

Kemerton silica sand mining revised proposal – additional mining areas and transfer of land for conservation

Kemerton Silica Sand Pty Ltd

**Report and recommendations
of the Environmental Protection Authority**

**Environmental Protection Authority
Perth, Western Australia
Bulletin 1183
June 2005**

ISBN. 0 7307 6823 6
ISSN. 1030 - 0120
Assessment No. 1573

Contents

	Page
1. Introduction and background	1
2. The proposal.....	4
3. Consultation	4
4. Relevant environmental factor	4
4.1 Biodiversity	5
5. Conditions.....	9
5.1 Recommended conditions	9
6. Conclusions.....	10
7. Recommendations.....	10

Tables

1. Key proposal characteristics

Figures

1. Location Plan
2. Location of Wetlands (BEC 2004).

Appendices

1. References
2. Recommended Environmental Conditions and Proponent's Consolidated Commitments

1. Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment on the environmental factors relevant to the revised proposal by Kemerton Silica Sands Pty Ltd (KSS) to transfer the ownership of approximately 17ha of land (Area 1) that contains the Muchea Limestone Communities Threatened Ecological Community (TEC) to the conservation estate and to extract silica sands from two parcels of land (Area 2 and Area 3) which total approximately 13ha.

Area 1 is part of the area approved for mining following the EPA's 1994 assessment of the Kemerton Silica Sands Mining Proposal, while Areas 2 and 3 are within the property owned by the proponent. The KSS property is private freehold land released before 1899 and hence not subject to the *Mining Act 1978*.

Based on the information provided in referral document the EPA considered that, on balance the proposal achieves a net conservation benefit in the protection of a Threatened Ecological Community and can be managed to meet the EPA's environmental objectives. Consequently, it was notified in the *West Australian* newspaper on 27 June 2005 that the EPA intended to assess the proposal at the level of Assessment on Referral Information (ARI).

The proponent has submitted a referral document setting out the details of the proposal, potential environmental impacts and appropriate commitments to manage those impacts. The EPA considers that the proposal as described can be managed in an acceptable manner, subject to these commitments and the EPA's recommended conditions being made legally binding.

The EPA has therefore determined under Section 40(1) of the Environmental Protection Act that the level of assessment for the proposal is Assessment on Referral Information, and this report provides the EPA advice and recommendations in accordance with Section 44(1).



Figure 1: Location Plan



Figure 2: *Location of Wetlands (BEC 2004)*

2. The proposal

Kemerton Silica Sands Pty Ltd proposes to transfer the ownership of land that contains the Muchea Limestone Communities TEC (Area 1) to the conservation estate and to extract silica sands from two new areas (Area 2 and Area 3).

Area 1 is part of the area approved for mining in the EPA's 1994 assessment of the Kemerton Silica Sands proposal, while Areas 2 and 3 are within the property owned by the proponent.

The main characteristics of the proposal are summarised in the table below.

Table 1: Key proposal characteristics

Element	Description
Area 1 - Muchea Limestone Communities TEC	17 hectares approximately
Area 2 – Southern Extension to Mining Area	8 hectares approximately
Area 3 – Northern Extension to Mining Area	5 hectares approximately

The potential impacts of the proposal are discussed by the proponent in the letter of referral, attached map and accompanying report (BEC 2004).

3. Consultation

The EPA has consulted with the Department of Conservation and Land Management (CALM). CALM advises that, while the areas proposed to be mined contain wetlands in excellent condition, the proposal offers the opportunity to conserve a more significant area and that Area 1 can be included within the adjacent Gwalia Nature Reserve, currently managed by CALM.

4. Relevant environmental factors

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and the conditions and procedures, if any, to which the proposal should be subject. In addition, the EPA may make recommendations as it sees fit.

It is the EPA's opinion that the following environmental factor is relevant to the proposal require evaluation in this report:

- 1) Biodiversity.

Details on the relevant environmental factor and its assessment are contained in Section 4.1. The description of the factor shows why it is relevant to the proposal and how it will be affected by the proposal. The assessment of the factor is where the

EPA decides whether or not a proposal meets the environmental objective set for the factor.

4.1 Biodiversity

Description

Area 1 - Muchea Limestone Communities Threatened Ecological Community

A TEC is a naturally occurring assemblage of plants and animals listed by CALM as being threatened with extinction by human activity, or is in danger of being destroyed or significantly modified by development and other pressures from people (English and Blyth 1997, 1999). These ecological communities are assessed through a procedure (coordinated by CALM) and assigned to one of the following categories related to the status of the threat to the community: "Presumed Totally Destroyed", "Critically Endangered", "Endangered" or "Vulnerable" (English and Blyth, 1997).

Area 1 contains an area of “Shrublands and Woodlands on Muchea Limestones of the Swan Coastal Plain”, referred to as Muchea Limestone Communities. The Muchea Limestone Communities are listed as an Endangered TEC under the Western Australian *Wildlife Protection Act 1950*. Endangered TECs are identified where “*current distribution is limited, and there are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes*”. The Muchea Limestone Communities TEC is also identified as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Incorporated within the description of the Muchea Limestone Communities TEC are four broad vegetation units (Keighery and Keighery).

1. *Eucalyptus decipiens* unit: A woodland to open forest dominated by combinations of *Eucalyptus decipiens*, *E. calophylla*, *Banksia littoralis* and *Agonis flexuosa*; located on the eastern rise and *Eucalyptus decipiens* and *Agonis flexuosa* on the central southern rise of Area 1.
2. *Melaleuca raphiophylla* and *Eucalyptus decipiens* Low Forest: This unit fringes the rises of Area 1.
3. *Melaleuca* species Shrublands/Sedgeland/Herbland wetland mosaic: This unit is dominated by a complex suite of *Melaleuca* species associated with a series of sedges, rushes and herbs. In some locations, the sedges, rushes and herbs occur without the *Melaleuca* layer.
4. *Melaleuca raphiophylla* Low Forest: This unit is associated with the deeper wetland areas and areas of *Baumea articulata*, some of which contain areas of lakes listed in the Revised Draft of the *Environmental Protection (Swan Coastal Plain Wetlands) Policy and Regulations 2004*.

Vegetation units 1, 2 and 3 are found in Area 1.

Area 1 is contiguous to the south and east with an area of Muchea Limestone Communities TEC in the adjacent Gwalia Nature Reserve. Area 1 is of outstanding conservation significance because it contains:

- part of an area of an endangered TEC which is also the most southern area of this TEC and contains a unique assemblage of vegetation units and flora;
- a series of plant species of conservation significance being undescribed taxa, poorly known taxa and taxa not normally found in the area (outlying populations) which are confined to this area of the Kemerton Silica Sands Project Area;
- the only known area of this TEC within a larger bushland area containing contiguous areas of Pinjarra Plain (Muchea Limestone)/Bassendean Dunes/Spearwood Dunes, hereafter referred to as part of the Kemerton South Ecological Linkage; and
- a sequence of fauna habitat units with a rich and diverse vertebrate assemblage including a large number of bird species of conservation significance that are habitat specialists with reduced distributions on the Swan Coastal Plain or wide-ranging species with reduced populations on the Swan Coastal Plain (Government of Western Australia 2000). A series of short assessments has recorded 58 vertebrate species comprising five amphibians, eight reptiles, three native mammals, two introduced mammals and 40 bird species (Dell and Hyder-Griffiths, 2004). Bird species of conservation significance include: Whistling Kite, Wedge-tailed Eagle, Little Eagle, Baudin's Cockatoo, Common Bronzewing, Splendid Fairy-wren, White-browed Scrubwren, Broad-tailed Thornbill, White-cheeked Honeyeater, New Holland Honeyeater and Golden Whistler.

Area 2 – Southern Extension to Mining Area

Area 2 covers part of Wetland U, as identified by the proponent (BEC 2004), which is described as “Palusplain”. Within this palusplain, the vegetation can be divided into 3 distinct groups.

- Tall Shrubland of *Kunzea glabrescens* over Open Low Heath of *Hypocalymma angustifolium* and scattered *Pericalymma ellipticum*.
- Low Open Woodland of *Melaleuca preissiana* over Open Low Heath *Pericalymma ellipticum* with scattered *Calothamnus lateralis* over Sedgeland dominated by *Meeboldina coangustata*.
- Closed Tall Scrub of *Astartea scoparia* over Closed Sedgeland of *Lepidosperma longitudinale* with open water. *Dillwynia dillwynioides* is located within this vegetation unit.

Area 2 also contains a section of higher ground to the east of wetland U. This higher area also contains 3 distinct vegetation groups.

- Low Woodland of *Banksia attenuata* and *Banksia ilicifolia* over a Shrubland dominated by *Melaleuca thymoides* and *Verticordia nitens* on the higher ground above and to the east of the wetland.
- Tall Open Scrub of *Kunzea glabrescens* over bare ground and weeds.
- Tall Shrubland of *Kunzea glabrescens* over Open Heath of *Hypocalymma angustifolium* and *Xanthorrhoea preissii*.

The significant flora identified by the proponent within Area 2 includes *Acacia semitrullata*, *Caladenia speciosa*, *Dillwynia dillwynioides* and *Verticordia nitens*” (BEC 2004).

Area 2 is a significant area of high conservation value and has the following values.

- It contains a wetland area which is part of a contiguous sequence of wetland vegetation units representing the transition between soils with a higher clay to sand component to the east to sandy humus rich sands to the west. A similar transition appears to occur in wetlands further north in the Kemerton Silica Sands Project Area.
- A series of plant species of conservation significance are found in the larger area of wetland U being *Dillwynia dillwynioides* (BEC 2004), *Boronia juncea subsp. juncea* (BJK 2005) and *Schoenus cruentus* (BJK 2005), with *Verticordia nitens* on the adjacent uplands. These are significant populations of these species. *Dillwynia dillwynioides* is mapped by the proponent as occurring in Area 2.
- The Muchea Limestone Communities TEC is contiguous, to the south and west, with Wetland U. This wetland is part of the Kemerton South Ecological Linkage which is the only known occurrence on the Swan Coastal Plain of such an ecological linkage.
- Area 2 contains a sequence of fauna habitat units with a rich vertebrate assemblage including bird species of conservation significance that are habitat specialists with reduced distributions on the Swan Coastal Plain or wide-ranging species with reduced populations on the Swan Coastal Plain (Government of Western Australia 2000). A brief survey by DoE on 8 March 2005 revealed 10 bird species (including 4 conservation significant species), 1 native mammal and 2 reptile species. Conservation significant bird species included Splendid Fairy-wren, Broad-tailed Thornbill, Golden Whistler and Painted Button-quail.

Area 3 - Northern Extension to Mining Area

Area 3 covers part of Wetland N and part Wetland Complex 8, as identified by the proponent (BEC 2004), and is described as “Palusplain”. Within this palusplain, the vegetation can be divided into 4 distinct groups.

- Low Open Woodland of *Melaleuca preissiana* over Closed Heath of *Astartea scoparia* and *Calothamnus lateralis* in wet ground.
- Closed Low Heath of mixed species dominated by *Pericalymma ellipticum*, *Hypocalymma angustifolium* and *Euchilopsis linearis* over a Sedgeland of *Hypolaena exsulca* and *Evandra pauciflora* in damp soil.
- Open Heath of *Astartea scoparia* over Open Low Heath of *Pericalymma ellipticum* and *Calothamnus lateralis* over Open Sedgeland of *Meeboldina coangustata* water on the surface.
- Low Woodland of *Melaleuca raphiophylla* over Tall Shrubland of *Melaleuca teretifolia* with water on the surface. This was only a small area within the wetland in Area 3.

Area 3 also contains a section of higher ground north of wetland complex 8. This area also contains 2 distinct vegetation groups.

- Tall Shrubland of *Kunzea glabrescens* over Open Low Heath of *Hypocalymma angustifolium* in damp ground on the edge of the wetland. Scattered *Eucalyptus marginata subsp. marginata* are recorded from this vegetation unit.

- Low Open Woodland of *Melaleuca preissiana* over Open Low Heath of *Hypocalymma angustifolium* in damp ground on the edge of the wetland. Scattered *Kunzea glabrescens* was recorded in this vegetation unit.

The significant flora identified within Area 3 includes *Boronia juncea subsp. Juncea*, *Dillwynia dillwynioides*, *Evandra pauciflora*” (BEC 2004).

Area 3 is a significant area of high conservation value having the following values.

- It contains a sequence of wetland vegetation units, in the two wetlands (Wetland N and an un-named eastern wetland), representing the transition between soils with a higher clay to sand component to the east to sandy humus rich sands to the west. A similar transition appears to occur in wetlands further to the north in the Kemerton Silica Sands Project Area.
- A series of plant species of conservation significance are found in the wetlands of Area 3 being *Dillwynia dillwynioides* (BEC 2004), *Boronia juncea subsp. juncea* (BEC 2004/BJK 2005), *Evandra pauciflora* (BEC 2004/BJK 2005), *Stylidium trudgenii* (BJK 2005) and *Schoenus cruentus* (BJK 2005). These are significant populations of these species. Further populations have been located elsewhere in the Kemerton Silica Sands Project Area except for *Stylidium trudgenii*.
- Area 3 is part of a broader area containing contiguous areas of Pinjarra Plain/Bassendean Dunes/Spearwood Dunes ecological linkage.
- Area 3 contains a sequence of fauna habitat units with a rich vertebrate assemblage including bird species of conservation significance that are habitat specialists with reduced distributions on the Swan Coastal Plain or wide-ranging species with reduced populations on the Swan Coastal Plain (Government of Western Australia 2000). A brief survey by DoE on 8 March 2005 (Dell, 2005) revealed 13 bird species (including 8 conservation significant species), 1 native mammal and 1 reptile species. Conservation significant bird species included Splendid Fairy-wren, White-browed Scrubwren, Broad-tailed Thornbill, Scarlet Robin, Common Bronzewing, Painted Button-quail, New Holland Honeyeater and Tawny-crowned Honeyeater.

Assessment

Areas 1, 2 and 3 each represent a high conservation value as singular vegetated blocks and as part of the regionally significant bushland of the Kemerton area. All three areas contain several plant species and wetland areas of conservation significance and form parts of significant regional ecological linkages. Area 1, however, also contains a unique assemblage of wetland vegetation units and flora within the Muchea Limestone Communities TEC and is approved for mining.

The wetlands contained within Area 2 and Area 3 are identified in the *Revised Draft Environmental Protection (Swan Coastal Plain Wetlands) Policy and Regulations 2004* as wetlands of high ecological value on the Swan Coastal Plain which are recommended to be protected.

In its assessment of the proposal, as outlined in the proponent’s referral information dated 5 November 2004, and amended on 14 April 2005, the EPA has ranked Areas 1,

2 and 3 in order of conservation significance. From higher to lower value the ranking is - Area 1, Area 2 and Area 3, based on consideration of

- the known flora and fauna values of the three areas,
- the representation of these values elsewhere in the Kemerton Silica Sands Project Area; and,
- representation of these values on the broader Swan Coastal Plain.

While it is preferable that Areas 2 and 3 are not mined, the EPA is mindful of the existing approval to mine Area 1 and so considers that the proposal represents the least environmentally undesirable outcome available and that it will achieve a net conservation benefit.

In recommending that this proposal be approved, the EPA advises that it should not be seen as a precedent that mining within the remainder of the KSS property, which has similar high conservation values, would be acceptable. The company's proposal for further mining in the area is currently subject to assessment at the level of Public Environmental Review.

Summary

Having particular regard to the:

- Ranking of Areas 1, 2 and 3 in order of conservation significance

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor and will achieve a net conservation benefit.

5. Conditions

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

5.1 Recommended conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Kemerton Silica Sands Pty Ltd to transfer land for conservation, is approved for implementation.

These conditions are presented in Appendix 2. Matters addressed in the conditions include the following:

- (a) that ownership of Area 1 shall be transferred to the Executive Director of the Department of Conservation and Land Management as an addition to the proposed Gwalia Nature Reserve;
- (b) that the proponent shall be permitted to clear native vegetation and extract silica sands from Area 2 and Area 3; and,

- (c) that all conditions and commitments contained in the existing approval (Ministerial Statement No. 366) are to apply to the clearing of native vegetation and the extraction of silica sands by the proponent within Area 2 and Area 3.

6. Conclusions

The EPA has considered the revised proposal by Kemerton Silica Sands Pty Ltd to transfer the ownership of land that contains the Muchea Limestone Communities TEC (Area 1) to the conservation estate and to extract silica sands from two new areas (Area 2 and Area 3).

In its assessment of the proposal the EPA has ranked Areas 1, 2 and 3 in order of conservation significance. From higher to lower value the ranking is - Area 1, Area 2 and Area 3.

The EPA has concluded that the proposal represents the least environmentally undesirable outcome available and is capable of being managed in an environmentally acceptable manner such that it is most unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation of the recommended conditions and proponent's commitments set out in Section 5.

7. Recommendations

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

1. That the Minister notes that the revised proposal being assessed is for the transfer of the ownership of land containing the Muchea Limestone Communities TEC to the conservation estate and the extraction of silica sands from two new areas (Area 2 and Area 3);
2. That the Minister considers the report on the relevant environmental factor as set out in Section 4;
3. That the Minister notes that the EPA has concluded that the proposal represents the least environmentally undesirable outcome available and it is unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2.
4. That the Minister imposes the conditions recommended in Appendix 2 of this report.

Appendix 1

References

Map (showing Areas 2 and 3) emailed on 14 April 2005 from G.J. Karelse, Kemerton Silica Sands Pty Ltd.

Map (showing Area 1) emailed on 26 May 2005 from G.J. Karelse, Kemerton Silica Sands Pty Ltd.

Bennett Environmental Consulting Pty Ltd June 2004, *Kemerton Significant Flora and Vegetation*. Report prepared for Martinick Bosch Sell Pty Ltd.

Dell J. 2005, Fauna notes from site inspection on 8 March 2005.

English V. & Blyth J. 1999, '*Development and application of procedures to identify and conserve threatened ecological communities in the South-west Botanical Province of Western Australia*' Pacific Conservation Biology, Vol. 5, 124-138.

Government of WA 2000b, *Bush Forever Volume 2: Directory of Bush Forever Sites*. Department of Environmental Protection, Perth, Western Australia.

Keighery B.J. 1998, *Vegetation and Flora Conservation Values of the Kemerton Silica Sands Project Area*. An unpublished report for the Department of Environmental Protection.

Keighery B.J. 2005, Flora and vegetation notes from site inspection on 8 March 2005.

Keighery B.J. and Keighery G.J. 2003, *Muchea Limestones of the Kemerton Silica Sands Project Area*. An unpublished report for the Department of Environmental Protection and Department of Conservation and Land Management.

Keighery B.J., Keighery G.J., Hyder-Griffiths B.M., Pryde J. and Hoskins M. 2004, *Muchea Limestones of the Kemerton Silica Sands Project Area. Report 2: Extent of Muchea Limestone Community Mosaic in the Kemerton Silica Sands Area and the Gwalia Nature Reserve*. An unpublished report for the Department of Environmental Protection and Department of Conservation and Land Management.

Appendix 2

Recommended Environmental Conditions and Proponent's Consolidated Commitments

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

KEMERTON SILICA SAND MINING PROPOSAL – ADDITIONAL MINING AREAS AND TRANSFER OF LAND FOR CONSERVATION

Proposal: The transfer of the ownership of land that contains the Muchea Limestone Communities Threatened Ecological Community to the conservation estate and the extraction of silica sands from two new areas, as documented in schedule 1 of this statement.

Proponent: Kemerton Silica Sand Pty Ltd

Proponent Address: Corner Treasure and Wellesley Roads
KEMERTON WA 6233

Assessment Number: 1573

Report of the Environmental Protection Authority: Bulletin 1183

The proposal referred to above may be implemented by the proponent subject to the following conditions and procedures:

1 Implementation

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions of this statement.

2 Proponent Nomination and Contact Details

2-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.

2-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.

2-3 The nominated proponent shall notify the Department of Environment of any change of contact name and address within 60 days of such change.

3 Commencement and Time Limit of Approval

- 3-1 The proponent shall substantially commence the proposal within five years of the date of this statement or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment will determine any dispute as to whether the proposal has been substantially commenced.

- 3-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement to the Minister for the Environment, prior to the expiration of the five-year period referred to in condition 4-1.

The application shall demonstrate that:

1. the environmental factors of the proposal have not changed significantly;
2. new, significant, environmental issues have not arisen; and
3. all relevant government authorities have been consulted.

Note: The Minister for the Environment may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.

4 Compliance Auditing and Performance Review

- 4-1 The proponent shall prepare an audit programme and submit compliance reports to the Department of Environment which address:

1. the status of implementation of the proposal as defined in schedule 1 of this statement;
2. evidence of compliance with the conditions and commitments; and
3. the performance of the environmental management plans and programs.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environment is empowered to monitor the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement.

- 4-2 The proponent shall submit a performance review report every five years following the formal authority issued to the decision-making authorities under section 45(7) of the *Environmental Protection Act 1986*, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, which addresses:

1. the major environmental issues associated with implementing the project; the environmental objectives for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those objectives;
2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best practicable measures available;

3. significant improvements gained in environmental management, including the use of external peer reviews;
 4. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
 5. the proposed environmental objectives over the next five years, including improvements in technology and management processes.
- 4-3 The proponent may submit a report prepared by an auditor approved by the Department of Environment under the “Compliance Auditor Accreditation Scheme” to the Chief Executive Officer of the Department of Environment on each condition or commitment of this statement which requires the preparation of a management plan, programme, strategy or system, reporting on the fulfilment of the requirements of each condition or commitment.

5 Area to be Transferred to the Conservation Estate

- 5-1 Prior to the clearing and extraction of silica sand from Area 2 or Area 3, ownership of the area bounded by Point 1 (387 693E, 6333 392N), Point 2 (387 894E, 6333 388N), Point 3 (387 908E, 6332 790N), Point 4 (387 560E, 6332 778N), Point 5 (387 572E, 6332 854N), Point 6 (387 576E, 6333 020N) and Point 7 (387 694E, 6333 032N) and shown as Area 1 in Figure 1 of this statement shall be transferred to the Conservation Commission of Western Australia for inclusion as an addition to the proposed Gwalia Nature Reserve.

6 Extraction of Silica Sands from Area 2 - Southern Extension to Mining Area

- 6-1 The proponent is permitted to clear native vegetation and extract silica sands within the area bounded by STH03 (387245E, 6332775N), STH01 (386810E, 6332755N), STH04 (387090E, 6332555N) and STH02 (386820E, 6332525N) and shown as Area 2 in Figure 2 of this statement.

7 Extraction of Silica Sands from Area 3 - Northern Extension to Mining Area

- 7-1 The proponent is permitted to clear native vegetation and extract silica sands within the area bounded by NTH023 (387195E, 6333890N), NTH03 (387165E; 6334255N), NTH04 (387040E; 6334240N) and NTH01 (387020E; 6333885N) and shown as Area 3 in Figure 2 of this statement.

8 Protection of Remnant Vegetation

- 8-1 The proponent shall protect remnant vegetation on the property, outside the area to be mined, from indirect impacts of the construction and mining operations of the project.
- 8-2 Prior to construction, to achieve the objectives of condition 4-1, the proponent shall prepare an Environmental Management Programme in consultation with the Department of Conservation and Land Management and the Department of Environment.
- 8-3 The proponent shall implement the Environmental Management Programme required by condition 4-2, to achieve the objectives of condition 4-1.

9 Wetlands

The protection of the unmined lakes in the project area covered by the Environmental Protection (Swan Coastal Plains Lakes) Policy 1992 from impacts associated with the project is critical.

- 9-1 Prior to the commencement of the mining operation, the proponent shall prepare a Groundwater Monitoring and Management Programme in consultation with the Department of Conservation and Land Management and the Department of Environment.
- 9-2 The proponent shall implement the Groundwater Monitoring and Management Programme required by condition 9-1.
- 9-3 The proponent shall not engage in dewatering, for the purpose of increasing the depth of material available for mining.

10 Rehabilitation

- 10-1 The proponent shall rehabilitate Area 2 and Area 3 to a standard of rehabilitation that is consistent with the conservation values of Area 1 which is to be vested in the proposed Gwalia Nature Reserve.
- 10-2 Within 12 months of the commencement of mining, the proponent shall prepare a Rehabilitation Plan for Area 2 and Area 3 in consultation with the Department of Conservation and Land Management and the Department of Environment. This plan shall include draft completion criteria and a monitoring component to determine its effectiveness, and shall be reviewed and reported on annually.
- 10-3 The proponent shall implement the Rehabilitation Plan required by condition 10-2.

11 Decommissioning

- 11-1 The proponent shall satisfactorily decommission the project, remove the plant and installations, and achieve the final rehabilitation of the site and its environs.
- 11-2 At least 6 months prior to decommissioning, the proponent shall prepare a decommissioning and final rehabilitation plan.
- 11-3 The proponent shall implement the plan required by condition 11-2.

Notes

- 1. The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environment over the fulfilment of the requirements of the conditions.

The Proposal (Assessment Number 1573)

The proposal involves the transfer the ownership of land that contains the Muchea Limestone Communities TEC (Area 1) to the conservation estate and the extraction of silica sands from two new areas (Area 2 and Area 3).

The main characteristics of the proposal are summarised in Table 1 below.

Table 1: Key proposal characteristics

Element	Description
Area 1 - Muchea Limestone Threatened Ecological Community	17 hectares approximately
Area 2 – Southern Extension to Mining Area	8 hectares approximately
Area 3 – Northern Extension to Mining Area	5 hectares approximately

Figures (Attached)

Figure 1: Area to be Transferred to the Conservation Estate

Figure 2: Location Plan



Figure 1: Area to be Transferred to the Conservation Estate



Figure 2: Extraction of Silica Sands from Area 2 & 3 - Southern & Northern Extension to Mining Area