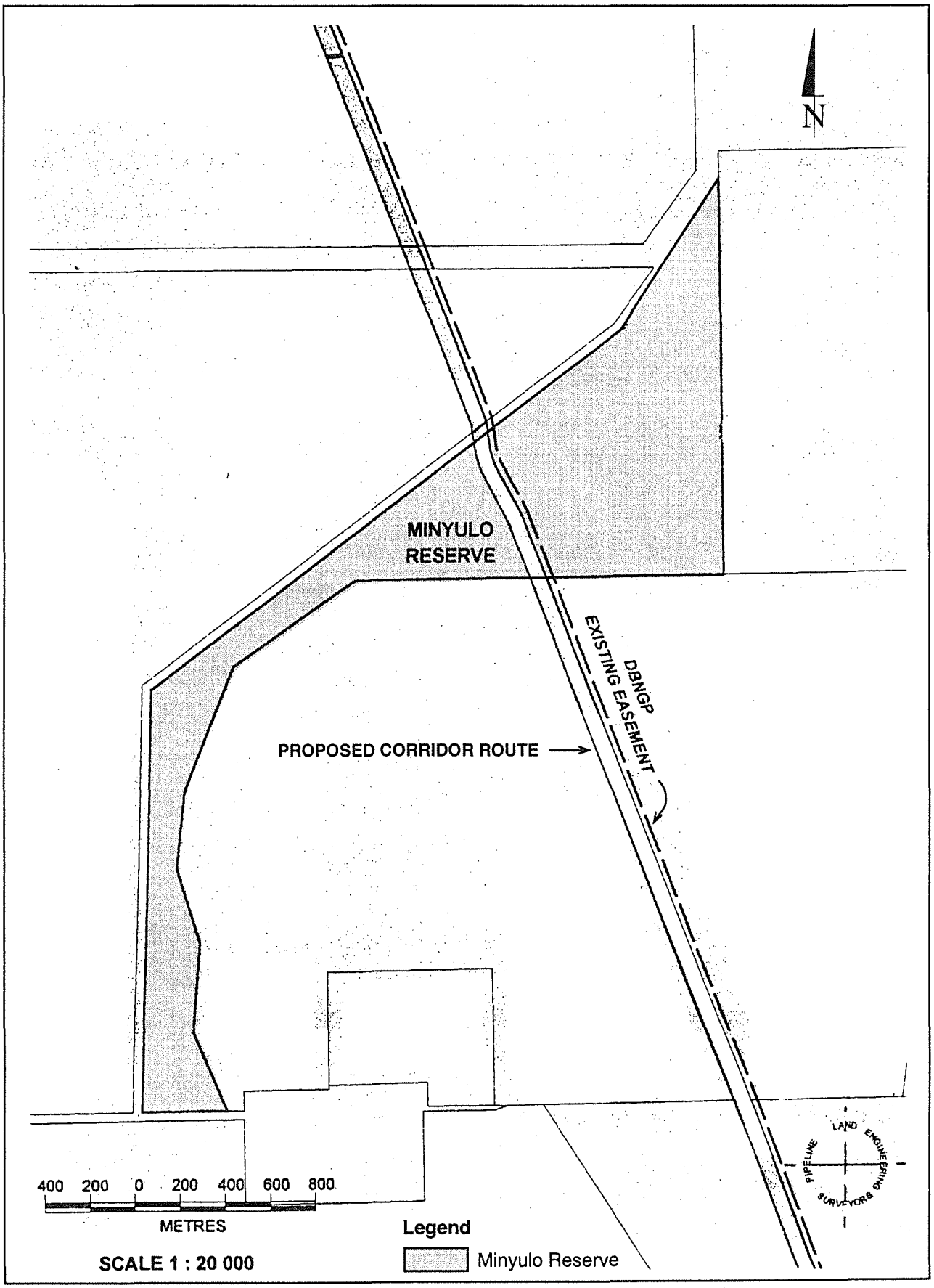

Figure 4. Pipeline corridor route through Minyulo Nature Reserve (Source: Mr D Austin-Gas Pipeline Working Group 2.4.01).

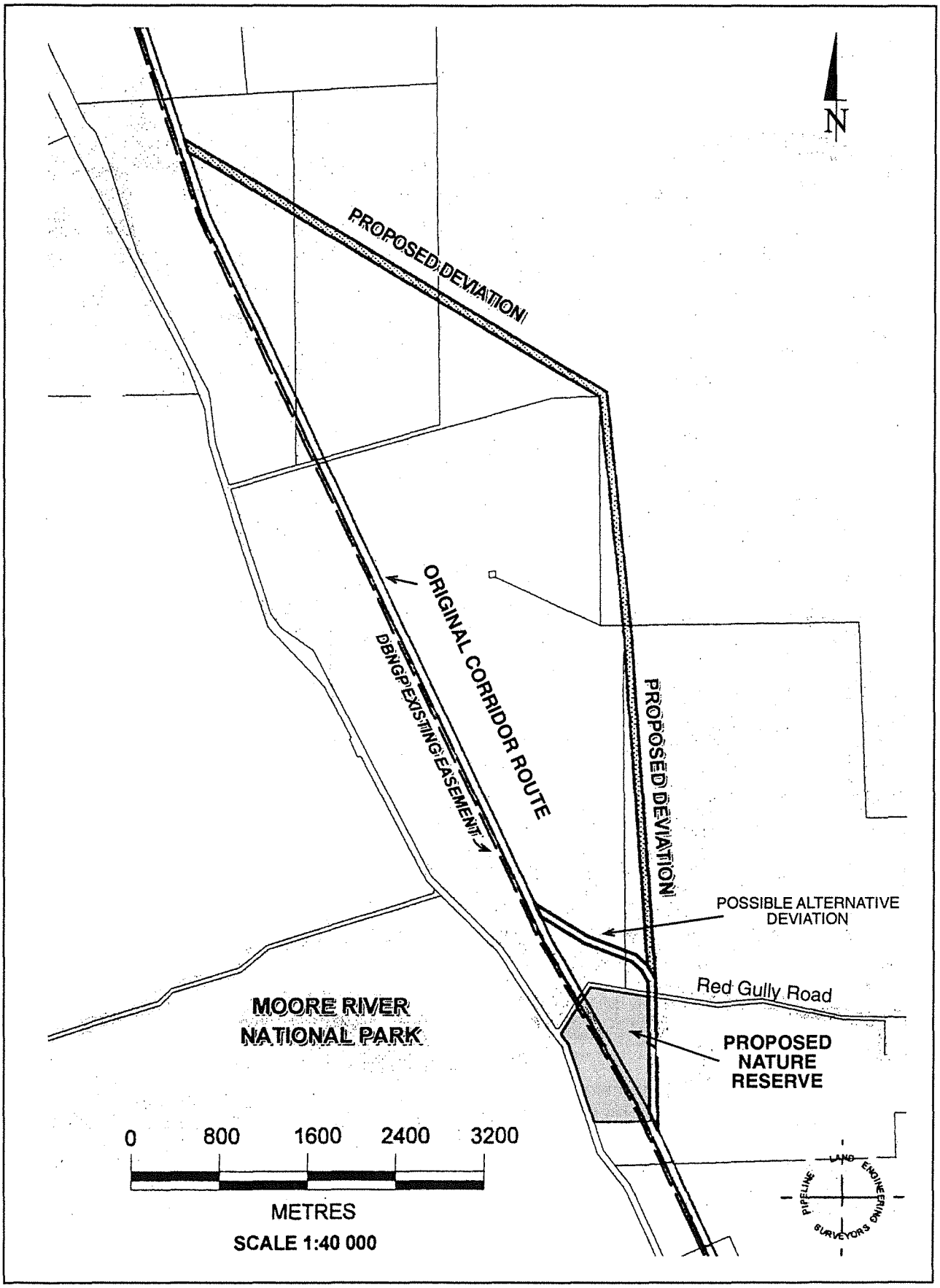

Figure 5. Pipeline corridor route deviation around the proposed Moore River Nature Reserve near Red Gully Road (Source: Mr D Austin-Gas Pipeline Working Group 2.4.01).

regarding the annual cost recovery for routine monitoring within the proposed corridor, and for the loss of conservation values within the conservation reserve system.

The EPA also understands from the GPSSC's response to submissions that additional diagrams and figures of conservation reserves and road reserves with higher levels of detail and clarity were provided to the DEP. The GPSSC also provided aerial photos to the DEP for the sections of the proposed pipeline corridor and surrounding areas in the vicinity of the Coomallo Nature Reserve, Hill River Nature Reserve, Twyata Nature Reserve, and the proposed Moore River Nature Reserve near Red Gully Road.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.1.3 Bushplan

Description

The SER indicated that, close to its southern end, the originally proposed pipeline corridor would pass through one area nominated in Perth's Bushplan. This area is known as the Kirby Road Bushland, Bullsbrook (Bushplan Site No. 97). This land lies on the interface between the Bassendean and Pinjarra Plain landforms and comprises banksia woodlands on upland areas and seasonal wetlands in the depressions. The bushland at this site is in good to very good condition.

Submissions

The DEP indicated that while it is beneficial that the Tumulus Spring Communities at Muchea, particularly the better examples near 'The Maze' at Bullsbrook, have been avoided, it is concerned that a continuous stretch of poorly reserved Banksia Woodland which extends from Muchea to the Kirby Road Bushland (Bushplan Site No. 97), will be impacted upon by the pipeline corridor. The DEP questioned whether this impact could be avoided. The DEP also requested that pipeline corridor route options which acknowledge Bushplan Site No. 97 as a significant constraint be more thoroughly considered by the proponent.

EPA advice

The area of concern in regard to this factor is the Kirby Road Bushland (Bushplan Site No. 97) and the Department of Defence - Muchea Air Weapons Range Bushland (Bushplan Site No. 462).

The EPA's environmental objective for this factor is to ensure that the conservation values of Bushplan recommended areas are not compromised, and that regionally significant flora and vegetation communities in Bushplan areas are protected.

The EPA understands that the GPSSC was requested by the DEP to investigate the possibility of deviating the proposed pipeline corridor route in the vicinity of Muchea and Bullsbrook in order to avoid wetlands with high conservation value, and to prevent the fragmentation of bushland areas within Bushplan Site No. 97 via the proliferation of multiple infrastructure corridors through the area.

The GPSSC agreed to deviate the proposed pipeline corridor along a new route as shown in Figure 6. While the pipeline corridor route deviation does pass through the Department of Defence - Muchea Air Weapons Range Bushland (Bushplan Site No. 462), it will run parallel and in proximity to the existing Western Power 132kV high voltage electricity transmission line corridor for approximately 5km up until it meets the Parmelia Gas Pipeline corridor. It will then run parallel with the Parmelia Gas Pipeline corridor up until it reaches Neaves Road. It will then run in a south-easterly direction away from the Parmelia Gas Pipeline corridor and rejoin the existing DBNGP corridor west of Bullsbrook. The EPA notes that the bushland within Bushplan Site No. 462 is in excellent condition and has similar characteristics to Bushplan Site No. 97. However, the above route through Bushplan Site No. 462 will effectively consolidate

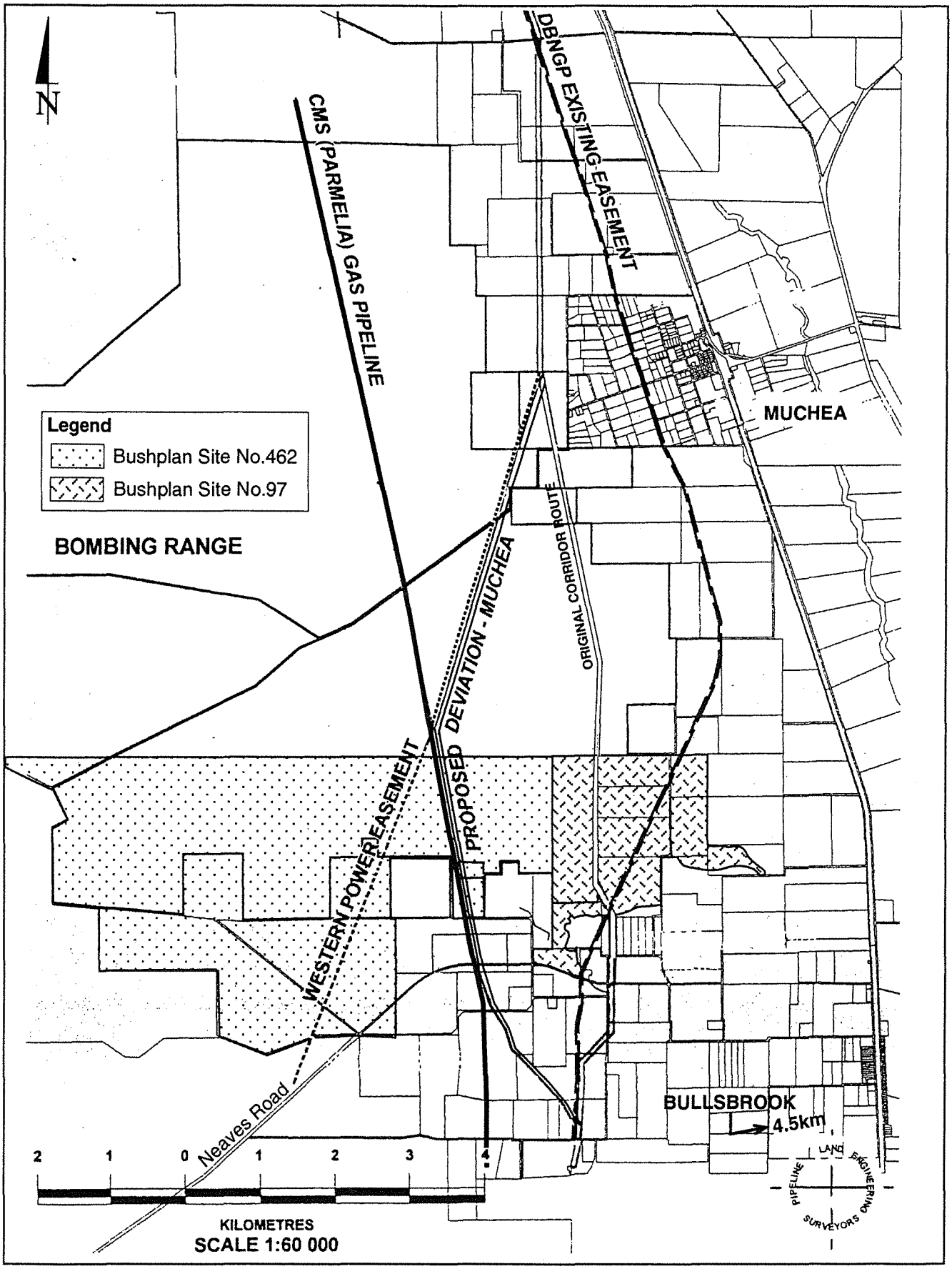

Figure 6. Pipeline corridor route deviation between Muchea and Bullsbrook (Source: Mr D Austin-Gas Pipeline Working Group 2.4.01 [modified]).

environmental impacts into one relatively narrow localised area, and will assist in bushfire management by creating a very effective firebreak configuration.

The EPA understands that the implementation of the above pipeline corridor route deviation will eliminate any environmental impacts on Bushplan Site No. 97, and will minimise them on Bushplan Site No. 462. This will be achieved by preventing the segmentation of the bushland found within Bushplan Site No. 97 that would result from the proliferation of a multitude of individual infrastructure corridors through the area, and by consolidating any environmental impacts within Bushplan Site No. 462 into one relatively narrow localised area immediately adjacent to existing infrastructure corridors.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.1.4 Vegetation communities

Description

In general, a significant vegetation community is defined as one having one or more of the following characteristics:

(a) Restricted in area or distribution;

(b) Provides a rare or unusual habitat for fauna;

(c) Contains DRF or PF as defined by CALM; or

(d) It is otherwise classified as significant by the regulatory authorities.

The presence of significant vegetation communities within each natural region is summarised below.

Pilbara region

The more restricted vegetation types within the Pilbara region occur along drainage lines and associated ephemeral wetlands, in response to the greater localised availability of water, and in association with rocky outcrops. A full description of the significant vegetation types found within the Pilbara region can be found on page 6.13 of the SER.

Carnarvon region

As in the Pilbara Region, most of the vegetation types present are widespread and common. The exception are those which have developed around permanent or temporary water features because of the rarity of this habitat type in arid environments. In the parts of the Carnarvon Region, through which the proposed pipeline corridor passes, such communities occur along the drainage lines and river channels.

Gascoyne region

Most of the vegetation types in the Gascoyne Region are well represented throughout the region. However, as with all vegetation types in the arid zone, those associated with rivers, creeks and wetlands (ephemeral or permanent) are considered important for the specialised habitat they provide for flora and fauna. In this region, dense stands of large eucalypts are restricted to the banks of the Gascoyne River and provide a valuable fauna habitat. A number of ephemeral wetlands are present to the north and south of Minilya River. These generally support species such as claypan grasses fringed with *Acacia* and *Cassia* shrubs.

Northern Sandplains region

The area south from Shark Bay to the Wooramel River contains extensive areas of sand heath rich in plant species. The vegetation is dominated by species which are collectively described as *kwongan*. Many of the plants are endemic to the region. The area between the Hill River and Dongara is considered particularly important (Conservation Through Reserves Committee [CTRC], 1974).

Southwest Forest region (Swan Coastal Plain subregion)

Due to the general extent of clearing that has occurred on the Swan Coastal Plain, remnant vegetation of both dry and wetland communities is considered to have conservation value.

There is an area to the north of the proposed Moore River Nature Reserve near Red Gully Road which is private land and which still appears to have a majority of native vegetation cover.

To the north and south of Airfield Road at Gingin are two Threatened Ecological Communities (TECs) which occur within 500m of the proposed corridor. These have been classified and described by CALM as Northern Ironstone communities which are critically endangered. The Northern Ironstone community is considered to be the most threatened community of the Swan Coastal Plain (V. English pers. comm.) and is known from only three examples. No TECs will be disturbed by the proposed pipeline corridor.

Northern *Banksia attenuata, Banksia menziesii* Woodlands (Community 23b) are unreserved on the Swan Coastal Plain and are considered to be endangered (Gibson et al, 1994). The *Banksia* woodlands occur in the Kirby Road Bushland at Bullsbrook, which is traversed by the originally proposed pipeline corridor route.

Tumulus or mound spring communities have been identified by CALM as unusual and distinct ecological communities (Cresswell et al, 1997) and classified as TECs. The communities are formed by the discharge of groundwater at the boundary between the sandy soils of the Swan Coastal Plain and the clay and loam soils deposited at the base of the Darling Scarp (Pinjarra Plain). Two tumulus spring communities occur within 1km of the originally proposed pipeline corridor route near Muchea (Deviation 13 in the SER). This deviation to the west of Muchea avoids these communities. In the Neaves Road area, Bullsbrook, the originally proposed corridor route deviates to the east of the existing pipeline, thereby avoiding the mound spring located near 'The Maze' (Deviation 15 in the SER).

Many of the vegetation communities found in the wetlands on the Swan Coastal Plain have been affected by pastoral, agricultural and urban development. Remnant wetland vegetation in good condition is therefore considered significant. The proposed pipeline corridor passes through or near a number of wetlands on the Swan Coastal Plain.

Submissions

CALM expressed concern about riparian vegetation being impacted by Deviation 9 at Hill River, and the fragmentation of a relatively large area of intact woodland by Deviation 13 near Muchea.

In a detailed submission, the Wildflower Society of WA Inc suggested that all clearing of bushland in agricultural areas where there already has been extensive loss of vegetation must be prevented. The Society questioned the need for such a wide pipeline corridor to be constructed given that most of the land will not be required for many years. The Society also indicated that at least 3500ha of bushland will be affected in the Northern Sandplains region alone, and that impacts in the Fortescue and Carnarvon botanical districts would be even greater. Please refer to Appendix 3 for full details of the Society's concerns.

A submission from the owner of a property in the Bullsbrook area requested that the proposed pipeline corridor route be altered in order to conserve a number of old and very large trees that are located on the eastern boundary of the property.

The DEP indicated that the vegetation found on the mesas of the Nanutarra land System is likely to have some significance and requires mention, as this issue was not discussed in the SER. The DEP also indicated that when considering alternative pipeline corridor routes that avoid conservation areas, every attempt should be made to locate access roads along grazed or otherwise disturbed areas to avoid introducing permanent impacts to remnant native vegetation.

EPA advice

The EPA's environmental objective for this factor is to maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities.

The SER indicated that the alignment of the pipeline corridor has been selected to avoid significant plant communities where practicable. Where they cannot be avoided, detailed plans to minimise the environmental impact on these areas, and to maximise rehabilitation success, will be developed by future proponents as part of the Environmental Impact Assessment (EIA) process and through the application of best practice.

The SER also indicated that as a result of extensive clearing in the agricultural regions, areas of remnant vegetation may also be considered as significant. Where practicable, these areas have been avoided. Where it is not possible to avoid large areas of remnant vegetation, the above management measures will ensure disturbance of these areas is kept to a minimum.

In the Pilbara region large trees will not be allowed to re-establish over a constructed pipeline due to the risk of pipeline damage from tree roots. However, the extent of clearing prior to construction will need to be carefully planned to minimise the number of large trees which need to be removed.

Similarly, in the Carnarvon region construction of a pipeline could potentially result in some disturbance of vegetation communities within the proposed corridor. Impacts on these communities would need to be minimised by careful planning of the extent of disturbance combined with the implementation of suitable rehabilitation measures to ensure the successful long-term re-establishment of vegetation within the pipeline corridor.

The EPA considers that the pipeline corridor route deviations that the GPSSC agreed to make in the vicinity of the Hill River and Muchea, which were discussed in Sections 3.1.2 and 3.1.3 of this report (Figure 3 and Figure 6), adequately address the concerns expressed by CALM.

With regard to the concerns expressed by the Wildflower Society of WA Inc, the EPA notes from the GPSSC's response to submissions that although a 70m wide corridor will be set aside for future pipeline development needs, vegetation will not be cleared from this corridor unless there is a specific proposal put forward to develop a pipeline. In this case, only the area required for construction of the pipeline will be disturbed (typically a 25m or less wide strip of land in sensitive / difficult access areas). The GPSSC indicated that calculations made using the CALM digital remnant vegetation database (1996) show that an area of approximately 350ha of remnant vegetation is located within the proposed corridor in the portion that traverses the Northern Sandplains region. As outlined above, only a fraction of this 350ha area of remnant vegetation is likely to be disturbed when a pipeline is constructed within the corridor in the future.

The EPA notes from the GPSSC's response to submissions that they agreed to accommodate the request made by the owner of a property in the Bullsbrook area to alter the proposed pipeline corridor route in order to conserve a number of old and very large trees that are located on the eastern boundary of the property. Furthermore, as described in Section 3.1.3 of this report, the GPSSC agreed to deviate the proposed pipeline corridor route in the vicinity of Muchea and Bullsbrook (Figure 6). As a result, the agreed pipeline corridor route will have no impact upon the above property.

With regard to the concerns expressed by the DEP, the EPA understands from the GPSSC's response to submissions that while they acknowledge the potential significance of vegetation occurring on the tops and outcrops of the mesas found in the Nanutarra Land System, the proposed pipeline corridor route has been aligned to avoid these features as they are considered to be a geotechnical constraint and unsuitable for the construction of future pipelines. The GPSSC also indicated that where the proposed pipeline corridor route runs parallel with the existing DBNGP, the existing access road will be used, and where it deviates from the DBNGP, it has been aligned through previously disturbed areas where practicable.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.1.5 Weeds

Description

Weeds are estimated to currently cost Western Australian agriculture in the vicinity of $3.5 billion annually (DEP, 1999) and major programs are underway to control the spread of declared weeds. The State Weed Plan is currently being finalised for WA.

The SER indicated that little detail is currently available on weed distribution along the proposed pipeline corridor and further advice is awaited from Agriculture Western Australia (AgWA) in this regard. A declared weed is one that has been declared by the Agricultural Protection Board as having an adverse impact on agriculture or the environment, and listed in the Government Gazette under the *Agriculture and Related Resource Act, 1976*. There are over 30 species of declared weeds which may occur along the proposed pipeline corridor. In addition to declared species, there are locally defined pest species of plant. Lists of these species (both declared and pest) are regularly updated. A list of the known weed species of significance to this project can be found on page 6.5 of the SER.

Some weed species have become serious problems to primary producers along the existing DBNGP. Weed infestations for the pipeline route are not centrally mapped and regional information is limited.

Submissions

CALM recommended that Section 8.2.4 of the SER which proposes the reporting of declared weeds to Agriculture WA (for agricultural and pastoral areas) or CALM (for bushland or reserve areas), needs to be expanded to address all recognised invasive weed species, not just declared weeds or those listed in Section 6.2 of the SER.

CALM is concerned that the responsibility for the on going long term management of weeds should lie with one agency and considers that funding should be made available. Although Section 11.4 of the environmental review document discusses mechanisms for on going funding, auditing and management of the easement, and indicates that discussions will occur between the proponent and the Land Access Minister, CALM suggested that the resulting arrangements need to be in accordance with the requirements of the Minister for the Environment.

The Wildflower Society of WA Inc indicated that construction of the expanded pipeline corridor will facilitate the spread of weeds and promote disturbance by increasing the accessibility of sites.

The DEP indicated that the Wooramel River, and possibly several other rivers, have severely degraded areas along them closer to the coast. These areas have been planted with buffel grass and its allies to stabilise erosion, and are a major source of seeds. It is likely that infestations of these species occur along the watercourse, so that care will be needed at crossings to reduce the spread of this grass outwards.

EPA advice

The EPA's environmental objective for this factor is to minimise the potential for the spread of weeds.

The EPA notes that future pipeline proponent(s) will implement a weed control programme to ensure that weed species will not be introduced to, or spread from the proposed pipeline corridor. The EPA understands that this programme will be included in the field hygiene procedures that the GPSSC has committed to require future pipeline proponent(s) to prepare prior to construction. The programme will be developed in consultation with CALM and Agriculture WA (AgWA) and will include:

- a survey along the pipeline corridor prior to construction to enable future pipeline proponent(s) to flag weed infested areas with colour coded tape, map occurrences and identify appropriate sites for vehicle and equipment inspection and blowdown/washdown areas;

- site specific weed management procedures that will be developed prior to construction and which will take into account the effect of season on the risk of weed spread.
- avoiding or minimising disturbance to areas with, or vulnerable to, weed infestation;
- implementing vehicle and equipment hygiene measures, as required, particularly at each significant vegetation or natural boundary;
- restricting corridor access to only that equipment and those vehicles which have been adequately cleaned;
- avoiding import of pasture or agricultural species into remnant bushland along or adjacent to the corridor;
- avoiding introduction of weeds into weed free properties;
- inspecting all areas disturbed by the construction of the pipeline(s), particularly after rainfall events, and treating weed infested areas with an approved herbicide;
- ensuring soil used for rehabilitation is weed free;
- ensuring stockpiled soil and vegetation are returned as close as possible to the site from where they were removed;
- training / induction of field personnel about the need for weed control, identification and treatment of key weed species;
- rehabilitating disturbed areas progressively to allow native plants to establish rapidly after disturbance; and
- construction of borrow pits outside weed infested areas.

The SER also indicated that the discovery of any infestation of declared weeds will be reported to AgWA (for agricultural or pastoral areas) or CALM (for bushland or reserve areas).

The EPA understands from the GPSSC's response to submissions that they have agreed with CALM's recommendation to include all recognised invasive weed species on the list of species which need to be reported to AgWA and CALM. The EPA notes that the GPSSC subsequently agreed to amend the commitment referred to above to include the requirement that future pipeline proponent(s) report the discovery of all weeds (i.e. declared weeds and all other locally defined weed species) to Ag WA (for agricultural and pastoral areas) or CALM (for bushland or reserve areas).

In regard to CALM's concern about the responsibility for the on-going long term management of weeds, the GPSSC proposed that, should weed infestation in the pipeline corridor require remedial work, the Minister for the Environment would notify the Land Access Minister (Minister for Lands), who would instruct DOLA to ensure the work was undertaken. However, Section 11.4 of the SER indicated that the proposed corridor and the existing DBNGP corridor will eventually become a single entity under the direction of the DBNGP Land Access Minister (Minister for Lands). Accordingly, the EPA considers that, should a weed infestation be identified within the corridor, it would be more appropriate for the DBNGP Land Access Minister via DOLA to direct future pipeline proponent(s) to undertake remedial work, on advice from, and to the satisfaction of AgWA (for agricultural or pastoral areas) or CALM (for bushland or reserve areas).

The GPSSC also indicated that in addition to the weed control programme, future proponents will be required to install fences, locked gates and other barriers as necessary to prevent third party access to the pipeline corridor, thereby helping to address the concerns highlighted by the Wildflower Society of WA Inc.

In regard to the DEP's concern about the spread of weeds from the Wooramel River and other water courses, the GPSSC indicated that they acknowledged that watercourse crossings may act as foci for the introduction of weeds, and that specific measures will be required in these areas, particularly where weed infestations are known to occur nearby.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.1.6 Dieback

Description

Dieback is an introduced disease caused by the microscopic fungus *Phytophthora cinnamomi* that kills a wide variety of plants in WA. It exists in the south-west of WA, across an area from Kalbarri in the north west to Israelite Bay in the south-east. The area of potential infestation is characterised by annual rainfall of greater than 450mm per year. Dieback poses a serious problem for conservation of native plants and plant communities, nurseries, horticulture and forestry (Dieback Working Group, 1999). In remnant bushland, the Proteaceae (eg *Grevillea* sp, *Banksia* sp.), Myrtaceae (eg *Eucalyptus* sp, bottle brush, myrtles) and Epacridaceae (heaths) are particularly susceptible to dieback infestation (CALM, 1989).

At this stage, there is no practical field cure for dieback, so prevention is the only means of minimising its spread. Infestations may be difficult to identify, and generally need specialist biologists to confirm and map.

The natural spread of dieback through soil or infected root systems is slow (one to ten metres per year). Spread in free-flowing water is rapid (many kilometres per year). Spread by human vectors can be extremely broad. If infested soil particles are transported from one area to another, they may begin spot infestations in new areas (DME, 1991). The likelihood of movement and proliferation of dieback is significantly increased in wet conditions, particularly with the use of vehicles and machinery.

Dieback is most likely to occur along the pipeline corridor, south of MLV80 (Curtin Consultancy Services, 1997). In addition, the pipeline corridor traverses several areas where dieback infestations have been mapped. The occurrence of these infestations may be adjacent to, nearby, or within the corridor (NSDWP, 1992). According to (NSDWP, 1992) these areas include:

- Eneabba - Three Springs Road to 15km south;
- Approximately 7.5km north of Green Head Rd;
- Immediately north of Cantabilling Rd;
- 3 - 8km south of Wongonderrah Rd; and
- 5.5km north - 3.5km south of Moore River.

Infected areas are also known to exist between Kilometre Point (KP) locations KP1169.5 and 1173.9 along the DBNGP corridor. (Curtin Consultancy, 1997).

The linear pathway created by the DBNGP and proposed pipeline corridor creates a high risk for the spread of dieback.

Submissions

The Wildflower Society of WA Inc indicated that the proposed dieback control measures will not completely stop the spread of this disease because testing is unlikely to reveal all infected sites, and attempts to decontaminate equipment are unlikely to be completely effective. The Society stated that any operation that moves large quantities of soils in affected areas will inevitably spread this disease.

The DEP indicated that dieback management will have to be strongly structured into long term management by pipeline operators for the whole of the susceptible areas, and with particular emphasis on reserve areas that are traversed by the proposed pipeline corridor. This will need to be enforceable in some meaningful long term way, otherwise new avenues for the spread of dieback will gradually consolidate. The DEP stated that a commitment or bond etc placed on pipeline proponents may be warranted.

EPA advice

The area of concern in regard to this factor is the entire length of the expanded land corridor for the DBNGP south of Kalbarri.

The EPA's environmental objective for this factor is to minimise the potential for the spread of dieback.

The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to prepare field hygiene procedures for dieback, on advice from CALM.

Section 8.3 of the SER indicated that a dieback survey will be conducted prior to construction of the pipeline(s) in accordance with current protocol and methods recommended by CALM. This survey will be planned sufficiently in advance to enable surveys in appropriate seasonal conditions. The boundaries of dieback-infested and dieback-free areas, as well as those areas whose dieback status is unknown, will be defined, flagged and mapped.

Section 8.3 of the SER also stated that proponent(s) will minimise the further spread of dieback through the following management measures:

- blowdown / washdown areas will be established in all areas known to be infected by dieback. All vehicles, machinery and equipment exiting the dieback infected area will be cleaned to remove any soil adhering to surfaces. Similar cleaning bays will be established in dieback-free conservation reserves and other significant susceptible areas. Emphasis will be on arriving clean to all bushland and conservation areas;
- soil required for bedding and padding of the pipeline will be sourced from dieback free areas, or trench soil will be screened then returned to the trench for padding;
- topsoil and vegetation removed in dieback free areas will be stockpiled separately from topsoil and vegetation from infected areas;
- where appropriate, stockpiles will be located on the downslope side of the pipe to prevent any spread of the disease upslope;
- particular attention will be paid to ensuring drainage from sites infected with dieback does not flow on to dieback free areas;
- water used for dust suppression will be accessed from dieback free areas or will be sterilised;
- construction will take place during the dry months, where practicable; and
- personnel will be trained in relation to appropriate field hygiene.

Dieback management will need to continue through all stages of construction where site access is required, and will be applicable in all areas south of Kalbarri.

With regard to the concerns expressed by the Wildflower Society of WA Inc and the DEP, the EPA understands from the GPSSC's response to submissions that in addition to the dieback survey that will be undertaken prior to construction, the proposed management measures that will be implemented represent the minimum requirement for future proponent(s) and have been developed on the basis of the most current advice and recommendations. The GPSSC also agreed that dieback management will have to be strongly structured into long term management practices by pipeline operators for the whole of the susceptible areas, and indicated that this concern has been effectively addressed by their commitment to require future pipeline proponent(s) to develop and implement the field hygiene procedures described above.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.2 Specially Protected (Threatened) Fauna

Description

The SER indicated that a field survey of fauna occurring within the proposed corridor was not undertaken prior to its public release because of the relatively low and temporary disturbance to

local fauna and their habitats that would occur during pipeline construction, and the time and resources involved in undertaking surveys of such a large project area over several seasons. Nevertheless, a detailed fauna survey of potentially sensitive habitats found along the entire length of the corridor route will need to be undertaken by future pipeline proponent(s) prior to construction.

General impacts on fauna associated with the construction and operation of pipelines include:

- Disturbance to fauna habitats;
- Noise and vibration during construction;
- Animals becoming trapped in the open pipeline trench;
- Fauna road casualties along access roads; and
- Dust and the impacts of saline suppression water.

Significant species listed on CALM's Wildlife Conservation (Specially Protected Fauna) Notice 1998, which could occur in the corridor are presented by region in Appendix F of the SER. These include 15 mammal species, 20 birds, 7 amphibians and reptiles.

Details of significant fauna habitats which may occur within or in the vicinity of the proposed pipeline corridor were provided in Section 6.3 of the SER.

Submissions

None of the submissions received expressed any concerns in relation to this factor.

EPA advice

The EPA's environmental objective for this factor is to protect Specially Protected (Threatened) Fauna, consistent with the provisions of the *Wildlife Conservation Act 1950.*

The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to undertake a detailed fauna survey of the entire pipeline corridor prior to the start of construction in order to establish the location of significant fauna habitat and rare and / or endangered species, and to develop and implement management practices to protect habitat consistent with the requirements of *Wildlife Protection Act 1950.* The fauna survey and associated management practices will be prepared on advice from CALM and the DEP.

The SER also indicated that disturbance to fauna habitats will be minimised by appropriate management of flora and vegetation. In addition, adequate crossings of the pipeline trenches will be provided during the construction period to minimise the risk of animals becoming trapped in the trenches. All trenches will be ramped at each end to allow trapped animals to escape from the trench confines. Trenches will be inspected daily and any animals found will be released.

Personnel travelling to and from site will be instructed to exercise caution when driving, particularly at dawn and dusk, to minimise the risk of fauna being killed on the road. Direct contact with fauna will be avoided where possible, and no feeding, hunting or other avoidable interference will be allowed. Firearms and domestic pets will also be prohibited from construction sites.

Following construction, the corridor will be rehabilitated with native vegetation (or pastoral or agricultural species where appropriate) and is unlikely to adversely affect the native fauna of the area.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.3 EPP lakes and other specially protected wetlands

Description

Pilbara region

The ephemeral wetlands to the north and south of Peepingee Creek provide an important water resource for local flora and fauna. Most of these are claypans and contain water only following substantial rainfall. The proposed pipeline corridor has been aligned to avoid the majority of these wetlands.

Carnarvon region

There are a number of ephemeral wetlands and claypans which occur in the vicinity of the proposed pipeline corridor. These are shown in Table 6.4 in the SER.

The majority of these features have been avoided where possible and a deviation to the east of several wetlands was selected to the north of the Murchison River. Where it is not possible to avoid wetlands or claypans, the proposed corridor has been aligned so that disturbance is kept to a minimum on the edges of the feature.

Gascoyne region

There are a number of ephemeral wetlands and claypans which occur in the vicinity of the proposed pipeline corridor. These are shown in Table 6.6 in the SER.

With the exception of the ephemeral wetland south of the Minilya River, these features occur on the edge of, or outside, the proposed corridor. Disturbance to these areas will therefore be restricted to the fringing areas of these wetlands. Where the existing pipeline was constructed through the claypan south of the Minilya River, perennial grass cover has become well established along the pipeline corridor, as in surrounding areas, and supports a healthy fringing community of mixed acacias.

Northern Sandplains region

A number of wet areas are located along the proposed corridor, most of which have been substantially degraded by pastoral or agricultural activities.

Southwest Forest region (Swan Coastal Plain subregion)

Within the Swan Coastal Plain, discrete groups or suites of wetlands are recognised on the basis of similar features relating to wetland type, wetland geometry, stratigraphy, origin and water characteristics (Semeniuk, 1988). The location of individual wetlands, their wetland type (i.e. classification) and wetland suites occurring in the region surrounding the corridor is shown on Figures 6.17 and 6.18 of the SER. The main groups of wetlands that occur along the Swan Coastal Plain sector of the corridor are summarised below.

The majority of wetlands occurring along the Swan Coastal Plain sector of the corridor are located within the Bassendean Dune / Pinjarra Plain transition zone. These wetlands contain features that are characteristic of the Mungala suite (B/P2) and Muchea suite (B/P3) as classified by Semeniuk (1988). The wetlands are lakes, sumplands (i.e. seasonally inundated basin wetlands), floodplains and creeks located in depressions either associated with creeks and other drainage channels or lie along depressions at the base of Bassendean Dunes. The main habitats within these wetlands include closed forests and scrubs of *Melaleuca rhaphiophylla,* heathlands and closed scrub (dominated by *Melaleuca* species) with scattered emergent *Melaleuca preissiana* and *Banksia littoralis* trees. A description of each wetland occurring along or close to the corridor is provided in Table 6.9 in the SER.

The wetlands occurring along the proposed corridor are mostly located within developed farmland and as a result their conservation value is largely determined by the extent of disturbance from pastoral and agricultural activities (e.g. vegetation clearance, stock grazing effects, pasture invasion) at each site. Those wetlands within the Department of Defence lease area are largely undisturbed and surrounded by extensive upland areas of banksia woodland.

Wetlands of particular conservation importance are:

- the EPP lakes and WRC conservation category lakes and sumplands in the Airfield Road area (located within the Mungala wetland suite); and
- TEC mound spring wetlands occurring to the south-west of Muchea town and in the Neaves Road area, Bullsbrook (located within the Muchea wetland suite).

The location of the above wetlands, together with the proposed alignment, are shown in Deviations 11 to 14 within the SER.

A study undertaken for the Western Australian Water Resources Council (WAWRC, 1987) identified a preliminary list of wetlands of regional to international significance in the Darling System (including the northern section of the Swan Coastal Plain) on the basis of a range of criteria related to the conservation values of wetlands. Of those wetlands occurring within the general area of the corridor, the Nambung Swamps (Lake Mungala, Lake Nambung and Bambun Lake), Chandala Lake, Ellenbrook and Red Gully Creek were acknowledged by the (WAWRC, 1987) study as being particularly significant. The location of these wetlands on Figures 6.17 and 6.18 of the SER illustrates that the corridor will not affect these significant wetlands with the exception of Red Gully Creek where the corridor traverses the creek east of the Brand Highway.

The alignment of the corridor traverses a number of wetlands within the Moore River to Bullsbrook section of the Swan Coastal Plain. The SER indicated that a review of existing WRC and EPP databases together with a field survey shows that many of the wetlands are located within developed farmlands and have been highly modified by pastoral and agricultural activities (and therefore are of low conservation value).

The SER also indicated that during the route selection process, wetlands containing particularly environmentally sensitive habitats or of known high conservation value were identified and deviations away from the existing pipeline corridor were made to avoid these areas. Of particular concern were the Airfield Road wetlands, the mound spring wetlands in the Muchea and Bullsbrook areas, the conservation value wetlands within the Department of Defence lease area, and the EPP lakes south of Neaves Road.

The proposed corridor, while passing close to several EPP lakes, avoids directly intersecting these lakes with the exception of EPP 393 (Timaru Road area). The alignment avoids the wetland WRC No. 47 to the west, although intersects the eastern section of the EPP wetland which is highly modified by farming. Potential disturbance during pipeline construction would be confined to pastures and scattered *Melaleuca* trees.

The majority of WRC conservation and resource enhancement wetlands have also been avoided, however due to other constraints it has not been possible to avoid a small number of wetlands identified in Table 6.9 in the SER. Potential disturbance to these areas would, in most cases, be alongside previously disturbed areas associated with the existing pipeline corridor.

Submissions

The DEP expressed concern about the destruction of trees around wetlands and changes to groundwater movement caused by pipeline construction.

EPA advice

The EPA's environmental objective for this factor is to retain the integrity, functions and environmental values of protected wetlands, and to ensure that EPP lakes are protected and their key ecological functions are maintained.

The EPA understands that following the release of the SER, the GPSSC agreed to add a new commitment pertaining to EPP lakes and other specially protected wetlands to the list of commitments originally detailed in Table 11.1 of the SER. The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to identify wetlands or parts of wetlands that are offered special protection and develop management methods to ensure that there are no significant impacts on these wetlands, on advice from the WRC and the DEP. The EPA also

notes that the above commitment requires future pipeline proponent(s) to implement the management methods detailed in Section 8.6.3 of the SER, where appropriate.

Section 8.6.3 of the SER stated that the following management measures are options which may be applied to minimise both the loss of wetland values and alteration to hydrological function:

- restrict construction work area in all sensitive wetland areas;
- ensure that a 50m setback is maintained between a sensitive wetland and the construction corridor;
- during construction, ensure that impacts to wetlands close to, but outside of, the corridor are avoided by defining the limits to clearing on site maps, surveying and clearly marking areas, supervising clearing activities and auditing compliance to these limits;
- removal of wetland vegetation will be avoided where possible. Where required, undertake clearing to ground level only and retain rootstock;
- the reinstatement of material excavated for pipelines should be aimed at replicating the original stratigraphy underlying wetland areas to minimise disturbance to hydrological function. This will require separate excavation and stockpiling of clay, sand and peat materials;
- minimise disturbance to surface drainage features as much as possible. Where necessary construct temporary drainage diversion channels and reinstate drainage patterns during rehabilitation of the site;
- undertake construction during the dry season to minimise impacts due to water logging where practicable; and
- store fuel and chemicals used during construction in designated areas, at a reasonable distance from wetlands and with temporary bunds constructed in accordance with WRC requirements. Undertake refuelling activity at least 100m away from sensitive wetlands.

Where the proposed corridor passes through sensitive wetlands management measures would include:

- consideration of the applicability of modern construction techniques which have the ability to minimise surface disturbance;
- restricted work area; and
- complete restriction to the area post-construction, through fencing and signage, allowing maximum regrowth and rehabilitation of disturbed vegetation (restricting access to both vehicles and stock).

With regard to the concern expressed by the DEP, the EPA notes from the GPSSC's response to submissions that they have tried to avoid all wetland areas and associated vegetation where possible along the entire length of the corridor. Where this has not been possible, the corridor has been aligned through previously disturbed areas where these are present. To minimise the impacts to groundwater hydrology, future proponents will be required to reinstate excavated material as close as possible to the original stratigraphy.

As indicated in Section 3.1.3 of this report, the proponent has altered the route of the proposed pipeline corridor between Muchea and Bullsbrook following discussions with the DEP (Figure 6). The revised pipeline corridor route will not affect the nearby mound spring wetlands and the conservation wetlands within the Department of Defence lease area.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.4 Rivers and ephemeral streams

Description

Pilbara region

The proposed pipeline corridor crosses numerous creeks and large rivers in the Pilbara region. Details of these creeks and rivers are listed on page 6.15 of the SER.

Following disturbance along the proposed corridor during construction, there is the increased potential for bank erosion to occur at these sites. Severe erosion was noted along the original DBNGP alignment on the northern banks of the Fortescue River.

Part of Peepingee Creek runs parallel to the east of the existing pipeline. Widening the pipeline corridor at this point, where there is also a sharp bend in the creek, could cause bank erosion.

Carnarvon region

The proposed pipeline corridor crosses the Lyons River, Davis Creek, Gascoyne River, Wooramel River, and the Murchison River.

These sites are potentially susceptible to erosion along the banks, following disturbance along the proposed corridor during construction. The Channel land system on the banks of the Wooramel River is particularly susceptible to erosion and will require stabilisation to minimise impacts of a future pipeline.

The proposed deviation at the Murchison River (Deviation 6 in the SER), where the entire 70m of the proposed pipeline corridor abuts the eastern side of the existing corridor, avoids a shallow bend in the river, thereby minimising the erosion potential.

Gascoyne region

The proposed pipeline corridor crosses the Yannarie River, Lyndon River, Monkey Creek, Minilya River (north and south branches), and the Newman River.

Disturbance of the banks of these watercourses could increase the risk of bank erosion. Land systems present on the banks of the Yannarie, Minilya and Lyndon Rivers are particularly prone to erosion. The deviation proposed between Lyndon River and Monkey Creek will reduce impacts on those two rivers (Deviation 5 in the SER). The Lyndon River crossing will be more perpendicular to the river banks, reducing crossing distance. The proposed Monkey Creek crossing is across the main channel only, just below the convergence of two arms of the creek, thereby reducing the number of watercourses crossed by future pipelines.

Northern Sandplains region

The proposed pipeline corridor crosses the Greenough River, Irwin River, Arrowsmith River, Donkey Creek, Hill River, Mullering Brook, and Minyulo Brook.

Rivers in this region have similarities to rivers in both the arid and temperate zones. The Greenough and Irwin Rivers are broad sandy drainage lines supporting *Eucalyptus camaldulensis* (river red gum) trees characteristic of the northern rivers. Further south, the watercourses in this region tend to be narrower, with steeper banks which are dominated by *Eucalyptus rudis* (flooded gum) and *Melaleuca* species.

Southwest Forest region (Swan Coastal Plain subregion)

The proposed pipeline corridor crosses Gingin Brook, Lennard Brook, Red Gully Creek, and Moore River.

The creeks, rivers and floodplains associated with the Moore River, Gingin Brook and Lennard Brook are typically fringed by remnant stands of *Melaleuca rhaphiophylla* and *Eucalyptus rudis* (8m to 15m high) with understoreys often dominated by the pasture grasses occurring in surrounding paddocks. Understoreys of *Juncus* sedgeland and *Melaleuca* shrubs occur in some areas. Red Gully Creek drains from the Dandaragan Plateau towards the Swan Coastal Plain, approximately 10km south of the Moore River.

Submissions

None of the submissions received expressed any concerns in relation to this factor.

EPA advice

The EPA's environmental objective for this factor is to maintain the integrity, functions and environmental values of rivers and ephemeral streams, and to ensure that alterations to surface drainage do not adversely impact indigenous vegetation.

The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to develop and implement erosion control procedures for all high risk areas, with particular reference to river crossings, on advice from the WRC, AgWA, and the DEP.

The EPA understands that following the release of the SER, the GPSSC agreed to amend the above commitment to include the following requirements:

- For river and stream crossings, the management procedures detailed in Sections 8.6.1 and 8.6.2 of the SER will be implemented where appropriate; and
- Rapid rehabilitation to be undertaken after construction to prevent soil loss and to maintain the integrity, functions and environmental values of rivers and ephemeral streams.

The SER indicated that the pipeline(s) will be constructed with adequate and appropriate surface drainage control to minimise disturbance of natural drainage patterns within the proposed pipeline corridor and to ensure its resistance against erosion.

In areas where surface sheet flow is significant, sufficient breaks in the crown (mound of earth usually remaining above a pipeline after its burial) will be left to allow sufficient flow-through to prevent the occurrence of drainage shadows. Drainage shadows occur where an obstacle such as a road has prevented the natural drainage of water across the soil surface, resulting in upstream waterlogging and downstream water starvation with consequent impacts on vegetation.

Where practicable, watercourse crossings will be constructed during dry or low flow periods. Large eucalypts or other trees along watercourses which assist bank stability and may provide an important fauna habitat within the corridor will be avoided where practicable.

The traversing of drainage lines will be completed promptly to minimise impacts. Flood warnings will be observed during construction. Control or contour banks will be constructed where necessary to prevent runoff travelling along the pipe.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.5 Rehabilitation

3.5.1 Rehabilitation programme

Description

The SER stated that the objective of rehabilitation of the proposed pipeline corridor is to return the land, as close as possible, to a pre-determined land use which will be established in consultation with existing landowners, local authorities and CALM, and will be site specific.

The rehabilitation process will be an important strategy for safeguarding the pipeline(s) because of the following:

- rehabilitation will protect the pipeline(s) from erosion effects;
- vegetation will conceal the right of way and deter third party access; and
- restored land use will maintain the good will and co-operation of landowners.

Submissions

The Shire of Dandaragan expressed concern about the manner in which construction of the previous pipeline had reduced soil productivity and financially disadvantaged farmers, and indicated that as a result, farmers do not wish to relinquish further land unless construction and rehabilitation techniques are improved. The Shire also suggested that additional rehabilitation work should be carried out on the existing corridor to regain some confidence from the affected landowners.

The Shire of Chapman Valley indicated that Section 6.7.2 of the SER does not go far enough in stipulating the conditions proponents must adhere to when laying new pipelines in order to prevent a depletion in the quality and quantity of top soil on affected properties along the pipeline route.

The Wildflower Society of WA Inc indicated that the knowledge required for the successful rehabilitation of many of the plant communities that will be cleared is not available. The habitats in the pipeline corridor include some of the world's most diverse plant communities and include many species which are difficult or impossible to propagate. The Society considers that it is unrealistic to expect that restoration attempts in very diverse ecosystems will be successful.

The Wildflower Society of WA Inc suggested that adequate funds must be provided to allow the impacts on vegetation to be monitored, and any remedial steps to be taken for many years to come. The Society believes that an independent body is required to assess on going environmental impacts, and suggested that the proponent must provide funds for these activities as government agencies such as CALM do not have sufficient resources.

EPA advice

The EPA's environmental objective for this factor is to ensure that areas affected by the proposed development are satisfactorily rehabilitated.

The EPA notes that the GPSSC made three separate commitments that require future pipeline proponent(s) to implement the following management measures at the appropriate time:

(1) Prepare a detailed rehabilitation plan on advice from CALM, AgWA, and the DEP. The rehabilitation plan will include sources of seed stock, methods for stockpiling soil and vegetation during clearing, a monitoring schedule, and auditable site specific completion criteria. Where possible during clearing, rootstock will be left in place to encourage rapid revegetation and to stabilise soil. Rehabilitation activities will be undertaken rapidly following construction, particularly in areas prone to wind and/or water erosion.

(2) Prepare soil management procedures to prevent the loss of top soil, the compaction of subsoil, reduced agricultural or pastoral productivity, or a reduction in the success of rehabilitation, on advice from CALM, AgWA and the DEP.

(3) Prepare erosion control procedures for all high risk areas, with particular emphasis on river and stream crossings and erosion prone soils or land systems, on advice from the WRC, AgWA, and the DEP.

The EPA notes that not all plant species can be regenerated from seed. It will be necessary for future pipeline proponent(s) to give attention to other sources of propagules for these species.

The SER indicated that rehabilitation will be carried out by a qualified and experienced contractor. The success of the rehabilitation programme is dependent on planning for rehabilitation well in advance of disturbance. The planning will include the development of completion criteria by the proponent(s) in consultation with the relevant government agencies to provide a baseline against which the success of the rehabilitation can be measured. Completion criteria will also act as a guide directing rehabilitation towards the final land use identified during the planning phase, thus giving reasonable assurance that the land will once again attain function, productivity, stability and sustainability. Emphasis will be placed on the development of a stable landform compatible with the contiguous landscape, with a non-erodible surface conducive to revegetation.

Remedial work or maintenance will be undertaken if required. The frequency of monitoring will decrease as rehabilitation progresses, and monitoring will cease once the completion criteria are met. Rehabilitation guidelines and completion criteria for areas disturbed during the pipeline construction will be determined by the proponent(s) to the satisfaction of the relevant regulatory authorities.

In relation to the concerns expressed by the Shire of Dandaragan, the EPA notes that the GPSSC's response to submissions indicated that a study was commissioned by the GPSSC to investigate the main causes of soil degradation along the existing corridor and to provide recommendations for future proponents. The results of the study were presented in Sections 7.5 and 8.7.4, and Appendix D of the SER.

In considering the concerns expressed by the Shire of Chapman Valley, the EPA notes that the GPSSC's response to submissions indicated that further guidelines and commitments for future proponents in regard to construction methods to avoid the depletion of the quality and quantity of top soil are further outlined in Sections 8.1.2, 8.6.4, 8.7, 8.8 and 11 of the SER.

With regard to the concerns expressed by the Wildflower Society of WA Inc, the EPA notes from the GPSSC's response to submissions that they acknowledged that it is not possible to rehabilitate a vegetation community to the exact state prior to disturbance, and that no development is without impact. The GPSSC also indicated that the rehabilitation plan that future proponents will be required to prepare will include detailed auditable completion criteria and a monitoring schedule. It is likely that the rehabilitation plan will include a comparison of the progress of rehabilitation against the surrounding vegetation communities over a period of time.

The EPA believes that the concerns expressed by the Wildflower Society of WA Inc regarding future funding of rehabilitation monitoring and remediation activities can be adequately addressed through the implementation of a detailed rehabilitation plan by future pipeline proponent(s), as these activities are essential elements of the required plan, and accordingly, any costs incurred will be met by the proponent(s). The EPA also notes that Section 11.4 of the SER indicated that the GPSSC will further discuss mechanisms for funding, auditing and managing environmental issues within the corridor (i.e. proposed corridor and the existing DBNGP corridor) with the DBNGP Land Access Minister for resolution prior to pipeline construction.

The EPA considers that the above responses provided by the GPSSC, together with the three commitments referred to previously which require future pipeline proponent(s) to prepare a rehabilitation plan, soil management procedures, and erosion control procedures, adequately address the concerns expressed by the Shire of Dandaragan, the Shire of Chapman Valley, and the Wildflower Society of WA Inc.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.5.2 Erosion

Description

Pipeline construction activities have the potential to facilitate erosion in susceptible areas along the proposed pipeline corridor route.

Submissions

The Shire of Dandaragan indicated that special consideration should be given to bank stability, erosion, flooding and the loss of trees at the Hill River, Moore River and Minyulo Brook pipeline river crossings.

The Shire of Chapman Valley expressed concern about the extensive soil erosion problems that have arisen where previous borrow pits have not being properly rehabilitated. The Shire indicated that it is important that rehabilitation measures incorporate the reinstatement of top soil

and the monitoring of vegetation over several years, to ensure that the rehabilitation process is successful.

EPA advice

The EPA's environmental objective for this factor is to establish stable, sustainable landform consistent with surroundings in order to control erosion.

The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to prepare erosion control procedures for all high risk areas on advice from the WRC, AgWA, and the DEP. These erosion control procedures will place particular emphasis on river crossings, erosion prone soils and land systems, as well as, rapid rehabilitation after construction to prevent soil loss.

The EPA understands that the GPSSC has also committed to require future pipeline proponent(s) to prepare soil management procedures in order to prevent the loss of top soil, the compaction of subsoil, the reduction in agricultural or pastoral productivity, or the reduction of rehabilitation success. The EPA notes that this commitment was amended following the release of the SER to include the requirement that future pipeline proponent(s) properly rehabilitate all borrow pits by reinstating the original top soil and by monitoring the progress of their rehabilitation.

The SER indicated that erosion prevention measures will be implemented to maintain the operating integrity of the pipeline(s), and the overall stability of the surrounding landscape. Areas of high erosion risk, have been avoided in the selection of the proposed pipeline corridor where practicable.

Within the pipeline corridor, the following strategies will be considered:

- minimise ground disturbance and restrict clearing;
- in agricultural areas, clear topsoil only from the area above the trench and not across the entire work area;
- schedule creek-crossing construction activities to coincide with dry conditions or low creek flow periods, where practicable;
- reinstate creek beds, embankments and steep sections of the corridor with protection measures such as gabions, sandbags, seeded concrete bags and hydromulching;
- rehabilitate progressively after the pipe is laid;
- cover topsoil to prevent loss to wind and water erosion;
- return stripped topsoil and rootstock from trench lines to the original horizon to promote rapid revegetation and trench stabilisation;
- spread cleared vegetation or hydromulch on to disturbed areas as necessary to ensure re-establishment of vegetation cover;
- provide cut-off drains to divert stormwater away from disturbed areas to natural drainage lines;
- provide a crown over the trench line to compensate for subsidence, with crown breaks to allow for normal surface flow; and
- construct control banks on steep gradients and in areas where runoff may travel along the pipe.

The EPA notes from the GPSSC's response to submissions that they agree with the Shire of Dandaragan that special consideration should be given to bank stability, erosion, flooding and the loss of trees at specific river crossings. The GPSSC indicated that while proponents will be required to restrict disturbance through sensitive areas such as Moore River and Minyulo Brook, disturbance to some riparian vegetation will be unavoidable.

The GPSSC's response to submissions also indicated that any borrow pits which are used during the construction of a future pipeline will be rehabilitated once they are no longer required.

This will include replacement of the original topsoil and the use of locally sourced seed if seeding is required. Nevertheless, as mentioned previously, the GPSSC's commitment requiring future pipeline proponent(s) to prepare soil management procedures was amended following the release of the SER to include this particular requirement.

The EPA considers that the erosion control and soil management procedures that future pipeline proponent(s) will be required to prepare, together with the above responses to submissions provided by the GPSSC, satisfactorily address the concerns expressed by the Shire of Dandaragan and the Shire of Chapman Valley.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.6 Surface water and groundwater

Description

Pipeline construction activities have the potential to impact upon surface water and groundwater quality and the quantity and distribution of groundwater along the entire length of the expanded land corridor for the DBNGP.

The SER indicated that water will be sourced from dams and bores along the route alignment and that appropriate sources and conditions of use will be agreed in consultation with landowners, Water Corporation and the WRC where necessary.

It is anticipated that a number of water sources developed during construction of the existing pipeline can be re-established and used to supply water for hydrostatic testing of the new pipeline(s).

Submissions

The Shire of Chapman Valley expressed concern about rock blasting procedures damaging aquifers within the region which currently provide water for both personal and broad acre farming uses. The Shire Council believes that the conditions relating to blasting activities for the installation of new pipelines must incorporate some form of geotechnical survey along the route to identify aquifers, as well as fair and equitable compensation to land owners for the loss of any water sources from blasting.

The WRC indicated that many of the issues involving water resources are site specific, and requested that it be consulted regarding construction details where construction may impact on rivers, wetlands and existing or future drinking water supply areas.

EPA advice

The EPA's environmental objectives for this factor is to maintain the quality of surface water and groundwater so that existing and potential uses, including ecosystem maintenance, are protected, and to maintain the quantity and distribution of groundwater so that existing and potential uses are protected.

The EPA understands that following the release of the SER, the GPSSC agreed to add two new commitments pertaining to surface water and groundwater to the list of commitments originally detailed in Table 11.1 of the SER.

The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to develop and implement a Surface Water and Groundwater Management Plan to minimise sediment release to watercourses and the contamination of surface water from fuels and oils, on advice from the WRC, DME, and the DEP.

The EPA also notes that the GPSSC has committed to require future pipeline proponent(s) to develop and implement a Dewatering Management Plan to ensure that activities associated with dewatering and hydrostatic testing do not impact on existing and future beneficial uses of aquifers, on advice from the WRC and the DEP.

The EPA understands that the Dewatering Management Plan requires future pipeline proponent(s) to consult with the WRC prior to construction if pipeline development is likely to impact upon existing or future drinking water supply areas.

The SER indicated that the following measures will be implemented to minimise the impact of hydrotest water on the environment:

- aerate test water by spraying, in order to oxidise any residual corrosion inhibitor;
- discharge water into suitable areas as agreed between the proponent(s) and the appropriate authorities in accordance with any environmental conditions that may apply;
- implement erosion control measures at the point of discharge; and
- reuse discharge water in multiple test sections.

Holding dams will have minimal surface area and maximum depth to reduce evaporation loss. These dams may be lined to prevent water loss by seepage and contamination with soil particles.

Prior to construction, consideration will be given to the potential for the pipe trench to influence subsurface hydrology. The main issues which may arise include:

- the trench acting as a subsoil drain;
- disruption to soil layers of different permeability and hence subsurface water flow;
- instability of the trench during construction; and
- the potential for the materials surrounding the pipe to act as a conduit for increased groundwater movement.

The SER also indicated that in areas where groundwater will be an issue such as wetland areas or agricultural land susceptible to salinity, groundwater investigations will be required to determine the most appropriate construction and management measures. These will include investigating the depth and make up of the soil horizons, soil permeability, groundwater levels and movement through the various soil layers.

In general, proponents will be required to re-instate soil horizons as close as possible to the original structure to minimise the impact on existing groundwater conditions. The aim is to ensure that the pipe does not provide an obstruction to, or conduit for groundwater flow.

In areas where the water table is near the soil surface, removal of deep-rooted species may result in a localised rise in the water table. As the water table rises, it brings with it the salts bound in the soil, thereby increasing the salinity of near-surface soil. This is unlikely to be a problem along the proposed pipeline corridor as the area of disturbance is small (maximum of 70m wide) and linear in nature. Progressive rehabilitation following construction will ensure the site is revegetated rapidly, although deep-rooted species will not be allowed to re-establish over constructed pipes due to the risk of pipe damage from roots. Clearing of vegetation along the pipeline corridor will be carefully planned and the removal of deep-rooted species minimised where practicable.

The GPSSC indicated in its response to submissions that appropriate geotechnical investigations will be required prior to construction of a future pipeline, and where blasting is considered necessary, blasting induced fracturing will be restricted to the trench area only which will extend to a depth of approximately 1.5 to 2.0 metres. The GPSSC also indicated that blasting will not have an impact on nearby aquifers. The EPA considers that the above information satisfactorily addresses the concerns expressed by the Shire of Chapman Valley.

The EPA also understands from the GPSSC's response to submissions that in order to fulfil the requirements of the erosion control procedures that they will be required to prepare, future pipeline proponent(s) will need to consult with the WRC in regard to activities which may impact upon rivers, wetlands areas and erosion susceptible areas. Given that future pipeline proponent(s) will also be required to consult with the WRC if pipeline construction is likely to impact upon existing or future drinking water supply areas as part of the Dewatering Management Plan referred to earlier, the EPA considers that the WRC's concerns in relation to this matter have been satisfactorily addressed.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.7 Construction pollution issues

3.7.1 Liquid and solid waste disposal

Description

Construction activities within the expanded land corridor of the DBNGP are likely to produce liquid and solid wastes such as waste oils, solvents and other toxic materials such as hydrotest water, domestic sewage, and general refuse.

Submissions

None of the submissions received expressed any concerns in relation to this factor.

EPA advice

The EPA's environmental objective for this factor is to ensure that the disposal of liquid and solid waste is consistent with local Shire requirements.

The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to prepare a Liquid and Solid Waste Management Plan on advice from the DEP and the DME. This management plan will include treatment and disposal options for waste water resulting from construction activities, pipeline testing, washdown and domestic use, as well as, oils, packaging, hazardous materials, and domestic and putrescible waste.

The SER indicated that potential environmental impacts such as contamination by oils, domestic sewage or other wastes will be avoided by the following means:

- waste oils, solvents and other toxic materials will be collected and removed from the site for recycling or disposal in approved liquid waste disposal areas; and
- all general refuse will be collected and either buried in pits or transported to the local Municipal Council approved disposal sites, or disposed of as required by local authorities. New pits will be dug at the site on already disturbed ground, if no suitable pits exist.

All facilities and debris will be removed when a camp is shifted or any other temporary facility is no longer required. Each area will be subject to the same clean-up and rehabilitation requirements as the pipeline right-of-way. Any excavated areas will be separately assessed to establish the most suitable rehabilitation techniques. Rehabilitation procedures will be initiated following removal of the camp or when the temporary facility is no longer required. Measures that will be implemented to minimise the impact of hydrotest water on the environment were outlined in Section 3.12 of the SER.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.7.2 Dust

Description

Construction activities within the expanded land corridor of the DBNGP are likely to produce visible dust emissions which have the potential to impact upon nearby residents and vegetation.

Submissions

None of the submissions received expressed any concerns in relation to this factor.

EPA advice

The EPA's environmental objective for this factor is to protect surrounding land users such that dust emissions will not adversely impact upon their welfare and amenity or cause health problems by meeting the Guidelines for the Prevention of Dust and Smoke Pollution from Land Development Sites in WA.

The SER also indicated that the GPSSC has committed to require future pipeline proponent(s) to prepare a Dust Management Plan on advice from the DEP and the DME. The compliance criteria to be used for this plan includes:

- ensuring that minimal dust lands on nearby vegetation;
- no complaints are received from nearby residents; and
- quick resolution of any dust problems that may occur during construction.

The SER indicated that dust levels will be visually monitored along the corridor during construction by the construction contractor. The creation of dust will be minimised by implementing the following measures:

- minimising the area being cleared;
- rehabilitating and / or stabilising areas as soon as possible after disturbance;
- avoiding unnecessary movement of machinery; and
- using water trucks and sprinklers to suppress dust as necessary.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.7.3 Noise and vibration

Description

Localised noise and vibration will be generated during construction by earthmoving machinery, blasting, trucks and small vehicles.

Submissions

The DEP indicated that a detailed Noise Management Plan will need to be developed by future pipeline proponent(s) undertaking construction activities within the corridor, where these activities occur within 1km of a residence. The DEP stated that on going noise sources such as compressor stations would need to be designed, and if necessary sited, so that their noise emissions are not intrusive and comply with the regulations. The DEP pointed out that full compliance with the regulations in some rural areas where ambient levels are very low may still leave noise emissions from compressors intrusive in character.

The DEP noted that the information provided in the SER on vibration levels relates to the protection of structures such as buildings and other pipelines, and while the limit of 50mm/s PPV cited is acceptable for this purpose, a substantially lower level is required to provide adequate protection of people's amenity. The DEP recommended a limit of 5mm/s PPV (Australian and New Zealand Environment Council, Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration, September 1990).

The DEP suggested that noise management plans prepared by future proponents should include vibration measurement in locations where residences are within 500m of the pipeline corridor.

The DEP also indicated that pressure relief valves and regular pressure testing of pipelines may cause noise emissions that will require consideration when the pipelines are in operation. These

other sources will need to comply with Regulation 7 of the *Environmental Protection (Noise) Regulations 1997*. However, initial pressure testing of pipelines to prove construction integrity would be classed as construction work for the purposes of the regulations.

The Shire of Chapman Valley requested further clarification about whether the Department of Minerals and Energy (DME) would be involved in issuing permits to future pipeline proponent(s) which outline rock blasting design, procedures and appropriate limits.

EPA advice

The EPA's environmental objective for this factor is to ensure that noise and vibration levels meet statutory requirements and acceptable standards.

The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to prepare a Noise Management Plan on advice from the DEP.

The SER indicated that Regulation 13 of the *Environmental Protection (Noise) Regulations 1997* currently applies to construction sites, which includes work in laying any pipe. Future pipeline proponent(s) will minimise the noise generated from construction activities by complying with relevant statutory guidelines.

The noise generated by the operation of construction equipment is not expected to cause an unacceptable impact on other land users in pastoral and agricultural areas due to the remoteness of the pipeline corridor. In more densely populated areas or near homesteads and other residences, construction activities will be restricted as necessary to comply with the requirements of the provisions of the noise regulations.

Monitoring of noise levels will be conducted if any complaints regarding noise are received. If required, operating practices or machinery will be modified to reduce noise emissions and associated impacts.

The SER indicated that the amount of blasting will be kept to a minimum, as the proposed pipeline corridor avoids rocky areas where possible for ease of construction. Blasting will comply with the requirements of the Department of Minerals and Energy and specifically with the *Explosives and Dangerous Goods Act 1961* and the *Mining Act 1978*.

Blasting may not exceed:

- 125dB $L_{Linear\ peak}$ (the maximum reading obtained calculated using AS 1259.1-1990) between 0700 hours and 1800 hours on Monday to Saturday inclusive; or
- 120dB $L_{Linear\ peak}$ between 0700 hours and 1800 hours on a Sunday or a Public Holiday.

These levels are further reduced if consecutive blasting is required. No blasting is allowed outside 0700 hours and 1800 hours on any day.

In the absence of legislated vibration limits, future pipeline proponent(s) would be required to reach an agreement with regulatory authorities as to what constitutes an appropriate level of vibration. The fundamental criteria governing the selection of the maximum vibration magnitude is that blasting operations should not result in damage to either the existing pipeline or any other neighbouring facilities or populations, and due regard should be given to amenity.

With regard to blasting in general, AS 2885 requires that blasting operations be undertaken in accordance with AS 2187.2-1993. This standard provides a recommended maximum Peak Particle Velocity (PPV) of 10mm/s for houses and low rise buildings and a maximum PPV of 25mm/s for commercial and industrial buildings or structures of reinforced concrete or steel construction regardless of the frequency. In specific circumstances, a PPV other than those recommended by AS 2187.2 may be used if substantiated by careful investigation.

Guidance as to what would be an appropriate maximum vibration magnitude can be gained from reference to previously implemented limits and published guidelines. A selection of these sources are presented on pages 8.12 and 8.13 of the SER.

The magnitude of vibrations generated by non-blasting activities such as ripping, rock breaking and vibratory compaction are generally insignificant when compared to those produced from

blasting unless separation distances are very small. Case studies of construction vibration presented by Heilig & McKenzie (1999) show that rock breaking activities within 2m of a pipeline generate vibrations of less than 10mm/s. Therefore construction vibrations other than blasting generated within the expanded pipeline corridor will have an insignificant impact on the existing pipeline. The potential for such damage would still need to be assessed for any special construction stages where separation distances are less than 5m.

In regard to the DEP's concerns about appropriate vibration levels, the EPA notes that the GPSSC indicated in their response to submissions that because the majority of the proposed pipeline corridor is remote and does not pass through any settlements, the potential for annoyance due to blasting activities is expected to be negligible. The GPSSC also indicated that the vibration level of 50mm/s PPV referred to by the DEP relates only to structures in the immediate vicinity of the blast (ie, within or immediately adjacent to the pipeline corridor), and is not intended to be applicable to persons living or working in the general vicinity of the construction activities. The GPSSC advised that vibration levels from a blast would attenuate to 5mm/s within approximately 80m of the blast. Therefore, persons located outside the immediate construction zone will not be adversely affected by blasting activity. The EPA considers that the above information satisfactorily addresses the concerns expressed by the DEP.

The EPA also notes that the GPSSC has indicated in their response to submissions that future pipeline proponent(s) will need to submit a Blasting Operation Plan outlining the rock blasting design, procedures and appropriate limits to be observed to the DME, and will be required to comply with DME requirements when undertaking blasting activities. The EPA considers that the above information satisfactorily addresses the concerns expressed by the Shire of Chapman Valley in this regard.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.8 Risk and hazards

Description

The construction of future gas pipeline(s) within the expanded DBNGP corridor will lead to increased risk levels. The proposed pipeline corridor has been aligned away from settlements and individual dwellings or community buildings in order to minimise public risk.

Submissions

CALM suggested that, in addition to the fire management procedures to be used during construction, which were discussed in Section 8.19 of the SER, consideration also needs to be given to strategic access for machinery crossing pipelines during fire suppression activities.

The Department of Minerals and Energy (DME) indicated that Section 9 of the SER is limited to public safety issues and does not extend to cover environmental risk. The DME considers that AS/NZS 4360 (1995), [now superseded by AS/NZS 4360 (1999)], which was identified as being the relevant Australian Standard in Section 2.3.6 of the SER, could be interpreted to provide a risk based approach to environmental management, and should be included in the Guidelines for Future Proponents that were detailed in Section 11 of the SER.

The Department of Defence indicated that the proposed pipeline corridor alignment places severe restrictions on land use over the Muchea Air Weapons Range (AWR). These restrictions arise from the need for unexploded ordnance (UXO) clearance through the alignment, increased public risk, and public safety concerns. Deviations 13 (Map B) and 14 (Map C) around the wetlands at Muchea have encroached upon the Muchea AWR safety template and compromised safety procedures within the area. The Department of Defence indicated that these issues have not been clearly stated within the SER and only receive brief comment in Section 7.4, and therefore, will need to be resolved prior to any formal agreement on the proposed pipeline corridor alignment.

EPA advice

The EPA's environmental objective for this factor is to ensure that risk is managed to meet the EPA's criteria for individual fatality risk off-site and the Department of Mineral and Energy's requirements in relation to worker and public safety near natural gas pipelines.

The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to prepare a detailed risk assessment and a Safety Management Plan prior to construction, on advice from the DME and the DEP. The EPA understands that following the release of the SER, the GPSSC agreed to amend the above commitment to include the requirement that future pipeline proponent(s) liaise closely with the Department of Defence in regard to UXO clearance requirements along the new corridor route prior to construction commencing.

Australian Standard 2855 (AS 2885) requires such assessments as an integral component of the pipeline design. A Safety Management Plan will be developed for construction and operation of the pipeline(s) based on the results of the risk assessment. AS 2885 (1997), HB105 (1998) and AS/NZS 4360 (1999) provide guidance on the conduct of a safety risk assessment and subsequent development of a safety management plan for high pressure gas pipelines.

A pipeline development may achieve acceptable risk if it can be shown that features to be incorporated in the new pipeline will result in the EPA's individual risk criteria being met. If this information cannot be provided, and the pipeline development falls within 300m of a conflicting land use, a detailed quantitative risk assessment will be required. It is probable that any new pipeline will be larger and operate at a higher pressure, and therefore a new quantitative risk assessment will need to be carried out to determine the distances required to meet the EPA's individual risk criteria and HB105 (1998).

The EPA's individual risk criteria are summarised in Table 9.1 of the SER. The SER indicated that in addition to individual risk, the EPA will consider societal risk for areas where large groups of people may congregate, such as sporting venues. The SER also indicated that it will be the developer's responsibility to make contact with the local planning authority to determine future land uses and any necessary restrictions.

In the assessment of public risk and the EIA process, the developer would be required to outline plans for the implementation of risk management systems in accordance with EPA Guidance Statement No. 50 (EPA, 2001) and best practice management systems for gas pipelines.

The EPA has prepared Guidance Statement No. 50 (EPA, 2001) for achieving risk criteria for public safety adjacent to high pressure gas pipelines. High pressure gas pipelines are defined in the Guidance as having a maximum allowable operating pressure of 5MPa or above and are subject to Australian Standards AS 2885.1 (1997) and HB105 (1998).

A project does not need to be referred to the EPA for risk reasons where a 300m separation distance can be achieved between the centreline of a high pressure gas pipeline and all areas where people reside or where groups of people are likely to congregate. Such areas may include sensitive developments such as hospitals and schools, residential development, and commercial development.

The proposed corridor does not control land uses within the consequence distance of around 300m of a jet flame from an ignited gas pipeline rupture. There is therefore a need to assess and if necessary restrict adjacent land development. In addition, risk mitigation may be applied to the pipeline itself (e.g. thickness of pipe, additional signage, depth of coverage, frequency of pipeline surveillance, concrete surface coatings, etc) in order to meet the EPA's individual risk criteria (Guidance Statement No. 2, EPA 2000).

Development processes in the vicinity which should trigger risk assessment include:

- initiation for *Amendment* to a planning scheme;
- application for a *subdivision approval*;
- lodgement of a *development application*; or
- installation of a new pipeline adjacent to an existing land use.

It will be the responsibility of future pipeline proponent(s) to assess the public risk from their pipeline, determine areas of non-compliance and implement risk mitigation features in pipeline design and construction in accordance with AS 2885.1 (1997), HB105 (1998), and the ALARP principle. 'Low' or 'Negligible' risk needs to be achieved in each specific proposal in order to receive EPA approval.

For sections of the pipeline where the separation distance to adjacent developments is less than 300m, the EPA considers that the proponent should assess the risks to the land use in accordance with AS 2855.1 (1997), HB105 (1998) and EPA Guidance Statement No. 50.

The SER indicated that up to six additional gas pipelines could be accommodated within the corridor. Risk is cumulative, and as each pipeline is installed, the risk levels at the edge of the corridor increases. Installing parallel pipelines in proximity also increases the potential for "knock on" failures between pipelines. Accordingly, the EPA recommends that whenever and wherever the cumulative risk of the pipeline(s) exceeds 1.0×10^{-6} at the boundary of the corridor, the manager of the corridor, the Ministry for Planning and relevant local government authorities should consider implementing appropriate planning controls to restrict the establishment of residential and sensitive land uses immediately adjacent to the corridor.

The EPA believes that the GPSSC, in conjunction with future pipeline operator(s), should assess and manage risk levels and adopt risk mitigation measures to reduce risk to ALARP levels. Both the risks to the pipeline(s) (eg. washaways, road crossings and excavations etc) and from the pipelines themselves (eg. ruptures) should be considered.

The EPA notes that the GPSSC has indicated in their response to the submission from CALM that it does not consider the existing pipeline and any future pipelines to be constructed within the corridor to be a barrier to access for fire management procedures, provided vehicles crossing the pipeline(s) weigh less than 3 tonnes. The GPSSC also indicated that consideration will be given to providing strategic access points for larger fire fighting vehicles along the corridor in conjunction with CALM. The EPA considers that the above information satisfactorily addresses the concerns expressed by CALM in this regard.

In regard to the DME's concerns about Section 9 of the SER being limited to public safety issues and not extending to cover environmental risk, the EPA notes that the GPSSC has indicated in its response to the summary of submissions that future pipeline proponent(s) will be required to consider AS/NZS 4360 (1995) [now actually AS/NZS 4360 (1999)] when developing specific environmental management procedures. The GPSSC also indicated that it has adopted the approach prescribed by the APIA Code of Environmental Practice in developing the environmental management guidelines outlined in Section 11 of the SER. The EPA considers that the above information satisfactorily addresses the concerns expressed by the DME.

As discussed in Section 3.1.3 of this report, the GPSSC has altered the route of the proposed pipeline corridor in the vicinity of Muchea and Bullsbrook in order to avoid wetlands and bushland areas with high conservation value (Figure 6). The EPA considers that this new route effectively addresses the concerns expressed by the Department of Defence in relation to the proposed pipeline corridor alignment placing severe restrictions on land use over the Muchea Air Weapons Range (AWR). By running parallel and in proximity to the existing infrastructure corridors which already traverse the Muchea AWR, the EPA considers that there will be no significant additional restriction placed on the existing land use which would unduly affect the operations of the Department of Defence. Furthermore, the EPA considers that the commitment referred to above satisfactorily addresses the Department of Defence's concerns in regard to UXO clearance requirements along the new corridor.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.9 Culture and heritage

3.9.1 Aboriginal culture and heritage

Description

Construction of future pipeline(s) within the expanded DBNGP corridor may affect Aboriginal cultural and heritage sites.

Submissions

None of the submissions received expressed any concerns in relation to this factor.

EPA advice

The EPA's environmental objective for this factor is to ensure that the strategic plan complies with the requirements of the *Aboriginal Heritage Act 1972 - 1984*, and that changes to the biological and physical environment resulting from the proposed development do not adversely affect cultural associations of the areas along and adjacent to the pipeline corridor.

The EPA notes that the GPSSC committed to require future pipeline proponent(s) to develop and implement an Aboriginal Heritage Management Protocol on advice from the AAD. The EPA understands that the objective of this commitment is to avoid all known aboriginal heritage sites and to protect all sites discovered during construction in accordance with the *Aboriginal Heritage Act 1972 - 1984.*

The SER indicated that Aboriginal heritage surveys for the proposed pipeline corridor are currently being conducted by McDonald Hales & Associates and additional anthropologists as required. Work conducted up until the release of the SER included:

- a review of archival material including the Register of Aboriginal Sites held by the Aboriginal Affairs Department (AAD) as well as published and unpublished academic literature and consultancy research documentation;
- discussions with the Aboriginal interest groups and their representative bodies;
- presentation of the archaeological survey methodology to, and approval by, the AAD; and
- meetings with most of the relevant Aboriginal groups.

Ethnographic and archaeological fieldwork has commenced along the majority of the proposed corridor. The findings of the survey work conducted to January 2000 were presented in Appendix C of the SER and are summarised below.

Data base searches of the Register of Aboriginal Sites indicated that 288 archaeological and ethnographic sites have been recorded along or in the vicinity of the pipeline corridor. Most of these sites were recorded during Aboriginal heritage surveys associated with the existing DBNGP. It is possible that other sites listed on the database also occur in the vicinity of the pipeline corridor. Further research and mapping is currently being undertaken in relation to the previously recorded sites.

The sampling methodology for the archaeological survey has been approved by the AAD and the survey of several areas is currently being undertaken. Preliminary results for the archaeological survey were not available at the time of production of the SER. However, the proponent recently indicated that the AAD has advised that the Aboriginal Cultural Heritage Material Committee has considered the application for Section 18 approval pursuant to the Aboriginal Heritage Act for 216 sites. The AAD has requested more information on 61 of these sites and provided generic conditions to several other sites. The proponent's Aboriginal Heritage consultants are currently liaising with the AAD to clarify the information sought.

In regard to the ethnographic survey, the SER stated that the preliminary findings indicate that several ethnographic sites may be affected by development of the proposed pipeline corridor. These sites are shown in Table 7.4 of the SER. Field inspections with Aboriginal groups were

conducted as part of the ethnographic survey for the Muchea section of the pipeline corridor in November 1999.

The SER indicated that all known Aboriginal sites within or in the vicinity of the proposed corridor will be flagged or fenced prior to construction in order to prevent accidental incursion. Construction personnel will be briefed on heritage management issues. Clearances under Section 18 of the *Aboriginal Heritage Act 1972 - 1984* will be sought for all Aboriginal heritage sites located within the proposed corridor. In the event that additional sites are discovered in the corridor during construction, work will cease immediately and the AAD will be consulted to determine the appropriate course of action. Protocols for effectively dealing with archaeological findings will be put in place in consultation with Aboriginal claimant groups as part of the Aboriginal Training and Employment Strategy detailed in Section 7.8 of the SER.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.9.2 European heritage

Description

Construction of future pipeline(s) within the expanded DBNGP corridor may affect European heritage sites.

Submissions

None of the submissions received expressed any concerns in relation to this factor.

Assessment and Recommendations

The EPA's environmental objective for this factor is to ensure that changes to the biological and physical environment resulting from the proposed development do not adversely affect European heritage values of the areas along and adjacent to the pipeline corridor.

The EPA understands that following the release of the SER, the GPSSC agreed to add a new commitment pertaining to European heritage to the list of commitments originally detailed in Table 11.1 of the SER. The EPA notes that the GPSSC has committed to require future pipeline proponent(s) to develop and implement a European Heritage Management Plan in accordance with the *Heritage of Western Australia Act 1990*, and to undertake a detailed ethnographic survey within the widened pipeline corridor prior to construction, on the advice of AHC, HCWA, and NTA.

The SER indicated that European heritage sites within, or in the vicinity of, the proposed pipeline corridor were identified through discussions with, and a search of databases held by the Australian Heritage Commission (AHC), the Heritage Council of Western Australia (HCWA), and the National Trust of Australia (NTA).

No heritage sites are listed by the HCWA or NTA as occurring within the originally proposed pipeline corridor route as described in the SER. Of the natural heritage areas registered by AHC in the National Estate, only the Coomallo Nature Reserve, the Badgingarra National Park and the Burma Road Nature Reserve are traversed by the original pipeline corridor route. However, as indicated in Section 3.1.2 of this report, the GPSSC has agreed to deviate the route of the proposed pipeline corridor around the Coomallo Nature Reserve and Badgingarra National Park so that they are not affected by future pipeline development (Figure 3). Furthermore, in order to address a specific DEP concern regarding impacts on vegetation within the Burma Road Nature Reserve, the GPSSC indicated in their response to submissions that the proposed pipeline corridor will no longer be situated in the existing DBNGP buffer zone within the Burma Road Nature Reserve as detailed in the SER. As a result it will have no impact on this reserve.

The SER indicated that discussions were also held with the relevant Shires which are traversed by the DBNGP. Some of these Shires provided a copy of their municipal heritage inventory for

review, or conducted a search of their own register. No sites listed by these inventories occur in the pipeline corridor.

In view of the above, the EPA considers that the proposal can be managed to meet the EPA's environmental objective for this factor.

4. Commitments

Section 16(e) of the *Environmental Protection Act 1986* requires the EPA to advise the Minister for the Environment and Heritage on the environmental protection aspects of any proposal or scheme, and on the evaluation of information relating thereto. Section 16(e) does not allow for the setting of environmental conditions or for legally binding commitments.

Nevertheless, the GPSSC have provided a list of commitments that future pipeline proponent(s) will be required to adopt and implement at the appropriate time in order to ameliorate the environmental impacts of a pipeline development proposal (Appendix 3). It should be noted that this list differs from that shown in Table 11.1 of the SER due to the GPSSC agreeing to include additional commitments in the list and to amend a number of the original commitments, following the release of the SER. The intent of these commitments is considered by the EPA to be appropriate for a future high pressure natural gas pipeline proposal within the expanded corridor, although the implementation of the commitments may need to be varied to apply to specific proposals. It is expected that when such a proposal is referred to the EPA, the referral will be consistent with the commitments listed in Appendix 3 and contain all the information required in these commitments. If the referral documentation contains sufficient and satisfactory information, the process of environmental impact assessment would be considerably expedited.

5. Other Advice

Referral of future pipeline development proposals

It should be noted by prospective pipeline proponent(s) that any proposal for the construction of a new natural gas pipeline within the expanded land corridor of the DBNGP will need to be referred to the EPA under Section 38 of the *Environmental Protection Act 1986*. The timelines associated with a possible formal assessment should be taken into account in pipeline infrastructure development planning.

Planning

State government planning agencies and local government authorities should develop and implement appropriate development control measures that will prevent non-compatible land uses from establishing directly adjacent to the expanded DBNGP corridor in the future. This will reduce and / or eliminate the potential for uncoordinated development directly adjacent to the corridor from compromising the ability of future pipelines to meet the EPA's risk criteria for development in proximity to existing and proposed high pressure gas transmission pipelines (EPA Guidance Statement No. 50).

Consultation with the Department of Defence

Future pipeline proponent(s) should liase closely with the Department of Defence, particularly in regard to ensuring that, where appropriate, pipeline construction and environmental management activities on Department of Defence controlled land are consistent with the policy, objectives and strategies outlined in the Department of Defence's Environmental Management Plan for the Muchea Air Weapons Range and other RAAF properties in the area.

6. Conclusions

The EPA has strategically assessed the proposal to widen the existing corridor for the Dampier to Bullsbrook section of the Dampier to Bunbury Natural Gas Pipeline (DBNGP) by 70m to enable future accommodation of up to six additional pipelines and system upgrades.

The EPA notes that no constraints that would preclude the use of the proposed widened corridor for the construction of future gas pipeline(s) have been identified on the basis of the information currently available.

The EPA also notes the commitments that will need to be made and implemented by future pipeline proponent(s) intending to construct new gas pipeline(s) within the widened land corridor for the DBNGP.

The EPA has concluded that all factors identified can be managed in an environmentally acceptable manner, and that it is unlikely that the EPA's environmental objectives would be compromised, subject to future pipeline proponent(s) agreeing to adopt the recommended commitments detailed in this report, and implementing them in a satisfactory manner.

Any specific proposal for the development of a new pipeline within the expanded corridor will require referral to the EPA under Section 38 of the *Environmental Protection Act 1986.*

7. Recommendations

The EPA submits the following recommendations to the Minister for the Environment and Heritage:

(1) That the Minister notes that the proposal on which advice is being provided is the widening of the existing corridor for the Dampier to Bullsbrook section of the Dampier to Bunbury Natural Gas Pipeline (DBNGP) by 70m to enable future accommodation of up to six additional pipelines and system upgrades.

(2) That the Minister considers the EPA's advice on relevant environmental factors as detailed in Section 3 of this report.

(3) That the Minister notes that the EPA has concluded that no constraints that would preclude the use of the proposed widened corridor for the construction of future gas pipeline(s) have been identified on the basis of the information currently available.

(4) That the Minister notes that the EPA has concluded that the intent of the commitments that will need to be adopted and implemented by future pipeline proponent(s) intending to construct new gas pipeline(s) within the expanded land corridor for the DBNGP is appropriate.

(5) That the Minister notes that future proposals for the development of new pipelines within the expanded pipeline corridor for the DBNGP would require referral to the EPA under Section 38 of the *Environmental Protection Act 1986.*

Appendix 1

List of submitters

Organisations:

Aboriginal Affairs Department
Agriculture Western Australia
Department of Conservation and Land Management
Department of Defence
Department of Minerals and Energy Western Australia (Petroleum Operations Division)
Water and Rivers Commission
National Parks and Nature Conservation Authority
Shire of Ashburton
Shire of Chapman Valley
Shire of Chittering
Shire of Dandaragan
Shire of Mullewa
Wildflower Society of Western Australia (Inc)

Individuals:

Allan S. More
R. K. Craig

Appendix 2

References

CALM (1989) Moora District Dieback Protection Plan, 1990-94.

CALM (1994) Draft Management Plan: Lesueur National Park and Coomallo Nature Reserve. Report prepared for National Parks and Nature Conservation Authority.

Conservation Through Reserves Committee (1974) Conservation Reserves in Western Australia. Environmental Protection Authority, Perth.

Cresswell, I, English, V, Blyth, J. (1997) Ecological Communities on the Brink in Conservation Australia No.2. Australian Nature Conservation Agency.

Crook, I.G, Williams, A.E & Chatfield, G.R. (1982) Nature Reserves of the Shire of Dandaragan, Volume 1. Western Australia Nature Reserve Management Plan No. 5 (Draft) Department of Fisheries and Wildlife, Perth WA.

Curtin Consultancy Services (1997) Draft report on Action Plan for Management of Dieback on the Dampier to Bunbury Natural Gas Pipeline for Alinta Gas, September 1997.

Dames & Moore Pty Ltd (2000) Dampier to Bunbury Natural Gas Pipeline Corridor Expansion Section 16(e) Strategic Environmental Review. Report prepared for Gas Pipeline Sale Steering Committee.

Dames & Moore Pty Ltd (1994) Goldfields Gas Pipeline Public Environmental Review. Report prepared for Goldfields Gas Transmission Joint Venture.

Department of Environmental Protection (DEP) (1999) Fighting Weeds on all Fronts. In: Ecoplan News, Spring 1999.

Dieback Working Group (1999) Managing Dieback in Bushland: A Guide for Landholders and Community Conservation Groups.

DME (1991) Information Series No.9, Guidelines for the Management of Dieback Disease in Mineral Exploration. Department of Minerals and Energy, WA.

Environmental Protection Authority (2000) Guidance Statement No. 2: Guidance for the Assessment of Environmental Factors. Guidance for Risk Assessment and Management: Off-site individual risk from hazardous industrial plant. July 2000.

Environmental Protection Authority (2001) Guidance Statement No. 50: Guidance for the Assessment of Environmental Factors. Achieving EPA Risk Criteria for development in proximity to existing and proposed high pressure gas transmission pipelines. April 2001.

Gibson, N., Keighery, B., Keighery, G., Burbidge, A. & Lyons, M. (1994) A Floristic Survey of the Southern Swan Coastal Plain. A report prepared for CALM and the Western Australian Conservation Council for the Australian Heritage Commission.

Government of Western Australia (1998) Perth's Bushplan. Western Australian Planning Commission, Perth.

Heilig, J & McKenzie, C (1999) Prevention of Damage to Buried Pipelines When Blasting an Adjacent Trench. Pipeline Risk Management, Perth 22-23 November, 1999.

Hill, A.L., Semeniuk, C.A., Semeniuk, V. & Del Marco, A. (1996) Wetlands of the Swan Coastal Plain. Volume 2a: Wetland Mapping, Classification and Evaluation, Main Report. Water and Rivers Commission and Department of Environmental Protection, 1996.

Morhard, R.C. (1987) Explosives and Rock Blasting. Atlas Powder Company.

Ninox (1997) Vertebrate Fauna Report: The Proposed Dampier to Kemerton Natural Gas Pipeline Route. Unpublished Report for Dames & Moore.

NSDWP (The Northern Sandplains Dieback Working Party) (1992) Dieback in the Northern Sandplains: Results and recommendations from a regional survey.

Semeniuk, C.A (1988), Consanguineous wetlands and their distribution in the Darling System, south western Australia, Journal of the Royal Society of Western Australia, 72 (4): 109-121.

Standards Australia (1997) Pipelines - Gas and Liquid Petroleum, Part 1: Design and Construction, AS 2885.1. Standards Australia, Homebush NSW.

Standards Australia (1998) Guide to Pipeline Risk Assessment in Accordance with AS 2885.1, HB105. Standards Australia, Homebush NSW.

Standards Australia (1999) Risk Management, AS/NZS 4360. Standards Australia, Homebush NSW.

Western Australian Water Resources Council (1987) Environmental Significance of Wetlands in the Perth to Bunbury Region, Report to WAWRC by LeProvost, Semeniuk & Chalmer, December 1987.

Appendix 3

Consolidated list of commitments on management measures to be implemented by future pipeline proponent(s)

Consolidated list of commitments on management measures to be implemented by future pipeline proponent(s)

Commitment (Who/What)	Objective (why)	Action (How/Where/When)	Whose Advice	Measurement/Compliance Criteria
Preparation of an Environment Management Plan (EMP).	To prepare a detailed EMP which adequately describes the various measures that will be implemented in order to ameliorate the environmental impacts associated with pipeline construction activities, in a consolidated format.	Prepare a detailed EMP which adequately describes the various measures that will be implemented in order to ameliorate the environmental impacts associated with pipeline construction activities. The EMP will consolidate all of the various individual management plans, protocols, procedures and activities (such as surveys etc) relating to the individual commitments listed in this table, as appropriate. The EMP will be made publicly available and will be prepared well ahead of construction.	DEP	EMP prepared by proponent and approved by the DEP.
Detailed flora survey.	To establish locations of significant vegetation communities and declared (DRF) or priority flora (PF) species and avoid impacting on important areas, consistent with the *Wildlife Conservation Act, 1950.*	Future proponent(s) will review existing flora and vegetation survey information (including the results of the GPSSC initiated survey undertaken in 2001) and / or undertake further survey work within the proposed pipeline corridor route, if appropriate at the time, to establish the locations of DRF, PF and significant vegetation communities, consistent with the Wildlife Conservation Act 1950.	DEP CALM	Flora survey completed if deemed to be appropriate at the time. Sites of significance (DRF/PF) mapped and avoided where possible. Management procedures to minimise impacts approved by the DEP and CALM and included in the EMP.
Detailed fauna survey.	To establish location of significant habitat and potential locations of rare or endangered species. To enable avoidance of significant habitat or preparation of suitable environmental management practices to protect habitat, consistent with the *Wildlife Conservation Act, 1950.*	Detailed fauna survey to be conducted of potentially sensitive habitats in advance of construction.	DEP CALM	Fauna survey completed. Sites of significance mapped and avoided where possible. Management procedures to minimise impacts approved by the DEP and CALM and included in the EMP.

Consolidated list of commitments on management measures to be implemented by future pipeline proponent(s)

Commitment (Who/What)	Objective (why)	Action (How/Where/When)	Whose Advice	Measurement/Compliance Criteria
Field Hygiene Procedures (weeds, dieback, pests, disease).	Prevent spread of weeds, pests and diseases which may reduce productivity of land or threaten ecological systems. Particular emphasis on declared and all locally defined weed species, and the dieback fungus (areas south of Kalbarri only, where remnant vegetation occurs).	Conduct surveys of construction areas for weeds and diseases, including agricultural diseases and dieback. Map and flag affected areas ahead of construction. Report the discovery of all weed species (i.e. declared weeds and all other locally defined weed species) to AgWA (for agricultural and pastoral areas) or CALM (for bushland or reserve areas). Prepare hygiene procedures, including specific detail of vehicle and equipment inspection and clean-down. Nominate and prepare clean-down areas prior to access by construction vehicles or personnel. Conduct personnel induction and training to raise awareness. Where practicable, Proponent should plan to construct during dry conditions where dieback is a problem.	AgWA (weeds and agricultural diseases in agricultural and pastoral areas) CALM (dieback and weeds in bushland or reserve areas)	Field hygiene procedures approved by both CALM and AgWA and included in the EMP. Areas of weed, disease or dieback infestation mapped and flagged in the field. Clean-down areas prepared. Personnel trained in appropriate field hygiene.
Groundwater quantity and the protection of groundwater aquifers.	Maintain the quantity and distribution of groundwater so that existing and potential uses are protected.	Develop and implement a Dewatering Management Plan to ensure that activities associated with dewatering and hydrostatic testing do not impact on existing and future beneficial uses of aquifers. Prior to construction, consult with WRC if pipeline construction is likely to impact upon existing or future drinking water supply areas.	WRC, DEP	Dewatering Management Plan approved by the WRC and the DEP and included in the EMP. WRC consulted if pipeline construction is likely to impact upon existing or future drinking water supply areas.
Surface water and groundwater quality.	Maintain the quality of surface water and groundwater so that existing and potential uses, including ecosystem maintenance, are protected.	Develop and implement a Surface Water and Groundwater Management Plan. Prior to construction, develop specific measures to minimise sediment release to watercourses. Prior to construction, develop specific measures to minimise surface water contamination from fuels and oils.	WRC, DME, DEP	Surface Water and Groundwater Management Plan approved by WRC, DME and the DEP and included in the EMP.

Consolidated list of commitments on management measures to be implemented by future pipeline proponent(s)

Commitment (Who/What)	Objective (why)	Action (How/Where/When)	Whose Advice	Measurement/Compliance Criteria
Community consultation.	To ensure general public and affected landowners are briefed of activities and potential impacts on their day to day lives, including landowner restrictions or conflicts. To maintain good public relations. To keep stakeholders (e.g. CALM) informed of progress and issues affecting their interests.	Notify appropriate councils, landowners, leasees, etc. of proposed construction activities and their likely impacts on people (noise, traffic, disruption to services, etc.). Negotiate with landowners to ensure safety of all personnel, stock and equipment. Place advertisements in papers as necessary.	DOLA DEP Public service providers as necessary (e.g. Main Roads, AlintaGas, Western Power, Telstra)	All landowners, local shire councils and interested parties are notified well in advance of construction activities, and regular liaison occurs during construction.
Soil Conservation.	To prevent loss of topsoil, compaction of subsoil, reduction in agricultural or pastoral productivity or reduction of rehabilitation success.	Preparation of soil management procedures. Stripping of vegetation only across top of trench or where vegetation significantly impedes construction activities. Retention of rootstock in soil when clearing, with the exception of that area directly above the trench.. Deep ripping as required in agricultural areas. All borrow pits will be properly rehabilitated by reinstating the original top soil and by monitoring the progress of their rehabilitation.	AgWA, CALM, DEP	Soil management procedures approved by AgWA, CALM and DEP and included in the EMP. Topsoil returned above trench.
Erosion control (including protection of rivers and ephemeral streams).	Prevent erosion in sensitive areas such as river and stream crossings and erosion-susceptible land systems. Maintain the integrity, functions and environmental values of rivers and ephemeral streams.	Prepare erosion control procedures for all high risk areas. Particular emphasis on river and stream crossings, and erosion-prone soils or land systems. For river and stream crossings the management procedures detailed in Sections 8.6.1 and 8.6.2 of the SER will be implemented where appropriate. Rapid rehabilitation after construction to prevent soil loss and to maintain the integrity, functions and environmental values of rivers and ephemeral streams.	DEP, WRC, AgWA	Erosion control procedures for high risk areas including river and stream crossings approved by WRC, AgWA, and the DEP, and included in the EMP.

Consolidated list of commitments on management measures to be implemented by future pipeline proponent(s)

Commitment (Who/What)	Objective (why)	Action (How/Where/When)	Whose Advice	Measurement/Compliance Criteria
Prevent unauthorised access.	To prevent unauthorised access to corridor during and after construction. To prevent weed or disease spread to promote public safety and to protect landowners property.	Erection of fences, locked gates and barriers as necessary to prevent third party access.	DEP CALM DOLA	Plans approved by DEP, CALM, and DOLA.
Noise and dust management.	To minimise noise and dust disturbance to people and wildlife, and to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997.*	Prepare noise and dust management plans.	DEP DME	Noise and dust management protocols prepared and included in the EMP. Minimal dust on nearby vegetation. No complaints of noise or dust problems from landowners, or quick resolution to problems during construction. Compliance with the *Environmental Protection (Noise) Regulations 1997.*
Liquid and solid waste management.	To prevent pollution of soil, water and vegetation from liquid and solid wastes.	Preparation of a management plan for both liquid and solid wastes. Inclusion of treatment and disposal options for water (construction, pipeline testing, washdown and domestic use), oils, packaging, hazardous materials, domestic and putrescible waste.	DEP DME	Waste management plan approved by DME and DEP and included in the EMP.
Avoidance and respect of Aboriginal heritage sites.	To avoid all known sites of Aboriginal heritage and to protect all sites discovered during construction, in accordance with the *Aboriginal Heritage Act, 1972-84.*	Fence or flag known sites of significance in advance of construction. Promote awareness of heritage issues in construction personnel. Implement protocols for dealing with archaeological sites in accordance with the Heritage Management Protocol currently being developed (refer Section 7.8 of the SER).	AAD	Aboriginal Heritage Management Protocol approved by the AAD and included in the EMP. Personnel briefed on Aboriginal heritage management issues. All known sites of significance in close vicinity of corridor flagged or fenced to prevent accidental incursion.
European Heritage sites.	Ensure that changes to the biological and physical environment resulting from the proposed development do not adversely affect European heritage values of the areas along and adjacent to the pipeline corridor.	Develop and implement a European Heritage Management Plan in accordance with the *Heritage of Western Australia Act 1990*, and undertake a detailed ethnographic survey within the widened pipeline corridor prior to construction.	AHC, HCWA, and the NTA.	European Heritage Management Plan approved by the AHC, HCWA, and the NTA and included in the EMP. Personnel briefed on European heritage management issues. All known sites of significance in close vicinity of corridor flagged or fenced to prevent accidental incursion.

Consolidated list of commitments on management measures to be implemented by future pipeline proponent(s)

Commitment (Who/What)	Objective (why)	Action (How/Where/When)	Whose Advice	Measurement/Compliance Criteria
EPP lakes and other specially protected wetlands.	To retain the integrity, functions and environmental values of protected wetlands, and to ensure that EPP lakes are protected and their key ecological functions are maintained.	Identify wetlands or part of wetlands that are offered special protection and develop management methods to ensure that there are no significant impacts on these wetlands. Implement management methods detailed in Section 8.6.3 of the SER, where appropriate.	WRC, DEP	Management procedures for all protected wetlands approved by WRC and the DEP, and included in the EMP.
Protection of the Conservation Estate (National parks and other nature reserves).	To ensure minimal impacts to areas of conservation traversed by pipelines. To return conservation areas (as close as possible) to original state and prevent long-term reduction in conservation value.	Reduce work areas where possible. All temporary lay-down and camp facilities to be located outside conservation areas. Use existing access track where possible. Retain rootstock when clearing (except above trench). Replace topsoil and cleared vegetation and implement rapid rehabilitation.	CALM DEP	Rehabilitation plan approved by CALM and included in the EMP. Minimal work areas prescribed and workers briefed on conservation practices.
Rehabilitation.	To return soil and facilitate revegetation of work areas and enable stabilisation of the landscape following construction. To encourage vegetation and fauna to return to community composition as close as possible to pre-construction state.	Prepare detailed rehabilitation plan, including sources of seed stock, methods of stockpiling soil and vegetation during clearing, monitoring schedule and auditable completion criteria (site-specific). Where possible during clearing, rootstock will be left in place to encourage rapid revegetation and to stabilise soil. Rapid rehabilitation activities to occur, particularly in areas prone to wind or water erosion.	DEP CALM AgWA	Rehabilitation plan prepared and approved by CALM, AgWA and the DEP prior to construction, and included in the EMP. Plan to provide detailed, auditable completion criteria, and monitoring schedule.
Public health and Safety (Risk and hazards).	To comply with EPA risk criteria and appropriate standards (HB105, AS2855, AS/NZS 4300).	Prepare detailed risk assessment and a Safety Management Plan. Closely liaise with the Department of Defence in regard to unexploded ordnance (UXO) clearance requirements along the new corridor route through the Muchea Air Weapons Range (AWR) prior to construction commencing.	DME DEP Department of Defence.	Risk assessment and Safety Management Plan approved by the DME, DEP, and the Department of Defence and included in the EMP. Personnel trained in safe procedures and contingency response.
Bushfire prevention.	Prevent bushfires resulting from construction activities (in accordance with *Bushfires Act, 1954*). Provide safe work area for personnel and the public.	Prepare fire-prevention guidelines for construction personnel. Provide training and induction on fire prevention and fire management. Prepare a contingency plan for evacuation as part of the above-mentioned Safety Management Plan.	Bushfire Services CALM DME	Safety Management Plan, incorporating bushfire prevention strategies and evacuation plan approved by relevant agencies and included in the EMP. Personnel trained in fire prevention and management prior to construction.

Appendix 4

Summary of submissions and the proponent's response to submissions

RESPONSE TO SUBMISSIONS TO PUBLIC REVIEW PERIOD
DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR EXPANSION
SECTION 16(E) STRATEGIC ENVIRONMENTAL REVIEW

Attached are the Gas Pipeline Sale Steering Committee's (GPSSC) response to submissions made during the public review period (21 February 2000 to 17 March 2000) for the Dampier to Bunbury Natural Gas Pipeline (DBNGP) Corridor Expansion, Section 16(e) Strategic Environmental Review (SER).

Additional supporting information on the existing environment, potential impacts and proposed management of deviations required by the regulatory authorities, subsequent to the publication of the SER, have been provided separately and should be read in conjunction with this document.

This is a final response, notwithstanding that there are three areas where the alignments have yet to be resolved. Information on these outstanding areas will be provided as an addendum to this response when the GPSSC and the DEP reach agreement on preferred alignments.

The 3 outstanding areas are in the vicinity of:

- Hill River;
- Moore River Proposed Nature Reserve; and
- Department of Defence Lease, south of Muchea township.

General Comments on Public Submissions

It is evident from some of the submissions that there have been a few underlying misunderstandings of the intent of the Project and purpose of the Section 16(e) SER document. To clarify these issues we make the following statements.

Purpose of the Strategic Environmental Review

The document has been prepared as a strategic plan only, under Section 16(e) of the *Environmental Protection Act* 1986, to set aside a corridor for future development needs. It does not preclude the need for minor deviations which may arise following completion of Aboriginal Heritage studies, surveys for significant flora or subsequent discovery of any other constraints. Rather, it presents an alignment which is considered broadly environmentally and socially acceptable, and economically and structurally feasible. Its adoption also strategically precludes conflicting development plans along or adjacent to the corridor.

Any future proposal to develop a pipeline within the corridor will be subject to environmental assessment under Section 38 of the Environment Protection *Act*. This assessment will consider the specific measures which a Proponent proposes to minimise environmental impacts of future pipeline(s). There will be a requirement that these measures are in line with the commitments outlined in the GPSSC's SER (Sections 8 and 11). The SER is therefore not intended to provide specific measures for management of environmental impacts or commit future developers to potentially restrictive construction and operation procedures. With the continual development of pipeline technology and environmental management practices in an industry which is typically committed to best practice, it would be unwise to commit to specific measures which may be considered inadequate in the future. The SER therefore provides guidelines and environmental targets that are expected to be achieved rather than defining techniques.

Clearing of Vegetation and Construction of Pipeline

The purpose of defining a 70 m corridor is not for this area to be cleared regardless of whether pipelines will be constructed within the corridor. It is intended that this 70 m is set aside for planning purposes, to prevent development of incompatible land uses that may jeopardize future development of any pipelines within the corridor. The 70 m is to meet gas transmission developments over the next 80 to 100 years and allows for the construction of several pipelines, including loopings as these are required (Refer to Figure 11.1 of SER). Pipelines will be constructed as needed and loopings will be developed to accommodate system expansion. Clearing will only be conducted on the basis of individual pipeline construction plans, following environmental reviews under Section 38 of the *Environment Protection Act*.

The GPSSC's responses to specific submissions follow.

ISSUE 1: DECLARED RARE AND PRIORITY FLORA

Question 1.1

The Department of Conservation and Land Management (CALM) considers that an early flora survey of the route well prior to construction and in the optimal season is necessary to avoid fatal flaws. If the flora survey is delayed until just prior to construction, it may give rise to the potential for delays. How does the proponent respond to the above advice from CALM, and is it willing to adopt it?

Response

The GPSSC, accepts CALM's suggestion to undertake a vegetation and flora survey of the entire length of the corridor to assist in finalising the route alignment and minimising the risk of delays to future pipeline projects. It is understood that a detailed survey to vegetation community level, undertaken on a regional basis to ensure sampling is conducted during the most appropriate season, would reduce the requirement to undertake subsequent detailed flora surveys. However, it is anticipated that future proponents would need to conduct flora surveys of 'target areas'. A definition of these 'target areas' is provided in the response Question 1.3.

The commitment to undertake a detailed flora survey (SER, Table 11.1) would therefore be modified for future proponents to include a detailed survey only of 'target areas' following consultation with the DEP and CALM.

Based on consultation with CALM and the DEP with regards to the selection process and preparation of the brief, the GPSSC has recently selected a specialist consultant to undertake this survey work. Desktop preparation for the surveys has been initiated.

Question 1.2

CALM indicated that the first paragraph on page 11.1 in Section 11.2 of the environmental review document which states that the document is intended to give "future proponents some degree of certainty that environmental approvals will be obtained within the defined pipeline corridor" may be somewhat erroneous, because in the event that Declared Rare Flora (DRF) are located within the alignment:

- *ministerial consent to take DRF under the Wildlife Conservation Act 1950 cannot be presumed, and if there is the threat of extinction, then consent may not be possible; and*
- *an additional survey outside the easement may locate additional populations of DRF and assist in negating any need to change the alignment. Such a survey would also need to occur in the optimal season and well ahead of construction.*

How does the proponent respond to the above concern?

Response
The GPSSC acknowledges that environmental approvals cannot be guaranteed on the basis of a Section 16(e) SER, however, it is understood from the *Act* that this type of assessment provides an indication of the likely environmental acceptability of the Proposal, to allow for strategic planning.

The GPSSC is also aware that Ministerial consent to take Declared Rare Flora (DRF) cannot be presumed and may not be possible. To overcome the potential problems with finalising the route alignment, the GPSSC has accepted CALM's proposal to undertake a full-scale vegetation survey as stated in response to Question 1.1. Should DRF be encountered within the proposed corridor, the GPSSC will work with CALM to determine an acceptable solution.

A corridor has been selected for this Project, which for the majority of its length avoids known environmental constraints. A strategic planning study cannot be expected to provide complete assessment for the corridor, and it is acknowledged that future pipeline development will be subject to assessment under Section 38 of the *Act.*

Importantly, declaration of the corridor will ensure that the required studies can be carried out and incompatible landuses will not be developed on or alongside the proposed alignment, ensuring safety of people, property and future pipelines.

Question 1.3
CALM considers that if surveys for all priority flora and DRF were conducted early during the optimal flowering period, then the need for further survey work for future construction activities would most likely be minimal, and would generally only be required for specific habitats if additional taxa became listed. Is the proponent prepared to adopt this suggestion?

Response
The GPSSC considers this suggestion appropriate for the Project and as indicated in response to Question 1.1 above, has initiated work on a complete survey for priority flora and DRF during the optimal flowering period for each natural region. It is anticipated that, as suggested by CALM and the DEP, this undertaking will subsequently limit the extent of survey work required by future proponents prior to construction of a pipeline, with the exception of 'target areas'. Target areas would be defined as:

- areas where DRF or priority flora were recorded during the initial survey;
- specific habitats of newly listed species (i.e. species listed after the full flora survey);
- restricted vegetation communities; and
- vegetation communities, which, at the time of the survey, contained potentially significant species, the identity of which could not be confirmed.

Survey of target areas may also include the need to survey outside the corridor to demonstrate the more widespread occurrence of restricted plants or vegetation communities.

As discussed in Question 1.1, the GPSSC has agreed to carry out this study based on discussions with CALM and the DEP that have indicated that the requirement for subsequent full-scale flora and vegetation surveys of the corridor would be minimised.

ISSUE 2: VEGETATION COMMUNITIES

Question 2.1

CALM expressed concern about riparian vegetation being impacted by Deviation 9 at Hill River, and suggested that additional information be provided by the proponent about what other options, if any, had been considered at this site. Can the proponent please provide the requested information in relation to this concern?

Response

The sensitivity of this area was acknowledged in the initial assessment. In selecting the alignment for the Hill River deviation, a number of significant constraints were considered. These were presented in Table E1 of the SER and are listed below:

- the proximity of the CMS pipeline immediately to the west of the DBNGP;
- the proximity of the Brand Highway to the east of the DBNGP;
- the increased risk of multiple crossings of the CMS pipeline and/or the Brand Highway;
- fragmentation of the Twyata Nature Reserve and remnant vegetation;
- vegetation and stability of Hill River banks; and
- sterilisation of land.

This area is currently being investigated in consultation with the DEP. A resolution to this area will be provided in an addendum once agreement has been reached on a suitable alignment.

Question 2.2

CALM expressed concern about the fragmentation of a relatively large area of intact woodland by Deviation 13, and suggested that it would be beneficial if further assessment was undertaken to determine if this is the most appropriate route. What assessment has occurred in this area and is the proponent willing to undertake further assessment of the chosen route and possible alternatives at Deviation 13 as requested by CALM in order to mitigate the impact on the woodland?

Response

This is considered a highly restrictive area, with numerous conflicting constraints. The major requirement in this area are to join up with the existing DBNGP prior to MLV117, which is just south of the Defence Lease area.

The alignment through the remnant vegetation of the Defence Lease, which also dissects Site 97 of Bushplan, avoids:

- the township of Muchea;
- mound spring communities (Threatened Ecological Communities);
- two EPP wetlands and numerous other wetlands to the south of Muchea;
- the proposed Darwin Highway;
- multiple crossings of the Brand Highway; and

- the Gnangara water mound.

(Refer to Section 6.8.6 of SER).

These constraints have been discussed at length with DEP and the Waters & Rivers Commission, and an agreeable resolution is being investigated.

Question 2.3

The Wildflower Society of WA Inc indicated that all clearing of bushland in agricultural areas where there already has been extensive loss of vegetation must be prevented. The Society believes that such clearing is in breach of government guidelines as discussed in EPA Bulletin No. 966 and EPA Preliminary Position Statement No. 2. The Society stated that all remaining vegetation in most wheatbelt shires must be preserved because over clearing has left less than 20% of their native vegetation, and the EPA is now indicating that the target should be increased to 30% retention of remnant vegetation. How does the proponent respond to the above concern?

Response

In agricultural areas, much of the existing DBNGP avoids areas of remnant vegetation, and is therefore the preferred alignment for the widened corridor. Where the existing DBNGP passes through remnant vegetation, the proposed corridor has been aligned to minimise disturbance where practicable, or along the existing pipeline to prevent further fragmentation, and in some cases to one side or the other of the pipeline to avoid encroaching into the majority of the bushland.

Areas of remnant vegetation within the agricultural areas often occur in small isolated patches. While the corridor has been aligned to avoid most of these, the engineering constraints and prohibitive costs of constructing a pipeline within a corridor which 'zigzags' to avoid all areas of remnant vegetation, is not feasible. Where extensive deviations would be required to avoid larger expanses of bushland, the additional areas to be disturbed and associated costs and risk factors were weighed up against the environmental benefits. Clearing for pipeline construction is a temporary disturbance and (not withholding access requirements) all areas will be rehabilitated.

Question 2.4

The Wildflower Society of WA Inc questioned the need for such a wide pipeline corridor to be constructed given that the environmental review document states that most of this land will not be required for many years, if ever. The document also does not explain why a 30 to 70m wide swath of bushland must be cleared for a pipeline which is only about 1m wide. The Society requested that the pipeline corridor be kept to a more reasonable width, as there is no reason to clear a 70m wide strip of vegetation for additional pipelines that may never be built. How does the proponent respond to the above concern?

Response

Although a 70 m corridor will be set aside for future development needs, vegetation will not be cleared from this corridor unless there is a specific proposal to develop a pipeline. In this case only the area required for construction of the pipeline will be disturbed (typically 25 m or less in

sensitive/difficult access areas). This disturbance will be temporary (during construction) and soil and vegetation will be progressively rehabilitated after construction. Where the DBNGP exists alongside the proposed corridor expansion, which is most of its length, the existing access track will be used for permanent access. Direct access will be required to test points (approximately every 2 km).
A Section 38 assessment will also be required for all development proposals, with details of areas to be cleared, environmental management techniques for soil, water and vegetation and a rehabilitation plan.

Question 2.5

The Wildflower Society of WA Inc indicated that at least 3500 ha of bushland will be affected in the Northern Sandplains region alone, and that impacts in the Fortescue and Carnarvon botanical districts would be even greater. The Society also indicated that the amount of land cleared for the project is likely to greatly exceed the area of natural vegetation restored in Western Australia during the same period, and that this would negate a major fraction of the land planted with trees for greenhouse credits. The Society believes that the State Government should not support this proposal in its current form, because it sets a very bad precedent at a time when they are trying to stop all land clearing, and rural LandCare groups are trying very hard to reverse vegetation loss and degradation. How does the proponent respond to the above concern?

Response
We believe that this question is based on the incorrect premise that the entire corridor will be cleared in advance of pipeline construction.

As noted above, no clearing of vegetation will be undertaken until construction of a pipeline is planned, and the loss of vegetation will be temporary. Following construction of a pipeline, the corridor will be rehabilitated. While it is acknowledged that rehabilitation cannot replace exactly what was present prior to disturbance in areas of remnant vegetation, it will allow for the re-establishment of native species and the development of a similar community structure over time (with the exception of deep-rooted species which could compromise pipeline integrity). In areas where remnant vegetation has been degraded from the impacts of adjacent land practices, it may also be possible to enhance the condition of this vegetation during rehabilitation of the corridor.

As stated in Question 2.3, areas of bushland have been avoided where practicable in selecting the alignment of the corridor. However, avoidance of all areas of remnant vegetation by the pipeline corridor is not possible. Calculations made using the CALM digital, remnant vegetation database (1996) provide that an area of approximately 350 ha of remnant vegetation is mapped within the proposed corridor between Burma Road Nature Reserve and Bullsbrook (Northern Sandplains), of which only a fraction of this is likely to be disturbed if pipelines are constructed within the corridor.

Question 2.6

A submission from a concerned landowner living in the Bullsbrook area requested that the pipeline corridor expansion be undertaken approximately 100m to the east of the proposed location on the eastern boundary of his property (details provided to proponent) in order to conserve a number of old and very large trees that are located there. Can the proponent accommodate this landowners request?

Response

The GPSSC accepts the request to avoid a number of old and very large trees along the eastern boundary of the nominated landowner's property. An appropriate alignment will be determined to achieve this.

Question 2.7

The Department of Environmental Protection (DEP) indicated that the vegetation of the mesas in the Nanutarra Land system, is likely to have some significance, and requires mention. This is not only because the land system is limited in extent, but because throughout the Pilbara the tops and outcrops on the sides of these formations often harbour outlying populations or even relictual forms of grasses, in particular the less predominant forms of spinifex. How does the proponent respond to the above concern?

Response

The GPSSC acknowledges the potential significance of vegetation occurring on the tops and outcrops on the mesas of the Nanutarra Land System. However, the proposed corridor has been aligned to avoid these features, since they are considered a geotechnical constraint and unsuitable for the construction of future pipelines.

Question 2.8

The DEP indicated that in considering alternative pipeline corridor routes that avoid conservation areas, every attempt should be made to locate access roads along grazed or otherwise disturbed areas to avoid introducing permanent impacts to remnant native vegetation. Is the proponent prepared to adopt and implement the DEP's advice in this regard?

Response

This advice is compatible with GPSSC's plans and guidelines in the SER. Where the proposed corridor runs parallel with the existing DBNGP, the existing access road will be used (Table 11.1 of SER). Where the proposed corridor deviates from the existing pipeline, the corridor has been aligned through existing disturbed areas where practicable. Existing access will be used where practicable along these deviations.

ISSUE 3: BUSHPLAN

Question 3.1

While it is beneficial that the Tumulus Spring Communities at Muchea, particularly the better examples near 'The Maze' at Bullsbrook have been avoided, the DEP is concerned that a continuous stretch of poorly reserved Banksia Woodland which extends from Muchea to the Kirby Road Bushland (Bushplan Site No. 97), will be impacted upon by the pipeline. Can this impact be avoided?

Response

As discussed in Question 2.2 the alignment along the eastern edge of the Defence Lease and through Bushplan Site No. 97 (Kirby Road Bushland) has been selected to meet up with the existing DBNGP north of MLV117, and to avoid the social and risk constraints of the town of Muchea, the proposed Darwin Highway to the east, other infrastructure, the mound springs and other wetlands to the south of Muchea and minimise the potential impacts on the banksia woodland in the Defence Lease. The mound springs in particular, although some are highly modified from past and current land uses, are some of the only remaining examples of these types of communities, are classified as Threatened Ecological Communities and have therefore been avoided.

The options for this area are currently being investigated in close consultation with the DEP and WRC and an agreeable alignment will be provided as an addendum to this response when available.

The GPSSC also acknowledges the DEP's concern about the spread of dieback through the woodlands, and is acutely aware that dieback must be prevented as there is no current, feasible remedial action once an area is infested. The dieback prevention measures listed in the SER (Table 11.1) and Questions 4.3, 6.1 and 6.2 will be implemented to ensure the risk of dieback infection, or spread is minimised. In summary, the prevention measures will include:

- field (including vehicle) hygiene procedures to be approved by CALM and AgWA;
- areas of dieback to be identified, mapped and flagged in the field;
- clean-down areas will be prepared (in accordance with CALM guidelines); and
- construction and operations personnel will be trained in appropriate field hygiene.

In addition, access to the area will be restricted using fencing or other barrier system, to prevent unauthorised access along the corridor.

Question 3.2

The DEP requests that pipeline corridor route options which acknowledge Bushplan Site No. 97 as a significant constraint be more thoroughly considered by the proponent. Please indicate the extent to which this issue has been considered and the options for resolving this issue?

Response

As noted above, this area is currently under further investigation, in close consultation with the DEP.

ISSUE 4: NATIONAL PARKS AND OTHER NATURE RESERVES

Question 4.1

CALM considers that the loss to the conservation reserve system should be compensated at rates equivalent to mining compensation rates, and that the use of unimproved agricultural valuations under-values the ecosystem services provided by biological resources. CALM suggested that funding should be provided to acquire additional conservation areas within the relevant bioregions for vesting in the National Parks and Nature Conservation Authority. How does the proponent respond to the above concern?

Response
Consultation will be undertaken with CALM to reach an equitable agreement. Matters of compensation will be dealt with in the appropriate manner through the Valuer General's Office.

Question 4.2

CALM indicated that Figure 6.14 of the environmental review document is not up-to-date as it shows Cane River Station as CALM managed land, but does not show two other recent purchases by CALM adjacent to Cane River, namely:

- *Mount Minnie Station - adjacent to the north-west boundary of Cane River Station; and*
- *Range Block - adjacent to the southern boundary of Cane River Station and previously part of Nanutarra Station.*

Can the proponent please update this information?

Response
The information used for Figure 6.14 was provided by CALM in June 1999. This has subsequently been updated and the GPSSC has provided a figure which indicates the locations of Mount Minnie Station and Range Block (see supporting documentation).

The proposed corridor occurs within these two leases which are located to the west and south of Cane River Station. The proposed pipeline route traverses the Stuart and Uaroo land systems on Mt Minnie lease, and Boolaloo, Capricorn, Giralia, Globe, Nanutarra, Uaroo and Yanrey on Range lease. The Globe and Yanrey land systems have high pastoral potential and are susceptible to degradation because of their sensitive vegetation and soil surfaces. Particular care will be required when constructing a pipeline through these areas to minimise disturbance to soil and vegetation. The remaining land systems are characterised by stony and sandy soils which are not inherently susceptible to erosion (A.M.E. Van Vreeswyk, et al., *An Inventory and Condition Survey of Rangelands in the Pilbara Region, Western Australia* , Agriculture WA Technical Bulletin, in prep.).

Question 4.3

The Wildflower Society of WA Inc indicated that the proposed pipeline corridor expansion will cause massive and unacceptable damage to national parks, nature reserves and a Bushplan site. Affected vegetation is unlikely to fully recover and the nature of the damage done would be far worse than if localised rectangular sections were being disturbed by clearing new paddocks. The pipeline crosses entire reserves, impacting on most of their plant communities and it is likely to facilitate the spread of weeds, dieback and further disturbance. How does the proponent respond to the above concern?

Response

Refer to the responses to Questions 2.3, 2.4, 2.5 and 2.8.

Dieback and weed management programmes will be developed in consultation with CALM and AgWA (see Table 11.1 of the SER) and will be implemented to minimise the risk of degradation in conservation areas due to disease and weed infestation. Third party access which may increase the risk of this occurring and hinder rehabilitation efforts will be minimised by appropriate fencing and other access controls.

Question 4.4

The Wildflower Society of WA Inc expressed concern that while deviations to the pipeline route alignment are planned for a number of reasons, none have been proposed in order to conserve bushland, even if it occurs within national parks, nature reserves or Bushplan sites. Is the proponent prepared to incorporate additional pipeline corridor deviations around affected national parks, nature reserves and Bushplan sites in order to prevent further impacts?

Response

As stated in Question 2.3, the existing DBNGP avoids many areas of bushland and a number of nearby conservation areas, and is therefore the preferred alignment for the widened corridor. Where bushland or conservation areas could not be avoided due to significant constraints, the proposed corridor has been aligned along the existing pipeline to prevent further fragmentation, and in some cases to one side or the other of the pipeline to avoid encroaching into the majority of the bushland.

Areas of remnant vegetation within the agricultural areas often occur in small isolated patches. While the corridor has been aligned to avoid most of these, the engineering constraints and prohibitive costs of constructing a pipeline within a corridor which 'zigzags' to avoid all areas of remnant vegetation, is not feasible. Where extensive deviations would be required to avoid larger expanses of bushland, the additional areas to be disturbed and associated costs and risk factors were weighed up against all environmental benefits (Refer to Section 3.3 of SER).

Several sections of the alignment which pass through bushland and conservation areas (Hill River, Muchea and Moore River) are still under investigation to determine if more appropriate alignments can be found. This is being done in close consultation with the DEP. A resolution to these areas will be provided as an addendum to this document once agreement has been reached.

Question 4.5

The DEP indicated that the Toolonga Nature Reserve conserves a portion of the vegetation of the Toolonga Plateau within the Carnarvon Basin and is the major reserve dedicated to this purpose. It is not replicated elsewhere (Burbidge et al., 1980), and there needs to be greater justification for going through this reserve on an ecological basis, although it is acknowledged that the breakaway on the very eastern portion of the reserve may be a significant constraint. Can the proponent please provide alternative routes or additional justification for going through this reserve?

Response

The constraints associated with the Toolonga Nature Reserve were outlined in Section 6.5.5 of the SER. The proposed corridor covers approximately 0.1% of this reserve, not all of which would be disturbed during construction of future pipelines. A deviation of 120 km (to the east) would be required to avoid this area with the associated financial and environmental costs for construction and operation of additional pipeline, supporting facilities and infrastructure. The breakaway on the very eastern portion of the reserve would also be a significant constraint. Based on these considerations, a deviation to avoid the Toolonga Nature Reserve is not considered feasible.

Question 4.6

The Minyulo Nature Reserve features species rich Kwongan heath, and the proposed corridor alignment traverses the northern part of the reserve for 800m parallel to the existing pipeline in order to minimise the impact at the Minyulo Brook crossing. The DEP considers that dismissing the alternative 5 km deviation that was put forward by the proponent because it would require two crossings of Minyulo Brook, it is not a sufficient reason to impact the reserve to this extent. Is the proponent prepared to reconsider using the proposed 5 km deviation in order to minimise the impact on the Minyulo Nature Reserve?

Response

Due to the proximity of MLV105 to the north of Minyulo Brook Nature Reserve and Brand Highway to the west, a deviation around the reserve is not considered feasible. Deviations around this reserve could also potentially have significant effects on areas of remnant vegetation. Future proponents will be required to restrict the working area to reduce impact in this reserve. This area has been discussed with the DEP and the proposed deviation has been agreed in principle as the most appropriate.

Question 4.7

While the DEP recognises that the proposed pipeline corridor alignment appears to keep the disturbance to the main body of the Badgingarra National Park to a minimum, and that there may be significant constraints on the final route alignment, it considers that a more detailed figure showing the pipeline corridor route options considered in the vicinity of the Badgingarra National Park should have been provided. Can the proponent provide the requested information?

Response
Additional information has been provided to the DEP, as requested. Aerial photographs have been provided and a field visit was undertaken with a member of the DEP Conservation Branch in July 2000. Alternative alignments in this area are still being investigated in consultation with the DEP, as noted in the response to Question 2.1.

Question 4.8

Deviation 9 shows that the proposed pipeline corridor follows the eastern side of the existing pipeline and goes directly through the middle of the Hill River Reserve and then proceeds to cover a wide section of the Brand Highway road reserve to the south for about 1 km. The DEP considers that it appears possible to deviate the proposed route a few degrees west at a point about 0.5 km north of Hill River, and hence cross the river at a narrow point in the vegetation and swing through the acute tip of the reserve before rejoining the existing pipeline just south of the bend in the Brand Highway, without going through the road reserve. Is the proponent willing to consider adopting the DEP's suggested pipeline corridor alignment?

Response
Refer to the responses to responses to Questions 2.1, 4.7, 4.9 and 4.10.

Alternative alignments in this area are still being investigated in consultation with the DEP, as noted previously.

Question 4.9

The DEP indicated that the level of detail provided in Figure 6.16 is insufficient in allowing the location of the proposed pipeline corridor to be determined relative to the Hill River Nature Reserve. Consequently, this makes it difficult to determine the magnitude of the impact on the reserve. Can the proposed pipeline corridor route avoid the Hill River Nature Reserve?

Response
Refer to responses to Questions 2.1, 4.7, 4.8 and 4.10.

Question 4.10

The DEP considers that the pipeline route alignment through the Coomallo Nature Reserve should have been shown on a more detailed aerial photograph, together with possible alternatives. Can the proponent provide additional information in regard to this concern?

Response
Refer to responses to Questions 2.1, 4.7, 4.8 and 4.9.

Question 4.11

The DEP indicated that the specific types of vegetation affected by the pipeline buffer strip within the Burma Road Nature Reserve have not been listed. It appears that there is no significant restraint on moving the proposed pipeline corridor slightly east of the reserve buffer strip to minimise any potential impacts. Can the proponent provide the additional information that was requested, and is it prepared to adopt the DEP's suggested pipeline corridor alignment?

Response

The proposed corridor will no longer be situated in the pipeline buffer zone within the Burma Road Nature Reserve and will have no impact on the reserve.

Question 4.12

The DEP indicated that the specific types of vegetation located in the affected western tip of the Burma Road Nature Reserve have not been listed. It appears that only a small deviation to the west is required in the route of the proposed pipeline corridor in order to minimise any potential impacts. Can the proponent provide the additional information that was requested, and is it prepared to adopt the DEP's suggested pipeline corridor alignment?

Response

It is incorrect that the proposed corridor will pass through the western tip of the Burma Road Nature Reserve. It is assumed that the DEP are referring to Wandana Nature Reserve further north where approximately 7.5 ha of vegetation has been excised from the reserve by the existing DBNGP and a track. The vegetation of this portion of the reserve is not as dense as the remainder of the reserve, and has been impacted by the adjacent agricultural land uses. Considering the condition of this portion of land a deviation is not considered appropriate, unless the results of the flora survey indicate the presence of significant flora or vegetation communities.

Question 4.13

The DEP indicated that as the proposed Moore River Nature Reserve is relatively small, consideration should be given to going around it, especially as a large part of it will be affected. Is the proponent prepared to adopt the DEP's suggested modification to the originally proposed pipeline corridor alignment?

Response

Alternative alignments in this area are still being investigated in consultation with the DEP.

Question 4.14

The DEP indicated that the conservation significance of Cane River Station appears to be high because the removal of grazing pressure is likely to allow populations of the more palatable species of native plants to recover to something approaching pre-settlement levels. If the pipeline corridor cannot be routed around the station it would need to be clearly demonstrated that the pipeline will not become, in the longer term, an avenue for the naturalisation of invasive species, and a direct access route with palatable forage for feral animals such as goats. Can the pipeline corridor route be changed so that it goes around Cane River Station in view of the above concern?

Response

A 70 km deviation around Cane River Station is considered unfeasible due to the environmental and financial costs associated with the construction and operation of additional pipeline and supporting infrastructure. Following construction of a pipeline all existing fences will be replaced, and the corridor will be rehabilitated in accordance with a rehabilitation plan developed in consultation with DEP, CALM and AgWA. One of the commitments presented in Table 11.1 of the SER states that field hygiene and weed management plans would be developed in consultation with, and approved by, CALM and AgWA. Rehabilitation would not incorporate the use of introduced grasses such as buffel grass, which may act as weeds along the corridor. Discussions with the DEP Conservation Branch in preparation of this response to submissions have indicated that the general alignment is acceptable.

Question 4.15

The DEP suggested that it would be helpful if the appraisal of the conservation value of Cane River Station was given in terms of the most detailed information available (unless or until specific investigation is carried out). This should be in terms of the land systems, or preferably, the land units and the proportion of each which is likely to be affected by the proposed pipeline corridor. Can the proponent please provide the requested information?

Response

Information from land system mapping and resource evaluation of Cane River Station undertaken by AgWA indicates that the majority of perennial vegetation on the station was considered in good condition, and soil erosion was evident at very few sites during a rangeland survey conducted in 1997. The introduced Buffel grass (*Cenchrus ciliaris*) was restricted to drainage lines supporting grassy eucalypt woodlands, or occasionally to degraded alluvial plains supporting spinifex and tussock grasses at 2% of sites assessed. None of the land systems that occur on the Cane River lease are restricted to that lease. The proposed pipeline route traverses Boolaloo, Cane, Nanutarra, Peedamulla, Stuart and Uaroo land systems on the Cane River lease. Of these, the Cane, Nanutarra and Peedamulla land systems are those in poorer condition. It is recognised that the Cane land system is sensitive to disturbance, particularly on the active alluvial plains. Care will be taken when installing the pipeline through this system and disturbance to the soil surface will be minimised, and stabilised to reduce the risk of erosion.

Within the Ashburton River catchment area the Nanutarra land system is restricted and only covers 93 km^2 (see Section 6.4.1 of SER). However, within the Pilbara area, it covers an area of 69,745 ha, and represents 1.9% of land systems on Cane River station (A.M.E. Van Vreeswyk, et al., *An Inventory and Condition Survey of Rangelands in the Pilbara Region, Western Australia*, Agriculture WA Technical Bulletin, in prep).

Question 4.16

The DEP requested that a clearer outline of the options and obstacles considered when deciding to place the proposed pipeline corridor route through conservation reserves and road reserves be provided via suitable figures. Images which give an indication of the latitude in an east-west direction would generally be appropriate. Can the proponent please provide the requested information?

Response

Additional figures showing greater detail of specific conservation areas requested, have been provided (refer to response to Questions 2.2, 3.1, 4.2, 4.7, 4.8, 4.9, 4.10 and 14.3).

Aerial photos have been provided to the DEP for sections of the corridor and surrounding areas where the DEP has requested deviations around Coomallo, Hill River, and Twyata and the proposed Moore River Nature Reserves. A field trip was also conducted with a representative of the DEP in early July to investigate alternative alignments and current conditions of these areas.

Additional information is provided in the supporting documentation.

ISSUE 5: WEEDS

Question 5.1

CALM recommended that Section 8.2.4 of the environmental review document which proposes the reporting of declared weeds to Agriculture WA (for agricultural and pastoral areas) or CALM (for bushland or reserve areas), needs to be expanded to address all recognised invasive weed species, not just declared weeds or those listed in Section 6.2 of the document. Is the proponent prepared to adopt and implement CALM's recommendation in regard to this matter?

Response
The GPSSC is prepared to adopt CALM's recommendation to include recognised invasive weed species on the list of species which need to be reported to AgWA and CALM (Refer to Section 8.2.4 of SER).

Question 5.2

CALM is concerned that the responsibility for the on going long term management of weeds should lie with one agency and that funding be made available. Although Section 11.4 of the environmental review document discusses mechanisms for on-going funding, auditing and management of the easement and indicates that discussions will occur between the proponent and the Land Access Minister, CALM suggested that the resulting arrangements need to be in accordance with the requirements of the Minister for the Environment. How does the proponent respond to the above concern?

Response
While the land will remain under the control of the landholder, the DBNGP Corridor will be managed by the Department of Land Administration for the Land Access Minister. Should weed infestation become a significant problem that requires remedial work, the Minister for the Environment would notify the Land Access Minister who would in turn instruct DOLA to either request the pipeline companies take the necessary action or contract-out the necessary remedial work and back charge the pipeline companies.

Question 5.3

The Wildflower Society of WA Inc indicated that construction of the expanded pipeline corridor will facilitate the spread of weeds and promote disturbance by increasing the accessibility of sites. How does the proponent respond to the above concern?

Response
Future proponents will be required to implement field hygiene procedures during construction and operation of future pipelines within the corridor. These procedures will be developed in consultation

with, and approved by CALM and AgWA (Refer to Section 8.2.4 of SER). Fences, locked gates and other barriers will be installed as necessary to prevent third party access.

Question 5.4

The DEP indicated that the Wooramel River, and possibly several other rivers, have severely degraded areas along them closer to the coast. These areas have been planted with buffel grass and its allies to stabilise erosion and are major sources of seeds. It is likely that inocula of these species occur along the watercourse, so that care will be needed at crossings to reduce the spread of this grass outwards. How does the proponent respond to the above concern?

Response

As stated in Section 8.2.4 of the SER document, future proponents will implement a weed control programme to ensure that weed species will not be introduced to, or spread from, the proposed corridor. It is acknowledged that waterway crossings may act as foci for the introduction of weeds, particularly grass weeds. Specific management measures will be required in these areas, particularly where weed infestations are known to occur nearby.

ISSUE 6: DIEBACK

Questions 6.1

The Wildflower Society of WA Inc indicated that the proposed dieback control measures will not completely stop the spread of this disease because testing is unlikely to reveal all infected sites, and attempts to decontaminate equipment are unlikely to be completely effective. The Society stated that any operation that moves large quantities of soils in affected areas will inevitably spread this disease. How does the proponent respond to the above concern?

Response

As stated in Section 8.3 of the SER document, a dieback survey will be conducted prior to construction of a pipeline in accordance with current protocol and methods recommended by CALM. The proposed management measures outlined in the document represent the minimum requirement for future proponents and have been developed on the basis of the most current advice and recommendations.

Question 6.2

The DEP indicated that dieback management will have to be strongly structured into long term management by pipeline operators for the whole of the susceptible areas, and with particular emphasis on reserve areas that are traversed by the proposed pipeline corridor. This will need to be enforceable in some meaningful long term way, otherwise new avenues for the spread of dieback will gradually consolidate. A commitment or bond etc placed on pipeline proponents may be warranted. How does the proponent respond to the above concern?

Response

The GPSSC agrees that dieback management will have to be strongly structured into long term management practices by pipeline operators for the whole of the susceptible areas. Individual proponents will be required to prepare dieback management plans for review by CALM and for assessment under Section 38 of the *Environmental Protection Act*. As described in the response to Question 5.2, DOLA manage the corridor for the Land Access Minister and leases rights to pipeline companies to use sections of the corridor.

ISSUE 7: EPP LAKES AND OTHER SPECIALLY PROTECTED WETLANDS

Question 7.1

The DEP indicated that the destruction of even small stands of trees around wetlands may form a nucleus which 'seeds' or accelerates salination. This appears to be the case for one of the lakes north of Airfield Road where the death of a 50m x 50m patch of trees on the adjacent low sand rise had nucleated an area which now contains halophyte vegetation and many dead Melaleucas. Under the wrong circumstances it seems likely that clearing for the pipeline corridor could replicate such an effect. Similar effects may result from changes to groundwater movement caused by pipeline construction. Accordingly, this issue needs to be considered in the location, design and construction phases in susceptible areas. How does the proponent respond to the above concern?

Response

The GPSSC acknowledges DEP's comment that construction around a wetland has the potential to 'seed' or accelerate salination. In selection of the proposed corridor, the GPSSC has tried to avoid all wetland areas and associated vegetation where possible. In a few cases where this has not been possible due to conflicting constraints, the corridor has been aligned through previously disturbed areas where these are present. To minimise the impacts to groundwater hydrology, future proponents will be required to reinstate excavated material as close as possible to the original stratigraphy (Refer to Section 8.6.3 of the SER document).

In agricultural areas, stands of trees have been avoided where practicable, although it has not been possible to align the corridor to avoid all trees. The corridor will be rehabilitated, conducive to the existing land use, although deep-rooted trees will not be allowed to become re-established over the constructed pipeline(s) due to the risk of pipe damage from tree roots.

ISSUE 8: EROSION

Question 8.1

The Shire of Dandaragan indicated that special consideration should be given to bank stability, erosion, flooding and the loss of trees at the Hill River, Moore River and Minyulo Brook pipeline river crossings. How does the proponent respond to the above concern?

Response

The GPSSC agrees that special consideration should be given to bank stability, erosion, flooding and the loss of trees at specific river crossings. As stated in Table 11.1 of the SER document, future proponents will be required to consult DEP, WRC and AgWA. While proponents will be required to restrict disturbance through sensitive areas such as the Moore River and Minyulo Brook, disturbance to some riparian vegetation will be unavoidable.

Question 8.2

The Shire of Chapman Valley expressed concern about the extensive soil erosion problems that have arisen where previous borrow pits have not being properly rehabilitated. The Shire indicated that it is important that rehabilitation measures incorporate the reinstatement of top soil and the monitoring of vegetation over several years, to ensure that the rehabilitation process is successful. How does the proponent respond to the above concern?

Response

Any borrow pits which are used during the construction of a future pipeline will be rehabilitated once they are no longer required (Refer to Section 8.1.3 of SER). As stated in Table 11.1 of the SER document, future proponents will be required to rehabilitate all areas disturbed during construction of a pipeline in accordance with a rehabilitation plan prepared and approved by CALM, DEP and AgWA. This would include replacement of the original topsoil and the use of locally sourced seed if seeding is required.

ISSUE 9: REHABILITATION PROGRAMME

Question 9.1

The Shire of Dandaragan expressed concern about the manner in which construction of the previous pipeline had reduced soil productivity and financially disadvantaged farmers, and indicated that as a result, farmers do not wish to relinquish further land unless construction and rehabilitation techniques are improved. The Shire also suggested that additional rehabilitation work should be carried out on the existing corridor to regain some confidence from the affected landowners. How does the proponent respond to the above concern?

Response

The GPSSC is aware of the problems experienced following construction of the existing pipeline in regards to soil productivity, and commissioned a study to investigate the main causes of soil degradation along the DBNGP and provide recommendations for future proponents. These were presented in Sections 7.5 and 8.7.4, and Appendix D of the SER document.

The proposal to undertake additional rehabilitation work along the existing corridor is outside the scope of this study, and should be requested through DOLA, the current manager of the pipeline corridor.

Question 9.2

The Shire of Chapman Valley indicated that Section 6.7.2 of the environmental review document does not go far enough in stipulating the conditions proponents must adhere to when laying new pipelines in order to prevent a depletion in the quality and quantity of top soil on affected properties along the pipeline route. Can the proponent please provide additional information on the measures that will used by proponents to prevent a depletion in the quality and quantity of top soil on affected properties along the pipeline route?

Response

Further guidelines and commitments for future proponents in regards to construction methods to avoid the depletion of the quality and quantity of topsoil, are further outlined in Sections 8.1.2, 8.6.4, 8.7, 8.8 and 11 and Appendix D of the SER document.

Question 9.3

The Wildflower Society of WA Inc indicated that the knowledge required for the successful rehabilitation of many of the plant communities that will be cleared is not available. While mining companies have attempted to restore some vegetation types in the Northern Sandplains region, they have yet to demonstrate that these communities were fully restored to original levels and types of diversity, and that they had formed sustainable natural ecosystems. The habitats in the pipeline corridor include some of the world's most diverse plant communities and include many species which are difficult or impossible to propagate. While all cleared vegetation must be restored, it is unrealistic to expect the restoration attempts in very diverse ecosystems will be successful. The absence of large woody plants and redisturbance of the corridor will also ensure that full vegetation recovery is impossible. How does the proponent respond to the above concern?

Response

The GPSSC acknowledges that it is not possible to rehabilitate a vegetation community to the exact state prior to disturbance, and that no development is without impact. However, as stated in Table 11.1 "Rehabilitation" of the SER document, future proponents will be required to prepare a detailed rehabilitation plan prior to construction, in consultation with, and approved by, CALM, AgWA and the DEP.

Question 9.4

The Wildflower Society of WA Inc indicated that if the project does proceed in any form, adequate funds must be provided to allow the impacts on vegetation to be monitored and any remedial steps to be taken for many years to come. The Society believes that an independent body is required to assess on-going environmental impacts, and suggested that the proponent must provide funds for these activities as existing government agencies such as CALM and the EPA do not have sufficient resources. Money would have to be set aside as a bond to manage the affected areas after the project has been completed. How does the proponent respond to the above concern?

Response

Refer to Table 11.1 "Rehabilitation" of the SER and response to Question 9.3. In regards to the ongoing long term management of the corridor, refer to responses to Questions 5.2 and 6.2. A rehabilitation plan, prepared in consultation with, and approved by, CALM will include detailed, auditable completion criteria and a monitoring schedule. This is likely to include comparison of the progress of the rehabilitation against the surrounding vegetation communities, over a period of time.

ISSUE 10: SURFACE WATER AND GROUNDWATER QUALITY

Question 10.1

The Shire of Chapman Valley expressed concern about rock blasting procedures damaging aquifers within the region which currently provide water for both personal and broad acre farming uses. The Shire Council believes that the conditions relating to blasting activities for the installation of new pipelines must incorporate some form of geotechnical survey along the route to identify aquifers, as well as fair and equitable compensation to land owners for the loss of any water sources from blasting. How does the proponent respond to the above concern?

Response

Appropriate geotechnical investigations will be required prior to construction of a future pipeline (Refer to Section 3.3 "Geotechnical Constraints Considered" of SER). Where blasting is considered necessary, blasting induced fracturing will be restricted to the trench area only which will extend to a depth of 1.5 to 2.0 m. Blasting will not be of a scale which would have any impact on nearby aquifers.

Future proponents will be required to comply with the Department of Minerals and Energy requirements for undertaking blasting and will submit a Blasting Operation Plan which will outline the rock blasting design, procedures and the limits to be observed (Refer to Section 9.4 of SER).

Question 10.2

The Water and Rivers Commission (WRC) indicated that many of the issues involving water resources are site specific, and requested that it be consulted regarding construction details where construction may impact on rivers, wetlands and existing or future drinking water supply areas. In order to address the above concern, will a condition be placed on future pipeline proponents to consult with the WRC in regard to this matter?

Response

Any future proponent will be required to consult with the WRC (see Table 11.1 "Erosion control" of the SER document) in regard to construction activities which may impact on rivers, wetlands and existing or future drinking water supply areas.

ISSUE 11: NOISE AND VIBRATION

Question 11.1

The Department of Environmental Protection (DEP) indicated that a detailed noise management plan will need to be developed by proponents carrying out construction / earthmoving work on the corridor or the pipelines within it, where this activity occurs within 1km of a residence. Will this requirement be made a formal condition for future pipeline proponents?

Response

As stated in Table 11.1 any future proponent proposing to develop within the corridor will be required to prepare a noise management plan and comply with the *Environmental Protection (Noise) Regulations* 1997. Specific proposals to develop within the corridor will be subject to environmental assessment under Section 38 of *the Environmental Protection Act* 1986. This statement also applies to Questions 11.2 to 11.6.

Question 11.2

DEP indicated that on going noise sources such as compressor stations need to be designed, and if necessary sited, so that noise emissions from them comply with the regulations and are not intrusive. The DEP pointed out that full compliance with the regulations in some rural areas where ambient levels are very low may still leave noise emissions from compressors intrusive in character. How does the proponent respond to the above concern

Response

Any proposal to develop within the corridor will be required to comply with the *Environmental Protection (Noise) Regulations* 1997 and other relevant standards. On going noise sources such as compressor stations will be designed and operated according to best industry practice.

Question 11.3

The DEP indicated that the information provided in the environmental review document on vibration levels only relates to the protection of structures such as buildings and other pipelines, and while the limit of 50mm/s PPV cited is acceptable for building and pipeline protection, a substantially lower level is required to provide adequate protection for people. A limit of 5mm/s PPV is recommended (Australian and New Zealand Environment Council, Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration, September 1990). How does the proponent respond to the above concern?

Response

The majority of the proposed pipeline corridor is remote and does not pass through any settlements. The potential for annoyance due to blasting activities is expected to be negligible. The vibration level of 50 mm/s Peak Particle Velocity (PPV) relates only to structures in the immediate vicinity of the

blast (i.e. within or immediately adjacent to the pipeline corridor). This level of vibration is not intended to be applicable to persons living or working in the general vicinity of the construction activities. Since the peak level of ground motion at any given point is inversely proportional to the square of the distance from the blast point, a PPV of 50 mm/s will attenuate to only 5 mm/s within approximately 80 m of the blast. Persons outside of the immediate construction site will therefore not be adversely impacted by blasting activity.

Question 11.4

The DEP suggested that vibration measurement in locations where residences are within about 500m of the pipeline corridor should be included in noise management plans prepared by future proponents. Will the DEP's suggestion be made a formal condition for future pipeline proponents?

Response
The GPSSC agrees that vibration measurements should be included in noise management plans near residential areas. As stated in Section 8.7.1 of the SER document, in the absence of legislated vibration limits, the Proponent(s) would be required to reach an agreement with the appropriate regulatory authorities as to what constitutes an appropriate level of vibration.

Question 11.5

The DEP indicated that pressure relief valves and regular pressure testing of pipelines may result in other noise sources that will require consideration when the pipelines are in operation. These other sources will need to comply with Regulation 7 of the Environmental Protection (Noise) Regulations 1997. However, initial pressure testing of pipelines to prove construction integrity would be classed as construction work for the purposes of the regulations. How does the proponent respond to the above advice from the DEP?

Response
Future proponents will be required to comply with all applicable requirements for construction and operation including Regulation 7 of the *Environmental Protection (Noise) Regulations* 1997. Each proposal to develop the corridor will require environmental assessment under Section 38 of the *Environmental Protection Act* 1986, which will include the potential noise impacts of the development and the proponent's proposed management measures.

Question 11.6

The Shire of Chapman Valley requested further clarification about whether the Department of Minerals and Energy would be involved in issuing permits to future proponents which outline rock blasting design, procedures and appropriate limits. Can the proponent provide further clarification in regard to this matter?

Response

Future proponents will be required to comply with the Department of Minerals and Energy requirements for undertaking blasting and will submit a Blasting Operation Plan which will outline the rock blasting design, procedures and the limits to be observed (Refer to Section 9.4 of SER).

ISSUE 12: RISKS AND HAZARDS

Question 12.1

CALM suggested that, in addition to the fire management procedures to be used during construction, which were discussed in Section 8.19 of the environmental review document, consideration also needs to be given to strategic access for machinery crossing pipelines during fire suppression activities. How does the proponent respond to the above concern?

Response

The existing pipeline and any future pipelines to be constructed within the corridor are not considered a barrier to access for fire management procedures, provided vehicles crossing the pipeline(s) weigh less than 3 t. Consideration will be given to providing strategic access points for larger vehicles in conjunction with CALM.

Question 12.2

The Department of Minerals and Energy (DME) indicated that Section 9 of the environmental review document is limited to public safety issues and does not extend to cover environmental risk. The DME considers that AS/NZS 4360-1995, which was identified as being the relevant Australian Standard in Section 2.3.6, could be interpreted to provide a risk based approach to environmental management, and included in the Guidelines for Future Proponents in Section 11. How does the proponent respond to the above concern?

Response

Future proponents will be required to consider AS/NZS 4360-1995 when developing specific environmental management procedures. In developing the environmental management guidelines as outlined in Section 11, the GPSSC has adopted the approach prescribed by the APIA Code of Environmental Practice.

Question 12.3

The Department of Defence indicated that the proposed pipeline corridor alignment places severe restrictions on land use over the Muchea Air Weapons Range (AWR). These restrictions arise from the need for unexploded ordnance (UXO) clearance through the alignment, increased public risk, and public safety concerns. Deviations B and C around the wetlands at Muchea have encroached upon the Muchea AWR safety template and compromised safety procedures within the area. The Department of Defence indicated that these issues have not been clearly stated within the environmental review document and only receive brief comment in Section 7.4, and therefore, will need to be resolved prior to any formal agreement on the proposed pipeline corridor alignment. Can the proponent please indicate how it intends to resolve this important matter with the Department of Defence, particularly in regard to using an alternative pipeline corridor route alignment that will not impact upon the wetlands at Muchea and the town site itself?

Response

The Department of Defence will be consulted on the finalisation of the proposed corridor through the Defence lease near Muchea in addition to those decision making authorities outlined in Questions 2.2 and 3.1. It is acknowledged the alignment of this section of the corridor is currently unresolved and Department of Defence will be included in discussions to select and appropriate alignment with the DEP, CALM and WRC.

ISSUE 13: PUBLIC CONSULTATION

Question 13.1

The Wildflower Society of WA Inc indicated that it should be added to the proponent's list of stakeholders that need to be consulted during the environmental impact assessment process, and asked to be informed of any further developments. Is the proponent prepared to accommodate the Society's request in this regard?

Response
The GPSSC will add the Wildflower Society of WA Inc. to the list of stakeholders which will need to be consulted during the environmental impact assessment process, and will inform the Society of further developments.

Question 13.2

The Shire of Mullewa would like to see the opportunity for community forums to be held in those communities that have such a desire, so that the impacts of the proposed pipeline corridor expansion can be fully discussed. The Shire indicated that an invitation to a single community forum may allow the same message to be given to a larger number of people. The Shire highlighted the fact that one on one negotiations have lead to some distrust and suspicion in the local community, and in this respect, the Shire requested that an equitable compensation arrangement be established both during corridor widening and pipeline construction. How does the proponent respond to the Shire's concerns and is the proponent prepared to accommodate the Shire's requests in this regard?

Response
The GPSSC has discussed this matter with the CEO of the Shire of Mullewa and is happy to discuss compensation through them if this is deemed to be appropriate by the landholders in that Shire.

ISSUE 14: OTHER ISSUES

Question 14.1

The Shire of Dandaragan indicated that the compensation paid to land owners for the loss of their land for the existing pipeline corridor was minimal, and that in view of the previous soil productivity loss and proposed changes to land tenure rights, due consideration should be given to substantially increased compensation for land owners for the loss of their land. How does the proponent respond to the above concern?

Response
Consideration has been given to matters of compensation and will be dealt with through the Valuer General's Office.

Question 14.2

A submission from a concerned landowner living in the Dongara area requested that the pipeline corridor expansion be undertaken on the western side of the existing pipeline on his property (details provided to proponent), as it would then not interfere with his farming operations, and would utilise existing waste land. Can the proponent accommodate this landowners request?

Response
The GPSSC is prepared to align the proposed corridor 30 m to the west of the existing DBNGP, which will remove a narrow strip of vegetation, with the remaining 40 m to the east. It is not considered feasible to align the entire 70 m of the proposed corridor to the west of the existing pipeline due to the proximity of Burma Road Nature Reserve.

Question 14.3

The DEP indicated that the scales of Figures 6.14 through to 6.16 are inadequate as they do not allow a proper judgement to be made of the relative impact of the alignment on all but the largest conservation areas. A scale closer to that used in figures such as Deviation 9 (ie; 1:100) would have been more appropriate for smaller reserves, and something in the range 1:1000 to 1:10000 for the larger ones. Can the proponent please provide figures at the requested scales?

Response
Figures for conservation areas have been provided to the DEP at a larger scale, although due to unresolved alignments, detailed maps of the Coomallo, Hill River and Twyata Nature Reserves and Badgingarra National Park will be provided as an addendum, if required when an alignment is agreed.

Question 14.4

The Department of Defence indicated that an Environmental Management Plan (EMP) for Muchea Air Weapons Range (AWR) and other RAAF properties in the area is presently being developed and should be completed in August 2000. Environmental issues raised in the environmental review document, to be addressed by the proponent, will also need to conform to the environmental policy, objectives and strategies developed in the Department of Defence Muchea AWR EMP. How does the proponent respond to the above concern?

Response

The GPSSC is aware of the proposed Environmental Management Plan (EMP) for the Defence lease. Future proponents proposing to develop a pipeline along the eastern edge of the Defence lease will be required to consider the policy, objectives and strategies outlined in this EMP.

* * *

The GPSSC has endeavoured to ensure all issues raised during the submission period have been addressed. It is important that this documentation be read in conjunction with the SER (15 February, 2000) and the supporting technical documentation on the existing environment, potential impacts and proposed management of the realigned sections of the corridor.

Detailed figures for the 3 outstanding areas have been omitted from this response and will be provided as an addendum when alignments have been agreed and finalised. The 3 outstanding areas are:

- Hill River (incorporating Hill River Nature Reserve, Badgingarra National Park, Coomallo Nature Reserve and Twyata Nature Reserve) ;
- Moore River Proposed Nature Reserve; and
- Department of Defence Lease, south of Muchea township.

We would also like to take this opportunity to provide an apology for two misspelt names in Section 13 - Acknowledgements, in original SER. Our apologies to:

- Sandy Lloyd at AgWA; and
- John Güld at DEP.

If you have any queries please don't hesitate to contact Nigel Goodall at the Gas Pipeline Working Group on 9320 2214.

ADDENDUM TO RESPONSE TO SUBMISSION TO PUBLIC REVIEW PERIOD, DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR EXPANSION 16(E) STRATEGIC ENVIRONMENTAL REVIEW

The initial response to submission to the public review period indicated that an addendum would be supplied to provide further information in regard to questions 3.2, 4.4, 4.7, 4.8, 4.9, 4.13 and 14.3.

These questions were in regard to impact of the corridor on National Parks (Badgingarra), Reserves (Moore River Nature Reserve, Hill River Nature Reserve, Coomallo Nature Reserve and Twyata Nature Reserve).

Detailed discussions have been held with the DEP in regard to the development of deviations to bi-pass these areas where possible.

The attached maps show alignments that have been proposed by the DEP Conservation Branch in order to bi-pass or minimise impact on each of the areas.

As a result of these deviations the following areas are not impacted by the 70m corridor expansion.

- Badgingarra National Park
- Moore River Nature Reserve
- Hill River Nature Reserve, and
- Coomallo Nature Reserve

The Badgingarra deviation crosses Hill River in the Twyata Nature Reserve. Alignment of the crossing has been chosen to minimise impact on the reserve and to ensure that no rare and endangered species are impacted. Impact will be minimised during construction and the disturbed area rehabilitated to a high standard.

The alignment west of Muchea passes through bushplan site 97. This area is already dissected by a Western Power easement and the Parmelia gas pipeline easement. In order to minimise ingress into the area the DBNGP corridor has been aligned with the Western Power easement in the Northern Section and the Parmelia pipeline corridor in the Southern Section.

In the case of all deviations detailed flora surveys have been carried out to ensure that the chosen alignments do not impact on rare and endangered special.