

Cowal Gold Operation

Compensatory Wetland Management Plan

September 2003



COWAL GOLD PROJECT
COMPENSATORY WETLAND MANAGEMENT PLAN



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PREFACE

This Compensatory Wetland Management Plan (CWMP) has been prepared to meet the requirements of Condition 3.10(A)(ii) of the Cowal Gold Project Development Consent. Where there is any conflict between the provisions of this CWMP and the applicable statutory requirements (ie. licences, permits, consents and relevant laws) the statutory requirements are to take precedence.

In accordance with Consent Condition 3.2 this CWMP is to be revised/updated at least every five years, or as otherwise directed by the Director-General, in consultation with the relevant government authorities.

It is the responsibility of Barrick to refer to the latest versions of statutory instruments or guidelines that are referenced in this CWMP, but have not been appended.

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1 INTRODUCTION

The Cowal Gold Project (the Project) is located approximately 38 kilometres (km) north-east of West Wyalong, New South Wales (NSW) (Figure 1). The Project is owned by Barrick Gold Australia Ltd (Barrick). The Project area and conceptual layout is shown on Figure 2.

Consent Condition 3.10(A)(ii) for the mine and pipeline requires the preparation of the enclosed Compensatory Wetland Management Plan (CWMP). The consent conditions and the corresponding sections of this Plan that address the conditions are outlined below.

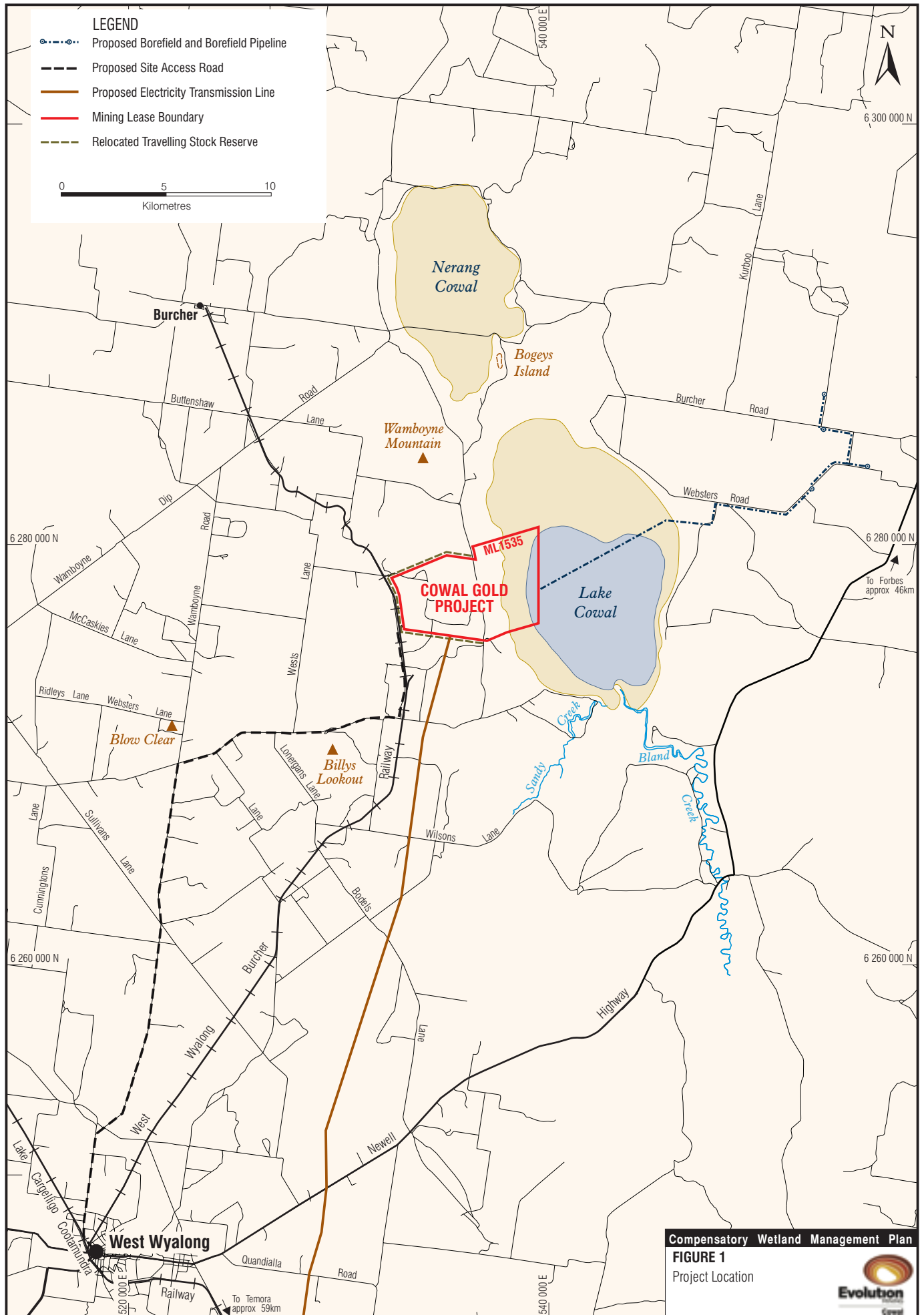
Consent Condition		Section
3.10	<p>Land Management</p> <p>The Applicant shall:</p> <p>(A)(ii) prior to commencement of construction works prepare a Compensatory Wetland Management Plan, in consultation with NPWS, NSW Fisheries, DLWC, Lake Cowal Landowners Association, and Lake Cowal Environmental Trust, and to the satisfaction of the Director-General. The plan shall detail compensation measures for the loss of 120 hectares of wetland, through the enhancement of at least the equivalent area of existing wetland within the mine lease area during operation and following closure of the mine. The plan shall include, but not be limited to:</p> <p>(a) a definition of wetland which shall be all land up to the high water mark of Lake Cowal recognising that river red gum habitat is below high water mark;</p> <p>(b) measures to manage the enhanced wetlands without adversely impacting adjoining private properties; and</p> <p>(c) measures to improve habitats for wildlife including waterbirds, fish, aquatic organisms etc, in the wetlands covered by the plan.</p>	<p>Section 6.1</p> <p>Section 3</p> <p>Section 7</p> <p>Sections 6.1, 6.2 and 6.3</p>

In addition:

- Consent Condition 2.3 establishes the requirements for the Mining Lease (ML) boundary fence. This condition is addressed in Section 6.1.1.
- Consent Condition 3.6 states the requirements for site rehabilitation management. This condition is addressed in Section 6.2.
- Consent Condition 8.7 establishes the requirements for a Community Environmental Monitoring and Consultative Committee (CEMCC) and is addressed in Section 10.1.
- Consent Condition 8.8 establishes the requirements for an Independent Environmental Audit (IEA) and an Independent Monitoring Panel (IMP). These conditions are discussed in Section 11.
- Consent Condition 9.2 establishes reporting requirements and is provided and discussed in Section 12.
- Consent Condition 10 outlines the requirements for receipt and response to community complaints. This condition is provided and discussed in Section 10.2.
- In accordance with Consent Condition 12.1, the Applicant is obliged to ensure all statutory requirements are fully met.

Conditions of Authority ML 1535

The Department of Mineral Resources (DMR) has requirements that relate to rehabilitation and vegetation clearance as detailed in the Conditions of Authority for ML 1535. Relevant Conditions of Authority include:



Compensatory Wetland Management Plan

FIGURE 1
Project Location





Compensatory Wetland Management Plan

FIGURE 2
Wetland Areas Within ML1535



Rehabilitation

12. (a) *Land disturbed must be rehabilitated to a stable and permanent form suitable for a subsequent land use acceptable to the Director-General and in accordance with the Mining Operations Plan so that:-*
- *there is no adverse environmental effect outside the disturbed area and that the land is properly drained and protected from soil erosion.*
 - *the state of the land is compatible with the surrounding land use and land use requirements.*
 - *the landforms, soils, hydrology and flora require no greater maintenance than in the surrounding land.*
 - *in cases where revegetation is required and native vegetation has been removed or damaged, the original species must be re-established with close reference to the flora survey included in the Mining Operations Plan. If the original vegetation was not native, any re-established vegetation must be appropriate for the area and at an acceptable density.*
 - *the land does not pose a threat to public safety.*
- (b) *Any topsoil that is removed must be stored and maintained in a manner acceptable to the Director-General.*
13. *The lease holder must comply with any direction given by the Director-General regarding the stabilisation and revegetation of any mine residues, tailings or overburden dumps situated on the lease area.*

These conditions are addressed in Section 6.2.

Prevention of Soil Erosion and Pollution

14. *Operations must be carried out in a manner that does not cause or aggravate air pollution, water pollution (including sedimentation) or soil contamination or erosion, unless otherwise authorised by a relevant approval, and in accordance with an accepted Mining Operations Plan. For the purpose of this condition, water shall be taken to include any watercourse, waterbody or groundwaters. The lease holder must observe and perform any instructions given by the Director-General in this regard.*

This condition is addressed in Section 8.2.

Mining, Rehabilitation, Environmental Management Process (MREMP) Mining Operations Plan (MOP)

25. (4) *The Plan must present a schedule of proposed mine development for a period of up to seven (7) years and contain diagrams and documentation which identify:-*
- (b) *mining and rehabilitation method(s) to be used and their sequence;*
 - (f) *progressive landscape and rehabilitation management plan including schedules; and*
 - (g) *areas of particular environmental, ecological, archaeological and cultural sensitivity and measures to protect these areas.*

This condition is addressed in Sections 5 and 6.

Annual Environmental Management Report (AEMR)

26. (1) *Within 12 months of the commencement of mining operations and thereafter annually or, at such other times as may be allowed by the Director-General, the lease holder must lodge an Annual Environmental Management Report (AEMR) with the Director-General.*
- (2) *The AEMR must be prepared in accordance with the Director-General's guidelines current at the time of reporting and contain a review and forecast of performance for the preceding and ensuing twelve months in terms of:*
- (a) the accepted Mining Operations Plan;*
 - (b) development consent requirements and conditions;*
 - (c) Environment Protection Authority and Department of Land and Water Conservation licences and approvals;*
 - (d) any other statutory environmental requirements;*
 - (e) details of any variations to environmental approvals applicable to the lease area; and*
 - (f) where relevant, progress towards final rehabilitation objectives.*
- (3) *After considering an AEMR the Director-General may, by notice in writing, direct the lease holder to undertake operations, remedial actions or supplementary studies in the manner and within the period specified in the notice to ensure that operations on the lease area are conducted in accordance with sound mining and environmental practice.*
- (4) *The lease holder shall, as and when directed by the Minister, cooperate with the Director-General to conduct and facilitate review of the AEMR involving other government agencies and the local council.*

This condition is addressed in Section 12.

1.1 OBJECTIVES AND SCOPE

The objectives of this Plan are to fulfil the relevant consent conditions by providing:

- detail of the compensation measures developed for the loss of 120 hectares (ha) of wetland, through the enhancement of at least the equivalent area of existing wetland within ML 1535 during mine operation and following closure of the mine;
- a definition of wetland;
- measures to manage the enhanced wetlands without adversely impacting adjoining private properties; and
- measures to improve habitats for wildlife (including waterbirds, fish and aquatic organisms) in the wetlands covered by the Plan.

The CWMP is structured as follows:

- Section 1: Outlines the objectives of the Plan and details relevant consent conditions.
- Section 2: Identifies the statutory requirements applicable to the Plan.
- Section 3: Provides a definition of a wetland.
- Section 4: Provides an overview of the Lake Cowal wetland.
- Section 5: Details the area of wetland to be disturbed.
- Section 6: Outlines the wetland habitat rehabilitation and enhancement measures that will be implemented to improve habitats for wildlife.
- Section 7: Identifies measures to manage the enhanced wetlands without adversely impacting adjoining private properties.
- Section 8: Summarises CWMP monitoring and maintenance activities.
- Section 9: Outlines mine closure and lease relinquishment requirements.
- Section 10: Summarises stakeholder consultation and complaints receipt.
- Section 11: Provides IEA processes.
- Section 12: Outlines reporting requirements for Compensatory Wetland related issues.

In accordance with requirements of Consent Condition 3.10(A)(ii) the National Parks and Wildlife Service (NPWS), NSW Fisheries, Department of Land and Water Conservation (DLWC) (now part of the Department of Infrastructure, Planning and Natural Resources [DIPNR]), Lake Cowal Landholders Association and Lake Cowal Foundation Limited (LCFL) have been consulted during the preparation of this CWMP. Where applicable, reference is made to consultation notes or verbal advice from these regulatory authorities throughout this report. The CWMP will be prepared to the satisfaction of the Director-General of DIPNR.

2 STATUTORY REQUIREMENTS

2.1 LEGISLATION

Legislation applicable to the CWMP is discussed below.

Noxious Weeds Act, 1993 (NW Act)

The NW Act specifies landholder responsibilities to control noxious weeds. Provisions relevant to the CWMP are:

- An occupier of land must control noxious weeds on the land, as required under the control category or categories specified in relation to the weeds concerned (section [s] 12).
- An occupier of land on which there is a notifiable weed must notify the local control authority for the land of that fact within 3 days after becoming aware that the notifiable weed is on the land (s15).
- If a watercourse, river or inland water, tidal or non-tidal, is situated between land occupied by different occupiers, the requirement for each occupier to control noxious weeds extends to weeds located on the land between the boundary of the occupier's land and any fence erected to define the boundary of the occupier's land or, if there is no fence, to the middle line of the watercourse, river or inland water (s17).

- A person must not scatter or cause to be scattered on any land or water any notifiable weed material or other noxious weed material prescribed by the regulations, knowing it to be such weed material (s30).

An occupier of land (other than a public authority or a local control authority) given a weed control notice by a local control authority under s19 must not fail to comply with the notice (ss18 & 19).

Rural Lands Protection Act, 1998 (RLP Act)

The RLP Act specifies the responsibility for occupiers of private land to control pests which have a pest control order (ie. feral pigs, rabbits and wild dogs). Occupiers of private land to which a pest control order applies must implement any control measures specified in that order (s155). Proposed pest control activities in the ML 1535 wetland areas will be in accordance with the RLP Act. Pest control activities are summarised in this Plan and detailed in the Land Management Plan (LMP).

Catchment Management Act, 1989 (CM Act)

The CM Act sets up Catchment Management Boards whose role is to develop catchment blueprints. The catchment blueprints are 10-year advisory plans for integrated catchment management. There are 21 blueprints covering the whole of NSW. They were endorsed by the NSW Government in late 2002 and they are the overarching integration mechanism for natural resource planning. The Lachlan Catchment Blueprint covers West Wyalong and the Cowal Gold Mine and was prepared by the Lachlan Catchment Management Board. The Lachlan Catchment Blueprint provides management recommendations applicable to this Plan and is discussed in Section 2.2.2.

2.2 POLICIES AND PLANS

A number of regional, state and commonwealth policies and plans are relevant to the CWMP including those summarised below. The integration of the CWMP with regional, state and commonwealth policies and plans is recognised as important. Where practicable and appropriate, management recommendations resulting from the policies/plans have been incorporated into the CWMP.

2.2.1 Policies

Wetlands Policy of the Commonwealth Government of Australia

The Wetlands Policy of the Commonwealth Government of Australia (Environment Australia, 1997) recognises the special role of wetlands in the well-being of present and future generations of Australians and demonstrates the Commonwealth Government's commitment to the management of wetland resources for the enjoyment and benefit of all.

National Objectives and Targets for Biodiversity and Conservation 2001 – 2005

The National Objectives and Targets for Biodiversity and Conservation 2001 – 2005 (Environment Australia, 2001a) document sets objectives and targets for ten priority outcomes which the Commonwealth, States and Territories should pursue between now and 2005. The priority actions are to:

- protect and restore native vegetation and terrestrial ecosystems;
- protect and restore freshwater ecosystems;
- protect and restore marine and estuarine ecosystems;

- control invasive species;
- mitigate dryland salinity;
- promote ecologically sustainable grazing;
- minimise impacts of climate change on biodiversity;
- maintain and record indigenous peoples' ethnobiological knowledge;
- improve scientific knowledge and access to information; and
- introduce institutional reform.

NSW Biodiversity Strategy

The strategic goal of the NSW Biodiversity Strategy (NPWS, 1999) is to protect the native biological diversity of NSW and maintain ecological processes and systems. The core objectives of the NSW Biodiversity Strategy are to:

- Ensure the survival and evolutionary development of species, populations and communities of plants, animals and micro-organisms native to NSW.
- Strengthen management of biodiversity on a bioregional basis while using existing catchment level networks to focus on specific actions, including the integration of biodiversity conservation and natural resource management, consistent with the principles of ecologically sustainable development.
- Identify, prevent or attack at-source the threats to biodiversity through timely implementation of targeted actions.
- Build on the success of existing initiatives to develop a coordinated and cost-effective biodiversity conservation program involving the community, industry and all levels of government and ensure that the rights, knowledge and values of local and Aboriginal communities are properly recognised and reflected.
- Strengthen actions to inform, motivate and achieve the support of the community including local and Aboriginal communities, industry, State Government agencies and Local Government agencies, in conserving biodiversity.
- Increase our understanding of the ecological systems and processes required to conserve biodiversity through scientific research, survey and monitoring, taking into account the knowledge and values of Aboriginal and local communities.

NSW Wetlands Management Policy 1996

The NSW Wetlands Management Policy is a whole-of-government policy for the ecologically sustainable conservation, management and use of wetlands in NSW for the benefit of present and future generations (DLWC, 2002). The policy includes nine wetland management principles, *viz.*:

- Water regimes needed to maintain or restore the physical, chemical and biological processes of wetlands will have formal recognition in water allocation and management plans.
- Land use and management practices that maintain or rehabilitate wetland habitats and processes will be encouraged.
- New developments will require allowance for suitable water distribution to and from wetlands.
- Water entering natural wetlands will be of sufficient quality so as not to degrade the wetlands.
- The construction of purpose-built wetlands on the site of viable ones will be discouraged.

- Natural wetlands should not be destroyed, but when social or economic imperatives require it, the rehabilitation or construction of a wetland should be required.
- Degraded wetlands and their habitats and processes will be actively rehabilitated as far as is practical.
- Wetlands of regional or national significance will be conserved.
- An adoption of a stewardship ethos and co-operative action between land and water owners and managers, government authorities, non-government agencies, and the general community is necessary for effective wetland management.

NSW Fisheries Policy and Guidelines for Aquatic Habitat Management and Fish Conservation, 1999

The NSW Fisheries Policy and Guidelines for Aquatic Habitat Management and Fish Conservation, 1999 (NSW Fisheries) has been prepared in order to improve the conservation and management of aquatic habitats in NSW. In relation to this Plan NSW Fisheries (1999) outlines the policy for habitat rehabilitation and environmental compensation.

2.2.2 Plans

Lachlan Catchment Blueprint

The Lachlan Catchment Blueprint, also known as the Integrated Catchment Management Plan for the Lachlan Catchment 2002 (Lachlan Catchment Management Board, 2003), provides direction for the changes needed in natural resource management within the Lachlan Catchment. The Blueprint provides a framework for the investigations and research that needs to be undertaken, the on ground actions that need to occur, the advisory and education services that need to be in-place and the commitment that government needs to make to resource the plan. A number of key natural resources issues identified in the catchment are addressed by the Blueprint, including those relating to salinity, native vegetation management, water quality and quantity, soil health, biodiversity and cultural heritage.

Mid Lachlan Regional Vegetation Management Plan and Strategy

The Mid Lachlan Regional Vegetation Management Plan and Strategy has been developed “to promote the sustainable management of native vegetation in the Mid Lachlan Region in a manner which is balanced, achievable and supported by the Region’s local communities” (DLWC, 2001). The Mid Lachlan Regional Vegetation Management Plan and Strategy provides a framework for the enhancement and re-establishment of native vegetation in the Mid Lachlan Region.

Jemalong Land and Water Management Plan

The Jemalong Land and Water Management Plan (Glasson and Duff, 2001) aims to guide the development of the Jemalong Irrigation District so that land and water resources are used in a way which is profitable and improves and sustains the environment for current and future generations. The goals of the Jemalong Land and Water Management Plan to achieve this are:

1. To reduce accessions to the watertable, thereby helping to minimise salinity and water logging.
2. To increase the economic viability of the Jemalong Land and Water Management Plan area.
3. To increase awareness of the value of land and water management planning.
4. To increase the implementation of best management practices.

5. To alleviate the adverse effects of local agricultural practices on soil and water quality.

The Jemalong Land and Water Management Plan provides strategies for on-farm options (such as landforming, farm planning, recycling systems, high volume outlets, soil fertility testing and improving pastures), as well as regional options (such as vegetation, floodway levees and rain reject storages).

Bland Creek Catchment Plan

The Bland Creek Catchment (BCC) covers an approximate area of 940,950 ha and is the southern portion of the Lachlan Catchment containing Lake Cowal. There are six subcatchments within the BCC, of which the Project is located in the north of the Barmedman sub-catchment.

The Bland Creek Catchment Plan (Bland Catchment Committee, 2002) is divided into two stages. Stage one was developed to address local natural resource and land management issues and an economic analysis of the issues, presenting a 'no-plan' scenario. The Catchment Plan developed by stage one has collated existing information on the Catchment, provides an overview of the Catchment's physical features and socio-economic status and gives an account of the extent and severity of each issue at a subcatchment level. Stage two was developed from the findings of stage one and provides a Catchment Action Plan, in which priorities are set for future 'on-ground' activities. The BCC Action Plans identify a number of proposed actions to overcome threats and barriers to natural resource management. Actions are provided for soils, water, native vegetation and biodiversity, and salinity.

Land and Water Management Plan for Lake Cowal and Associated Wetlands

The Land and Water Management Plan for Lake Cowal and Associated Wetlands (Australian Water Technologies, 1999) is a component of the Jemalong Land and Water Management Plan. The objectives and actions outlined in the plan are consistent with the vision to manage the lake in a way that sustains and enhances the economic, social and ecological well being of the Lake Cowal area for future generations.

3 DEFINITION OF A WETLAND

Consent Condition 3.10(A)(ii)(a) requires the CWMP to include a definition of wetland which shall be all land up to the high water mark of Lake Cowal recognising that the River Red Gum habitat is below high water mark.

The CWMP adopts the NSW Wetlands Management Policy (DLWC, 1996a) definition of a wetland, namely:

A wetland is land that is:

- inundated with water on a temporary or permanent basis;
- inundated with water that is usually slow moving or stationary;
- inundated with water that is shallow; and
- inundated with water that maybe fresh, brackish or saline.

This definition of wetland includes all land up to the high water mark of Lake Cowal (ie. full storage water line in Figure 2) and recognises that the River Red Gum habitat is below the high water mark.

4 OVERVIEW OF THE LAKE COWAL WETLAND

The Lake Cowal wetland forms part of the Wilbertroy-Cowal wetlands which includes Lake Cowal, Nerang Cowal and Bogandillon Swamp. This wetland system is located on the Jemalong Plain, which is a fluvial¹ landform, formed in the lower reaches of Bland Creek in the Lachlan Valley (Figure 3). The plain extends to the Lachlan River in the north and is bounded by ridgelines to the east and west (North Limited, 1998a).

The dynamics of the system have been modified significantly by a number of factors including agricultural landuse within the catchment, clearing, levee construction and modifications to flood entry and exit points and the construction of the Jemalong-Wyldes Plains irrigation system, including the Jemalong Weir (Goldney *et al.*, 1997 in North Limited, 1998a). Grazing and opportunistic cropping within the full storage water line of the lake occurs when moisture and market conditions are suitable (North Limited, 1998a).

In past years Lake Cowal has been an important recreational and commercial fishing resource (Fisheries Research Institute, 1997) however the proliferation of the European Carp (*Cyprinus carpio*) is likely to have impacted on catch composition in recent years (North Limited, 1998a).

Lake Cowal receives inflow from Bland Creek, which drains into the lake at its southern end (Figure 3). Bland Creek commands a catchment area of some 9,500 square kilometres (km²) upstream of the lake (North Limited, 1998a). Inflows to the lake also occur from the Lachlan River via breakout flows during major flood events in the Lachlan, causing back flooding to Lake Cowal. The breakout flows enter the lake via modified floodways at the north-eastern side of the lake (Figure 3). The lake also receives inflow from incident rainfall (North Limited, 1998a).

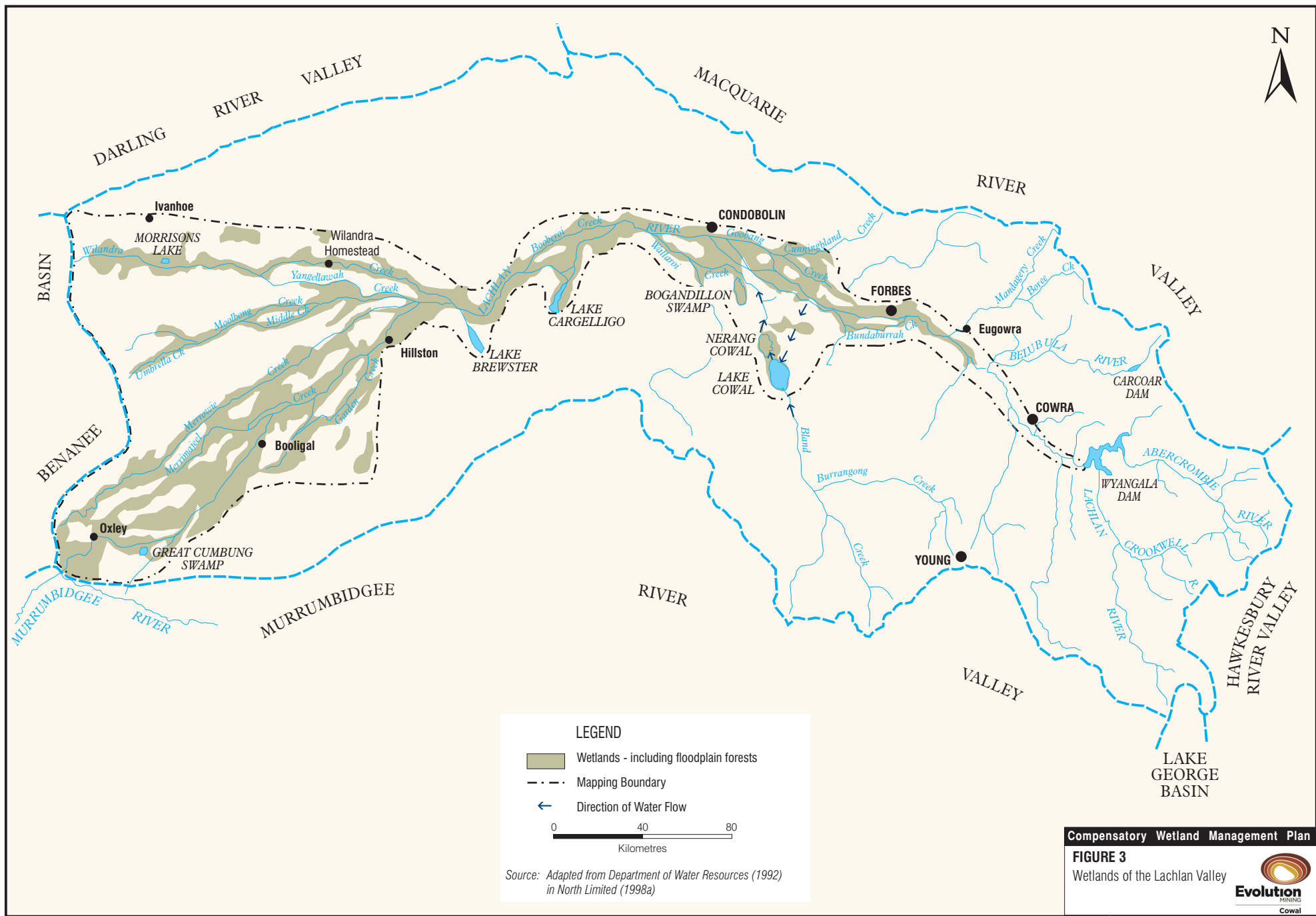
When full, Lake Cowal overflows into Nerang Cowal to the north which in turn overflows to Manna Creek, Bogandillon Creek and ultimately into the Lachlan River. The lake is substantially inundated approximately seven years out of ten, with relatively small increases in lake water depth leading to significant increases in the area of inundation due to the flat, shallow nature of the lake. Without inflows, drying of the lake is driven predominantly by high evaporative losses which can reduce the lake from a full storage to minimal storage levels within 12 months (North Limited, 1998a).

The vegetation on the lakebed of Lake Cowal is adapted to the irregular wetting and drying cycle. When inundated, propagules of ephemeral aquatic plants germinate and grow rapidly providing a food source for similarly ephemeral invertebrates and nomadic waterbirds. When dry, the bare lakebed is colonised by the seeds of many grasses and herbs creating a temporary grassland. The shallower parts of the lakebed also feature permanent swamp vegetation (*viz.* Lignum and Canegrass) which can tolerate the extremes of wet and dry (North Limited, 1998a).

The Wilbertroy-Cowal wetland system has been described as one of the most significant water bird concentration areas in NSW by the Australian Heritage Commission (AHC) (1992). In 1992 the lake was listed by the AHC on the Register of the National Estate (North Limited, 1998a).

Like many other lakes in Australia, Lake Cowal's value to bird life relates to its shallow depth and to the cycles of flooding and drying that have occurred over a large period of time. Integral to the lake's ecology is its periodic drying which results in the release of nutrients in mineral form from the built-up organic matter. When the lake fills after a period of drying, it is these nutrients that generate the temporary bloom of aquatic life on which many birds thrive.

¹ Fluvial: relating to, or produced by a river.



When Lake Cowal is dry, contains little water or otherwise has become less productive of aquatic life under relatively stable water level conditions, wetland habitats of other inland river floodplains provide this critical resource. Waterbirds are generally adept at moving sometimes hundreds of kilometres to suitable habitat (North Limited, 1998a).

In this wetland system Lake Cowal provides, albeit episodically and for relatively short periods of time, habitat for wetland bird life that is of national significance (North Limited, 1998a).

5 OVERVIEW OF THE AREA OF WETLAND TO BE DISTURBED

Section 5.1 provides an overview of the disturbance to wetland habitats by mine infrastructure, while Section 5.2 describes the characteristics of the wetland areas to be disturbed.

5.1 PROJECT WETLAND DISTURBANCE

The location of the Cowal orebody is such that mining the deposit requires part of the open pit to extend beyond the full storage level of Lake Cowal (Figure 2). As a result, a New Lake Foreshore will be constructed that will comprise (Figure 4):

- a temporary isolation bund;
- a lake protection bund and the lower batter of the perimeter waste emplacement; and
- an intervening section of lakebed between the temporary isolation bund and the lake protection bund.

The temporary isolation bund (Figure 4) will be located closest to the lake and is designed to prevent water inflow to the pit development area from the lake during construction of the lake protection bund.

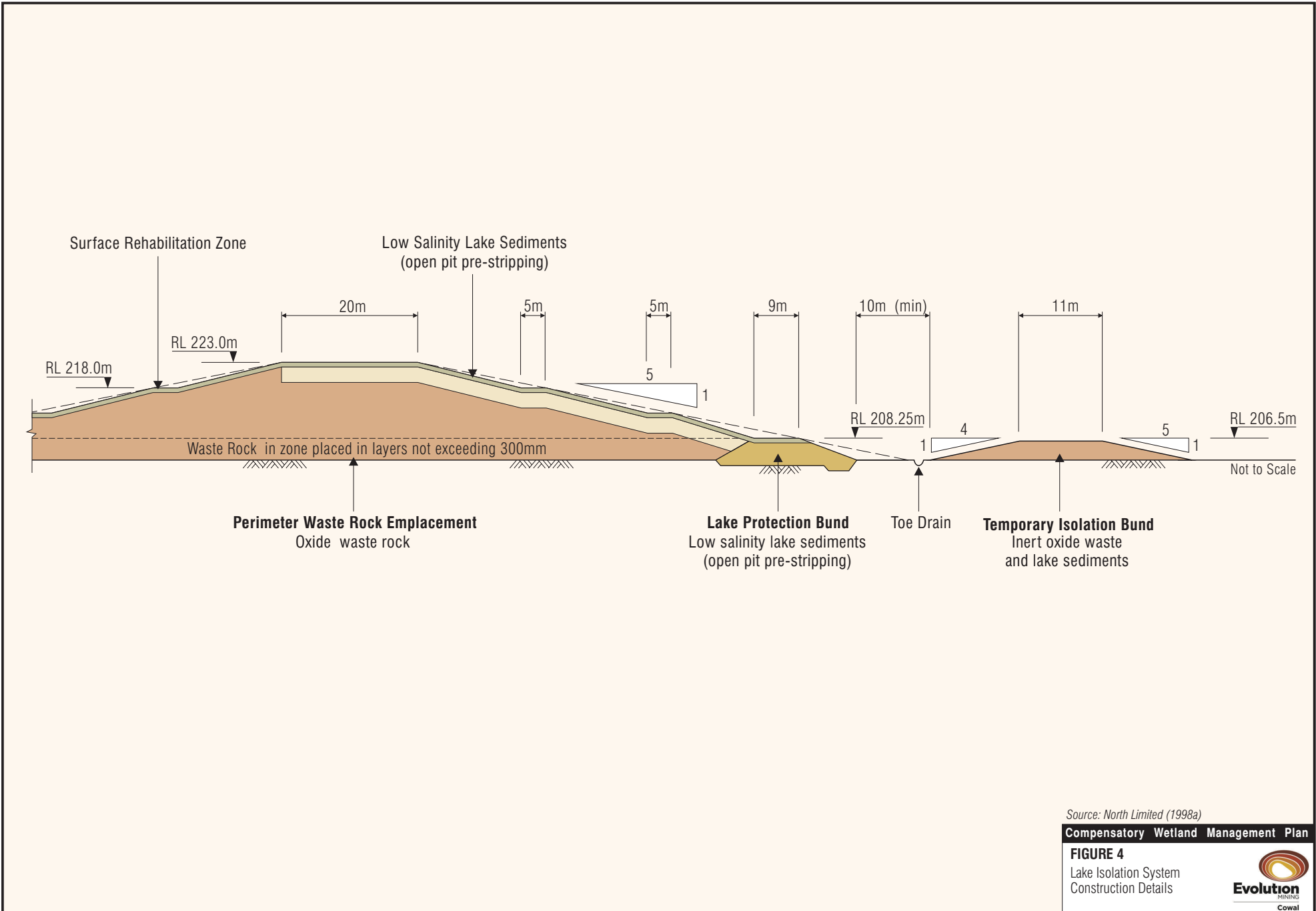
The lake protection bund is a low permeability embankment designed to prevent water inflow (during periods of high lake water level) from the lake into the open pit development area over the life of the mine and over the long-term. The lake protection bund will be located behind the temporary isolation bund (ie. closer to the pit) (Figure 4). The perimeter waste emplacement will surround the pit to the north, east and south and will be located behind the lake protection bund (Figure 2).

5.2 CHARACTERISTICS OF THE WETLAND TO BE DISTURBED

Terrestrial and wetland vegetation communities of the Project area and surrounds are presented in Figure 5. Two wetland vegetation communities/habitat types will be disturbed by the Project, namely, fringing River Red Gum (*Eucalyptus camaldulensis*) and lakebed (scattered areas of Burr Medic [*Medicago polymorpha*] and Canegrass [*Eragrostis australisica*]). A description of the fringing River Red Gum community (represented by vegetation community 4 on Figure 5) and lakebed community (vegetation community 6 on Figure 5) within Barrick-owned land is provided below (Figure 5) (North Limited, 1998a).

5.2.1 Fringing River Red Gum (*Eucalyptus camaldulensis*)

The riparian zone of Lake Cowal and tributaries comprise mainly fringing woodland of River Red Gum (*E. camaldulensis*) which has been substantially thinned as a result of past landuses. The transition between the riparian zone and the surrounding vegetation is pronounced and corresponds to the high water level of the lake. Shrub layer development and ground substrate is almost non-existent in this highly disturbed strip. The Project will remove/modify approximately 20 ha of this vegetation community within ML 1535 (Figure 5).



Source: North Limited (1998a)

Compensatory Wetland Management Plan

FIGURE 4

Lake Isolation System
Construction Details



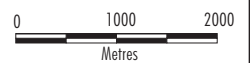


LEGEND

- Barrick-owned Land (Current as at August 2003)
- Mining Lease Boundary
- Disturbance Area

Vegetation Communities

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> 1 Remnant Woodland
(<i>E. divyeri</i> - <i>Acacia doratoxylon</i> - <i>Callitris</i> sp.) 2 Eucalypt Woodland
(<i>E. divyeri</i> - <i>E. populnea</i> - <i>E. microcarpa</i> - <i>Callitris glaucophylla</i> - <i>Casuarina cristata</i>) | <ul style="list-style-type: none"> 3 Predominantly cleared agricultural land with scattered Bimble Box Woodland (<i>E. populnea</i>) 4 Fringing River Red Gum (<i>Eucalyptus camaldulensis</i>) 5 Lignum (<i>Muehlenbeckia florulenta</i>) 6 Lake Bed - Scattered areas of <i>Medicago polymorpha</i> and Canegrass (<i>Eragrostis australasica</i>) | <ul style="list-style-type: none"> 7 Mixed Woodland (<i>A. pendula</i> - <i>Casuarina cristata</i>) 8 Wilga Woodland (<i>Geijera parviflora</i> - <i>Casuarina cristata</i>) 9 Belah Woodland (<i>Casuarina cristata</i>) |
|--|--|--|



Source: After North Limited (1998a)
Bower (2003)
Aerial Photo AAM Surveys (August 2002)

Compensatory Wetland Management Plan

FIGURE 5
Vegetation Communities
Within Barrick-owned Land



5.2.2 Lake Bed (*Eragrostis australasica* – *Medicago polymorpha*)

Sections of the shallow waters of Lake Cowal support a Swamp Canegrass (*Eragrostis australasica*) and Burr Medic (*Medicago polymorpha*) community. A band of Swamp Canegrass (*Eragrostis australasica*) occurs within ML 1535. The area of Swamp Canegrass community alters with the flooding cycle of the lake. The Project will remove/modify approximately 100 ha of this vegetation community within ML 1535 (Figure 5).

6 WETLAND REHABILITATION AND ENHANCEMENT MEASURES

In accordance with Consent Condition 3.10(A)(ii), Sections 6.1 to 6.3 describes the wetland rehabilitation and enhancement measures that will be implemented to improve habitats for wildlife (including waterbirds, fish and aquatic organisms) in the wetlands covered by the CWMP. The CWMP wetlands will include three parts, namely the Compensatory Wetland, New Lake Foreshore and remaining wetland areas within ML 1535 (Figure 6). Section 6.1 details the Compensatory Wetland; Section 6.2 the rehabilitation of the New Lake Foreshore; and Section 6.3 describes the enhancement of the remaining wetland areas within ML 1535. Section 6.4 outlines how the rehabilitation and enhancement measures detailed in Sections 6.1 to 6.3 are expected to improve habitats for wildlife.

The wetland habitat rehabilitation and enhancement measures are consistent with the NSW Wetlands Management Policy which states that “*Natural wetlands should not be destroyed, but when social or economic imperatives require it, the rehabilitation or construction of a wetland should be required*” (Principle 6) and that “*Wetlands of regional or national significance will be conserved*” (Principle 8).

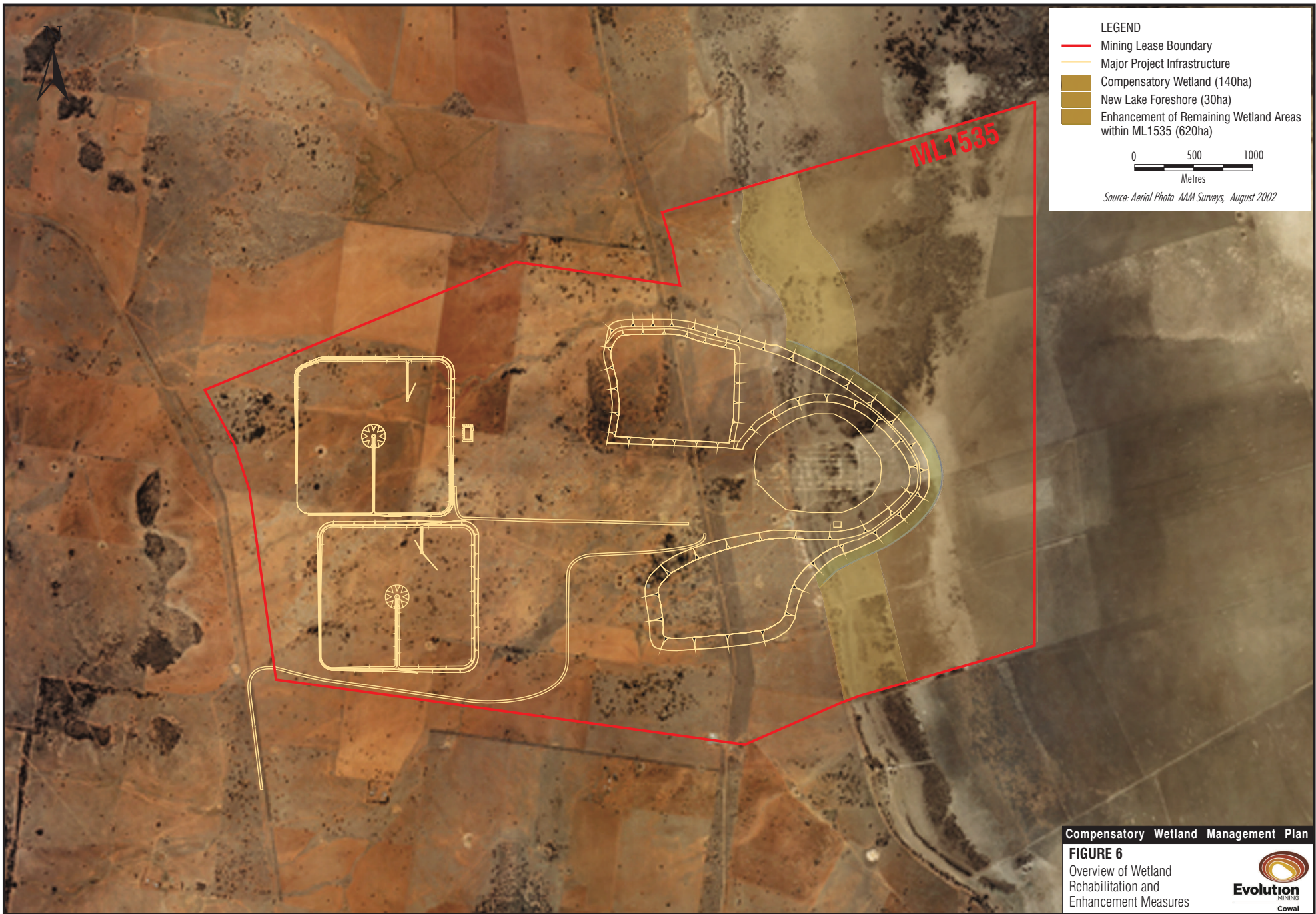
The measures in Sections 6.1 to 6.3 will aim to enhance wildlife values around Lake Cowal, within the ML, in accordance with the FFMP and Consent Condition 3.4(a)(vii). The wetland rehabilitation and enhancement measures incorporate management strategies developed for a number of threatened species as a component of the Project Threatened Species Management Protocol. All rehabilitation works will be conducted in accordance with ML 1535 Condition of Authority 12, which details conditions for rehabilitation of land disturbed in the ML area (Section 1).

6.1 COMPENSATORY WETLAND

In accordance with Development Consent Condition 3.10(A)(ii), areas of lake foreshore situated within ML 1535, to the north and south of the New Lake Foreshore, will be enhanced during mine operation and post-closure (ie. until lease relinquishment) to compensate for the loss of 120 ha of wetland as a result of the development (Figure 6). These areas will form the Compensatory Wetland. Enhancement measures during mine operation are detailed in the following sections. Enhancement measures post-closure will be developed as part of the long-term landuse and lease relinquishment process, which is detailed in Section 9 of this Plan.

The Compensatory Wetland is consistent with the NSW Fisheries Policy and Guidelines for Aquatic Habitat Management and Fish Conservation 1998 which indicates that rehabilitation of degraded areas is an appropriate form of environmental compensation (Train, 1999).

The Compensatory Wetland covers an area of approximately 140 ha of existing wetland within ML 1535 and includes the fringing River Red Gum community (Figures 5 and 6).



LEGEND

- Mining Lease Boundary
- Major Project Infrastructure
- Compensatory Wetland (140ha)
- New Lake Foreshore (30ha)
- Enhancement of Remaining Wetland Areas within ML1535 (620ha)

0 500 1000
Metres

Source: Aerial Photo AAM Surveys, August 2002

Compensatory Wetland Management Plan

FIGURE 6
Overview of Wetland Rehabilitation and Enhancement Measures



A number of wetland enhancement measures will be implemented within the Compensatory Wetland. These measures will include:

- the prevention of stock entry into the enhancement area to encourage the natural regeneration of native plants;
- measures to minimise the spread of weeds and competition with native flora;
- measures to minimise the occurrence of feral pests;
- provision of structural habitat for aquatic fauna; and
- limiting vehicular access.

In addition, planting of native wetland species within the Compensatory Wetland may be undertaken if monitoring indicates that doing so is necessary to enhance the regeneration of native vegetation within the area.

Measures to manage weeds and pests and to limit vehicular access to the Compensatory Wetland will commence by year one of mine operations. Sections 6.1.1 and 6.1.2 outline the factors which will determine when measures to prevent stock from entering the area and revegetation (if any) will commence.

6.1.1 Prevention of Stock Entry into Compensatory Wetland and Natural Regeneration of Native Plants

The wetland areas of Lake Cowal have traditionally been farmed and grazed. Livestock can have direct and indirect impacts on wetlands. The primary effect, alteration of wetland vegetation, influences multiple faunal assemblages which use the vegetation as habitat (ie. birds, mammals, reptiles, amphibians and aquatic fauna) (Robertson, 1998 in Williams, 1998).

In order to encourage the natural regeneration of native plant species, livestock will be prevented from entering the Compensatory Wetland through the use of fencing. Natural regeneration of native vegetation in the wetland area is only likely to occur after a flood event. Accordingly, the Compensatory Wetland may be subject to light grazing until the flood event occurs. Livestock will be prevented from entering the Compensatory Wetland subsequent to the flood event. Until that time, light grazing of the area by livestock will assist with weed control and pasture management. Weeds can be more difficult to control once livestock are excluded (DLWC, 2001). The early removal of livestock is likely to result in a heavy cover of weeds, which could prevent or reduce eucalypt seedling growth once the flood event occurred. Eucalypt regeneration in the riparian zone is likely to be best over relatively bare soil. Livestock may also be prevented from entering areas within the Compensatory Wetland in the event revegetation activities are conducted (refer Section 6.1.2).

The concept of prevention of stock entry to encourage natural regeneration for habitat enhancement is a widely accepted practice and, in accordance with Consent Condition 4.3, is recommended by the Land and Water Management Plan for Lake Cowal and Associated Wetlands, Mid Lachlan Regional Vegetation Management Plan and Strategy, Jemalong Land and Water Management Plan and the NSW Wetlands Management Policy.

It is anticipated that preventing livestock from entering the Compensatory Wetland will naturally increase flora species diversity and abundance without the need for supplementary plantings (NPWS, pers. comm., 21 May 2003).

In accordance with Consent Condition 3.10(A)(ii)(c), preventing stock from entering the Compensatory Wetland and subsequent natural regeneration is expected to improve the habitat for wildlife including waterbirds, fish and aquatic organisms (refer to Section 6.4 for further detail).

Monitoring will be conducted to assess the regeneration of native vegetation within the Compensatory Wetland and to determine the need for any maintenance and/or contingency measures (such as the requirement for the planting of native species and weed/pest control). Details of the monitoring programme are provided in Section 8.1.

Fence Design

Fences will be constructed within ML 1535 and around the ML boundary.

In accordance with Consent Condition 2.3 which requires the mine site to be secured, a fence will be constructed around the boundaries of ML 1535 and the lake protection bund above the full storage water line (Figure 7).

A fence will be constructed around the remainder of the ML boundary below the full storage water line to prevent stock from entering the wetland areas (Figure 7). In accordance with Consent Condition 2.3, the fence has been designed to minimise the impact on water birds and aquatic species. The fence will comprise a standard four strand farm fence. However to minimise the impact on waterbirds and aquatic species, the spacing between the top three wires will be increased by 75 millimetres (mm) in comparison to a standard farm fence and the fence will contain no barb wire. A farm gate will be built on the northern and southern fence boundary and two will be built in the eastern fence boundary.

The fences will be subject to weekly inspection and maintenance. If animals are found trapped inside the wetland area, the appropriate access gate(s) will be opened or maintained to facilitate movement.

6.1.2 Revegetation

The planting of native species within the Compensatory Wetland may be conducted to enhance the regeneration of native vegetation if the results of the monitoring programme show inadequate progress by year three of mine operation. Section 6.4 outlines how revegetation is expected to enhance habitats for wildlife. Consideration will be given to parameters such as species diversity and abundance, and community structure. In addition, revegetation trials conducted as a component of the rehabilitation programme for the New Lake Foreshore (Section 6.2) will provide results on species selection for revegetation.

6.1.3 Weed Control

Weed species are effective competitors for resources and have the potential to exclude native species from the landscape, resulting in changes in the composition and structure of plant communities. Environmental weeds are one of the major causes of environmental degradation in the Mid Lachlan Region (DLWC, 2001).

Weed control within the Compensatory Wetland will be conducted in accordance with the applicable procedures detailed for Barrick-owned land in the LMP. An overview of these procedures is provided in Section 7.2. Section 6.4 outlines how weed control is expected to enhance habitats for wildlife.



Compensatory Wetland Management Plan

FIGURE 7

Fence Locations



6.1.4 Pest Control

Control of pest animals is an important component of habitat enhancement and land management. For example, the European Red Fox (*Vulpes vulpes*) has been confirmed as a significant threat to a range of listed endangered and vulnerable species (Environment Australia, 2001b). The occurrence of rabbits (*Oryctolagus cuniculus*) has been found to influence fox abundance (Williams *et. al.*, 1995). Where rabbit numbers are high, fox populations generally thrive, and conversely when rabbit numbers drop, fox populations often decline (*ibid.*). Rabbit control is important to improving habitats for wildlife.

Management measures for the control of pests including rabbits, feral pigs, wild dogs and foxes will be implemented in accordance with the LMP (refer to Section 7.3 for further detail). Section 6.4 outlines how pest control is expected to enhance habitats for wildlife.

6.1.5 Provision of Structural Habitat for Aquatic Fauna

As a component of Project vegetation clearance activities, features identified for use in the Project rehabilitation and habitat enhancement programmes will be salvaged/collected. On the advice of NSW Fisheries (pers. comm., 1 September, 2003), some of the root balls, logs and limbs collected during Project vegetation clearance activities will be dispersed within the Compensatory Wetland to add structural habitat for aquatic fauna. Large woody debris is an important resource for aquatic animals providing shelter, feeding and breeding sites for aquatic fauna (NSW Fisheries, pers. comm., 1 September 2003). The placement of such material onto the bed of the lake should considerably enhance the value of the habitat for aquatic species when the area is inundated (*ibid.*).

6.1.6 Limiting Vehicular Access

Damage by vehicles can result in the compaction of soil (which reduces infiltration of water into the soil and restricts root growth, and consequently natural regeneration), the spread of weeds and disturbance to vegetation. In order to reduce the degree of disturbance to the Compensatory Wetland, vehicular access will be limited throughout mine construction and operation to authorised personnel only. Authorisation for vehicular entry into the Compensatory Wetland will be determined by the mine site managers at the time of request. Section 6.4 outlines how limiting vehicular access is expected to enhance habitats for wildlife.

6.2 REHABILITATION OF THE NEW LAKE FORESHORE

The New Lake Foreshore covers approximately 30 ha (Figure 6) and will comprise a temporary isolation bund, a lake protection bund and the lower batter of the perimeter waste emplacement, and an intervening section of lakebed between the temporary isolation bund and the lake protection bund (Figures 2 and 4). An overview of the rehabilitation of the New Lake Foreshore is provided in Sections 6.2.1 to 6.2.6. Barrick will conduct rehabilitation works on the New Lake Foreshore in accordance with the MOP and EIS as required by Consent Condition 3.6.

6.2.1 Rehabilitation Philosophy

The rehabilitation philosophy for the Project was formulated in consideration of the following factors (North Limited, 1998a):

- the location of the Project within an area acknowledged for its conservation status as an inland wetland ecosystem; and

- the need to operate and rehabilitate the proposed mine in such a way that the conservation status of the lake and its critical conservation values are preserved (North Limited, 1998a).

The rehabilitation philosophy for the Project (North Limited, 1998a) is as follows:

“To operate as a non-intrusive land user and to create stable rehabilitated landforms that increase the areas of endemic vegetation in the Project area and the status of terrestrial-aquatic habitats.”

6.2.2 Preparatory Works for Rehabilitation of the New Lake Foreshore

The temporary isolation bund will be a short-term feature used to isolate the pit from the lake during the mine construction phase while the lake protection bund is constructed. Once the lake protection bund has been constructed, the temporary isolation bund will be reworked (and breached) by light machinery when the lake is lower than the bund, to create a series of low mounds (North Limited, 1998a).

The New Lake Foreshore will be re-profiled during mine construction with the guiding influence of ecological enhancement in its design and layout. The New Lake Foreshore will be constructed with points and embayments at the lake full/dry land ecotone as opposed to a more engineered, straight line profile (North Limited, 1998a).

6.2.3 Revegetation Concepts for the New Lake Foreshore

The revegetation programme for the New Lake Foreshore has considered the micro-variations in slope, elevation and hydrology that occur (Figure 8). The overriding objective of the programme is to re-establish the vegetation alliances that would have occurred in these habitats prior to significant clearing and intensive landuse (North Limited, 1998a). Accordingly, the revegetation programme for the New Lake Foreshore will include a broad number of vegetative suites from Eucalypt woodland on the foreshore batters to Lignum/Canegrass and a variety of aquatic plant assemblages in the littoral zone (freshwater ecological community) (Figure 8).

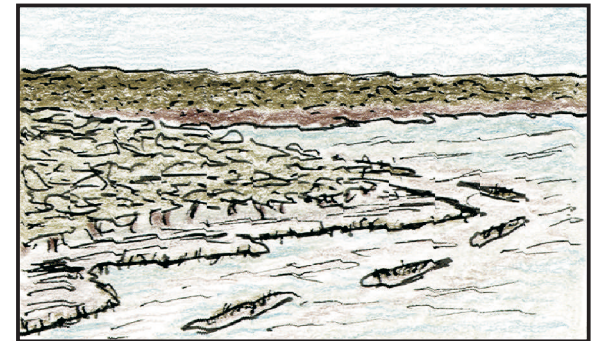
Fringing Lake Vegetation

Revegetation aims for the lake protection bund and the lower batter of the perimeter waste emplacement are to establish a River Red Gum (*E. camaldulensis*) dominated woodland with an upper strata of Yellow Box (*E. melliodora*), Grey Box (*E. microcarpa*) and Belah (*Casuarina cristata*) (Figure 8).

Freshwater Ecological Community

Revegetation for the New Lake Foreshore will create a freshwater ecological community with a focus on the establishment of waterfowl habitat. Freshwater communities, as waterfowl habitat, are comprised of four zones (Braithwaite and Norman, 1975 in North Limited, 1998a) (Figure 9), viz.:

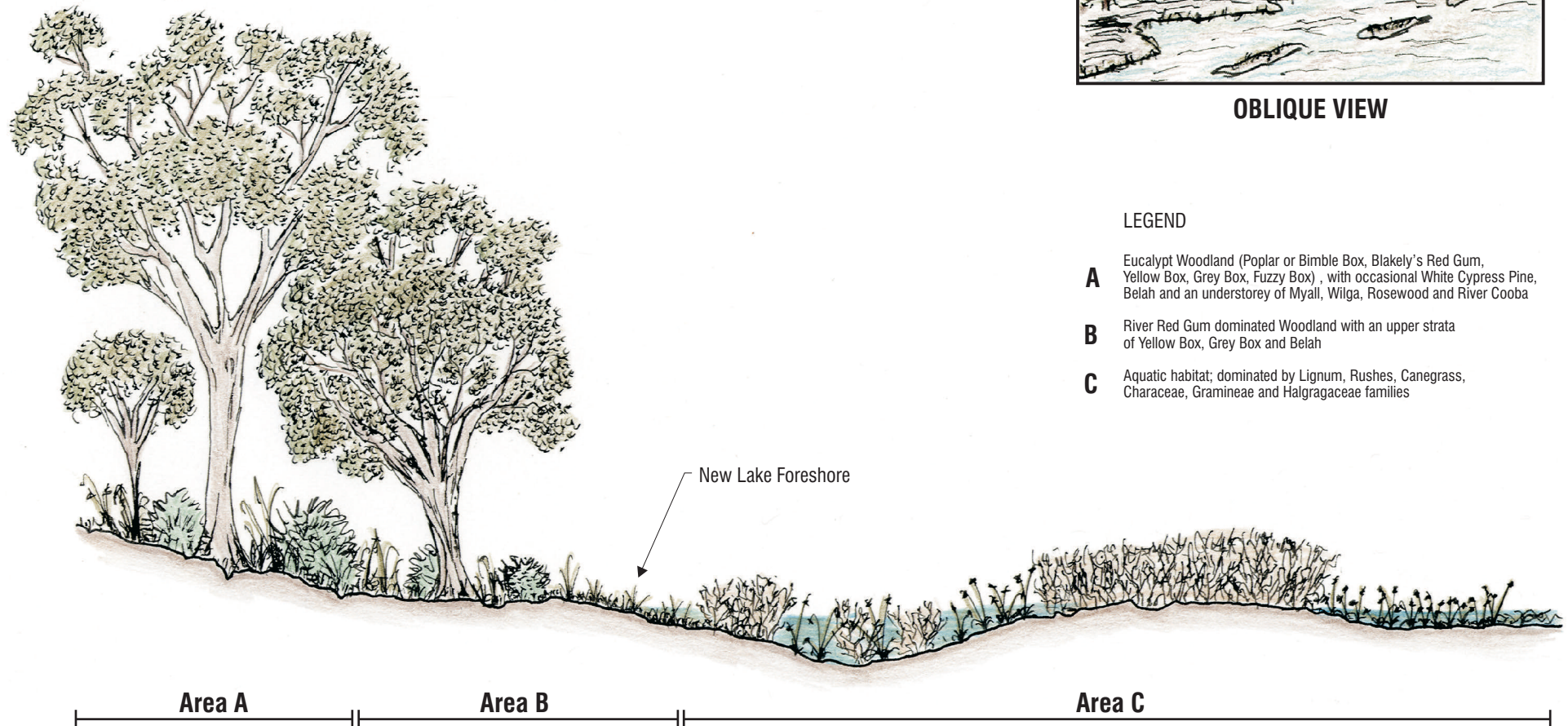
- flood zone;
- littoral zone;
- rush zone; and
- permanent water zone.



OBLIQUE VIEW

LEGEND

- A** Eucalypt Woodland (Poplar or Bimble Box, Blakely's Red Gum, Yellow Box, Grey Box, Fuzzy Box) , with occasional White Cypress Pine, Belah and an understorey of Myall, Wilga, Rosewood and River Cooba
- B** River Red Gum dominated Woodland with an upper strata of Yellow Box, Grey Box and Belah
- C** Aquatic habitat; dominated by Lignum, Rushes, Canegrass, Characeae, Gramineae and Halgragaceae families



Area A

Area B

Area C

TYPICAL SECTION

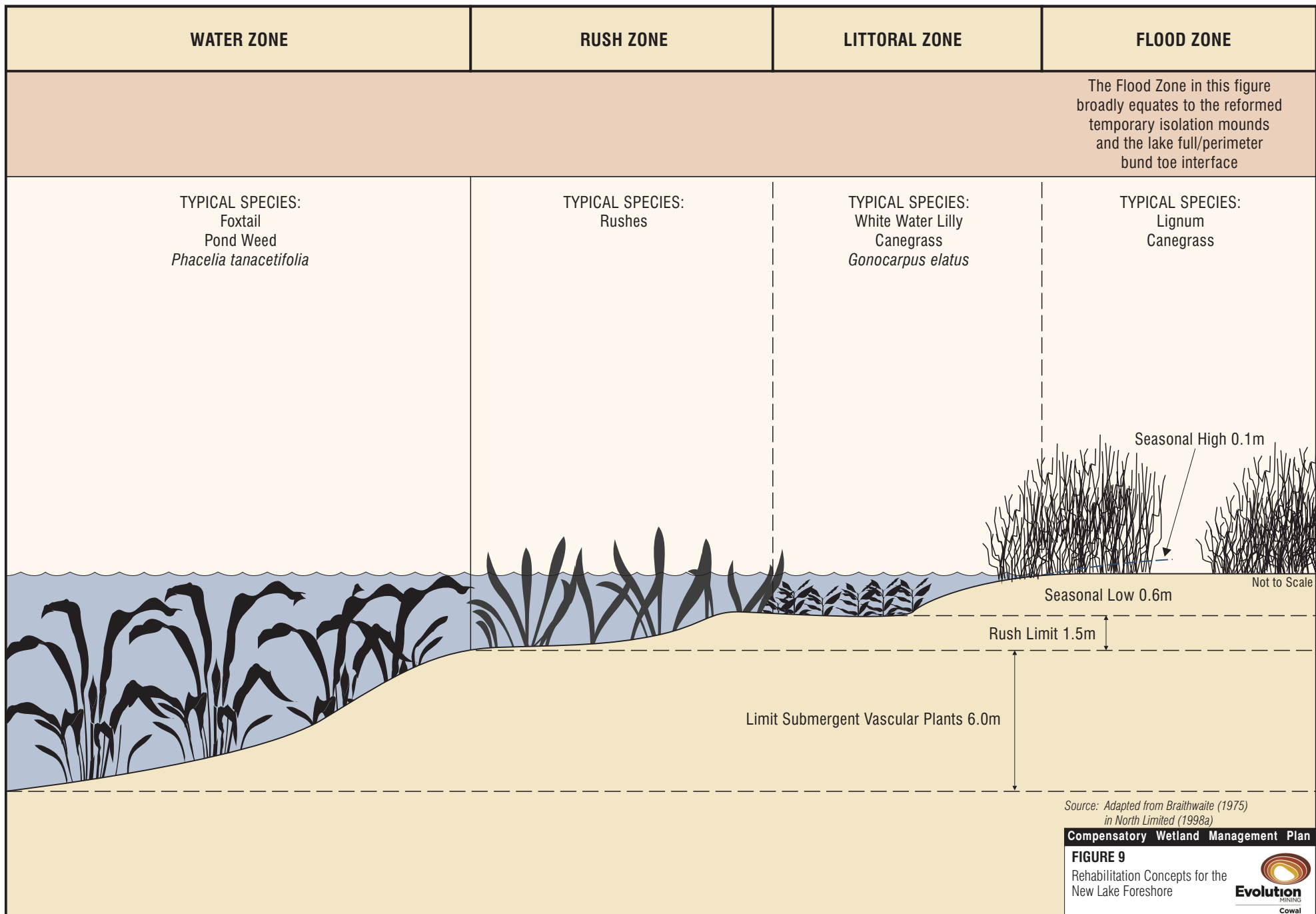
Source: North Limited (1998a)

Compensatory Wetland Management Plan

FIGURE 8

Rehabilitation of the New Lake Foreshore





These zones have been adopted as the basis for the revegetation strategy for the New Lake Foreshore with particular emphasis on the flood, littoral and rush zones. Revegetation of the water zone will be progressive with timing dependent on fluctuating lake levels and species establishment.

Water depth, permanence and regularity of inundation will determine which of the freshwater communities will occur in a given situation. A summary of each zone within the freshwater community is provided below (North Limited, 1998a).

Flood Zone

This community is a most temporary freshwater habitat. Flooding provides an immediate food source for a number of waterbird species in the form of waterborne seed and insects (Frith, 1959 in North Limited, 1998a). With the stabilisation and subsequent recession of floodwaters, the nutrient supplies in the shallow water support vigorous breeding of aquatic invertebrates and plankton (Figure 9).

Littoral Zone

Littoral communities are characteristic of temporary or seasonal swamps, where there is an absence of water turbulence. Ecological succession is the key to formation of littoral communities and their utilisation by waterfowl (Braithwaite and Norman, 1975 in North Limited, 1998a). The drying out of the floor of the littoral zone is essential. The bottom is consolidated for optimum germination of aquatic plants and nutrients are released from oxidation of organic matter on exposure to air.

Inundation causes an effect not dissimilar to a flood, the differences being water level fluctuations are usually less rapid, the inundation occurs over a longer period, there is less turbulence from water currents and the water has time to clear as suspended solids settle (Figure 9). With an adequate nutrient supply these factors are conducive to the growth of a characteristically vigorous plant community (Families Characeae, Nymphaeaceae, Alismataceae, Gramineae and Haloragaceae) and accompanying invertebrate fauna.

Water snails (Physastra) and caddisfly (Trichoptera) larvae for example, can proliferate in this community type (Braithwaite and Frith, 1969 in North Limited, 1998a).

Rush Zone

Rushes (eg. *Eleocharis* sp.) can be important food plants for waterfowl, particularly in times of drought (North Limited, 1998a). The New Lake Foreshore rehabilitation programme will aim to establish a variety of rush species in this zone (Figure 9).

Water Zone

A wide variety of aquatic plants (mainly of the Families Potamogetonaceae, Hydrocharitaceae, Ceratophyllaceae and Haloragaceae) occur in water that is too deep for the establishment of rushes. The main requirements for establishment appear to be water clarity, absence of turbulence and reasonably firm substrates (Frey, 1966 in North Limited, 1998a). Minor areas of this zone may occur within the New Lake Foreshore, particularly after consecutive wet seasons (Figure 9).

6.2.4 Revegetation Methods

The New Lake Foreshore will primarily be revegetated using native seedlings propagated on-site or obtained from a supplier. Suppliers of revegetation species are expected to be local contractors or specialist nurseries.

Planting of terrestrial vegetation (ie. the Eucalypt woodland rehabilitation area shown in Figure 8) will commence after construction of the New Lake Foreshore (ie. when the lake level is lower than the temporary isolation bund during mine operation). Planting of the four zones of freshwater ecological community (discussed in Section 6.2.3) will be conducted opportunistically, when edaphic conditions (ie. soil moisture content, lake level and season) are suitable.

Soil containing a viable seed bank of native waterplant species may be used to regenerate wetland vegetation (DLWC, 1998). Topsoil resources removed from wetland areas and stockpiled during mine construction will be utilised in the rehabilitation of the New Lake Foreshore.

Revegetation methods will be reviewed and revised annually in consideration of the results of revegetation trials (Section 6.2.6).

6.2.5 Species Selection

In accordance with state and regional management strategies such as those outlined in the NSW Fisheries Policy and Guidelines for Aquatic Habitat Management and Fish Conservation 1999, MLRVP, the Land and Water Management Plan for Lake Cowal and Associated Wetlands and Consent Condition 4.3, native endemic species will be selected for use during revegetation trials.

Revegetation species for the New Lake Foreshore will also be selected in consideration of the lake's hydrological regime (wetting and drying cycles), species performance during revegetation trials (Section 6.2.6) and suitability to substrate conditions. Species selection will be an iterative process, whereby revegetation trials and monitoring (Sections 6.2.6 and 8.1) will provide information as to the most appropriate species for revegetation.

Table 1 lists species that are potentially suitable for revegetation of the New Lake Foreshore. Species suitable to specific revegetation areas (ie. Eucalypt woodland and the four zones of the freshwater ecological community shown in Figures 8 and 9) will be refined through continual monitoring (Section 8.1) and revegetation trials (Section 6.2.6).

**Table 1
Potential Revegetation Species**

Scientific Name	Common Name	Scientific Name	Common Name
<i>Eucalyptus camaldulensis</i>	River Red Gum	<i>Potamogeton ochneatus</i>	Pond Weed
<i>Eucalyptus melliodora</i>	Yellow Box	<i>Potamogeton perfoliatus</i>	Pond Weed
<i>Eucalyptus microcarpa</i>	Grey Box	<i>Potamogeton tricharinatus</i>	Pond Weed
<i>Casuarina cristata</i>	Belah	<i>Ottelia ovalifolia</i>	Swamp Lily
<i>Alectryon oleifolius</i>	Rosewood	<i>Nymphaea alba</i>	White Water Lily
<i>Gonocarpus elatus</i>	Hill Raspwort	<i>Phacelia tanacetifolia</i>	-
<i>Danthonia</i> sp.	Wallaby Grasses	<i>Ceratophyllum demersum</i>	Hornwort
<i>Chloris truncate</i>	Windmill Grass	<i>Rumex brownii</i>	Slender Dock
<i>Austrostipa aristiglumis</i>	Plains Grass	<i>Rumex tenax</i>	Shiny Dock
<i>Austrostipa scabra</i>	Speargrass	<i>Muehlenbeckia florulenta</i>	Lignum
<i>Austrostipa densifolia</i>	Foxtail Speargrass	<i>Eleocharis cylindrostachys</i>	A Rush
<i>Eragrostis parviflora</i>	Weeping Lovegrass	<i>Eleocharis plana</i>	A Rush
<i>Enteropogon acicularis</i>	Curly Windmill Grass	<i>Eleocharis pallens</i>	A Rush
<i>Sporobolus creber</i>	Western Rats Tail Grass	<i>Juncus aridicola</i>	Tussock Rush
<i>Eragrostis australasica</i>	Canegrass	<i>Juncus flavidus</i>	Tussock Rush

**Table 1 (Continued)
Potential Revegetation Species**

Scientific Name	Common Name	Scientific Name	Common Name
<i>Sida intricata</i>	-	<i>Juncus usitatus</i>	Common Rush
<i>Marsilea drummondii</i>	Common Nardoo	<i>Cyperus gymnocaulos</i>	Spiny Sedge
<i>Myriophyllum verrucosum</i>	Water Milfoil	<i>Baumea juncea</i>	-
<i>Myriophyllum crispatum</i>	Water Milfoil	native species in the Families Characeae, Nymphaenaceae, Alismataceae, Gramineae, Haloragaceae, Potamogetonaceae, Hydrochantaceae, Ceratophyllaceae	
<i>Myriophyllum variifolium</i>	Water Milfoil		
<i>Pilularia novae-hollandiae</i>	Austral Pillwort		
<i>Potamogeton crispus</i>	Pond Weed		

Source: Anne Clements and Associates (1995), Charles Sturt University (1997) and Greening Australia (pers. comm., 2003)

6.2.6 Revegetation Trials

As a component of rehabilitation of the New Lake Foreshore a number of revegetation trials will be undertaken. The revegetation trials will be drafted in the MOP and will include:

- evaluation of the relative revegetation establishment rates of native plant species;
- assessment of various establishment procedures and suitability of propagation methods; and
- determination of the New Lake Foreshores' suitability as revegetation media.

Rehabilitation will be an iterative process, whereby the results of the revegetation trials and monitoring will be used to provide feedback into the most appropriate species, revegetation and propagation methods, and substrate suitability for the rehabilitation of the New Lake Foreshore.

The revegetation trials will commence for the terrestrial component after the construction of the New Lake Foreshore (ie. when the lake level is lower than the temporary isolation bund during mine operation). Revegetation trials for the freshwater component will be conducted opportunistically, when edaphic conditions (ie. soil moisture content, lake level and season) are suitable.

Further to the above, consideration will be given to trialling the establishment of regionally endangered species such as the Austral Pillwort (*Pilularia novae-hollandiae*).

The revegetation trials will be conducted in dedicated areas on the New Lake Foreshore as determined by the Environmental Manager, which will not be disturbed subsequent to establishment. The trials will be designed by a suitably qualified person(s). The results of the trials will be reported in the AEMR (Section 12).

6.3 ENHANCEMENT OF REMAINING WETLAND AREAS WITHIN ML 1535

Areas of wetland situated within ML 1535 not included in the Compensatory Wetland or the New Lake Foreshore will also be enhanced as a component of this CWMP. The remaining areas of wetland within ML 1535 comprise approximately 620 ha (Figure 6).

Enhancement measures will include:

- the prevention of stock entry into the enhancement area to encourage the natural regeneration of native plants (Sections 6.1.1);
- measures to minimise the spread of weeds and competition with native flora (Section 6.1.3);
- measures to minimise the occurrence of feral pests (Section 6.1.4); and

- limiting vehicular access (Section 6.1.5).

Monitoring will be conducted in accordance with the monitoring programme in Section 8.1 of this Plan. The monitoring programme will provide feedback as to the most appropriate weed and pest control methods and timing, and the performance of enhancement measures (ie. prevention of stock entry into the enhancement area and limiting vehicular access).

6.4 MEASURES TO IMPROVE HABITATS FOR WILDLIFE

The wetland rehabilitation and enhancement measures discussed in Sections 6.1 to 6.3 aim to improve habitats for wildlife. In accordance with Consent Condition 3.10(A)(ii)(c), Sections 6.4.1, 6.4.2 and 6.4.3 discuss how the wetland rehabilitation and enhancement measures will improve habitats for wildlife including waterbirds, fish and aquatic organisms. Monitoring will be conducted to assess whether the rehabilitation and enhancement measures are improving habitat for wildlife. The monitoring programme is detailed in Section 8.1.

6.4.1 Waterbirds

Waterbirds consist of four main feeding groups; piscivores, herbivores, invertebrate feeders, and omnivores (Kingsford, 1998). Each feeding group focuses on a different food source. Enhancing flora species diversity, abundance and community structure through natural regeneration and revegetation will improve habitat for waterbirds by providing a variety of food sources.

Waterbirds require breeding sites that are concealed by predators such as feral cats and foxes (*ibid.*). The measures used to increase vegetation cover (ie. prevention of stock entry into the wetland areas and natural regeneration, revegetation, weed and pest control, and limiting vehicular access) within the Compensatory Wetland have the potential to provide secluded areas for bird breeding (*ibid.*).

Pest control measures aim to reduce the occurrence of predators (eg. Fox) and thereby reduce the risk of predation on waterbirds. Rabbits can alter floral species diversity and can retard revegetation and natural regeneration (DLWC, 2001). Pest control will aid revegetation establishment and habitat enhancement, providing potential habitat for waterbirds.

6.4.2 Fish

Natural regeneration and revegetation has the potential to enhance habitat opportunities for fish by increasing the variety and abundance of shelter, food and breeding resources (DLWC 2001; Frith et al., 1969; Braithwaite & Norman, 1974, 1975). Hawking (1991 and 1995) demonstrated that vegetation itself provides feeding resources for fish, and increases aquatic organism diversity and abundance which provide additional feeding resources. Habitat enhancement through natural regeneration and revegetation also provides fish with shelter from predators (*ibid*; DLWC 2001).

Rabbits, as described above, can alter floral species diversity and retard regeneration (DLWC 2001). Pest control will aid vegetation establishment and thereby improve habitat for fish fauna.

In addition, the placement of root balls, logs and limbs collected during Project vegetation clearance activities will be dispersed within the Compensatory Wetland area, thereby providing potential shelter, feeding and breeding habitat for fish.

6.4.3 Aquatic Organisms

Hawking (1991 and 1995) demonstrated that vegetation was important in order to increase aquatic organisms species abundance and diversity. Material falling from emergent vegetation provides potential food resources for aquatic organisms (eg. crustaceans and aquatic insects). Enhancing flora species diversity, abundance and community structure through natural regeneration and revegetation will improve habitat for aquatic organisms by providing a variety of food sources.

In addition, the placement of root balls, logs and limbs collected during Project vegetation clearance activities will be dispersed within the Compensatory Wetland area, providing additional habitat resources for aquatic organisms.

7 MEASURES TO MANAGE WETLANDS WITHOUT ADVERSELY IMPACTING ADJOINING PRIVATE PROPERTIES

In accordance with Consent Condition 3.10(A)(ii)(b), Sections 7.1 to 7.4 provide detail of the measures that will be implemented to manage the enhanced wetlands without adversely impacting adjoining private properties. Section 7.5 describes the procedures that will be implemented if the measures implemented to manage wetlands impact on adjoining private properties.

7.1 CONSULTATION WITH NEIGHBOURING LANDHOLDERS

A CEMCC will be established for the Project in accordance with Consent Condition 8.7 (Section 10.1). The CEMCC will provide opportunities for members of the community to attend CEMCC meetings to discuss specific issues relevant to them, including CWMP-related issues. This will be achieved by landholders making a request to the CEMCC regarding a particular issue, or by the landowner registering a complaint in the complaints register. Landowners who register complaints will be invited to join in discussion of the issue at the next CEMCC meeting.

7.2 WEED CONTROL

Implementation of measures that favour the restoration of healthy and vigorous native vegetation (such as preventing livestock from entering wetland areas and encouraging natural regeneration) is considered to be an effective method of weed management (NPWS pers. comm., 27 August 2003). The wetland rehabilitation and enhancement measures will facilitate the control of weeds within ML 1535 wetland areas.

In addition to the rehabilitation and enhancement measures, weed control within ML 1535 wetland areas will be conducted in accordance with the applicable procedures detailed in the LMP. Control of weeds in the Compensatory Wetland in accordance with the LMP will limit adverse weed effects at neighbouring private properties that could potentially occur if no weed controls were implemented. An overview of the weed management strategy and procedures from the LMP is provided below.

The strategy for management of weeds on Barrick's landholdings includes the following:

- identification of weeds by annual site inspections;
- communication with other landholders/leaseholders and regulatory authorities to keep weed management practices in line with regional weed control activities;
- mechanical removal of identified weeds and/or the application of approved herbicides in authorised areas (herbicide use in wetland areas will be strictly controlled);

- implementing follow-up site inspections to determine the effectiveness of the weed control measures; and
- where practicable, prevention of the establishment of new weeds in Barrick’s landholdings by minimising seed transport of weed species to and from the Project during mine construction and operation through the use of a vehicle wash bay.

Physical removal and chemical application are the main weed control methodologies. In some cases, control can be effective by planting grasses that out-compete the weeds. The following procedures will be adopted where necessary:

- Any species of uncertain classification will be sampled and identified by Bland Shire Council (BSC) or local NSW Agriculture officers. Advice will be sought from BSC for the control of any new identified weeds on Barrick’s landholdings.
- Notification of BSC if a noxious weed is identified on Barrick’s landholdings with a W1 classification (notifiable weeds).
- Mechanical/hand removal of identified weeds and/or recommended chemical (herbicide) control.
- If herbicides are used, permission will be sought from the occupiers of the land.
- Weed control measures will generally be undertaken when conditions are favourable (ie. after rainfall and before flower set).

Herbicide Use

Typical herbicide application techniques (DLWC, 2001) that will be considered include:

- spraying (spot application or over a broad area of infestation);
- cut and paint (applied to weed trees);
- stem injection (applied to weed trees);
- frilling (application to a series of notches around the trunk of a large weed plant); and
- stem-painting (useful for vines and smaller weed plants).

The use of herbicides within the Compensatory Wetland will be strictly controlled. Within these areas, physical removal methods will be employed, where practicable. Where physical control methods are not suitable, a herbicide registered for use in aquatic situations by the National Registration Authority may be used. This registration will be indicated on the label of the herbicide (DLWC, 1998).

7.3 PEST CONTROL

Control of pest animals is an important component of habitat enhancement and land management as described in Section 6.1.4. Pest control on Barrick-owned land will be conducted in accordance with the procedures detailed in the LMP and will assist in minimising potential adverse impacts on adjoining private landholdings associated with pests. Barrick will place emphasis on the prevention of incursion of pest animal species as well as post incursion treatment in accordance with the requirements of the Condobolin Rural Lands Protection Board (CRLPB).

The Barrick employees responsible for land management will implement pest control measures on Barrick-owned land, including wetland areas within ML 1535, in consultation with the CRLPB and NSW Agriculture, and in co-ordination with adjacent landholders. Pest control activities will include:

- regular property inspections to assess the status of pest populations within Barrick-owned land, including wetland areas within ML 1535, and the need for the implementation of appropriate control strategies;
- pest control for declared pests (ie. rabbits, pigs and wild dogs) and foxes in accordance with the RLP Act; and
- post control inspections to assess the effectiveness of the control measures implemented and review the need for alternative or additional control methods.

Barrick will undertake pest control operations in conjunction with adjacent landholders/leaseholders for more effective pest control in accordance with CRLPB and NSW Agriculture recommendations.

NSW Agriculture has developed a Draft Vertebrate Pest Control Manual (NSW Agriculture, 2003) which is appended to the LMP. The Vertebrate Pest Control Manual provides an overview of pest control requirements, the use of poisons and fumigants as well as the biology and general control procedures for rabbits, feral pigs, wild dogs, mice, foxes and goats. Barrick personnel responsible for land management will control pest species in accordance with this manual, and periodically update control methods as required by the CRLPB and NSW Agriculture.

Typical vertebrate pest control methods that can be employed are summarised in Table 2.

**Table 2
Summary of Vertebrate Pest Control Measures**

Pest	Typical Controls
Rabbit	<ul style="list-style-type: none"> • poisoning/baiting (with 1080/pindone) • destruction of warrens (ripping and/or blasting) • fumigation of warrens; • flooding of warrens; • removal of harbouring vegetation (eg. blackberry); • shooting, trapping and other direct physical control methods.
Feral Pig	<ul style="list-style-type: none"> • poisoning (with 1080) • shooting • trapping
Wild Dog	<ul style="list-style-type: none"> • poisoning (with 1080) • trapping • shooting • fencing
Fox	<ul style="list-style-type: none"> • poisoning (with 1080) • shooting
Mouse	<ul style="list-style-type: none"> • barriers • traps • encouraging raptors • baiting/poisoning
Feral Goat	<ul style="list-style-type: none"> • mustering • trapping • shooting

After: NSW Agriculture, (draft) 2003

In addition, NPWS have indicated that the use of 1080 for the control of feral pigs requires high doses of 1080 in baits such as grain and is considered a significant risk to non-target species (NPWS, pers. comm., 27 August, 2003). NPWS suggests, other methods such as trapping and shooting of feral pigs are preferred methods. Barrick will utilise these preferred methods for pig control where practicable.

Notwithstanding, the use of 1080 for the control of foxes (with appropriate controls to minimise risks to non-target fauna) is considered to be the most effective and target specific method of fox control currently available (NPWS, 2001). The *Threat Abatement Plan for Predation by the Red Fox* (NPWS, 2001) will be used to guide fox control in accordance with Section 4.4.2 of the EIS (North Limited, 1998).

As described in the LMP, to minimise the risks to the wetland, poisoning of vertebrate pests will not be employed within the Compensatory Wetland area unless Barrick is specifically directed to do so by the CRLPB in accordance with relevant permits and the requirements of the RLP Act, *Pesticides Act, 1999* and the *Federal Agricultural and Veterinary Chemicals Code Act, 1994* (the Agvet Code).

7.4 REHABILITATION AND REVEGETATION MEASURES

The rehabilitation and enhancement measures (Section 6) are not expected to adversely impact on adjoining private properties. In particular, Cumbungi (*Typha* sp.) is not included in the list of potential revegetation species (Table 1) and will not be planted as discussed below.

Cumbungi (Typha sp.)

Concerns were raised by irrigation authorities and neighbouring landholders during the first session of the Commission of Inquiry regarding the use of Cumbungi (*Typha* sp.) in the rehabilitation programme for the New Lake Foreshore (North Limited, 1998b).

Local landholders were concerned that Cumbungi would be introduced into surrounding agricultural areas (Train, 1999). Cumbungi eradication programmes have previously been implemented in the Lake Cowal area in order to prevent the plant entering the north-east section of the lake from the Jemalong/Wyldes Plains Irrigation Areas drainage system (*ibid.*).

Cumbungi was intended to be used in the rehabilitation of the New Lake Foreshore (North Limited, 1998a) as it can be an important food plant for wildlife, particularly in times of drought. The seeds are important to many waterfowl and in the south, the new shoots and leaf bases of *Typha* are a major food of Black Swans (Frith *et al.*, 1969 in North Limited, 1998a). However due to the concerns raised, Barrick does not propose to use this species for revegetation (Train, 1999). A list of potential revegetation species has been provided in Table 1.

7.5 PROCEDURES TO BE IMPLEMENTED IN THE EVENT MEASURES IMPLEMENTED TO MANAGE WETLANDS IMPACT ON ADJOINING PRIVATE PROPERTIES

In accordance with Consent Condition 10.1(a), a complaints register will be maintained by the Environmental Manager. The process for the handling of complaints and resolution of disputes is outlined in Section 10.2 and will be utilised to determine whether the measures implemented to manage wetlands are impacting on adjoining private properties and appropriate actions.

8 MONITORING AND MAINTENANCE

A monitoring programme will be implemented to assess the success of the wetland rehabilitation and enhancement measures in improving wetland habitats for wildlife and to determine the need for maintenance and/or contingency measures. Maintenance measures that may be identified by the monitoring programme are outlined in Section 8.2. The monitoring programme will be coordinated by the Environmental Manager and conducted by suitably qualified person(s). The results of the monitoring programme will be included in the AEMR (Section 12). The monitoring programme includes the assessment of natural regeneration, revegetation and faunal activity, as detailed in Sections 8.1.1 to 8.1.3. In addition to the CWMP monitoring, Barrick will be continuing baseline biological monitoring in the waters of Lake Cowal in accordance with Consent Condition 8.2(a)(iii) and the Surface Water, Groundwater, Meteorological and Biological Monitoring Programme.

8.1 MONITORING PROGRAMME

8.1.1 Natural Regeneration

Subsequent to the removal of livestock, monitoring will be conducted to determine whether natural regeneration is occurring within those areas subject to enhancement measures. The monitoring of natural regeneration will be conducted annually (when the area is not inundated) following the removal of livestock. The survey design and techniques that will be utilised to monitor natural regeneration are detailed below.

Survey Design

The survey design is summarised in Table 3. Subsequent to the removal of livestock, three survey sites (ie. Compensatory Wetland, remaining areas of wetland within ML 1535 and a control site) will be established to monitor the extent of natural regeneration within the Compensatory Wetland and remaining areas of wetland within ML 1535. The control survey site (Site GW) will be located within areas subject to grazing and will serve as a reference point against which natural regeneration can be assessed. Four permanent survey plots will be established within each survey site to obtain quantitative data on flora species diversity and abundance (Table 3).

**Table 3
Summary of Survey Design**

Prevention of Stock Entry/Control	Survey Sites	Survey Plots
Enhancement (ie. livestock prevented from entering wetland areas)	Compensatory Wetland (Site CW)	CW1 to CW4
	Remaining areas of Wetland within ML 1535 (Site RW)	RW1 to RW4
Control (ie. areas subject to grazing)	Wetland areas subject to grazing (Site GW)	CW1 to CW4

Flora Survey Techniques

Four permanent survey plots (50 x 20 m) will be established within each survey site (ie. Site CW, Site RW and Site GW). The plots will be marked on each corner by white-painted 600 x 50 x 25 mm surveyor pegs. The following methods will be utilised to obtain quantitative data on flora species diversity and abundance within each 50 x 20 m survey plot:

- Each flora survey plot will be systematically searched to compile a list of vascular plant species observed within the plot.

- A count will be made of all individuals of each tree and shrub species occurring within the plot.
- The ground layer (ie. grasses and herbs) will be sampled using four permanent 5 x 1 m quadrats, with two quadrats placed at each end of the 50 x 20 m quadrat. Every ground layer species recorded within the 5 x 1 m quadrats will be rated for its percentage cover of the ground.

Survey Results

Species presence and abundance data recorded by the surveys will be assessed by suitably qualified person(s) to determine whether natural regeneration is occurring. In the event that natural regeneration is not considered to be occurring, revegetation activities will be determined and implemented by suitably qualified person(s) and co-ordinated by the Environmental Manager.

8.1.2 Revegetation

Monitoring will be conducted to determine whether vegetation planted within the New Lake Foreshore (and where applicable, within the Compensatory Wetland and remaining wetland areas within ML 1535) is establishing and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control or weed and pest control).

Visual observations will be made on a regular basis to assess whether plants are growing and to assess the health of planted vegetation. This information will be utilised to determine the need for supplementary plantings.

In addition, a number of survey plots (50 x 20 m) will be monitored annually following the commencement of revegetation activities (when the area is not inundated) to obtain quantitative data on species diversity and abundance. Specifically:

- Each flora survey plot will be systematically searched to compile a list of vascular plant species observed within the plot.
- A count will be made of all individuals of each tree and shrub species occurring within the plot.
- The ground layer will be sampled using four permanent 5 x 1 m quadrats, with two quadrats placed at each end of the 50 x 20 m quadrat. Every ground layer species recorded within the 5 x 1 m quadrats will be rated for its percentage cover of the ground.

In the event that revegetation is not performing well, the revegetation programme will be modified using the results of the monitoring programme. For example, if the survivorship of a particular species is low, alternative plant species will be utilised.

8.1.3 Faunal Activity

Incidental observations of fauna activity within ML 1535 wetland areas will be documented during weekly inspections of ML 1535. Surveys will also be conducted to determine the usage of wetland areas by wildlife, as outlined below.

Compensatory Wetland and Remaining Wetland Areas within ML 1535

Waterbird surveys will be conducted by Year 5 of mine operations within the Compensatory Wetland and remaining wetland areas within ML 1535, and thereafter, annually. Monitoring by Year 5 of mine operations allows any revegetation and natural regeneration time to establish and provide improved habitat for wildlife. A number of survey transects will be established within the Compensatory Wetland and remaining wetland areas within ML 1535 to survey waterbird diversity and abundance. The location of transects will be selected in consideration of the establishment and progress of any revegetation and natural regeneration.

In addition, fish fauna surveys will be conducted within the Compensatory Wetland and remaining wetland areas within ML 1535, no more than annually, when the lake is full (ie. at full storage level). Survey methods may include seine netting.

The monitoring of wildlife within the Compensatory Wetland and remaining wetland areas within ML 1535 will be detailed during the review of the CWMP, which is required to be revised/updated at least every five years in accordance with Consent Condition 3.2.

New Lake Foreshore

In accordance with the Project EIS, there will be an emphasis placed on the monitoring of waterfowl, native fish and European Carp within the New Lake Foreshore area.

Waterbird surveys will be conducted annually after the completion of its construction. The monitoring programme will utilise the existing waterbird survey transect within ML 1535. Additional survey transects will be established within the New Lake Foreshore area. The location of transects will be selected in consideration of the vegetative suites that are aimed to be established by the revegetation programme. The monitoring programme will survey waterbird diversity and abundance.

In addition, fish fauna surveys will be conducted within the New Lake Foreshore, no more than annually, when the lake is full (ie. at full storage level). Survey methods may include seine netting.

A survey of terrestrial fauna (ie. birds, mammals, amphibians and reptiles) will also be conducted of the New Lake Foreshore once vegetation has established and before year six of mine operations. Survey methodology may include visual and opportunistic observations, active searches, spotlighting, identification of bird calls, identification of amphibian calls, Elliott trapping and electronic call detection. The frequency of monitoring thereafter will be determined by the MREMP (North Limited, 1998a). The monitoring programme will be detailed during the review of the CWMP, which is required to be revised/updated at least every five years in accordance with Consent Condition 3.2.

8.2 MAINTENANCE

The monitoring programme will determine the need for maintenance activities. A variety of maintenance activities may be conducted to facilitate the enhancement of wetland habitats. Routine maintenance measures may include:

- supplementary plantings to replace any losses;
- control of erosion and sedimentation (in accordance with the Project Erosion and Sediment Control Plan);
- the use of tree guards to provide protection against wind, frost, vermin and herbivores;
- weed and pest control (in accordance with the LMP); and
- limiting vehicle access.

9 MINE CLOSURE AND LEASE RELINQUISHMENT

Upon the cessation of mining operations, tenure of ML 1535 will be maintained by Barrick until such time as lease relinquishment criteria (required by DMR and DLWC [now part of DIPNR]) are satisfied.

Prior to the cessation of mining operations, Barrick will develop a strategy for the long-term landuse of its landholdings, including the wetland areas within ML 1535. The strategy for long-term landuse of the Project area and Barrick-owned land will be submitted by Year 7 of mining operations or five years before mine closure, whichever is the earlier. The strategy will be developed in consultation with the DLWC (now a part of DIPNR), Environmental Protection Authority (EPA), NPWS, BSC and to the satisfaction of the Director-General.

The strategy will include: appropriate landuses (ie. conservation, agriculture or recreation); long-term management of the area; environmental impacts of any uses; and maintenance of necessary drainage characteristics and other features provided on the site. The strategy will also identify the enhancement measures to be undertaken within the Compensatory Wetland area following closure of the mine. Enhancement measures post closure will be developed in consideration of the progress of the Compensatory Wetland and the results of the CWMP monitoring programme. Enhancement measures may include weed and pest control, revegetation and stock access management. Determination of the enhancement measures will include consideration of best practice environmental management and new technologies.

10 CONSULTATION AND COMPLAINTS RECEIPT

10.1 COMMUNITY ENVIRONMENTAL MONITORING AND CONSULTATIVE COMMITTEE

CEMCC will be set up for the Project in accordance with Consent Condition 8.7. The condition is reproduced below:

8.7 Community Consultative Committee

Community Environmental Monitoring and Consultative Committee (CEMCC)

The Applicant shall:

- (i) *establish a Community Environmental Monitoring and Consultative Committee and ensure that the first meeting is held before the commencement of construction works. Selection of representatives shall be agreed by the Director-General and the appointment of an independent Chairperson shall be to the satisfaction of the Director-General in consultation with the Applicant and BSC. The Committee shall comprise two (2) representatives of the Applicant (including the Environmental Officer), one (1) representative of BSC, one (1) representative of the Lake Cowal Environmental Trust (but not a Trust representative of the Applicant), four community representatives (including one member of the Lake Cowal Landholders Association), to monitor compliance with conditions of this consent and other matters relevant to the operation of the mine during the term of the consent.*

Representatives from relevant government agencies (including DUAP) may be invited to attend meetings as required by the Chairperson. The Committee may make comments and recommendations about the implementation of the development and environmental management plans. The Applicant shall ensure that the Committee has access to the necessary plans for such purposes. The Applicant shall consider the recommendations and comments of the Committee and provide a response to the Committee and Director-General.

- (ii) *The Applicant shall, at its own expense:*
 - a) *nominate two (2) representatives to attend all meetings of the Committee;*
 - b) *provide to the Committee regular information on the progress of work and monitoring results;*
 - c) *promptly provide to the Committee such other information as the Chair of the Committee may reasonably request concerning the environmental performance of the development;*
 - d) *provide access for site inspections by the Committee;*
 - e) *provide meeting facilities for the Committee, and take minutes of Committee meetings. These minutes shall be available for public inspection at BSC within 14 days of the meeting.*
- (iii) *The Applicant shall establish a trust fund to be managed by the Chair of the Committee to facilitate the functioning of the Committee, and pay \$2000 per annum to the fund for the duration of gold processing operations. The annual payment shall be indexed according to the Consumer Price Index (CPI) at the time of payment. The first payment shall be made by the date of the first Committee meeting. The Applicant shall also contribute to the Trust Fund reasonable funds for payment of the independent Chairperson, to the satisfaction of the Director-General.*
- (ix) *By year 5 of mining operations the Applicant shall, in consultation with CEMCC, identify and discuss post mining issues, particularly in relation to reduced employment and consequent impacts on West Wyalong, and develop a plan for the phase out of the mine workforce. The plan will be reviewed during the year of mining operations following the scale down of the year 8 mining operation workforce. The impacts of the year 8 scale down shall be monitored by the Applicant and results used in planning for full mine closure.*
- (x) *The Applicant shall, in consultation with the CEMCC, develop appropriate strategies to support activities which promote special interest tourism related to the co-existence of mining and the Lake Cowal environment.*

The CEMCC will comprise representatives of BSC, LCFL, two Barrick representatives and four community representatives including one from the Lake Cowal Landholders Association.

The CEMCC will provide opportunities for members of the community to attend CEMCC meetings to discuss specific issues relevant to them, including Compensatory Wetland-related issues. This will be achieved by landholders making a request to the CEMCC regarding a particular issue, or by the landowner registering a complaint in the complaints register. Landowners who register complaints will be invited to join in discussion of the issue at the next CEMCC meeting.

Items of discussion at these meetings may include mine progress, environmental monitoring and rehabilitation activities.

10.2 COMPLAINTS REGISTER

A process for the handling of complaints, resolution of disputes and land acquisition in the event of affectation is provided below in accordance with the requirements of Project consent conditions and to facilitate prompt and comprehensive responses to any community concerns.

A complaints register will be maintained by the Environmental Manager in accordance with Consent Condition 10.1(a).

The condition is reproduced below:

10.1 Community Consultation (including Aboriginal community)

(a) Complaints

The Environmental Officer (refer condition 3.1) shall be responsible:

- (i) *for receiving complaints with respect to construction works and mine operations on a dedicated and publicly advertised telephone line, 24 hours per day 7 days per week, entering complaints or comments in an up to date log book, and ensuring that a response is provided to the complainant within 24 hours; and*
- (ii) *providing a report of complaints received every six months throughout the life of the project to the Director-General, BSC, EPA, DMR, and CEMCC, or as otherwise agreed by the Director-General. A summary of this report shall be included in the AEMR (condition 9.2(a)).*

Information recorded in the complaints register with respect to each complaint will include:

- date of complaint;
- name, address and telephone number of complainant;
- nature of complaint; and
- response action taken to date.

An initial response will be provided to the complainant within 24 hours. Preliminary investigations into the complaint will commence within 48 hours of complaint receipt.

11 INDEPENDENT ENVIRONMENTAL AUDIT

An IEA will be conducted in accordance with Consent Condition 8.8 and may include Compensatory Wetland related issues. The condition is reproduced below:

8.8 Third Party Monitoring/Auditing

(a) *An Independent Environmental Audit shall be completed:*

- *six monthly during construction;*
- *12 months after commencement of ore processing;*
- *then every three years thereafter until decommissioning of the mine and ore processing operations respectively, or as otherwise directed by the Director-General.*

The Applicant shall conduct an environmental audit of the mining and infrastructure areas of the development in accordance with ISO 14010 - Guidelines and General Principles for Environmental Auditing, and ISO 14011 - Procedures for Environmental Auditing (or the current versions), and in accordance with any specifications required by the Director-General. Copies of the report shall be submitted by the Applicant to the Director-General, BSC, EPA, DLWC, DMR, NPWS and CEMCC within two weeks of the report's completion for comment.

(i) *The audit shall:*

- a. *assess compliance with the requirements of this consent, licences and approvals;*
- b. *in the event of any non-compliance, report on the effectiveness of the environmental management of the mine as it may relate to the area of non-compliance;*
- c. *be carried out at the Applicant's expense; and*
- d. *be conducted by a duly qualified independent person or team approved by the Director-General in consultation with BSC and CEMCC.*

- (ii) *The Director-General may, after considering any submission made by the relevant government agencies, BSC and CEMCC on the report, notify the Applicant of any requirements with regard to any recommendations in the report. The Applicant shall comply with those reasonable requirements within such time as the Director-General may require.*

(b) Independent Monitoring Panel

- (i) *The Applicant shall at its own cost establish an Independent Monitoring Panel prior to commencement of construction. The Applicant shall contribute \$30,000 per annum for the functioning of the Panel, unless otherwise agreed by the Director-General. The annual payment shall be indexed according to the Consumer Price Index (CPI) at the time of payment. The first payment shall be paid by the date of commencement of construction and annually thereafter. Selection of the Panel representatives shall be agreed by the Director-General in consultation with relevant government agencies and the CEMCC. The Panel shall at least comprise two duly qualified independent environmental scientists and a representative of the Director-General.*
- (ii) *The panel shall:*
 - a. *provide an overview of the independent audits required by condition 8.9 above;*
 - b. *regularly review all environmental monitoring procedures undertaken by the Applicant, and monitoring results; and*
 - c. *provide an Annual State of the Environment Report for Lake Cowal with particular reference to the on-going interaction between the mine and the lake and any requirements of the Director-General. The first report shall be prepared one year after commencement of construction. The report shall be prepared annually thereafter unless otherwise directed by the Director-General. Copies of the report shall be provided to those parties which receive the AEMR (condition 9.2) and shall be made publicly available at Bland Shire Council within two weeks of the report's completion.*

12 REPORTING

An AEMR will be prepared in accordance with the requirements of Consent Condition 9.2 and DMR requirements (Condition of Authority 26 – Section 1) and submitted to the Director-General. The condition is reproduced below:

9.2 Environmental Reporting

Annual Environmental Management Report (AEMR)

- (i) *The Applicant shall, throughout the life of the mine and for a period of at least five years after the completion of ore processing operations, prepare and submit an Annual Environmental Management Report (AEMR) to the Director-General. The AEMR shall review the performance of the mine against the environmental management plans (refer condition 3.2), Mining Operations Plan (refer condition 2.1), the conditions of this consent, and other licences and approvals relating to the mine. To enable ready comparison with EIS predictions, diagrams and tables, the report shall include, but not be limited to, the following matters:*
 - a) *an annual compliance audit of the performance of the project against conditions of this consent and statutory approvals;*
 - b) *a review of the effectiveness of the environmental management of the mine in terms of EPA, DLWC, DMR, NPWS, NSW Fisheries, and BSC requirements;*
 - c) *results of all environmental monitoring required under this consent or other approvals, which includes interpretation and discussion by a suitably qualified person;*
 - d) *from results of fauna monitoring, records of any fauna deaths due to mine operations;*
 - e) *a listing of any variations obtained to approvals applicable to the subject area during the previous year;*

- f) *the outcome of the water budget for the year and the quantity of water used from water storages and Bland Creek palaeochannel borefield;*
 - g) *rehabilitation report;*
 - h) *environmental management targets and strategies for the next year.*
- (ii) *In preparing the AEMR, the Applicant shall:*
- a) *consult with the Director-General during preparation of each report for any additional requirements;*
 - b) *comply with any requirements of the Director-General or other relevant government agency; and*
 - c) *ensure that the first report is completed and submitted within twelve (12) months of this consent, or at a date determined by the Director-General in consultation with DMR.*
- (iii) *The Applicant shall ensure that copies of each AEMR are submitted at the same time to the Director-General, EPA, DLWC, DMR, DSC, NPWS, NSW Fisheries, the BSC and CEMCC, and be available for public information at the BSC within 14 days of submission to these authorities.*

The AEMR will outline the progress of the wetland rehabilitation and enhancement measures and the results of the monitoring programme.

13 REFERENCES

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