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1.0 INTRODUCTION

1.1 The Project

The Guthalungra Prawn Farm Project ("the Project") involves the construction of a major new prawn farm near to the coastal North Queensland town of Guthalungra. The site is around 40 km north of Bowen and adjacent to the Elliott River.

On the 29 January 2001, the Project was declared a significant project for which an Environmental Impact statement (EIS) is required on pursuant to s.26 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

The proposal was referred to the Commonwealth Government under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The project was determined to be a "controlled action" due to the potential impacts on matters of national environmental significance. The "controlling provisions" under the EPBC Act have been identified as:

- Sections 12 and 15A (World Heritage);
- Sections 18 and 18A (Listed threatened species and communities);
- Sections 20 and 20A (Listed migratory species); and
- Sections 23 and 24A (Marine Environment).

The Commonwealth Minister for the Environment has decided that the appropriate assessment approach for the assessment of the relevant impacts on the controlling provisions is by an accredited process. The accredited process is the EIS process under part 4 of the SDPWO Act and Part 5 of the SDPWO Regulation 1999. This EIS was prepared to fulfil the requirements of both the State and the Commonwealth Governments.

1.2 Background to the Project

In 1999 Pacific Reef Fisheries (Bowen) Pty Ltd ("Pacific Reef Fisheries") purchased 800 ha of land adjacent to the Elliott River near the small town of Guthalungra. The company's intention is to develop the site for prawn aquaculture. The company intends to develop an integrated enterprise using industry best practice in production, emerging wastewater treatment technologies and maximise opportunities for waste water reuse.

The structural elements of this proposal include:

- A series of growout ponds;
- A seafood processing facility; and
- Support infrastructure including feed storage, workshops, general storage and accommodation.

The feasibility study carried out in conjunction with this EIS indicates that the site can support 260 ha of prawn production producing in excess of 1600 tonnes per annum.

1.2.1 Social and Economic Setting

Bowen Shire has come through a period of extended economic decline, with over 2500 jobs lost from traditional industries (mining, power generation, meat processing, railways) since the mid 80's. This economic decline has resulted in a rise in unemployment and reduction in population over this period (from 14000, to 12700 in 2001) (Bowen Shire Economic Profile 2002).

The reduction in population is significant when it is considered in relation to the growth experienced in neighbouring areas such Mackay, Townsville and the Whitsundays.

To arrest this economic decline, a coordinated economic development program was introduced in 1999 by the Bowen Shire Council and Bowen Collinsville Enterprise. Efforts are focused on the development of a number of key industry segments with aquaculture being a priority.

Coal mining, power generation, and meat processing, horticulture, fishing and railways historically dominated industry within the Bowen shire. Over time, the economic significance of these industries has changed dramatically.

Whilst still significant industries to Queensland, the coal mining, power generation and railway industries no longer employ significant numbers of people which has reduced their economic importance to Bowen Shire. The Bowen Meat Works closed in 1998.

Bowen Shire has traditionally had a high concentration of workers in the skilled trades, engineering and technical fields. The economic decline in these traditional industries has left a pool of relatively highly skilled people who are either currently unemployed or underemployed. There is evidence of significant underemployment in the Bowen Shire, with many people in employed in seasonal industries with wide variations in available hours (horticulture, fishing, tourism).

The Bowen Shire Council has identified the potential for aquaculture to assist in addressing some of the social and economic issues facing the region. This has manifested itself in a number of projects being undertaken by the Bowen Collinsville Enterprise to identify suitable geographic areas in the shire for aquaculture and to support potential aquaculture investors to the area.

1.3 The Proponent

Pacific Reef Fisheries (Bowen) Pty Ltd is a branch of Pacific Reef Fisheries (Australia), a wholly owned subsidiary of Mitris Management Holdings. The total groups' assets exceed $100 million with investments primarily in Australian companies, through the Australian Stock Market, property investments, primary production and the Pacific Reef Group. Mr Nick Mitris is the sole shareholder.

In 1997, the company acquired its first prawn site at Alva Beach, Ayr, Northern Queensland; it has since invested in excess of $10 Million on site expansion and operation, now making the site, one of the countries largest and most technologically advanced prawn farms in Australia.

In 1998 – 1999, turnover was approximately $2.5 million, and in 1999 – 2000 reached $5.6 Million, with sales for the year 2001 – 2002 at $7 million. Sales will increase to $10 million in 2004 when a proposed 30 ha expansion becomes operational.

Currently, the operation employs 44 people, 23 of whom are permanent full time staff, with another 21 working at the site as full time casuals, for a period of six months every year. It is expected that this number of employees will increase to 54, with the planned expansion in 2003. The operation at Alva Beach has provided valuable experience for the feasibility assessment of the Guthalungra project.

The successful development of the Guthalungra site will establish Pacific Reef Fisheries as the nation's premium aquaculture business. Total turnover will be around $39 million by 2008/09 and staff numbers will be around 150 with over 100 being permanent full time and 47 full time casual staff.

Pacific Reef will continue to supply quality prawns to the domestic market as well as vigorously pursuing export markets. An export drive will be initiated in late 2003.

Mission Statement

Pacific Reef Fisheries (Australia) Pty Ltd Mission Statement

Pacific Reef Fisheries divides its operational goals into four areas.

- Product Mission: to produce, process and distribute a product that can stand side by side with the best seafood on the world market;
- Social Mission: to operate our company in a way which actively recognises the central role that business plays, in the structure of society, by initiating innovative ways to improve the quality of life for its employees and the broader local community in which it is situated;
- Economic Mission: to manage our company on a sound financial basis, aimed at sustained profitable growth, which increases value and career opportunities for its Directors, employees and the local community at large; and
- Environmental Mission: To lead the world in production and water handling procedures to ensure the maintenance of our most valuable asset – the environment.

Summary

To represent our company in a manner that understands the social and moral value of a modern corporate citizen, while maintaining the highest standards of operational professionalism at all times.

Contact Address

Pacific Reef Fisheries
PO Box 2200
AYR QLD 4807

1.4 Regulatory Framework

1.4.1 Objectives

Impact assessment is a process through which information is provided to Local, State and Commonwealth government decision-makers. In this process, a proponent provides appropriate levels of information to approval agencies and the general public about the nature of a development proposal, its potential impacts, and the way in which the proposal will be managed in order to reduce those impacts. An assessment of the proposal, including any relevant recommendations, is then made available to the decision makers. The objectives for impact assessment are:

- To inform decision makers about the potential impacts of a proposal on the surrounding natural, social and economic environment;
- To develop strategies to ensure that, where possible, effects on natural, social and economic values are acceptable; and
- To provide opportunities for effective input to the assessment process.

The impact assessment process in Queensland is designed to achieve these objectives by ensuring that decision makers are provided with information which is comprehensible, of appropriate scope, and which is based on consultation with all interested parties. Impact assessment influences the design of the project and identifies management or monitoring conditions that can form part of the approval process.

1.4.2 Terms of Reference

Terms of Reference (ToR) were developed by the Queensland Department of State Development in consultation with a number of referral agencies including Environment Australia and the Environment Protection Authority. The ToR sets out all the matters that must be investigated and documented in the Environmental Impact Statement (EIS).

The ToR was publicly reviewed and finalised by the Coordinator General and is presented in Appendix A.

1.4.3 Preparation of the EIS

Under the provisions of the *State Development and Public Works Organisation Act 1971,* (SDPWO Act) the Coordinator-General has declared the Guthalungra Aquaculture project for Pacific Reef Fisheries to be a significant project for which an EIS is required.

The Commonwealth Minister for the Environment has decided that the proposed action is a “controlled action” under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act), affecting matters of national environmental significance.

The controlling provisions are:

- Sections 12 and 15A (World Heritage);
- Sections 18 and 18A (Listed threatened species and communities);
- Sections 20 and 20A (Listed migratory species); and
- Sections 23 and 24A (Marine Environment).

The term “controlling provision” for a project means a provision of the EPBC Act, Chapter 2, Part 3, decided by the Commonwealth Environment Minister as a controlling provision for the project under that Act, Chapter 4, Part 7, Division 2.

The EPBC Act allows for assessment of the "relevant impacts" of the proposed action by an accredited assessment process. The term "relevant impacts" has the meaning given by the EPBC Act, section 82.

Part 5 of the *State Development and Public Works Organisation Regulation 1999* provides a process for an accredited assessment process where the project has been declared a significant project. Accordingly, it is proposed that this EIS will be carried out in accordance with the provisions of Part 4 of the SDPWO Act and Part of 5 of the SDPWO Regulation to address both State and Commonwealth issues.

The key aspects of the EIS process are outlined below:

- Draft terms of reference are prepared and public comment on them is invited over a four week period;
- The terms of reference are finalised to ensure that, in relation to the controlled actions, the assessment;
  - Assesses all relevant impacts that the action has, will have or is likely to have;
  - Contains enough information about the action and its relevant impacts to allow the Commonwealth Environment Minister to make an informed decision whether or not to approve the action under Part 9 of the EPBC Act*;* and
  - Addresses the matters (if any) prescribed in regulations for the purposes of paragraph 102(2) of the EPBC Act relating to the preparation of guidelines for an environmental impact statement under that Act.
- An EIS is prepared and made publicly available for a period of at least 28 days and submissions are invited;
- A Supplementary report is prepared by the proponent summarising any issues raised in the submissions including those relating to the "relevant impacts" of the proposed action and addressing the issues raised during the submission period;
- The Coordinator-General evaluates the EIS and prepares a report on the proposed action in accordance with s.35 of the SDPWO Act. A copy of the report is provided to the proponent and to the Commonwealth Environment Minister, and made publicly available; and
- The Commonwealth Environment Minister is required to make a decision as to whether or not to approve the action under Part 9 of the EPBC Act following the completion of the State EIS assessment process.

The term 'environment' includes:

- Ecosystems and their constituent parts, including people and communities;
- All natural and physical resources;
- The qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community; and
- The social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).

The methodology used to prepare this EIS followed standard procedures for undertaking an Environmental Impact Assessment. Figure 1-1 shows the steps undertaken to prepare this EIS.

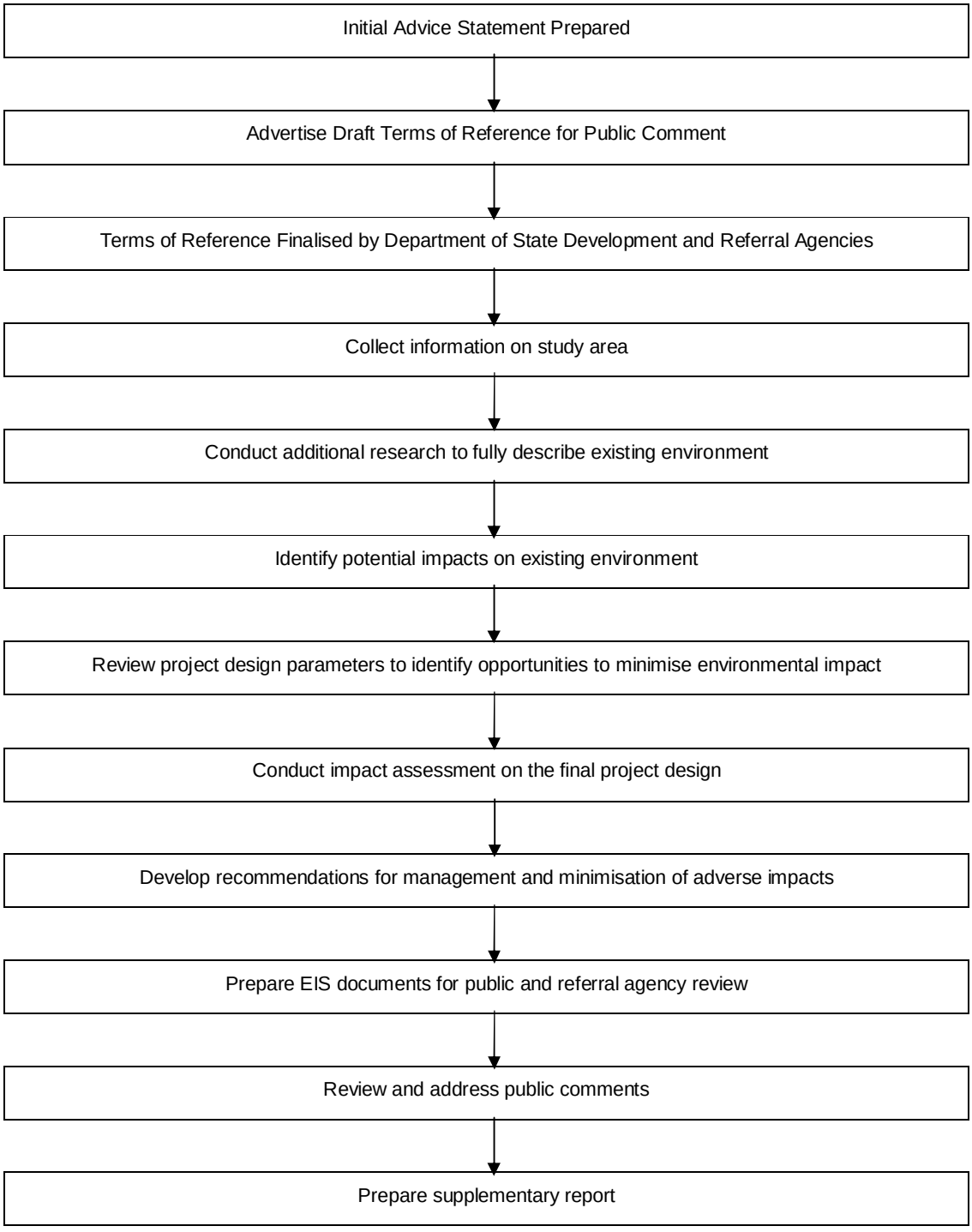

Figure 1-1
Key elements in the preparation of the Guthalungra EIS

1.4.4 Consultation and Participation

1.4.4.1 Stakeholders

The following groups and individual were identified as stakeholders in this project:

- Individuals immediately affected by the developments including residents directly adjacent to the property;
- The Mayor and Chief Executive Officer and Councillors of Bowen Shire Council and the Bowen Collinsville Collective;
- State and Federal Members of Parliament, whose constituents or portfolios are relevant to the project;
- Department of State Development, Environment Australia, Great Barrier Reef Marine Park Authority, referral agencies, and other relevant state and federal authorities; and
- The Gudjuda Reference Group, the Giru Dala Council of elders, Community Groups including the North Queensland Conservation Council, the Gumlu growers Association, Agforce, the Bowen Landcare Group, Queensland Seafood Industry Association, Sunfish, the Bowen Tourism & Development Bureau, the Bowen District Growers Association, and Bowen- Collinsville Enterprise.

1.4.4.2 Community Consultation

The Community consultation process for the project was designed to:

- Provide stakeholders with as much information about the project as possible;
- Provide the stakeholders with opportunities for input to the process;
- Identify stakeholder issues and concerns;
- Respond to the immediate concerns of stakeholders in a timely fashion;
- Feed stakeholder comments into the technical studies of the EIS and into the Social Impact Assessment in particular; and
- Develop meaningful mitigation strategies to ensure the consultation process resulted in real benefits to the community.

The following activities were undertaken as part of the community consultation process for the Guthalungra prawn farm development:

- Letters to individuals potentially directly affected by the project;
- Direct contact including letters to key stakeholders with an interest in the project;
- Advertisements in local and national papers;
- Media releases and media articles;
- Communication management system to log all correspondence with stakeholders during the EIS process;
- The dissemination of phone contact numbers for stakeholders to respond;
- Telephone calls to individuals potentially directly affected by the project;
- Meetings with property owners potentially directly affected by the project and key stakeholders;
- Meetings with industry and community groups in the region and the undertaking of a public forum; and
- Establishment of a Technical Advisory Group of scientists and relevant NGO's and the establishment of a Government stakeholders forum.

A large number of public and referral agencies have been informed about this EIS. Their comments are an important part of the impact assessment and feedback process, aimed at improving the conceptual design and mitigation measures proposed in the EIS. The proponent will respond to all comments received in a Supplementary Report. Copies of the Supplementary Report will be publicly available.

1.4.4.3 Technical Advisory Group

A Technical Advisory Group (TAG) was established to seek technical input to the project from experts within the community and Government agencies and research organisations. The details of TAG are further discussed in Section 10 - Community Consultation and in Appendix V.

1.4.4.4 Referral Agencies

The Department of State Development is coordinating the impact assessment process:

Referral agencies include:

- Department of Primary industries;
- Department of Natural Resources and Mines;
- Department of Main Roads;
- Department of Aboriginal; and Torres Strait Islander Policy and Development;
- Department of Local Government Planning and Sport;
- Department of Emergency Services;
- Department of Families;
- Environment Australia;
- Queensland Transport;
- Queensland Treasury;
- Queensland Health;
- Great Barrier Reef Marine Park Authority; and
- Bowen Shire Council.

1.5 Queensland Legislation & Approvals

1.5.1 Overview

The EIS process for the project was managed by the Department of State Development under Part 4 of the *State Development and Public Works Act 1971* (SDPWO Act). The responsibility for the co-ordination of input from local and state government agencies therefore lies with the Coordinator General.

For the project to proceed, a range of approvals and licences will be required following consideration of the EIS by the Coordinator General. These are dealt with under the integrated Development Assessment System (IDAS) as established by the *Integrated Planning Act 1997* (IPA).

A list of licenses, permits and other approvals required for the project are detailed in Section 14.2 Approvals, Licenses & Permits.

1.5.2 Queensland Policies and Legislation

The legislative requirements to be addressed and any existing approvals (existing permits and conditions) are listed in Section 2.

1.5.2.1 State Development and Public Works Act 1971

This EIS has been prepared in accordance with the provisions of Part 4 of the *State Development and Public Works Act 1971* (SDPWO Act). This EIS will be used to support applications for licences and approvals from the various government agencies through their relevant legislation.

1.5.2.2 Integrated Planning Act 1997

The purpose of the *Integrated Planning Act 1997* (IPA) is to seek to achieve ecological sustainability through co-ordinating and integrating planning, and managing the process of development and the effects of development upon the environment.

Under IPA, Pacific Reef Fisheries (Bowen) may submit Development Applications to Bowen Shire Council (the Assessment Manager) seeking a permit for a material change of use for Lot 370 and Lot 8 as they currently have approval for rural grazing.

Being an impact assessable development, a development permit is required for *material change of use*. Under s.1.3.5 of IPA, a material change of use means:

- The start of a new use of the land or building;
- The re-establishment on the building or land of a use that has been abandoned; or
- The material change in the intensity or scale of the use of the building or land.

1.5.2.3 Environment Protection Act 1994

The object of the *Environment Protection Act 1994* (IPA) (Section 3) is to "Protect the Queensland environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends".

Pursuant to Section 36, Pacific Reef Fisheries must not carry out any activities that cause, or are likely to cause, environmental harm unless it takes all reasonable and practicable measures to prevent them.

The *Environment Protection Act 1994* (EP Act) requires Environmentally Relevant Activities (ERA's) to be authorised by an Administering Authority. The Guthalungra Prawn Farm has the following level 1 ERA's:

- Aquacultural Activity - Cultivating or holding marine, estuarine or freshwater organisms in ponds or tanks (e) if the total area of the impoundments is 20 ha or more and wastes are released to waters.
- Seafood Processing – Commercially processing seafood including removing the scales, gills, intestines or shells, filleting, chilling, freezing, or packaging seafood in works having a design production capacity of more than 100 tonnes/year.

There may be ancillary activities to the primary activity such as motor vehicle workshop (for farm equipment maintenance purposes) and storage of petroleum products. Also dredging fuel storage and contractors engaged in construction may need to secure a licence under the Act.

1.5.2.4 Coastal Protection and Management Act 1995

Proposed changes to the *Coastal Protection and Management Act 1995* and the *Integrated Planning Act 1997* through the *Coastal Protection and Management and other Legislation Amendment Act 2001* will led to the incorporation of the development assessment provisions under the *Harbours Act 1955* and the *Beach Protection Act 1968* into the Integrated Development Assessment System (IDAS).

1.5.2.5 Beach Protection Act 1968

If a development occurs in an Erosion Prone Area, then approval of any clearing of vegetation or earthworks on freehold land can be granted under section (47)(2) of the *Beach Protection Act 1968*. The project intends to take water from Abbot Bay therefore, approval under the *Beach Protection Act 1968* will be required.

1.5.2.6 Fisheries Act 1994

Under section 123 of the *Fisheries Act 1994*, all marine plants are protected regardless of land tenure. Any proposed removal or destruction of marine plant species or any impact on the integrity of a fisheries resource will require the proposal to be forwarded to the Department of Primary Industries (Fisheries) for consideration. This will apply to any marine plant on the freehold property, as well as any marine plant disturbed on other land.

The *Fisheries Act 1994* requires that aquaculture projects hold permits from the Department of Primary Industries. In a similar way to the Environmental Authority from EPA, Fisheries permit requirements will become integrated into the development approvals process through IDAS. The permit issued by QDPI covers the operation of the aquaculture facility, including facility design, disease management and habitat protection. Information related to these requirements is found throughout the EIS.

1.5.2.7 Harbours Act 1955

The *Harbours Act 1955* is soon to be repealed with sections transitional under *Coastal Protection and Management Act 1995*. Applications and approvals are administered by the Environmental Protection Agency. Section 86 of this Act requires that approval must be granted for works on tidal lands or waters for infrastructure such as an intake pipe sited in Queensland waters.

1.5.2.8 Water Act 2000

If any construction of development is likely to occur in a watercourse (including a lake, water body or a stream or creek), a permit will need to be issued from the Department of Natural Resources under the *Water Act 2000. (It is not envisaged that a permit will be required).*

1.5.2.9 Lands Act 1994

Any future development such as installation of a pipeline to service seawater off take would probably require burying such a pipeline to maintain the current use of the land (for grazing). An application will be made to the Department of Natural Resources (Lands Division), to seek consent and granting of a permit to occupy for the pump housing and pipeline infrastructure on Crown land.

1.5.2.10 Cultural Record (Landscapes Qld and Qld Estate) Act 1987

Any item, record or relic encountered will be managed in accordance with legislative requirements. It is not anticipated that such material will be disturbed during approved construction works on the land parcel. Should they need to be, they will be managed and reported to EPA, Townsville.

1.6 Commonwealth Legislation

1.6.1 World Heritage Properties Conservation Act 1983

The Marine Park in the waters adjacent to Lot 135 NPW463 and Lot 26 SB441 is located within the Central Section of the Marine Park. The Central Section Zoning Plan defines this area as General use 'A'.

It appears that no other specific approval will be required for the planned development under this legislation, although any risk to world heritage values should be considered.

1.6.2 Environmental Protection & Biodiversity Conservation Act 1999

Under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions that have, or are likely to have, a significant impact on a matter of national environmental significance (i.e. are deemed to be controlled actions) require approval from the Commonwealth Environment Minister.

The proposed action to develop and operate an aquaculture farm comprising approximately 250 hectares of prawn growout ponds, a seafood processing facility and associated facilities at Guthalungra, North Queensland was declared a Controlled Action under Section 75 of the Act, on 29 January 2001 (EPBC 2001/138). The controlling provisions of the Act being:

- Sections 12 and 15A (World Heritage);
- Sections 18 and 18A (Listed threatened species and communities);
- Sections 20 and 20A (Listed migratory species); and
- Sections 23 and 24A (Marine Environment).

Under s.87 of the EPBC Act, the Commonwealth Environment Minister has decided that assessment of the relevant impact on the controlling provisions will be by accredited assessment process. This is in recognition from the Commonwealth Environment Minister that the state impact assessment process addresses the Commonwealth Governments needs of impact assessment.

To accommodate this accreditation process, Part 5 of the Queensland SDPWO Regulation provides additional requirements for an EIS to address Commonwealth Government requirements under the EPBC Act. The SDPWO regulation states requirements for an EIS in circumstances where the Co-ordinator General has declared a project significant, and the Commonwealth Minister for the Environment has decided that the appropriate assessment approach for the assessment of relevant impacts is by accredited assessment.

1.7 Great Barrier Reef Marine Park Authority

It is recognised that Environment Australia will be the Commonwealth Agency responsible for the assessment of the project with respect to matters of national environmental significance. However the project will require a Marine Parks Permit for any structures proposed to be located within the Great Barrier Reef Marine Park.

An application for a Maine Parks Permit will be assessed under the *Great Barrier Reef Marine Park Regulations 1993*.

1.8 Coordination of State and Commonwealth Planning Approval Processes

It is desirous to run a single, coordinated process to seek assessment and approvals under both State and Commonwealth legislation. Presently, the State and the Commonwealth are deciding how their respective legislation can be integrated, with the aim being that specific State planning and operational instruments and approvals can be 'accredited' by the Commonwealth. Until that 'accreditation' is granted, separate State and Commonwealth applications and assessment processes will be required. However, the proponent is interested to amalgamate the requirements of the State and Commonwealth to eliminate potential for duplication during the EIS phase.

It is the intention of the proponent to seek a 'case-by-case' accreditation by the Commonwealth for a State assessment process run under section 29 of the *State Development & Public Works Organisation Act 1971*.

1.9 Submissions

Any person, group or agency can make a written submission about the EIS to the Co-ordinator General.

Submissions may relate to any aspect of the EIS and do not need to cover the entire EIS. You do not need to be an expert in any of the issues assessed in the EIS to make a submission about it. Submissions will be invited through the placement of advertisements in local and national newspapers.

A period of 28 days has been allowed from receipt of submissions.

A response to all reasonable comments must be provided. The proponent can choose to issue a supplementary report addressing these comments, or may amend the EIS to incorporate comments made.

The Co-ordinator is legally required to take all comments into consideration when making a decision about the project.

1.10 The Environmental Impact Statement

1.10.1 Structure of the EIS

The EIS begins with an Executive Summary. Introductory sections cover legislative framework, need for the Project, and description of the Project. Subsequent sections address biophysical issues relating to land, water, air, noise, flora and fauna. Waste management, hazard and risk, cultural heritage, social and economic impact assessments are all covered in separate sections.

The EIS report closely addresses the Terms of Reference (ToR) for the project prepared by the Coordinator Generals Office, and wherever possible follows the same structure as the ToR. In order to reduce the incidence of duplication in the text extensive cross – referencing is used. Throughout the document the reader will be directed to the section or appendices in which the topic is discussed or presented in the most detail. Appendix A cross-references the ToR with this EIS document.

The EIS is separated into two major sections; a comprehensive description of the existing environment followed by an identification of potential impacts and associated mitigation measure to control impacts to acceptable levels. Draft Environmental Management Plans have been developed for to cover the principal of construction and operational procedures.

1.10.2 Outline of the Studies

The following lists the studies undertaken as part of the EIS and the relevant appendices and/or section of the EIS:

Concept Design Information (Appendix B) – Sinclair Knight Merz:

- Refer to Section 4;
- A number of detailed A3 and A4-sized concept design drawings of the production area and layout have been produced. These drawings also include the pump house and pipeline concept designs.

Raw Water and Wastewater Treatment Systems Specifications (Appendix C) – Sinclair Knight Merz:

- Refer to Section 4;
- The calculations supporting the raw water treatment facilities and wastewater treatment systems have been completed.

Treatment Discharge Calculations (Appendix D) – Lambert and Rehbein:

- Refer to Section 4;
- These calculations have been performed on an excel spreadsheet and detail the operation of the 259 ha pond system over the growing season from September through to June.

Water Quality Management of Prawn Farm Discharges – Preliminary Concepts (Appendix E) - Ken Hartley and Associates:

- Refer to Section 4;
- An assessment of alternative methods of water treatment by a pre-eminent industrial water treatment engineer;
- Summary of Results: Alternative methods to existing primary treatment of prawn farm discharge likely to be prohibitively expensive.

Acid Sulphate Soils (ASS) Report (Appendix F) - DJ Douglas and Partners:

- Refer to Section 6.3.1 ;
- The ASS Report was undertaken to identify the presence of ASS on site; and
- Summary of Impacts: No potential acid sulphate soils were identified in the vicinity of the proposed farm on Lots 8 and 340, however potential acid sulphate soils are present on the pipeline route. PASS (Potential Acid Sulphate Soil) management procedures will ensure no adverse impacts during construction of pipeline.

Geotechnical Report (Appendix G) - DJ Douglas and Partners:

- Refer to Section 6.3.2;
- The Geotechnical Report was undertaken to investigate the suitability of the soils for construction and water holding capabilities; and
- Summary of Results: Large areas of the study site suitable for pond construction and constriction of associated works.

Flood Study of the Site (Appendix H) - Sinclair Knight Merz:

- Refer to Section 6.4.1;
- An assessment of surface water movement across the site under a 100-year flood event was undertaken;
- Summary of Results: Elements of the proposal have been located and designed to accommodate a 100-year flood event. The proposal has been designed to facilitate the natural flow of waters across the site.

Tides in Abbot Bay (Appendix I) - James Cook University:

- Refer to Section 6.4.2;
- Tide meters were located in the Bay to assess currents and wave amplitude for incorporation to the dispersion modelling study.
- Summary of Results: Tidal currents and water flows are predominantly parallel with the coast.

Bathymetry & Elliot River Tide Data (Appendix J) – Aquamap, Townsville:

- Refer to Section 6.4 5;
- Water depths in relevant sections of Abbot Bay and tidal regime in the Elliot River determined;
- Summary of Results: The bathymetry has been incorporated into offshore pipeline design and dispersion water modelling study. The tidal regime in the Elliot River highlights its unsuitability for farm intake or discharge location.

Coastal Geomorphology (Appendix K) – James Cook University:

- Refer to Section 6.4.6;
- The Coastal Geomorphology report was undertaken to determine erosion and geomorphic processes from the mouth of the Elliot River and into Abbot Bay.
- Summary of Results: It is surmised that the coast in the vicinity of the pump station is nearing the end of a 30 year erosion period, in that the current erosion rate of 0.9m per year could continue for several more years before a recovery cycle commences. In the absence of any severe storm events this suggests that the proposed location of the intake pump station is well clear of anticipated erosion zones.

Marine Ecology Review (Appendix L) Scientific Marine, Townsville:

- Refer to Section 6.5.1;
- Predominantly an assessment of sea grasses and coral in Abbot Bay in an area adjacent to the discharge location;
- Summary of Results: Sparse/patchy seagrass cover across the assessment area. Coral bleaching at Camp Island.

Flora and Fauna Report (Appendix M) - Ecotone Environmental Services:

- Refer to Section 6.5.2;
- Terrestrial ecological assessment undertaken to identify habitats and key ecosystems functions on the site and pipeline route; and
- Summary of Results: No endangered species present, development will not result in the removal of endangered ecosystems.

Noise Report (Appendix N) - Sinclair Knight Merz:

- Refer to Section 7.4;
- Assessment of anticipated noise levels from the farm and associated works;
- Summary of Results: No adverse impacts from the operation anticipated.

Hydro-geological Study (Appendix O) - Sinclair Knight Merz:

- Refer to Sections 7.1.4, 7.1.5;
- An assessment of the location and movement of underground water on and across the site was undertaken;
- Summary of results: There is very little freshwater below the proposed production ponds and, because of the relative low permeability of the soils, seepage rate expected for the ponds will be very low.

Coastal Erosion Report (Appendix P) – Coastal Engineering Solutions:

- Refer to Section 7.1.3;
- An assessment of beach erosion risk at Abbot Bay.
- Summary of Results: The modelling indicated that the beach is likely to receive approximately 15m during a 20 year event, 18m for a 50 year event; and up to 23m in a 100 year event. These estimates include a 40% factor of safety in accordance with standard beach protection authority allowances.

Water Quality Monitoring of Prawn Farm Discharges in Abbot Bay (Appendix Q) - CRC Reef Research, Townsville:

- Refer to Section 7.1.13
- Modelling undertaken to determine the characteristics of the discharge plume. The direction and concentration of discharge throughout the production season was assessed under number of scenarios;
- Summary of Results: There will be an area of seagrass that will be subjected to nutrient concentrations above background level for a period of time during the farm production season. Given the minimal increase in concentration, this exposure may encourage rather than restrict seagrass growth.

Traffic Study (Appendix R) - Lambert & Rehbein:

- Refer to Section 7.7;
- An assessment of projected traffic and impacts on road designs was undertaken.
- Summary of Results: Access roads to the farm will require some upgrading. Access to and from the highway is more than adequate.

Induction Training and Workplace Health and Safety Policy (Appendix S) – Pacific Reef Fisheries:

- Refer to Section 8.0;
- The induction training presently being undertaken at the Alva Beach Pacific Reef prawn farm will be used for staff training at Guthalungra. This training will also include workplace health and safety procedure training also presently being undertaken at the same site.

Other studies not included in the Appendices include:

Business Plan - Seafood Farming Services, Lambert and Rehbein, Sinclair Knight Merz:

- Report Confidential;
- Refer to Section 6. 7, 7.10;
- Summary of Results: Strong growth in the domestic market for quality farmed prawns. The financial viability of the project is contingent on the approval of the full compliment of 260 ha of production ponds due to the relatively high capital costs associated with the construction of the pipeline.

Cultural Heritage - Gudjuda Reference Group/Northern Archaeology, Townsville:

- Report Confidential;
- An assessment of the cultural values of the area and the likely impacts of the proposal was undertaken. Mitigation measures and recommendations regarding ongoing management are provided;
- Summary of Results: Confidential Report

Community Consultation - Seafood Farming Services:

- Refer to Section 10 and Appendix T & U
- A Community Consultation plan was implemented which consisted of a variety of techniques to inform interested parties and to solicit input on the project.
- Summary of results: The Bowen Shire Community welcome valid and viable aquaculture ventures to the region provided there are no unacceptable adverse environmental impacts.

Socio Economic Study - Seafood Farming Services:

- Refer to Sections 6.7 & 7.10;
- The possible impacts of the prawn farm on the social fabric of the local community, the economic well being and the infrastructure in the region were investigated;
- Summary of Results: The prawn farm will bring much-needed jobs and wealth to the Shire and will help to redress the population decline.

Environmental Review – Lambert and Rehbein:

- Refer to Section 7;
- The possible impacts of the prawn farm operation and construction on the environmental values of the site and the Great Barrier Reef were investigated;
- Summary of Results: The development will not affect any endangered ecosystems. The pipeline route and pump station has a small ecological footprint and construction impacts will be rehabilitated. In Abbot Bay there will be an area of seagrass that will be subjected to nutrient concentrations above background level for a period of time during the farm production season. Given the minimal increase in concentration, this exposure may encourage rather than restrict seagrass growth.
- World Heritage values have been fully considered taking into account ESD principles and a risk management approach to assessment. The predicted impact of the proposal on World Heritage values is considered to be minimal and acceptable.

The Terms of Reference for the EIS is located in Section 14.

1.11 Commonwealth Legislation

1.11.1 World Heritage Properties Conservation Act 1983

The Marine Park in the waters adjacent to Lot 135 NPW463 and Lot 26 SB441 is located within the Central Section of the Marine Park. The Central Section Zoning Plan defines this area as General use 'A'.

It appears that no other specific approval will be required for the planned development under this legislation, although any risk to world heritage values should be considered.

1.11.2 Environmental Protection & Biodiversity Conservation Act 1999

Under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions that have, or are likely to have, a significant impact on a matter of national environmental significance (i.e. are deemed to be controlled actions) require approval from the Commonwealth Environment Minister.

The proposed action to develop and operate an aquaculture farm comprising approximately 250 hectares of prawn growout ponds, a seafood processing facility and associated facilities at Guthalungra, North Queensland was declared a Controlled Action under Section 75 of the Act, on 29 January 2001 (EPBC 2001/138). The controlling provisions of the Act being:

- Sections 12 and 15A (World Heritage);
- Sections 18 and 18A (Listed threatened species and communities);
- Sections 20 and 20A (Listed migratory species); and
- Sections 23 and 24A (Marine Environment).

Under s.87 of the EPBC Act, the Commonwealth Environment Minister has decided that assessment of the relevant impacts on the controlling provisions will be by an accredited assessment process. This is in recognition from the Commonwealth Environment Minister that the state impact assessment process addresses the Commonwealth Government's needs of impact assessment.

To accommodate this accreditation process, Part 5 of the Queensland SDPWO Regulation provides additional requirements for an EIS to address Commonwealth Government requirements under the EPBC Act. The SDPWO regulation states requirements for an EIS in circumstances where the Coordinator-General has declared a project significant, and the Commonwealth Minister for the Environment has decided that the appropriate assessment approach for the assessment of relevant impacts is by accredited assessment. This EIS has been prepared to address both State and Commonwealth interests.

1.12 Great Barrier Reef Marine Park Authority

It is recognised that Environment Australia will be the Commonwealth Agency responsible for the assessment of the project with respect to matters of national environmental significance. However the project will require a Marine Parks Permit for any structures proposed to be located within the Great Barrier Reef Marine Park.

An application for a Maine Parks Permit will be assessed under the *Great Barrier Reef Marine Park Regulations 1993*.

1.13 Submissions

On completion, once the Coordinator General is satisfied that the TOR has been meet, any person, group or agency can make a written submission about the EIS to the Coordinator General.

Submissions may relate to any aspect of the EIS and do not need to cover the entire EIS. You do not need to be an expert in any of the issues assessed in the EIS to make a submission about it. Submissions will be invited through the placement of advertisements in local and national newspapers.

A minimum period of 28 days has been allowed from receipt of submissions.

A response to all reasonable comments must be provided. The proponent can choose to issue a supplementary report addressing these comments, or may amend the EIS to incorporate comments made.

The Coordinator General is legally required to take all comments into consideration when making a decision about the project.

1.14 The Environmental Impact Statement

1.14.1 Structure of the EIS

The EIS begins with an Executive Summary. Introductory sections cover legislative framework, need for the Project, and description of the Project. Subsequent sections address biophysical issues relating to land, water, air, noise, flora and fauna. Waste management, hazard and risk, cultural heritage, social and economic impact assessments are all covered in separate sections.

The EIS report closely addresses the Terms of Reference (ToR) for the project prepared by the Coordinator Generals Office, and wherever possible follows the same structure as the ToR. In order to reduce the incidence of duplication in the text extensive cross – referencing is used. Throughout the document the reader will be directed to the section or appendices in which the topic is discussed or presented in the most detail. Appendix A cross-references the ToR with this EIS document.

The EIS is separated into two major sections; a comprehensive description of the existing environment followed by an identification of potential impacts and associated mitigation measure to control impacts to acceptable levels. Draft Environmental Management Plans have been developed for to cover the principal of construction and operational procedures.

1.14.2 Outline of the Studies

The following lists the studies undertaken as part of the EIS and the relevant appendices and/or section of the EIS:

Concept Design Information (Appendix B) – Sinclair Knight Merz:

- Refer to Section 4;
- A number of detailed A3 and A4-sized concept design drawings of the production area and layout have been produced. These drawings also include the pump house and pipeline concept designs.

Raw Water and Wastewater Treatment Systems Specifications (Appendix C) – Sinclair Knight Merz:

- Refer to Section 4;
- The calculations supporting the raw water treatment facilities and wastewater treatment systems have been completed.

Treatment Discharge Calculations (Appendix D) – Lambert and Rehbein:

- Refer to Section 4;
- These calculations have been performed on an excel spreadsheet and detail the operation of the 259 ha pond system over the growing season from September through to June.

Water Quality Management of Prawn Farm Discharges – Preliminary Concepts (Appendix E) - Ken Hartley and Associates:

- Refer to Section 4;
- An assessment of alternative methods of water treatment by a pre-eminent industrial water treatment engineer;
- Summary of Results: Alternative methods to existing primary treatment of prawn farm discharge likely to be prohibitively expensive.

Acid Sulphate Soils (ASS) Report (Appendix F) - DJ Douglas and Partners:

- Refer to Section 6.3.1;
- The ASS Report was undertaken to identify the presence of ASS on site; and
- Summary of Impacts: No potential acid sulphate soils were identified in the vicinity of the proposed farm on Lots 8 and 340, however potential acid sulphate soils are present on the pipeline route. PASS (Potential Acid Sulphate Soil) management procedures will ensure no adverse impacts during construction of pipeline.

Geotechnical Report (Appendix G) - DJ Douglas and Partners:

- Refer to Section 6.3.2;
- The Geotechnical Report was undertaken to investigate the suitability of the soils for construction and water holding capabilities; and
- Summary of Results: Large areas of the study site are suitable for pond construction and associated works.

Flood Study of the Site (Appendix H) - Sinclair Knight Merz:

- Refer to Section 6.4.1;
- An assessment of surface water movement across the site under a 100-year flood event was undertaken;
- Summary of Results: Elements of the proposal have been located and designed to accommodate a 100-year flood event. The proposal has been designed to facilitate the natural flow of waters across the site.

Tides in Abbot Bay (Appendix I) - James Cook University:

- Refer to Section 6.4.2;
- Tide meters were located in the Bay to assess currents and wave amplitude for incorporation to the dispersion modelling study;
- Summary of Results: Tidal currents and water flows are predominantly parallel with the coast.

Bathymetry & Elliot River Tide Data (Appendix J) – Aquamap, Townsville:

- Refer to Section 6.4 5;
- Water depths in relevant sections of Abbot Bay and tidal regime in the Elliot River determined;
- Summary of Results: The bathymetry has been incorporated into offshore pipeline design and dispersion water modelling study. The tidal regime in the Elliot River highlights its unsuitability for farm intake or discharge location.

Coastal Geomorphology (Appendix K) – James Cook University:

- Refer to Section 6.4.6;
- The Coastal Geomorphology report was undertaken to determine erosion and geomorphic processes from the mouth of the Elliot River and into Abbot Bay;
- Summary of Results: It is surmised that the coast in the vicinity of the pump station is nearing the end of a 30 year erosion period, in that the current erosion rate of 0.9m per year could continue for several more years before a recovery cycle commences. In the absence of any severe storm events this suggests that the proposed location of the intake pump station is well clear of anticipated erosion zones.

Marine Ecology Review (Appendix L) Scientific Marine, Townsville:

- Refer to Section 6.5.1;
- Predominantly an assessment of sea grasses and coral in Abbot Bay in an area adjacent to the discharge location;
- Summary of Results: Sparse/patchy seagrass cover across the assessment area. Coral bleaching at Camp Island.

Flora and Fauna Report (Appendix M) - Ecotone Environmental Services:

- Refer to Section 6.5.2;
- Terrestrial ecological assessment undertaken to identify habitats and key ecosystems functions on the site and pipeline route; and
- Summary of Results: No endangered species present, development will not result in the removal of endangered ecosystems.

Noise Report (Appendix N) - Sinclair Knight Merz:

- Refer to Section 7.4;
- Assessment of anticipated noise levels from the farm and associated works;
- Summary of Results: No adverse impacts from the operation anticipated.

Hydro-geological Study (Appendix O) - Sinclair Knight Merz:

- Refer to Sections 7.1.4, 7.1.5;
- An assessment of the location and movement of underground water on and across the site was undertaken;
- Summary of results: There is very little freshwater below the proposed production ponds and, because of the relative low permeability of the soils, seepage rate expected for the ponds will be very low.

Coastal Erosion Report (Appendix P) – Coastal Engineering Solutions:

- Refer to Section 7.1.3;
- An assessment of beach erosion risk at Abbot Bay;
- Summary of Results: The modelling indicated that the beach is likely to accrete by approximately 15m during a 20 year event, 18m for a 50 year event; and up to 23m in a 100 year event. These estimates include a 40% factor of safety in accordance with standard beach protection authority allowances.

Water Quality Monitoring of Prawn Farm Discharges in Abbot Bay (Appendix Q) - CRC Reef Research, Townsville:

- Refer to Section 7.1.13;
- Modelling undertaken to determine the characteristics of the discharge plume. The direction and concentration of discharge throughout the production season was assessed under number of scenarios;
- Summary of Results: There will be an area of seagrass that will be subjected to nutrient concentrations above background level for a period of time during the farm production season. Given the minimal increase in concentration, this exposure may encourage rather than restrict seagrass growth.

Traffic Study (Appendix R) - Lambert & Rehbein:

- Refer to Section 7.7;
- An assessment of projected traffic and impacts on road designs was undertaken;
- Summary of Results: Access roads to the farm will require some upgrading. Access to and from the highway is more than adequate.

Induction Training and Workplace Health and Safety Policy (Appendix S) – Pacific Reef Fisheries:

- Refer to Section 8.0;
- The induction training presently being undertaken at the Alva Beach Pacific Reef prawn farm will be used for staff training at Guthalungra. This training will also include workplace health and safety procedure training also presently being undertaken at the same site.

Other studies not included in the Appendices include:

Business Plan - Seafood Farming Services, Lambert and Rehbein, Sinclair Knight Merz:

- Report Confidential;
- Refer to Section 6. 7, 7.10;
- Summary of Results: Strong growth in the domestic market for quality farmed prawns. The financial viability of the project is contingent on the approval of the full compliment of 260 ha of production ponds due to the relatively high capital costs associated with the construction of the pipeline.

Cultural Heritage - Gudjuda Reference Group/Northern Archaeology, Townsville:

- Report Confidential;
- An assessment of the cultural values of the area and the likely impacts of the proposal was undertaken. Mitigation measures and recommendations regarding ongoing management are provided;
- Summary of Results: Confidential Report.

Community Consultation - Seafood Farming Services:

- Refer to Section 10 and Appendix T & U;
- A Community Consultation plan was implemented which consisted of a variety of techniques to inform interested parties and to solicit input on the project;
- Summary of results: The Bowen Shire Community welcome valid and viable aquaculture ventures to the region provided there are no unacceptable adverse environmental impacts.

Socio Economic Study - Seafood Farming Services:

- Refer to Sections 6.7 & 7.10;
- The possible impacts of the prawn farm on the social fabric of the local community, the economic well being and the infrastructure in the region were investigated;
- Summary of Results: The prawn farm will bring much-needed jobs and wealth to the Shire and will help to redress the population decline.

Environmental Review – Lambert and Rehbein:

- Refer to Section 7;
- The possible impacts of the prawn farm operation and construction on the environmental values of the site and the Great Barrier Reef were investigated;
- Summary of Results: The development will not affect any endangered ecosystems. The pipeline route and pump station has a small ecological footprint on a wetland and dunal system with construction impacts to be rehabilitated. In Abbot Bay, there will be an area of seagrass that will be subjected to nutrient concentrations above background level for a period of time during the farm production season. Given the minimal increase in concentration, this exposure may encourage rather than restrict seagrass growth. The impacts on grazing dugongs and turtles on seagrass;
- World Heritage Values have been fully considered taking into account ESD principles and a risk management approach to assessment. The predicted impact of the proposal on World Heritage Values is considered to be minimal and acceptable.

The Terms of Reference for the EIS is located in Section 14.

1.15 Study Area and Regional Setting

The proposed site, as shown in Figure 1-2, is near the coastal North Queensland town of Guthalungra which lies approximately 40 kilometres north of Bowen, 60 kilometres south of Home Hill, and 175 kilometres south of Townsville.

Figure 1-2
Regional location of proposed site
(Source: Department of Natural Resources)

The proposed site is part of the near coastal zone and has previously been used for grazing.

The land is situated at the end of Watts Road and Coventry Road. Coventry Road joins the Bruce Highway at Guthalungra. The proposed area for development includes Lot 8 SB294 and Lot 370 K124643 in the Parish of Curlewis, County of Salisbury (Refer to Figures 1-3 and 1-4). Lot 370 abuts the Elliot River.

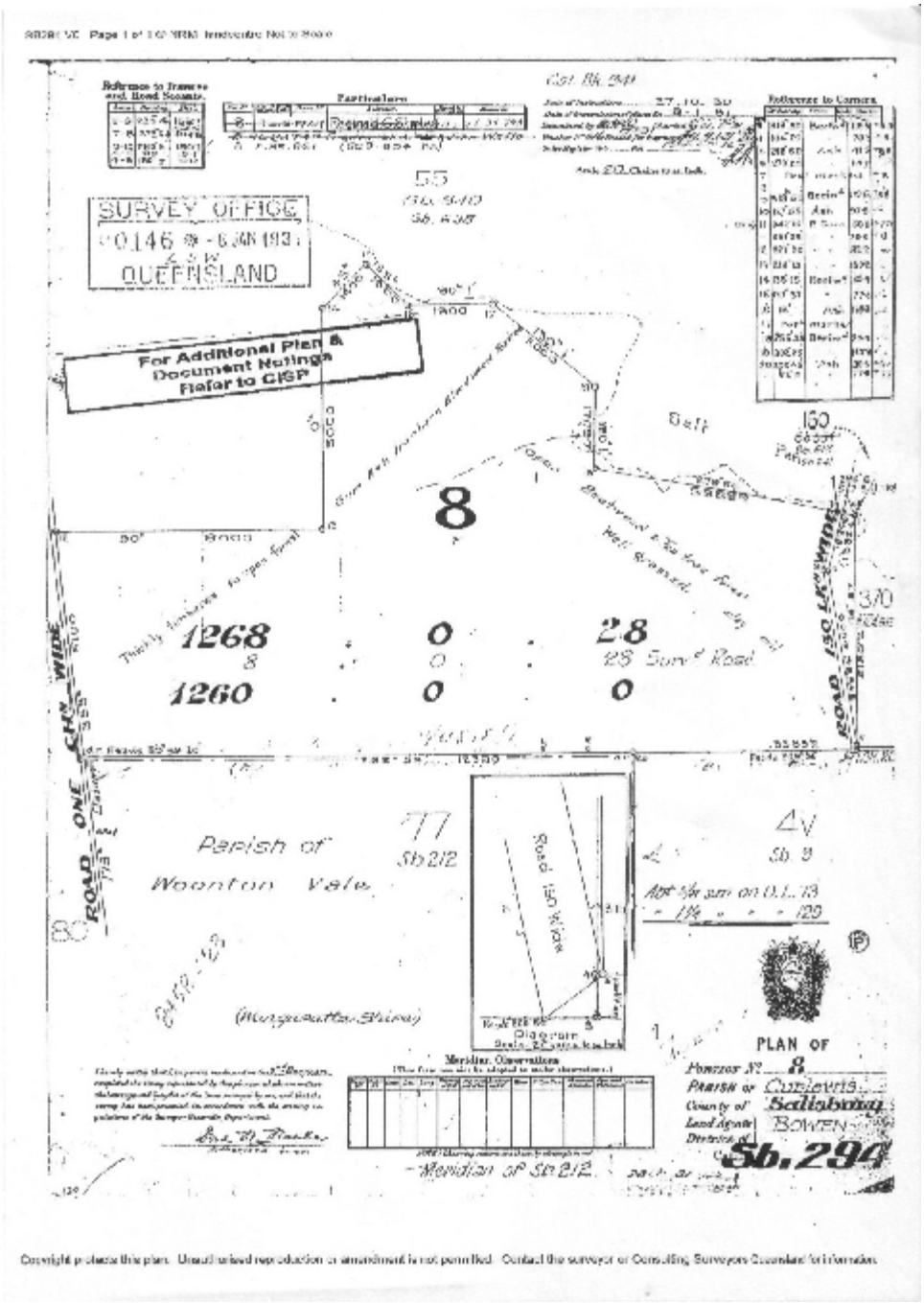

Figure 1-3
Lot 8 SB294
(Source: Department of Natural Resources)

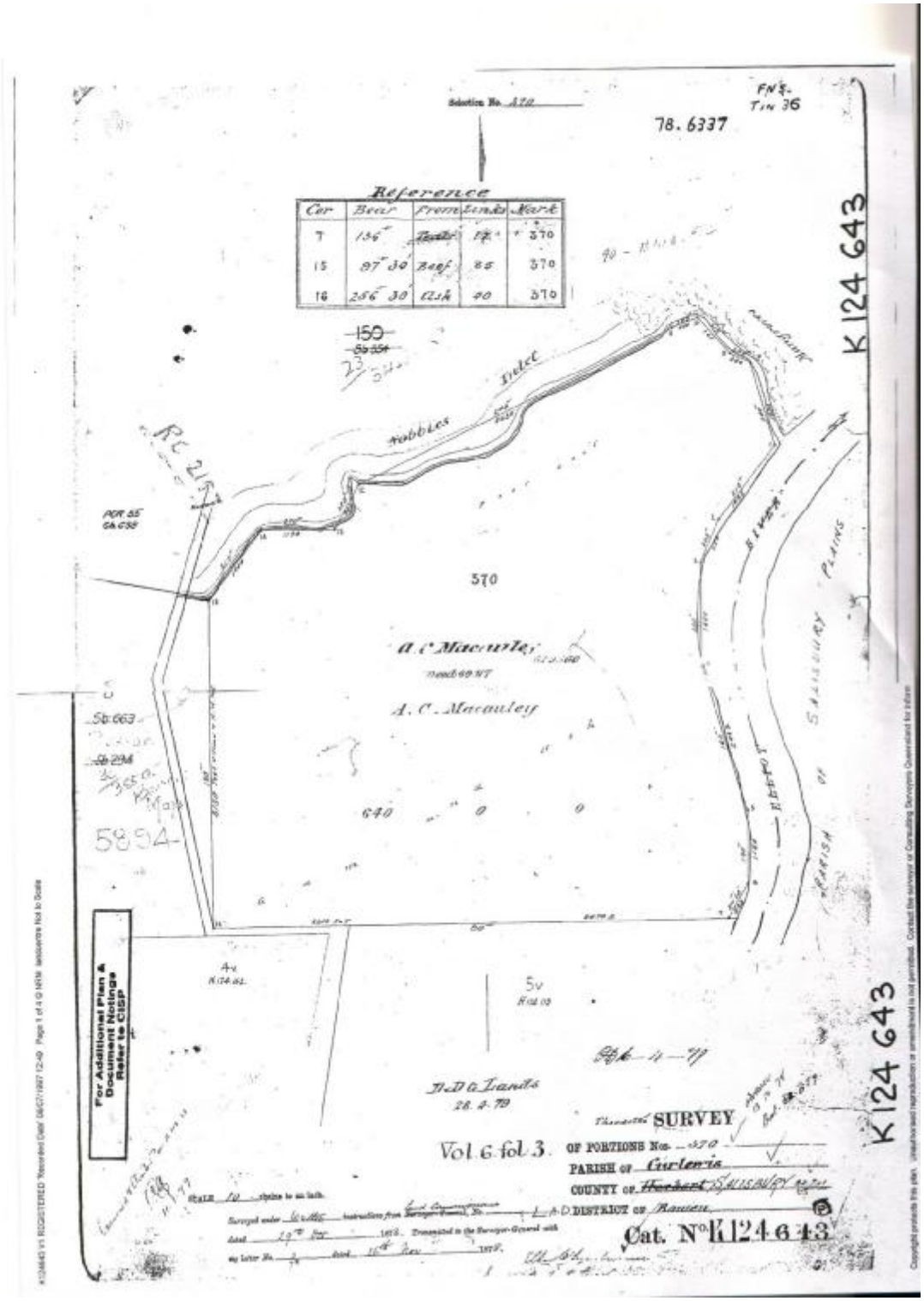

Figure 1-4
Lot 370 K124643
(Source: Department of Natural Resources)

Figure 1-5 shows extra details of the location of the proposed development site. Note that Coventry Road extends to the middle of the properties and Watts Road enters Lot 370 K124643.

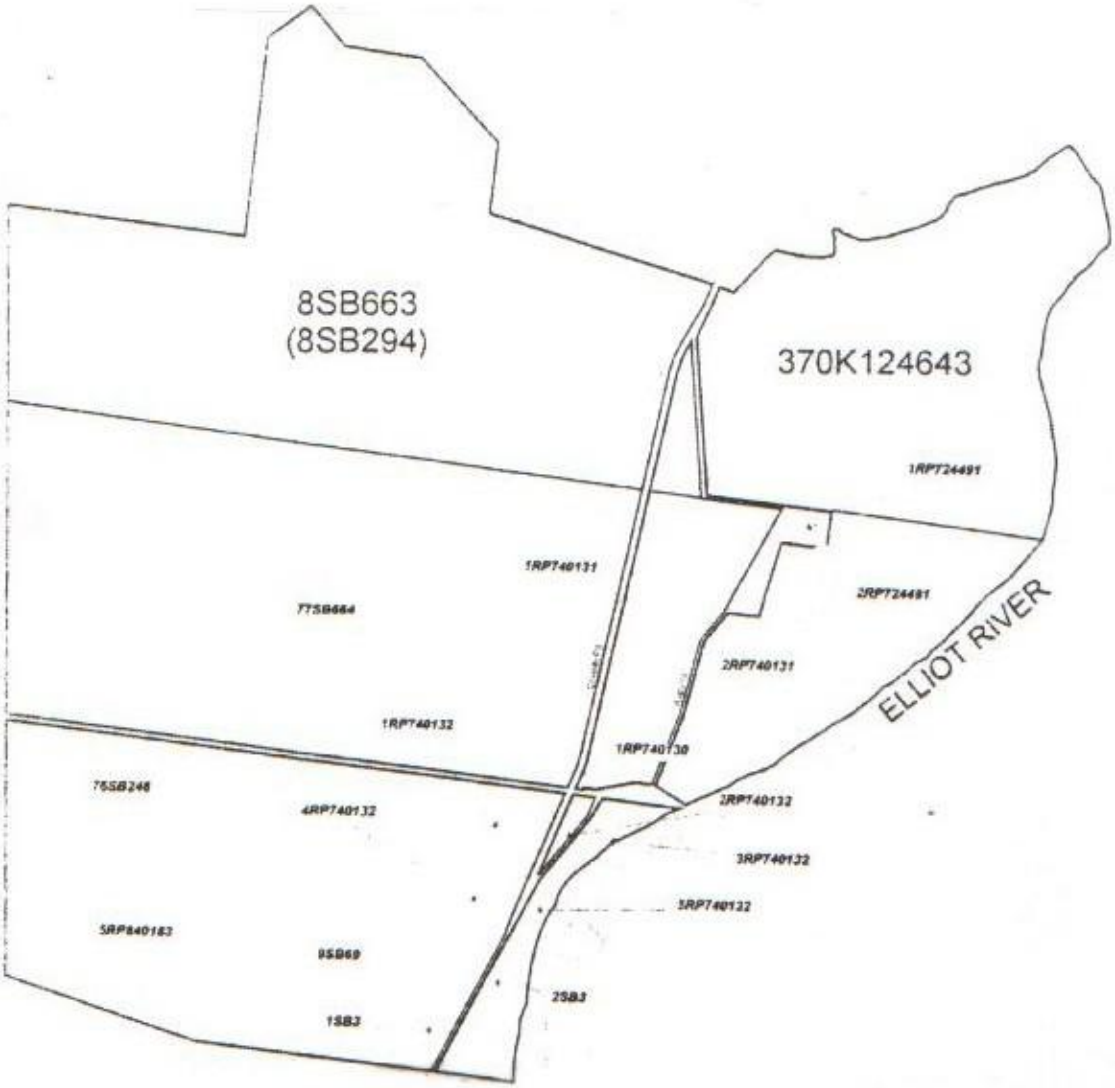

Figure 1-5
Site Location

Figures 1-6 and 1-7 show the location of the properties through which the proposed pipeline route and access tracks will be located.

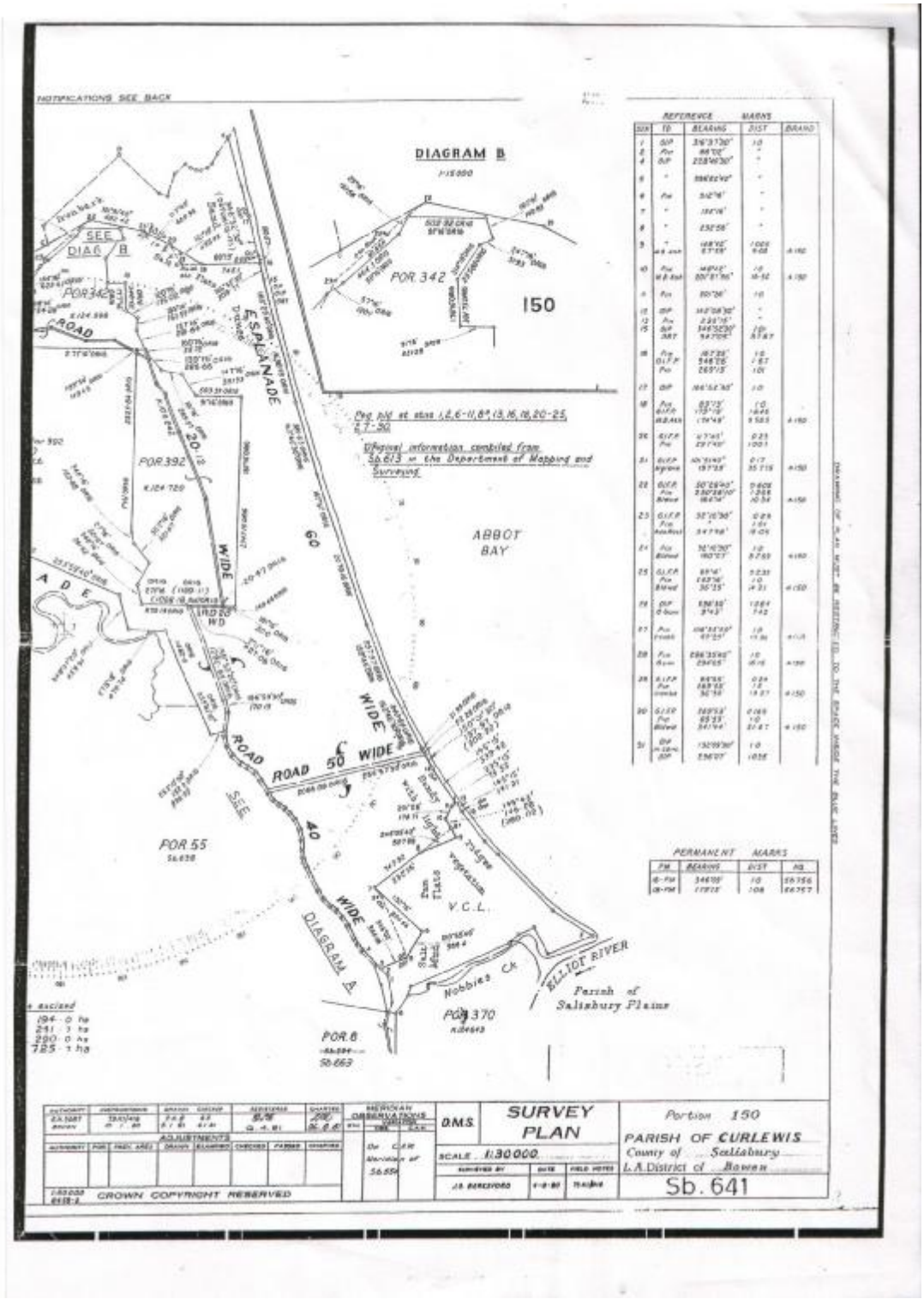

Figure 1-6
Lot 150 SB641
(Source: Department of Natural Resources)

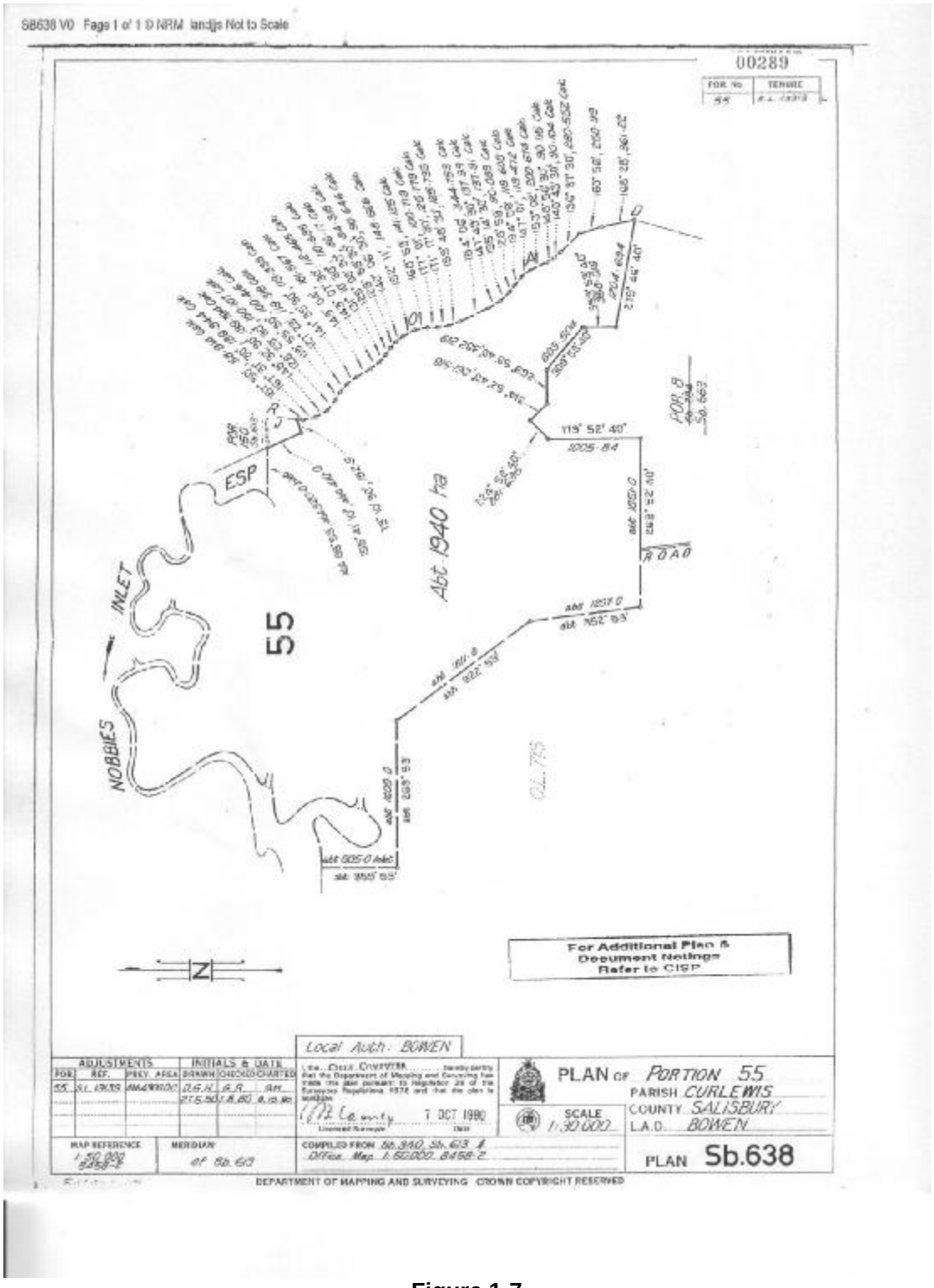

Figure 1-7
Lot 55 SB638 (S.L. 43313)
(Source: Department of Natural Resources)