



# Gorgon Gas Development and Jansz Feed Gas Pipeline

## Non-indigenous Species Management Procedure

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## 1.0 INTRODUCTION

The Gorgon Gas Development will include a Liquefied Natural Gas (LNG) processing facility on Barrow Island. As part of Chevron Australia's commitment to protecting the Island's conservation values, a Terrestrial and Marine Quarantine Management System (QMS) (G1-PP-QRT-GDL-0001) has been developed to minimise the risk of introducing or proliferating Non-indigenous Terrestrial Species (NIS) and Marine Pests to or within Barrow Island or the waters surrounding, as a consequence of the Proposal. The QMS provides quarantine barriers that focus on three areas: prevention, detection and eradication. Every effort is taken to prevent the introduction of new NIS on the Island through stringent pre-border and border quarantine measures. However, the possibility remains that NIS may evade the quarantine barrier and be introduced to Barrow Island.

A variety of measures are in place to enable early detection and rapid response to any such incursions. There is a terrestrial surveillance and monitoring program in place to detect incursions at an early stage which will provide the best opportunity of successful eradication with the least impact on the environment (Quarantine Design of Detection Surveillance System for Non-indigenous Species of Terrestrial Invertebrates, Vertebrates and Plants G1-NT-REPX0002140). The Marine Pest surveillance program is based on the Australian Marine Pest Monitoring Guidelines: Version 1—Department of Agriculture Fisheries and Forestry (DAFF).

Awareness and notification procedures are in place to encourage staff to be vigilant and report suspect NIS. A Quarantine Incursion Response Plan (G1-NT-REPX0001907) has been prepared, which describes the management structure and the roles and responsibilities of the positions in incursion management. Staff will be assigned specific roles and responsibilities in the response team and trained in the required roles. Contingency plans (Species Action Plans [SAP]) have been developed for the immediate use in the eradication of high risk species, should an incursion occur.

The aim is always to eradicate introduced NIS detected on the Island. If determined by the Minister that eradication is not feasible or having unacceptable consequences, an ongoing control procedure may be required.

As well as the commitment to prevent the entry and establishment of any new NIS onto Barrow Island, Gorgon Joint Venturers has committed to prevent the proliferation or spread of any existing NIS through project activities. The Gorgon Gas Development and Jansz Feed Gas Pipeline has identified 10 weed and 20 invertebrate NIS currently on the Island. Many of these are not considered invasive or likely to have an impact on the biodiversity of the Island and have been present since the 1980s. However, a number are invasive and have been under active control for many years. A range of measures have been developed to prevent the proliferation of NIS weeds which are already on the Island (Weed Hygiene Common User Procedure G1-PP-HES-PRC-0016).

Whole of island co-ordination will be through the Barrow Island Co-ordination Council (refer to the Barrow Island Act 2003) and explained in the QMS.

This document outlines the general procedure for the management of NIS which is already on, or which may become established on, Barrow Island or in the surrounding waters. It forms part of the Chevron Australia's integrated approach under the QMS to protect the conservation values of the island.

## 1.1 Purpose

The purpose of this document is to establish a procedure for an annual management program that ensures the control and, unless otherwise determined by the Minister, eradication of detected Non-indigenous Terrestrial species (including weeds) and Marine Pests and the prevention of the proliferation or spread of existing NIS on Barrow Island with the long term target of reduction and ultimate eradication of the existing NIS (refer to Table 7.1, Objective 3, in Terrestrial and Marine Quarantine Management System G1-PP-QRT-GDL-0001).

## 1.2 Scope

To establish a step-by-step process for the management, eradication and/or control of NIS on Barrow Island and in the surrounding waters for the duration of the construction program of the Gorgon LNG Plant (Phase 4) and the ongoing operational phase (Phase 5). This will include information on:

- ◆ consolidating appropriate flora and fauna baseline information/data
- ◆ consolidating historical records and information on existing and past records of NIS
- ◆ comprehensive biological and appropriate ecological information on the NIS
- ◆ distribution determination
- ◆ risk assessment, including classifying of NIS in terms of invasiveness
- ◆ surveillance and monitoring
- ◆ available and appropriate eradication and control methods, and mitigation measures
- ◆ performance management, review and reporting.

This procedure applies to all groups – plants (weeds), vertebrates (birds, reptiles, mammals), invertebrates and marine pests.

## 1.3 Definitions and Acronyms

Terms, definitions and acronyms used in this document are provided in the Quarantine Definitions and Acronyms (G1-NT-GDLX0000011) and align with the terms, definitions and abbreviations defined in Schedule 2 of the Western Australian Gorgon Gas Development and Jansz Feed Gas Pipeline Ministerial Implementation Statements No. 800 and No. 769 respectively (Statement No. 800 and 769) and the Commonwealth Gorgon Gas Development and Jansz Feed Gas Pipeline Ministerial Approvals (EPBC Reference: 2003/1294 and 2008/4178 and 2005/2184).

## **2.0 DEVELOPMENT OF NIS MANAGEMENT PROCEDURE**

This management procedure is a step-by-step process that directs planning, implementation and review of all NIS management activities, including but not limited to, eradication and/or control activities on Barrow Island.

### **2.1 Management of Information**

#### **2.1.1 Baseline Surveys**

A precondition for recognising existing NIS and the ability to identify a new incursion is a comprehensive inventory of all species on the Island. This will be achieved by utilising past records and commissioned surveys. Collected material will require detailed taxonomic examination to establish the identity of all the species. Identification is necessary to determine whether species are indigenous or non-indigenous to the Island. The species most easily assigned as non-indigenous are those which are exotic to Western Australia or Australia. The main challenge will be in assessing those species which are present on the mainland but not previously known on the Island. These could occur naturally, but due to the relatively limited state of baseline knowledge uncertainty may exist. This is demonstrated by the putative NIS status of many of the invertebrate species listed as NIS in the QMS, e.g. the Red Back Spider and the Springtails.

Birds, reptiles, mammals and plants on the Island have been comparatively well studied and the inventory of species present is considered to be complete. However, invertebrates have not been well studied in the past. Two recent baseline surveys have been conducted for invertebrates and the current species list now comprises more than 2000 species. This makes the invertebrate fauna of Barrow Island one of the best documented invertebrate populations in Australia. However, ongoing surveys will undoubtedly reveal more species which will require careful assessment to determine if they are indigenous or newly detected NIS.

Annual survey program will monitor the presence and distribution of weed populations as per the Detection Surveillance Systems for Non-indigenous Species of Terrestrial Invertebrates, Vertebrates and Plants on Barrow Island (G1-NT-REPX0002140). This program is designed to achieve early detection of NIS but will also provide distribution data on existing species including established NIS. Similarly marine surveillance will be conducted to detect marine pests in the waters surrounding Barrow Island.

#### **2.1.2 Historical Records**

Barrow Island has been a nature reserve since 1910. Since that time it has been subjected to many different management regimes, some benign, some more interventionist and attitudes to NIS has changed over time. Compiling the historical records of NIS on the Island, the nature of their introduction, impacts of climatic conditions and events such as fire will all assist in the development of management, eradication and/or control strategies. This information is currently maintained by WA Oil and Chevron Australia Pty Ltd and could be stored in the Geographic Information System (GIS) maps.

Early reports exist of mice and rats introduced by pearlsharps. Some plants were intentionally introduced including trees and grass seed for seeding of disturbed areas. This information will assist in the development of sustainable eradication and control procedures for NIS on Barrow Island.

### **2.1.3 Previous Control and Eradication Records**

A number of species have been recorded on the Island and successfully eradicated, e.g. doublegee, tomato (Barrow Island Weed Management Plan and past WA Oil weed management reports). The proliferation of several other NIS weed species is prevented under a long term management regime, e.g. Buffel Grass, Blackberry Nightshade (Weed Hygiene Common User Procedure G1-PP-HES-PRC-0016). Information on current and past practices and their efficacy will form part of the SAP and assist in designing future management, eradication and/or control approaches.

All records, maps, schedules, decisions, studies and data sets for the past year will be consolidated and lodged in the Gorgon Document Management System to provide an accessible record for future reference. This will be undertaken in accordance with the requirements of the Terrestrial and Marine Quarantine Management System (G1-PP-QRT-GDL-0001).

## **2.2 Mapping and Distribution**

### **2.2.1 Geographic Information System Mapping**

For those species targeted for management, eradication and/or control it is necessary to establish the population size and distribution on the Island. This will be achieved through ongoing observation and surveillance activities, targeted surveys and reference to historical records. These data will be recorded in the Barrow Island GIS NIS Dataset and used to generate GIS maps illustrating and recording the information.

### **2.2.2 Trend Mapping**

Using the initial delineation surveys, subsequent surveys can track trends in distribution, revealing whether the species is growing in number or spreading in area thus providing evidence of the efficacy of management, eradication and/or control measures. Trend mapping will also reveal influences of events such as rainfall, fire and ground breaking activities. Trend maps will be used in the decision-making process that determines the parameters, sets targets and nominates targeted species for each management period, i.e. the annual cycle.

### **2.2.3 Validation**

All current and past locations of NIS will undergo ongoing surveillance which will act as a check on the data and confirm trends. In so doing, anecdotal reports or subjective views are excluded from the management process.

## **2.3 Risk Assessment**

### **2.3.1 Risk Classification**

To determine the threat posed by a species, it is necessary to have information on the invasive potential, population density, distribution and likely environmental impact. There are a number of attributes of species which are considered to contribute to its invasive potential. These can be combined to provide an invasiveness ranking for a species. The biological information and literature review contained within the SAPs will provide much of this information. The SAP will also provide information to indicate those species likely to have a significant impact on the environment.

In the case of NIS which have been on Barrow Island for some time, e.g. Buffel Grass since 1980s, past experience and records will also show whether the species is stable, or increasing or decreasing its distribution and if it is invading the natural habitat. Because this information relates directly to the Barrow Island conditions it is extremely useful in the risk classification process.

### 2.3.2 Risk Factors

Factors to consider in the risk assessment include planned activities, particularly ground breaking and clearing, which may increase the risk of colonisation by some species. Invasive species are typically pioneer species and can rapidly exploit disturbed habitats. Most NIS will find it difficult to establish in the natural habitat. Invasion into natural habitat is usually secondary and after initial establishment in disturbed situations.

Relevant risk factors for the high risk species or for activities planned must be recorded and become part of the decision-making process at the beginning of each planning cycle for the Annual NIS Management Program.

### 2.3.3 Prioritisation of High Risk Species

Using the risk assessment results, a Quarantine Risk Register can be developed to determine the order of priority of species for management, eradication and/or control. It is important to establish a logic that ensures time and effort is directed to priority species and not on benign NIS. All decisions must reflect the risks recorded in the Quarantine NIS Risk Register so decisions are based on the risk hierarchy.

### 2.3.4 Risk Mapping

Utilising all the known biological information on the species, the climatic and physical attributes of Barrow Island, presence and location of disturbed areas and the known distribution on the Island, it is possible, using modelling software, to determine the areas most prone to establishment of NIS. GIS maps can be produced showing the high risk areas.

## 2.4 NIS Species Action Plans

Species Action Plans (SAPs) are contingency plans developed for each species. The SAP is designed to ensure complete and up to date information is captured and used to develop the most appropriate response to an incursion on Barrow Island. The pre-prepared plans are available to enable a rapid response to any incursion.

There are four categories of NIS and SAPs will be developed as follows:

- ◆ Develop SAPs for all exemplar species identified as the major high risk taxa, prior to commencement of construction.
- ◆ Development of SAPs for all detected species after commencement of construction within three months of detection and positively identified as NIS.
- ◆ Development of SAPs for NIS and Marine Pests that were detected previously on BWI which are not covered by the exemplar SAPs within six months of commencement of construction. (PS the reason for this can best be explained by an example e.g. the Rat SAP covers *R. rattus* would be likely to detect, and therefore be representative of, three other invasive rat species, *R. norvegicus*, *R. exulans* and *R. tanezumii*, making it a suitable exemplar. Same for ants, it is written for the Big Headed Ant but is suitable for the eradication of the crazy black ant, cannibal ant and the sneaking ant (although this

one is still classed as putative and we would not like to eradicate something that might still be native).

- ◆ Development of newly identified high risk species on mainland locations from where the Gorgon Gas Development and Jansz Feed Gas Pipeline will mobilise cargo which poses a risk of introduction to Barrow Island. Such plans will also be completed within a three months timeframe as part of island readiness.

#### **2.4.1 Species Action Plans for Exemplar Species**

A series of SAPs will be developed for a range of exemplar species, which broadly covers most of the high risk species which threaten Barrow Island and act as a model for similar species in that taxa. These SAPs include the best available control options and mitigation strategies to ensure successful eradication with minimal impact on the environment. However, if determined by the Minister that eradication is not feasible or is likely to have unacceptable consequences, ongoing mitigation measures may be required.

#### **2.4.2 Species Action Plans for New Detected NIS**

If a new NIS is detected on the Island and no existing exemplar SAP is suitable, then as part of the incursion response, a SAP targeting the species will be developed in consultation with subject matter experts, such as QEP, DEC or Western Australian Department of Fisheries (DoF). However, if the Minister determines not to implement the SAP on the grounds that eradication is not feasible or is likely to have unacceptable consequences, ongoing mitigation measures may be required.

#### **2.4.3 Species Action Plans for Established NIS**

If an existing NIS is not covered by the exemplar SAPs, and on the advice of the QEP and DEC, as determined by the Minister, the species is considered a potential threat to the conservation values of Barrow Island, then a species specific SAP will be developed. In such cases the Species Action Plan Framework (G1-NT-REPX0002103) must be followed.

All SAPs are developed with the intention to eradicate; however for existing NIS a greater emphasis will be on the long term management. While long term management procedures will be developed and implemented, the desired goal is the reduction of existing populations with the ultimate goal of eradication.

The development of SAPs will, if necessary, incorporate workshops with all nominated stakeholders, including DEC, DoF, QEP and subject matter experts (Astron, URS, Curtin University, Western Australian Museum, Department of Agriculture and Food, etc.) to obtain the best available information to develop the most appropriate and effective management, eradication and control measures.

The management procedures noted above for the existing NIS under consideration will include the following detail:

- ◆ Methodology to determine infested area
- ◆ Measures to prevent the proliferation or spread
- ◆ Eradication or control methods
- ◆ Intensity of the eradication intervention (e.g. traps per hectare, spraying campaign, baiting regime, etc.)

- ◆ Actual program description (e.g. people, equipment, budget, schedule, audit, etc.)
- ◆ Follow-up program in relation to continued presence of NIS.

## **2.5 Management Program Decision-making**

Many of the NIS on Barrow Island are known synanthropic, cosmopolitan species, restricted to human habitation or to disturbed environments and with no known impact on the natural habitat. Conversely, some NIS have known invasive properties. To ensure alignment exists amongst all stakeholders as to the prevailing priorities, coordination will be sought through an annual approval mechanism, which clearly sets the expectations for the next year. To ensure the most effective eradication and/or control program is developed for each annual cycle, stakeholders should agree on the parameters, set targets and nominate targeted species. This will require consensus between Gorgon Gas Development, QEP and DEC or DoF on the annual NIS Management Program. This agreed program will be recorded in the Annual Record of Decision.

## **2.6 Annual NIS Management Program**

Annually a single source of measures to be implemented as part of eradication or controlling NIS will be developed. This is known as the Annual NIS Management Program.

### **2.6.1 Scoping of the Annual Program**

Guided by the directive received via the Annual Record of Decision, which states the parameters, targets and targeted species, a workshop with all nominated stakeholders, including DEC, DoF, QEP and subject matter experts (e.g. Astron, URS, Curtin University, Western Australian Museum, Department of Agriculture and Food, etc.) will develop the Annual NIS Management Program. At this annual workshop the SAPs will be consulted and relevant environmental conditions, events and activities that might influence NIS on Barrow Island will be considered in the preparation of the Annual NIS Management Program. The actions pertaining to targets and targeted species will be developed and agreed by relevant stakeholders. Agreement and approval will also be sought on the appropriate eradication and control measures, e.g. chemical use. The necessary resources will be allocated and a schedule of activities developed. Roles and responsibilities assigned, mitigation measures selected if required, and a reasonable funding request developed. This Plan will span a one to three year outlook.

### **2.6.2 Specific Scopes of Work**

Specific scopes of work will be developed for each of the main groupings, namely:

- ◆ invertebrates
- ◆ vertebrates
- ◆ plants
- ◆ marine Pests
- ◆ diseases.

### **2.6.3 Contingency**

Sufficient flexibility must exist in the organisation, planning, resource commitment and financial capability to respond effectively to an unplanned event not covered by the Annual NIS Management Program. Examples include a stochastic event such as an outbreak of locusts, an episodic event such as a cyclone or a catastrophic event such as fire. It may

also be the consequence of an emergency such as a shipwreck. Such events may derail the approved plan for an indeterminate period. Contingency measures will have to be developed that may override the procedure. As far as is practicable the Contingency Plans will attempt to maintain or restore the objectives of the Annual NIS Management Program.

QEP and DEC will be involved in developing the contingency plans. In these cases a Contingency Response Team will be constituted to implement the contingency plan.

#### **2.6.4 Roles and Responsibility**

The Annual NIS Management Plan must assign and communicate roles and responsibilities. This is an activity that may take place repeatedly throughout the annual program to ensure roles are understood and reassigned as necessary if circumstances change. The responsibilities must be included in the job description for each position with an assigned role.

#### **2.6.5 Approving Expenditure**

Gorgon Joint Venturers has made a commitment to eradicate NIS on Barrow Island which are introduced and become established as the result of Gorgon Gas Development activities. This commitment is underwritten by a financial guarantee. Notwithstanding, reasonable funding will be made available to manage existing NIS on Barrow Island consistent with the prioritisation as recorded in the Annual Record of Decision.

Furthermore, the funding will be sufficient to accommodate unplanned events which may impact on the Annual NIS Management Program.

### **2.7 Implementation of the Program**

#### **2.7.1 Integrate in Work Plans**

The Annual NIS Management Program involves numerous personnel across several disciplines. For this reason, NIS management activities must be included in all the respective work plans of all personnel with a role in NIS management. This will ensure that these activities are not in conflict with other duties and, therefore, not impact on the implementation of this program. Exact periods must be identified when agreed NIS management activities must commence.

#### **2.7.2 Performance Measurement**

The annual program will include milestones and performance targets which will enable progress to be measured, recorded and reported. These performance measures must be SMART:

- ◆ Specific
- ◆ Measurable
- ◆ Achievable
- ◆ Reliable
- ◆ Timely.

These targets will align with the relevant targets stated in the QMS.

### **2.7.3 Measurement of Progress**

An Annual Progress Report must be prepared that records all the salient features of the NIS management, eradication and/or control campaign e.g. population trends, changes in aerial cover of NIS, satellite populations, etc.

### **2.7.4 Schedule Mitigation**

NIS and NIS behaviour is very unpredictable. It is expected that mitigation measures may need to be implemented if the schedule slips as the consequence of unplanned or unexpected events or in the event NIS risk increases.

## **2.8 Surveillance and Monitoring**

Using the initial delineation surveys (baseline surveys, current GIS WHZ layers, Astron Reports), subsequent surveys can track trends in population number and distribution revealing whether the species is growing in number or spreading in area thus providing evidence of the efficacy of management, eradication and/or control measures.

Surveys (under the Detection Surveillance Systems for Non-indigenous Species of Terrestrial Invertebrates, Vertebrates and Plants on Barrow Island (G1-NT-REPX0002140) will be conducted which incorporate a range of surveillance methods to achieve the required level of detection (specified by the Ministerial Conditions), as well as opportunistically after events that may induce regeneration or proliferation, e.g. significant rain event (>30mm), fire and other disturbances.

Ecological monitoring will be conducted of significant ecological elements at risk from proposal-related stressors on Barrow Island as per the Terrestrial and Subterranean Environmental Monitoring Program (G1-NT-PLAX0000309).

### **2.8.1 Impact Mitigation**

Eradication and control measures have the potential to impact on the environment or cause collateral damage to other species. Mitigation strategies to control or eradicate NIS, and subsequent rehabilitation of the environment, may need to be implemented to ensure that ecological impacts from NIS response strategies are recoverable in the long term. Ecological monitoring may also be required to track the rate and success of rehabilitation, with monitoring focusing on the equivalent components of the environment which the invader represents (e.g. mammals for NIS of rodent, vegetation and/or flora for weeds). Procedures to monitor various ecological elements are summarised in the Ecological Monitoring Common User Procedure (G1-PP-HES-PRC-0017). Rehabilitation for vegetation will be conducted consistent with the requirements of the Post-Construction Rehabilitation Plan (G1-NT-PLNX0000303).

## **2.9 Audits**

Audit requirements will be developed based on the species biology, surveillance methodology and agreed management plans to determine the efficiency and operational effectiveness in meeting the milestones and performance targets.

The NIS Management Procedure will be audited as per the current OE Compliance Assurance Process and Gorgon Gas Development Quarantine Internal Audit Guidelines (G1-TE-Z-0000-PLNX030) with which Chevron Australia internally requires its employees, contractors, etc. to comply.

## **2.10 Reporting**

### **2.10.1 Compliance Reporting**

Condition 4 of Statement No. 800 and Condition 2 of EPBC Reference: 2003/1294 and 2008/4178 requires Chevron Australia to submit a Compliance Assessment Report annually to address the previous 12-month period. Condition 4 of Statement No. 769 also requires that Chevron Australia submit an Audit Compliance Report on an annual basis, for the previous 12-month period. An audit table is provided in Appendix B to assist with auditing for compliance with this Procedure for Statement No. 800, EPBC Reference: 2003/1294 and 2008/4178 and Statement No. 769.

### **2.10.2 Environmental Performance Reporting**

Progress against the milestones and targets and the results of audits will form part of the annual reporting requirements.

Condition 5.1 of Statement No. 800 and Statement No. 769 and Condition 4 of EPBC Reference: 2003/1294 and 2008/4178 requires that Chevron Australia submits an Environmental Performance Report to the Western Australian Minister for the Environment and to the Commonwealth DEWHA respectively, on an annual basis, for the previous 12-month period.

In addition, under Condition 5.3 of Statement No. 800 and Statement No. 769 every five years from the date of the first annual Report, Chevron Australia shall submit to the Western Australian Minister for the Environment an Environmental Performance Report covering the previous five year period.

Specific details on the content of the Environmental Performance Report are defined in Condition 5.2 and Schedule 3 of Statement No. 800, Condition 5.2 of Statement No. 769 and Condition 4 of EPBC Reference: 2003/1294 and 2008/4178.

## **2.11 Reviews**

An annual review of the implementation of the NIS Management Procedure for each species under management, eradication and/or control will be carried out. The results will be reported to DEC and QEP and included in the Annual Report progress report. Relevant or new information will also be incorporated into the review of the SAPs. The review will also recalibrate the start of the next annual cycle to form the basis of the following three year program.

## **2.12 Update of History and Continuous Improvement**

Compliance assurance is the process by which audits and other workplace assessments and lessons learnt are closed out. Continuous improvement guidelines are outlined in the Quarantine Continuous Improvement Supplement (G1-NT-REPX0001868).

## **2.13 Documentation and Record Keeping**

All records, maps, schedules, decisions, studies and data sets for the past year will be maintained for future reference

### 3.0 REFERENCES

Australian Marine Pest Monitoring Guidelines: Version 1 (Department of Agriculture Fisheries and Forestry (DAFF)).

Detection Surveillance Systems for Non-indigenous Species of Terrestrial Invertebrates, Vertebrates and Plants on Barrow Island (G1-NT-REPX0002140)

Ecological Monitoring Common User Procedure (G1-PP-HES-PRC-0017)

Gorgon Gas Development Internal Audit Plan (G1-TE-Z-0000-PLNX030).

Post-Construction Rehabilitation Plan (G1-NT-PLNX0000303)

Quarantine Continuous Improvement Supplement (G1-NT-REPX0001868)

Quarantine Definitions and Acronyms (G1-NT-GDLX0000011)

Quarantine Design of Detection Surveillance System for Non-indigenous Species of Terrestrial Invertebrates, Vertebrates and Plants G1-NT-REPX0002140)

Quarantine Incursion Response Plan (G1-NT-REPX0001907)

Species Action Plan Framework (G1-NT-REPX0002103)

Statutory Quarantine Reporting Procedures (G1-NT-REPX0002100)

Terrestrial and Marine Quarantine Management System (G1-PP-QRT-GDL-0001)

Terrestrial and Subterranean Environmental Monitoring Program G1-NT-PLAX0000309)

Weed Hygiene Common User Procedure (G1-PP-HES-PRC-0016)

## APPENDIX A: NIS MANAGEMENT PROCEDURES OVERVIEW

NIS Management Procedure Document Number. G1-PP-QRT-POL-0001									
Legend		Roles/Responsibilities						Evidence	Detailed Work Instruction
		Quarantine Manager	BICC	Site Enviro/Qtine Manager	Environmental Team Leader	QEP	DEC/DoF Representatives		
Activity Steps									
<b>1</b>	<b>Management of Information</b>								
1.1	Baseline surveys							Astron/DEC Weed Reports and CVX environmental	Secure all baseline surveys done by Chevron and relevant government authorities and consolidate in one central location for future reference
1.2	Historical records pertaining to existing NIS								Complete record of all past records of NIS, their possible source of introduction, historic locations if eradicated, episodic events and any other anecdotal reference that may be of interest in the future.
1.3	Previous control and eradication programs for existing NIS							Barrow Island Weed Management Plan Curtin Invertebrate NIS Report	Complete record of all past treatments of NIS from annual reports, previous years close outs, personal communication and anecdotal evidence
<b>2</b>	<b>Mapping and Distribution</b>								
2.1	Produce and maintain accurate GIS maps of the distribution of known NIS							GIS Layers	Source and consolidate all survey and surveillance data sets of NIS on Barrow Island or its waters into a single GIS data set
2.2	Track current trends in relation to proliferation status or retrogression in NIS populations							Survey and Surveillance data, NIS Trends in NIS Risk Register	NIS may be naturally expanding or contracting. Invasive species also act opportunistically to environmental and other anthropogenic factors. These trends must be recorded as part of the risk assessment for any particular year in the NIS Risk Register
2.3	Validate all data through on-going surveillance programs							Validation reports	All current and past locations of NIS will be verified by comparing with latest surveillance data and by confirmation by Subject Matter Expert
<b>3</b>	<b>Risk Assessment</b>								
3.1	Complete risk classifications based on theoretical and actual consequences of introduction							NIS Classification Record in NIS Risk Register	All NIS to be classified as either: 1. High risk species with known or suspected invasive potential or unknown invasive potential 2. Species of interest which are unlikely to be invasive 3. Benign species known to be cosmopolitan or poor survivors
3.2	Risk factors							NIS Risk Register	Invasive species act opportunistically to environmental and other anthropogenic factors. Many species also undergo seasonal flights or population explosions. These responses must be recorded as part of the risk assessment for any particular year in the NIS Risk Register.
3.3	Prioritise high risk species							Risk Register for Priority Species	Prioritise species for inclusion in the Annual NIS Management Program based on invasiveness, distribution and potential environmental impact.
3.4	Risk mapping - habitat utilisation, potential entry modes and dispersal risks							NIS Risk Map in NIS Risk Register	Create a series of maps that use habitat suitability, dispersal likelihood, disturbances and recent stochastic events to identify areas prone to establishment
<b>4</b>	<b>NIS Species Action Plans</b>								
4.1	Consult existing Species Action Plans (SAPs) for high risk exemplars							Exemplar Species List	SAPs have been developed for a range of exemplar species which may apply or be adapted for NIS already established on BWI. These are well researched plans based on 'best available' knowledge and must serve as the basis of all eradication and control actions.
4.2	Develop SAPs for new detections of NIS (SAPs include mitigation)							Species Action Plan Framework	As part of the incursion response SAPs will be developed for new NIS not previously detected on BWI. Should such new species not be covered by an exemplar SAP and a priority species, a new SAP to be developed. The plans will be reviewed by independent experts initially and annually updated to incorporate latest information
<b>5</b>	<b>Management Program Decision-making</b>								
5.1	Annually an agreed eradication and/or control program must be established amongst stakeholders.							Annual Record of Decision	To ensure the most effective eradication and/or control program is developed for each annual cycle, stakeholders must agree on the parameters, set targets and nominate targeted species. Needs consensus amongst Gorgon Gas Development personnel, QEP and DEC or DoF on the annual NIS Management Program.
<b>6</b>	<b>Annual NIS Management Program</b>								
6.1	Scoping - define scale of eradication/management activities for next 1-3 year horizon including agreed targets							Annual NIS Management Plan	Workshop with all nominated stakeholders, including DEC, DoF, QEP and SMEs (Astron, URS, Curtin, etc) to identify all environmental conditions, events and activities that might influence the decision making process in setting up the Annual NIS Management Program based on the parameters, targets and targeted species agreed to in Step 5. Select the appropriate eradication and control measures from the SAPs, assign resources and responsibilities, mitigation measures if required and agree on a reasonable funding request.
6.2	Specific Scopes of Work								Each broad category of NIS in the Annual NIS Management Program will have a specific scope of work
6.2.1	Weeds							Annual Weeds Eradication Scope of Work	Weed eradication and control remains a priority. The objective is to eradicate newly established populations and to reduce existing populations with the long term objective of eradicating such weeds. The Annual NIS Management Program must be sufficiently scaled to achieve these outcomes. The Weed Hygiene Procedure will be implemented to prevent the proliferation of weeds
6.2.2	Vertebrates							Annual Vertebrate Eradication Scope of Work	Currently there are no NIS vertebrates on BWI. It is a priority to maintain the NIS vertebrate free status of BWI and all eradication programs must reflect this target.
6.2.3	Invertebrates							Annual Invertebrate Eradication Scope of Work	Currently there are 20 invertebrate NIS on BWI. None of these species are known high risk invaders. Notwithstanding some of these species are known tramp species and control measures must be considered to prevent the proliferation of such species.
6.2.4	Marine Pests							Annual Marine Pest Eradication Scope of Work	Currently there are no known marine pests in the waters surrounding BWI. For this reason eradication and control programs must be agreed timely, implemented swiftly and decisively due to the complexity of eradicating marine pests in open access systems.
6.2.5	Diseases							Disease Response Protocol	Disease scope to be developed once the disease is accurately identified and advice sourced from QEP
6.3	Contingency provision							Contingency protocol	Ensure sufficient flexibility exists in organisation, resource commitment and financial capability to respond effectively to an unplanned event not covered by Annual NIS Management Program. Unplanned may be stochastic, episodic or cyclic.
6.4	Assigning roles and responsibilities							Roles and Responsibility Matrix	Roles and responsibility to executing the Annual NIS Management Program is detailed with specific tasks assigned to each asset. This is to be monitored by the Person-in-Charge who is the final authority on the island
6.5	Approval for expenditure							Annual Authority for Expenditure (AFE)	Sufficient funds must be made available to implement the Annual NIS Management Program. Reasonable funding requests will not be withheld. Detailed budgets will accompany each agreed task identified in the scoping phase.

NIS Management Procedure Document Number. G1-PP-QRT-POL-0001											
Legend		Roles/Responsibilities									
<p><span style="color: red;">■</span> Responsible for activity</p> <p><span style="color: green;">■</span> Involved in activity</p>		Quarantine Manager	BICC	Site Enviro/Qtine Manager	Environmental Team Leader	QEP	DEC/DoF Representatives				
Activity Steps								Evidence	Detailed Work Instruction		
<b>7</b>	<b>Implement agreed Annual NIS Management Program</b>										
7.1	Integrate implementation into work plans							Implementation Schedule	Implement the eradication and control programs that will give effect to the decision as recorded in the Annual Record of Decision. This program to be presented to QEP and DEC for further review and advice. Develop an implementation schedule and execute		
7.2	Performance Measurement							Targets register in the Annual Record of Decision	Targets identified in the Annual Record of Decision will include an aspirational target and a deliverable target. The latter must conform with the SMART criteria for targets, being specific, measurable, achievable, reliable and timely and the targets should align with the targets stated in the QMS.		
7.3	Measure progress of program implementation							Progress Monthly Report	Progress will be recorded and reported against milestones in schedule. In the event the schedule slips mitigation measures must be developed to ensure schedule is maintained		
7.4	Population - increase or reduction							Risk map	Provide exact description including control success		
7.5	Area of infestation - increase or reduction							Risk map	Provide exact description including control success		
7.6	Schedule mitigation							Mitigation register	In the event of the program not achieving its stated objectives and milestones for the year, mitigation measures must be implemented to ensure the NIS risk is not increased unduly. This mitigation measure may require additional resources which will need to be made available over and above that which was approved in the AFE - see 5.6		
<b>8</b>	<b>Monitoring and Surveillance</b>										
8.1	Structured observation							Observation schedule	Areas subject to eradication and control will be regularly visited according to a schedule as well as opportunistically after events that may induce regeneration of proliferation, e.g. rain, fire and other disturbances. This will be included in the work program of Environment and Quarantine personnel.		
8.2	Unstructured and structured surveillance							Surveillance schedule	Areas subject to eradication and control will be incorporated into a post treatment surveillance program to determine rehabilitation or continued control requirements		
8.3	Ecological monitoring							Ecological Monitoring Common User Procedure	Monitoring for evidence of ecological variations that may indicate presence of NIS		
8.4	Ecological monitoring for impact							Terrestrial and Subterranean Environmental Monitoring	Long term ecological monitoring to track impact on indigenous species		
8.5	Ecological monitoring for rehabilitation							Post-Construction Rehabilitation Plan	Long term ecological monitoring for rehabilitation progress.		
<b>9.0</b>	<b>Audit</b>										
9.1	Internal asset							Quarantine Internal Audit Plan	Develop an Annual Internal Audit Plan that recognises environmental conditions, events and activities		
9.2	External e.g. DEC							External Audit Notice	This notice is dependant upon DEC needs		
<b>10</b>	<b>Reporting</b>										
10.1	Annual reporting against agreed targets							Statutory Quarantine Reporting Procedures	The Proponent will report to DEC and the QEP in accordance with procedures noted in the Statutory Quarantine Reporting Procedures (G1-NT-REPX0002100)		
<b>11</b>	<b>Review</b>										
11.1	Annual							Annual review	Report using standardised reporting template to DEC and QEP		
<b>12</b>	<b>Update History and Continuous Improvement</b>										
12.1	Update historical control and eradication programs for NIS							Update report	The outcome of the historical update becomes the starting point of the new year's cycle		
12.2	Implement continuous improvement							Lessons Learnt Corrective Actions	Implement all agree lessons learnt and corrective actions that will improve the following year's program.		
<b>13</b>	<b>Documentation and record keeping</b>										
13.1	Consolidate all documentation associated with each annual cycle into a							NIS Annual Management Program	All records, maps, schedules, decisions, studies, data sets of each year will be consolidated in an approved format for execution		

## APPENDIX B: COMPLIANCE REPORTING TABLE

Section No.	Actions	Timing
2.1.1	A precondition for recognising existing NIS and the ability to identify a new incursion is a comprehensive inventory of all species on the Island. This will be achieved by utilising past records and commissioned surveys. Collected material will require detailed taxonomic examination to establish the identity of all the species.	All Phases
2.1.1	Annual survey program will monitor the presence and distribution of weed populations as per the Detection Surveillance Systems for Non-indigenous Species of Terrestrial Invertebrates, Vertebrates and Plants on Barrow Island (G1-NT-REPX0002140). Similarly marine surveillance will be conducted to detect marine pests in the waters surrounding Barrow Island.	All Phases
2.1.3	All records, maps, schedules, decisions, studies and data sets for the past year will be consolidated and lodged in the Gorgon Document Management System to provide an accessible record for future reference. This will be undertaken in accordance with the requirements of the Terrestrial and Marine Quarantine Management System (G1-PP-QRT-GDL-0001).	All Phases
2.2.1	For those species targeted for management, eradication and/or control it is necessary to establish the population size and distribution on the Island. This will be achieved through ongoing observation and surveillance activities, targeted surveys and reference to historical records. These data will be recorded in the Barrow Island GIS NIS Dataset and used to generate GIS maps illustrating and recording the information.	All Phases
2.2.2	Trend maps will be used in the decision-making process that determines the parameters, sets targets and nominates targeted species for each management period, i.e. the annual cycle.	All Phases
2.2.3	Current and past locations of NIS will undergo ongoing surveillance which will act as a check on the data and confirm trends.	All Phases
2.3.2	Relevant risk factors for the high risk species or for activities planned must be recorded and become part of the decision-making process at the beginning of each planning cycle for the Annual NIS Management Program.	All Phases
2.4	There are four categories of NIS and SAPs will be developed as follows: <ul style="list-style-type: none"> <li>• Develop SAPs for all exemplar species identified as the major high risk taxa, prior to commencement of construction.</li> </ul>	All Phases

Section No.	Actions	Timing
	<ul style="list-style-type: none"> <li>• Development of SAPs for all detected species after commencement of construction within 3 months of detection and positively identified as NIS.</li> <li>• Development of SAPs for NIS and Marine Pests that were detected previously on BWI which are not covered by the exemplar SAPs within 6 months of commencement of construction.</li> <li>• Development of newly identified high risk species on mainland locations from where the Gorgon Gas Development and Jansz Feed Gas Pipelinewill mobilise cargo which poses a risk of introduction to Barrow Island. Such plans will also be completed within a 3 months timeframe as part of island readiness.</li> </ul>	
2.4.1	A series of SAPs will be developed for a range of exemplar species, which broadly covers most of the high risk species which threaten Barrow Island and act as a model for similar species in that taxa.	All Phases
2.4.2	If a new NIS is detected on the Island and no existing exemplar SAP is suitable, then as part of the incursion response, a SAP targeting the species will be developed in consultation with subject matter experts, such as QEP, DEC or Western Australian Department of Fisheries.	All Phases
2.4.3	If an existing NIS is not covered by the exemplar SAPs, and on the advice of the QEP and DEC, as determined by the Minister, the species is considered a potential threat to the conservation values of Barrow Island, then a species specific SAP will be developed. In such cases the Species Action Plan Framework (G1-NT-REPX0002103) must be followed.	All Phases
2.4.3	The management procedures noted above for the existing NIS under consideration will include the following detail: <ul style="list-style-type: none"> <li>• Methodology to determine infested area</li> <li>• Measures to prevent the proliferation or spread</li> <li>• Eradication or control methods</li> <li>• Intensity of the eradication intervention (e.g. traps per hectare, spraying campaign, baiting regime, etc.)</li> <li>• Actual program description (e.g. people, equipment, budget, schedule, audit, etc.)</li> <li>• Follow-up program in relation to continued presence of NIS.</li> </ul>	All Phases
2.5	To ensure alignment exists amongst all stakeholders as to the prevailing priorities, coordination will be sought though an annual decision-making forum which are to record the expectations for the next year.	All Phases
2.5	To ensure the most effective eradication and/or	All Phases

Section No.	Actions	Timing
	control program is developed for each annual cycle, stakeholders should agree on the parameters, set targets and nominate targeted species. This will require consensus between Gorgon Gas Development Gorgon, QEP and DEC or DoF on the annual NIS Management Program. This agreed program will be recorded in the Annual Record of Decision.	
2.6.1	<p>Guided by the directive received via the Annual Record of Decision, which states the parameters, targets and targeted species, a workshop with all nominated stakeholders, including DEC, DoF, QEP and subject matter experts (e.g. Astron, URS, Curtin University, Western Australian Museum, Department of Agriculture and Food, etc.) will develop the Annual NIS Management Program. At this annual workshop the SAPs will be consulted and relevant environmental conditions, events and activities that might influence NIS on Barrow Island will be considered in the preparation of the Annual NIS Management Program. The actions pertaining to targets and targeted species will be developed and agreed by relevant stakeholders. Agreement and approval will also be sought on the appropriate eradication and control measures, e.g. chemical use. The necessary resources will be allocated and a schedule of activities developed. Roles and responsibilities assigned, mitigation measures selected if required, and a reasonable funding request developed. This Plan will span a one to three year outlook. Specific scopes of work will be developed for each of the main groupings, namely:</p> <ul style="list-style-type: none"> <li>• invertebrates</li> <li>• vertebrates</li> <li>• plants</li> <li>• marine Pests</li> <li>• diseases.</li> </ul>	All Phases
2.6.3	Contingency measures will have to be developed that may override the procedure. As far as is practicable the Contingency Plans will attempt to maintain or restore the objectives of the Annual NIS Management Program. QEP and DEC will be involved in developing the contingency plans. In these cases an Contingency Response Team will be constituted to implement the contingency plan.	All Phases
2.6.4	The Annual NIS Management Plan must assign and communicate roles and responsibilities. The responsibilities must be included in the job description for each position with an assigned role.	All Phases
2.6.5	Reasonable funding will be made available to manage existing NIS on Barrow Island consistent with the	All Phases

Section No.	Actions	Timing
	prioritisation as recorded in the Annual Record of Decision. Furthermore, the funding will be sufficient to accommodate unplanned events which may impact on the Annual NIS Management Program.	
2.7.3	An annual progress report must be prepared that records all the salient features of the NIS management, eradication and/or control campaign e.g. population trends, changes in aerial cover of NIS, satellite populations, etc.	All Phases
2.8	Surveys (under the Detection Surveillance Systems for Non-indigenous Species of Terrestrial Invertebrates, Vertebrates and Plants on Barrow Island (G1-NT-REPX0002140) will be conducted on a schedule as well as opportunistically after events that may induce regeneration or proliferation, e.g. significant rain event(>30mm), fire and other disturbances.	All Phases
2.9	Audit requirements will be developed based on the species biology, surveillance methodology and agreed management plans to determine the efficiency and operational effectiveness in meeting the milestones and performance targets.	All Phases
2.11	An annual review of the implementation of the NIS Management Procedure for each species under management, eradication and/or control will be carried out. The results will be reported to DEC and QEP and included in the Annual Report progress report. Relevant or new information will also be incorporated into the review of the SAPs. The review will also recalibrate the start of the next annual cycle to form the basis of the following three year program.	All Phases
2.13	All records, maps, schedules, decisions, studies and data sets for the past year will be maintained for future reference	All Phases