Land and Environment Court
New South Wales

Case Title:	Hunter Environment Lobby Inc v Minister for Planning
Medium Neutral Citation:	[2011] NSWLEC 221
Hearing Date(s):	6 - 24 June 2011
Decision Date:	24 November 2011
Jurisdiction:	Class 3
Before:	Pain J
Decision:	Approval should in principle be granted to the project identified in MP 08_0184 subject to conditions. The terms of several conditions require further consideration by the parties before these are finalised. The parties also need to consider appropriate timeframes for compliance as referred to in a number of the conditions. A timeframe to enable finalisation of conditions will be discussed with the parties.
Catchwords:	APPEAL - objector appeal against Minister's decision to approve extension of open-cut and underground coal mine - ecologically sustainable development principles under Pt 3A of the Environmental Planning and Assessment Act 1979 - should offset of scope 1 and 2 greenhouse gas emissions be required - whether long term impact on groundwater justified refusal - conditions to offset baseflow losses - whether remediation of groundwater possible - impact on biodiversity required greater connectivity of offset areas - approval should be granted subject to amended conditions

Legislation Cited:

Energy and Utilities Administration Act 1987 Pt 6A
Environment Protection and Biodiversity Conservation Act 1999 (Cth)
Environmental Planning and Assessment Act 1979 s 5, Pt 3A s 75F, s 75H, s 75I, s 75J, s 75L, s 75R, Pt 4 s 79C
Environmental Planning and Assessment Amendment (Part 3A Repeal) Act 2011 Sch 6A cl 2(1)(a), cl 3(1)
Environmental Planning and Assessment Regulation 2000 Sch 3
Land and Environment Court 1979 s 17(d), s 39
Local Government Act 1919
Merriwa Local Environmental Plan 1992 cl 9, cl 10(1)
Mid-Western Regional Interim Local Environmental Plan 2008
National Greenhouse and Energy Reporting Act 2007
Protection of the Environment Administration Act 1991 s 6(2)
Protection of the Environment Operations Act 1997
State Environmental Planning Policy (Major Projects) 2005 Sch 1, cl 5(1), cl 6(1)
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 cl 2, cl 12, cl 14
Threatened Species Conservation Act 1995 Pt 7A s 127S, Sch 1 Pt 1 Sch 2 Pt 1

Cases Cited:

Aldous v Greater Taree City Council [2009] NSWLEC 17; 167 LGERA 13
Allen Commercial Constructions Pty Ltd v North Sydney Municipal Council [1970] HCA 42; (1970) 123 CLR 490
Associated Provincial Picture Houses Ltd v Wednesbury Corporation [1948] 1 KB 223; [1947] 2 All ER 680
Botany Bay City Council v Saab Corporation Pty Ltd [2011] NSWCA 308
Dogild Pty Ltd v Warringah Council [2008] NSWLEC 53; (2008) 158 LGERA 429
Gales Holdings Pty Ltd v Tweed Shire Council [2008] NSWLEC 209
Gerroa Environment Protection Society Inc v

Minister for Planning [2008] NSWLEC 173
Gray v Minister for Planning [2006] NSWLEC 720; (2006) 152 LGERA 258
Ironstone Community Action Group Inc v NSW Minister for Planning [2011] NSWLEC 195
Lake Macquarie City Council v Hammersmith Management Pty Ltd [2003] NSWCA 313; 132 LGERA 225
Macquarie International Health Clinic Pty Limited v Sydney South West Area Health Service [2010] NSWCA 268
Minister for Planning v Walker [2008] NSWCA 224; (2008) 161 LGERA 423
Newbury District Council v Secretary of State for Environment [1981] AC 578; [1980] 1 All ER 731
Pyx Granite Co Ltd v Ministry of Housing and Local Government [1958] 1 QB 554
Ulan Coal Mines Ltd v Minister for Planning [2008] NSWLEC 185; (2008) 160 LGERA 20
Western Australian Planning Commission v Temwood Holdings Pty Ltd [2004] HCA 63; (2004) 221 CLR 30
Westfield Management Ltd v Perpetual Trustee Company Ltd [2006] NSWCA 245

Texts Cited:

Category: Principal judgment

Parties: Hunter Environment Lobby Inc (Applicant)
Minister for Planning (First Respondent)
Ulan Coal Mines Ltd (Second Respondent)

Representation

- Counsel: Mr P Clay (Applicant)
Ms A Mitchelmore (First Respondent)
Mr A Galasso SC with Mr R Beasley (Second Respondent)

- Solicitors: Environmental Defender's Office Ltd (Applicant)
Department of Planning, Legal Services (First Respondent)
McCullough Robertson Lawyers (Second

Respondent)

File number(s): 10998 of 2010

Decision Under Appeal

- Court / Tribunal:

- Before:

- Date of Decision:

- Citation:

- Court File Number(s)

Publication Restriction:

JUDGMENT

1 This is an objector appeal under s 75L of the *Environmental Planning and Assessment Act* 1979 (the EPA Act) against the approval by the Minister for Planning (the Minister) of the consolidation and expansion of the Second Respondent's (Ulan) existing coal mine project (the project) on 15 November 2010 subject to numerous conditions. I thank Commissioner Pearson for her assistance. The Applicant, the Hunter Environment Lobby Inc (HEL) originally sought an order that major project application number MP 08_0184 of Ulan, to consolidate existing development consents into a single planning approval and to expand its existing mining operations by way of longwall and open cut mining, be refused on several merit grounds. Alternatively that it be modified with the imposition of additional or amended conditions.

2 The Court went on a view of the mine site and the surrounding area. It heard evidence at Mid-Western Regional Council Chambers on 10 June

2011 from seven objectors. Another two objectors gave evidence during the hearing about why mining in the Ulan area should not be expanded.

3 The project site is at Ulan about 40km north east of Mudgee. The project is located in the headwaters of the Goulburn River catchment (draining to the east) and the Talbragar River catchment (draining to the west). The neighbouring mines are Moolarben and Wilpinjong Coal Mines. The three mines are surrounded by a combination of large rural properties and bushland, including areas of significant conservation such as the Goulburn River National Park, Curryall State Conservation Area, Durridgere State Conservation Area and Munghorn Gap Nature Reserve. The project site is 17,959ha, of which at least 75 per cent of land area is directly or indirectly affected by existing or proposed mining operations. There is an existing underground coal mine in operation. Surface mining has been undertaken previously. The closest settlement to the project site is Ulan Village, located 1.5km south of the mine.

4 The mine currently has 27 existing developments consents. The project approved by the Minister includes:

(i) consolidating its existing development consents into a single planning approval for a further 20 years;
(ii) expanding its existing underground mining operations;
(iii) recommencing and expanding its open cut mining operations;
(iv) increasing its production rate from up to 10 million tonnes of coal a year (Mtpa), as currently permitted, to 20 Mtpa,

5 The project was considered under Pt 3A as it came within cl 5(1)(a) of Sch 1 of the State Environmental Planning Policy (Major Projects) 2005 at the time the application was made (confirmed by the Director-General (DG) as delegate of the Minister in a Record of the Minister's opinion for the purposes of cl 6(1) of the State Environmental Planning Policy (Major Projects) 2005 dated 4 September 2009). Part 3A was repealed by the *Environmental Planning and Assessment Amendment (Part 3A Repeal)*

Act 2011, the relevant parts of which commenced on 1 October 2011. As an approved project it is within the definition of "transitional Part 3A projects" in cl 2(1)(a) of Sch 6A Transitional arrangements - repeal of Part 3A of the EPA Act. Part 3A continues to apply to this project under cl 3(1) of Sch 6A.

6 The appeal is under Pt 3A Div 2 s 75L (since repealed). Section 75L provided:

> 75L Appeals by an objector
> (1) This section applies to a project if:
> (a) it is not a critical infrastructure project, and
> (b) there has been no approval of a concept plan for the project under Division 3, and
> (c) the project has not been the subject of a review by the Planning Assessment Commission, and
> (d) but for this Part, the project would be designated development to which the provisions of Part 4 would apply.
>
> (2) For the purposes of this section, an objector is a person who has made a submission under section 75H by way of objection to an application for approval under this Division to carry out a project.
>
> (3) An objector who is dissatisfied with the determination of the Minister under this Division to give approval to carry out a project may appeal to the Court within 28 days after the date on which notice of the determination was given in accordance with the regulations.
>
> (4) If such an appeal is made, the proponent and the Minister are to be given notice of the appeal, in accordance with rules of court, and are entitled to be heard at the hearing of the appeal as parties to the appeal.

7 The entitlement to appeal under s 75L arises where a project would have been designated development if not coming within Pt 3A, is not a critical infrastructure project, there has not been approval of a concept plan for the project under Div 3, and the project has not been the subject of Planning Assessment Commission review. Schedule 3 of the Environmental Planning and Assessment Regulation 2000 (the EPA Regulation) provides that open cut coal mines processing more than 500 tonnes of coal per day or that disturb more than 4ha of land are designated development. The

proposal satisfies these criteria, has not been declared critical infrastructure and does not involve a concept plan or Planning Assessment Commission review. There is no challenge to the Applicant's right to bring these proceedings.

8 The Department of Planning wrote to Ulan on 22 October 2008 advising it of the DG's Environmental Assessment Requirements (DGEARs) (exhibit 1 vol 1 tab 5). As required by the assessment process in Pt 3A, Ulan submitted to the DG of the Department of Planning an Environmental Assessment (EA) dated October 2009 (exhibit 9A) addressing those matters set out in the DGEARs (s 75F(2), (3)). The DG requested that the proponent respond to the issues raised in submissions received during the public exhibition of the EA. Umwelt prepared a response to submissions on behalf of Ulan. The DG's Environmental Assessment Report, Major Project Assessment: Ulan Continued Operations Project dated November 2010 (DG's report) (exhibit 1 vol 1 tab 33) was prepared.

9 Section 75J (now repealed) identifies the Minister's powers of approval. It provided:

> (1) If:
>
> (a) the proponent makes an application for the approval of the Minister under this Part to carry out a project, and
> (b) the Director-General has given his or her report on the project to the Minister,
>
> the Minister may approve or disapprove of the carrying out of the project.
>
> (2) The Minister, when deciding whether or not to approve the carrying out of a project, is to consider:
>
> (a) the Director-General's report on the project and the reports, advice and recommendations (and the statement relating to compliance with environmental assessment requirements) contained in the report, and
> (b) if the proponent is a public authority-any advice provided by the Minister having portfolio responsibility for the proponent, and
> (c) any findings or recommendations of the Planning Assessment Commission following a review in respect of the project. [not relevant]

> (3) In deciding whether or not to approve the carrying out of a project, the Minister may (but is not required to) take into account the provisions of any environmental planning instrument that would not (because of section 75R) apply to the project if approved. However, the regulations may preclude approval for the carrying out of a class of project (other than a critical infrastructure project) that such an instrument would otherwise prohibit.
>
> (4) A project may be approved under this Part with such modifications of the project or on such conditions as the Minister may determine.
> ...

10 There is no regulation for which s 75J(3) provides.

11 Section 75R relevantly provided:

> (1) Part 4 and Part 5 do not, except as provided by this Part, apply to or in respect of an approved project (including the declaration of the project as a project to which this Part applies and any approval or other requirement under this Part for the project).
>
> (2) Part 3 and State environmental planning policies apply to:
> (a) the declaration of a project as a project to which this Part applies or as a critical infrastructure project, and
> (b) the carrying out of a project, but (in the case of a critical infrastructure project) only to the extent that the provisions of such a policy expressly provide that they apply to and in respect of the particular project.
>
> (3) Environmental planning instruments (other than State environmental planning policies) do not apply to or in respect of an approved project...

Court's jurisdiction

12 The Court has power to determine the appeal under s 75L pursuant to s 17(d) of the *Land and Environment Court* 1979 (the Court Act). Under s 39 of the Court Act the Court has all the functions and discretions which the Minister had in relation to the matter. Accordingly, the Court has the power to modify, refuse or approve the project unaltered pursuant to s 75J(4). Section 39(4) states the Court is required to have regard to the EPA Act or any other relevant Act and instruments made under any such Act , the circumstances of the case and the public interest . This is a de novo

hearing (confirmed in *Gerroa Environment Protection Society Inc v Minister for Planning* [2008] NSWLEC 173).

Non-binding instruments which can be considered

13 The State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP) is not a mandatory consideration but may be taken into account in determining this application; *Ironstone Community Action Group Inc v NSW Minister for Planning* [2011] NSWLEC 195 at [25]. No reliance was placed on s 75R(2) by the Applicant. While the Applicant does not rely on any SEPP in this case the aims of the Mining SEPP in cl 2, cl 12 and cl 14 were set out in its submissions. Clause 12 specifies matters a consent authority should take into account when considering a development application for mining. Clause 14 provides:

> (1) 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.
>
> (2) Without limiting subclause (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, programs or guidelines concerning greenhouse gas emissions.

14 Environmental planning instruments (EPIs) other than State environmental planning policies may be taken into account (under s 75J(3)) but are not binding under s 75R(3). Consequently, the Mid-Western Regional Interim Local Environmental Plan 2008 (Mid-Western Regional LEP) and the

Merriwa Local Environmental Plan 1992 (Merriwa LEP) can be taken into account.

15 The project site is zoned 1(a) General Rural and 1(f) Rural Forest under the Merriwa LEP. Mining is permissible in both these zones with development consent. The majority of the project site is zoned 1(a) General Rural under the Merriwa LEP. The objectives of the 1(a) General Rural Zone are set out in clause 9 of the Merriwa LEP as follows:

> a) to encourage the productive and efficient use of land for agricultural purposes,
> b) to prevent inappropriate development of prime crop and pasture land for the purposes other than agriculture,
> c) to protect, conserve and enhance the natural and scenic resources of the Shire,
> d) to control subdivision of land having regard to the efficient use of land for the purposes of agriculture, and
> e) to ensure that the type and intensity of development is appropriate, having regard to the characteristics of the land, the rural environment and the cost of providing services and amenities.

16 Clause 10(1) of the Merriwa LEP also provides that:

> the Council shall not consent to an application to carry out development on land within Zone No 1(a), 1(c) or 1(d) unless it has made an assessment of that development in relation to the following general principles:
>
> a) the development should be generally compatible with the suitability and capability of the land on which it is to be carried out, as indicated on maps prepared by the Department of Agriculture, and the Soil Conservation Service of the New South Wales, which are deposited in an office of the Council;
> b) the development should not materially reduce the agricultural production of the land on which it is to be carried out, or of the adjoining land;
> c) the development should be of a type compatible with the maintenance and enhancement, as far as practicable, of the existing rural and scenic character of the Shire;
> d) the development should not adversely affect the future recovery of known or prospective areas of valuable deposits of minerals, coal, petroleum, sand, gravel or other extractive materials;
> e) the development should not have the possible effect of creating demands for unreasonable or uneconomic provision or extension of services by the Council.

17 The project site is zoned Agriculture and Conservation under the Mid-Western LEP. Mining is permissible in these zones with development consent. The objectives of the Agriculture Zoning under the Mid-Western LEP are, amongst other things, to protect and maintain land for agriculture and other rural purposes. The objectives of the Conservation Zoning under the Mid-Western LEP include the conservation of areas of environmental significance, biological diversity and native vegetation corridors, the prevention of development that could destroy or damage areas of environmental, social or cultural significance, to ensure that development within this zone adjoining land within the Natural Areas Zone is compatible with the management objectives for that land, to ensure that development allowed in the zone will not adversely affect the environmental sensitivity of land in the zone and to prevent development which might adversely affect such historical and archaeological significance of the areas identified.

18 The approval granted by the Minister (exhibit 16A) is subject to a number of conditions ordered in different schedules. Schedule 2 refers to administrative conditions. Schedule 3, environmental performance obligations, includes conditions 1 to 56 concerning noise, blasting, air quality and greenhouse gas (GHG), meteorological monitoring, subsidence, soil and water, biodiversity, heritage, transport, waste and rehabilitation (a number of these conditions are the focus of the Applicant's appeal). Schedule 4 identifies additional procedures. Schedule 5 deals with environmental management, reporting and auditing. Various plans are annexed to the approval. Consolidated draft conditions of approval were filed identifying agreed and disputed proposed conditions after the hearing.

Application of Ecologically Sustainable Development (ESD) principles in Pt 3A

19 The Applicant submits that the principles of ESD must be applied, particularly the principles of inter-generational equity and conservation of biological diversity and ecological integrity. The Respondents deny that the project is inconsistent with the principles of ESD. The Minister also denies that the principles of ESD are mandatory considerations.

20 I have broad discretion to consider the project under Pt 3A within the scope and purpose of the EPA Act. ESD principles are part of the objectives of the EPA Act in s 5. The principles of ESD identified in s 6(2) of the *Protection of the Environment Administration Act* 1991 are that:

> ... 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.

21 Section 39(4) of the Court Act imposes a general requirement to take into account the public interest in dealing with an objector appeal under s 75L of the EPA Act. As ESD principles are an aspect of the public interest, they can be a relevant consideration in my decision. Strictly speaking, I do not need to determine if these are a mandatory relevant consideration in order to determine the merits of this case. In *Minister for Planning v Walker*

[2008] NSWCA 224; (2008) 161 LGERA 423 in the context of judicial review proceedings of the Minister's determination of a concept plan approval under Pt 3A, Hodgson JA stated at [39] - [44] that it was mandatory for the Minister to consider the public interest, however this did not mean that it was mandatory to have regard to any particular aspect of the public interest, such as one or more of the principles of ESD. In that case it was found at [62] that as the Minister did not consider principles of ESD at the concept plan approval stage, the Minister was required to consider these if a project approval was sought. By analogy his Honour stated at [42] - [43] that a similar obligation to consider the public interest when making a decision under s 79C of the EPA Act, that the public interest embraces ESD principles. See also *Aldous v Greater Taree City Council* [2009] NSWLEC 17; 167 LGERA 13 where Biscoe J stated at [40] that it was mandatory for the consent authority to take into account ESD principles under s 79C. *Walker* at [62] in particular supports the conclusion that ESD principles are a mandatory relevant consideration for project approvals under Pt 3A.

Ulan's submissions on economic benefits and importance of mining

22 Before considering the environmental issues raised by the Applicant other matters raised by Ulan should be identified as these are relevant to an assessment which considers ESD principles, which requires the balancing of environmental, economic and social factors. Little time was spent at the hearing on the economic benefits of the project as the evidence summarised below is largely uncontested. Ulan submitted that m ining is directed to undoubtedly valuable resources which are immovable. There are specific legislative indicators that recognise the importance of the location of a resource when it comes to making decisions. For example, the *Mining Act* 1992 establishes that if there is a mining lease granted in relation to land, subject to certain exemptions, the mine will go ahead. It is also recognised in Pt 7A of the *Threatened Species Conservation Act* 1995 (the TSC Act) which sets up the biobanking regime and prohibits any

intervention on land that is reserved for biobanking except where there is a mining or a petroleum lease granted, per s 127S .

Mr Brown (economic benefits)

23 Ulan read the affidavit of Mr Brown, a partner with Deloitte Touche Tomatsu and Director of Deloitte Access Economics, filed 18 May 2011 attaching his expert report dated May 2011. Mr Brown estimates that the direct increase in economic activity as a result of the project will be $11,965 million for the life of the mine. The total estimated direct economic contribution of the mine (including current operations worth $2,516 million) is $14,481 million. The total estimated increase in economic activity including indirect effects is $29,718 million. Approximately $2,962 million of the estimated economic activity (25 per cent of the total benefit) resulting from the mine accrues to Mudgee and benefits also accrue to Gulgong and other parts of the Mid West region. The project will generate an additional 296 full time equivalent jobs per annum, on average, over the life of the mine, directly, and an additional 885 jobs indirectly, totalling 1,181 jobs. The total increase in taxes to the NSW and Commonwealth governments attributable to the project is estimated to be $1,849.9 million.

Mr Simes (coal market analysis)

24 Ulan read the affidavit of Mr Simes, Senior Associate at Wood Mackenzie Pty Ltd, filed 24 May 2011 attaching his expert report. Based on the Wood Mackenzie supply demand analysis it is reasonable to expect coal supplied by one or more of a range of coal supply regions worldwide will replace any coal not produced by Ulan. In response to par 6.2(a) of Professor Jones' report (earth sciences expert called by the Applicant) (which states that there is no evidence this project replaces other more polluting sources) Mr Simes stated that Ulan coal produces less carbon dioxide emissions per unit of energy than other coals. Alternate coals would produce a similar or a higher level of carbon dioxide emissions.

JER Jones and Simes (coal market analysis)

25 In their joint expert report filed on 2 June 2011 (exhibit 5), Professor Jones and Mr Simes agreed that the projected demand for coal is robust in the current economic environment and that if coal from Ulan was not supplied alternative sources of similar quality coal could be supplied.

26 Ulan submitted that in part the project was driven by the "clear need for the development of new coal deposits, for at least the foreseeable future, to meet society's basic energy needs": DG's report, exhibit 1 vol 1 tab 33 p 702. There will be a significant boost to the economies of the towns of Mudgee and Gulgong: DG's report, exhibit 1 vol 1 tab 33 p 668; Mr Brown's report exhibit 8A, annual report of Xstrata exhibit 24A p 67. Further, a payment of $3.475 million will be made to the Mid-Western Regional Council for community infrastructure, and a further $50,000 per year for 21 years for the maintenance of Cope Road (see O'Brien's affidavit below at par 29).

Ulan's submissions/evidence on benefits of single modern consent

Mr O'Brien (consents, commitments)

27 Ulan read the affidavit of Mr O'Brien filed on 3 May 2011 (exhibit 7A). Mr O'Brien has been employed as Group Environment and Community Manager at Xstrata Coal New South Wales since October 2005. Ulan is a joint venture between Xstrata Coal Pty Limited and Mitsubishi Development. Ulan currently operates under five major development consents granted under Pt 4. In all there are at least 27 development consents and modifications. Underground mine number 1 began production in 1941 and underground mine number 2 was developed in 1957. In 1981 the first major mine expansion, stage 1, was approved pursuant to Pt 4 of the EPA Act which enabled the first open cut operations to commence. In October 1985 stage 2 development for new underground mines (numbers 3 and 4) were approved under Pt 4. This included a western expansion to the existing open cut mine which was approved in 1981. In 1993 stage 3 development, involving the extension of underground mining to the north and west, including mining in the area now known as Ulan West, was approved under Pt 4. In 1999 stage 4

development, involving the extension of underground mine number 3, additional mine workings in Ulan West and construction of associated surface facilities in support of mining lease application 80, was also approved under Pt 4. In 2005 approval was granted under Pt 4 for additional works to maximise the efficiency of coal recovery and handling associated with the existing open cut and underground operations. Attached to Mr O'Brien's affidavit was a table of development consents. On 15 November 2010 approval was granted under Pt 3A for, inter alia, streamlining of the approved framework for the total Ulan operations, approval to continue mining in underground mine number 3 and Ulan West under a modified mine plan for 21 years (to 2031), increase the coal production limit of 10Mtpa to 20Mtpa, and continue mining operations 24 hours a day, 7 days a week.

28 Discussions have taken place since 2004 between the Department of Planning and Ulan about the mutual benefits of having a single consolidated consent. Ulan will be operating under the current statutory regime which is far more rigorous than under development consents granted shortly after 1980. Stringent obligations are imposed in relation to managing, monitoring, mitigating, reporting and auditing the environmental performance of all operations. In relation to GHG emissions, Ulan is required to implement all reasonable and feasible measures to minimise the release of these emissions from the site (condition 18) and prepare and implement an air quality and GHG management plan (condition 22). This Plan has been submitted to the DG for approval. Ulan must do the following in relation to water resources: offset more than negligible loss of baseflow caused by the project to surrounding watercourses (condition 29); provide compensatory water supply to any owner of privately owned land whose water entitlements have been adversely impacted as a result of the project (condition 30); remediate the Goulburn River diversion; and create and implement a water management plan (conditions 34 to 40). The project approval will also be beneficial in terms of biodiversity.

29 Operating under the project approval Ulan entered into a planning agreement with the Mid-Western Regional Council to provide $4.525 million over the life of the project comprising of $3.475 million to a community infrastructure fund (of which an initial payment of $2.050 million has been made) and $1.05 million toward the maintenance of Cope Road (in 21 payments of $50,000 per year).

30 Ulan has already taken action in accordance with and in reliance upon the project approval including mobilising a project team, commencing preparatory work, drafting management plans and executing contracts with suppliers, contractors and consultants. By entering into these contracts Ulan has committed to a capital expenditure in excess of $420 million. As at 31 March 2011 Ulan had spent in excess of $40 million in fulfilment of contractual obligations.

31 Ulan's counsel submitted that the homogenous approval replaces the current patchwork quilt of consents . It brings more stringent environmental conditions than those that apply to the existing consents in relation to, inter alia, noise, air quality, GHG emissions, water management, and ecology; see the affidavit of Mr O'Brien at par 34 to 87. Another benefit of consolidation, which was identified by Ulan and the Department as a reason for consolidation of the consents, is improved reporting and environmental performance: exhibit 9A vol 1 section 2.1. I accept that there are benefits in having a single approval granted under Pt 3A with more stringent environmental conditions but note that greater impacts will also occur with the mine expansion if approved.

Applicant's issues

32 The Applicant's case changed in the course of the hearing. In opening its counsel submitted that the application should be refused due to the environmental impacts of the project on ground and surface water, loss of biodiversity and the level of GHG emissions produced. There was less strident opposition in closing and the focus of the Applicant's case was

largely on proposed conditions the Applicant argued should be imposed to ameliorate biodiversity and GHG emissions impacts, not all of which are agreed by the Respondents. In closing the Applicant continued to contend that the project should be refused because of the very long-term impact on groundwater unless conditions were imposed requiring replenishment of groundwater and greater offsetting of baseflow losses. As some of the conditions the Applicant seeks to impose are novel, particularly in relation to measures to offset GHG emissions, it is necessary to consider the Court's powers to impose conditions if development consent is granted.

Anthropogenic climate change/GHG emissions

33 In opening the Applicant submitted that the project will exacerbate global anthropogenic climate change and increase Australia's contributions to GHG concentrations in the atmosphere, contrary to the principle of inter-generational equity and the conservation of biological diversity and ecological integrity. The particulars in the statement of facts and contentions are that:

> (a) The Project as approved permits the mining of up to 20 million tonnes of coal per year;
> (b) All of the coal extracted from the Project site will be burnt in thermal combustion to produce electricity in coal fired power stations;
> (c) The burning of coal produces carbon dioxide;
> (d) Carbon dioxide, once emitted, is dispersed throughout the global atmosphere and it remains in the atmosphere for, on average, approximately 100 years;
> (e) Carbon dioxide is a greenhouse gas and currently makes the largest contribution to anthropogenic climate change of all greenhouse gases;
> (f) Anthropogenic climate change is having, and will continue to have, environmental, economic and social impacts of a serious and irreversible kind across NSW and throughout Australia and globally,
> (g) The Project will emit scope 1, 2 and 3 greenhouse gas emissions totalling 28.7 million tonnes of carbon dioxide equivalents (TCO2-e) each year;
> (h) Over the 20 year lifetime of the Project, the Project will emit scope 1, 2 and 3 greenhouse gas emissions totalling 575 million tonnes of carbon dioxide equivalents (TCO2-e);
> (i) Scope 1 GHG emissions are direct emissions;
> (j) Scope 2 GHG emissions are indirect emissions from the consumption of purchased electricity;

(k) Scope 3 GHG emissions are other indirect emissions and includes emissions generated from the burning of coal; [note: domestically and internationally]
(l) The emissions from the burning of coal from the Project are scope 3 emissions for the Project and are also scope 1 and 2 emissions for the organisation or country that burns the coal;
(m) Approximately 81% of the coal extracted by the Project will be burnt in overseas countries. The greenhouse gas emissions from that coal is reported as the Project's scope 3 emissions, but will also be reported internationally as that country's scope 1 and 2 emissions;
(n) Approximately 19% of the coal extracted by the Project will be burnt in Australia. The greenhouse gas emissions from that coal is reported as the Project's scope 3 emissions, but will also be reported nationally as Australia's scope 1 and 2 emissions;
(o) Approximately 6% of the coal extracted by the Project will be burnt in NSW. The greenhouse gas emissions from that coal is reported as the Project's scope 3 emissions, but will also be reported at a State level as NSW's scope 1 and 2 emissions;
(p) Domestic use of coal from the Project will generate 5.2 million tonnes of carbon dioxide equivalents (TCO2-e) each year. The Project's scope 3 emissions, reported nationally as Australia's scope 1 and 2 emissions, will increase Australia's contribution to global greenhouse gas emissions by 1.3% per annum;
(q) Combustion of coal from the Project in NSW will generate 1.4 million tonnes of carbon dioxide equivalents (TCO2-e) per annum. The Project's scope 3 emissions, reported at a State level as NSW's scope 1 and 2 emissions [where coal burned for domestic use], will increase NSW's contribution to global greenhouse gases by 0.8% per annum;
(r) Ulan has failed to quantify the Project's GHG emissions in the context of Australia's international commitments to reduce GHG emissions, in particular, the agreement of the parties to the Copenhagen Accord that to avoid dangerous anthropogenic climate change deep cuts in global emissions are required to limit the increase in global temperature to 2 degrees celsius;
(s) Ulan has not addressed measures that would be implemented to avoid, minimise, mitigate and or offset the scope 3 impacts of the Project;
(t) The DGRs required the proponent to provide a detailed assessment of the key issues specified, which included a quantitative assessment of the potential scope 1, 2, and 3 GHG emissions and qualitative assessment of the potential impacts of those emissions on the environment, and a description of the measures that would be implemented to avoid, minimise, mitigate and or offset the potential impacts of the Project.

34 In closing submissions the Applicant no longer sought refusal of the project because of the extent of scope 1 (direct), 2 (indirect) and 3 (byproduct of coal burning) emissions (identified in contentions (i), (j), (k), (l), (m), (n), (o) (p), (q)). It sought conditions requiring an offset for scope 1 and 2

emissions as the appropriate means of mitigating these impacts. No condition requiring offsetting measures for scope 3 emissions was sought. This was a substantial change in the focus of its case as much of the evidence and submissions focussed on scope 3 emissions which are by far the largest component of GHG emissions attributable to the project.

Existing and proposed draft conditions for GHG emissions

35 Existing condition 18 is as follows:

> **Greenhouse Gas Emissions**
> The Proponent shall implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Director-General.

36 Existing condition 22 provides:

> **Air Quality & Greenhouse Gas Management Plan**
> The Proponent shall prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Director-General. This plan must:
>
> (a) be prepared in consultation with OEH and Council, and submitted to the Director-General for approval within 3 months of the date of determination by the Land and Environment court in proceedings no 10998 of 2010;
> (b) describe the measures that would be implemented to ensure compliance with conditions 17-21 of this schedule, including a real-time air quality management system that employs reactive and proactive mitigation measures; and
> (c) include an air quality monitoring program, that uses a combination of real-time monitors, high volume samplers and dust deposition gauges the evaluate the performance of the project, and includes a protocol for determining exceedances with the relevant conditions of this approval.
>
> *Note: The effectiveness of the Air Quality & Greenhouse Gas Management Plan is to be reviewed and audited in accordance with the requirements in Schedule 5. Following these reviews and audits, the plan is to be revised to ensure it remains up to date (see Condition 4 of Schedule 5).*

37 The Applicant proposed the following alternative conditions which the Respondents entirely oppose:

> 18A. While the project is in operation, the Proponent must submit for approval, by 31 August each year, a report to the Director-General on the Scope 1, 2 greenhouse gas emissions associated

with the project over the preceding financial year, including an assessment of the efficacy of the minimisation and mitigation actions described in the Air Quality and Greenhouse Gas Management Plan. Prior to approving the report, the Director-General must be satisfied that the emissions are within 5% of the scope of the original emissions budget projection, and can instruct the report to be amended and the Proponent must comply with any such instruction.

18B. If the report at condition 18A indicates that the total emissions budget, as estimated for the Environmental Assessment for the project, will be exceeded, the proponent shall be required to mitigate or offset the additional emissions.

18C. The Proponent must purchase and surrender Gold Standard Certified Emission Reductions (GS-CERs), or Australian Carbon Credit Units (ACCUs), to offset the Scope 1, 2 greenhouse gas emissions associated with the project that are identified in a report approved by the Director-General under condition 18A. The Proponent must acquire the offsets within one month of the approval of the report under condition 18A.

18D. The Proponent must provide documentation, to the satisfaction of the Director-General, to demonstrate compliance with condition 18B. This documentation must be provided within two months of the approval of the report under condition 18A.

18E. The Director-General can waive compliance with the requirement to report on, and offset, the Scope 1, 2 greenhouse gas emissions of the project under conditions 18A, B, C and D if he/she is satisfied that:

(i) a financial or regulatory liability has been imposed under another law (of any jurisdiction) in relation to the relevant emissions; and

(ii) the liability is appropriate having regard to ecologically sustainable development and the risks posed by climate change.

38 Amended condition 22(b) would require the proponent to prepare and implement a detailed air quality and GHG management plan for the project to the satisfaction of the DG. This plan must:

(b) describe the measures that would be implemented to minimise and mitigate the greenhouse gas emissions associated with the project.

Evidence

39 Expert evidence as to the GHG emissions of the project, and impacts of those emissions, was given on behalf of the Applicant by Professor Roger Jones and Mr Andrew Macintosh, and on behalf of Ulan by Dr Hugh Saddler and Mr David Blyth. Much of this evidence was directed to the Applicant's contentions that the volume of scope 1, 2 and particularly 3 emissions justified refusal or at least required substantial offset provisions. Evidence of the NSW government's approach to the assessment and regulation of GHG emissions of coal mines in NSW was given by Mr David Kitto, Director of the Mining and Industry Assessment Branch of the Department of Planning and Infrastructure.

Mr Blyth

40 Mr Blyth is Principal, SEE Sustainability Consulting, and has qualifications in environmental studies and economics. Mr Blyth prepared the Energy and Greenhouse Gas Assessment that was Appendix 14 in the Environment Assessment provided by Ulan as part of its application for the project approval. Mr Blyth's Statement of Evidence (exhibit 4A) provides a quantitative assessment of potential scope 1, 2 and 3 GHG emissions of the project. Mr Blyth's evidence was that the combined scope 1 and 2 emissions are estimated at 235,986 TCO2-e per annum, including estimated emissions from explosives and spontaneous combustion and slow oxidation of coal. The scope 3 emissions from coal transport were estimated at an annual average of approximately 902,553 TCO2-e per annum. The scope 3 emissions from the transport and combustion of the coal produced by the project have been estimated at an annual average of approximately 28,450,418 TCO2-e per annum. The scope 1 and 2 emissions from the project represent approximately 0.043 per cent of Australia's total GHG emissions of around 550 million TCO2-e per annum (2008), and the scope 3 emissions from the transport and combustion of the coal produced by the project are equivalent to 0.067 per cent of annual global GHG emissions.

41 Mr Blyth provided an energy and GHG assessment for the previously approved mining operations, which he based on the assumptions that the

mine life was 11 years (2011-2021) with no open cut mining and no Ulan West, and calculated at an average underground production of 6.221 Mtpa, an average yield of 93 per cent, and average run of mine, that is the coal mixture extracted from the ground, of 6.679 Mtpa (exhibit 23A). The comparison of GHG emissions between the previously approved mining operations, and the approved project, is as follows:

	Existing approvals	**Project approval**
Scope 1 : Methane emissions	Annual average=24,149 TCO2-e Total 11 year mine lifetime= 265,643 TCO2-e	Annual average=88,243 TCO2-e Total 20 year mine lifetime=1,746,866 TCO2-e
Scope 1 including emissions from methane, diesel, explosives (open cut) and slow oxidation & spontaneous combustion (open cut)	Annual average=27,591 TCO2-e Total 11 year mine lifetime= 303,503 TCO2-e	Annual average=104,833 TCO2-e Total 20 year mine lifetime=2,096,663 TCO2-e
Scope 2 : emissions from electricity consumption	Annual average=79,646 TCO2-e Total 11 year mine lifetime= 876,107 TCO2-e	Annual average= 131,153 TCO2-e Total 20 year mine lifetime=2,623,053 TCO2-e
Scope 3 : emissions associated with on site activities	Annual average=16,369 TCO2-e Total 11 year mine lifetime= 180,061 TCO2-e	Annual average=27,582 TCO2-e Total 20 year mine lifetime=551,650 TCO2-e
Scope 3 : emissions from new infrastructure		96,321 TCO2-e
Scope 3 : emissions from transport of coal including export	Annual average=613,058 TCO2-e Total 11 year mine lifetime= 6,743,634 TCO2-e	Annual average=902,553 TCO2-e Total 20 year mine lifetime=18,051,068 TCO2-e
Scope 3 : emissions from burning the product coal	Annual average=18,732,211 TCO2-e Total 11 year mine lifetime= 206,054,317 TCO2-e	Annual average=27,577,865 TCO2-e Total 20 year mine lifetime=551,557,310 TCO2-e

Mr Blyth's evidence was that the project's predicted energy and GHG indices for on site activities are significantly lower than the Australian coal mining averages, so that if the demand is filled from an alternative supply the GHG impacts are likely to be greater (exhibit 4A, 3.2(d)). In oral evidence, Mr Blyth commented that in modelling the impacts for scope 1, 2 and 3 emissions, Professor Jones had overstated the potential impacts associated with scope 1 or scope 1 and 2 combined. The current national programs for reporting GHG emissions require reporting of scope 1 and scope 2 emissions, and the proposed Carbon Pollution Reduction Scheme (CPRS) brought that back to scope 1 emissions: every party has responsibility to pay for the emissions for which they are directly responsible and control and manage. While there is no direct carbon price at the moment, Ulan is a member of the Commonwealth Government's Energy Efficiency Opportunities Program which requires organisations to look at how they use energy and what are the opportunities for using energy more efficiently. Ulan is also a participant in the NSW Government's Energy Savings Action Plan Program (ESAP) which is looking at the energy use of the facility.

Professor Jones

42 Professor Jones is a Professorial Research Fellow at the Centre for Strategic Studies, Victoria University, and has qualifications in earth science and environmental engineering. He has worked as a research scientist in the Climate Risk and Integrated Assessment, Climate Impact Group of the CSIRO, and more recently as principal research scientist in the Risk, Adaptation and Policy Team of the Climate Change Research Group, Centre for Australian Weather & Climate Research. Professor Jones addressed the marginal impacts of the estimated GHG emissions from the project. In his Statement of Evidence (exhibit E) Professor Jones separated the projected emissions into three categories: emissions directly under control of the mining operation, those incorporated into Australia's

national emissions, and international emissions that would fall under the various countries that import and consume the coal, including bunker fuels used in shipping (exhibit E, p3) (essentially scope 1, 2 and 3). Professor Jones used three emission scenarios to explore the changes to the global climate system of emissions from the project:

(1)a high emission scenario (Garnaut reference), being a "business as usual" scenario that factors in high emissions growth to 2100 based on recent global trajectories;
(2)a medium emissions scenario (MEP2030) that factors the Copenhagen Accord emission reduction pledges into current growth but contains no further policy interventions until 2030 when a minimum emissions path is followed through to 2100;
(3)a low emissions scenario (MEP2010) where undertakings additional to Copenhagen Accord pledges are implemented to 2020 followed by strong climate policy thereafter.

43 In oral evidence Professor Jones explained that those scenarios were used as input into a simple climate model that had been used in the temperature projections by the Intergovernmental Panel on Climate Change (IPCC). These gave an estimate of the change in temperature for the additional scope 1, 2 and 3 emissions projected for the project by putting emissions from a number of GHG into a simple carbon cycle model to estimate what the concentrations are into the atmosphere. This is converted into radiative forcing in the atmosphere and then converted into temperature. That model also provided estimates of sea level rise. He used a 3 degrees climate sensitivity, being the median estimated by the IPCC, and on that basis the high emissions scenario reached a mid range estimate of about 5 degrees by 2100. One of the targets for international treaties is to avoid exceeding 2 degrees from pre-industrial levels, and so he included a scenario initially designed to do that. This would require entering into very stringent emissions policy from 2010 in order to achieve that. To cope with the uncertainties of estimating global temperatures, he

had also used 6 degrees climate sensitivity and 1.5 degrees climate sensitivity in the modelling.

44 Professor Jones used three ways of measuring the marginal impacts of action affecting emissions, being:

1.aggregated economic impacts: impacts aggregated at the global scale and measured economically, the impacts ranging from market impacts to total economic value;
2.social cost of carbon: marginal impacts measured as the social cost of carbon defined as the net present value of the incremental damage due to a small increase in carbon dioxide emissions;
3.key vulnerabilities and tipping points: changes in the likelihood of exceeding critical thresholds, including loss of large ecosystems, loss of ice sheets such as the Greenland and West Antarctic Ice Sheets, climate-driven loss of security in a significant region or harm to a key economic region such as a coastal megacity.

45 In oral evidence Professor Jones explained that aggregated economic impact can be determined either by collecting impact studies and adding the numbers up. Alternatively by matching temperature and rainfall with current yields for that around the globe and calculating that if the average temperature in this region is 12 degrees and the income from that activity is X, and the average temperature in another location is 14 degrees and the average income is Y, that moving from 12 to 14 degrees will move income from X to Y. Professor Jones acknowledged that both methods have a lot of assumptions and tend to be very general, and there have been a limited number of models that have used those techniques.

46 The social cost of carbon is used to model changes from the proposed development by making a marginal change in a scenario and estimating the changes from that, which provides an estimate per tonne of carbon dioxide or CO2-e. The social cost of carbon can use the aggregated

economic impact figures, or, as was done in the Stern review, to estimate the changes in welfare according to a number of different metrics that included direct market costs, then look at indirect costs, the risk of catastrophe. On that analysis Stern determined that there was a potential for a loss of up to 20 per cent of global welfare, starting between up to approximately 5 per cent for direct costs. That approach, and the discount rates used in his modelling, were contentious. However, social costs of carbon are being used in a number of jurisdictions, most notably in the UK where they are applying the social cost of carbon to a number of different projects. At 2.18 of his Statement of Evidence Professor Jones referred to studies that have contributed to 223 estimates of the social costs of carbon, which vary widely because of the range of underlying emission scenarios driving the damages, rates of economic growth, assumptions as to welfare distribution and pure and applied rates of time preference. The median estimates from the entire population converted into ranged from US$6-US$27 per tonne of carbon dioxide (in 2010 dollars), and the mean ranged from US$33-US$47 per tonne of carbon dioxide (in 2010 dollars). In oral evidence Professor Jones explained that a lot of the studies on which those estimates are based were based on costs around 1995-2000, and that the social cost of carbon increases as more GHG are emitted, so that the social costs of GHG to be emitted between 2010 and 2030 would be higher than equivalent estimates in 1995-2000.

47 Key vulnerabilities and tipping points could be used to measure the marginal impacts of action affecting emissions on the basis that something like the loss of the Greenland ice sheet or the West Antarctic ice sheet could take place over a very long time, and that it would be very difficult to cost economically what the human and environmental cost of those would be. The approach is a precautionary one so that if critical points are likely to be exceeded it is preferable to avoid exceeding those without necessarily trying to get the direct economic cost. That approach has probably contributed most to the construction of the 2 degree limiting policy which originally came from work done by the German Government.

48 Professor Jones analysed the marginal impacts of the projected scope 1, 2 and 3 emissions from the project, being 574,976,019 tonnes of carbon dioxide with 1 per cent comprising the direct emissions from the project, 19 per cent being emitted within Australia's national jurisdiction, and 80 per cent being emitted internationally, mainly from burning of the coal. Professor Jones concluded that while the total emissions from the project as a proportion of national and global emissions respectively would be small in percentage terms, the marginal impacts are significant and contribute to the large externalities projected under climate change (at par 2.31-2.33):

- Using a simple climate model and three emissions scenarios temperature increase at median climate sensitivity peak between 0.0013-0.0015 degrees C around 2040, declining to 0.0009-0.0013 degrees C by 2100 as a result of the project;
- Sea level rise, restricted to ocean warming and glacial melt, showed a rise of 0.020-0.025cm in 2100 for the median climate sensitivity and 0.010-035cm for the full range as a result of the project;
- The marginal cost per tonne of CO2-e emissions due to this warming was estimated (in 2010 dollars) as being $38-$105 per tonne CO2 for the median climate sensitivity and medium emissions scenario and $19-$313 per tonne CO2 for the full range;
- Using two critical thresholds for ecological impacts, the thermal bleaching of coal and risk of species extinction, the area of the Great Barrier Reef affected ranged from at least 5sq km on all scenarios to 18sq km, while Australian vertebrates would face a marginal change in risk ranging from <1 to 5 species across the various scenarios as a result of the project and assuming a similar risk profile for Australian insects and plants those results would scale up by factors of 12 and 3 respectively.

49 In oral evidence Professor Jones commented that when considering scope 1 emissions alone, the social cost of carbon as estimated for scope 1, 2 and 3 would still hold because that is a marginal cost that has been divided back per tonne CO2-e. Professor Jones was asked to comment on the difference between the presently approved extraction under the existing consents and the proposed extraction over the proposed mine life of 21 years on which he had based his calculations. His opinion was that in terms of carbon emissions from either the existing or the future mine it was unsustainable regardless of the other parts of the project and the benefits that might be derived from it, because every tonne of CO2-e that is emitted past and present is going to cause damage into the future. There is an external cost to the benefits that are derived and to be sustainable those external costs have to be managed in some way.

50 Professor Jones' analysis of marginal costs in exhibit E was based on information relating to project emissions broken down into direct project emissions, domestic emissions (including direct project emissions) and international emissions, including yearly variations in emissions over the life of the proposed project (Table 1, exhibit E)). In response to a request from the Court Professor Jones provided a Supplementary Report (exhibit L) which addressed domestic scope 1, 2 and 3 emissions, comprising 19 per cent of the total emissions from the project. In preparing this document Professor Jones repeated the procedure he had used for the full range of emissions, using the three emission scenarios described at par 42 above. The revised temperatures averaged 19 per cent of the original warming across all scenarios, with marginal increases in temperature for the three scenarios ranging between 0.0002-0.0003 degrees C between 2030 and 2100. Professor Jones noted that the results were "noisier", "as the model is reaching the limits of its ability to simulate changes of that magnitude (model precision is 0.0001 degrees C)". The impacts measured as an absolute change reduced by a similar proportion, with areas of the Great Barrier Reef exposed to bleaching ranging between 0 and 3sq km, with the risk at lower temperatures being higher due to the high sensitivity of corals

to temperature rises. Species at risk ranged from 0 to 1, with the greater risk associated with higher temperatures due to the greater range of sensitivities across vertebrate species. Taking the domestic proportion of total emissions reduced absolute impacts by approximately the proportion of total emissions applied, however marginal changes per tonne of CO2-e emitted were broadly the same. Professor Jones described the results of considering the domestic proportion of total emissions in the following terms (exhibit L par 1.5):

> Absolute impacts are reduced by approximately the proportion of total emissions applied. However, marginal changes per tonne of CO2-e emitted are broadly the same. This principle will apply for any single project or part of a project when assessing marginal impacts. Higher emissions will register a loss over time, and lower emissions a benefit due to avoided damages.

51 Professor Jones also provided estimates based on Mr Blyth's calculation of scope 1, 2 and operational (transport) emissions for the new development. The total emissions were 15,315,450 TCO2-e, which comprised 2.66 per cent of the total estimated emissions for the project (1.6 exhibit L). That volume was below the precision of the simple climate model previously used to measure impacts, however the results showed that both warming and absolute impacts scaled proportionally as expected. On that basis, the impacts of the scope 1, 2 and operation specific scope 3 emissions ranged between 0.00001 and 0.00006 degrees C increase in global mean air temperature; an increased area of the Great Barrier Reef at risk of coral bleaching ranged between 0 to 50ha; and species at risk ranged from <1 per cent to just over 12 per cent of a single species being put at risk by having its bioclimatic envelope of habitat dislocated from its current location.

52 Mr Blyth commented on Professor Jones' Supplementary Report (exhibit L) by letter dated 17June 2011 (exhibit 26A), in which he noted that while it only modelled the domestic scope 1, 2 and 3 emissions it still included scope 3 emissions which are outside the control of Ulan. The National

Greenhouse and Energy Reporting System only requires organisations to report on scope 1 and 2 emissions and the CPRS only required organisations to pay for scope 1 emissions. In Mr Blyth's opinion, if only scope 1 and 2 emissions were modelled then the impacts from those emissions would be significantly lower than those predicted.

Dr Saddler

53 Dr Saddler is a consultant engaged in issues related to energy policy and environmental impacts of energy supply and use, including measurement and mitigation of GHG emissions. Dr Saddler's assessment of the relative significance of the GHG emissions impacts of the proposed development was based on information relating to Australia's total national GHG emissions in 2008-2009 excluding emissions relating to land use, land use change and forestry. Dr Saddler noted, based on the figures provided by Mr Blyth, that there would be variations in annual emissions over the life of the project, peaking in year 5 in which maximum coal production was expected. Dr Saddler considered that the assessment prepared by SEE Consulting provided a comprehensive and accurate estimation of emissions, with the exception of the assumptions used about scope 2 emission factors. In Dr Saddler's opinion the emissions intensity of electricity from power stations supplying the grid would decline steadily until 2020 because of the increase in zero emission renewable electricity resulting from the Large Renewable Energy Target program and an increase in low emission electricity generation from recently commissioned gas fired capacity and further new gas fired generation likely to be built over the next few years. Dr Saddler estimated that reduction was likely to be at least 10 per cent and possibly more if an emissions pricing policy comes into force. Dr Saddler considered that while there is bilateral support for reducing emissions by 5 per cent relative to a 2000 inventory baseline, that in no way implies an obligation on an individual emitter to make a proportionate reduction in its emissions. In oral evidence Dr Saddler's position was that there is a need for a strong policy response that is coherent.

Mr Macintosh

54 Mr Macintosh, Associate Director of the Australian National University's Centre for Climate Law and Policy, provided a report dated 15 April 2011 on international obligations relating to the reduction of GHG emissions and offsetting. He describes the *United Nations Framework Convention on Climate Change* , opened for signature 4 June 1992, 1771 UNTS 107 (entered into force 21 March 1994) (UNFCCC), *Kyoto Protocol to the Framework Convention on Climate Change* , opened for signature 16 March 1998, 2303 UNTS 148 (entered into force 16 February 2005) , Copenhagen Accord and Cancun Agreements in great detail and explains Australia's general obligations and specific commitments, at the national level under these international agreements. In order to promote the objectives of ecologically sustainable development (as opposed to also promoting sustainable development in developing countries) he recommended the use of Gold Standard Certified Emission Reductions (GS CERs) or Australian Carbon Credit Units (ACCUs), other than reforestation ACCUs, and stated that Ulan should be required to cancel the units to prevent their resale. ACCUs are issued to projects that are approved under the national carbon farming initiative, a statutory-based offset accreditation system targeted at abatement in agriculture; land use, land-use change and forestry; and waste sectors. Mr Macintosh reported that the carbon farming initiative legislation was before the Commonwealth Parliament at the time of the hearing, and that it was expected that the carbon farming initiative would be operational by mid-2011.

55 In the context of the parties' obligations for emissions and removals under the UNFCCC, Mr Macintosh in his expert report (exhibit at p 6 - 7) compared the production approach and consumption approach. The first, which was adopted under Article 4 of that convention, involves countries being responsible for emissions that occur within their territories whereas the second involves countries being responsible for emissions that were

produced in the creation of goods and services consumed within their territories. As a consequence of the adoption of the production approach, exporting countries are not liable for emissions produced from their goods and services in importing countries and conversely, importing countries are not responsible for the emissions created in the production of the goods and services in the exporting countries. It also means no party has liability for international transport emissions and these are not included in national totals. In his expert report Mr Saddler agreed with the statements made by Mr Macintosh in relation to these approaches. He considered that given the focus of current policy proposals and the approach under the UNFCCC, the consumption approach is unlikely to be adopted in Australia despite the prominence in the policy debate for such an approach to pricing emissions.

Joint Report

56 Dr Saddler, Mr Blyth, Professor Jones and Mr Macintosh provided a joint report (exhibit 4) in which Professor Jones and Mr Macintosh disagreed with Mr Blyth's opinion that the project's scope 1 and 2 emissions represent an insignificant contribution to Australia's GHG emissions. In their opinion, the fact that the projected scope 1 and 2 emissions pass the threshold for reporting under the *National Greenhouse and Energy Reporting Act* 2007 (agreed fact) and the former proposed threshold for the CPRS means that the projected emissions are significant.

57 In oral evidence the expert witnesses addressed the issue of offsetting GHG emissions. It was common ground that scope 1 emissions are the emissions that a project theoretically has control over (direct emissions). In Dr Saddler's view the reason for having the scope 2 category is that while a project can reduce some of its emissions by, for example, reducing its use of electricity by using it more efficiently, these are not fully under the control of the project. The project cannot determine whether, for example, the power station providing the electricity improves its efficiency in the way

in which it burns coal. Mr Macintosh accepted that imposing a requirement to offset scope 1 emissions is arguably not the most efficient way to reduce emissions because it is not necessarily targeting the cheapest ways of reducing emissions. Mr Macintosh accepted that in the context where there are two other mines in the locality, Moolarben and Wilpinjong, and the price for coal is fixed, that imposing an offsetting requirement would result in a smaller return from the operation. Mr Blyth was of the opinion that a carbon price, whether it be by way of a tax or allowed to float as an emissions trading system, would have the objective of limiting emissions to a 5 per cent increase on 2000 levels; it is an entirely different matter to attempt to replace that by a 100 per cent offset of scope 1 emissions. In his opinion, market based mechanisms such as a carbon tax or emissions trading system are generally considered to be the most effective and efficient outcome of delivering an emissions reduction. Mr Blyth estimated the cost of offsetting scope 1 emissions, at around $22 per tonne, would be in the order of $2.2 million.

58 It was common ground that the project's coal seams are relatively low in methane and so coal sourced from another mine would typically have higher scope 1 fugitive methane emissions per tonne of coal extracted.

Mr Kitto, Department of Planning

59 Mr Kitto, Director of Mining and Industry Assessment Branch, Department of Planning and Infrastructure affirmed an affidavit on 14 June 2011. He has held that position since 2005 and for the last 12 years has worked exclusively on environmental assessment of major mining and industry projects. Mr Kitto oversaw the preparation of the DG's report required under s 75I of the EPA Act and drafting recommended conditions of approval. The Applicant's proposed conditions, Mr Kitto stated, would be "inconsistent with the government's policy of not using the development assessment process in the EPA Act to impose obligations on proponents to offset the GHG emissions of their projects; and contrary to the

Department's practice of at least 5 years of applying this policy to the assessment and regulation of all major projects in NSW." There is no formal document setting out the government's position on the treatment of scope 1, 2 and 3 GHG emissions and the risks of climate change in the development assessment process under the EPA Act. It was first detailed in the DG's environmental assessment report on the project application for the Anvil Hill case (*Gray v Minister for Planning* [2006] NSWLEC 720; (2006) 152 LGERA 258) and then refined in subsequent reports. Since then, as was the case for this project, only a brief summary of the Government's position was included in the reports as it was assumed that the Government's position on the matter was clear.

60 Mr Kitto summarises the Department's position as being that development approval conditions are unsuitable for implementing a regulatory regime to require proponents to offset some or all of the GHG emissions of their projects. The government decided against such a regime for the following reasons. Firstly, such a regime would be inefficient, ineffective and inequitable because conditions could only be imposed on new projects, not existing ones. There are over 50 operating coal mines in NSW and it is likely to take at least 30 years for all of these mines to exhaust their current approvals and either close or obtain new approvals for extensions to existing operations. None of these mines are currently required to offset their GHG emissions. Imposing a regulatory regime through conditions would make the coal supply from a few mines more expensive and would not drive change across the industry. Furthermore, in the absence of a national or international scheme for offsetting GHG emissions, the regulatory regime imposed by conditions would need to rely on a collection of largely voluntary schemes to achieve offsets. Further, the regime would be inflexible as consents could only be modified at the request of the proponent. Finally, the regime would be complex to administer as it would not be uniform for all proponents.

61 Mr Kitto's oral evidence is that there is no NSW Government policy which operates as a constraint on the Court's consideration of offsets for GHG. Mr Kitto agreed that in principle there is no difference between applying current environmental standards and requiring an offset for GHG emissions for a new coal mine where an old coal mine is not subject to such a requirement, and requiring an offset for impacts on an endangered ecological community or vegetation. Mr Kitto commented that while the principle of equity was correct, there were some differences between a biodiversity offset and a GHG offset, namely that while under the EPA Act there is an express obligation to consider biodiversity impacts and link them to decisions on development through provisions such as s 5(a) and the biobanking scheme, there is no express link to GHG emissions.

Chevron Australia Pty Ltd Wheatstone Development (exhibit 25A)

62 During his oral evidence Mr Kitto referred to a gas project in Western Australia which he said was required to offset scope 1 emissions. The Minister later clarified that this was a reference to Chevron Australia Pty Ltd's development proposal for a 25 Mtpa liquefied natural gas plant, a domestic gas plant and marine facilities. When the facility extracts methane from the gas reservoir, carbon dioxide gas will be released into the atmosphere. GHG emissions from the proposal would be approximately 10 million T CO2-e per annum. Ulan tendered the Western Australian Environmental Protection Agency's (WA EPA) Report 1404: Wheatstone Development - Gas Processing, Export Facilities and Infrastructure dated June 2011 (exhibit 25A) in which it recommended to the WA Minister for Environment that the project be granted conditional approval. One of the recommended conditions was to require the proponent to offset the carbon dioxide gas released from the reservoir during the life of the project (at p 93), consistent with conditions applying to two other liquefied nitrogen gas projects (including Chevron Australia's Gorgon project). The Minister granted environmental approval in August 2011 subject to a condition that the applicant implement an offset package: see Government of Western Australia, Bill Marmion, Minister for

Environment; Water, " Final State environmental approval given for Wheatstone project" (Ministerial Media Release, 30 August 2011).

Whether proposed condition 18A - 18E should be imposed

Applicant's submissions

63 The Applicant contends that if the project is approved, the approval should be subject to conditions 18A-18E requiring the offsetting of scope 1 and 2 emissions. The Applicant submits the power to impose a condition is to be determined by reference to the scope, purpose and object of the legislation. The requirement that a condition be for a "planning purpose" is a gloss on the power, which was relevant in the context of *Allen Commercial Constructions Pty Ltd v North Sydney Municipal Council* [1970] HCA 42; (1970) 123 CLR 490 where the council was subject to the applicable EPI under Pt 4 of the EPA Act. In Pt 3A, the power being exercised under s75J is not constrained by an EPI, and is constrained only by the scope, purpose and object of the Act. There is no constraint in the words of s75J(4) itself, and the relevant question is whether the condition falls within the scope of the statutory power properly understood. In any event, the question of power to impose conditions requiring offsets does not strictly arise because the conditions are addressing the direct impacts of the development.

Minister's submissions

64 The Minister's extensive written submissions addressed (appropriately) the original case of the Applicant which sought offset measures for scope 3 emissions as well as scope 1 and 2. It is difficult to separate entirely the criticisms of measures for scope 3 emissions from scope 1 and 2 emissions as these overlap. I have endeavoured to summarise as far as possible the criticisms relevant to scope 1 and 2.

Legality of offset condition

65 The proposed conditions of the Applicant are opposed. The power to impose conditions under s 75J(4) is wide but must be within the objects and purposes of the EPA Act. That Act is not directed to worldwide environmental problems such as climate change, because the scale on which the Act operates is a local planning scale, and the regime pursuant to which it operates is on an application by application basis. *Newbury District Council v Secretary of State for Environment* [1981] AC 578; [1980] 1 All ER 731 identifies that there are limits on an unlimited statutory power to impose planning conditions including that it must have a planning purpose, which was described by McHugh J in *Western Australian Planning Commission v Temwood Holdings Pty Ltd* [2004] HCA 63; (2004) 221 CLR 30 as requiring that it implements a planning policy whose scope is ascertained by reference to the legislation that confers planning functions; it must fairly and reasonably relate to the permitted development to which it is annexed; and must not be so unreasonable no planning authority could have imposed it. While cases challenging Pt 3A decisions have not expressly raised the *Newbury* principles, there is no reason as a matter of principle why they would not apply with respect to conditions imposed pursuant to project approvals under that Part.

66 The principles referred to by Lord Fraser in *Newbury* , to test the validity of a condition are:

(i) It must have a planning purpose. In *Temwood* at [57], McHugh J described a "planning purpose" as one that implements a planning policy whose scope is ascertained by reference to the legislation that confers planning functions on the authority, not by reference to some preconceived notion of what constitutes planning.

(ii) It must fairly and reasonably relate to the permitted development to which it is annexed. Lord Fraser referred in this context in *Newbury* to the following statement of Lord Denning in *Pyx Granite Co Ltd v*

Ministry of Housing and Local Government [1958] 1 QB 554 (at 572):

(iii) A planning authority is not at liberty to use its powers for an ulterior object, however desirable that object may seem to be in the public interest.

(iv) It must not be so unreasonable that no reasonable planning authority could have imposed it.

Merits

67 As required by the DGEARs the report by SEE Consulting (Appendix 14 of the EA) provides the quantitative assessment of the scope 1, 2 and 3 emissions emitted from the project, a qualitative assessment of the potential impact of these on the environment, and a description of measures that would be implemented on site to minimise the GHG emissions of the project. Mr Blyth's subsequent report identifies the volume of these emissions produced by the mine under existing consents and what is proposed.

68 A number of measures to minimise GHG emissions of the project are identified in the EA. Ulan is required under Pt 6A of the *Energy and Utilities Administration Act* 1987 to prepare and maintain an ESAP every four years. A number of projects have been implemented pursuant to the ESAP which have resulted in estimated savings of 29,390 GJ per annum which corresponds to scope 1 and 2 emissions reductions of 3,064 TCO2-e per annum. In relation to scope 3 emissions management, Ulan's parent company Xstrata Coal participates in a number of initiatives aimed at reducing emissions from the combustion of coal in power stations.

69 Current condition 18 requires Ulan to take reasonable and feasible measures to minimise the release of GHG emissions from the site to the satisfaction of the DG. Reasonable is defined in the approval, and

incorporates notions of costs and benefits, with a value judgment ultimately being made as to where the balance should be struck in a particular case. The term feasible focuses on the more fundamental practicalities of the mitigation measures, and is defined as relating to engineering considerations and what is practical to build or carry out. According to Mr Kitto the requirement in condition 18 translates broadly into being energy and fuel efficient and, for coal mines, minimising the fugitive emissions associated with mining. Condition 22 provides a mechanism for monitoring Ulan's implementation of condition 18 and requires a detailed air quality and GHG management plan for the project to the DG's satisfaction. An amendment to that condition proposed by the Minister and Ulan clarifies that the purpose of the plan is to ensure compliance with conditions 17 to 21 which deal with air quality and GHG emissions.

70 Condition 22 needs to be read with Sch 5 of the approval which provides a detailed regime for the environmental management, reporting and auditing of the site and is required to be updated regularly. Condition 2 of Sch 5 requires such a plan to include baseline data, performance indicators and any relevant statutory requirements. Condition 3 of Sch 5 requires Ulan to conduct a review of environmental performance of the project to the DG's satisfaction on an annual basis. The contents of the annual review are specified in detail. Condition 4 requires the review of the plans, if necessary, to the satisfaction of the DG within three months of submitting an annual review. Condition 8 Sch 5 requires Ulan to commission and fund an independent environmental audit of the project by the end of December 2011 and at the end of every three year period thereafter. The audit must be conducted by a suitably qualified, experienced and independent team of experts. The assessment of minimisation and mitigation actions described in the air quality and GHG management plan is required to be conducted pursuant to condition 3 Sch 5.

71 Conditions 18A and 18B seek to impose a reporting regime and an obligation to "mitigate" any scope 1 and 2 emissions which exceed the scope of "the original emissions budget projection". In the Minister's submissions there is a disjunct in condition 18A between the nature of the report required and the formulation of the obligation. Ulan is required to submit a report that addresses scope 1 and 2 emissions in the previous financial year. The DG must be satisfied that the emissions are within 5 per cent of the scope of the original emissions budget projection before he or she can approve the report (but it is not clear what he or she could do if not so satisfied). Condition 18B requires the proponent to mitigate or offset but does not say how this should be done.

72 In the case of scope 1 and scope 2 emissions, Ulan is already subject to a requirement in condition 18 to implement all reasonable and feasible measures to minimise the release of GHG emissions from the site to the satisfaction of the DG. No distinction is drawn for the purposes of that condition between GHG emissions that are within the total original budget or that might exceed it. To the extent that the requirement to "mitigate" in proposed condition 18B was intended to require something along the lines of condition 18, the presence of the latter renders it superfluous.

Conditions 18C, 18D and 18E

73 The Minister's written submissions on proposed conditions 18C, 18D and 18E focussed on the requirement to offset scope 3 emissions. Those aspects of the submissions relevant to the proposed offsetting of scope 1 and 2 were:

(a) The legislation for one of the two offsetting schemes referred to has not yet been passed;

(b) The (then) proposed carbon pricing scheme involved the imposition of a carbon pricing mechanism by reference to an entity's scope 1 emissions. A carbon pricing scheme would provide an incentive to entities such as Ulan to reduce the scope 1

emissions associated with their projects, and reduce their scope 2 emissions as the power station responsible for generating the electricity would be subject to a carbon price which it would either internalise or pass on to the end user;

(c) The proposed conditions pre-empt the imposition of a national policy, and in a manner that would be anomalous to the way that the structure of the international climate change regime was set up;

(d) The proposed conditions are inequitable in the sense that they would be imposed on the project alone, and would be ineffective in generating broader climate change outcomes because of the length of time it would take for all presently operating mines to exhaust their current approvals;

(e) There would be administrative uncertainty if regulatory regimes imposed by conditions became inconsistent over time;

(f) The scale of the climate change problem and its global impact can be contrasted with the issues traditionally dealt with in development consents which focus on the local or regional impacts of the development concerned;

(g) If the offsetting regime were limited to scope 1 only or scope 1 and 2 emissions, the issues regarding the emissions associated with the original consents and the entirety of the offset would need to be considered; if scope 3 emissions are out of the picture only a very small proportion of the overall emissions associated with the project is left.

(h) The scope 1 and 2 emissions alone are unlikely to constitute a threat of serious or irreversible damage, the criterion for the operation of the precautionary principle.

74 The proposed offsetting scheme for scope 1, 2 (and 3) emissions is anomalous as Ulan under its existing consent can carry out activities that would result in a not insignificant proportion of the emissions without any offset requirements. The commitment of the Australian government is not to neutralise national GHG emissions but rather to reduce them by between 5 per cent and 25 per cent from 2000 levels by 2025. Including scope 2 emissions is anomalous as these are another entity's scope 1

emissions. Such conditions are an attempt to implement broad climate change objectives. The Government's policy in relation to the treatment of GHG emissions over the last five years in the development assessment and approval process recognises the efforts at national level to implement a broad initiative to regulate GHG emissions but also the limits of the EPA Act in relation to global environmental outcomes.

75 The project will be the only one in NSW with these requirements imposed by condition. Proposed condition 18E vests discretion in the DG to waive compliance with the requirements of conditions 18A to 18D if he or she is satisfied that an equivalent financial or regulatory liability has been imposed under another law of any jurisdiction. The project stands alone until when and if that occurs.

76 The person who is most efficiently able to reduce emissions is the person directly responsible for them, and so requiring Ulan to offset scope 2 emissions removes the incentive for that person to do something about their emissions because they are already being offset. According to Mr Kitto there are over 50 coal mines operating in NSW and it will take about 30 years for all those mines to exhaust their current approvals. None have offset requirements. Conditions can only be imposed on new projects assuming the government makes the decision to do so in future. It will take many decades before an offset regime imposed by way of conditions has the coverage necessary to drive change across the industry. The imposition will impose an increase on the cost of the coal from a few mines such as this project.

77 The Minister accepts that the Ulan underground coal seams are considered to be non gassy and the levels of fugitive emissions associated with the mine are not of the order that would make it economically feasible to construct the infrastructure required to capture those emissions. The Minister accepts that it is not possible to reduce the scope 1 and 2

emissions to zero because the project would always need to use diesel to run trucks and equipment and electricity and underground mining would always result in methane emissions. It is not possible for the mine to reduce its emissions to a zero baseline level, and what the Applicant is seeking to impose is a requirement of that nature.

Ulan's submissions

Legality of offset conditions

78 Ulan submits that the power to impose conditions is not unfettered, despite the broad words used in s 75J(4). Ulan submits that the imposition of any kind of GHG offset condition would be invalid as being in breach of all three of the *Newbury* tests. The Applicant's proposed conditions are not for a proper planning purpose, when considered against the objects in s 5(a)(i) and (ii) of the Act. Because of the financial burden imposed, they do not fairly and reasonably relate to the development. In determining whether a condition is for a proper planning purpose, that purpose is to be ascertained from the statute that is the source of the power to grant approval and impose conditions, which in this instance is to be understood by reference to all the objects of the Act and not just the object of encouraging ecologically sustainable development. The conditions are discriminatory, not being imposed on any other coal mine in NSW, which means that they do not fairly and reasonably relate to the development and are an indication of unreasonableness. The conditions require complete offsetting and thus would not be consistent with Australia's commitment to reduce emissions by 5 per cent on the year 2000 emissions. Requiring offsetting of scope 1 emissions would not be rational. There is no guarantee that a market to buy CERs will exist indefinitely, and there is no evidence as to how the market operates, what factors influence the cost of CERs and how available they are for purchase. The ACCUs do not yet exist.

Merits

79 Ulan submits that if the Court does require an offset, the condition could not be one where Ulan was forced to buy either non existent carbon credit units or any form of CER, and any offset condition should have the flexibility to allow Ulan to choose how to do this subject to approval of the DG. The Court should consider that over the next ten years Xstrata, the 90 per cent owner of Ulan, will invest more than $A180 million in renewable or low emissions technology, which is to address emissions from fossil fuel based power generation. This is a form of voluntary offset and a huge financial contribution and it would be unreasonable for the Court to impose any further GHG offset. Ulan submits that the recommendation in the Wheatstone Development in WA can be distinguished from this application: the recommendation requires offsetting of only a component of scope 1 emissions, being the carbon dioxide in the methane reserves, and it arises in a context where other gas projects are voluntarily sequestering their carbon dioxide emissions.

80 Ulan submits that the imposition of any offset would be a discriminatory attack on Ulan to the benefit of its competitors. Even ignoring unlawfulness, ESD and the precautionary principle require that any measures be imposed to ameliorate an environmental risk should be practical and proportional to the level of threat and uncertainty, and what is proposed by the Applicant is neither practical nor proportional.

Consideration of GHG

81 The EA for the project compared project-related emissions (assuming maximum 20 Mtpa) with national and global emissions. Of the total GHG emissions 96 per cent were scope 3 emissions, annual average of 0.063 per cent equivalent of annual global GHG emissions. Scope 1 and 2 emissions represent 0.44 per cent of Australia's total GHG emissions and 0.0005 per cent of annual global emissions. The predicted maximum GHG index for on site activities was 0.029 TCO2-e per tonne of product coal, which was significantly less than the Australian coal mining industry

average of 0.079 TCO2-e per tonne. On Mr Blyth's updated figures scope 1 and 2 emissions are 0.04 per cent of Australia's total GHG emissions of around 550 million TCO2-e per annum in 2008 and for scope 3 emissions from transport and combustion of coal produced by the project are equivalent to 0.067 per cent of annual global GHG emissions.

82 The power to impose conditions on a project approval is conferred by s 75J(4) of the Act. The power to impose conditions on a Pt 3A project approval is not confined in the manner specified for conditions of development consent granted under Pt 4 of the Act, and is wide: *Ulan Coal Mines Ltd v Minister for Planning* [2008] NSWLEC 185; (2008) 160 LGERA 20 at [74], [75]. It is not, however, unlimited.

83 In *Allen Commercial Constructions* the High Court considered whether a condition imposed on a development consent limiting hours of construction work was within the scope of s 40 of the applicable EPI, which conferred power on the council to grant consent "unconditionally or subject to such conditions as it may think proper to impose". Walsh J (at 499) held (Barwick CJ and Menzies and Windeyer JJ agreeing):

> In accordance with a well-recognized rule, s 40 (1) ought to be understood (quite apart from the limitation contained in its opening words) not as giving an unlimited discretion as to the conditions which may be imposed, but as conferring a power to impose conditions which are reasonably capable of being regarded as related to the purpose for which the function of the authority is being exercised, as ascertained from a consideration of the scheme and of the Act under which it is made. This purpose may be conveniently described, in accordance with the expression used by Lord Jenkins in *Fawcett Properties Ltd. v. Buckingham County Council* (1961) AC 636 at 684 , as being "the implementation of planning policy", provided that it is borne in mind that it is from the Act and from any relevant provisions of the Ordinance, and not from some preconceived general notion of what constitutes planning, that the scope of planning policy is to be ascertained.

84 In *Dogild Pty Ltd v Warringah Council* [2008] NSWLEC 53; (2008) 158 LGERA 429 Biscoe J considered the authorities on the scope of power to impose conditions, including *Newbury* in the context of Pt 4 of the EPA Act. Biscoe J noted (at [41]) that this Court has often applied *Newbury* to test the validity of conditions of development consent, and that the Court of Appeal has approved the *Newbury* tests. At [42] Biscoe J noted that the only High Court case to have considered *Newbury* is *Temwood* , where McHugh J held:

> [57] The Commission also does not dispute that a condition attached to a consent must reasonably and fairly relate to the development permitted. A condition attached to a grant of planning permission will not be valid therefore unless:
>
> 1. The condition is for a planning purpose and not for any ulterior purpose. A planning purpose is one that implements a planning policy whose scope is ascertained by reference to the legislation that confers planning functions on the authority, not by reference to some preconceived general notion of what constitutes planning.
>
> 2. The condition reasonably and fairly relates to the development permitted.
>
> 3. The condition is not so unreasonable that no reasonable planning authority could have imposed it.
>
> [58] A condition attached to a grant of planning permission may be invalid although its ulterior purpose is not the sole purpose. If the ulterior purpose is a substantial purpose for which the authority is exercising its power, the condition is invalid. Counsel for Temwood conceded that the purpose of reserving the Foreshore Reserve was a proper town planning purpose. The question is whether the condition was imposed for a proper planning purpose. (footnotes omitted)

85 In *Dogild,* Biscoe J noted (at [44]) that the *Newbury* test or principles articulated by McHugh J in *Temwood* were cited and followed by the Court of Appeal in *Westfield Management Ltd v Perpetual Trustee Company Ltd*

[2006] NSWCA 245, where Basten JA cautioned (at [78]) that "care must be taken not to treat a succinct statement of principles as a formulaic test". Biscoe J concluded (at [48] that:

> In my opinion, the *Newbury* tests derive High Court support from the judgments of McHugh and Callinan JJ in *Temwood* and are entrenched in decisions of intermediate appellate courts and this court, including decisions of the New South Wales and Queensland Courts of Appeal following McHugh J in *Temwood* . They are a succinct and convenient statement of principles and may be viewed as a refinement of the statement in *Allen* .

86 More recently, the Court of Appeal has considered *Newbury* in *Botany Bay City Council v Saab Corporation Pty Ltd* [2011] NSWCA 308, in the context of a condition imposed in granting development consent under Pt 4 of the Act. Basten JA noted (at [2]) that the validity of the condition then under consideration "must be assessed primarily by reference to the scope and purpose of the statutory power under consideration". Basten JA noted at [5] that all five members of the House of Lords in *Newbury* expressed the test in slightly different language, and that each exposition was obiter, all members of the House of Lords having accepted that no planning permission was required so that the validity of the condition was irrelevant. Basten JA went on to note at [6] that *Newbury* has been applied by the Court of Appeal in respect of conditions requiring contributions under s 94(1) of the Act (*Lake Macquarie City Council v Hammersmith Management Pty Ltd* [2003] NSWCA 313; 132 LGERA 225). Tobias AJA noted at [67] - [68] that the *Newbury* tests "have been neither adopted nor rejected" by the Court of Appeal or by a majority in the High Court, and that in *Temwood* only McHugh J had applied *Newbury,* while Callinan J referred to it. There was, however no submission made that the primary judge had been wrong to apply the second *Newbury* test. At [25] Macfarlan JA agreed with Tobias AJA, subject to the observations of Basten JA.

87 What emerges from this consideration of the authorities is that the power to impose conditions on an approval under Pt 3A is wide, and includes

imposing a condition that retains practical flexibility leaving a choice of the means by which an outcome or objective is to be met for the proponent: *Ulan* , at [79]. The approach in *Newbury* as a test of the validity of a condition on a Pt 3A project approval has not been expressly endorsed, or rejected, by the Court of Appeal or the High Court: *Botany Bay City Council v Saab* at [67]-[68]. The decision of the High Court in *Allen Commercial Constructions,* and the comments by Basten JA in *Botany Bay City Council v Saab,* confirm that the starting point for consideration of a condition sought to be imposed on an approval is that it must be assessed by reference to the scope and purpose of the statutory power under which it is imposed. In contrast to development consents granted under Pt 4 of the Act, the only applicable provision is s 75J(4). The scope of the power conferred by that provision is broad, but not unlimited. A condition must be reasonably capable of being regarded as related to the purpose for which the approval function is being exercised: *Allen Commercial Constructions* at 499. In the context of that case, that purpose was to be ascertained from a consideration of the relevant planning scheme and the *Local Government Act* 1919, and was, as held by Walsh J, "the implementation of planning policy" which was to be ascertained from the Act and the planning scheme and not from "some preconceived general notion of what constitutes planning". In the context of s 75J(4) the relevant purpose must be ascertained by reference to the scope and purpose of the power conferred under Pt 3A, in the context of the scope and purpose of the Act as a whole which is to be derived from its objects.

88 Alternatively, to the extent that it is relevant to apply the *Newbury* approach, any general statement of principle that can be derived from the differing discussions in *Newbury* is reflected in the discussion by McHugh J in *Temwood* at [57], quoted above at par 84. The first element of that statement of principle is consistent with the analysis above, namely that a condition must be imposed for a purpose, described in *Temwood* (and *Allen Commercial Constructions)* as being for a "planning purpose", but better described in this context more broadly as being a purpose

consistent with the scope and purpose of the power conferred by Pt 3A in its context of the Act as a whole. It is consistent with that requirement that a condition imposed for an ulterior or improper purpose will be invalid: *Botany Bay City Council v Saab* at [13] per Basten JA. The second element requires that the condition "reasonably and fairly" relate to the development, and in this context, a condition framed to address impacts of the proposed development would satisfy that requirement. The third element requires that the condition not be so unreasonable that no reasonable planning authority could have imposed it. As noted by Basten JA in *Botany Bay City Council* at [15], any exercise of discretionary power is capable of challenge as manifestly unreasonable in the *Wednesbury* sense; *Associated Provincial Picture Houses Ltd v Wednesbury Corporation* [1948] 1 KB 223; [1947] 2 All ER 680 . If a condition satisfies the fundamental requirement that it be reasonably related to the purposes for which the power may be exercised, it may be that this third element becomes relevant where the severity of the burden imposed on the applicant is disproportionate to the consequences attributable to the proposed development.

89 In *Ulan* Preston J acknowledged at [80] that projects subject to approval under Pt 3A are "often complex, extensive and multi-stage projects". In contrast to the detailed environmental assessment provisions applicable for development assessed under Pt 4 of the Act, assessment of the projects to which Pt 3A applied proceeded by way of environmental assessment requirements prepared by the DG specifically for the proposal (s 75F(3)); preparation and exhibition of the required environmental assessment (s 75H); preparation by the DG of an environmental assessment report to the Minister for the purposes of the Minister's consideration of the application for approval (s 75I); and approval by the Minister (s 75J). The discretion to approve projects under Pt 3A is far less constrained than under Pt 4.

90 The power conferred by s 75J to approve a project, whether or not subject to modifications or on conditions, is the outcome of the assessment process provided in Div 2 of Pt 3A. That assessment process, and Pt 3A generally, falls within the overall scheme of the Act which, according to its long title, is an act "to institute a system of environmental planning and assessment" for the State. The objects of the Act are identified in s 5 as:

> The objects of this Act are:
>
> (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.

91 The statutory scheme of the Act, as understood from a consideration of its objects, is to ensure a proper consideration of all factors relevant to environmental planning and assessment, including in particular the proper management, development and conservation of natural and artificial resources, for the purpose of promoting the social and economic welfare of the community and a better environment (object 5(a)(i)).

92 Turning to the imposition of conditions requiring the offsetting of GHG emissions, much of the experts' discussion was directed to whether conditions requiring the offsetting of scope 1, 2 and particularly 3 emissions could be imposed. Offsets for scope 3 emissions are no longer pressed. The GHG emissions released directly and indirectly from the existing and proposed mine as scope 1 and 2 emissions contribute to an environmental impact which has local, regional and global impacts. As the purpose of the EPA Act includes the protection of the environment, the imposition of conditions to address GHG which are attributable to the project under Pt 3A are arguably within power.

93 It was common ground between the experts that scope 1 emissions are a direct consequence of the carrying out of the activities authorised by the project approval, and are the emissions over which the proponent has potentially greatest control. A condition requiring the offsetting of emissions directly attributable to the operation of the project, in order to address direct potential or actual adverse impacts on the environment, is related to the purpose of assessing and approving a significant extension of a coal mine both in terms of time and rate of extraction of the resource. I am satisfied that a condition requiring Ulan to offset the scope 1 emissions of the project would be within the scope and purpose of the power conferred first on the Minister and now on the Court under s 75J. Alternatively, if the principles in *Newbury* apply, a condition which aims to ameliorate an environmental impact of a development is for a purpose within the scope of the EPA Act addressing the first principle. That the

impact is felt within and also well beyond NSW does not suggest that legally a condition should not be imposed under State legislation which seeks to ameliorate one contributor to that impact. A condition requiring offsetting of scope 1 emissions would meet the first *Newbury* principle, as summarised by McHugh J in *Temwood* . The scope 1 emissions, which are the direct consequence of the project, ensure that the condition directly relates to the project, whether or not it is possible for Ulan to reduce or minimise its scope 1 emissions from fugitive gas emissions from underground mining or from its operations.

94 Scope 2 emissions are different to scope 1 emissions. By contrast scope 2 emissions result from diesel and electricity use at the project and are not emissions which Ulan can control entirely. As identified by Dr Saddler, while Ulan can minimise electricity and diesel use at the mine it cannot influence how an electricity generator and supplier chooses to generate the electricity Ulan uses. While scope 2 emissions are reported under the National Greenhouse and Energy Reporting System, according to Mr Blyth only scope 1 emissions were the subject of the proposed carbon reduction scheme, being the emissions which a party was directly responsible for and could control and manage. A condition framed to require offsetting of scope 2 emissions would be open to criticism that to the extent that those emissions are under the control of others, the requirement would not fairly relate to the development. It was not clear from the evidence how identifiable those parts of the scope 2 emissions are which Ulan has the ability to minimise or of any other form of control. The incentive for the electricity generator to reduce the production of GHG will also be removed if Ulan has to offset these, a poor policy outcome as identified in the Respondent's submissions. I do not therefore consider it necessary to determine whether offsets in relation to scope 2 emissions are lawful as I do not intend to impose conditions requiring these for the reasons identified in this paragraph.

95 The Respondents submit that under the second (must be fair and reasonable) and third (not unreasonable) principles in *Newbury* the offset conditions proposed are not fair or reasonable and would be discriminatory and therefore so unreasonable no planning authority would impose them as this is the only coal mine in NSW which would be subject to them. Further, the offsets are not proportional to the impacts sought to be addressed. I will now determine if it is fair and reasonable to impose the offset conditions in 18A -18E in relation to scope 1 emissions. Mr Blyth estimated (as shown in the table above at par 41) the total scope 1 emissions including emissions from methane, diesel, explosives (open cut) and slow oxidisation and spontaneous combustion (open cut) for the project's lifetime are 2,096,663 TCO2-e in contrast to the total for the currently approved mine lifetime of 303,503 TCO2-e, or an annual average of 88,243 TCO2-e as compared to 24,149 TCO2-e. Those calculations were not challenged and suggest a substantial increase in these emissions if this project is approved and are sufficient to trigger reporting requirements under the National Greenhouse and Energy Reporting System. I accept the evidence of Professor Jones and Mr Macintosh that these are significant emissions in the context of this application.

96 Professor Jones' evidence was that every tonne of CO2-e emitted past and present is going to cause damage into the future, and that the marginal cost per tonne emitted is the same. In his evidence he modelled the impact of the project in terms of scope 1, 2 and 3 emissions based on three emission scenarios (high, medium and low). Given the contraction in the Applicant's case to offsetting of scope 1 and 2 emissions he undertook further modelling of these with some scope 3 emissions he considered arose from transport (exhibit L). He measured the impacts of action affecting emissions as aggregated economic impacts at a global scale, the social costs of carbon being the net present value of the incremental damage due to a small increase in carbon dioxide emissions and key vulnerabilities and tipping points. Professor Jones acknowledged the difficulties and uncertainties in the modelling undertaken particularly when

modelling for smaller amounts of carbon. He maintained that for the scope 1 emissions from the project the social cost of carbon estimated for scope 1, 2 and 3 emissions would still hold as that marginal cost can be divided back per tonne of CO2-e. This evidence is significant because it demonstrates that it is methodologically possible to apply data from single (large) projects in a climate model to quantify to some extent at least the social cost of carbon. Such evidence means that the submission that a particular project is but one of many contributors to a local, regional and global problem, while correct, can be subject to analysis of what the individual project's social cost of carbon is.

97 The Government's policy approach not to require proponents to offset some or all of the GHG emissions of their projects, as explained by Mr Kitto, is based on the view that the development approval process is not the most appropriate or efficient approach to achieve the reduction of GHG. There are a large number of existing operating coal mines in NSW which are not required to offset GHG emissions, and the length of time it would take for those mines to exhaust their current approvals and either close or obtain new approvals is some 30 years. The policy is relied on by the Respondents to support their submission that any offsetting of GHG emissions is not reasonable or rational.

98 The Court is not bound by such a policy which is not formalised as a whole of government policy but is adopted within the Department of Planning and effectively signed off by the Minister as part of several approval processes under Pt 3A. Both Respondents argued the offset if imposed is discriminatory. Neither of the two adjoining coal mines, Moolarben and Wilpinjong, is subject to such a condition nor is any other coal mine in NSW. The Court has had before it very few merit appeals in relation to large coal mines. Objector appeal rights for such developments are limited under the EPA Act and related instruments. I am aware of only one other merit appeal concerning a coal mine under Pt 3A, also heard this year,

being *Ironstone* . The impact of GHG emissions was not raised in that appeal. This is therefore the first time the Court has had to consider the environmental issues raised by the GHG impacts of a large coal mine in a merit review process. The orthodox approach applied generally in all areas of environmental impact assessment is that any adverse impact must be avoided where feasible and practical to do so. Where harm is unavoidable other measures should be considered to ameliorate the impact, one of which can be offsetting measures. As acknowledged by Mr Kitto there is nothing inherent in an offset scheme for GHG which prevents such an approach.

99 Ulan and the Minister submitted that the application of ESD principles together with all the objectives of the EPA Act which require measures to ameliorate an environmental impact must be practical and proportional and this is not met in this case. The Minister emphasised that ESD principles required improved pricing and incentive mechanisms to be implemented and the offset scheme proposed did not achieve that.

100 In the context of this application, the condition would be imposed on an approval that extends the life of this coal mine for 10 years and permits extraction of substantial additional coal each year of that extended period. The offsetting relates directly to the additional emissions generated over that time. That this is the first such condition imposed on a coal mine in NSW is not necessarily discriminatory, it is simply the first occasion that has occurred. I have found that it is otherwise lawful. Condition 18B does not require the offsetting of all GHG emissions just those which are emitted above the GHG budget identified in the EA. I consider it can be implemented reasonably (subject to clarification of the approach in some of the conditions referred to below). As other operating coal mines seek approval to modify or extend their operations, or new coal mines are opened, it would be open to the consent authority which may be the Minister to impose a similar condition.

101 The Minister considered that a carbon pricing scheme was a preferable means from a policy and economic perspectives to drive reductions in GHG emissions and would provide better incentives to Ulan to do so. That may well be the case but no such system is yet to operate in Australia or NSW and this approval is sought now. The Applicant's proposed condition 18E provides flexibility to respond to changing regulatory regimes and would allow the adoption of a carbon pricing scheme once available at the national or state level instead of the offset scheme. To the extent these provisions pre-empt a national scheme, that can be adopted instead once in place by virtue of proposed condition 18E.

102 I am mindful of Ulan's submission which the Minister accepts that capturing the scope 1 GHG emissions released in the course of mining the coal is not practically possible at present as the cost of the technology is simply prohibitive. Ulan submits that it cannot take practical and feasible steps to reduce its scope 1 emissions which escape as fugitive gas when coal seams are mined. That release of GHG beyond a certain level as identified in condition 18B has an impact which should be offset for the reasons I have outlined above.

103 The Wheatstone Development in WA is noteworthy in that it shows that in at least one other Australian jurisdiction the environmental regulator is alive to the issue of GHG impacts from single projects and considered offsetting measures to mitigate the inevitable release of scope 1 emissions in that case. Approval for that project has been granted by the relevant Minister to include an offset condition. There does not appear to be any basis for distinguishing it as a policy approach, contrary to Ulan's submissions which sought to emphasise the different nature of that development.

104 Existing condition 18 requires the mitigation of all GHG released from the site (which must be scope 1 and 2 emissions) through the implementation of all reasonable and feasible measures. Its implementation is to the satisfaction of the DG. Reporting requirements in condition 22 are supported by the environmental management and auditing requirements in Sch 5. The anomalies between existing condition 18 and proposed 18A and 18B are highlighted in the summary of the Minister's submissions at par 69 - 72. Proposed condition 18A requires the reporting of scope 1 and 2 emissions at the end of each year of operation including an assessment of the efficacy of the actions taken to minimise and mitigate these as described in the air quality and GHG management plan. If emissions are not within 5 per cent of the scope of the original emissions budget in the EA the DG can instruct the report to be amended. The reason for this mechanism is unclear and in the absence of one should not be adopted. Proposed condition 18B requires mitigation and offsetting of emissions which exceed the total emissions' budget identified already in the EA. Condition 18B will apply only to scope 1 emissions. It is therefore necessary for an amended condition 18 requiring the mitigation of GHG to continue to apply to scope 2 emissions. The reporting obligations in proposed condition 18A can apply to scope 2 emissions but its terms need to be clarified to ensure there is an obligation to mitigate these.

105 Proposed condition 18C specifies offsetting through the purchase of specified carbon credits within a certain timeframe. Since the hearing in this matter there have been legislative changes at the Commonwealth level which may impact on the carbon credit schemes referred to in this condition. Advice as to whether this should be amended is necessary. I agree with Ulan's submissions that it cannot be expected to purchase non-existent carbon credit units which was the case at the hearing with one of the schemes specified (ACCU). The other scheme specified (GS CER) is voluntary and that was criticised as not therefore being guaranteed to last the life of the mine project.

106 Subject to clarification of these matters conditions 18A -18E as proposed by the Applicant need be no more complex to administer than specific conditions imposed on other aspects of large and complex projects approved under Pt 3A.

107 As submitted by the Minister the amendment to condition 22(b) sought by the Applicant is unnecessary as similar obligations are imposed by Sch 5.

108 Before finalising conditions 18A - 18E the parties' advice on alternative wording in light of matters raised in the judgment is necessary.

Groundwater issues

109 The Applicant's statement of facts and contentions states the project will significantly and permanently impact on the Ulan and Bobadeen groundwater systems, failing to conserve biological diversity and ecological integrity and breaching the principle of intergenerational equity.

Particulars

(i) Water bores and groundwater seeps within the Project site are likely to be impacted by mining subsidence, and those located directly over the mining area are expected to dry up as a result of mining;

(ii) The reduction in acquifer pressures caused by the longwall mining operations will impact on groundwater baseflows, causing losses to the Goulburn River catchment in the order of 0.11 ML/day by the time mining is complete; (see conditions)

(iii) The reduction in acquifer pressures caused by the longwall mining operations will impact on groundwater baseflows, causing losses to the Talbragar River catchment in the order of 0.2 ML/day by the time mining is complete; (see conditions)

(iv) There will be almost complete loss of baseflow contributions to Ulan Creek and Babadeen Creek (sic) catchments by 2020;

(v) Simulation of the recovery of groundwater levels indicates that it will take more than 200 years for groundwater levels and pressures within the depressurised strata to recover;

(vi) Approval would be contrary to the precautionary principle with respect to hydrogeology in that there is scientific uncertainty as to the groundwater impacts.

(vii) There is no certainty that The Drip, a significant natural feature which hosts localised groundwater dependent ecosystems, will not be adversely impacted by the drawdown effects of mining, offending against the precautionary principle. (not pressed in final submissions)

(viii) The DGRs required the proponent to provide a detailed assessment of the cumulative impacts associated with the concurrent operation of the Project with any other existing or approved mining operations in the region, including on groundwater. (addressed in conditions)

110 Not all these issues were pressed by the end of the hearing in light of the expert evidence on matters such as (lack of) impact on the Drip from this mine expansion, measuring cumulative impact being conditioned, and the impact of the drawdown of groundwater on private bores being addressed in condition 30.

Existing and proposed draft conditions

111 Existing conditions 28 - 40 deal with the impact of mining on surface and groundwater. The Applicant proposes a number of new and amended conditions (28A, 29, 29A and 29B).

112 The Respondents agreed to alternative conditions 29 and 34 to achieve the outcome sought by the Applicant to the extent deemed by them to be appropriate as follows:

> **Baseflow Offsets**
>
> 29. The Proponent shall offset the loss of any baseflow to the Goulburn and Talbragar Rivers caused by the project to the satisfaction of the Director-General. However, this condition does not apply if the Director-General determines that the loss of baseflow is negligible.
>
> **Water Management Plan**
>
> 34. The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General. This plan must:
>
> (a) be prepared in consultation with OEH, NOW, I&I NSW and Council by suitably qualified and experienced persons whose appointment has been approved by the Director-General;
>
> (b) be submitted to the Director-General for approval within 3 months of the date of determination by the Land and Environment Court in proceedings no. 10998 of 2010; and
>
> (c) include:
>
> - a Site Water Balance;
> - the Goulburn River Diversion Remediation Plan;
> - an Erosion and Sediment Control Plan;
> - a Surface Water Monitoring Program;
> - a Groundwater Monitoring Program; and
> - a Surface and Ground Water Response Plan.
>
> *Note: The effectiveness of the Water Management Plan is to be reviewed and audited in accordance with the requirements in Schedule 5. Following these reviews and audits, the plan is to be revised to ensure it remains up to date (see Condition 4 of Schedule 5).*

113 HEL's three remaining issues are:

> (i) Existing condition 29 applies subject to the discretion of the DG who determines whether baseflow is negligible, and consequently whether Ulan is exempt from the obligation to offset the loss of baseflow

caused by the project. The condition does not provide any guidance as to how this is to be determined or a definition of "negligible". HEL proposes more specificity of when the loss of baseflow is to be deemed negligible (modified condition 29) and requires the permanent retirement of water licences to be specified in the condition.

(ii) Depressurisation of groundwater levels for centuries requires that action be taken to address this issue (proposed condition 28A). If no condition is imposed the application should be refused.

(iii) Validation of groundwater and surface water monitoring is required (modified conditions 34, 39).

114 The Applicant's proposed conditions are:

Groundwater Impact (new condition)

28A. The Proponent shall remediate groundwater resources impacted and demonstrate no impact on groundwater by the Project at the time of Project completion. [For example, using reinjection methods]

Baseflow Offsets (modified condition 29, 29A, 29B)

29. The Proponent shall:

a. offset the loss of baseflow to the Goulburn River by 0.05ML per day;

b. offset the loss of baseflow to the Talbragar River by 0.13ML per day;

by the retirement of water entitlements within the catchments of the Goulburn and Talbragar Rivers respectively upstream of the mine site.

29A. The Director-General may vary the obligation in condition 29 if following monitoring required pursuant to condition 39 the loss of baseflow is less than the offsets required under condition 29 provided that offsets shall be required unless the loss of baseflow is less than 0.01ML/day.

29B. The Director-General shall vary the obligation in condition 29 if following monitoring required pursuant to condition 39 the loss of baseflow is greater than the offsets required under condition 29 so that the offset is equal to or greater than the loss of baseflow.

Water Management Plan (modified condition)

34. The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General. This plan must:

(a) Allow validation of groundwater and surface water monitoring and impact assessment; [new]

39. The Groundwater Monitoring Program must include:

(a) detailed baseline data of groundwater levels, yield and quality in the region, and particularly any groundwater bores, springs and seeps (including spring and seep fed dams) that may be affected by mining operations on site;

(b) a program to augment the baseline data over the life of the project, *including an expanded baseflow monitoring program and a model that incorporates surface water monitoring with baseflows* [new]

(c) groundwater assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts;

(d) a program to monitor and/or validate:

Groundwater inflows too the open cut and underground mining operations;

the impacts of the project on;

- the alluvial, Triassic, coal seam and interburden aquifers;

- base flows to the Goulburn and Talbragar Rivers and associated creeks;

- any groundwater bores, springs and seeps on privately-owned land;

- the "Drip"; and

- riparian vegetation along the Goulburn and Talbragar Rivers and associated creeks; and

the seepage/leachate from any tailings dams, water storages or backfilled voids on site; and

(d) a program to validate the groundwater model for the project, and calibrate it to site specific conditions.

Groundwater experts

115 Dr Mackie, a hydrogeologist, affirmed an affidavit filed on 6 May 2011 attaching his statement of evidence dated 2 May 2011 (exhibit 2A). He is Manager of Mackie Environmental Research Pty Ltd, has 40 years professional experience in groundwater hydrology and has been appointed to several expert panels in NSW. Dr Mackie prepared the groundwater assessment, appendix 6 of the EA, for Ulan and in doing so relied on the information and advice of other consultants in relation to ecology and surface water systems. Dr Mackie's report (at p 5) states that simulation of mining to 2029 - 2030 indicated sustained depressurisation of the Ulan seam to distances of 10 to 20km beyond the mine panel footprint, Permian interburden to distances of 5 to 15km and Triassic strata to distances of 3 - 5km as identified by the 2m drawdown contours. He predicts all strata to be dewatered within the mine subsidence zone being the area impacted by the underground mining of Ulan West and underground mine 3 (exhibit 9A vol 1 p 5.3 and depicted in figure 5.2.2).

116 Dr Mudd affirmed an affidavit filed on 15 April 2011 attaching his expert report of the same date (exhibit B) on behalf of the Applicant. He is Senior Lecturer and Course Director for Environmental Engineering, Department of Civil Engineering at the Clayton campus of Monash University, Melbourne. In forming his opinion Dr Mudd relied on the information produced by Ulan and he confirmed in oral evidence that he had not visited the project site.

117 The joint report was filed on 20 May 2011 (exhibit 7). Dr Mudd agreed that figures 2 to 4 in Dr Mackie's report were reasonable conceptual models of the principal processes involved in baseflow systems and the contribution of groundwater to baseflow in surface streams, commonly known as groundwater-surface water interactions (joint report par 2.3 - 2.4). Dr Mudd agreed that the revised figures for baseflow loss were arrived at by a process that was reasonable and conformed to good modelling and hydrogeological practice; see joint report at par 2.5.

118 It was agreed that the drawdown in groundwater pressures in the principal mine area will exist for at least 200 years and potentially for up to 400 - 500 years. The groundwater system was not modelled for 400 - 500 years because of the difficulty in assigning "future model boundary conditions" and the time and computing power required: joint report at par 2.6.

119 The issues of disagreement between the experts included the feasibility of modelling of groundwater-surface water interactions and the feasibility of reinjecting water into the groundwater system as a method of remediation.

Extent of baseflow losses

120 Dr Mackie's report (exhibit 2A) states that the reduction in aquifer pressures caused by historical open cut, underground mine 3 and Ulan West operations was predicted to impact on groundwater baseflows to the catchments with losses to the Goulburn River catchment of the order of 0.11ML per day and losses to the Talbragar River catchment of the order of 0.2ML per day (see exhibit 2A at par 2.2; DG's Report) (These are the figures referred to above at par 109 in the Applicant's statement of facts and contentions at (ii) and (iii)). His baseflow estimates were generated from the groundwater model and governed largely by permeability values Dr Mackie had assigned to different strata. Further information about his methodology is included in the EA. After reviewing the Triassic strata

permeabilities, which underlie much of the area, Dr Mackie found that they were lower than the values he used in the groundwater model reported in appendix 6 of the EA. He undertook a recalibration of the groundwater model and revised down the predicted baseflow losses to 0.05ML per day for the Goulburn River and 0.13ML per day for the Talbragar River at the close of mining (see exhibit 2A at par 3.5 - 3.6 and par 3.15, and figure 5 and replacement figure 6) suggesting less impact.

121 In relation to the Goulburn River, Dr Mackie stated that the historical surface flow records for the Ulan flow gauge (which contains all baseflow contributions) indicated that the baseflow reduction of 0.05ML per day at the close of mining was a very small part of the total flow regime. Figure 5, the flow duration curve for the Goulburn River, demonstrates the percentage of time that a particular flow rate (measured in ML per day) is equalled or exceeded. The solid line represents the flow measured at a gauging station from 1956 to 1982 and was calculated by Umwelt from NSW Office of Water data. The dashed line plots this flow minus 0.05ML per day and represents the loss of baseflow to the Goulburn River caused by longwall mining operations at the close of mining. Dr Mackie opined that the differences in the two plotted lines are almost indiscernible (exhibit 2A at par 3.14).

122 In the flow duration curve for the Talbragar River (replacement figure 6 of exhibit 2A prepared by Dr Mudd and Dr Mackie) the solid line plots gauged flow near Ulan from 1970 to 2011. The dashed line plots this flow as minus 0.13ML per day and represents the loss of baseflow to the Talbragar River at the close of mining. Dr Mackie opined that the differences in the two plots are almost indiscernible and that the change in the flow regime as a result of the predicted baseflow reduction is very small (exhibit 2A at par 3.15). The graph indicates that before mining impacts, baseflow is zero 31.67 per cent of the time and after mining impacts, flow is zero 33.72 per cent of the time.

123 In oral evidence Dr Mackie explained that a flow duration curve is employed by surface water specialists to characterise flow in a catchment at a gauging station. The gauging station at the Goulburn River was discontinued. He said there were difficulties in measuring low flows at that gauging station. The dotted line in figure 5 departs from the solid line at low flow levels beyond about 80 or 75 per cent and becomes more discernible at approximately 95 per cent at which point it drops from about 0.11ML per day to 0.09ML per day. About 2 per cent of the time the baseflow is this small amount (less than approximately 0.1ML per day), which would be an acute drought situation. Two per cent of the time the removal of 0.05ML per day is a significant component in terms of the overall baseflow. Dr Mackie accepted that from the 92nd percentile of figure 5, the impact of the loss of 0.05ML per day is significant numerically as representing approximately 40 to 45 per cent of the flow.

124 Dr Mackie provided a technical note to the Court advising that the baseflow loss figures are not cumulative. Based on the most recent monitoring information indicating that there are no impacts on Triassic strata beyond about 2km from the mine footprint, Dr Mackie expects to further reduce the groundwater model permeabilities of the hardrock strata which will lead to further reductions in predicted baseflow impacts.

125 The experts agreed that there are no short-term practical measures or processes that could be adopted to respond to any particular problems that the monitoring shows in surface water stream health or groundwater assessment. Dr Mudd said the only other option, which is not one preferred by most mining companies, was to change the mine plan to avoid some areas to avoid impacts on groundwater levels for example.

126 Dr Mudd agreed with the statement at par 3.14 of Dr Mackie's report (exhibit 2A) that the differences in the two plots are almost indiscernible

when high flows are averaged. There is a significant difference at low flows. Dr Mudd also agreed with the statement that the records and recalculated groundwater model that the base flow reduction is a very small part of the total flow regime. The small flows would be important in terms of river health from an environmental point of view. Dr Mackie did not express any view as to whether the reduction in groundwater flow has any impact on conserving biological diversity and ecological integrity. Both experts acknowledged that they did not have expertise to comment on the ecological sustainability of the project in relation to groundwater and impact on the environment of low flow as a result of baseflow losses.

127 Regarding negligibility of baseflow (as referred to in existing condition 29), Dr Mudd said in oral evidence that it is a qualitative, subjective term and that he would prefer negligibility to be defined more quantitatively and specifically.

Retirement of water licences to offset baseflow (condition 29A)

128 Dr Mackie agreed in oral evidence that water licences ought to be retired in perpetuity to set off the 0.05ML per day and 0.13ML per day losses to the Goulburn and Talbragar Rivers, respectively. Dr Mackie did not know whether or not there are any available water licences to be surrendered in that catchment area.

129 In relation to whether a condition of approval requiring the retirement of water rights equivalent to the baseflow loss would neutralise that effect on the groundwater resource, Dr Mudd commented that the groundwater impacts will be there for some centuries. Therefore if surface water rights are retired they have to be retired for the same time scale. It does not remove the groundwater impacts but is one mechanism that might help to address the low flow situation.

Remediation of groundwater resources (condition 28A)

130 It is not disputed that there will be long-term depressurisation of ground water within the mine footprint and beyond. Dr Mackie stated in oral evidence that after completion of the project there will be "massive depressurisation in the strata and in the mine workings". (This will result in the baseflow losses discussed above. In oral evidence Dr Mudd noted that the modelling by Dr Mackie had been conducted for 200 years and though possible to model for 400 years, it would take too much time and energy to do so. Based on the modelling conducted he observed that by 200 years, there would not be a complete replenishment of groundwater levels to what they were prior to mining. Therefore, as it is a low permeability system, it is reasonable to expect that it is going to take a fair bit longer than 200 years for groundwater to recover.

131 The only evidence about reinjection of groundwater was oral and was very limited. Dr Mudd stated that reinjection of water into the hard rock aquifers in order to re-establish the groundwater levels pre-mining was possible because it has been done internationally and elsewhere in Australia. He considered it practical to look at injection systems and ascertain whether it could be done by the completion of mining or in 10 or 20 years because there are mechanisms in place to look at groundwater injection to help recover groundwater pressure. He emphasised that despite the system being of low permeability, reinjection needed to be considered more seriously to ensure that future potential users of the groundwater resource are not impaired in their ability to access it. Dr Mudd suggested that the source of the water for reinjection did not have to be groundwater but could be recycled or surface water.

132 In brief oral evidence Dr Mackie said it was a practical impossibility to demonstrate no impact on groundwater by the project at the time of project completion. Dr Mackie accepted that reinjection methods had been used within Australia but not on the scale that would be required to meet the

terms of proposed condition 28A. He considered it impractical in the subject environment for the following reasons. Firstly, reinjection requires a lot of water from some source. Secondly, a mechanism is required to inject the water into sandstone with a generally low permeability. This would require a lot of infrastructure and may include hundreds and hundreds of borehole structures to get the water moving into the system. Thirdly, a substantial reservoir above the boreholes to act as a "basin" for the water is necessary. Fourthly, facilities to back-flush the systems are required to clean the boreholes and maintain them in a state that can accept water.

Modelling of groundwater-surface water interactions (condition 39(a) new 39(b) amended)

133 In oral evidence Dr Mudd agreed that Dr Mackie's groundwater modelling establishes those losses in baseflow to the Talbragar and Goulbourn Rivers, Dr Mudd said that the modelling does not incorporate the very rapid and local scale issues that are driven by surface water. He thought it was necessary to know what is happening on the surface to really understand the potential long-term impact. Dr Mudd said he would like more data and would prefer some other studies including field work to be done which look at the surface water process and groundwater-surface water interactions. Dr Mackie countered that his modelling, which does not include surface water, is valid methodologically and that because of the complexity of the shallow localised surface water system, it would be very difficult to generate an integrated model and produce sensible answers.

Issues no longer in dispute

Impact on private bores (condition 30)

134 Dr Mackie identifies that five privately owned bores not owned by Ulan are likely to be impacted by continued mining owing to depressurisation of the strata. Of these five bores, one is in use, three are inoperable and one cannot be located. (See Sch of Affected Bores, Table B1, EA vol 2). Most of these draw groundwater from the Triassic or younger strata including

alluvium along the Talbragar River. They will be located within the 5m drawdown contour in the Triassic strata at the end of mining. Dr Mackie's report states that the 5m head loss contour is considered important as bores are likely to produce less yield if drawdowns of this magnitude occur. Dr Mudd stated that a new private landholder wanting to put down a bore would have to drill deeper than he or she would have had to drill prior to mining.

135 It was agreed in the joint report that there will be depressurisation of groundwater that will directly impact on a small number of bores. In oral evidence the experts agreed it was appropriate to impose a condition that Ulan make available an alternate water supply in one form or another to those private landholders. Usually this is done by deepening of the bore for a further 15 to 40m depending on the proximity of the bore to the mine site. Dr Mudd commented that deepening of the bore might result in lower quality water and that another option was to drill bores nearby. Existing condition 30 is intended to ameliorate this impact.

The Drip

136 The experts ultimately agreed that the Drip is not a ground water eco-dependent ecosystem but a perched aquifer. There was no evidence that the project will definitely impact the Drip. Dr Mackie explains at par 3.21, "Infiltration and downwards percolation of rainwater at surface (above the Drip) finds bedding planes or zones which act as lateral transmission conduits conveying the infiltrated water to the face of the cliff where it emanates as seepage and downwards percolation to a permanent water table at or near the base of the cliff face adjoining the Goulburn River." Dr Mackie assumes that perched systems are unlikely to be affected by deeper aquifer depressurisations because the downwards percolation process which is governed by rainfall would continue (at par 3.21). As a result Dr Mackie does not believe that Ulan's mining operations would

structurally disturb the system. He was not aware of any impacts on the Drip from mining (at par 4.26).

137 In the joint report, Dr Mudd agreed that the conceptual model of groundwater and water movement in this area in Dr Mackie's report at par 4.5 was reasonable. Dr Mudd preferred better documentation and presentation of this groundwater flow model to demonstrate this more clearly. Following communication with Dr Mackie, Dr Mudd was satisfied that figures DR1 and DR2 attached to the joint expert report showing the Drip and surrounding topography and groundwater cross-section addressed his concerns in this regard. They agreed that the Drip would not be impacted by the Ulan mine expansion.

138 Dr Mudd was concerned at the lack of long-term data to validate the theory. Dr Mudd accepted that existing condition 39(d), which requires Ulan to monitor and/or validate groundwater impacts on the Drip, allows for the collection of such data.

Cumulative impact of all nearby mines (condition 39)

139 In relation to cumulative impact of baseflow losses from this mine in combination with losses from other mines, Dr Mackie said the mining companies need to co-operate amongst themselves to monitor this by conducting joint monitoring at the same location. Ulan and Moolarban intend to place a piezometer or a series of piezometers in and around the Drip for example and those piezometers will serve to feed back into the groundwater model. (Condition 39 in relation to the Groundwater Monitoring Program includes a note which states that the Ulan's program to monitor and/or validate the impacts of the project on the Drip will need to be prepared and implemented in collaboration with the owners of the Moolarben coal mine.)

Applicant's submissions

140 A condition should be imposed which requires the proponent to make up for the reduction of the baseflow of the Goulburn and Talbragar Rivers in the stated amounts in the proposed condition 29A. The current condition states that the requirement to offset does not apply if the baseflow is negligible. The condition does not make clear what is meant by negligible. The flow duration curve in replacement figure 6 demonstrates that at periods of low flow the loss of baseflow of 0.13ML per day becomes significant. Before mining impacts, flow is zero 31.67 per cent of the time. After mining impacts, flow is zero 33.72 per cent of the time. In figure 5 approximately 10 per cent of the time after mining the baseflow is in the order of 40 per cent reduction in flow. At low flows that represents a significant loss of baseflow. Applying Dr Mackie's modelling the impact is greatest at critical low flow periods and that impact is significant. Dr Mudd's evidence is that the impact at low flow is critical. The hydrologists agree that the low flow periods are when the impact is greatest, and Dr Mackie agrees that the loss during low flow periods is numerically significant.

141 Below 0.01 ML per day is considered zero flow. In relation to the Talbragar River, the loss means that for about six to seven days per year over an extended period the river will be dry. For the Goulburn River the loss of baseflow is above 50 per cent for ten per cent of the time. That is not a negligible impact in baseflow.

142 The quality of evidence now available as a result of this case is greater than that before the Minister and it is appropriate to specify a quantity in the condition. The appropriate method to compensate for the baseflow losses is the permanent retirement of water licences, as provided for in the amended condition 29.

143 The second contention in relation to groundwater is condition 28A requiring the remediation of groundwater resources at the conclusion of the project, such as using reinjection methods. It is accepted by Dr Mackie that at the project completion there will be massive depressurisation in the strata and the mine workings. While there may be debate about the practicality of measures such as reinjection, the issue was well summarised by Dr Mudd in oral evidence stating that long term sustainability of the groundwater resource is important to make sure that future potential users of groundwater resources are not impaired in their ability to access it. The conditions proposed by the Minister and the proponent cannot remedy the impact on groundwater 200-500 years into the future. Land owners in the future as opposed to present landholders cannot feasibly be compensated. Proposed condition 28A provides a mechanism for the issue to be worked out over 20 years. If not imposed development consent should be refused.

Minister's submissions

144 In relation to the project affecting groundwater discharges (baseflow) to local creek systems and the Talbragar and Goulburn Rivers, the modelling evidence of Dr Mackie of the predicted baseflow loss for each was revised with the amount of baseflow being lost as a result of the project being very small. (A letter from Dr Mackie dated 15 June 2011 (exhibit 15A) indicates that the volume of water contained in an Olympic sized swimming pool (50m x 25m x 2m) is 2.5ML.) The daily baseflow loss from the Goulburn River is one fiftieth of the amount of an Olympic sized swimming pool and the loss from the Talbragar River just under one twentieth of that amount. Dr Mackie considered the loss in baseflow was very small so as to be almost undiscernible when the graphs showing the gauged flow minus 0.05ML per day (Goulburn) and 0.13ML per day (Talbragar) respectively. The point at which the loss of baseflow to the Rivers as a result of the project will be noticeable is at times of very low flow. The Talbragar River is more susceptible to low flows than the Goulburn River. Revised figure 6 prepared for the Talbragar River shows that the flow is zero 31.67 per cent

of the time, increasing to 33.72 per cent when the mining impacts of the project are factored in. In the case of the Goulburn River, Dr Mackie expressed the opinion that it would only reach a flow level approaching zero in an acute drought situation.

145 The Department stated in the DG's report that it was satisfied that the baseflow losses were small and that they were licensable. The Department recommended a condition requiring the offset of any loss of baseflow to surrounding watercourses provided this was not negligible. The Applicant misunderstands the approach to when baseflow losses are "negligible". Offsetting must be implemented for the currently predicted baseflow losses. The reference to negligible losses foreshadows that at some point down the track, when mining operations cease and the groundwater system starts to rebound, the baseflow losses will eventually decrease. At that point, a decision may be made that the losses are not significant enough to warrant the costs incurred by Ulan in offsetting them. The present identified loss of baseflow is not considered negligible.

146 The main difference between condition 29 and proposed conditions 29A and 29B requiring Ulan to offset baseflow losses is in the level of specificity. The Applicant's proposed conditions use exact numbers to establish a baseline offset, to which the DG could add or subtract based on the results of any monitoring data. They define negligible impact as being below 0.01ML per day and require the retirement of water entitlements to achieve offset. The Applicant's proposed condition 29 is based on the current best estimate of what the baseflow losses are likely to be. Those numbers are likely to change over time as Dr Mackie's recent revisions of the model relied on for the EA demonstrate. The condition approved by the Minister better accommodates the evolving nature of the data regarding actual baseflow losses rather than fixing particular numbers that are likely to need revision. Under the current condition, the DG can adjust the level of offset without the need for the qualifications in conditions

29A and 29B. The figure in condition 29A which defines the limits of loss that is negligible is arbitrary and could set a poor precedent as to what constitutes a negligible impact across the mining industry. What is negligible could vary from one region to another. The existing condition also accommodates the possibility that Ulan might seek to offset the baseflow losses by means other than the retirement of licences.

147 The Applicant proposes a condition to remediate groundwater resources impacted and demonstrates no impact on groundwater by the project at the time of project completion. Reinjection is proposed as a rehabilitation method. There is some uncertainty as to the meaning of the phrase "project completion". If intended to refer to the completion of mining operations that is 31 August 2031. Under condition 5 Sch 2 Ulan is required to rehabilitate the site and carry out additional undertakings and the approval continues until the rehabilitation and additional undertakings have been carried out satisfactorily.

148 The task of reinjection is not reasonable or feasible from an economic or an engineering perspective. Dr Mackie described it as "a practical impossibility" because it involves a lot of water the source of which has not been identified and development of a mechanism as yet unidentified that can get the water into the ground. Sandstone is of generally low permeability and hundreds and hundreds of borehole structures would be required to try and get the water moving into the system. In order to maintain them in a state that can accept water, the boreholes would need to be cleaned. This requires development of facilities to back-flush the systems. While Dr Mackie accepted that reinjection methods had been used within Australia, it had not been used on the scale that would be required to meet the terms of proposed condition 28A. Assuming a practical solution is available, it is still necessary to consider if that is a reasonable requirement. The primary purpose of the condition it to restore

equilibrium in groundwater that is of limited beneficial use in order to reduce groundwater impacts of the project.

149 The Applicant proposes changes to the Water Management Plan in condition 34 which include a series of subsidiary plans, including a surface water monitoring program and groundwater monitoring program. These are unnecessary given the existing conditions.

Ulan's submissions

Offset of baseflow losses

150 It is common ground that the project will result in a loss of groundwater baseflow to the Goulburn and Talbragar Rivers in the order of 0.05ML per day and 0.13ML per day, respectively: exhibit 2A, Dr Mackie's report, at par 3.6 and par 3.15; joint report of Dr Mudd and Dr Mackie at par 2.5. While this loss of baseflow may look statistically significant on a logarithmic graph in times of extreme drought, the predicted baseflow loss is a relatively small amount of water. For the Goulburn River, the predicted loss is something like 1/50th of an Olympic sized swimming pool, and for the Talbragar River, the predicted loss is slightly greater. A precise measurement of the possible impact zone of baseflow loss for the Goulburn and Talbragar Rivers is hard to make, but both are in excess of 15km. Spread over these distances, and bearing in mind the width of the Rivers, the predicted loss per metre of river length is a very small amount of water. The loss of flow per metre of river length per minute would not be discernable. Dr Mackie describes these predicted baseflow losses as "relatively minor" and "almost indiscernible" and states that they are a "very small part of the total flow regime": exhibit 2A at par 3.2, 3.14 - 3.15. The DG had a similar view: DG's report exhibit 1 vol 1 tab 33 p 684.

151 The Applicant's description in par 99 of its written submissions that the two flow charts of the Rivers in exhibit 2A indicate that the effect of mining

would create a no flow situation 2 days out of every 100 for the Talbragar River is nonsense. Properly considered, the graph indicates that without offsetting, the no flow circumstance will be extended slightly by the amount of reduction in groundwater contribution to the overall flow of the River. Replacement figure 6 indicates that for about 68 per cent of the time without this additional mine, the flows in the Talbragar River are significantly low. These losses are acceptable even without the imposition of the Minister's condition. Nevertheless, the Minister considered this situation was addressed by condition 29 as Ulan must offset any impact on baseflows .

152 Additionally, during the 21 years of mining operations, the project will increase the flow of the Talbragar River as u p to 17.5 ML of treated water will be discharged into it per day: exhibit 9A vol 1 p 5.31 - 5.33 and vol 2 p 5.13 - 5.15. In a sense, that is an offset during the mine life.

153 There is no expert evidence that slightly extending the period of low flow has an ecological effect. Dr Mudd conceded that he was not an expert on the ecological effect of a reduction in these amounts of flow. If there really was an ecological impact, the Applicant should have called a witness or provided some information that establishes what that impact is or might be. Accordingly, t he approval of the project is not contrary to the precautionary principle or intergenerational equity. Compared to the benefits of the project, loss of baseflow, or any groundwater impact, is not a proper ground for refusing the project application or imposing the Applicant's conditions.

Applicant's conditions 29 - 29B

154 The Applicant's proposed conditions 29 - 29B make little sense and should not be adopted by the Court for the following reasons. F irstly, they are based on losses predicted by modelling which may or may not be the

actual losses. Secondly, it is inappropriate to make express reference to retirement of water licences in a particular location of the catchment (upstream of the mine site). The groundwater contribution is removed downstream of the mine site. Such a concept is without any evidentiary foundation. This matter should be dealt with in accordance with the applicable legislative requirements at the time. Thirdly, t he requirement that the offset be by retirement of water entitlements is overly prescriptive and does not permit the provisioning of offset by alternate methods. There may be other ways in which there is an offset to baseflow. For example, amended condition 29 does not account for the fact that during the mine life there is a permitted discharge of water to the catchments, or there may be a way in which that can be done. On one view of it condition 29 requires a retirement in circumstances where that retirement is not necessary where there is a discharge of water during the mine life.

155 Fourthly, the Applicant arbitrarily uses the amount of 0.01ML per day without considering matters such as catchment area, soil types, infiltration rates, vegetation cover and other matters relevant to natural catchment systems for rivers as a no-flow situation without foundation. According to its submissions, it chose that figure because either it was the same bottom line used in figures 5 and 6 or it is somehow a noflow situation. There is no scientific evidence that it would serve any particular purpose. Existing condition 29 is adequate to ensure that Ulan offsets any baseflow losses to the relevant rivers. The baseflow offset must be to the satisfaction of the DG, and he or she will no doubt exercise common sense and be guided by expert views as to whether the baseflow losses are ultimately "negligible" or not.

Applicant's c ondition 28A (remediation of groundwater impacts)

156 There is no expert evidence that would provide any basis for a belief that "reinjection methods" could be reasonably used to achieve what this proposed condition seeks to do. No evidence has been tendered on what

precisely is required from an engineering or hydrogeological point of view, cost, environmental impact, source of water to be injected, how much water would be required, or even where it should be injected. As there is no evidence to provide a basis for rationally imposing it, the condition cannot validly be made.

157 Further, to the extent that there is any considered evidence concerning "reinjection" methods, the oral evidence of Dr Mackie suggests a range of substantial difficulties (or the impossibility) with the "injection" techniques. This is neither practical nor proportional to the level of threat and degree of uncertainty given the evidence of Dr Mackie. The possible infrastructure mentioned by Dr Mackie, "well in excess of hundreds of boreholes", "massive reservoirs", would ironically no doubt require clearing of a large amount of vegetation. That condition is patently unworkable and it should not be made.

Applicant's condition 34

158 Condition 34(a) proposed by the Applicant is also unnecessary. This matter is already covered by conditions 38(d) and 39(d) and (e) as proposed by the Minister and Ulan.

Applicant's condition 39(b)

159 This condition is adequately covered by conditions 38(d) and (e) and 39(d) and (e) as proposed by the Minister and Ulan. Dr Mackie's evidence was that it was impossible to produce such a model because of the variation in the surface water circumstances at any given point along any of the Rivers and the unrepresentative nature of each of those points .

Consideration of groundwater

160 The power of the Court to impose conditions under s 75J(4) is discussed above at 82 - 91. No issue is raised in relation to the groundwater conditions as to whether these have a proper purpose, but the issue does arise of whether those proposed by the Applicant are a reasonable response to the environmental issues sought to be addressed.

Proposed condition 28A (remediation of groundwater)

161 The Applicant submits that the project should be refused because of the undisputed long term impact through the depressurisation of the groundwater under the mine site and beyond unless a condition is imposed requiring the remediation of the groundwater by the end of the mine life. This impact has been modelled to continue for 200 years, the limit of the modelling undertaken by Dr Mackie. Both experts agree it is likely to continue for many years, possibly centuries, past that date. The area affected is under the mine subsidence area on site with some extension beyond in different strata. According to Dr Mackie's modelling the dominant strata in the area, the Triassic strata, is likely to be affected for two kilometers beyond the mine site. Condition 28A is aimed at alleviating this problem

162 The evidence in relation to remediation of groundwater is scant. As outlined in the brief oral evidence of the experts on this topic, Dr Mudd considers that it is theoretically possible to use reinjection methods for reintroducing water to the groundwater systems under the mine site because this has been done elsewhere in Australia. This evidence is general and not site specific. Dr Mudd did not visit the site or undertake site specific studies. Dr Mackie's view is that reinjection would be impractical requiring possibly hundreds of boreholes and an unidentified source of water.

163 The experts have not been asked to consider in any informed way what is feasible if anything at this site in terms of reinjection methodology and/or technology. This leaves the Court with very little evidence on which to base a decision. While not stated explicitly the Applicant essentially relies on the long lead time of the mine project of some 20 years as a period in which a solution can be found. Given the lack of information and therefore certainty about whether reinjection could work in the future in this location from the evidence of Dr Mudd, and the view of Dr Mackie that it would be impractical, the reasonableness of imposing such a condition essentially hoping that a methodology can be worked out and implemented in the next 20 years is debateable. This must be weighed up with the undesirable very long term impact on the groundwater under the mine and beyond with potentially unforeseen consequences given the long period of impact.

164 The principles of ESD emphasised in the Applicant's submissions in this context were the application of the precautionary principle and inter-generational equity in particular. Both principles have been considered in a number of cases in this Court and have been relied on to support the imposition of protective environmental measures in appropriate cases. These principles must be applied within the context of the EPA Act as a whole. As Ulan identified, two objects of the EPA Act are to encourage " 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" and " the promotion and co-ordination of the orderly and economic use and development of land " (per s 5(a)(i) and (ii)). As the Respondents submit these concepts recognise the importance of balancing the value of the resource together with the other aspects of the development and environmental protection objectives. Preston J in *Gerroa* at [7] stated that ESD and s 5(a)(i) and (ii) of the EPA Act require "the effective integration of economic, social and environmental considerations in the decision-making process" . The effective integration of economic, social and

environmental considerations, requires in this case the balancing of the importance of winning coal with attendant significant economic benefits to the local community through employment generation inter alia and to the local and state governments through taxation with the long term impact on groundwater. Environmental impacts identified as resulting from loss of groundwater are on private bores, which is dealt with in condition 30. The impact on baseflow losses to the Goulburn and Talbragar Rivers is also identified is also to be subject to conditions requiring these to be offset. No evidence of other environmental impacts is presented.

165 Whether there will be any other impacts in the future cannot be ruled out entirely, particularly as the interaction between groundwater and surface water is not presently modelled and not therefore understood. Dr Mackie says such modelling is not feasible in this area. The tension in this case therefore is between the possibility of unknown impacts in the future with the absence of a condition requiring remediation of the groundwater, meaning there is no ability under the approval to require a response to that impact from Ulan. The Applicant's condition is essentially an attempt at a precautionary approach. As identified above the precautionary principle identifies that if there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason to postpone measures preventing environmental degradation. Where there is no other identified environmental impact resulting from the loss of groundwater at present and no evidence of a feasible technical or other response, the necessity for the condition is not established.

166 Weighing up the various economic and social factors, mindful of a precautionary approach where the potential for unspecified impacts is unknown, does not require refusal of the application in the absence of condition 28A. The imposition of condition 28A is not warranted given the general nature of the concerns raised by the Applicant and the absence of

any clear information that remediation is now or may become practical and feasible.

Conditions 29, 29A, 29B (baseflow offsets)

167 The Minister's approval conditions include a requirement that the baseflow losses to the Goulburn and Talbragar Rivers be offset (condition 29). Much of the hydrological evidence of the experts was focussed on the modelling undertaken by Dr Mackie of the baseflow loss to the Goulburn and Talbragar Rivers. The figures in the EA were revised by Dr Mackie in light of further monitoring of permeability of different geological strata to reduce the daily predicted baseflow loss. That loss for the period 2009-2030 of 0.13ML per day in the Talbragar River catchment and 0.05ML per day for the Goulburn River catchment is reflected in the Applicant's proposed condition 29A on the basis that this must be compensated for.

168 There was considerable discussion about figure 5 and revised figure 6 prepared by Dr Mackie in the course of the proceedings as to whether the duration of loss of baseflow in periods of low flow was significant in environmental terms. There was agreement that the loss was numerically significant. Neither hydrologist considered they were qualified to comment on whether the loss of flow would have ecological impacts. The Applicant and Ulan made conflicting submissions of what the actual impact in a low flow situation was likely to be with the Applicant's counsel interpreting figure 5 and revised figure 6 as showing a measurable and significant loss in low flow periods and Ulan's counsel disputing this. There is no ecological evidence of whether this additional loss during low flow periods has any environmental consequence.

169 Ulan and the Minister do not disagree that there should be measures to compensate for the loss of baseflow and consider the existing condition 29 provides for this. The Minister submitted that the baseflow losses identified

in Dr Mackie's report and revised figures were not considered negligible and Ulan will be required to compensate for these. That submission means that much of the debate about whether those figures represent a sufficient loss to warrant offsetting was unnecessary as the regulator of the licence considers that it does. The inclusion of the specific levels sought by the Applicant in the condition does not provide any flexibility for further monitoring information becoming available which may suggest different figures should apply. This is a sensible submission by the Minister given the length of the project, if approved, is 20 years.

170 Despite the volume of expert evidence and submissions on this topic the issue from my perspective is whether there can be a definition of negligible which can be inserted into the condition. Dr Mudd and hence the Applicant considers that a figure should be specified. In condition 29A the Applicant proposes 0.01ML per day as the minimum baseflow loss above which offsets must occur. This is criticised by Ulan as arbitrary and not backed up by expert evidence but it is the figure which appears in figures 5 and 6 prepared by Dr Mackie described as a zero flow situation. If that figure was adopted as the minimum figure it would be unnecessary for the other baseflow loss figures in Dr Mackie's report to be forever fixed as the level below which flow must be compensated for. The Minister did not adopt 0.01ML per day by implication as the existing condition is contended for. If there can be an agreement that negligible loss is any flow below 0.01ML per day there will be no need to further specify any baseflow losses. The Minister's advice on this proposal is sought before a condition to that effect is finalised.

171 The Minister also submitted the Applicant's approach would set an unfortunate precedent because these figures would become accepted as meaning that flows below these are negligible, when a lesser amount may be appropriate. My understanding is that each project of this kind is likely to be the subject of site specific modelling which may suggest a different

result is appropriate for a particular site. If there can be agreement of what is a negligible flow there will be no need to identify further figures.

172 A remaining issue is whether the Applicant's condition 29 requiring the retirement of water licences as the only means by which the loss of baseflow can be offset should be imposed. Ulan identifies that there may be other measures taken which would replenish water flow as, for example, it is likely to be releasing water into the Talbragar River in the course of the project. The Applicant's proposal is directed to long term measures to replenish baseflow given the length of time of impact of the mine on groundwater and the retirement of water licences can potentially achieve that outcome. The condition should be redrafted to specify that water licences should be purchased and retired unless Ulan can provide alternative proposals for other methods of offsets within specified timeframes. A redrafted condition to that effect from the parties is necessary. This allows for some practical flexibility, an important consideration as identified in *Ulan* at [74] - [79].

Condition 34(a) new; condition 34(b)

173 The Applicant seeks conditions requiring monitoring of groundwater and surface water which the Respondents oppose as they are covered under other conditions or such modelling is not possible according to Dr Mackie. I agree with the Respondents' submissions and will not impose these conditions.

Biodiversity issues

174 In opening the Applicant pressed for outright refusal and alternatively the provision of an adequate offset (contentions 4, 5 and 6 of the Applicant's Amended Statement of Facts and Contentions filed in Court on 25 May 2011). The project will have an adverse effect on the White Box woodland EEC (that is, White Box-Yellow Box-Blakely's Red Gum Woodland which

is listed as an endangered ecological community under Sch 1 Pt 1 of the TSC Act), failing to conserve biological diversity and ecological integrity.

Particulars:

a. The Project will involve the clearing of approximately 69 hectares of White Box Woodland EEC;

b. The Project will result in the cumulative loss of the EEC, which is significant vegetation in the region, New South Wales and Australia;

c. The Project results in the loss of biological diversity and ecological integrity;

d. The loss of the vegetation and biodiversity values as a result of the Project is contrary to the principle of intergenerational equity;

The Project will fail to conserve biological diversity and have an adverse effect on Acacia ausfeldii (approximately 150 plants) due to the open cut operations.

Particulars:

a. The Project will involve the removal of the entire local population of Acacia ausfeldii from its insitu site;

b. The loss of the vegetation and biodiversity values as a result of the Project is contrary to the principle of intergenerational equity;

c. The Project results in the loss of biological diversity and ecological integrity

Offsets are not consistent with the conservation of biological diversity and ecological integrity as a fundamental consideration. Should the Court take the view that offsetting is appropriate, then the offset strategies as proposed are inadequate to compensate for the adverse impacts on biodiversity and ecological integrity.

Particulars:

a. The Project will involve the clearing of 409 ha of native vegetation;

b. The Project will involve the clearing of 69 ha of EECs;

c. The DGRs required the proponent to provide a detailed description of the measures that would be implemented to maintain or improve the biodiversity values of the surrounding region in the medium to long term;

d. The proposed Bobadeen offset area is already a salinity offset area protected under previous mining approval, decreasing the likelihood that the offset will result in a "net-gain";

e. The proposal to revegetate as part of the offset proposal requires a much greater ratio in order to secure a "net-gain" in the long term;

f. The offset areas are not secured in perpetuity;

g. The offset areas are not "like for like" in that they do not contain the same EECs proposed to be cleared;

h. Not all impacts are known (Bekessy at para 3.3-3.4).

175 It was agreed that the project will result in the clearing of 408ha of vegetation; 239ha for the open cut footprint and 169ha for additional surface infrastructure. Of this 408ha, 69ha of White Box woodland EEC will be removed. The TSC Act listing recognises derived native grasslands as part of the EEC. White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed as a critically endangered ecological community under the *Environment Protection and Biodiversity Conservation Act* 1999 (Cth) (the EPBC Act). Approximately 150 *Acacia ausfeldii* plants will be removed from the open cut disturbance area . This plant is listed as a vulnerable species under Sch 2 Pt 1 of the TSC Act .

Environment Protection and Biodiversity Conservation Act 1999 (Cth) assessment

176 On 8 December 2009 the project (excluding existing mining operations) was referred to the Department of Environment, Heritage and the Arts

(DEWHA) (Cth), as it was then known, for the relevant Commonwealth Minister to determine whether it was a controlled action, meaning whether it was likely to have a significant impact on a matter of national environmental significance. The Minister decided that the project was a controlled action as it was likely to have a significant impact on species and communities listed under the EPBC Act, including White Box- Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, a critically endangered ecological community. The project consequently had to be assessed and approved by the Minister before it could proceed.

177 On 9 July 2010 the DEWHA advised that the proposed Bobadeen offset area including 239ha of White Box woodland EEC was inadequate to offset the loss of 69ha of this community (exhibit 1 p 618). Umwelt proposed an additional offset area, the Bobadeen East vegetation offset area, comprising 232ha of which 169ha is the EEC and an offset management plan (exhibit 1 p 620). This additional area is located on land owned by Ulan, adjoins Durridgere State Conservation Area and is east of the Spring Gully Fault which prevents Ulan from accessing coal reserves that may potentially exist under that offset area. Subsequently the project was approved by formerly DEWHA (Cth) on 30 November 2010 subject to conditions including that no more than 150 *Acacia ausfeldii* plants be removed (exhibit 1 p 647). As part of the conditions of approval a draft Biodiversity, Rehabilitation and Offset Management Plan (BROMP) was prepared in January 2011 to address the Department of Sustainability, Environment, Water, Population and Community's (DSEWPC) (Cth) and Department of Planning's ecological requirements. The BROMP, approved by the DSEWPC on 18 January 2011 was tendered (exhibit 10A).

Currently proposed BROMP

178 The BROMP describes strategies for managing flora and fauna within the site to meet Ulan's requirements under the Department's condition 44 and the DSEWPC's approval decision conditions. Condition 44 requires Ulan to

prepare a biodiversity management plan for submission to the DG for approval by December 2011. Attached as appendix 2 is a Offset Management Plan dated December 2010 created to implement the BROMP. The Offset Management Plan at section 3.1 states that a detailed biodiversity offset and management program is yet to be developed outlining the specific details and schedule of management actions to be implemented. Additional surveys are required to develop specific target criteria for each offset area, plan revegetation/management works to meet the target criteria, and evaluate whether the offset areas are successful. Further studies are also required to address issues such as erosion, weed infestation, the presence of feral animals, grazing and seed collection and handling. (The BROMP contains an outline of an overall rehabilitation strategy and attaches as appendix 1 the Rehabilitation Management Plan dated January 2011. This document was not prepared to satisfy condition 57. At the time the BROMP was created, a rehabilitation environmental management plan to address condition 57 was yet to be prepared.)

179 Land has been identified for biodiversity offset and management areas for the project in the Bobadeen offset area, the Bobadeen East offset area, the Brokenback Conservation Area and the Spring Gully Cliff Line management area. The Bobadeen offset area was designed to offset vegetation loss from the open cut and surface infrastructure disturbance areas. It is 991ha and contains 239ha of EEC. The Bobadeen East offset area was proposed to address the Commonwealth offset requirements is 232ha and contains 169ha of the EEC. Revegetation works will occur in the Bobadeen and Bobadeen East offset areas to bring disturbed vegetation community variants up to the quality and condition of their benchmark communities.

180 The Brokenback Conservation Area, which is 58ha, and Spring Gully Cliff Line management area, which is 211ha, provide protection for rock shelters and mitigate the loss of cliff line and cave habitat from the open

cut disturbance area together with damage to cliff line and cave habitat from subsidence above the longwall areas. These areas contain approximately 12km of cliff line length. These two areas will be protected and managed for identified threats to the integrity of the existing vegetation.

Existing and proposed draft conditions

181 In closing the Applicant did not press for refusal on the basis of biodiversity impacts but considered that a larger offset area should be conditioned to enhance connectivity between the Bobadeen and Bobadeen East offset areas and the Durridgere State Conservation Area. Nor should Ulan "double dip" by including the salinity offset vegetation area (required by the environmental protection licence (EPL), see par 195 below) in the Bobadeen offset area.

182 Existing conditions 41 - 45 deal with biodiversity. Amendments to all of these were proposed by the Applicant and in some cases agreed by the Respondent. Condition 41 identifies biodiversity offset outcomes. The Respondents agreed to an amended table 15, as follows:

> **Biodiversity Offset**
>
> 41. The Proponent shall implement the offset strategy outlined in Table 15, described in the EA, and shown conceptually in the figure in Appendix 4 to the satisfaction of the Director-General.

Table 15: Biodiversity Offset Strategy

Clearing, Removal and/or Disturbance	**Offset Areas**			
	Spring Gully	**Brokenback**	**Bobadeen**	**Bobadeen**

		Cliffline Management Area	Conservation Area	Vegetation Offset Area	East Offset Area
Native Vegetation (ha)	408	211	58	992	229
EEC / CEEC (ha)	69	-	-	239	169
Cliffline (km)	11.7	9	3	-	

183 The Applicant sought greater offset areas than in table 15, as marked up by it s counsel on the plan tendered as exhibit M as consistent with the Biodiversity Management Plan in condition 44 and the former Department of Environment Climate Change and Water's (DECCW) Principles for the use of biodiversity offsets in NSW of Biodiversity Offsetting (extracted at par 194 below) issued in 2008. Condition 41 is proposed to be amended to state this. The Respondents did not agree with the Applicant's proposed amendments because the offset strategy outlined in table 15 reflects an outcome that had previously taken into account the relevant biodiversity offsetting principles.

184 The Respondents agreed to the following additional condition:

> 41A. The Proponent shall ensure that the offset areas provide suitable habitat for significant and/or threatened species identified in the areas to be cleared, removed and/or disturbed.

185 The Applicant wants condition 41A to require Ulan to comply "prior to the commencement of the Project". This is opposed by Ulan as the project has already commenced and is impractical to achieve.

186 The parties agreed to an amended condition 43.

Long Term Security of Offset

43. Within 1 year of the date of determination by the Land and Environment Court in proceedings no. 10998 of 2010, the Proponent shall make suitable arrangements to provide appropriate long term security for the Bobadeen Vegetation Offset Area, the Bobadeen East Offset Area, the Brokenback Conservation Area, the stand of *Acacia ausfeldii* along the eastern side of Highett Road, and the Spring Gully Cliffline Management Area to the satisfaction of the Director-General .

187 In the consolidated conditions of approval filed after the hearing on 6 July 2011, the Respondents agreed to an amended condition 44:

Biodiversity Management Plan

44. The Proponent shall prepare and implement a Biodiversity Management Plan for the project to the satisfaction of the Director-General. This plan must:

(a) be prepared in consultation with OEH and Council by suitably qualified and experienced persons,

(b) be submitted to the Director-General for approval by the end of December 2011;

(c) describe how the implementation of the offset strategy would be integrated with the overall rehabilitation of the site (see below);

(d) include:

(i) a description of the short, medium, and long term measures that would be implemented to:

implement the offset strategy; and

manage the remnant vegetation and habitat, both on site and in the offset areas;

(ii) detailed completion criteria as well as performance criteria for measuring the short, medium and long term success of the offset strategy, including annual indicators and trigger values for the regeneration/revegetation of both the Box-Gum Woodland and Acacia ausfeldii, and the provision of suitable habitat for threatened woodland birds;

(iii) a detailed description of the measures that would be implemented over the next 3 years, including the detailed

procedures to be implemented for each of the following matters:

- implementing revegetation and regeneration within the offset areas, including the establishment of canopy, sub-canopy (if relevant), understorey and ground strata;
- protecting vegetation and soil outside the disturbance areas;
- rehabilitating creeks and drainage lines on the site (both inside and outside the disturbance areas), to ensure no net loss of stream length and aquatic habitat;
- managing salinity
- undertaking pre-clearance surveys;
- minimising impacts on fauna, including providing important habitat features (e.g. hollows) during the period of revegetation and rehabilitation;
- landscaping the site, and particularly the land adjoining public roads, to minimise visual and lighting impacts;
- protecting and managing *Acacia ausfeldii* ;
- collecting and propagating seed;
- salvaging and reusing material from the site for habitat enhancement;
- propagating threatened flora and native grassland (including *Acacia ausfeldii*);
- controlling weeds and feral pests;
- managing grazing and agriculture on site;
- controlling access; and
- bushfire management;

(iv) a program to monitor and report on the effectiveness of these measures and the performance of the offset strategy, with summary reporting to be carried out annually and comprehensive reporting every three years following the independent environmental audit (see condition 8 of schedule 5);

(v) a description of the contingency measures that would be implemented to improve the performance of the offset strategy if the detailed performance criteria above are not being met in any given year; and

(vi) details of who would be responsible for monitoring, reviewing, and implementing the plan.

Note: The effectiveness of the Biodiversity Management Plan is to be reviewed and audited in accordance with the requirements in Schedule 5. Following these reviews and audits, the plan is to be revised to ensure it remains up to date (see Condition 4 of Schedule 5).

188 The Applicant suggested the following amendment:

> ...
>
> (vii) At least 2 years prior to the cessation of the approval, prepare a management plan to be submitted to the Department of Planning and Investment for approval to address the ongoing management of the offset areas, for the life of the offset areas, including procedures to be implemented for:
>
> - controlling weeds and feral pests;
> - managing grazing and agriculture on site;
> - controlling access;
> - bushfire management; and
> - any other matters directly relating to the biodiversity management of the offset areas.

189 Existing condition 45 states as follows:

> **Conservation Bond**
>
> Within 6 months of the approval of the Biodiversity Management Plan (see above), the Proponent shall lodge a conservation bond with the Department to ensure that the offset strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Management Plan. The sum of the bond shall be determined by:
>
> - calculating the full cost of implementing the offset strategy; and
> - employing a suitably qualified quantity surveyor to verify the calculated costs,
>
> to the satisfaction of the Director-General.
>
> If the offset strategy is implemented to the satisfaction of the Director-General, the Director-General will release the conservation bond.
>
> If the offset strategy is not implemented to the satisfaction of the Director-General, the Director-General will call in all or part of the conservation bond, and arrange for the satisfactory implementation of the offset strategy.

190 The Applicant proposed the following amended condition 45 with which the Respondents disagreed.

> **Conservation Bond**
>
> First part agreed
>
> If the performance and completion criteria for measuring the short, medium and long term success of the offset strategy are met, the Director-General will release the conservation bond.
>
> If the offset strategy is not successful in the short, medium or long term, as determined by the performance and completion criteria, the Director-General will call in all or part of the conservation bond, and arrange for the satisfactory implementation of the offset strategy.

191 The Respondents' agreed amended condition 56/57 (in the consolidated draft conditions) states:

> **Rehabilitation Management Plan**
>
> The Proponent shall prepare and implement a Rehabilitation Management Plan for the project to the satisfaction of the Director-General of DTIRIS. This plan must:
>
> (a) be prepared in consultation with the Department, OEH, NOW, Council , and the CCC;
>
> (b) be prepared in accordance with any relevant DRE guideline ;
>
> (c) describe how the rehabilitation of the site would be integrated with the implementation of the offset strategy ;
>
> (d) build, to the maximum extent practicable, on the other management plans required under this approval ;
>
> (e) document the scientific knowledge gained during the rehabilitation, and make it publicly available; and
>
> (f) be submitted to the Director-General of DTRIS for approval within three months of the date of determination

by the Land and Environment Court in proceedings no. 10998 of 2010.

192 The Applicant proposed the following amendment with which the Respondents disagreed:

(a) ... and experts in rehabilitation and Box Gum Woodland;

Department of Environment Climate Change and Water Principles for the use of biodiversity offsets in NSW

193 DECCW (as it then was) issued guidelines in 2008 to be considered when offsets are proposed (the offset principles).

The following principles provide a useful framework for considering environmental impacts and developing offset proposals. The principles do not apply where legislation defines requirements for biodiversity offsets.

1. Impacts must be avoided first by using prevention and mitigation measures.

Offsets are then used to address remaining impacts. This may include modifying the proposal to avoid an area of biodiversity value or putting in place measures to prevent offsite impacts.

2. All regulatory requirements must be met.

Offsets cannot be used to satisfy approvals or assessments under other legislation, e.g. assessment requirements for Aboriginal heritage sites, pollution or other environmental impacts (unless specifically provided for by legislation or additional approvals).

3. Offsets must never reward ongoing poor performance.

Offset schemes should not encourage landholders to deliberately degrade or mismanage offset areas in order to increase the value from the offset.

4. Offsets will complement other government programs.

A range of tools is required to achieve the NSW Government's conservation objectives, including the establishment and management of new national parks, nature reserves, state conservation areas and regional parks and incentives for private landholders.

5. Offsets must be underpinned by sound ecological principles.

They must:

- include the consideration of structure, function and compositional elements of biodiversity, including threatened species
- enhance biodiversity at a range of scales
- consider the conservation status of ecological communities
- ensure the long-term viability and functionality of biodiversity.

Biodiversity management actions, such as enhancement of existing habitat and securing and managing land of conservation value for biodiversity, can be suitable offsets. Reconstruction of ecological communities involves high risks and uncertainties for biodiversity outcomes and is generally less preferable than other management strategies, such as enhancing existing habitat.

6. Offsets should aim to result in a net improvement in biodiversity over time.

Enhancement of biodiversity in offset areas should be equal to or greater than the loss in biodiversity from the impact site.

Setting aside areas for biodiversity conservation without additional management or increased security is generally not sufficient to offset against the loss of biodiversity. Factors to consider include protection of existing biodiversity (removal of threats), time-lag effects, and the uncertainties and risks associated with actions such as revegetation.

Offsets may include enhancing habitat, reconstructing habitat in strategic areas to link areas of conservation value, or increasing buffer zones around areas of conservation value and removal of threats by conservation agreements or reservation.

7. Offsets must be enduring - they must offset the impact of the development for the period that the impact occurs.

As impacts on biodiversity are likely to be permanent, the offset should also be permanent and secured by a conservation agreement or reservation and management for biodiversity. Where

land is donated to a public authority or a private conservation organisation and managed as a biodiversity offset, it should be accompanied by resources for its management. Offsetting should only proceed if an appropriate legal mechanism or instrument is used to secure the required actions.

8. Offsets should be agreed prior to the impact occurring.

Offsets should minimise ecological risks from time-lags. The feasibility and in-principle agreements to the necessary offset actions should be demonstrated prior to the approval of the impact. Legal commitments to the offset actions should be entered into prior to the commencement of works under approval.

9. Offsets must be quantifiable - the impacts and benefits must be reliably estimated.

- Offsets should be based on quantitative assessment of the loss in biodiversity from the clearing or other development and the gain in biodiversity from the offset. The methodology must be based on the best available science, be reliable and used for calculating both the loss from the development and the gain from the offset. The methodology should include:
- the area of impact
- the types of ecological communities and habitat/species affected
- connectivity with other areas of habitat/corridors
- the condition of habitat
- the conservation status and/or scarcity/rarity of ecological communities
- management actions
- level of security afforded to the offset site.
- The best available information/data should be used when assessing impacts of biodiversity loss and gains from offsets. Offsets will be of greater value where:
- they protect land with high conservation significance
- management actions have greater benefits for biodiversity
- the offset areas are not isolated or fragmented
- the management for biodiversity is in perpetuity (e.g. secured through a conservation agreement).
- Management actions must be deliverable and enforceable.

10. Offsets must be targeted .

They must offset impacts on the basis of like-for-like or better conservation outcome. Offsets should be targeted according to biodiversity priorities in the area, based on the conservation status of the ecological community, the presence of threatened species or their habitat, connectivity and the potential to enhance condition

by management actions and the removal of threats. Only ecological communities that are equal or greater in conservation status to the type of ecological community lost can be used for offsets. One type of environmental benefit cannot be traded for another: for example, biodiversity offsets may also result in improvements in water quality or salinity but these benefits do not reduce the biodiversity offset requirements.

11. Offsets must be located appropriately.

Wherever possible, offsets should be located in areas that have the same or similar ecological characteristics as the area affected by the development.

12. Offsets must be supplementary.

They must be beyond existing requirements and not already funded under another scheme. Areas that have received incentive funds cannot be used for offsets. Existing protected areas on private land cannot be used for offsets unless additional security or management actions are implemented. Areas already managed by the government, such as national parks, flora reserves and public open space cannot be used as offsets.

13. Offsets and their actions must be enforceable through development consent conditions, licence conditions, conservation agreements or a contract.

Offsets must be audited to ensure that the actions have been carried out, and monitored to determine that the actions are leading to positive biodiversity outcomes.

194 The parties accepted these were relevant to the issues in the case. Several of the principles were referred to by the experts in their evidence and the parties in their submissions.

Environmental Protection Licence /Salinity offset requirement

195 The EPL was issued to Ulan under the *Protection of the Environment Operations Act* 1997 prior to March 2003 (exhibit 21A). Special Condition E1(a) obliges the proponent to implement the approved salinity offset program as specified by (i) the UCML Environmental Management System (2 December 2002), (ii) Department of Land and Water Conservation

(DLWC) Ulan Mine Area - Impacts of Proposed Land Use and Management Changes on Catchment Water and Salt Yields (February 2003), (iii) DLWC Ulan Mine Area - Impacts of Proposed Land Use and Management Changes on Catchment Water and Salt Yields - Supplementary Report (May 2009) (sic) but assumed to be May 2003 and (iv) UCM Salinity Offset and Monitoring and Reporting Program (April 2005) (exhibit 17A). The salinity offset area was created in 2003 to offset the salt produced within the catchment from the Bobadeen irrigation scheme. The DLWC (as it was then) required 4460ha of land as an offset for this purpose. In order to meet the objectives of the salinity offset program, Ulan is required to reduce the percentage of bare ground and regeneration of woody vegetation (there is a dispute about the management requirements of the salinity offset area to which topic I will return).

Biodiversity expert evidence

Dr Bekessy

196 Dr Bekessy, an ecologist, is a Senior Lecturer at RMIT University in Melbourne and affirmed an affidavit attaching her expert report dated 18 April 2011 (exhibit C) on behalf of the Applicant. In oral evidence Dr Bekessy confirmed that she has not visited the project site or the area of the proposed offset. In forming her opinion in the report, Dr Bekessy relied upon the information in Ulan's EA. Dr Bekessy considered that the project will significantly impact on most threatened species, contrary to the EA. The EA did not have any compelling evidence or substantiation to support the claim that the impact on most threatened species will not be significant and suggested that a viability analysis was required. The significance of the impacts on the viability of threatened species and communities must be considered in light of cumulative impacts due to neighbouring mines. In commenting on the offsets Dr Bekessy did not discuss the Bobadeen East offset area and was concerned about double dipping of the Bobadeen offset area which has been allocated for the salinity offset. Dr Bekessy was

highly critical of the offset stating that it was not adequate because of concerns about the long-term security and management of the offset sites, reliance on protecting existing vegetation which will result in a net loss of habitat in the landscape; lack of ecological rigour in establishing "like for like" offsets and in considering time lags; offset ratios are too low considering some of the offset is revegetation and success is highly uncertain; the proposal focuses on vegetation clearance with no attempt to offset the loss of viability of threatened species due to other impacts such as roads, noise, vibration, and light; and lack of a detailed cost-benefit analysis of competing scenarios with lower ecological impacts.

Mr Peake

197 Mr Peake, Ecology Manager at Umwelt, affirmed an affidavit filed on 3 May 2011 attaching his report dated May 2011 (exhibit 3A). Umwelt has participated in the project since approximately 2005 and prepared the EA dated October 2009. Mr Peake stated that 239ha of vegetation will be removed for the proposed open cut operations, none of which includes EEC. A population of 150 *Acacia ausfeldii* plants will be removed from the open cut disturbance area. Additionally, the disturbance area required for the construction of underground service infrastructure such as transmission lines, pipes, mine dewatering pump sites and access roads will remove 169ha of vegetation of which 69ha is White Box woodland EEC (It is agreed that the 69ha of EEC cleared is not in a solid block but clearing along infrastructure corridor such as roads and electricity lines). The report states that Umwelt mapped vegetation community variants each of which meets the definition of the EEC: White Box woodland, White Box woodland (regenerating), modified White Box woodland, Blakely's Red Gum open forest, Blakely's Red Gum open forest (regenerating), Yellow Box-Red Gum woodland, and derived native grassland. The variants represent different dominant species and/or different ecological condition (high, moderate or low quality) of the EEC.

198 The Bobadeen offset area is 102ha larger than that proposed in the EA as a result of negotiations with the Department of Planning. It is largely located within the salinity offset area, will protect 239ha of existing EEC and includes the seven variants to differing degrees. The Bobadeen East vegetation offset area is approximately 232ha comprising 169ha of White Box woodland EEC. The offset areas contain a total of 408ha of White Box woodland EEC and Ulan plans to upgrade 244ha of disturbed variants (derived native grassland, modified White Box woodland, White Box woodland (regenerating) and Blakely's Red Gum open forest (regenerating)) to higher quality variants (White Box woodland and Blakely's Red Gum open forest). In relation to *Acacia ausfeldii* , at the time of the EA this plant was not recorded in any other locations but in additional surveys completed in August 2010 substantial populations were identified. Ulan is investigating the possibility of establishing an offset area for *Acacia ausfeldii* . The BROMP includes a commitment to protect and manage 250 *Acacia ausfeldii* plants as an offset for the project. This option in combination with the re-establishment of *Acacia ausfeldii* in the post-mined area with material propagated from the stand in the open cut area will contribute to the minimisation of impacts on this species. Mr Peake predicts that there will be an increase in the population of this species both in the planned offset area and the rehabilitation area over the medium term by implementing the management regime documented in the draft BROMP.

199 The salinity offset area is shown in figure 7 of Mr Peake's expert report. The Department of Land and Water Conservation (DLWC) identified that 4460ha of land was required to offset the salt load associated with the operation of the Bobadeen Irrigation Scheme. This scheme, approved via a variation to a previous environment protection licence (EPL 394), was implemented in 2003. The objectives under the salinity offset program relating to biodiversity are reducing the percentage of bare ground and regenerating woody vegetation. Ulan acknowledged the overlap between the salinity offset area and the Bobadeen offset area and therefore the

ecological management commitments proposed as part of the Bobadeen offset area needed to be supplementary to those already committed to under the salinity offset program so that there would be a net gain rather than a duplication of existing commitments. The actions required to achieve the salinity program biodiversity-related objectives (controlled rotational grazing, establishment/maintenance of stable vegetative cover, 6,000 trees planted along pivot fence lines and natural regeneration of the vegetation cover) are comparable to "managing grazing for conservation outcomes", "erosion control" and "retain regrowth and remnant vegetation" under the biobanking additionality considerations which can then be used for discounting.

200 Mr Peake was cross-examined about his understanding of what the salinity offset scheme required in light of obligations identified in the four documents referred to in the EPL. The cross-examination is discussed in my conclusions at par 270 - 271.

201 In relation to size of area, Umwelt applied three ratios to correspond with the variants of White Box woodland EEC on the site, namely 2.5:1 for the grassland version, 3:1 for the modified White Box woodland version and 4:1 for the other five variants which were both the mature variants and the regenerating variants. When averaged out, the Bobadeen offset area provides an offset ratio of 3.4:1 for the EEC as a whole and after factoring in the Bobadeen East offset area, the ratio increases to 5.9:1.

Dr Robertson

202 Dr Robertson, an ecologist, is the Director of Cumberland Ecology Pty Ltd which company he has managed since 2003. Dr Robertson's expert report dated 9 May 2011 was attached to his affidavit filed on 9 May 2011 (exhibit 3). Dr Robertson conducted his PhD on the EEC covering a form of Box Gum woodland and derived native grassland. He was a peer reviewer of

Ulan's flora and fauna assessments in the EA for the Minister and provided ecological advice on the likely significance of the flora and fauna impacts and the adequacy of the proposed offsets. Dr Robertson was initially concerned about the potential for double dipping of the Bobadeen offset area, the quantum of offsets proposed relative to the impact of the project and the utility of the proposed offsets and their long-term management and security. However these concerns were addressed after Dr Robertson participated in discussions with Ulan, DECCW and Umwelt and his site visit on 15 September 2009 to examine the project site and the land that was proposed for use as an offset.

203 He believes that the offset proposal is appropriate and of the right quantum and if implemented appropriately will lead to a net increase in habitat. He stated that the Bobadeen offset area, while already established for salinity, is not currently being used to restore and conserve native vegetation. It could be used in this manner in the future by regenerating broad areas of semi-cleared Box Gum woodland and derived native grassland to better quality vegetation. The offsets will be linked in the long-term with the woodland and open forest to be created on the rehabilitated mining area, which will facilitate fauna movement between rehabilitation and offset vegetation. Contrary to the Applicant's contention, Dr Robertson opined that if an arrangement were made under condition 43 to provide appropriate long-term security for the offset, there would be a long-term conservation outcome. He also believed that the offset areas are "like for like" because it contains the same type of EEC that will be impacted by the proposal.

204 Dr Robertson referred to the DECCW, Draft National Recovery Plan for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland, February 2010 (Draft National Recovery Plan) (exhibit 10) in which he said it states that the EEC was once very widespread occurring across Victoria, ACT, NSW and parts of southern

Queensland. He notes that the Draft National Recovery Plan for the EEC estimates that there are approximately 250,729ha remaining in NSW. The EEC has been and continues to be used for livestock grazing and farming. Despite the level of threat to the EEC Dr Robertson has found it to be very widespread in NSW and believes the predominant threat is agriculture, not mining. Many mines that occur in old grazing lands are now required to offset and therefore have funded offsets by purchasing old farmlands and managing them for conservation.

205 In his response to Dr Bekessy's affidavit, Dr Robertson was critical that no literature other than the EA in relation to the EEC was referred to in support of her views. He stated that the Draft National Recovery Plan contains many recommendations which are germane to the project. Many of the project's mitigation and compensation measures are consistent with these. Dr Robertson opined that if implemented according to the approval the project would "achieve no net loss of the EEC, increase protection of sites in good condition and increase landscape functionality by restoring degraded sites and increasing linkages in landscape". He quoted the objects and performance criteria of the Draft National Recovery Plan and listed how the project would achieve those performance criteria if correctly implemented.

Connectivity of offset areas

206 Mr Peake explained that the Bobadeen offset area adjoins the area of impact and contains suitable EEC vegetation of the same character as that being cleared. It is connected to the extensive vegetation to the west, the south and the east all of which is in generally good condition. To the north of that area in particular there are fairly extensive areas of White Box woodland, mainly in its derived native grassland form. He explained that the offset is located in an area where over time with improvement in its condition, it will assist in the movement for fauna species and contribute to the partial filling of a gap between vegetated patches. Much of the

vegetation in the Bobadeen offset area in the centre of the site is formerly grazed land, comprising derived native grasslands with sparse tree coverage.

207 Mr Peake explained that the location of the Bobadeen East offset area (EPBC approval process requirement) was selected because a substantial proportion (169ha) of the total offset area (232ha) is composed of White Box woodland in a number of variants. It contains a combination of mature, degraded and cleared variants of that community as the substantial variants are the modified White Box woodland, the derived native grassland and the White Box woodland. Ulan's intention is to manage the Bobadeen offset area to improve its quality, and provide foraging habitat and connectivity across the project site with better linkage to vegetation of high quality on the project site and to the Durridgere State Conservation Area.

208 Mr Peake believed that both areas contribute to connectivity in different ways but both substantially protect existing vegetation in moderate to good condition. Over time with revegetation and regeneration the Bobadeen East offset area will increase connectivity by linking two large patches of vegetation and fauna habitat, one of which is Durridgere State Conservation Area. He accepted that the Bobadeen offset area did not have direct connectivity to a reserve and that Dr Bekessy's suggestion of increased connectivity could be ecologically achieved. However, Mr Peake did not think that diminished the Bobadeen offset area because over time it will infill gaps in the northern part of that large mass of vegetation in which it occurs.

209 In relation to other areas where the EEC is present on the project site, Mr Peake explained that the ability to manage and improve the substantial area around the pivot irrigators associated with the salinity offset scheme (identified by circles on the maps attached to Mr Peake's affidavit) is

retarded by the pivot irrigators and other existing infrastructure. He added that there are also extensive areas of unimproved pasture of grassland that did not meet the EEC listing and a large footprint of the irrigated areas which comprise mostly exotic non-native grasses. The horseshoe shape of the Bobadeen offset area reflects the location of irrigation infrastructure in the middle of that area and around it. Mr Peake explained that the hole in the middle of the Bobadeen offset area relates to surface infrastructure corridors which may include a combination of access roads, small powerlines and pipelines.

210 Dr Robertson essentially agreed with Mr Peake's comment that the offset areas provide for enhanced connectivity. He added that the Bobadeen East offset area is largely cleared, especially in the central portions. When that is revegetated and regenerated it will form a connection with the Durridgere State Conservation Area to the north and to the block of better quality woodland to the south. Referring to figure 1 of Mr Peake's report depicting the Bobadeen offset area, Dr Robertson pointed out that it includes quite a few areas of grassland or sparsely wooded country that will be more densely wooded after it has been revegetated and regenerated. Over time the northwestern corner of that land for example, will link to the heavily forested area to the west. Those revegetated and regenerated areas will provide extra habitat for threatened woodland birds for example. Dr Robertson flagged that the divestment and the longterm management of these offsets is important.

211 Some of those areas of farmlands that are covered by the pivot irrigators are reasonably productive grazing lands at present. They could be revegetated to form links to the north.

212 Dr Bekessy expressed concerns during oral evidence about the lack of connectivity between the offset areas, noting that there is no certainty that the vegetation surrounding the Bobadeen offset areas within the project

site will be protected from development in the future. The desired improvement in quality of the EEC through management actions is by no means a certainty and may be difficult to achieve. Dr Bekessy noted the opportunities presented by the site to achieve superior outcomes for biodiversity. She recommended the Bobadeen offset area, the Bobadeen East offset area and the Durridgere State Conservation Area be connected and extended to provide a more contiguous offset area, improving connectivity on the project site and improved linkages to the conservation area.

213 The Applicant tendered a proposed biodiversity area offset plan as exhibit M. It was an enlarged copy of figure 5 from Mr Peake's report marked up by the Applicant's counsel indicating how greater connectivity could be achieved by including as part of the offset area the cross-hatched area in between Bobadeen and Bobadeen East offset areas. Mr Peake and Dr Robertson agreed during oral evidence that part of the area in between the Bobadeen East and Bobadeen offset areas includes modified White Box woodland, one of the variants of the EEC. During oral evidence it became apparent that this area is covered by a lease from Ulan to a third party (lease tendered as exhibit 19A). The lease map was also tendered (exhibit 20A). Dr Robertson and Dr Bekessy agreed that the lease being on farmland was not an impediment to protecting this vegetation type as it is possible for it to co-exist with grazing systems and would not require shutting down large expanses of agricultural land. Rather, it would only require prohibition on clearance of this vegetation type.

Whether inclusion of salinity offset area "double dipping"

214 In her expert report Dr Bekessy stated that the overlap of the Bobadeen offset area with the salinity offset area was a case of double dipping, undermining offsetting as a conservation strategy and ensuring eventual net loss across all habitat types.

215 Mr Peake said that the salinity offset area encompasses effectively the whole of the Bobadeen offset area. Umwelt were conscious of the possibility of double dipping in that, if the salinity offset area is used for a biodiversity offset area without there being any improvement to it, the proponent would receive double the benefit of using that area without producing better ecological outcomes. The outcomes under the salinity offset program can be achieved through the growth of weeds on the site. Currently Ulan is regenerating sifton bush, *cassinia arcuata* , a native plant species which is regarded a woody weed because of its invasive nature which can retard the regeneration of other trees, shrubs and groundcovers. This is not a good ecological outcome under a biodiversity offset program. There is no double dipping because although Ulan will be using the same land, the biodiversity offset program will lead to better ecological outcomes. Mr Peake compared the value of land use changes and management activities associated with the salinity offset program (selection of native vegetation, erosion control and managing grazing for conservation outcomes) with the proposed biodiversity offset area outcome. In his report, table 7 on p 29, the third column indicates Umwelt's assessment of which management issues were relevant to the Bobadeen offset area. He identified the numerous additional management approvals for the biodiversity outcomes over and above the salinity offset scheme (par 89 report exhibit 3A).

216 Dr Robertson highlighted that the salinity offset scheme will run for the life of the mine only. Upon project completion that land could be sold and used for grazing and for other purposes. There is no guarantee beyond the life of the mine that those measures discounted in table 7 would continue. By contrast, it is proposed that the Bobadeen offset area will be permanently conserved. Dr Robertson did not know how that was to be achieved. Mr Peake also did not know but said that the Minister required arrangements for permanency be agreed upon by the end of this year (specified in existing condition 43).

Size of offset area

217 In relation to ratio of offset land to cleared area, Dr Bekessy stated that, firstly, the objective is net gain; the offset has to make an addition to what exists. Secondly, relying on future regeneration/restoration is an extremely risky strategy. She emphasised that even when there is perfect revegetation, there will be a time lag in the provision of habitat and that is likely to impact on the threatened fauna species, such as the Swift Parrot that needs to have mature flowering trees to feed on and species that need hollow bearing trees. Dr Bekessy commented that the diverse understorey component of the EEC ecosystem is critical and is one of the key reasons it is listed as a threatened ecosystem. She said that component has never been successfully recreated at scale. Additionally, Dr Bekessy was concerned about the historical application of fertiliser which may have contained superphosphate or the application of manure which can affect regeneration. She highlighted that competition for resources when replanting woody vegetation into grassland can threaten the grassland layout. Thirdly, Dr Bekessy took issue with the ratio applied by Umwelt as it does not reflect the current best practice of 10:1 which has been applied in recent Commonwealth approvals under the EPBC Act.

218 The ratios applied by Umwelt were based on what had happened elsewhere, such as in the Hunter Valley. In figuring out the size of the offsets and ratios, Umwelt focussed on the likelihood that the areas would recover over time through natural regeneration or with intervention to their benchmark version where the tree canopy, the ground cover and the very sparse shrub layer are intact. It wanted to ensure that the area was dominated by native species and provided habitat for the threatened forms of species, through their own development and through artificial means such as mess boxes.

219 Dr Robertson observed that assuming a standard for offset ratios is false. It disregards the need to evaluate each project on its merits. The 10:1 ratio is not a mandatory standard for dealing with the EEC. Dr Robertson also observed that the "span or coverage of an EEC" is a relevant consideration. For example, compared to a situation where there were 250,000ha of mapped treed vegetation, it was not necessary to offset to the same degree when there was two or three times that area but where it was mostly derived native grassland. He said the span or coverage of an EEC gave greater latitude to consider offsetting ratios.

220 Dr Robertson disagreed with Dr Bekessy that relying on regeneration of the EEC was extremely risky. While not without risk, there were examples of where significant regeneration has been achieved by removing livestock and better managing the area. In the joint expert report, Dr Robertson stated that " Box Gum Woodland can be restored and greatly improved in quality by removing or strictly controlling livestock, controlling weeds and feral animals, and where necessary by replanting selective native plants. I believe that it is highly likely that the offset work proposed will be successful." In oral evidence Dr Robertson distinguished recreation/rehabilitation from restoration/regeneration, stating that the former is where vegetation is completely rebuilt after mining, whilst the latter is where pre-existing vegetation is encouraged to regenerate naturally. Rehabilitation at the Ulan site has been of quite a high quality involving regeneration of trees, shrubs, herbs, grasses. What is proposed for the offset areas is regeneration as there is substantial cover of native grasses and grassy woodlands which are to be regenerated by managing grazing and weeds, and fencing land to secure the tenure for conservation. He added that the Draft National Recovery Plan is predicated on an assumption that the EEC can be recovered by grazing management and other land use management practices. Through his research work for this PhD and afterwards Dr Robertson has observed that the grassy understorey (which Dr Bekessy highlighted had not been recreated at scale) is very resilient in NSW. He said there are more native species in

the grassy understorey around places like Ulan but even in some areas that had been subject to ploughing for wheat fields enough native grasses and herbs remain to be classified under the Commonwealth regime as critically endangered ecological community.

221 Regarding *Acacia ausfeldii* t he evidence of both Mr Peake and Dr Robertson is that these plants have also been successfully rehabilitated before, and there is a high probability its seeds can be propagated successfully, resulting in a net increase in these plants: exhibit 3A at par 73; exhibit 3 p 1.5; exhibit 6 p 4.

222 Both Dr Robertson and Mr Peake consider the offset strategy will improve the condition and secure the conservation status of the areas in the long term.

Lease terms

223 Part of the site (Lot 1 DP 701346 and Lot 2 DP840034) was leased to Ardrob Pty Limited (the lessee) on 25 May 1999 for a term of 20 years (due to expire on 25 May 2019) with an option to purchase granted for the consideration of $10.00. Rent is in the amount of $1.06 per hectare per annum (cl 2(e)). The land is to be used for the purposes of grazing, agriculture and farm tourism (cl 4(a)). If any part of the premises is not being well maintained, Ulan can excise the lands from the leased area, abate the rent and pay a consideration of $1.00 for a partial surrender of the lease (cl 4(d)). Notwithstanding the covenant for quiet enjoyment, Ulan can enter, re-enter and remain on the land at any time and from time to time for any purpose, without compensation or abatement of rent, upon giving the lessee reasonable notice (cl 22(a)(i)). It can use the lands beneath the surface of the premises for mining or mining purposes (cl 22(a)(ii)). If either party wants to terminate the lease, they can enter into negotiations to do so (cl 23). The lease map indicates that the leased land

is largely within the project area. It covers an area to the north of the Bobadeen offset area and the area between that offset area and the Bobadeen East offset area.

Applicant's submissions

224 The Applicant submits that the clearing of 69ha of White Box EEC and 150 *Acacia ausfeldii* plants represents a failure to conserve biological diversity and ecological integrity, and that Ulan's offset strategies are inadequate to compensate for the adverse impacts on biodiversity and ecological integrity. The Applicant relied on Dr Bekessy's evidence to argue that the project will adversely affect White Box woodland EEC and *Acacia ausfeldii* , and that the offsets currently proposed are not consistent with the conservation of biological diversity and ecological integrity. If clearing of EEC is allowed, the main issues are the need to ensure the offset area is large enough and promotes connectivity of land which enhances biodiversity values in the area within and beyond the mine area. The inclusion of the salinity offset area in the Bobadeen offset area is double dipping and not in accordance with principle 2 of the offset principles.

225 The offset currently proposed is constrained by operational requirements in particular the agricultural lease in evidence. The lease is not an impediment to the expansion of the offset area. Conditions can be imposed which require reaching agreement with other persons or government authorities. The current condition 29 envisages agreement being reached between the proponent and third parties in order to achieve the outcome required by the condition. The lease is for 20 years and cl 23 provides that if either party wishes to terminate the lease the parties will enter into bona fide negotiations with a view to agreeing mutually acceptable terms for termination. The obligation to negotiate in good faith requires the parties to reach mutually acceptable terms upon which the lease will be terminated, applying principles identified in *Macquarie International Health Clinic Pty Limited v Sydney South West Area Health*

Service [2010] NSWCA 268 per Hodgson JA (Allsop P and Macfarlane JA concurring). The provision in the lease facilitates its use. There is no evidence of an unreasonable financial burden on the proponent to reach an agreement to buy out the lease. In any event, the lease is subject to occupation of the demised premises by the lessor (cl 22); the rent is less than $1,000 per year; the option to purchase at the end of the 20 year lease period is at its highest the net present value of 20 per cent of the value of the land and there are a number of further variables to consider (see par 144 Applicant's written submissions).

226 Dr Bekessy and Dr Robertson agreed in oral evidence that the EEC can be properly maintained with grazing systems also in place. Protective measures could be implemented with the lease in place so that the EEC can co-exist with farm land.

227 Dr Bekessy's evidence is that improvement in and establishment of the EEC through management action is not a certainty and may not be readily achieved. Success relies on implementation of measures for many decades. She recommended the linking of the Bobadeen and Bobadeen East offset areas and further extended to provide a more contiguous offset area. As there are a number of patches of vegetation located between these two areas linking these up would improve connectivity and overcome the current fragmented proposal. The current offset areas are fragmented with no connectivity between the Bobadeen and Bobadeen East offset areas. The proposal in exhibit M while not produced by the experts does reflect Dr Bekessy's evidence of the desirability of having a greater area of offset which enhances connectivity between the Bobadeen and Bodadeen East offset areas and the Durridgere State Conservation Area. This would provide an opportunity for superior outcomes for biodiversity and is important given the uncertainty inherent in re-establishing an EEC through managed actions such as the BROMP.

228 Principle 2 of the offset principles is relevant to the consideration of the salinity area, and overlaps with principles 6 and 10 requiring net improvement in biodiversity over time. Most of the Bobadeen offset area encompasses the salinity offset area. Ulan argues that the biodiversity offset provides important additional benefits in relation to the salinity area, a principle of additionality. Such a principle is not reflected in principle 2. While the application of strict principles of statutory construction is not warranted the ordinary meaning of the words should be given their full effect.

229 To the extent support for the principles of additionality was sought to be gained from the biobanking scheme, that scheme is quite different in nature and relies on the creation of offset credits (par 160-162 Applicant's written submissions). If the principle of additionality is to be accepted the baseline obligation of the salinity offset scheme must be determined. Mr Peake stated there were only two relevant outcomes in his report and in oral evidence, being reduction of percentage of bare ground and regeneration of woody vegetation but much more is required. The EPL in evidence requires the implementation of the program as specified in four documents, the Ulan Environmental Management System 2 December 2002, DLWC February 2003, May 2003 (document says 2009 but error) and Ulan Salinity Offset and Monitoring and Reporting Program (April 2005). The first document does not mention the salinity offset program. The DLWC February 2003 document makes clear that greater tree cover was required and implementing the proposed land use changes would be in accordance with best practice. The Monitoring and Reporting Program includes land use change areas. The salinity offset program requires large areas of forest together with management of those areas as well as areas to be regenerated.

230 Ulan's submission that the offset applies only for as long as the Bobadeen Irrigation Scheme continues must be considered in light of the current

proposal. The EA refers to the Bobadeen Irrigation Scheme for pasture irrigation with figure 2.15 showing its continuation. Section 5.4 refers to the Irrigation Scheme continuing effectively for the life of the mine, some 20 years. The salinity offset is required for many years after the irrigation ceases. The EPL can only be surrendered with the consent of the Environment Protection Authority and the Environment Protection Authority is unlikely to allow its surrender while there is a need to maintain the salinity offset program. The requirement is permanent although not in perpetuity. Each of the actions proposed in the Bobadeen offset area can be characterised as being required as part of the salinity offset program such as planting, forest regeneration applying best practice methodology such as weed removal.

231 The Court is not bound by any offset ratio or rule of thumb in relation to size. The appropriate offset must be determined in relation to each individual circumstance and not from the outset by applying a particular ratio. The ESD principles can be applied as a framework in which to consider offsets as a mitigating measure. There are numerous examples of offsets in merit reviews before the Court. Ulan's proposal of clearing 69ha of EEC to be offset by 239ha is a ratio of 3.46:1. The Court has imposed greater ratios, see *Gerroa* for example. The area identified by Ulan was driven by a particular ratio which it was considered had been applied elsewhere in NSW and was influenced by the lease area. The application of an offset is a second best option given that it is preferable not to clear EEC at all. A further consideration is the cumulative impact on the clearing of EEC as a result of approvals of neighbouring mines.

Minister's submissions

232 The Minister's submissions outlined the process of assessment undertaken by the Department during the approval process for the project, including obtaining advice of Dr Robertson and the expansion of the biodiversity offset areas by Umwelt on behalf of Ulan. In particular the

Bobadeen offset area was extended to include an additional 102ha which includes 34.5ha of White Box woodland EEC resulting in a total of 237.5ha of existing EEC within the offset area. Further, an area along Highett Road of a comparable ex situ population of *Acacia ausfeldii* is to be added.

233 The BROMP proposes a number of offset strategies which are acceptable. Provided the additionality rules are applied correctly (principle 2), the salinity offset area can be included within the Bobadeen offset area. In Dr Robertson's view there is no double dipping taking place. The additional land has been strategically selected to form linkages in the landscape and to improve fauna movement in the long term. In his opinion the level of offset is adequate to address the anticipated impacts of the project and will result in long term biodiversity gains in combination with the proposed rehabilitation. Dr Robertson is an independent expert whose initial concerns about the adequacy of the offsets have been overcome. The Minister's Department considers the offset package provides long term protection for 991ha which could otherwise be subject to impacts from a variety of sources, such as mining applications or agriculture. The measures proposed for the Bobadeen offset area included eight supplementary measures beyond the salinity offset area requirement including increased security for the area for the long term, targeted revegetation and regeneration of native vegetation communities particularly the EEC and ongoing feral animal control.

234 Ulan has also agreed to set aside the Bobadeen East offset area (232ha) under condition 41. Although the offset strategy is not without risk, Dr Robertson disagrees with Dr Bekessy that the strategy was extremely risky. In his experience there are many examples where removal of livestock and better management of vegetation had achieved significant regeneration of the EEC. Both Dr Robertson and Mr Peake consider the offset strategy is consistent with the principles of intergenerational equity

as it will improve the condition and secure the conservation status of the areas in the long term.

235 There is little rigour in the Applicant's offset proposal with no supporting evidence of the need for greater fauna connectivity for example. The need for the greater area has not been established and the existing proposal is substantial in any event. Table 15 needs to be further amended to include the area of Highett Road proposed, as already referred to in condition 43.

236 In relation to the Applicant's proposed conditions, there is no need to further amend condition 41 to include a reference to the Biodiversity Management Plan given the detail in condition 44 about that plan and the obligations in Sch 5 to review and update the plan on an annual basis. Condition 41A is acceptable except where it states "prior to the commencement of the project" as that is unworkable, the project having already commenced. Applying set ratios as if these were a standard (Dr Bekessy proposing 10:1) is not the correct approach according to Dr Robertson and such an approach disregards the need to evaluate each project on its merits. Dr Robertson identifies that it is necessary to consider in this case that the open cut mine area will eventually be rehabilitated and this has been undertaken to a quite high quality standard on the site, certainly compared to mine rehabilitation in other areas of NSW. The requirement of the Commonwealth Government of 10:1 was along the Hume Highway, where there will be permanent loss of the vegetation cleared, does not automatically apply in this case. The existing coverage of EEC should also be considered.

237 Mr Peake explained that the ratios applied by Umwelt in designing the offset area were based on what had happened elsewhere both in the locality and further afield, such as in the Hunter Valley. Rather than apply a standard offset ratio, Umwelt applied three ratios to correspond with the variants of White Box woodland EEC on the site, namely "2.5:1 for the

grassland version, a ratio of 3:1 for the modified White Box woodland version and a ratio of 4.1 for the other five variants which were both the mature variants and the regenerating variants". When averaged out, the Bobadeen offset area provides an offset ratio of 3.4:1 for the EEC as a whole; factoring in the Bobadeen East offset area, the ratio increases to 5.9:1. Although Dr Bekessy relied on recent Commonwealth approvals under the EPBC Act (Cth) for current best practice, in the present case the Commonwealth approved the action comprising the project on the basis of the offset ratios applied by Umwelt.

238 The proposed reporting amendments of the Applicant to condition 44 overlook the reporting and auditing requirements in Sch 5. Amendment of condition 45 is unnecessary and semantic. In relation to condition 57 which deals with the Rehabilitation Management Plan, the Minister is agreeable to the addition of the Community Consultative Committee in paragraph (a), (I note that the committee was already included in the original condition 56/57(a)) but the Minister does not consider it necessary for experts in the rehabilitation of the White Box woodland EEC to also be involved in the preparation of the plan. Appropriate expertise is provided by the requirement for the involvement of the Department and the Office of Environment and Heritage (formerly DECCW) in consultation on the Plan before it is approved by the Director-General of Department of Trade and Investment, Regional Infrastructure and Services .

Ulan's submissions

239 By definition an opencut mine mines where the resource is. Insofar as the underground component is concerned, the Applicant did not contend that that Ulan did not seek to minimise the impacts of mining as much as operationally reasonable. Mr Peake's evidence was that while the location of the infrastructure corridors is to a certain extent dictated by the location of the resource, every attempt has been made to avoid the removal of 69ha of EEC . In determining the area to be impacted, Ulan took the most

conservative amount, namely the corridor for any given power line rather than the actual amount that was going to be removed. Clearing of infrastructure corridors has less impact than clearing a square box of 169ha of vegetation. Additionally, the mine plan was designed to maximise the project's environmental, social and economic benefits. A number of alternative options were considered: exhibit 9A vol 1 section 2.4.

240 Table 9.3 in the EA (exhibit 9A vol 3 p 9.2 to 9.4; reproduced as table 5 in Mr Peake's report exhibit 3A) indicates that of the 69ha of EEC that is removed, 35ha is derived native grassland. Although it is EEC, it is in the form of an "open paddock". Of Yellow Box Red Gum woodland there is 2ha, of White Box woodland there is 1ha, and of Blakely's Red Gum open forest there is 8ha. That is consistent with the position of minimising harm and with one of the principles in the offset principles. The EA states at p 9.3 of exhibit 9A t his has ensured minimal impact on the high quality variants of this community. Mr Peake's report (table 5 in exhibit 3A) demonstrates the limited extent of the impact on various vegetation communities and formations within the project area.

241 The vegetation clearing needs to be put in perspective. Firstly, the loss of 169ha of vegetation is a very limited amount when compared with the total project area. Moreover, the 69ha of EEC represents 3.1 per cent of 2201ha of this EEC within the project area and 0.027 per cent of the NSW population: Mr Peake's report, exhibit 3A par 50 - 51, 54. These are low numbers. Secondly, only 19 per cent of the 69ha of EEC can be described as a high quality variant and more than half (35ha) is native grassland: Mr Peake's report, exhibit 3A par 55. Thirdly, there will be a significant net increase in the EEC and *Acacia ausfeldii* plants as a result of the offset requirements conditioned as part of the project approval: Dr Robertson's report, exhibit 3 p 3.4 and 3.10; Mr Peake's report, exhibit 3A par 61 - 62. *Acacia ausfeldii* plants have been successfully rehabilitated before by Ulan, and there is a high probability its seeds can be propagated

successfully, such that the project will result in a substantial net increase in this plant, something that the Applicant's contentions ignore: Mr Peake's report, exhibit 3A par 73; Dr Robertson's report, exhibit 3 p 1.5. A large stand of these plants will now be protected along the eastern side of Highett Road, as observed on the view: condition 43 proposed by Ulan and the Minister. The evidence of both Mr Peake and Dr Robertson is that these plants have also been successfully rehabilitated before, and there is a high probability its seeds can be propagated successfully, resulting in a net increase in these plants: exhibit 3A par 73; exhibit 3 p 1.5; exhibit 6 p 4, second paragraph of Dr Robertson's box. While the removal of this area of EEC is a relevant consideration for any decision maker, it is not a significant amount of this species.

242 The Applicant's contention that the project will result in a "cumulative loss" of the EEC ignores the offsetting arrangements. Sixty-nine hectares of EEC will be removed, of which half is low quality derived native grassland. This is a short to medium-term loss. This will be offset by the establishment and restoration of 239ha of EEC on old farmlands, a long-term gain. The offset ratio relating to the Bobadeen offset area is 4:1 for high quality variants and 3.46:1 overall and the total offset ratio including Bobadeen East is 5.9:1: exhibit 3A, Mr Peake's report par 97; Dr Robertson's report, exhibit 3 p 3.3. A further 753ha of vegetation will be upgraded "from modified variants to their benchmark target communities": Mr Peake's report, exhibit 3A par 27(e).

243 The concept of offsets is not driven by legislative prescription. It has developed as a practice by proponents offering an offset as a quid pro quo for removing vegetation. In *Gales Holdings Pty Ltd v Tweed Shire Council* [2008] NSWLEC 209 the proponent offered offsets where it was proposing to impact upon some littoral rainforest. At [135] Preston J dealt with the proponent's proposal for the offsets. His finding at [138] - [139] is important when it comes to recognising the role of offsets in a project such as the

one before this Court. H is Honour recognised that in some instances there is a need to impact upon vegetation. Ulan's counsel submitted that in relation to offsets recognition of the planning controls that apply to the land is warranted. But for Pt 3A mining would have in any case been permissible under the local environmental plan and it would have been permissible under the Mining SEPP.

Proposed offset

244 The offset proposed in the EA underwent two significant increases in the evolution of this project before this hearing commenced. The first was by negotiation with the Department of Planning to 102ha for the Bobadeen offset area. This was accepted by the Minister after a rigorous independent assessment by Dr Robertson whose position has not changed. The second increase was the inclusion of the Bobadeen East offset area as a result of the Commonwealth Government's controlled action approval process under the EPBC Act. That process was also rigorous.

245 T here is no issue of connectivity if it is accepted, as it should be, that the offset areas can achieve the regeneration and enhancement expected for the EEC. Mr Peake and Dr Robertson addressed this issue comprehensively in oral evidence. A letter from the DECCW to the Department of Planning states that they recognise the addition of 102ha satisfied them in terms of connectivity for the Bobadeen offset area: exhibit 1 tab 26 p 606. Also EA exhibit 9A vol 3, p 3.7 section 3.8. The allegation that the offsets are not "like for like", ignores the offsets that are the subject of the conditions in the project approval.

246 Numerous experts, some engaged by Ulan, some independent, some from government departments, approved what is in the current condition 41. Against all the expert views stating that the current condition will result in a net gain of EEC, and is a satisfactory biodiversity offset, the Court has the

view of one expert, who has not examined the site, saying it may not be. Dr Bekessy only attempted to visit the site after she wrote her report and after the joint report. Her visit would have been effectively on the eve of giving evidence in any case. The Court also has an arbitrary marking on an aerial photograph as a suggested additional area to include in the offset. It is a line drawn by the Applicant's advocate, not a plan drawn by Dr Bekessy. The Applicant's approach essentially throws out the degree of rigour that has occurred before the hearing in the assessment of biodiversity offsets for the project. The evidence confirms the appropriateness of the current biodiversity offset condition.

Offset ratios

247 In relation to offset ratios it is important to have consistency between decisions. The existing offset ratio is in the order of 6:1 and is not inadequate. The mine adjacent to Ulan, Wilpinjong which was approved on 1 February 2006, has an offset ratio for endangered ecological communities of 3.4:1: exhibit 1 vol 3 p 944 - 945. In Moolarben's case it was 2:1 approved around September 2007: see condition 41 exhibit 1 vol 3 p 1063. The different pattern of mining on each of them may affect ratios. (Moolarben, like Ulan, is part-underground and part open cut whereas Wilpinjong is open cut only).

248 A ratio of 10:1 is neither lawfully required, nor would it be proportional to the threat to the EEC involved, nor practical. The Bobadeen offset areas are nearly 1000ha in size, and secured for the long term: condition 43. Dr Bekessy and the Applicant used the phrase "best practice" which reflects what is the highest offset ratio that the EPBC approval process may have required. The Court does not have to get to what that practice is or may be. The offset arrangements have also been approved by the DSEWPC (Cth), which is said by the Applicant to employ best practice : see approval dated 30 November 2010 at exhibit 1 vol 1 tab 31 p 646 - 650. A n additional offset is unnecessary.

Salinity offset

249 The Applicant has not found some forensic point by reference to the documents that are referred to in the EPL. The position of the salinity offset was the subject of significant discussion and consideration by the proponent and the DECCW, which issued the EPL. The Applicant incorrectly submits that the concept of additionality is foreign to principle 2 of the offset principles. The offset principles are not a scheme but a series of principles generally to be applied published by DECCW. The Applicant ignores that DECCW explicitly recognises the concept of additionality within the concept of offsetting in its letter to the Department dated 4 May 2010 (exhibit 1 tab 26 p 605). It is clear that the DECCW did not think that the Applicant's proposition had any foundation; it proceeds to assess the concept and the quality of additionality. The author describes the task of the relevant Government departments as follows: "...it is clear that DECCW and Department of Planning are now required to determine what degree of overlap between the salinity and biodiversity offset is acceptable." The result of that determination is clear from the DG's report (exhibit 1 tab 33 p 694) which noted that:

> ...both DECCW and the Department are satisfied that establishment of the Bobadeen Vegetation Offset would provide well defined additional improvements to those required under the existing salinity offset requirements, particularly in relation to:
>
> - active regeneration, enhancement and management; and
> - the protection of the land in perpetuity.

250 Further, the EPL ought not be construed necessarily as an approval under other legislation within the meaning of that principle; it is a licence. Whether the intention of principle 2 was to catch anything that may be required under other legislation is not clear.

251 Importantly, the Bobadeen salinity offset program does not require Ulan to establish or restore the EEC or *Acacia ausfeldii* . It was created under the EPL in relation to its mining activities at Ulan and imposed in order to offset the salt load within the catchment, due to the implementation of the Bobadeen Irrigation Scheme. The Bobadeen salinity offset program comprises an area of about 4,460ha that has been identified for an altered land use and management in order to compensate for increased salt loadings. Ulan has volunteered the ambiguity in what was required and the type of management required as part of the salinity offset as early as in the EA in 2009: see exhibit 9A vol 3 p 10.15. On p 10.16 the salinity offset area is singled out including its large size of 4460ha. It states:

> Development of the salinity offset program is ongoing. Specific land use changes and management activities within the salinity offset area have included control rotational grazing, establishment, maintenance of stable vegetative cover, 6000 trees planted along the pivot fence lines...

252 The last bullet point, "Natural regeneration of the vegetation cover" is important as it emphasises the bi odiversity management measures being supplementary to the salinity offset area. The changes to land use flowing from the salinity offset scheme "involve better management of the pasture areas to reduce the percentage of bare ground, some regeneration of woody vegetation and some lucerne pasture establishment": exhibit 17A p 15. During the assessment phase Umwelt made it abundantly clear what the nature of the salinity offset required in a letter dated 23 March 2010 (exhibit 1 tab 21 p 510 - 517) which dealt with the Bobadeen offset area/salinity offset area, and a letter dated 13 April 2010 : exhibit 1 tab 23 . Therefore, despite the Applicant's contentions to the contrary, there was no doubt what the salinity offset required insofar as Ulan, the Department and DECCW were concerned.

253 What is required under the Bobadeen offset area is the targeted revegetation and regeneration of EEC and targeted plantings to enhance

specific habitat features for targeted threatened species: Dr Robertson's report, exhibit 3 p 3.8; Mr Peake's report, exhibit 3A par 82 to 89.

254 In response to the Applicant's submission that the concept of additionality was undertaken without independent analysis, the letter from DECCW dated 4 May 2010 indicates that there was independent analysis from DECCW, which imposed the salinity offset in the EPL and administers the licence. DECCW noted that the additional 102ha of land in the Bobadeen offset area "adequately improves connectivity of the existing blocks within the offset area". Moreover for the purposes of the assessment of the project application, Dr Robertson, who did his PhD on this EEC and is therefore someone with appropriate expertise, was retained by the DG to undertake a peer review of the additional information provided by Ulan: exhibit 1 tab 27 p 611. In section 1.4 Dr Robertson concludes that he was satisfied with what Ulan promulgated. Dr Robertson noted in a letter to the Department dated 11 May 2010 (exhibit 1 tab 27 p 611): "The additional land/vegetation for the offsets has been strategically designed to form linkages in the landscape to improve fauna movement long term." It is unclear if Dr Robertson had the benefit of the DECCW letter at the time. T he DG's report also supports this view: exhibit 1 tab 33 p 694.

255 T here is no foundation for the assertion that the salinity offset will be required for many years after the irrigation scheme ceases, in fact the evidence suggests to the contrary. One of the relevant matters that both the Department and the DECCW took into account in additionality was the Bobadeen offset area being locked away in perpetuity as an element of distinction between the offset and the salinity offset.

256 Mr Peake's evidence concerning any requirements of the salinity offset scheme is not "wrong" as alleged by the Applicant. He identifies what is critical additional in the biodiversity offset proposed in his report at par 89,

particularly (b) and (d), that is, the targeted revegetation and regeneration of EEC and targeted plantings of threatened species.

Regeneration

257 Despite being listed as endangered, the EEC is widespread in NSW: Dr Robertson's report (exhibit 3 p 3.1). The Applicant relies on Dr Bekessy's concerns regarding regeneration of the EEC. That concern is not shared by Dr Robertson, who has particular knowledge of this species, having undertaken his PhD on it. He set out his view in part at TS358.43 - 359.24, and the Court will note his reference to the fact that "the resilience of the grassy vegetation in box gum woodland increases as you go further north." In the joint expert report (exhibit 6) Dr Robertson stated that in his view "Box Gum Woodland can be restored and greatly improved in quality by removing or strictly controlling livestock, controlling weeds and feral animals, and where necessary by replanting selective native plants. I believe that it is highly likely that the offset work proposed will be successful." The Court as decision-maker must ask whether there is any basis for not accepting his opinion (and that of two government departments and other experts) on this issue, or on the adequacy of the offset areas proposed generally in relation to this EEC. There is no such basis.

258 The Court from its own observation, assisted by Dr Robertson, can have confidence in the likely regeneration of the EEC in the proposed offset areas. The Court was shown on the view a rehabilitation area of a part of a former open cut mine. Dr Robertson stated in his oral evidence that "...rehabilitation at the Ulan site has been of quite a high quality and it has involved regeneration of trees, shrubs, herbs, grasses and other plants": TS357.20-27. Also EA, exhibit 9A vol 3 p 5.21 - 5.22.

Applicant's condition 41A

259 The Applicant's condition 41A is a practical impossibility and should not be allowed. The mine has already commenced. That condition requires the mine to shut down until some future date when all the trigger levels are arrived at.

Applicant's condition 45

260 The matters proposed by the Applicant are already covered by condition 45 as proposed by the Minister and Ulan.

Applicant's condition 57 (condition 56)

261 What is proposed by the Applicant is already covered by condition 56(e) as proposed by the Minister and Ulan.

Consideration of biodiversity offset

262 The imposition of conditions requiring offsetting of areas for biodiversity conservation where a project can only proceed through the clearing of vegetation including of EEC is allowed at State and Commonwealth levels and has been allowed by this Court. In *Gerroa* at [67] Preston J identified that offsetting is appropriate to compensate for the removal of EEC. As Ulan identified EPIs while not binding are relevant to the Court's consideration. The Mid-Western Regional LEP and Merriwa LEP permit mining in this area as would the Mining SEPP. The draft BROMP is summarised above and the extent of offset area proposed by Ulan and accepted by the Minister in four distinct areas identified in table 15 in condition 41. Condition 41 will also need to be amended to incorporate the current proposals for an area along Highett Road dedicated to *Acacia ausfeldii* . The Bobadeen East offset area was added recently, it being a requirement of the Commonwealth approval process under the EPBC Act.

263 The Applicant proposes changes to the existing conditions. No issue arises as to whether these can be imposed as a matter of law. Whether these changes should be made must be assessed on their merits.

264 The parties agree that the offset principles should be applied to the determination of offsets but disagreed on whether these were complied with in this case. The first principle identifies that impacts should be avoided, with offsets used to address remaining impacts. As identified by Ulan part of the vegetation cleared is above the mine surface area. The 69ha of EEC to be cleared is along infrastructure corridors. This clearing is unavoidable if the mine is to proceed. Mr Peake's explanation for the current area location and size of the Bobadeen offset area was that this contained suitable EEC of the same character as that being cleared, was near the area of impact and is located in a gap between large vegetated patches and will connect with vegetation on and off the project site. The shape of the Bobadeen offset area also reflects the location of pivot irrigators and surface infrastructure corridors in the middle. His evidence identified that the boundaries of the agricultural lease with Ardrob Pty Ltd also had a role to play in defining boundaries according to operational requirements. Principle 1 states the offsets must be located appropriately, meaning areas with similar ecological characteristics. That is achieved by the proposed offset areas. Principle 5 requires that offsets must be underpinned by sound ecological principles, as specified therein. Under principle 6 offsets should result in a net improvement in biodiversity over time. The need for active management of offset areas is recognised. Principle 7 requires that offsets be enduring which is required by the conditions with the mechanism is yet to be determined.

265 Principles that received the most attention were the principle that all regulatory requirements must be met and must not be used to satisfy approvals or assessments under other legislation (principle 2). A related principle is principle 12 which requires that the offsets must be

supplementary and beyond existing requirements. The need for offset areas to enhance connectivity recognised in principle 6 was also raised by the Applicant. The Applicant's expert also suggested that a "like for like" offset was not being provided as required by principle 10.

266 The focus of argument was the adequacy of the Bobadeen and Bobadeen East offset areas. As emphasised in Ulan's submissions the 69ha of EEC proposed to be cleared along infrastructure corridors will be revegetated in the Bobadeen and Bobadeen East offset areas which total 408ha. The 69ha area of EEC to be cleared is 3.1 per cent of the total of 2201ha of EEC on the project area.

Regeneration feasible

267 There is conflicting expert evidence of how risky the re-establishment and/or regeneration of EEC is likely to be. Dr Bekessy describes the process as very risky in contrast to Dr Robertson who is aware of numerous examples where White Box woodland EEC has been successfully rehabilitated and considered the risk of failure was much less. His evidence was informed by his own PhD research and the Draft National Recovery Plan for White Box woodland EEC prepared by the Commonwealth. That contemplates the regeneration of the EEC in areas used for grazing suggesting that is considered feasible. Ulan pointed to the existing rehabilitation seen on the site visit which attests to the success Ulan has had. I consider that regeneration of vegetation in the manner referred to in Mr Peake's evidence is practical and feasible, albeit not foolproof. This suggests that with appropriate areas of offset there will be net improvement of EEC over time. There will however be loss of biodiversity in the short to medium term while it is regenerating as Dr Bekessy identifies, with consequent loss of habitat also, including for threatened species, for that period.

268 In relation to *Acacia ausfeldii* , Ulan's submissions at par 241 identify the evidence of Mr Peake and Dr Robertson which establishes that success in the regeneration of this species is likely to be achieved with proper management.

269 The proposal is also "like for like" given the identified variants of EEC referred to by Mr Peake which are represented in the offset areas. Given these conclusions Dr Bekessy's evidence that there will be net loss of EEC is not accepted.

Double dipping

270 The Applicant submitted that principle 2 prevented "double dipping" which occurred with the inclusion of the salinity offset area required under the EPL in the Bobadeen offset area. Given these guidelines are not statutory instruments they should be read in a commonsense, non-technical and practical way. That also applies to the documents in the EPL which set out the requirements for the salinity offset area. The Applicant's counsel spent some time attempting to demonstrate that what Mr Peake considered was required for the salinity offset area was incorrect. The Applicant cross-examined Mr Peake about his understanding of what management of the salinity offset area required, essentially because it wished to demonstrate that his understanding of the limited management for biodiversity conservation purposes was wrong. It is fair to say that based on the four documents referred to in the EPL the requirements of the salinity offset area are not crystal clear. The Applicant sought to emphasise that land use management under the scheme required the establishment of forests. Mr Peake's understanding that the salinity scheme required a reduction in the percentage of bare ground and regenerating woody vegetation is not inconsistent with the documents. That is how the salinity offset area has been managed by Ulan. As Ulan submitted the view of DECCW which issued the offset principles is apparently that it does not consider there is double dipping as it signed off, through the Pt 3A assessment process, the

proposed Bobadeen offset area. DECCW expressly identified the need to analyse the difference between the management of the salinity offset area and the proposed Bobadeen offset area in its letter dated 4 May 2010 so that it was clearly alive to that issue, as Ulan submitted.

271 The Applicant's counsel sought to apply a strict legal interpretive approach to the construction of the principles which is simply not relevant in this context and given their status as a policy document not a legal instrument. Whether additional biodiversity benefits apply in the Bobadeen offset area compared to the salinity offset area is a practical question. This is determined by reviewing what has occurred to date under that scheme with what is proposed as a biodiversity offset area. According to Mr Peake the salinity area has been managed to reduce bare ground through the cultivation of woody vegetation, a less than ideal choice from a biodiversity perspective. The salinity offset area is not managed for biodiversity conservation purposes such as the proposed biodiversity offset area is intended to be to regenerate EEC. The salinity offset use does not continue indefinitely, ceasing when the Bobadeen Irrigation Scheme is no longer required. Whether this coincides with the end of mining or is earlier or later, there is no doubt it is not permanent, unlike the Bobadeen offset area which must be established permanently for that purpose. I accept the evidence of Mr Peake and Dr Robertson confirmed by the views of DECCW that the inclusion of the salinity offset area is not double dipping and not contrary to principle 2 as there are additional biodiversity benefits given the requirement to establish and restore the EEC in perpetuity.

272 The same conclusion does not apply to the Bobadeen East offset area which clearly comes within the prohibition in principle 2. It was created directly in response to another statutory scheme with similar objectives. The Bobadeen East proposal was not part of the offset considered by DECCW or Dr Robertson for the Department of Planning as it resulted from the later EPBC Act approval process.

Size of area/connectivity

273 The Applicant presses for a further large area to be set aside as part of the offset required for this proposal, identified in hatching on a plan prepared by its counsel (exhibit M). If required this greatly increases the area of offset required and connects the Bobadeen offset area with the Durridgere State Conservation Area and the Bobadeen East offset area, a desirable outcome in the view of Dr Bekessy.

274 Mr Peake identifies the ratios he applied in identifying the Bobadeen offset area of variously 2.5:1, 3:1 and 4:1 for EEC grassland, modified and mature variants. As result of the EPBC approval process requiring the Bobadeen East offset area 5.9:1 is achieved. The Bobadeen East offset area was not part of the offset considered by DECCW or Dr Robertson on behalf of the Department of Planning as it resulted from the later EPBC Act approval process. As t he ratio of 5.9:1 includes the Bobadeen East offset area, if that area is not included in the ratio calculation the ratio is substantially reduced. These ratios are criticised by Dr Bekessy as not consistent with best practice of 10:1 applied by the Commonwealth in recent projects. In this case DSEWPC (Cth) has approved a lesser ratio than 10:1 with the Bobadeen East offset area suggesting that each case will yield a different result and that therefore a particular ratio is not necessarily indicative of best practice.

275 I agree with Dr Robertson, and as the Applicant submitted, the achievement of a particular ratio is not the best way to approach offsetting but rather the most feasible measures to achieve biodiversity objectives should be identified and achieved where possible and practical on the site. There is no doubt that ratios are used to provide an indication of what has been provided. As Dr Bekessy identifies, there is no long term (or short term) guarantee that areas outside the offset area will remain vegetated or be managed to enhance native vegetation. While Mr Peake and Dr

Robertson considered there was vegetation outside the offset areas including the EEC which would be connected over time with the restored EEC in the offset areas, in the absence of any management or other requirement in relation to these areas there is no guarantee this will occur.

276 There is a clear opportunity to link the Bobadeen offset area and the Bobadeen East offset areas, to a lesser extent than is proposed in exhibit M. The lease to Ardrob Pty Ltd is not a legal or practical impediment to that outcome based on the provisions of the lease which allow for termination of the lease on terms as identified in the Applicant's submissions. Doing so does not give rise to a major financial commitment for Ulan. Alternatively according to the evidence of Dr Bekessy and Dr Robertson an area used for grazing can be managed for EEC conservation while grazing occurs.

277 It is unfortunate that the proposed offset boundaries in exhibit M were not able to be identified by Dr Bekessy who did not visit the site or surrounds at any stage. No criticism of Dr Bekessy is intended in that one attempt to visit the site was prevented by airline disruption but the fact remains her evidence in Court and in her report was uninformed by a site inspection, an inherently limiting aspect of her evidence. The rough sketch of the area in exhibit M is in marked contrast to the extensive process explained in the evidence of Mr Peake as to how the boundaries of the Bobadeen and Bobadeen East offset areas were defined in terms of the identification of variations of the White Box woodland EEC. Mr Peake identified an area of White Box EEC variant which lies outside either of the offset areas close to the Bobadeen offset area. This should be incorporated as part of a corridor between the two offset areas. The area appears as a green triangle of vegetation on figure 5 in Mr Peake's evidence (revised Bobadeen offset area). The boundaries of the offset area indicated generally in exhibit M are too large and an offset of that size is not warranted. The corridor required will need to be defined by the parties' experts to achieve the linkage required at par 275 for final approval by the Court.

Condition 41A

278 The Applicant seeks an amendment of condition 41A (which is otherwise agreed) to require that it be complied with prior to the commencement of the project. As submitted by the Respondents the project is on-going given that mining operations are continuing under the existing consents. The condition should be reworded to make clear that this is part of the environmental management and reporting framework in Sch 5.

Biodiversity Management Plan (condition 44)

279 In the consolidated draft conditions of approval, the Respondents agreed amendments to condition 44 and disagreed with the Applicant's proposed amendment as the amendments they proposed were designed to achieve the outcome sought by the Applicant and the expert ecologists (exhibit 11). In the consolidated draft conditions of approval, the Minister states that the Applicant's proposal for a management plan to be submitted at least two years prior to the cessation of the approval is unnecessary as:

- All management plans in the approval have a maximum life of three years, after which they must be independently audited (Sch 5 condition 8) and reviewed and revised by the proponent to the satisfaction of the DG (Sch 5 condition 4).
- It is also a term of approval that the proponent implement the reasonable requirements of the DG arising from the Department's assessment of management plans (See Sch 2 condition 4).
- The management plan required by condition 44 in Sch 3, which will address inter alia the matters listed (weeds and feral pests, grazing and agriculture, bushfire management), will continued to be updated every three years until the offset strategy has been completed to the satisfaction of the DG, and the conservation bond has been handed back (see note to condition 5 of Sch 2, the offset strategy is the primary "undertaking" referred to in the note).

- In other words, the obligations under the approval or the preparation, review/audit, and implementation of a management plan which addresses the matters listed by the Applicant above will continue all the way through the mining operations and afterwards until the offset strategy has been successfully implemented.

280 Given the extensive environmental management and reporting framework in Sch 5 it is desirable that any condition adopt that process. I therefore accept the Respondents' submissions and condition 44 should be in the terms proposed by the Respondents.

Condition 45

281 The Applicant has proposed changes to the requirement for the payment of the conservation bond as identified above, essentially specifying in more detail that the DG must monitor compliance with the short, medium and long term requirements of the biodiversity management plan prepared under condition 44 rather than the offset strategy as a whole. The change sought is not necessary to achieve the effective operation of the condition.

Condition 56(57)

282 The Applicant wishes to include a requirement for consultation with experts in subsection (b) which the Respondents oppose. The necessity for this requirement is not made out given the other provisions in the clause.

Further objector evidence

283 Ms Davis, Mr Campbell, Mr Batey, Mr Pavich, Ms Smiles, Mr Mjadwesch and Mr McAdam gave evidence on 10 June 2011 at Mid-Western Regional Council Chambers objecting to the expansion of mining in the Ulan area.

Mr and Mrs Imrie gave evidence during the hearing. They were worried about the following issues:

(a) drawdown of the groundwater system and drop in water levels of bores

(b) less water seepage in the Drip

(c) the impact of the shrinking membership of local fire brigades as a result of mining, in the event of fires

(d) impact of the visibility of mining and miners on tourism

(e) lower water levels and deteriorating quality of the Goulburn River

(f) salinity of discharged water

(g) increased GHG and their contribution to changes in weather such in rainfall which affects food production

(h) depreciation of land value

(i) degradation of road surfaces due to heavier traffic movements

(j) impact on community culture and lifestyle

(k) subsidence and the likelihood of 20 per cent of cliffs collapsing

(l) noise levels exceeding WHO guidelines for preventing sleep deprivation as the mine operates 24 hours a day

(m) health impacts from increased dust emissions

(n) heavy metal pollution of water tanks leading to acidic water

(o) the impact of rapid increase population on cost of living including rental prices and pressure on health care, education and other services

(p) loss of the EEC and habitats

(q) cumulative impacts of mining since 1975 owing to the prevalence of mining in the region such as on the EEC; impact on the Goulburn River system including the diversion which was permitted under

an earlier approval and on water levels; salinity levels of discharged water; loss of local villagers and the concomitant loss of local knowledge

284 Submissions received during the exhibition of the EA from 9 government agencies, 9 special interest groups and 28 individuals were tendered (exhibit 1 vol 2). Some of the special interest groups included the Applicant, Mudgee District Environment Group, Ulan Public School, Goulburn River Stone Cottages (which is run by Mr and Ms Imrie) and National Parks Association of NSW (written by Ms Smiles).

285 In relation to the adjacent and neighbouring coal mines, the DG's Environmental Assessment Report for the Moorlabern Coal Project dated September 2007 and project approval dated 2007 and the DG's Report for the Proposed Wilpinjong Coal Project and project approval dated February 2006 were tendered (exhibit 1 vol 3 tabs 91 - 92).

286 The Applicant did not identify any of the matters raised by the objectors as an issue in its case. The objectors' valid concerns are not sufficient to justify refusal of the application. Nor is there any condition of approval which I can identify to change in response to these submissions.

Conclusion

287 I consider that approval should in principle be granted to the project identified in MP 08_0184 subject to conditions. The terms of several conditions require further consideration by the parties before these are finalised. The parties also need to consider appropriate timeframes for compliance as referred to in a number of the conditions. A timeframe to enable finalisation of conditions will be discussed with the parties.