



**BARRICK**

COWAL

**SECTION 6  
PLANNING FRAMEWORK AND  
MODIFICATION JUSTIFICATION**

**COWAL GOLD MINE EXTENSION MODIFICATION**

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## 6 PLANNING FRAMEWORK AND MODIFICATION JUSTIFICATION

This section outlines the statutory requirements relevant to the assessment of the Modification and its justification (i.e. the need for the Modification on economic, social and environmental grounds when considered against the objects of the EP&A Act).

### 6.1 LEGISLATIVE FRAMEWORK

Development Consent for the CGM and the Bland Creek Palaeochannel Borefield water supply pipeline was granted by the NSW Minister for Urban Affairs and Planning under Part 4 of the EP&A Act on 26 February 1999 (DA 14/98) (Section 2.1).

Development Consent (DA 2011/64) for the operation of the eastern saline borefield was granted by the Forbes Shire Council on 20 December 2010 (Section 2.1).

#### 6.1.1 Environmental Planning and Assessment Act, 1979

This EA has been prepared to support a request to modify Development Consent (DA 14/98) under section 75W of the EP&A Act.

Clause 12 of Schedule 6A of the EP&A Act provides that section 75W of Part 3A of the EP&A Act continues to apply to modifications of development consents referred to in clause 8J(8) of the *Environmental Planning and Assessment Regulation, 2000* (EP&A Regulation) following the repeal of Part 3A.

The CGM was approved under Part 4 of the EP&A Act in February 1999 by development consent under Division 4 of Part 4 of the Act (relating to State significant development). Therefore the Development Consent (DA 14/98) is a development consent that falls within clause 8J(8)(b) of the EP&A Regulation. That is, section 75W of the EP&A Act continues to apply to modifications to the CGM Development Consent (DA 14/98), notwithstanding its repeal<sup>1</sup>.

<sup>1</sup> Section 75W of the EP&A Act (as in force immediately before its repeal) continues to apply for the CGM. The description and quotations of relevant references to Section 75W in this document are as if Section 75W of the EP&A Act is still in force.

Approval for the Modification will be sought as a modification to the Development Consent (DA 14/98) under section 75W of the EP&A Act. Section 75W of the EP&A Act states:

#### 75W Modification of Minister's approval

(1) *In this section:*

**Minister's approval** means an approval to carry out a project under this Part, and includes an approval of a concept plan.

**modification of approval** means changing the terms of a Minister's approval, including:

- (a) *revoking or varying a condition of the approval or imposing an additional condition of the approval, and*
  - (b) *changing the terms of any determination made by the Minister under Division 3 in connection with the approval.*
- (2) *The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*
- (3) *The request for the Minister's approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.*
- (4) *The Minister may modify the approval (with or without conditions) or disapprove of the modification.*

...

Table 1-1 provides a comparison of the Modification with the currently approved CGM.

In general, there would be no change to the existing functionality of the CGM due to the Modification, as the Modification would involve:

- continued mining in the existing open pit for the extraction of gold-bearing ore and waste rock;
- continued use of existing waste rock emplacements for the placement of waste rock extracted from the open pit;
- continued use of existing ore processing infrastructure; and
- continued use of tailings storage facilities for the storage of tailings associated with ore processing.

The Modification would involve no change to the following key components of the existing CGM:

- mining tenements ( i.e. ML 1535);
- lake isolation system;
- existing surface development extent of the CGM within Lake Cowal;
- water management design objectives;
- mining methods;
- ore processing rate;
- ore processing infrastructure;
- tailings storage facility footprints;
- footprint of the southern waste rock emplacement;
- cyanide destruction method;
- approved cyanide concentration limits in the aqueous component of the tailings slurry;
- water supply sources;
- approved daily or annual extraction limits of the Bland Creek Palaeochannel Borefield;
- power supply;
- exploration;
- peak annual employment; or
- hours of operation.

Given that key environmental management measures and design principles (e.g. lake isolation system) for the currently approved CGM would be maintained for the Modification, limited additional environmental impacts are predicted in comparison to the currently approved CGM.

Where additional impacts are predicted (e.g. clearance within the Modification area), additional management measures for the Modification are proposed (i.e. proposed biodiversity offset) to mitigate potential residual impacts.

As such, it is considered that the Modification would result in not more than limited environmental consequence in comparison to the currently approved CGM.

Given this, and given that the Modification would not generally change the functionality of the approved CGM, approval for the Modification is sought as a modification to Development Consent (DA 14/98) under section 75W of the EP&A Act.

## 6.1.2 Environmental Planning Instruments

State environmental planning policies and local environmental plans that may be relevant to the Modification are discussed below.

### ***State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007***

The *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (Mining SEPP) is applicable to the whole of NSW. The Mining SEPP regularises the various environmental planning instruments that previously controlled mining activities.

Clause 5(3) of the Mining SEPP gives it primacy where there is an inconsistency between the provisions of the Mining SEPP and the provisions of any other environmental planning instrument (excluding the *State Environmental Planning Policy [Major Projects] 2005*, the *State Environmental Planning Policy No. 14 [Coastal Wetlands]* and the *State Environmental Planning Policy No. 26 [Littoral Rainforests]*).

#### *Part 1 – Clause 2*

Clause 2 of the Mining SEPP outlines the aims of the SEPP, including the following of relevance to the Modification:

- (a) *to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and*
- (b) *to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and*
- (c) *to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources.*

The Modification is considered to be generally consistent with the aims of the Mining SEPP because it is a Modification which:

- provides stimulus to local and regional economies through continued employment and on-going royalties and export earnings, thus contributing to future generations through social welfare, job security, amenity and infrastructure;

- involves the orderly economic use and development of land containing mineral resources, as the Modification open cut extension has been designed to optimise the recovery of the E42 ore deposit within ML 1535, while maintaining the use of existing processing infrastructure;
- has been developed in consideration of environmental planning instruments and the principles of consideration of ecologically sustainable development (ESD) principles (Section 6.2.2); and
- involves proper and sustainable management of the State's mineral resources (i.e. gold reserves) in a manner that minimises environmental impacts as the Modification has been designed such that there would be no change to key existing environmental management measures (e.g. lake isolation system) and where additional impacts are predicted (e.g. additional disturbance within ML 1535), appropriate mitigation measures are proposed (e.g. biodiversity offset).

#### Part 2 – Clause 7

Clause 7(1) states:

- (1) *Mining Development for any of the following purposes may be carried out only with development consent:*
- ...
- (b) *mining carried out:*
- ...
- (ii) *on land that is, immediately before the commencement of this clause, the subject of a mining lease under the Mining Act 1992 or a mining licence under the Offshore Minerals Act 1999,*
- ...
- (d) *facilities for the processing or transportation of minerals or mineral bearing ores on land on which mining may be carried out (with or without development consent), but only if they were mined from that land or adjoining land,*
- ...

The existing CGM and the Modification comprises mining activities within the existing ML 1535.

The eastern pump station proposed as part of the Modification would be located within a privately owned cultivated paddock, within the Development Application area.

#### Part 3 – Clause 12

Clause 12 of the Mining SEPP requires that, before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:

- (a) *consider:*
- (i) *the existing uses and approved uses of land in the vicinity of the development, and*
- (ii) *whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and*
- (iii) *any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and*
- (b) *evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii), and*
- (c) *evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).*

The existing land use within ML 1535 consists of mining activities associated with the existing CGM. Lands surrounding ML 1535, including Barrick owned lands, are predominantly used for agriculture (e.g. livestock grazing and grain cropping) with some areas forming the biodiversity offsets for the existing CGM.

The Modification would involve the continuation of mining activities within ML 1535, and therefore, would not change existing land use within 1535.

The eastern pump station would be located within a privately-owned cultivated paddock. Therefore there would be a change in land use (i.e. from agricultural use) for this minor area within the paddock in agreement with the land owner, however, use of the majority of the paddock for agricultural purposes would continue.

Specialist studies undertaken as part of this EA demonstrate that the Modification would not result in significant additional impacts on adjoining land uses near the approved CGM. The specialist studies also demonstrate that the Modification would not have a significant impact on regional water users or nature conservation, and that the Modification would not be incompatible with the existing land uses within the vicinity of the CGM (Appendices A to I).

The Socio-Economic Assessment (Appendix H) demonstrates that that Modification would provide socio-economic benefits to the local, state and national economies.

There would be no change to final land use for the land within ML 1535 due to the Modification. Consistent with existing operations, decisions regarding final land use (i.e. returning land to an area of conservation and land suitable for grazing) would be made closer to lease relinquishment in consultation with key stakeholders and in consideration of surrounding land use at that time.

#### Part 3 – Clause 14

Clause 14(1) of the Mining SEPP requires that, before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following:

- (a) *that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable,*
- (b) *that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable,*
- (c) *that greenhouse gas emissions are minimised to the greatest extent practicable.*

In addition, Clause 14(2) requires that, without limiting Clause 14(1), in determining a development application for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programmes or guidelines concerning greenhouse gas emissions.

The potential impacts of the Modification on groundwater and surface water resources including measures to minimise potential impacts are discussed in Section 4 and Appendices A and B. The potential impacts of the Modification on threatened species and biodiversity including measures to minimise potential impacts are described in Section 4 and Appendix D.

Greenhouse gas emission estimates for the Modification are described in Section 4, and Appendix F.

#### Part 3 – Clause 15

Clause 15 of the Mining SEPP requires that:

- (1) *Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider the efficiency or otherwise of the development in terms of resource recovery.*
- (2) *Before granting consent for the development, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at optimising the efficiency of resource recovery and the reuse or recycling of material.*
- (3) *The consent authority may refuse to grant consent to development if it is not satisfied that the development will be carried out in such a way as to optimise the efficiency of recovery of minerals, petroleum or extractive materials and to minimise the creation of waste in association with the extraction, recovery or processing of minerals, petroleum or extractive materials.*

The Modification would allow for the efficient extraction of additional gold reserves within the E42 ore deposit at the existing open pit utilising existing mining methods.

Barrick has presented information on the Modification to the DRE during the development of this EA (Section 1.4). It is in Barrick's financial interest to maximise the efficiency of gold recovery and minimise the production of waste that requires disposal.

#### Part 3 – Clause 16

Clause 16(1) of the Mining SEPP requires that, before granting consent for development for the purposes of mining or extractive industry that involves the transport of materials, the consent authority must consider whether or not the consent should be issued subject to conditions that do any one or more of the following:

- (a) *require that some or all of the transport of materials in connection with the development is not to be by public road,*
- (b) *limit or preclude truck movements, in connection with the development, that occur on roads in residential areas or on roads near to schools,*
- (c) *require the preparation and implementation, in relation to the development, of a code of conduct relating to the transport of materials on public roads.*

Gold product would continue to be transported from the CGM by road.

As the maximum production rate at the CGM would not change as a result of the Modification and the Modification would not result in any additional demand for employees/contractors, there would be no change in vehicle movements associated with consumable deliveries or employee and contractor vehicle movements to the CGM.

The transport of hazardous materials at the CGM (i.e. materials transport and routes used) would continue in accordance with the existing *Cowal Gold Project Transport of Hazardous Materials Study* (Barrick Australia Limited, 2006).

The eastern pump station would require deliveries of diesel by a licensed contractor. It is expected that a peak of one diesel delivery per week would be required.

Given the above, it is considered that the Modification would not result in any material change to potential road transport impacts.

#### *Part 3 – Clause 17*

Clause 17 of the Mining SEPP requires that before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring the rehabilitation of land that will be affected by the development. In particular, the consent authority must consider whether the conditions of the consent should:

- (a) *require the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated, or*
- (b) *require waste generated by the development or the rehabilitation to be dealt with appropriately, or*
- (c) *require any soil contaminated as a result of the development to be remediated in accordance with relevant guidelines (including guidelines under section 145C of the Act and the Contaminated Land Management Act 1997), or*
- (d) *require steps to be taken to ensure that the state of the land, while being rehabilitated and at the completion of the rehabilitation, does not jeopardize public safety.*

Rehabilitation at the CGM is conducted in accordance with the ROMP and the CGM MOP (October 2012 to January 2014). The ROMP would be revised to reflect the rehabilitation concepts for Modification.

Consistent with the currently approved rehabilitation strategy, rehabilitation objectives for the Modification would include final landforms that are stable and are revegetated with native and/or endemic species that are suited to the landform and characteristic of the vegetation in the surrounding landscape (Section 5). The management of tailings and other wastes is described in Sections 2, 3 and 4.

A new MOP would be prepared to reflect changes in mining operations as a result of the Modification. The new MOP would be developed in consideration of the DRE's (2013) *Draft ESG3: Mining Operations Plan (MOP) Guidelines March 2013* and would include a detailed description of proposed mining and rehabilitation activities.

#### ***State Environmental Planning Policy No 33 – Hazardous and Offensive Development***

The *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* (SEPP 33) is applicable to the whole of NSW. Clause 13 of SEPP 33 requires that in determining an application to carry out development for the purposes of a potentially hazardous industry, the consent authority (in this case the NSW Minister for Planning and Infrastructure) must take into account:

- (a) *current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development, and*
- (b) *whether any public authority should be consulted concerning any environmental and land use safety requirements with which the development should comply, and*
- (c) *in the case of development for the purpose of a potentially hazardous industry—a preliminary hazard analysis prepared by or on behalf of the applicant, and*
- (d) *any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the development and the reasons for choosing the location the subject of the application), and*
- (e) *any likely future use of the land surrounding the development.*

A PHA and a FHA were completed for the approved CGM.

The FHA concluded that the risks associated with the approved CGM complied with the HIPAP 4 *Risk Criteria for Land Use Safety Planning* (DUAP, 1992a) and HIPAP 6 *Guidelines for Hazard Analysis* (DUAP, 1992b) for tolerable fatality, injury, irritation and societal risk (Pinnacle Risk Management, 2004b).

As the operational activities on-site would generally remain unchanged, the Modification would not change the potential impact mechanisms to the environment, public and public property, and their associated consequences or likelihoods, to the extent that risk levels would change from those previously assessed in the PHA or FHA. Subsequently, no change to the overall PHA or FHA risk assessment findings would result from the Modification.

Notwithstanding, environmental management plans and monitoring programmes would be reviewed, and if necessary, revised by Barrick, to include the Modification and manage any associated environmental risks.

#### **State Environmental Planning Policy No. 44 – Koala Habitat Protection**

*State Environmental Planning Policy No. 44 (Koala Habitat Protection)* requires the consent authority for any Development Application in certain LGAs (including the Forbes LGA) to consider whether land subject to a Development Application is “potential Koala habitat” or “core Koala habitat”.

As discussed in Appendix D, the Koala has not been recorded during previous surveys at the CGM or surrounds. This species, or its habitat, was not predicted to occur near the Modification area in the EPBC Act Protected Matters Search (SEWPaC, 2013b). No potential Koala habitat occurs within the Modification area or surrounds and it is considered highly unlikely that potential Koala habitat would be cleared by the Modification.

#### **State Environmental Planning Policy No. 55 – Remediation of Land**

*State Environmental Planning Policy No. 55 (Remediation of Land)* (SEPP 55) aims to provide a State-wide planning approach to the remediation of contaminated land. Under SEPP 55, planning authorities are required to consider the potential adverse effects on contamination on the suitability of the site for its proposed purpose.

“Contaminated land” in SEPP 55 has the same meaning as in Part 7A of the EP&A Act as follows:

**contaminated land** means land in, on or under which any substance is present at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment.

Clause 7(1) states that a consent authority must not consent to the carrying out of any development on land unless:

- (a) it has considered whether the land is contaminated, and
- (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
- (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

An area of historic contamination (i.e. a disused sheep dip area) was identified within ML 1535, in the southern waste rock emplacement footprint area. The primary contaminant identified within the contaminated soil of the disused sheep dip area was arsenic.

Barrick proposed that the sheep dip area would be left *in-situ* and buried beneath approximately 30 m of waste rock and the base drainage control zone of the southern waste rock emplacement. Barrick commissioned Coffey Environmental Pty Ltd (Coffey Environment) to review a contamination assessment and proposed remedial strategy for the disused sheep dip area in July 2008. In their review, Coffey Environment (2008) concluded that:

*...following implementation of a remedial strategy based on containment of arsenic contaminated soil beneath the planned southern waste emplacement, the contamination in the sheep spray area would not pose a significant risk of harm to human health or any other aspect of the environment.*

The *Cowal Gold Project Hazardous Waste and Chemical Management Plan* (Barrick, 2006) was updated in May 2009 to incorporate the proposed management measures for the disused sheep dip area. As described by Coffey Environment (2008), the treatment option selected presents no potential for significant environmental harm. Accordingly, the land is considered suitable for the purpose of the Modification.



Further, clause 7(2) of SEPP 55 provides that before determining an application for consent to carry out development that would involve a change of use of land, the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned, carried out in accordance with the contaminated land planning guidelines.

Because the Modification is located wholly within the existing ML 1535 and development application areas, no change of use is proposed and no preliminary land contamination investigation is required.

### **Bland Local Environmental Plan 2011**

The CGM mining area is located wholly within the Bland LEP area.

Clause 1.2(2) of the Bland LEP outlines the aims of the plan, including the following of relevance to the Modification:

- (a) *to protect, enhance and conserve agricultural land through the proper management, development and conservation of natural and man-made resources,*
- (b) *to encourage a range of housing, employment, recreation and facilities to meet the needs of existing and future residents of Bland,*
- (c) *to promote the efficient and equitable provision of public services, infrastructure and amenities,*
- (d) *to conserve, protect and enhance the environmental and cultural heritage of Bland,*

...

The Modification is generally consistent with these objectives, as the development would facilitate the continued employment of the current workforce at the CGM (including employees from the Bland LGA); and would be operated in a manner that would minimise potential impacts on natural resources, soils, water resources, agricultural land and environmental heritage.

### **Permissibility**

Clause 2.3(2) of the Bland LEP relevantly provides:

*The consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within the zone.*

The currently approved disturbance area for the CGM is zoned as RU1 “Primary Production”. The proposed disturbance area for the Modification is also on lands classified under the Bland LEP as Zone RU1 “Primary Production”.

Open cut mining is permissible with consent on lands zoned as RU1 “Primary Production”.

### **Zone Objectives**

Part 2 of the Bland LEP outlines the land use objectives for lands zoned as RU1 “Primary Production” as follows:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To ensure that development on land within this zone does not unreasonably increase the demand for public services or public facilities.*

The Modification is considered to be generally consistent with the above zone objectives, as detailed management and mitigation measures would be implemented where practicable, to minimise the potential impacts of the Modification on other land uses and the environment, including Lake Cowal. As the Modification would not result in any additional demand for employees/contractors, it is expected that the Modification would not unreasonably increase the demand for public services or public facilities.

### **Forbes Local Environmental Plan 2013**

The *Forbes Local Environmental Plan 2013* (Forbes LEP) is applicable to all land within the Shire of Forbes.

Clause 1.2(2) of the Forbes LEP outlines the aims of the plan, including the following of relevance to the Modification:

- (a) *to encourage and manage ecologically sustainable development within the Forbes local government area;*

...

- (c) *to reinforce the rural character of Forbes whilst promoting sustainable development;*

- (d) *to protect Forbes' agricultural land for continued agricultural production whilst allowing for planned expansion at the urban fringe;*

...

- (f) *to protect, enhance and conserve the natural environment, including the Lachlan River, Lake Forbes, wetlands, native vegetation, environmentally sensitive land and other natural features that provide habitat for flora and fauna, provide scenic amenity and that may prevent or mitigate land degradation;*

...

The Modification is generally consistent with these objectives, as the development would facilitate the continued employment of the current workforce at the CGM; and would be operated in a manner that would minimise potential impacts on natural resources, soils, water resources and agricultural land. A consideration of the Modification against the principles of ESD has been provided in Section 6.2.2.

#### Permissibility

Clause 2.3(2) of the Forbes LEP relevantly provides:

*The consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within the zone.*

The currently approved disturbance area for the CGM water supply borefield and pipeline is zoned as RU1 "Primary Production". The proposed disturbance area for the Modification is also on lands classified as Zone RU1 "Primary Production", under the Draft Forbes LEP.

The Mining SEPP defines mining as the winning or removal of material by methods such as excavating, dredging or tunnelling for the purpose of obtaining minerals and includes the following:

- (a) *the construction, operation and decommissioning of associated works, and*
- (b) *the stockpiling, processing, treatment and transportation of materials extracted, and*
- (c) *the rehabilitation of land affected by mining.*

The construction of the eastern pump station would therefore fall under the definition of mining as it would be considered to be an associated work (i.e. to improve capacity/flows of the existing water supply pipeline).

Open cut mining is permissible with consent on lands zoned as RU1 "Primary Production" within Development Consent (DA 14/98).

#### Zone Objectives

Part 2 of the Forbes LEP outlines the land use objectives for lands zoned as RU1 "Primary Production" as follows:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To provide opportunities for intensive and extensive agriculture in appropriate locations consistent with the environmental capability of the land.*

The Modification is considered to be generally consistent with the above zone objectives, as detailed management and mitigation measures would be implemented where practicable, to minimise the potential impacts of the Modification on other land uses and the environment, including Lake Cowal.

The Modification is considered to be generally consistent with the above zone objectives. The eastern pump station and associated access track would be located within a privately owned cultivated paddock, however, would not preclude continued agricultural use from the remainder of the paddock.

### 6.1.3 Commonwealth Legislation

#### ***Environment Protection and Biodiversity Conservation Act, 1999***

The primary objective of the EPBC Act is to provide for the protection of those aspects of the environment that are of "national environmental significance". The EPBC Act establishes a scheme requiring environmental assessment and approval of proposals likely to impact significantly upon such matters, which in the EPBC Act are termed "protected matters".

The CGM was referred for consideration under the EPBC Act on 29 August 2001. The Minister for the Environment and Heritage determined that it was not a controlled action on 29 September 2001.

The potential impacts from the Modification on Matters of National Environmental Significance listed under the EPBC Act have been assessed by Cenwest Environmental Services (2013) and are considered in Appendix D.

### ***National Greenhouse and Energy Reporting Act, 2007***

The NGER Act introduced a single national reporting framework for the reporting and dissemination of corporations' greenhouse gas emissions and energy use. The NGER Act makes registration and reporting mandatory for corporations whose energy production, energy use or greenhouse gas emissions meet specified thresholds.

Barrick currently reports annual greenhouse gas emissions and energy consumption from the CGM to the federal government in accordance with the NGER Act requirements.

#### **6.1.4 Plans, Licences and Agreements that Require Revision**

##### ***Management/Monitoring Plans***

Some management plans (e.g. the IACHMP, the NMP and the Dust Management Plan) may require revision to reflect updated environmental management measures or changes to Development Consent (DA 14/98) conditions resulting from the Modification.

##### ***Mining Operations Plan***

As detailed in Section 6.1.2, a new MOP would be prepared to reflect the Modification. The new MOP would be developed in consideration of the DRE's (2013) *Draft ESG3: Mining Operations Plan (MOP) Guidelines March 2013* and would include a detailed description of proposed mining and rehabilitation activities.

## **6.2 MODIFICATION JUSTIFICATION**

A description of the need for and objectives of the Modification and a justification of the carrying out of the Modification in the manner proposed is provided below. The discussion is provided having regard to the biophysical, economic and social considerations including consideration of alternatives, the principles of ESD, the consistency of the Modification with the objectives of the EP&A Act and the consequences of the consequences of not carrying out the Modification.

### **6.2.1 Need for and Objectives of the Modification**

Barrick exploration has identified additional gold resources within the E42 ore deposit located to the west of the existing open pit.

The Modification provides for the continuation and extension of open pit mining operations at the CGM for a period of approximately 5 years to produce an additional 0.7 Moz of gold (i.e. a total of approximately 3.8 Moz over the life of the CGM).

The Modification would facilitate the continuity of employment for the existing CGM workforce (i.e. the Modification would not result in any additional demand for employees/contractors), providing job security for local mine employees and contractors, and to continue to stimulate demand in the local and regional economy.

The Modification would include the implementation of mitigation measures, and management (including performance monitoring), to minimise potential impacts on the environment and community (Section 4).

The Socio-Economic Assessment (Appendix H) indicates that the Modification would result in additional contributions to regional and NSW output and business turnover and household income.

The benefit cost analysis (BCA) presented in Appendix H indicates that an incremental net benefit of between \$49M and \$75M would be foregone if the Modification is not implemented. This incremental net benefit is net of costs associated with potential environmental impacts and management measures for the Modification (e.g. the BCA has considered costs associated with the proposed biodiversity offset and noise agreements).

### ***Consideration of Alternatives to the Modification***

The Modification involves the continuation of mining at the CGM within the E42 ore deposit.

Proposed changes to the CGM for the Modification (i.e. to the open pit, waste rock emplacements and tailings storage facilities) have been designed in consideration of environmental and operational constraints.

Detail of these constraints, and where relevant, alternatives considered, are provided below.

#### ***CGM Location and Open Pit Extension***

As the location of mining is constrained by the E42 ore deposit, alternative mining locations are not considered further in this EA.

The extension of the existing open pit has been designed to maximise ore recovery, while maintaining appropriate offset distances to the existing lake isolation system to avoid additional impacts to Lake Cowal.

#### ***Waste Rock Emplacement Areas***

Additional waste rock would be produced over of the life of the CGM incorporating the Modification.

This additional waste rock could be accommodated in new waste rock emplacement areas outside of ML 1535. However, to avoid additional surface disturbance and changes to catchment hydrology (and consequent potential impacts to ecology, Aboriginal heritage, water resources, air quality and noise amenity) and to avoid the requirement for additional mining tenements, new waste rock emplacements were not considered for the Modification.

The existing northern waste rock emplacement could be expanded to the north, and existing southern waste rock emplacement could be expanded to the south, to accommodate the additional waste rock for the Modification. However this would increase the footprints of the waste rock emplacements, and would require alterations to the existing up-catchment drainage channels of the UCDS.

To avoid additional surface disturbance and potential changes to catchment hydrology, there would be no change to the existing footprint of the southern waste rock emplacement. However, an increase to the final elevation of the southern waste rock emplacement is proposed to accommodate a portion of the additional waste rock produced for the Modification.

To avoid potential changes to catchment hydrology and to limit additional surface disturbance, the northern waste rock emplacement would be expanded to the west (i.e. within the ICDS), and its elevation would be increased, to accommodate the remaining portion of the additional waste rock produced for the Modification.

#### ***Tailings Storage Facilities***

Additional tailings would be produced over of the life of the CGM incorporating the Modification.

These additional tailings could be accommodated in a new tailings storage facility outside of ML 1535, or the footprints of the existing tailings storage facilities could be increased.

However, to avoid additional surface disturbance and changes to catchment hydrology, and to avoid the requirement for additional mining tenements, there would be no change to the existing footprint of the tailings storage facilities for the Modification.

Therefore, the final elevations of the tailings storage facilities would increase to accommodate the additional tailings for the Modification.

To increase the area available for tailings deposition, the top surface of the tailings storage facilities would be subdivided into two cells by extending the existing decant causeways to the opposite sides of the storages to enable active simultaneous deposition of tailings into three of the four resulting cells at any one time, while the remaining cell is being lifted/raised (i.e. upstream lift).

#### ***Ore Processing Infrastructure and Schedule***

The Modification mine schedule has been developed such that no material change to existing processing infrastructure would be required, and no change to the existing ore processing or cyanide destruction methods.

The processing schedule includes two oxide ore processing campaigns (Table 3-1). There is an operational cost associated with the transition from primary ore to oxide ore processing (i.e. due to processing downtime).

Processing oxide ore in a single campaign was considered for the Modification. As the water requirements for oxide ore processing are greater than for primary ore, a single oxide ore processing campaign would increase the duration of peak water requirements.

To meet this increased water requirement, additional water supply infrastructure (e.g. additional on-site water supply storage, or duplication of the existing water supply pipeline to the CGM) and an increase in the existing rate of water extraction from external water supplies would be required.

To avoid additional disturbance associated with additional water supply infrastructure, and to avoid increasing the existing rate of water extraction from external water supplies, the Modification involves two oxide ore processing campaigns, notwithstanding the additional operational cost associated with transitioning between primary ore and oxide ore processing twice.

#### *Additional Water Infrastructure and Soil Stockpiles*

The locations of D10 and the additional soil stockpiles required for the Modification have been designed to avoid clearance of EECs mapped within ML 1535 (Section 4).

The eastern pump station and associated access track would be located within a cultivated paddock, and have been positioned to avoid potential impacts to biodiversity (Section 4) and Aboriginal heritage (Section 4).

A diesel generator would supply power to the eastern pump station. An ETL approximately 7 km long from the existing Bore 4 was considered as a power supply alternative. However, to avoid potential impacts to biodiversity and Aboriginal heritage associated with the construction of the ETL, and due to economic considerations, the diesel generator was the preferred power supply option.

#### *External Water Supply*

There would be no change to the existing daily or annual extraction limits from external water supplies for the Modification, or the existing Groundwater Contingency Strategy used to manage groundwater levels in the Bland Creek Palaeochannel. As such, no additional impacts to other groundwater users are predicted due to the Modification (Appendix A).

The construction and use of D10 and the eastern pump station are proposed to improve water security at the CGM prior to the initial oxide ore processing campaign in Years 11 and 12 while maintaining the approved annual and daily extraction limits of the existing external water supply sources.

Consideration was given to upgrading the existing water supply pipeline to provide additional capacity to the CGM, as an alternative to the construction of D10 and the eastern pump station. However, this would involve re-excavation of the existing pipeline and/or potential duplication of the existing pipeline, and therefore, the construction and use of D10 and the eastern pump station were determined to be the preferred option for environmental and economic reasons (i.e. to avoid additional disturbance).

Alternative external water supply sources have also been considered, including the use of privately owned bores when not in use for agriculture. These alternative water supply sources would require the construction of additional water supply infrastructure (i.e. to connect to the existing water supply pipeline to the CGM) and potentially additional licenses.

Given that the continued use of existing external water supply sources is predicted to meet the water requirements for the Modification, and not result in additional impacts to other users, alternative water supplies have not been considered further in this Modification.

#### *Final Void and Landforms*

A final void would form part of the final landform of the CGM incorporating the Modification. This is consistent with the final landform concept for the approved CGM.

It is estimated that the cost to backfill the final void would be \$650M (present value). This cost is significantly greater than the incremental net production benefit of the Modification of \$50M, and as such, backfilling the final void would make the Modification uneconomical.

In addition, the final void would act as a localised groundwater sink and, therefore, any groundwater seepage from tailings storage facilities and the waste rock emplacements would continue to migrate towards the final void.

Given the final void would not be backfilled, the elevated landforms of the CGM (i.e. tailings storage facilities and waste rock emplacements) would remain post-mining.

Justification for the final design heights and footprints of the tailings storage facilities and waste rock emplacements, in consideration of environmental constraints, is provided in the sub-sections above.

In addition, the final landforms of the CGM have been designed to be compatible with the surrounding landscape. The final elevations of the CGM landforms would be similar, but lower than other topographic features in the region (Figure 5-3). In addition, the final landforms would be revegetated with native and/or endemic species characteristic of remnant vegetation within the surrounding landscape (Section 5.3.3).

#### *No Modification*

Consideration of the potential consequences of not proceeding with the Modification is provided in Section 6.2.4.

### **6.2.2 Ecologically Sustainable Development Considerations**

#### **Background**

The concept of sustainable development came to prominence at the World Commission on Environment and Development (1987), in the report titled *Our Common Future*, which defined sustainable development as:

*... development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

In recognition of the importance of sustainable development, the Commonwealth Government developed a *National Strategy for Ecologically Sustainable Development* (NSES D) (Commonwealth of Australia, 1992) that defines ESD as:

*using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.*

The NSES D was developed with the following core objectives:

- enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- provide for equity within and between generations; and
- protect biological diversity and maintain essential processes and life support systems.

In addition, the NSES D contains the following goal:

*Development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.*

In accordance with the core objectives and a view to achieving this goal, the NSES D presents private enterprise in Australia with the following role:

*Private enterprise in Australia has a critical role to play in supporting the concept of ESD while taking decisions and actions which are aimed at helping to achieve the goal of this Strategy.*

Clause 6(2) of the NSW *Protection of the Environment Administration Act, 1991* provides that ESD can be achieved through the implementation of the following principles and programmes:

*For the purposes of subsection (1) (a), ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs:*

- (a) *the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*

*In the application of the precautionary principle, public and private decisions should be guided by:*

- (i) *careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and*
- (ii) *an assessment of the risk-weighted consequences of various options,*
- (b) *inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,*
- (c) *conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,*
- (d) *improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:*
- (i) *polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,*
- (ii) *the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,*

- (iii) *environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*

The design, planning and assessment of the Modification have been carried out applying the principles of ESD, through:

- incorporation of risk assessment and analysis at various stages in the Modification design, environmental assessment and decision-making;
- adoption of high standards for environmental and occupational health and safety performance;
- consultation with regulatory and community stakeholders;
- assessment of potential greenhouse gas emissions associated with the Modification; and
- optimisation of the economic benefits to the community arising from the development of the Modification.

An assessment of potential long-term impacts of the Modification was carried out during the preparation of this EA on aspects of surface and groundwater resources, Aboriginal cultural heritage, ecology (flora and fauna), socio-economics, air quality, noise and visual amenity.

The assessments undertaken for this EA have used and built on the environmental impact assessment undertaken for the approved CGM including the EIS and subsequent modifications to the Development Consent (DA 14/98).

The Modification design takes into account biophysical considerations, including the principles of ESD as defined in section 6(2) of the *Protection of the Environment Administration Act, 1991*. In addition, it can be demonstrated that the Modification can be operated in accordance with ESD principles through the application of mitigation and management measures to minimise environmental impacts during the Modification. Mitigation and management measures in respect of the potential impacts of the Modification are discussed in Section 4 and in the appendices.

The following sub-sections describe the consideration and application of the principles of ESD to the Modification.

### **Precautionary Principle**

Environmental assessment involves predicting what the environmental outcomes of a development are likely to be. The precautionary principle reinforces the need to take risk and uncertainty into account, especially in relation to threats of irreversible environmental damage.

The specialist studies conducted in support of this EA, consider the potential environmental impacts associated with the Modification, including long-term effects.

Findings of these specialist assessments are presented in Section 4 and relevant appendices. Measures designed to avoid, mitigate and offset potential environmental impacts arising from the Modification are also described in Sections 4 and 5.

The specialist assessments prepared for this EA have evaluated the potential for harm to the environment associated with development of the Modification.

A PHA, Transport of Hazardous Materials Study and FHA have been previously completed for the approved CGM. The PHA identified scenarios that presented the highest risks to the environment, public safety and public property (North Limited, 1998). The FHA concluded that the CGM complied with the HIPAP No. 4 and HIPAP No. 6 Guidelines for tolerable fatality, injury, irritation and societal risk (Pinnacle Risk Management, 2004b).

No change to the overall PHA or FHA risk assessment findings would result from the Modification (Section 6.1.2).

An extensive range of measures has been adopted as components of the Modification design to minimise the potential for serious and/or irreversible damage to the environment, including operational controls, physical controls and the development of environmental management and monitoring programmes (Section 4). Where residual risks are identified, contingency controls have also been considered (Section 4).

In addition, peer review of the Hydrogeological Assessment (Appendix A) was undertaken by a recognised expert (Attachment 3).

### **Social Equity**

Social equity is defined by inter-generational and intra-generational equity. Inter-generational equity is the concept that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations, while intra-generational equity is applied within the same generation.

The principles of social equity are addressed through:

- assessment of the socio-economic impacts of the Modification, including the distribution of impacts between stakeholders;
- consideration of greenhouse gases generated by the Modification (Appendix F);
- management measures to be implemented in relation to the potential impacts of the Modification on water resources, Aboriginal cultural heritage, land resources, noise, air quality, ecology (flora and fauna), hazards and risks, visual character and socio-economics (Section 4);
- implementation of environmental management and monitoring programmes (Sections 4 and 5) to minimise potential environmental impacts (which include environmental management and monitoring programmes covering the Modification life); and
- implementation of an offset strategy to offset for potential ecological impacts that have been identified.

The Modification would benefit current and future generations through providing an additional 5 years of workforce employment (Appendix H). The Modification would also provide stimulus to local and regional economies and provide NSW export earnings and royalties, thus contributing to future generations through social welfare, amenity and infrastructure.

Potential incremental net economic benefits that would be foregone if the Modification was not approved would be between \$49M and \$75M (Appendix H).

The Modification incorporates a range of environmental management and mitigation measures (e.g. the biodiversity offset) to minimise potential impacts on the environment and the costs of these measures would be met by Barrick.

These costs have been included in the Socio-Economic Assessment (Appendix H) and, therefore, the potential benefits to current and future generations have been calculated in the context of the mitigated Modification where the environmental impacts have been minimised.

### **Conservation of Biological Diversity and Ecological Integrity**

Biological diversity or 'biodiversity' is considered to be the number, relative abundance, and genetic diversity of organisms from all habitats (including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are a part) and includes diversity within species and between species as well as diversity of ecosystems (Lindenmayer and Burgman, 2005).

For the purposes of this EA, ecological integrity has been considered in terms of ecological health and ecological values.

Land use within ML 1535 is currently mining activities associated with the existing CGM. Lands surrounding ML 1535 are predominantly used for agriculture (e.g. livestock grazing and grain cropping). Irrigation farming in the Jemalong/Wyldes Plains irrigation districts is generally located to the north of Lake Cowal.

The majority of the Modification area and surrounds is comprised of derived grasslands with scattered trees. The vegetation is a result of past land clearing for pastoral purposes, and historical prolonged grazing by livestock (Appendix D).

As a result, fauna habitats within ML 1535 are now very different from that existing prior to the development of the CGM (Appendix D).

Environmental assessments in Section 4 and Appendix D describe the potential impacts of the Modification on the biological and ecological environment. In accordance with ESD principles, this EA addresses the conservation of biodiversity and ecological integrity by proposing an environmental management framework designed to conserve ecological values where practicable.

The Modification would use the existing major infrastructure at the CGM to minimise impacts on the existing environment. Proven operating systems and pollution control structures would continue to be implemented where practicable. The potential for environmental degradation would continue to be managed and minimised through training of personnel and environmental auditing.



Environmental monitoring would continue to be undertaken to determine whether the environmental control measures are operating effectively. Further details of environmental management and monitoring are provided in Section 4.

The Modification incorporates a range of environmental management and mitigation measures (including an offset strategy) to address potential on-site impacts. The following components of the Modification would achieve this:

- impact avoidance and mitigation measures (i.e. minimising disturbance to native vegetation, the control of weeds and pests and on-going monitoring);
- progressive rehabilitation and revegetation; and
- the Modification offset strategy.

### **Valuation**

One of the common broad underlying goals or concepts of sustainability is economic efficiency, including improved valuation of the environment. Resources should be carefully managed to maximise the welfare of society, both now and for future generations.

In the past, some natural resources have been misconstrued as being free or underpriced, leading to their wasteful use and consequent degradation.

Consideration of economic efficiency, with improved valuation of the environment, aims to overcome the underpricing of natural resources and has the effect of integrating economic and environment considerations in decision making, as required by ESD.

While historically, environmental costs have been considered to be external to Modification development costs, improved valuation and pricing methods attempt to internalise environmental costs and include them within project costing.

The Socio-Economic Assessment (Appendix H) undertakes an analysis of the Modification and incorporates environmental values via direct valuation where practicable (e.g. greenhouse gas emissions of the Modification). Furthermore, wherever possible, direct environmental effects of the Modification are internalised through the adoption and funding of mitigation measures by Barrick to mitigate potential environmental impacts (e.g. biodiversity offset).

The BCA in Appendix H indicates an incremental net production benefit of approximately \$50M, and an incremental net benefit of between \$49M and \$75M would be forgone if the Modification is not implemented.

### **6.2.3 Consideration of the Modification against the Objects of the EP&A Act**

Section 5 of the EP&A Act describes the objects of the EP&A Act as follows:

- (a) *to encourage:*
  - (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
  - (ii) *the promotion and co-ordination of the orderly and economic use and development of land,*
  - (iii) *the protection, provision and co-ordination of communication and utility services,*
  - (iv) *the provision of land for public purposes,*
  - (v) *the provision and co-ordination of community services and facilities, and*
  - (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
  - (vii) *ecologically sustainable development, and*
  - (viii) *the provision and maintenance of affordable housing, and*
- (b) *to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and*
- (c) *to provide increased opportunity for public involvement and participation in environmental planning and assessment.*

The Modification is considered to be generally consistent with the objects of the EP&A Act, because it is a Modification which:

- incorporates:
  - measures for the management and conservation of resources including water, agricultural land and natural areas (Section 4);

- development of the State’s mineral resources (i.e. gold resources) (Sections 2 and 3);
- measures to minimise potential amenity impacts associated with noise, air quality and visual impacts on surrounding land uses (Section 4); and
- continued employment and other socio-economic benefits to the community (Section 4);
- would allow for the economic use and development of land, while maintaining key existing land uses including grazing uses on surrounding Barrick-owned lands;
- would support the provision of community services and facilities through significant contributions to State royalties, State taxes, Commonwealth tax revenue and any applicable contributions to local councils;
- incorporates a range of measures for the protection of the environment, including the protection of native plants and animals, threatened species and their habitats (Section 4);
- incorporates relevant ESD considerations (Section 6.2.2); and
- includes public involvement and participation through the EA consultation programme (Section 1.4), the public exhibition of the EA document and DP&I assessment of the Modification in accordance with the requirements of the EP&A Act.
- Additional tax revenue from the Modification would not be generated.
- Additional royalties to the State of NSW would not be generated.
- The additional potential social and environmental impacts for the Modification described in this EA would not occur.
- The Modification biodiversity offset and other revegetation areas would not be established.

Consultation with all levels of government and a range of stakeholders has been undertaken and issues raised have been considered and addressed where relevant (Section 1.4).

#### **6.2.4 Consideration of the Consequences of not Carrying out the Modification**

Were the Modification not to proceed, the following consequences are inferred:

- The existing CGM would continue to operate, as currently approved.
- There would be no additional employment for the existing CGM workforce, thereby forgoing job security for local mine employees and contractors.
- The BCA presented in Appendix H indicates that an incremental net benefit of between \$49M and \$75M would be foregone if the modification is not implemented.