# EXECUTIVE DIRECTOR OF THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT ("Lessor")

- AND -

WESTERN MINING CORPORATION LIMITED ("Lessee")

LEASE

CONVEYANCER
CROWN LAW DEPARTMENT
PERTH

TELEPHONE: (09) 264 1711 CLD: (WEM018D03) THIS DEED OF LEASE is made the

called "the Lessor") of the one part AND

/3 TH day of N/

1991

BETWEEN:

EXECUTIVE DIRECTOR OF THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT a body corporate constituted by the Conservation and Land Management Act, 1984 ("the CALM Act") of 50 Hayman Road, Como (hereinafter

WESTERN MINING CORPORATION LIMITED, of 2nd Floor, 28-42 Ventnor Avenue West Perth in the State of Western Australia (hereinafter called "the Lessee") of the other part.

#### WHEREAS:

- (A) Reserve 40323 ("the Reserve") is vested in the National Parks and Nature Conservation Authority for the purpose of conservation of flora and fauna.
- (B) The Lessor is the permanent head of the Department under whose care and management the Reserve is placed pursuant to the provisions of the CALM
- By Section 17 of the Petroleum Pipelines Act 1969 ("the Pipeline Act") a public authority (as defined in the Pipeline Act) is empowered to grant to the holder of a pipeline licence granted under the Pipeline Act a lease of or over any land vested in or owned by that public authority to enable the holder of the pipeline licence to construct operate inspect maintain and repair the pipeline specified in the licence.
- (E) The Lessee is together with a number of joint venture partners ("the Joint Venture Partners") the holder of a pipeline licence under the Pipeline Act dated the 27th day of November 1987 recorded as Pipeline Licence No.14 in the register of the Department of Mines ("The Pipeline Licence.")
- (F) The Lessee has applied for a lease of that part of the Reserve hachured green on the plan annexed hereto which has been marked out by representatives of the Lessor and Lessee ("the demised premises") for the

- purpose of constructing operating inspecting maintaining and repairing the pipeline specified in the Pipeline Licence ("the Pipeline").
- (G) At the request of the Lessee, the Lessor has agreed to grant this lease of the demised premises solely to the Lessee subject to the Lessee agreeing to be liable for all acts and omissions of the Joint Venture Partners.

NOW THIS DEED WITNESSES THAT the Lessor in consideration of the premises, and also in consideration of the rents hereinafter reserved and on the part of the Lessee to be paid and in the exercise of the powers in that behalf given by the Pipeline Act does by these presents and to the extent of the Lessor's powers in that behalf demise and lease to the Lessee jointly and severally the demised premises with the appurtenances thereto TO HAVE AND TO HOLD the demised premises with all the rights powers and privileges conferred on the Lessee by the Pipeline Act and these presents BUT SUBJECT to the covenants agreements obligations powers reservations and conditions contained herein and in the Pipeline Licence and to the provisions in the Pipeline Act as are applicable hereto for a term commencing on the 27th day of November 1987 and expiring on the day on which the term of the Pipeline Licence or any renewal thereof terminates or is determined ("the Term") and determinable as hereinafter provided YIELDING AND PAYING therefor during the Term unto the Lessor a yearly rent of \$12,370.15 subject to reappraisal as hereinafter provided and payable by equal payments yearly in advance on or before the 27th day of November in every year PROVIDED NEVERTHELESS that the Lessor does hereby save and reserve to the Crown all mines of gold, silver, copper, tin or other metals, ore and minerals, or other substances containing metals and all gems and precious stones, coal and all phosphatic substances in and under the demised premises with full liberty at all times (subject to the Lessor reasonably determining that the operations of the Lessee on the demised premises will not be unduly prejudiced or interfered with assuming that the Lessee takes all reasonable steps to avoid and mitigate the prejudice or interference) for the Crown or any person lawfully claiming under or

through the Crown to search and dig for and carry away the same and for that purpose enter upon the demised premises or any part thereof PROVIDED FURTHER that all petroleum (but excluding petroleum brought onto the demised premises by the Lessee its servants licencees and invitees in the course of their operations on the demised premises) on or below the surface of the demised premises is reserved to the Crown except to such extent as they have already been made the subject of an Exploration Permit with the right for the Crown or any person claiming under the Crown or lawfully authorised in that behalf to have access to the demised premises for the purpose of searching for and for the operations of obtaining petroleum in and under any part of the demised premises under the provisions of the Petroleum Act, 1967.

1. THE Lessee to the intent that the obligations may continue throughout the Term hereby jointly and severally COVENANTS AND AGREES with the Lessor as follows:-

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- (1) THAT the Lessee will pay the rent hereby reserved at the times and in the manner aforesaid.
- (2) THAT the Lessee will duly and punctually pay all rates taxes and outgoings in respect of the demised premises as are levied or imposed by any authority municipality or instrumentality from time to time.
- (3) THAT the Lessee will subject to and in accordance with the provisions of the Pipeline Licence commence and diligently proceed with the construction provision and completion of the Pipeline on the demised premises.
- (4) THAT the Lessee will permit the Lessor by his agents and servants with or without vehicles plant and equipment at all reasonable times and on reasonable notice (except in cases of emergency) to enter upon and inspect the demised premises for the purpose of ensuring that the Lessee is observing performing and complying with the covenants conditions and obligations contained herein and in the Pipeline Licence and on the part of

the Lessee to be observed performed and complied with provided that should the Lessee nominate an officer to accompany the agents or servants of the Lessor then such inspection shall be carried out by the agents or servants accompanied by such officer and all security and safety regulations of the Lessee shall to the extent practicable be observed and complied with by such agents and servants. The Lessee shall provide appropriate return transport between Karratha and the demised premises for such servants and agents of the Lessor and between Onslow and the demised premises for their vehicles plant and equipment (if any) together with suitable accommodation and living quarters on the demised premises. The same access, transport and accommodation shall also be provided upon request to representatives of the National Parks and Nature Conservation authority.

- had and obtained use or permit or suffer the demised premises or any part thereof to be used for any purpose other than the construction provision use operation inspection maintenance and repair thereon of the Pipeline in connection with the appraisal and development of the South Pepper and North Herald Oilfields or any other oilfields approved by the Environmental Protection Authority for servicing of the Pipeline Licence and the carrying out of the biological studies and monitoring programme referred to in Clause 1(27) hereof.
- (6) THAT the Lessee will at its own cost in all things comply in all respects with the provisions of all Acts (State or Federal) now or hereafter in force and rules regulations and by-laws made thereunder in respect of or affecting the demised premises or the operations of the Lessee thereon (including but not limited to the Calm Act and the Wildlife Conservation Act 1950) and will perform discharge and execute all requisitions and works and do and perform all such acts and things upon and to the demised

premises or any part thereof as are or may reasonably be required or directed to be executed or done by any competent local or public authority pursuant to any Act (State of Federal) now or hereafter in force PROVIDED that compliance with provisions of paragraphs 1 and 2 of Regulation 44 and paragraphs (a),(b),(c), (d). (e),(g), (i), (1), (m), (o) and (p) of Regulation 46 under the Wildlife Conservation Act 1950 shall not be required in circumstances where the breach thereof is an unavoidable effect of the Lessee's operations on the demised premises.

- (7) THAT the Lessee will at all times during the currency of this Lease observe perform and comply with all the covenants agreements conditions provisions and obligations contained or implied in the Pipeline Licence which are on the part of the Lessee to be observed performed and complied with.
- assign mortgage charge sublet dispose of or part with possession of the demised premises or any part thereof or procure allow or suffer the demised premises or any part thereof to be assigned mortgaged charged sublet disposed of or parted with possession of for all or any part of the Term without at the same time assigning mortgaging charging subletting disposing of or parting with the possession of (as the case may be) the Pipeline Licence to the same assignee mortgages chargee sublessee or disponee respectively.
- (9) THAT the Lessee will pay to the Lessor forthwith upon demand in writing:
  - (a) all reasonable costs and expenses incurred by the Lessor with respect to the carrying out of such boundary surveys of the demised premises and the remainder of the Reserve and the preparation of such plans of survey in respect thereof as shall in the Lessor's opinion be required in connection with the preparation of and preliminary to this Lease; and

- (b) all costs of and incidental to instructions for and the preparation execution and stamping of this Lease in triplicate.
- THAT the Lessee will indemnify and keep indemnified the Lessor the (10)Crown and its instrumentalities the Minister for Mines and their respective servants agents and contractors in respect of all actions suits proceedings claims demands losses expenses or costs arising out of or in connection with any work carried out by or on behalf of the Lessee or the Joint Venture Partners pursuant to the Pipeline Licence or relating to their operations or arising out of or in connection with the construction provision use operation inspection maintenance or repair by the Lessee or its servants agents contractors Joint Venture Partners or assignees of the Pipeline or the Lessee's works or services on the demised premises or the plant apparatus or equipment installed in connection therewith or arising out of or resulting from any default by the Lessee in the due and punctual performance and observance of and compliance with the covenants conditions or obligations contained herein or in the Pipeline Licence and on the part of the Lessee to be performed observed or complied with PROVIDED THAT this indemnity shall not apply in circumstances where any of the entities so indemnifiable have been negligent (to the extent of such negligence in the case of contributory negligence) in carrying out work for the Lessee.

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(11) THAT the Lessee shall take at all times all necessary precautions and steps to avoid and prevent the uncontrolled escape of petroleum or any other inherently dangerous or inflammable liquid from the Pipeline tanks plant equipment or other works of the Lessee upon the demised premises AND in the event of escape of petroleum or other liquid as aforesaid (whether with or without fault or negligence on the part of the Lessee its servants or agents) the Lessee shall forthwith and at its own cost and expense stop the escape of petroleum or other liquid and rectify and repair any injury or damage whatsoever caused thereby and clean up and reinstate the demised

premises to such condition and to such extent as shall be acceptable to the Lessor and the Director General of Mines AND the Lessee shall indemnify and keep indemnified the Lessor the Minister for Mines the Crown and its instrumentalities and their respective servants agents and contractors in respect of all loss injury or damage sustained by them or any of them and all suits proceedings claims demands losses costs or expenses of third parties arising out of or incurred as a result of the escape of petroleum or other liquid as aforesaid PROVIDED THAT this indemnity shall not apply where any such losses, injury damage, expenses or costs are caused or contributed to (to the extent of such contribution) by the negligence of any of the entities so indemnifiable.

- (12) THAT the Lessee will upon the expiration or sooner determination of the Term yield up the demised premises in such state of repair condition order and preservation as shall be in accordance with the Lessee's approved proposals referred to in paragraph (31) hereof and with the Lessee's covenants and obligations contained herein and in the Pipeline Licence.
- Authority recommendations of July 1985 and February 1987 set forth in the Schedule hereto and with the matters contained in the Environmental Review and Management Programme of November 1986 with respect to the development of an offshore oilfield at South Pepper, North Herald and Chervil submitted by the Lessee to the Environmental Protection Authority pursuant to the provisions of the Environmental Protection Act, 1971 and shall comply with any subsequent conditions imposed pursuant to Part IV of the Environmental Protection Act 1986 in respect of any oilfield serviced pursuant to the Pipeline Licence.
- (14) EXCEPT so far as they shall be inconsistent with anything herein contained the Lessee shall comply with all relevant Codes of Environmental Practice

for the time being issued by the Australian Petroleum Exploration Association.

- (15) THAT the Lessee shall not at any time carry out any construction, operations or works or create any disturbance whatsoever on the Reserve outside of the demised premises without the prior written approval of the Lessor.
- the Reserve any vehicle plant equipment or materials having on them or within them any soil vegetation flora or plant propagule AND all vehicles and plant intended by the Lessee to be brought onto the Reserve shall be thoroughly washed down with seawater from hoses at high pressure and all traces of soil and plant propagule shall be removed therefrom immediately prior to shipment at the point of embarkation on the mainland.
- (17) THAT the Lessee shall fumigate with methyl bromide or such other fumigant as may be approved for that purpose by the Lessor all accommodation containers utensils and equipment to be taken to the Reserve immediately prior to embarkation on the mainland or in transit prior to arrival at the Reserve AND no animal shall be permitted at any time to be or remain in or upon any boat barge or other vessel used by the Lessee to transport goods or personnel to or from the Reserve.
- (18) (a) EXCEPT with the prior written consent of the Lessor no animal plant, or plant propagule shall be taken to or removed from the Reserve.
  - (b) THAT all topsoil stockpiled during the Term shall be satisfactorily stabilised to prevent erosion and shall be used in eventual rehabilitation
- (19) EXCEPT for the purpose of rectifying and clearing up an oil spill or fighting a fire or handling some other emergency no vehicle shall be used or operated on the Reserve outside the boundaries of the demised premises

- without the prior written consent of the Lessor and any damage resulting from emergency access will be rectified by the Lessee.
- (20) THAT the Lessee shall neither create nor use more artificial lighting nor create more artificial light (including reflected light) than shall be reasonably necessary to carry on its operations on the demised premises AND the Lessee shall not cause or permit any artificial light to be directly visible from any beaches where turtles nest or from the waters adjacent thereto.
- (21) THAT all sewage from the demised premises shall be treated and disposed of to the satisfaction of the Lessor.
- (22) THAT except in cases of emergency the Lessee shall not use or operate a helicopter to from or upon the Reserve during the hours between sunset and sunrise.
- (23) THAT the Lessee shall ensure that no aggregate brought onto the Reserve shall contain plant propaguler.
- (24) EXCEPT for the purpose of biological studies and the monitoring referred to in paragraph (27) hereof the Lessee shall not approach or enter any seabird nesting areas on the Reserve outside the demised premises or unless agreed by the Lessor in advance within the demised premises.
- (25) THAT the Lessee shall comply in all respects with the provisions of the Initial Environmental Report of August 1987.
- THE Lessee shall carry out by its servants or independent consultants previously approved by the Lessor a continuous programme of investigation and research including annual monitoring studies of sample areas to ascertain the effectiveness of measures taken by the Lessee pursuant to approved proposals for rehabilitation protection and management of the environment. Data obtained from the monitoring studies shall be presented to the Lessor in a form suitable for statistical analysis by the Lessor.

- (27) THE monitoring to be carried out under paragraph (26) hereof shall include:-
  - (a) annual colour vertical aerial photography at a scale of 1:5,000 or larger of the entire Reserve to be flown along the same course each year;
  - (b) the effect on Wedge-tailed Shearwaters of both the destruction of nesting burrows upon the demised premises and the Lessee's operations as a whole;
  - (c) counts of, and measurements of the breeding success of, sea birds in breeding colonies on the Reserve and on an undisturbed island situated nearby;
  - (d) counts of burrows of Wedge-tailed Shearwaters on the Island and on an undisturbed island nearby;
  - (e) checks for feral animals (including, without limiting the generality of the foregoing, rodents) in accommodation buildings and supply boats;
  - (f) counts and distribution of turtle nests and nesting turtles and reporting of any disturbance thereof as a result of the Lessee's operations on the Reserve;
  - (g) the effects of unusual weather conditions including cyclones and droughts upon the flora fauna and environment of the Reserve; and
  - (h) counts and details of any fauna mortality resulting from the Lessee's operations on the Reserve.
- (28) THAT the Lessee shall on the twenty second day of June in each year during the Term submit a brief written report to the Lessor and the Minister for Mines containing particulars of items and (a), (b), (c) and (e) below and every third year (commencing 1990) the Lessee shall submit a comprehensive report containing particulars of items (a) to (f) below inclusive.

- (a) the Lessee's operations undertaken on the Reserve during the preceding twelve months;
- (b) any variations from established or previous procedures adopted by the Lessee;
- (c) ny environmental problems encountered by the Lessee in the preceding twelve months;
- (d) investigations research and biological monitoring studies carried out by the Lessee as nereinbefore provided and any conclusions or findings thereon;
- (e) proposed operations for the ensuing twelve months; and
- wish to suggest as being relevant or necessary to improve the management of the environment of the Reserve and to mitigate damage caused to that environment including, without limiting the generality of the foregoing, proposals to amend exising procedures if the monitoring carried out under paragraph (26) hereof shows that the Lessee's operations are having a detrimental effect on the Reserve's flora or fauna.

Each such report shall also contain an undertaking by the Lessee to adopt and implement those further new or additional procedures referred to in item (f) above. The Lessor may within three (3) months of the receipt of the Lessee's annual report notify the Lessee that it requires additional particulars to be supplied by the Lessee in respect of all or any of the matters the subject of the annual report or that it requires additional material to be disclosed in the annual report or that it requires certain practical remedial measures to be carried out by the Lessee AND the Lessee shall within one month of the receipt of the Lessor's notice hereinbefore referred to supply to the Lessor the additional particulars or material required or otherwise implement the requirements of the Lessor

- as may be appropriate. The Lessor may make available to the public copies of the said annual report additional particulars and material.
- (29) ANY observations of environmental concern resulting from the monitoring programme or otherwise shall be reported immediately to the Lessor.
- (30) NOTHING in this Lease shall be construed to exempt the Lessee from compliance with any requirement in connection with the protection of the environment arising out of or incidental to their activities on the Reserve that may be made by the State or any State instrumentality or any local or other authority or statutory body of the State pursuant to any Act from time to time in force.
- (31) THAT the Lessee shall not later than twelve (12) months prior to the expiration of the Term or the earlier surrender of this Lease prepare and submit to the Lessor for approval their detailed written proposals for the removal of their equipment from the Reserve the restoration and rehabilitation of the Reserve and the delivery of possession of the demised premises to the Lessor. As a condition of granting approval of the Lessee's proposals the Lessor may require the Lessee to make such alterations or additions to or deletions from those proposals and provide such bond or other security for the complete removal from the Reserve of all the Lessee's equipment as the Lessor in his absolute discretion may consider appropriate in either case.
- (32) The proposals referred to in paragraph (31) of this clause shall make proper provision for;
  - (a) the return of the land to its original contours and the stabilisation of the land surface of the Reserve;
  - (b) the rehabilitation and restoration of the vegetation cover of the Reserve to such an extent that it can reasonably be expected in the opinion of an independent qualified expert appointed by the Lessor to develop in a reasonable course of time to its former condition in

all material respects prior to the date of the commencement of the Term;

- (c) the restoration of the beaches and natural mobile land areas on the

  Reserve to a state and condition similar and compatible in all

  material respects to their former state and condition prior to the

  date of commencement of the Term; and
- (d) the removal of every item of the Lessee's equipment from the Reserve.
- (33) UPON approval by the Lessor of the Lessee's proposals referred to in paragraph (31) of this clause the Lessee shall duly and punctually carry out and comply with those approved proposals strictly in accordance with the terms thereof.
- (34)AS security for the due and punctual performance and observance by the Lessee of its obligations to rehabilitate and restore the Reserve as hereinbefore provided the Lessee shall at the time of submission of the proposals referred to in paragraph (31) of this Clause lodge with the Lessor a Bank Guarantee for such sum as shall be determined by multiplying the annual rental at that time by the number of hectares of the disturbed or damaged land from a bank and in a form acceptable to the Lessor such sum to be payable by the bank to the Lessor for and in respect of all that land (including but not limited to landings, tracks, storage accommodation, temporary pipeline assembly yards, storage tanks and bunds) forming part of the Reserve which has been disturbed or damaged by the Lessee and has not been wholly restored and rehabilitated within 5 years of the termination of the Term to the satisfaction of the Lessor in the manner hereinbefore provided SUBJECT HOWEVER to the following conditions:-
  - (a) the amount of the Bank Guarantee shall be adjusted annually in accordance with the formula set forth in Clause 3(7) hereof (which

formula shall apply mutatis mutandis) and may in the absolute discretion of the Lessor be adjusted annually upon the Lessor being satisfied that the Lessee is carrying out the rehabilitation and restoration of the Reserve in accordance with the terms of their approved proposals;

- (b) the Bank Guarantee shall be surrendered and returned by the Lessor to the Lessee upon the completion of all restoration and rehabilitation of the Reserve to the satisfaction of the Lessor provided that that restoration and rehabilitation has been effected within 5 years of the termination of the Term;
- (c) in the event of the failure by the Lessee to perform all or any of its obligations hereunder with respect to the restoration or rehabilitation of the Reserve the Lessor upon giving to the Lessee fourteen (14) days' notice in writing of the Lessor's intention so to do may invoke the Bank Guarantee and obtain payment of all or any of the moneys payable thereunder; and
- (d) the Lessor may utilise all or any moneys paid to the Lessor pursuant to the Bank Guarantee in the performance by the Lessor of all or any of the obligations of the Lessee with respect to the restoration or rehabilitation of the Reserve or in the carrying out of such other works to that end as the Lessor may in its absolute discretion consider appropriate.
- (35) THE Lessee shall upon the commencement of occupancy of the demised premises at its own expense supply construct erect and install fences satisfactory to the Lessor for the purpose of delineating the nesting colonies protection areas upon the demised premises and for separating the demised premises from the rest of the Reserve.
- 2. THE Lessor hereby COVENANTS with and warrants to the Lessee that the Lessee paying the rent hereby reserved and duly and punctually performing

observing and complying with the covenants agreements conditions and obligations contained either herein or in the Pipeline Licence and on its part to be performed observed or complied with and provided that the Pipeline Licence has not been determined the Lessee shall peaceably hold and enjoy the demised premises during the Term and any extension or renewal thereof without any interruption by the Lessor or any person rightfully claiming under or in trust for the Lessor except as provided herein.

- 3. IT IS HEREBY EXPRESSLY AGREED AND DECLARED by and between the Lessor and the Lessee as follows:-
- (1) THAT it shall be lawful at all times for the Lessor
  - (i) to require the Lessee to consent to the granting of such easements (including easements without dominant tenements) or rights in or over the demised premises as may from time to time be reasonably necessary for the overall development of the demised premises or for the overall development or use of the surrounding lands or waters; and
  - (ii) to use or permit the use of the demised premises as is reasonably necessary for the overall development or use of the demised premises or for the overall development or use of the surrounding lands or waters,

PROVIDED ALWAYS that no such grant requirement use or permission to use shall be made if such grant requirement use or permission to use (as the case may be) would unduly prejudice the Lessee or unduly interfere with the operations of the Lessee (including without limitation, the Lessee's security and safety systems) on the demised premises.

(2) THAT subject to the Pipeline Licence all rights in the demised premises (other than those expressly or impliedly granted under this Lease) are reserved to the Lessor and the Crown. 0

(3) THAT any notice or other writing authorised or required by this Lease to be given or sent shall be deemed to have been duly given or sent by the Lessor if signed as the case requires by the Executive Director or other the Permanent Head of the Department of Conservation and Land Management or other the officer for the time being discharging the duties of either of those offices and forwarded by prepaid post to Western Mining Corporation Limited at its address described herein and by the Lessee if signed on its behalf by a director manager or secretary of the Lessee or by any person or persons authorised by the Lessee in that behalf or by its solicitors as notified to the Lessor from time to time and forwarded by prepaid post to the Lessor at its office for the time being in Perth.

Any notice or writing sent by post shall be deemed to be given at the time when in due course of post it would be delivered at the address to which it is sent.

- thereof then it shall be lawful for the Lessor (without prejudice to any right of action of any one or more of the parties hereto in respect of any breach non-performance or non-observance or non-compliance with any of the covenants conditions and obligations contained herein or in the Pipeline Licence and on the part of the Lessee to be performed observed or complied with) to re-enter into and upon the demised premises or any part thereof in the name of the whole and the same to have again repossess and enjoy as if this Lease had never been executed.
- (5) UPON the expiration or sooner determination of this Lease or any extension or renewal thereof the Lessee shall remove from the demised premises all buildings erections fixtures fittings plant equipment apparatus and improvements erected or brought onto the demised premises by the Lessee EXCEPT such items as the Lessor has purchased or agreed to purchase from the Lessee in situ AND all holes and excavations resulting

from the removal by the Lessee of its property from the demised premises as aforesaid shall be filled in and consolidated by the Lessee and all rubbish shall be removed and the demised premises shall be left in a state and condition consistent with the provisions of Clauses 1(31) and 1(32) hereof AND it is acknowledged by the Lessee that nothing in this sub-clause contained shall in any way derogate from the powers of the Minister for Mines contained in sections 27 and 28 of the Pipeline Act.

- by the Lessor and not removed from the demised premises by the Lessee in accordance with the last preceding subclause hereof shall upon the determination of this Lease be and become the absolute property of the Lessor without payment of any compensation or consideration whatever and freed and discharged from all mortgages charges and other encumbrances and it shall be lawful for the Lessor to cause the same to be removed at the cost of the Lessee and such cost shall be a debt due and owing to the Lessor and shall be recoverable from the Lessee in a court of competent jurisdiction.
- (7) AT the expiration of twelve (12) months from the commencement of the Term and at the expiration of each twelve (12) months thereafter (each such date called hereinafter a "review date") the rent shall be reviewed and the rent payable by the Lessee during the twelve (12) months next following the relevant review date shall be that agreed between the parties hereto and failing agreement within SEVEN (7) DAYS prior to the relevant review date then as determined by applying the following formula namely:-

WHERE:-

"A" is the index number (as hereinafter defined) with respect to the relevant review date;

"B" is the index number with respect to the date of

commencement of the initial Term; and

"C" is the rent at the commencement of the Term.

The words "index number" shall mean the Consumer Price Index (all groups) for Perth published from time to time by the Australian Bureau of Statistics and the index number will be deemed to be with respect to any date if it is the index number as published with respect to the latest quarter prior to that date irrespective of whether the index number is published before or after that date. In the event that there is any suspension or discontinuance of the Consumer Price Index and also in the event that there is any change in the basis of assessment of the Consumer Price Index there shall be substituted therefor an index which in the opinion of the Dean for the time being at the Faculty of Economics at the University of Western Australia or of an expert appointed by him most closely reflects changes in the cost of living in Perth between the date of commencement of this Lease and the relevant review date PROVIDED THAT the rent so determined shall not be less than the rental payable immediately prior to such determination.

- (8) IF the Lessee shall with the consent of the Lessor remain in possession of the demised premises after the expiration of the Term the Lessee shall so remain as a monthly tenant.
- (9) THIS Lease shall be deemed to be made subject to any delays in the performance of obligations hereunder and to the temporary suspension of continuing obligations hereunder which may be occasioned by or arise from circumstances beyond the power and control of the party responsible for the performance of such obligations including delays or any such temporary suspension as aforesaid caused by or arising from Act of God force majeure earthquakes floods storms tempests washaways fire (unless caused by the fault or negligence of the Lessee) act of war act of public enemies riots

civil commotions strikes lockouts stoppages restraint of labour or other similar acts (whether partial or general) acts or omissions of the Commonwealth shortages or insufficient supply of labour or water or essential materials failure to secure contractors delays of contractors or delays due to overall world economic conditions or factors which could not reasonably have been foreseen PROVIDED ALWAYS that the party whose performance of obligations is affected by any of the said causes shall promptly give notice to the other party of the event or events and shall so far as reasonably practicable minimise the effect of the said causes as soon as possible after their occurrence.

- EXCEPT where otherwise specifically provided in this Lease any dispute or (10)difference between the parties arising out of or in connection with this Lease or any agreed amendment or variation thereof or agreed addition thereto or as to the construction of this Lease or any such amendment variation or addition or as to the rights duties or liabilities hereunder of any one or more of the parties hereto or as to any matter to be agreed between the parties hereto shall in default of agreement between the parties and in the absence of any provision in this Lease or the Pipeline Licence to the contrary be referred to a single arbitrator nominated by the Attorney-General or Minister for Justice for the time being of the State and settled by arbitration under the provisions of the Commercial Arbitration Act 1985 and the determination of the arbitrator shall be final and binding on the parties. The parties hereby agree that on any reference to arbitration pursuant to this paragraph any party may be represented by a duly qualified legal practitioner or other representative.
- (11) THE Lessee and its servants and agents shall be at liberty to enter and remain upon those parts of the Reserve outside the demised premises only for purposes of biological studies and monitoring and where approved in advance in writing by the Lessor for recreational purposes.

- (12) THE Lessee shall ensure that all employees servants and agents of the Lessee and the Lessee's contractors and sub-contractors and their respective servants and agents who travel to the Reserve have been properly trained in all environmental matters relevant to their presence upon the Reserve. Whenever the Lessor considers that it is warranted or necessary so to do the Lessor may supply an officer of the Lessor from time to time to participate and assist in the training of the Lessee's employees servants and agents in those environmental matters.
- (13) IN this Lease unless the contrary intention appears-

"Crown" means the Crown in right of the State of Western Australia;
"demised premises" means the land demised by this Lease and the buildings
erections and other improvements for the time being thereon;

"Lessee" means the Lessee and its respective successors and assigns, jointly and severally;

"Lessor" means the Lessor and the successors and assigns of the Lessor;

"petroleum" shall have the same meaning as the definition thereof

contained in section 4 of the Pipeline Act;

"pipeline" shall have the same meaning as the definition thereof in section 4 of the Pipeline Act;

"State" means the State of Western Australia.

Reference in this Lease to an Act shall include the amendments to such Act for the time being in force and also any Act passed in substitution therefor or in lieu thereof and the regulations for the time being in force thereunder.

WITNESS whereof this Lease has been executed as a Deed by or on behalf of the parties hereto the day first hereinbefore written.

SEAL

THE COMMON SEAL of the "XECUTIVE DIRECTOR OF THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT was hereunto affixed by

SYBNEY ROWALD SHEA in the presence of :

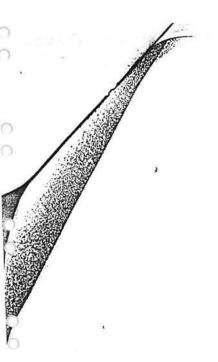
THE COMMON SEAL of WESTERN MINING CORPORATION LIMITED was hereto affixed this day of 1991

in the presence of:

Director

Assistant Secretary

(WEM018D03)



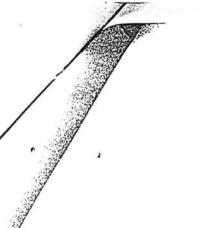
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WESMINCO OIL PTY LTD WA-149-P
OFFSHORE OIL PRODUCTION

ENVIRONMENTAL PROTECTION AUTHORITY REPORT

FEBRUARY 1987



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### ENVIRONMENTAL PROTECTION AUTHORITY REPORT

#### WESMINCO OIL PTY LTD WA-149-P

#### OFFSHORE OIL PRODUCTION

#### BACKGROUND

Wesminco Oil Pty Ltd as operator of WA-149-P has defined three small offshore oilfields, Chervil, North Herald and South Pepper, between Onslow and Barrow Island. Recoverable oil reserves are estimated at 1.7 million kl.

An Environmental Review and Management Programme (ERMP) dealing with a proposal to develop the oilfields was considered by the Environmental Protection Authority in 1985. The resulting Authority's report (Department of Conservation and Environment; Bulletin 210) is appended to this report.

The initial project involved platforms on the South Pepper, North Herald and Chervil oilfields with pipelines to processing and storage facilities on Airlie Island. The major issues raised during the public review period concerned the effects of the Airlie Island installations on bird life and turtles. The effects of the gas flare were of particular interest. As a consequence of these misgivings a number of submissions stated that more consideration should be given to alternatives such as offshore processing/storage facilities or an offshore flare.

Following submission of the ERMP, estimates of reserves in the fields were downgraded and the development did not proceed because of economic uncertainty. Evaluation of the fields was continued and the Company has now developed a proposal which it believes is feasible. An updated version of the Company's ERMP was submitted in November 1986. A copy of this document is held in the Authority's library and is available for loan.

### 2. PROJECT

The proposal now involves development of the South Pepper and North Herald oilfields with processing and accommodation on a production platform on the South Pepper field and storage facilities on Airlie Island. A tanker loading terminal adjacent to the island would discharge crude oil into tankers. The Company estimates that some 805 000 kl (approximately 25% of the oil in place) could be produced over the two year minimum life of the project.

Table 1 summarises the differences between the previous and current proposals.

Table 1. Comparison of old and current proposals

ASPECT	OLD	NEW
Oilfields	South Pepper, North Herald, Chervil	South Pepper, North Herald
Processing (incl flare)	Airlie Island	South Pepper
Accommodation	Airlie Island	South Pepper
Recoverable oil	1.7 million kl	0.8 million kl
Production time	5-7 year	2 year or more
Produced water (max 50 pp oil)	1700 kl/d	1600 kl/d
Airlie Island disturbance	10 ha	10 ha
Storage	Airlie Is	Airlie Is
Tanker loading	Mooring offshore from Airlie	Mooring offshore from Airlie
Pipeline approaches to Airlie	Trench	Tunnel
Pipe stringing	On Airlie Is	Offshore

#### ENVIRONMENTAL IMPACT ASSESSMENT

The general environmental implications of the project have been discussed in DCE Bulletin 210. Only those issues that have altered with the new project will be discussed below.

# 3.1 Wedgetailed Shearwaters

A major issue with the project is the temporary disruption of Wedgetailed Shearwater nesting sites on Airlie Island. There is potential for disturbing up to a third of the 2 700 nesting burrows on the island. However the proposed construction time is outside the October to April breeding period. Further, the proponent has made commitments both to confine disturbance of nesting sites and to rehabilitate disturbed areas at the cessation of the project so that soils would be suitable for nesting sites.

The flare was previously a major concern to the Authority because of potential disruption to birds and turtles. In accordance with an Authority recommendation, the flare has now been relocated offshore.

In order that the project's effects on birds could be adequately monitored it is believed that baseline and ongoing observations should be conducted on Wedgetailed Shearwaters both on Airlie and a control island.

### 3.2 Pipelines

Pipe stringing offshore and the proposed use of a tunnel under the reefs adjacent to the island rather than a dredged trench should minimise the environmental effects of establishing the pipe system to and from the island storage tanks.

#### CONCLUSIONS

The Authority considers that this short term project with all activities offshore apart for oil storage on Airlie Island would be environmentally acceptable if the following recommendations are incorporated. These recommendations are based on those of DCE Bulletin 210, modified in the light of the current project details.

#### 5. RECOMMENDATIONS

The project would be environmentally acceptable if the proponent follows its proposed environmental management commitments and adopts the following recommendations.

# 5.1 Wesminco

- 5.1.1 Drilling of production wells should be in accordance with an approved oilspill contingency plan.
- 5.1.2 Regular monitoring should be conducted on the effects of the South Pepper flare on turtles and seabirds.
- 5.1.3 Disturbance and covering of bird nesting sites on Airlie Island should be minimised.
- 5.1.4 Lights on Airlie Island should be designed so that they are not visible from turtle breeding beaches.
- 5.1.5 Details of the proposed staff training and education dealing with environmental aspects should be discussed with the Department of Conservation and Environment. This training should involve both construction and permanent workforces.
- 5.1.6 The effectiveness of quarantine measures will need to be monitored.
- 5.1.7 Treated produced water should be continuously monitored to ensure no exceedance of 50 mg/l total hydrocarbon, the average 24 hour concentration being less than 30 mg/l. This accords with current Department of Mines requirements.
- 5.1.8 Rehabilitation of disturbed construction areas should be required. Topsoil should be stored for this purpose. Rehabilitation techniques should be discussed with the Department of Conservation and Environment prior to commencing trials or actual work.
- 5.1.9 Fighting of fires in vegetation should not use salt water.
- 5.1.10 Septic tank and leach drains should only be established if soil conditions are suitable.
- 5.1.11 The draft oil spill contingency plan should take into account the revised approach to the use of dispersants discussed in DCE Bulletin 104.
- 5.1.12 During the construction phase develop a spill trajectory model such as the National Plan OSSM model.

- Monitoring should be finalised after discussion with the Department of Conservation and Environment. The monitoring should be designed to determine the biological effects of normal operations and accidental oil spills.
- 5.1.14 If monitoring shows unacceptable changes, alterations to the operations would be required.
- 5.1.15 Provide brief annual and comprehensive trennial reports to the Authority for review.
- 5.2 Government
- 5.2.1 The Department of Mines should determine a mechanism to guarantee satisfactory decommissioning and rehabilitation.
- 5.2.2 Airlie Island would receive appropriate management if vested in the State and classed as a Nature reserve.
- 5.2.3 In view of the need to minimise impacts on islands off the Pilbara coast, the State should take appropriate action to ensure that lease conditions for the petroleum facilities on Airlie Island would allow for sharing of these facilities by third parties.

# WESMINCO OIL PTY LTD WA-149-P OFFSHORE OIL PRODUCTION

**ENVIRONMENTAL PROTECTION AUTHORITY REPORT** 



Department of Conservation and Environment Perth Western Australia Bulletin 210 July 1985

# ENVIRONMENTAL PROTECTION AUTHORITY REPORT WESMINCO OIL PTY LTD WA-149-P OFFSHORE OIL PRODUCTION

#### 1. BACKGROUND

Wesminco Oil Pty Ltd as operator of WA-149-P has defined three small offshore oilfields, Chervil, North Herald and South Pepper, between Onslow and Barrow Island. Recoverable oil reserves are estimated at 1.7 million kl.

The Authority considered a Notice of Intent on the project in January 1984 and recommended preparation of an Environmental Review and Management Programme. The ERMP was released for public comment in February 1985 with a six week review period.

In addition to the Wesminco fields, the Harriet oil field has been defined by Bond Oil Pty Ltd north east of Barrow Island. It is likely that further small oil fields will be developed in the future.

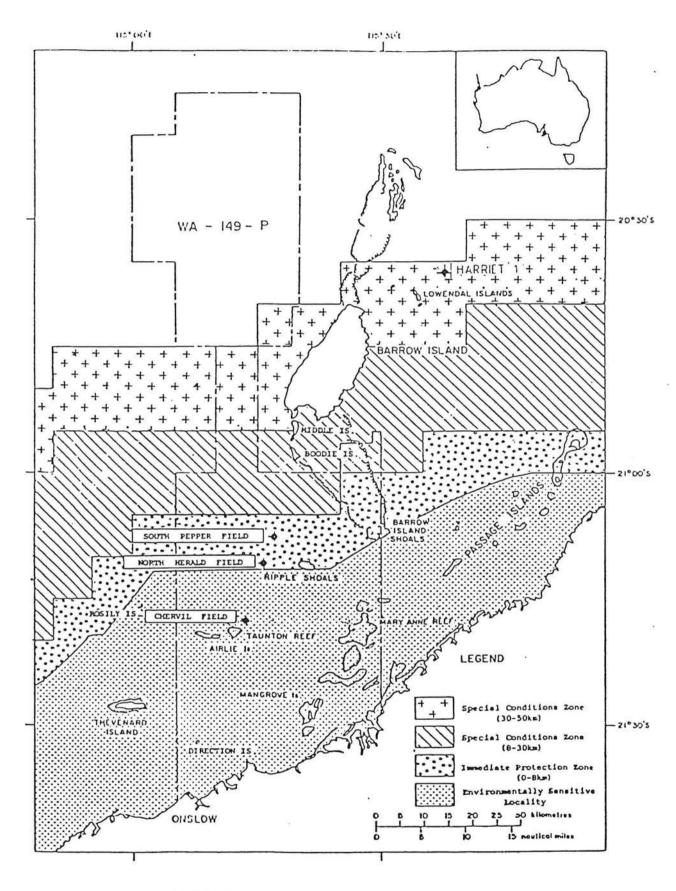
Barrow Island commenced oil production in 1967 reaching a peak of 7,900 kl/d in 1970. Current production has declined to approximately 3,800 kl/d. Barrow Island oil is stored on the island and is loaded into tankers via a concrete coated steel pipeline to a tanker mooring facility approximately 10km offshore.

The regional setting is presented in Figure 1.

### 2. THE PROPOSAL

The project would involve the production of light crude oil from the South Pepper, North herald and Chervil fields located 25, 20 and 6km north east of Airlie Island respectively. Well head structures at these fields could be linked by subsea pipelines to a treatment and storage facility on the eastern portion of Airlie Island. Some gas flaring will occur at the South Pepper A platform but the main processing is proposed for Airlie Island. Shipment would be via an offshore tanker mooring located 3km north of the island. Estimated production for the 5 to 7 year operation would initially be 1400 kl/d with a total of 0.48 million kl in the first year decreasing to 0.02 million kl in the fifth year.

A summary of various emissions and wastes from the operation is presented in Table 1.



LOCATION

# Table 1.

# SUMMARY OF EMISSIONS AND WASTES (FROM ERMP)

LOCATION	EMISSION OR WASTE	VOLUME/INTENSITY	COMMENT
South Pepper Platform	flared gas	200x10 <sup>3</sup> m <sup>3</sup> /d	Max from 6 wells
Pipelines	Test fluid	variable	Corrosion inhibitor may be used. Disposal to be determined.
Airlie Is.	Produced water	1700 kl/d max Average 400 kl/d	Marine Discharge 1.3km NE of island oil content will not exceed 50ppm. PH 7.7 to 8, C1 21,000 mg/l, S04 40 mg/l NO3 2mg/l. Temp, radiation, metals unknown.
0	Flared gas	185x10 <sup>3</sup> m <sup>3</sup> /d	maximum. Flare radiation_level not to exceed 440 Btu/ft /hr at process facility
0	Process area drainage .	NA	To production separator if contaminated.
	Production vessel drainage	NA	To production separator
	Tank drainage	NA	To production separator
0	Rainwater in bunded area	NA	Discharged through produced water line if less than 50ppm.
0	Reverse Osmosis salts	320 g/d approx.	Calc Based on design of 9000 1 seawater/d capacity. Disposal not discussed.
	Sewerage	NA ´	leach drain overflow to ocean
0	Noise from power generator	48-53dB(A) at 60m	n
	Crude Tank spills, Diesel fuel spillage	NA	contained by storage tank bund
	Garbage	NA	compacted, solid material removed from island

Note: NA indicates information not available.

# 3. ALTERNATIVES

Alternative options considered by Wesminco included:

- . the use of manned platforms on the South Pepper and North Herald fields, pumping stabilised crude oil to existing Barrow Island storage.
- using a Floating storage vessel supplied from fixed process platforms.
- using a combined floating production and storage vessel.

Disappointing appraisal drilling results and high capital costs eliminated the first alternative. The second two options were also uneconomic because of high operating costs, vulnerability to cyclone damage, high capital charges and risk of loss of production.

#### 4. THE ENVIRONMENT

The oilfields are located in water depths of 16 to 18m. The Rowley Shelf, a broad limestone platform, underlies the coastal waters and extends to the vicinity of Barrow Island. This has resulted in shallow coastal seas with many small islands formed by limestone outcrops. Intertidal platforms fringe most islands.

The locality is subjected to strong easterly winds in winter and constant south westerlies in summer. An average of 1.5 tropical cyclones per year pass over the area.

Surface water movements are dominated by tidal current modified by windstress. Opposing flows around islands and reefs often cause complex local movements.

The islands in the area are of low relief with low shrub vegetation providing important habitats for a variety of life ranging from generally seabirds to mammals, reptiles and seabirds (eg Barrow group). Mangrove communities occur on the Mangrove Islands and extensively along the mainland coast.

The marine ecosystem of the Rowley Shelf has macroalgae, seagrass and coral communities in localised areas but these are generally distant from the proposed area. Most of the seabed is bare limestone covered in parts with loose sand and less often with broken rubble. These substrates support relatively sparse biological communities. All marine elements of the proposal are located on such substrates except for a 400m stretch of coral on the approach to Airlie Island.

The marine fauna is very diverse, including prawns, commercial fish species, turtles, whales, dugongs and various seabirds. Rock oysters are particularly well developed on the Airlie Island intertidal platform. Some green turtle nesting occurs on Airlie Island particularly at the western end of the island.

Wedgetailed shearwaters are seabirds of particular interest as they use Airlie Island as a nest site. In the area of the ERMP study the birds nest on 15 islands between November and March, the adults returning to the same nesting burrow each year to breed while the young birds select new nest sites. An estimated 29,700 burrows occur on the islands including 2720 on Airlie Island, 1000 of which occur in the proposed construction area.

To protect the area's important environmental resources, most of the islands east of WA-149-P are nature reserves as is Barrow Island to the north. The remaining islands west to Exmouth Gulf have been proposed as C class reserves by the Authority and are also listed on the Register of the National Estate. Also the permit area includes part of the Rowley Shelf environmentally sensitive locality with defined safeguards during offshore oil exploration and production. Airlie Island because of its lighthouse, is currently owned by the Commonwealth.

This region of the northwest Australia coast is of interest for petroleum exploration and development, wildlife conservation, commercial fishing, recreation, navigation requirements and the National Estate. Private individuals, companies and State and Commonwealth agencies are involved.

# 5. PUBLIC AND GOVERNMENT SUBMISSIONS

Three public submissions and 13 responses from State and Commonwealth government agencies were received during the public review period. A summary of issues raised is provided in Table 2.

The predominant concern was the effect of Airlie Island installations on bird life and turtles. The effects of the gas flare were of particular interest. Also a consequence of these misgivings a number of submissions stated that more consideration should be given to alternatives such as offshore processing/storage facilities or an offshore flare.

Submissions also commented on the lack of detailed baseline information on Airlie Island's vegetation and wildlife and marine reptiles and mammals.

Particular comment was also made that there should be independent assessment of Wesminco's environmental management by State and Commonwealth Government agencies.

The Company has addressed the issues raised in a subsequent letter to the Authority.

Table 2. Submissions Summary

NO OF SUBMISSIONS	ISSUE
5	Bird effects on Airlie by installations including flare, helicopters, people.
3	Turtle effects by flare.
3	Discounting of alternatives should be supported. More consideration should be given to offshore processing/storage facilities. Consider an offshore flare. Airlie preferably should not be used. Heritage Commission should conduct a review of alternatives (A).
3	Decommissioning procedures should include rehabilitation including providing habitats for bird nesting.
5	Baseline information on vegetation (including conservation status) and wildlife other than birds required for Airlie.
. 1	Marine reptile and mammals effects should be mentioned.
4	There will be a need for independent assessment of the Company's environmental management
2	Work force education and restrictions on use of Airlie and surroundings.
2	Quarantine.
2	Avoid contamination of reverse osmosis feeder line. Respect noise legislation.
2	Navigation light need not be moved but proposed fence may need to be shifted.
1	Effects on Onslow.
1	Underestimates of produced water discharge dispersion and oil spill movement.
1	Disposal of ballast, oily storm water runoff.
1	Brief anthropological and archaeological surveys required.
1	Longterm future of Airlie if smaller fields developed.
1	Discuss possible trawling with Fisheries.
1	A and B Class Nature reserves required in the area.

Table 2. Continued RESPONDANTS

Fund for Animals Ltd.

Dr J R Hunter

H Butler

F & W Wildlife

F & W Fisheries

Health

Lands

WA Museum

WA Museum Ab. Sites

Dept. Local Govt. & Admin Services

Arts Heritage & Environment.

Youth, Sport and Rec.

Herbarium

DRD

Tourism Comm.

Heritage Comm.

# 6. ENVIRONMENTAL ASSESSMENT

# 6.1 Production Wells

It is likely that the bulk of any drilling mud discharge from production wells will accumulate in the vicinity of each well. Some covering of the sparse but diverse epibenthos in the vicinity of the wells could occur but the ecological consequences would probably be minimal. However some drift may occur from the Chervil Field towards the macroalgal, seagrass and soft coral communities of Taunton Reef. Wesminco has proposed regular monitoring of the reef to detect this. Drilling of these wells should be in accordance with an approved oil spill contingency plan.

# 6.2 Production Platforms

Due to the design of all structures for a 50 year return storm, high currents, high marine growth and variable structural foundations the only aspects of concern is associated with the South Pepper A platform. It is uncertain what phototrophic effects to turtles and sea birds could be caused by the flared gas.

# 6.3 Pipelines

With the possible exception of short buried lengths of pipelines traversing seabed dunes at South Pepper it is proposed that all pipelines will be laid directly onto the seabed and secured. The eastern approach to Airlie Island will require trenching through coral. Care should be taken to minimise disturbance to these corals, especially through trench spoil placement and turbidity.

These are two concerns with laying pipelines on the seafloor. Firstly there will always be the possibility of a ship anchor breaking the pipe, although the area is infrequently visited and pipelines will be marked on navigation charts. Secondly, cyclones produce strong currents which could lead to localised stresses on the pipe, particularly in sandy areas subject to scour. Wesminco has designed the pipelines to ensure adequate stability under wave and current forces and free span conditions across uneven seabed. As a result the Authority is satisfied that pipeline damage would be unlikely and extensive costly burial is unnecessary.

Some interest has been shown in fish trawling of the project area and the company has undertaken to consult with the Fisheries Department and the fishing industry on this matter.

Wesminco does not believe that corrosion inhibitor treatment of pipelines test water will be required. However if so it has undertaken to consult with the Department of Conservation and Environment prior to disposal.

# 6.4 Airlie Island Processing and Storage Facility.

The major environmental disruptions of the project would be caused by the construction and operation of the Airlie Island Facilities. These would be located in the eastern section of the island with disturbance occupying about 10 ha of the 24 ha island.

### 6.4.1 Wildlife

No rare or poorly collected flora occur on the island and the project would not reduce vegetation diversity. However approximately 1000 of the island's 2720 wedge tailed shearwater burrows occur within the construction area and many will be disturbed. Adult birds return consistently to their same burrow for nesting each year while young birds find new sites. It is not known what would be the fate of birds returning to nests covered say by tanks or accommodation units. Many may die without breeding but to ascertain what actually occurs, the Company has initiated a Shearwater monitoring programme including bird banding. Disturbance and covering of nesting sites should be minimised. In particular land between the proposed helipad and marshalling area should not be disturbed unless entirely necessary. This area should be fenced to protect existing burrows.

The proposed gas flare could have large effects on the whole Shearwater colony and also on the breeding success of turtles although the turtle nesting is predominantly at the western end of the island. Wesminco is conducting engineering studies into the use of a flare pit or a fully enclosed flare in a large diameter duct to reduce flare visibility. Such shielding of the flare should be seriously considered. If phototrophic effects on wildlife are found to be significant during flare operation, relocation or significant redesign would be necessary. Relocation alternatives would have to include siting the flare offshore, say at Chervil. It will be unlikely that an unshielded flare on the island would be satisfactory.

Lights are known to attract turtle hatchlings and it is important that lights on the island are not visible from the sea. Again, a shielded flare is probably necessary to avoid disruption to turtles.

The Company has recognised the potential for disruption to wildlife by the work force and has undertaken to minimize access to the south east sand spit used extensively by roosting birds, the western beach having the majority of turtle nests and the western vegetated section which supports the balance of the Shearwater colony.

Although there have been no apparent effects on nesting wedgetailed shearwaters during helicopter visits, flights over the western section of the island will not be permitted by the Company to avoid disturbing nesting birds.

#### 6.4.2 Education

In conjunction with restriction of access the company has undertaken to conduct staff training and education as an integral part of environmental management. Details of the training should be discussed with the Department of Conservation and Environment. It should involve both construction and permanent work forces.

# 6.4.3 Quarantine

To minimise the risk of introducing weeds, rodents and other animals such as cats and dogs to the island, Wesminico has proposed adopting quarantine regulations at least equivalent to those followed by Wapet for Barrow Island. The effectiveness of this approach will have to be monitored.

#### 6.4.4 Produced Water

Produced water containing oil at up to 48ppm will be discharged 1.3km north east of Airlie Island. Modelling has shown that this should not interfere with Airlie Island or Taunton Reef and would be at acceptable levels 350m to 800m from the outfall. Oil contaminated storm water and process drainage water would be similarly treated and discharged. To ensure that pollution does not occur and to be able to assess the effectiveness of the oily water separator, the treated water should be continually monitored with results being available for a minimum of 6 months after collection. Also a warning system should be installed to show when total hydrocarbon concentrations exceed 48 ppm.

### 6.4.5 Occupational Noise

The company has undertaken to design project facilities and machinery to ensure satisfactory working and living conditions, taking into account Hearing Conservation and Noise Abatement (Neighbourhood Annoyance) Regulations. The necessary approvals from the Shire of West Pilbara will also be obtained.

# 6.4.6 Rehabilitation

During the operations phase Wesminco would establish 2 or 3 trial plots to test rehabilitation approaches

for use upon decommissioning. The aim would be to particularly develop soil conditions suitable for wedge tailed shearwater burrows and plant regeneration.

In addition to the trials it is likely that actual rehabilitation work will be required to stabilise areas disturbed during construction. Storage of the top 200mm of soil from areas such as the marshalling area and oil storage would assist in the work.

Rehabilitation techniques should be discussed with the Department of Conservation and Environment prior to commencing trials or actual work.

The Mines Department should consider setting a realistic bond to guarantee satisfactory decommissioning (ie removal of infrastructure) and subsequent land stabilisation and rehabilitation at the conclusion of the project.

# 6.4.7 Fire Fighting

It is proposed that sea water will be used for fire fighting. This would be satisfactory for installation fires but would be highly damaging to vegetation. A combination of fire breaks and freshwater should be used for combatting fires in vegetation.

## 6.4.8 Other Wastes

The sewerage treatment system proposed is a septic tank with leach drain overflow directed to the sea. This would be satisfactory if the outfall is distant from the potable water inlet pipe and soil conditions are suitable.

Brine from the reverse osmosis plant will need to be disposed of to the sea in a controlled manner.

# 6.4.9 Land tenure

With the current land tenure, management of the Airlie Island operations could be difficult because of Commonwealth ownership of the island. For efficient management by State government agencies it would be desirable for the island to revert to State control with the land outside the production lease being a C class nature reserve vested in the National Parks and Wildlife Commission. This is in keeping with the Authority's System 9 recommendations for islands of this region.

In the future other oil fields may be discovered in the region and it would be desirable to utilise the Airlie Island, Barrow Island or Lowendal Island facilities rather than develop another site. As a

result lease conditions for Airlie should be written to accommodate sharing of facilities.

# 6.4.10 Aboriginal Sites

The Authority notes the Wesminco decision to carry out an anthropological and archaeological survey of Airlie Island. Results should be provided to the Authority for information.

# 6.4.11 Alternatives to Airlie Island

As a result of concerns expressed about the use of the island due to potential wildlife effects, the company was asked to detail the reasoning for the Airlie option. A similar question was asked of Bond Oil Pty Ltd in relation to its Lowendal Island proposals. Pipelines to Barrow Island and utilising its storage were not economic in the longer term when smaller fields were incorporated. This approach also created a high degree of uncertainty to continuity of supply because of a lack of control of facilities.

The Authority considers that storage tankers should only be used in the short term because of the higher risk of oil spills. Wesmingo also found that total offshore production from platforms with associated storage barge would have potential lost production and capital cost penalties such as to render that option uneconomic.

Overall the Authority accepts that on economic grounds Airlie Island is the acceptable option.

# 6.5 Oil Spills

Oil spills are recognised as the most common cause of environmental pollution associated with offshore activity. However statistics indicate that the vast majority of spills are small.

Spills from the Oil storage on Airlie Island would be contained by the bunded area which would need to be suitably sealed.

Offshore spills may result from: pipeline accidents; oil well blow outs; explosion and fire; severe storms; and tanker accidents and operations.

The following discussion concerns offshore spills.

#### 6.5.1 Spill probabilities

We sminico have shown that there is a very low probability of a large spill. There is a probability of 1 for spills of less than  $4m^3$  but for spills of more than  $50\ 000m^3$  the probability is only  $8x10^4$ .

### 6.5.2 Nature of the Oil

The crude oil contains a large percentage of low molecular weight hydrocarbons and approximately 80 to 90% of the oil would be lost after 6 hours.

# 6.5.3 Trajectory analysis

Estimates have been made of oil spill trajectories under spring and neap tides. These show that any major spill in the project area is most likely to remain at sea in relatively deep water where it would quickly evaporate. However intertidal areas of Airlie Island are well within the 48 hour risk zone. Subtidal areas in the vicinity of the spill (eg Taunton Reef) would not be exposed to oil unless it was dispersed through the water column.

For Middle and Boodie Islands to the north and the Mangrove Islands to the east there is a remote possibility of an oil spill reaching their shores.

# 6.5.4 Oil Spill contingency Plan

The draft oil spill contingency plan should take into account the revised approach to the use of dispersants discussed in the Department of Conservation and Environment publication, Bulletin 104. In conjunction with the construction phase a spill trajectory model such as the National Plan OSSM model should be developed to assist in the control of oil spills.

# 6.6 Monitoring

Wesminco has proposed a biological monitoring programme covering: the subtidal Taunton Reef and produced water discharge site; intertidal monitoring adjacent to Airlie, North Mangrove Island, Anchor Island and Weld Island; and supratidal monitoring of birds, vegetation and rehabilitation on Airlie and a control island.

This monitoring should be finalised after discussion with the Department of Conservation and Environment. If the monitoring showed that unacceptable biological or physical changes were occurring, it would be necessary for alterations to be made to the operation.

# 6.7 Reporting

The Company has undertaken to make regular reports on the results of monitoring studies to relevant State and Federal government Departments. It is considered that comprehensive triennial reports on the environmental management programme covering work carried out and

plans for the next triennium should be provided for review by the Authority. These reports should be supplemented by brief annual reports outlining progress with the environmental work, any notable results, and any notable changes to the programme. The first report should be prepared following commencement of production. This should summarise the results of baseline studies and discuss progress with the environmental management programme. The last report should follow decommissioning and certain triennial report detail.

# 7. CONCLUSIONS

The low risk of oil pollution from the production well heads, together with their localised construction and operating effects indicate that this aspect of the project should be environmentally acceptable.

The Authority accepts that the pipelines are designed for stability under storm conditions and extensive burial is not considered necessary.

The Authority understands that the Airlie Island facilities are necessary for the economic viability of the project. During the five to seven year life of the operation, disruption will occur to adult wedgetailed shearwaters. There also may be detrimental effects on turtles. However if the recommendations of the Authority are followed this aspect of the project would also be environmentally acceptable.

# 8. RECOMMENDATIONS

The project would be environmentally acceptable if the Company follows its proposed environmental management commitments and adopts the following recommendations.

#### 1. Wesminco

- 1.1 Drilling of production wells should be in accordance with an approved oil spill contingency plan.
- 1.2 Regular monitoring should be conducted on the effects of the South Pepper A flare on turtles and seabirds.
- 1.3 During pipeline construction care should be taken to minimise disturbance to corals.
- 1.4 Disturbance and covering of bird nesting site on Airlie Island should be minimised. Land east of the proposed helipad and camp should not be disturbed unless entirely necessary. This area should be fenced to protect existing burrows.
- 1.5 The Airlie island gas flare should be either fully enclosed, set in a flare pit or sited offshore. eq at Chervil.

- 1.6 Lights on Airlie Island should be designed so that they are not visible from turtle breeding beaches.
- 1.7 Details of the proposed staff training and education on environmental aspects should be discussed with the Department of Conservation and Environment. This training should involve both construction and permanent workforces.
- 1.8 The effectiveness of quarantine measures will need to be monitored.
- 1.9 Treated produced water should be continuously monitored to ensure no exceedance of 48ppm total hydrocarbon.
- 1.10 Rehabilitation of disturbed construction areas will be required. Store topsoil for this purpose. Rehabilitation techniques should be discussed with the Department of Conservation and Environment prior to commencing trials or actual work.
- 1.11 Fighting of fires in vegetation should not use salt water.
- 1.12 Site the sewerage outfall distant from the potable water inlet and use a septic tank and leach drain only if soil conditions are suitable.
- 1.13 Brine from the reverse osmosis plant will need to be disposed of to the sea in a controlled manner.
- 1.14 Aboriginal Site Survey results should be provided to the Authority for information.
- 1.15 The draft oil spill contingency plan should take into account the revised approach to the use of dispersants discussed in DCE Bulletin 104.
- 1.16 During the construction phase develop a spill trajectory model such as the National Plan OSSM model.
- 1.17 Monitoring should be finalised after discussion with the Department of Conservation and Environment.
- 1.18 Monitoring shows unacceptable changes, alterations to the operations would be required.
- 1.19 Provide brief annual and comprehensive triennial reports to the Authority for review.

# 2. Government

2.1 Mines Department should consider setting a bond to guarantee satisfactory decommissioning and rehabilitation.

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- 2.2 Airlie island should revert to State control with land outside the production lease being a C class Nature reserve.
- 2.3 Mines Department lease conditions for Airlie Island should be written to accommodate sharing of facilities.

