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Mr Warren Tacey
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Dear Mr Warren Tacey

Proposed Gorgon Development – Murdoch Review of Draft EIS/ERMP

Please find attached our comments on the report prepared by Professor Richard Hobbs of the School of Environmental Science at Murdoch University on aspects of the Draft EIS/ERMP for the Proposed Gorgon Development.

Thank you for the opportunity to consider his views and respond. I understand that both his report and our response will be made public at the release of the EPA Report and Recommendation.

Yours sincerely

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The Gorgon Joint Venturers Response to the Murdoch Review of the Draft EIS/ERMP

The West Australian Environmental Protection Authority engaged Professor Richard Hobbs from the School of Environmental Sciences at Murdoch University to perform a review of the Gorgon Development Draft EIS/ERMP and Additional Information Package. The Gorgon Joint Venturers have been provided with the report, entitled: *Review of and Advice on Gorgon Environmental Impact Statement and Environmental Review and Management Programme*, by Hobbs, R. J. (November 2005), referred to here as the 'Murdoch Review'. The opportunity to comment on this review is welcomed by the Gorgon Joint Venturers as it continues the transparent process that has been applied to the Draft EIS/ERMP and the matter of quarantine in particular. The Gorgon Joint Venturers also welcome the helpful suggestions in the Murdoch Review as they continue to improve their quarantine management plans to protect the conservation values of Barrow Island and the surrounding waters. The Murdoch Review recognises the issues associated with quarantine and their approach and expectations do not differ greatly from that of the Gorgon Joint Venturers.

The Gorgon Joint Venturers agree with the Murdoch Review that the conservation values of Barrow Island are unique and that invasive species pose a risk to these values. The Venturers appreciate the recognition in the Murdoch Review that the development of a world-class Quarantine Management System for the Proposed Gorgon Development is an ambitious attempt to reduce the increased risk associated with the change in the invasion probability (From Table 3.1 and Table 3.2). However the Ventures disagree that the progress to date suggests that a management system as proposed by the Venturers will not deliver the degree of quarantine protection agreed to through the community consultation process.

Risk Assessment Framework

The Murdoch Review acknowledged that the risk assessment approach undertaken by the Ventures is an acceptable and recognised approach, and that it is rapidly developing as a preferred scientific approach in challenges that require a qualitative adjudication. The Venturers in observing the advice of EPA as set out in their report and recommendation on the Environmental, Social and Economic Review of the Gorgon Development, (Bulletin 1011 2004); have developed this qualitative risk assessment methodology as a legitimate means of estimating the risk of introduction of non indigenous species in consultation with experts and the community.

As set out in Section 2.2 by the Murdoch Review, the Ventures understand and accept the limitations of risk assessment and have not utilised it as an exact science. In this context, the Venturers have used a conservative approach to assessing risk as a precautionary measure. In cases, where limited information eroded the confidence of the Ventures to determine risk, significant resources were made available in an attempt to fill the information gaps that had been identified. As an example, a competent invertebrate baseline survey for Barrow Island could not be uncovered in agencies or with the existing oilfield operator. Therefore the Ventures have funded a pilot baseline survey and a second extensive baseline survey to establish for the first time a detailed understanding of the invertebrate assemblages in the vicinity of the proposed Development and a range of disturbed sites on the Island. Such an approach has resulted in a better understanding of the risk associated with the proposed development. The Venturers and independent experts are not required to rely on assumptions and anecdotal evidence but have verifiable facts when assessing the potential quarantine risk.

Introduction of Invasive Species or Disease

The Ventures acknowledge the opinion in the Murdoch Review that invasive species, when ignored, are potentially a high risk threat in all ecosystems and if such species manages to establish they have the potential to be a high risk stressor. The Ventures highlighted this risk by dedicating an entire chapter in the Draft EIS/ERMP to Quarantine Management. In hindsight there could have been clearer linkage between Chapter 10 dealing with the Terrestrial Environment - Risks and Management and Chapter 12

Quarantine - Risks and Management. By dealing with quarantine and the potential introduction of non-indigenous species in a separate chapter, it was intended to highlight the importance of the matter rather than include it as a subsection in chapters in both terrestrial and marine environments.

The Venturers are well aware of the growing global concern of the environmental impacts and accompanying economic costs on ecosystems of invasive species. It is this awareness, coupled with the conservation status of Barrow Island that drives the Venturers to develop a Quarantine Management System that is setting new benchmarks. This awareness and system has a "zero tolerance" to the introduction of non-native species to Barrow Island.

In developing the Quarantine Management System, the Ventures are well-advanced in completing a quarantine management plan that incorporates detailed information on invasive species phenomena, species action plans, monitoring plans and eradication responses. In the management plan, attention is paid to biology and factors that influence potential introduction of non-native species as a result of the development's. These include the dispersal potential of organisms within the identified pathways of introduction, establishment of an individual(s) on the Island, the likelihood of survival and reproduction of such individuals and the subsequent colonization potential of the species.

The Venturers are very aware that the scale of the proposed Gorgon Development differs significantly from the existing oil field operations on the Island. The relative success of the existing quarantine management program has informed the proposed Gorgon Development. Specific attention has been and continues to be given to externalities such as an:

- increase in the number of suppliers and their respective locations (donor regions),
- stochastic and deterministic events within these source locations that may effect the risk profile (e.g. predictable floral blooms of buffel grass or kapok at the marine loading facility in Dampier or unexpected nuptial flights of termites after a rain event),
- perturbation on the Island as a result of the proposed development or unrelated environmental change that creates favourable habitat for colonization,
- opportunistic and episodic events that present a colonization window for species that require a juxtaposition of a unique/specific set of environmental conditions, and
- substantial increase in vectors to and on the Island that increase the inter-island dispersal and mobility of non-native species.

Adequacy of proposed measures

The Venturers agree with the Murdoch Review that the development of the Quarantine Management System is an ambitious project that requires considerable resources in the form of people, financial, technological, ingenuity and leadership to ensure the integrity of the system.

Over the 40 years of successful oilfield operation, quarantine management on Barrow Island has developed into a sophisticated, practicable process that has significantly contributed to the conservation values present on the Island. One of the strengths of this process has been the application of lessons learned over the years. Quarantine management is embedded in every project undertaken on Barrow Island and in every logistical activity. Visitors to the Island, whether from government agencies or community organisations, understand that there is pervasive quarantine culture that has developed over time. This is an accomplishment in which the operator takes considerable pride.

The Joint Venturers appreciate the challenge of developing a world class QMS for the proposed Gorgon Development which seeks to build on the legacy of the existing successful quarantine management program in a manner that can accommodate the increased activities associated with the proposed development. The QMS will incorporate the principles of ISO 9001 and ISO 14001 and will populate

the existing operational systems of the Joint Venturers and the operator (Chevron Australia) with quarantine procedures and requirements.

The QMS will be supported by a Quarantine Management Plan that identifies the key performance indicators as determined in the QHAZ process, the actions and procedures required for compliance and the measurements to ensure compliance. The management plan will cascade into all the operations of the Development. Both the QMS and the QMP will be subject to audit and review to ensure the desired outcomes. Progress to date supports the completion and full implementation of the system prior to construction.

Meeting community expectations

The Venturers have a different view to that expressed in the Murdoch Review on the ability to meet the community expectations for quarantine standards. This difference may be the result of a view developed by the author without the benefit of a complete set of available information at his disposal.

In line with the advice of EPA, the Venturers have embarked on a very robust, rigorous and transparent public process that aims to meet the community expectations of acceptable risk associated with the proposed Development. Through collaboration with independent experts and the broader community, the Venturers have a confidence in their abilities to develop an efficient and effective QMS which will ensure that the risks to the conservation values are acceptable and manageable, and meet the community expectations.

To date, the Gorgon Joint Venturers have held 28 workshops involving 29 independent technical specialists to assist and advise in the development of:

- an array of quarantine management measures,
- a set of barriers for the identified pathways that reduce residual risk of each item designated for the Island,
- detailed quarantine procedures underpinning the respective barriers,
- detection, monitoring and surveillance plans, and
- response and eradication strategies in the event of a quarantine breach.

In this context, it is the opinion of independent technical specialists, supported by advice from the Quarantine Advisory Committee that the risk of introductions to Barrow Island is low. This was reported in the Additional Information Package.

The workshops have been professionally facilitated to ensure that the risk scores and definitions have been consistently applied by the participants, and a wealth of experience has been gained to demonstrate how the scores are interpreted in practice. The accuracy of the judgments are assured through the proven risk assessment practice of engaging technical experts as a group, where debate and discussion was conducted openly and transparently among independent experts. In the event of uncertainty or differences of opinion, the range of scores was recorded in every case. The results of all workshops are published on the Gorgon quarantine website. Ultimately, the accuracy of scoring rests with the independent experts who have repeatedly attended workshops and exercised their interpretation of the scores with their colleagues.

The Joint Venturers have developed a set of standards for acceptable risk, with advice from experts and substantial community input. These standards are presented in Boxes 12-9 through 12-12 of the Draft EIS/ERMP. Details of the three priority pathways are presented in Part 2 of the Additional Information Package, which shows how the standards have been met in a rigorous and transparent manner for the three priority pathways, relying on the judgment and advice of independent experts participating in QHAZ workshops.

The Joint Venturers transparently discussed the possibility that introduction scores could not be reduced to a score of '1' (*The infection is extremely remote, highly unlikely*) in the Risk Standards Workshops #2 and #3

(Technical Appendix D3), and also reported this to the wider community during the development of the risk standards framework (starting with Community Consultation Meeting #2, 20 April 2004, and in subsequent meetings). The Joint Venturers discussed the additional measures that have been adopted in these situations. The community expressed the view in these Risk Standards Workshops, that there should be a commitment to 'a risk scaling of 3 (*There is a slight chance of infection*) as an upper limit'. The introduction scores for the pathways presented in Part 2 of the Additional Information Package and the subsequent scores in five other pathways are consistent with this upper limit, and meet the Joint Venturers' standards for acceptable risk (Boxes 12-9 through 12-12 in the Draft EIS/ERMP, pages 557-560).

As stated in the Additional Information Package, it is important to note, based on the advice of independent experts attending the QHAZ workshops, the scores for introduction cannot be further reduced, other than through the use of fumigation. The use of fumigation chemicals can have negative environmental consequences and hence this has been reserved as a measure of last resort in situations where cargo is discovered to contain organisms that have evaded the multiple barriers applied prior to transport to Barrow Island. The experts also expressed the view, on many occasions, that the scores for introductions reflect a precautionary judgment of risk (maximum scores) based on a lack of performance data for the proposed barriers. As experience is gained with the barriers that are used as the basis for scoring, an iterative process of review and improvement will occur as required by the QMS to further reduce the risk of introduction.

Disease organisms

As recommended by the Quarantine Expert Panel, the Venturers obtained advice on potential threats of disease by way of desktop studies. These reports are presented in Technical Appendices D8 and D9 of the Draft EIS/ERMP. Micro-organism threats to terrestrial vertebrate fauna were addressed by the School of Veterinary and Biomedical Sciences at Murdoch University. The plant pathogen threats were discussed by the Curator of the Plant Pathology Herbarium of the Queensland Department of Primary Industries and Fisheries. Potential pathogens and their hosts were identified in these studies, such that quarantine management would take them into account when developing barriers, particularly for the food and perishables and personnel pathways.

Experts have concluded that although risks associated with disease introduction exist, there are varying perceptions on the level of this risk. Notwithstanding this, the Venturers remain confident the proposed housekeeping and cleanliness requirements are sufficiently robust to ensure a very high standard of quarantine compliance. This will significantly reduce the stochastic probability of an unforeseen introduction within a poorly understood dynamic of a disease.

Detection, monitoring, surveillance and eradication

The Venturers agree with the Murdoch Review comments in Section 3.5 on Likelihood of detecting successful invasions. The primary focus in preventing the establishment of non-indigenous species on Barrow Island has been placed on preventing introductions through the barrier design, but the proposed Development will include detection, monitoring, surveillance and eradication. The aim of the detection, monitoring and surveillance program is to detect incursions of non-indigenous species along any of the pathways, and /or on the Island, by employing a logical methodology for surveys at regular time intervals during the pre-construction, construction, and operational phases of the development. Detection will trigger an Eradication Response Strategy that consists of a detection plan, incursion report, agency and operator contacts and authority, response inventory (eg. equipment and instructions), category of incursion and category of response, response protocol and Species Action Protocol aimed at containing and eradicating any introduction.

The Venturers recognise that eradication efforts will be organism-specific and have committed to a rapid response strategy utilising the advice of technical specialists (Section 12.5.9 of the Draft EIS/ERMP).

The detail of the strategy is being developed and will be subjected to peer review and field training exercises prior to the commencement of construction activities for the proposed Development. Chevron Australia, as the operator of the existing oilfield, has experience in effective response for introduced rats, mice and several species of plants on Barrow Island.

An important part of the Response Protocol will be pre-existing contingency plans for specific types of quarantine breaches and emergency situations that might occur (e.g., medical evacuation, distress of a vessel at sea requiring assistance). The Eradication Response Strategy will be completed prior to the start of construction.

Timely completion of pathways

The pathways will be completed in a timely manner. By agreement with the EPA and the Quarantine Expert Panel, the Venturers had focused on the delivery of the three critical pathways that were believed to be the most difficult and had the earliest application in the construction schedule. These were Sand Aggregate, Personnel and their Luggage, and Food and Perishables. The Joint Venturers have committed to complete all pathway assessments, develop pathway-specific barriers, test the proposed barriers in QHAZ workshops with independent experts and implement the barriers prior to the start of those materials being required on Barrow Island. To date ten of the fifteen pathways have been completed with risk scores that meet the risk standards. The pathway assessments will be complete by April 2006, enabling the Joint Venturers to trial barriers, collect data and implement proposed barriers for each pathway over a three month period prior to the start of construction.

The ground-truthing of barrier performances has commenced and a program that verifies the performance of the existing quarantine management procedures for the oil operation is being executed. Preliminary information indicates that quarantine compliance was achieved for the mobilisation and shipment of the two recent investigative works programs, the 52-man camp and the geotechnical drilling program. These investigative works were subject to a number of effective barriers that are proposed for the Development construction effort.

Adequacy of the information

The Venturers have presented a vast body of information in the Draft EIS/ERMP including a very detailed statement of its quarantine commitment. In addition, all the outcomes of the public consultation meetings, community workshops, the reports on all the IMEAs and PBAs, the Quarantine Advisory Committee meeting records, the QHAZ records and an informative quarantine website is freely available to all stakeholder. There is general consensus amongst the participating stakeholders that the progress to date is sufficiently adequate, notwithstanding philosophical differences of opinion about the rationale for a qualitative versus quantitative risk assessment process

In all of the workshops experts used their experience and knowledge to inform the assessment process. The Venturers are in the process of assessing the existing supply chain procedures to ascertain their effectiveness as measured against the newly developed logistic solutions for Barrow Island.

Baseline data

The Venturers agree with the Murdoch Review that only limited baseline data existed on invertebrate fauna on the Island. In preparing the Draft EIS/ERMP, the Venturers in consultation with biodiversity experts assessed the level of baseline knowledge on Barrow Island. It was established that notwithstanding the long period as a Class A Nature Reserve, no acceptable invertebrate baseline exists. In response, the Venturers agreed to an invertebrate pilot study with a contractual commitment for a second phase baseline survey to adequately sample the immediate surrounds of the development footprint and a range of disturbed sites on the Island. This program was endorsed by the Quarantine Advisory Committee and has been subject to independent peer review.

Likely effectiveness of management plans

The Venturers disagree strongly with the views expressed in the Murdoch Review that the QMS will not deliver the degree of quarantine protection agreed through community consultation. It would appear that the Murdoch Review has failed to incorporate readily available information on commitments to quarantine management as reflected in the QHAZ documentation. As such, the Review offers comments without regard for the progress in terms of developing procedures and requirements for quarantine and detection, monitoring and eradication protocols. The review also ignores over two years of consultation with experts and the community on matters directly informing the management of quarantine that will safeguard the conservation values of the Barrow Island and surrounding waters. Given these limitations, it is not surprising the Murdoch Review has a different understanding of the Quarantine Management System as stated in the Draft EIS/ERMP and the emerging Quarantine Management Plan. The Murdoch Review has not demonstrated an appreciation and complete understanding for the process the Venturers have embarked upon to develop a world-class QMS. The QMS is informed by risk assessment as a tool for making good management decisions. The QMS relies on a robust ISO 14001-based multi-facetted management system to protect the conservation values of Barrow Island and not a simple series of options and procedures condensed in a manual format.

Conclusion

The Venturers appreciate the contribution the Murdoch Review has made to the process of developing a competent Quarantine Management System. The opportunity the Murdoch Review created to benchmark the progress to date against another independent and valued stakeholder is welcomed. The limited differences of opinion regarding the adequacy of baseline surveys, the timeframes for completion and implementation of the Quarantine Management System and the effectiveness of management plans are partially the result of a limited exposure of the author to progress to date. The Gorgon Joint Venturers remain committed to explore all reasonable contributions and opinions of all the stakeholders to ensure the Development remains faithful to its commitment of a "world-class Quarantine Management System" that embraces a "zero tolerance to the introduction of non-indigenous species to Barrow Island".