Office of Environment & Heritage

Your reference:	DA-200-5-2003 MOD 2 and 07_0127 MOD 4
Our reference:	DOC14/23908
Contact:	Terry Mazzer 6883 5302

Carl Dumpleton
Senior Planner, Mining Projects
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

28 March 2014

Dear Carl,

Re: Coalpac Expansion Modifications

(DA-200-5-2003 MOD 2 and 07_0127 MOD 4)

I refer to your email dated 26th February 2014 inviting comment from the Office of Environment and Heritage (OEH) on a draft Environmental Assessment for the above proposal. OEH staff have inspected the proposed mining areas and proposed offset areas in conjunction with the Proponent.

OEH has previously provided the Department of Planning and Infrastructure and the Planning Assessment Commission with submissions regarding the potential impacts of the Coalpac Consolidation Project (10_0178), since withdrawn by the Proponent. OEH would like to refer DP&I to these previous submissions, as many of the comments within these submissions remain relevant to the current proposal.

OEH retains considerable reservations regarding the assessment of impacts. These include:

- impacts on biodiversity resulting from the removal, by open cut mining, of 150.5 ha of native vegetation comprising 148.1 ha of native woodland and 2.4 ha of derived native grassland,
- further encroachment on Ben Bullen State Forest, which previously has been identified by OEH as being of suitably high conservation value for future reservation under the *National Parks and Wildlife Act 1974*,
- an inadequate Biodiversity Offset Proposal in terms of the expected gain of biodiversity credits produced compared with the loss at the impact site,
- potential damage to pagoda and escarpment landforms caused by mining activities, and
- incomplete application of setback distances for threatened species associated with pagoda and escarpment landforms.

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Further detail on these and other issues is detailed in the attachments.

Should you require further information please contact Terry Mazzer, Conservation Planning Officer on (02) 6883 5302.

Yours sincerely,

PETER CHRISTIE
Regional Manager, North West
Regional Operations Group

Attachment 1: OEH Review of Biodiversity Impacts
Attachment 2: Summary Table of Results for Biobanking Assessment Using Simulated Data.

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Attachment 1

Coalpac Expansion Modifications
OEH Review of Biodiversity Impacts

Acronyms

BBAM - Biobanking Assessment Methodology
BOP - Biodiversity Offset Proposal
CCP - Coalpac Consolidation Project
DP&I - Department of Planning and Infrastructure
EA - Environmental Assessment
EEC - Endangered Ecological Community
OEH - Office of Environment and Heritage
PAC - Planning and Assessment Commission
RoTAP - Rare of Threatened Australian Plants

Citations refer to *Environmental Assessment. Invincible Colliery PA 07_0127 Modification and Cullen Valley Mine DA 200-5-2003 Modification. Draft February 2014.*

1. Biodiversity Offset Proposal (BOP)

Background

The Proponent has proposed three main offset areas:

1. "Hillview – Billabong" adjacent to the Invincible Mine,
2. part of "Gulf Mountain" approximately 22 km to the northwest of the Cullen Valley Mine, and
3. "Additional Offset Areas" adjacent to the Cullen Valley Mine.

OEH notes that the potential offset properties "Hillcroft" and "Hyrock Hartley", presented in the Coalpac Consolidation Project (CCP) have been omitted from the current proposal.

Interpretation of Offset to Impact Ratios

The Proponent has not used a recognised metric to calculate biodiversity losses and gains from the proposal, but simply presents an offset strategy which is based on hectares cleared and hectares offset. The ratio of offset to clearing for each vegetation type identified by the Proponent is presented in Table 16 of the EA (p 83). Overall the ratio given is 4.3:1. There are a number of problems with this approach:

- no evidence is presented as to the adequacy of this ratio,
- no allowance is made for the condition of vegetation at the impact sites or at the offset sites,
- failure to use a recognised metric such as the Biobanking Assessment Methodology (BBAM) means that aspects of offsetting such as effects on threatened species, effects of landscape type or viability of sites are not considered,
- the majority (62.5%) of the offset vegetation is contained in one vegetation type at one location, namely Tableland Scribbly Gum – Narrow-leaved Stringybark Shrubby Open Forest at the "Gulf Mountain" offset,

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- derived native grassland within the offset sites is treated as equivalent to the mature vegetation type even though it will need management to restore it. On the plus side much of this derived native grassland has been described in the EA as part of the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland), which is listed as an Endangered Ecological Community (EEC) (p 77).

An absence of data that can accurately and readily be used under the Biobanking Assessment Methodology (BBAM) precludes a definitive quantitative estimate of the credits required to offset biodiversity impacts arising from the Project. OEH has nevertheless used simulated vegetation condition data applied to the vegetation types identified in the EA to calculate estimated biodiversity credits which would be lost through the impacts arising from the project and those which would be gained through the BOP. From this analysis OEH has calculated a total impact of 11,597 biodiversity credits if the impact sites are considered to be at benchmark condition and 7,706 if the impact sites are considered to be at approximately 70% of benchmark condition. The total credits generated by the offset properties based on simulated data are 4,673. This leaves a deficit of 6,924 credits or 3,033 credits depending whether the higher or lower figure is used. At an average gain in biodiversity credits of 7.2 per ha (the lower end of the offset gain spectrum) at the offset sites this would require a further 955.6 or 418.6 ha respectively. This information is included in Attachment 2. These calculations should not be relied on too closely as they are based on simulated data as defined plot data was not presented in the EA. However, they demonstrate the degree of inadequacy of the currently proposed offsets.

The proposed "Gulf Mountain" offset constitutes approximately 53% of the "Gulf Mountain" property which was purchased by the Proponent in 2012-13. The property consists entirely of native forest and woodland and, from the information presented in the EA and the site visits by OEH staff, would appear to be a suitable property in terms of vegetation types and threatened species habitat. However, OEH believes that the property would be best managed as a single block. It is difficult to see how a portion of this block can be managed in isolation without detracting from the presumed benefits to biodiversity.

Recommendations

1.1. The BOP is assessed using a credible and transparent metric using actual plot data.

1.2. The Proponent provides further offset sites to ensure that the BOP adequately addresses the losses caused by the proposed impacts.

1.3. The Proponent demonstrates how the management of the proposed "Gulf Mountain" offset is not impacted upon by the management of the remainder of the property.

2. Reservation Considerations

Loss of Land with High Potential for Incorporation in the National Parks and Reserves System

The proposed project footprint encroaches further on Ben Bullen State Forest, which previously has been identified by OEH as being of suitably high conservation value for future reservation under the *National Parks and Wildlife Act 1974*. Proposals for future reservation of part of Ben Bullen State Forest also have the support of numerous environment groups including the Colong Foundation for Wilderness and the Blue Mountains Conservation Society. OEH has been working with other agencies to maximise positive reservation outcomes in the Gardens of Stone area, including Ben Bullen State Forest.

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One aspect of the suitability of Ben Bullen State Forest for inclusion in the Reserve System is the outstanding scenic value of the sandstone pagodas and escarpments. The current proposal has increased buffer distances between these features and open cut mining areas compared with the CCP. Notwithstanding this, OEH remains concerned that blast and vibration impacts and subsidence impacts caused by highwall mining could irretrievably damage these features. These concerns were shared by the PAC. Further information on sandstone features is contained in section 4.

Suitability of Proposed Offset Sites for Incorporation in the National Parks and Reserves System

OEH notes that the Proponent on this occasion does not propose to 'gift' the offsets for inclusion into the NSW reserve system. However, OEH has sought internal advice from its Parks and Wildlife Group (PWG) regarding the suitability of the current proposed offset properties in the BOP for future reservation in the National Parks and Wildlife Estate. PWG advise that at this point in time, none of the properties would be suitable for this purpose. Consequently, OEH recommends that another form of in perpetuity conservation mechanism would be required over all potential offsets.

Recommendations

2.1. DP&I note that this proposal would reduce the area of Ben Bullen State Forest suitable for any future inclusion in the National Parks and Reserves System.

2.2. DP&I note the potential for damage to scenic features associated with the proposal further reducing suitability for inclusion in the National Parks and Reserves System.

2.3. The Proponent recognises that the offset areas proposed are not suitable for addition to the National Parks and Reserves System and that some other mechanism of in-perpetuity conservation will be required.

3. Pagodas, Escarpments and Associated Features

The sandstone pagodas around the top of the edges of the plateaus in the area are significant geodiversity features which provide a range of crevice, cave and other refugia habitat types for biodiversity. The pagodas on the boundary of the proposed mining area are good examples of a distinctive landform found only in the "Pagoda country", a 50 kilometre long (600 km^2) belt centred on the western edge of Wollemi National Park, Gardens of Stone National Park and Ben Bullen State Forest. A substantial part of the main pagoda area is not reserved within parks. The pagodas in the Blue Mountains are recognised as distinctive features (with limited distribution) that are significant on a national level.

In recognition of the high scenic values of the plateau edge and pagodas it is important that mining operations do not degrade the scenic amenity/vistas of the prominent line of dissected sandstone cliff lines and pagodas in Ben Bullen State Forest as well as the sandstone plateau on the western side of the Castlereagh Highway north of Cullen Bullen. It is also important that mining operations/blasting will not cause collapse/subsidence cracks to the sandstone plateau edges, cliff lines and pagodas.

OEH supplied the PAC with mapping of "Geodiversity Features" (sandstone outcrops, pagodas and cliffs and associated high relief areas) and options for standoff zones. The mapping of "Geodiversity Features" by OEH closely resembles the mapping of "Sandstone Escarpments and Pagodas" produced by the Proponent during the Coalpac Consolidation Project (Figure 5, Coalpac Consolidation Project Environmental Assessment, Hansen Bailey 2012). OEH notes that based on

mapping undertaken by OEH and the Proponent the proposed open-cut will encroach within the previously recommended 300m set back and highwall mining will reach up to 200 m beneath these pagodas, cliff lines and associated features particularly in the case of the Cullen Valley Mine.

The Planning Assessment Commission reviewed the risk of subsidence caused by highwall mining during its assessment of the Coalpac Consolidation Project. It stated:

"The Commission finds that the risks of subsidence-induced damage to the pagodas and escarpments are real and that the level of uncertainty is such that no confidence can be placed in the assertion that the risks can be managed successfully at all times under all operating conditions. The Commission also notes that stability problems arising from highwall mining may only become apparent in the longer term."

The PAC recommended that *"the pagodas and the associated escarpments be considered natural features of special significance and that they be fully protected from any mine-induced impacts*". Given the uncertainty regarding subsidence and other mining impacts OEH considers that no highwall mining should occur beneath geodiversity features identified in the mapping supplied to the PAC during the review process of the Coalpac Consolidation Project.

Broad-headed Snake

The EA states that the impact area avoids pagoda and rocky escarpment areas and "summer and winter habitat for the Broad-headed Snake (located to the east of Invincible Colliery)" (p 81). Further, the Proponent states that they "utilise rock crevices and exfoliating sheets of weathered sandstone during the cooler months and tree hollows during summer within 200 m of their winter habitat (DEC (NSW), 2005b)" (EA Appendix C p 3.35). OEH notes that such movements by the Broad-headed Snake have been measured at up to 780 m, with a mean of 318 m (Webb and Shine 1997). This was, at least partly, the reasoning behind the PAC recommending "a minimum setback distance of 300 m be maintained from the open-cut highwall to the pagodas and the escarpments" (NSW Planning and Assessment Commission 2012, Recommendation 47). This would protect approximately 70-75% of the habitat requirements prescribed in the Threatened Species Profile Database for the Broad-headed Snake and other threatened and non-threatened fauna of the pagoda landform.

In most cases the proposed modifications achieve this 300 m setback. However, there are some small areas in the northern part of the Invincible modification where the setback is as small as approximately 100 m. More pertinently, much of the open-cut area proposed for the Cullen Valley modification is within 100 m or less of sandstone escarpments.

Recommendations

3.1. DP&I note the potential for damage to scenic features associated with the proposal.

3.2. That no open cut mining occurs within 300 m of mapped "Geodiversity Features" as supplied to the PAC.

3.3. That no underground highwall mining occurs beneath the mapped "Geodiversity Features" as supplied to the PAC.

4. The Significance of the Vegetation on Permian Sediments

OEH produced a report for the PAC on the significance of the vegetation on Permian sediments during the deliberations on the previous CCP. A fine scale map of the vegetation types occurring on undulating Permian sediments was produced.

The following vegetation types were determined to be of higher conservation significance due to a high level of clearing, and low level of reservation:

1. Ribbon Gum grassy forest on alluvial flats (equivalent to the Tableland Ribbon Gum Blackwood Apple Box vegetation type mapped by Cumberland Ecology);

2. Mountain Gum Apple Box Blakely's Red Gum grassy forest on small drainage lines and footslopes (equivalent to the Tableland Mountain Gum Broad-leaved Peppermint vegetation type mapped by Cumberland Ecology); and

3. Broad-leaved Peppermint Brittle Gum Red Stringybark grassy forest on small rises (is equivalent to the Tableland Slopes Brittle Gum Broad-leaved Peppermint vegetation type mapped by Cumberland Ecology).

The significance of vegetation on Permian sediments is shown by examination of 1:250 000 geological map sheets of the region. Permian geology largely occurs on a north-south line from Rylstone to Katoomba, predominantly on the valley floors and slopes. This landscape is largely cleared in the region and poorly represented in the National Parks and Reserves System (most of which is Triassic sediments). Consequently, the vegetation types to be cleared have a higher conservation status than might otherwise be expected in a region which is otherwise relatively well reserved.

Whilst the current proposal is much smaller than the previous proposal it remains the case that most of the vegetation impacted has been mapped by OEH as occurring on Permian sediments (100 ha out of 150.5) and that 45 ha of this is comprised of the three higher conservation value vegetation types outlined above. Permian geology is represented in the "Hillview – Billabong" and "Additional Offset Areas" but not represented in the larger "Gulf Mountain" offset area.

Recommendations

4.1. DP&I note that approximately one third of the vegetation to be removed is comprised of the three higher conservation value vegetation types on Permian sediments and that these vegetation types on Permian geology are highly cleared and poorly reserved in the region.

5. Flora Survey

In its submissions to DP&I and the PAC on the CCP application, OEH raised concerns over the adequacy of threatened flora surveys. These concerns remain. OEH maintains that the probability of detecting any species, and in particular cryptic species, is greatly improved through dedicated targeted surveys.

The EA cites the following threatened flora species that were targeted during surveys: *Derwentia blakelyi, Eucalyptus aggregata, E. cannonii, E. pulverulenta, Grevillea evansiana, G. obtusiflora, Persoonia marginata, and Prostanthera cryptandroides*. While it is stated in the EA that "random meander searches were employed within areas considered to provide suitable habitat for these species" (EA App C, p 2.4) the extent of random meander searches has not been reported. Presumably they were conducted in close proximity to other flora survey effort.

The flora survey presented in the EA is essentially a reproduction of that presented in the original CCP application with some information changed to reflect the boundaries of the current proposal. The flora survey was conducted for the earlier CCP application during 2009-11. Locations of flora

survey quadrats are shown in the EA (Appendix C, Figure 2.1, p 2.7). From Figure 2.1 it can be seen that only 9 of the 44 quadrats conducted were performed within the impact sites of the current proposal (7 of which are within one proposed open cut area) with a further quadrat within the footprint of the highwall operations. A similar situation has occurred with the Capertee stringybark / tree hollow quadrat locations where 3 out of 19 occur with the modification footprint. The proposal boundaries were drawn to avoid the *Persoonia marginata* quadrat locations hence none of these occur within the proposed open cut areas.

Therefore, the great majority of the flora survey effort was employed in areas which are now not part of the proposed area. This has provided information on flora in the local area generally and has informed the drawing on the boundaries of the new proposal. However, it has provided little surety that the aforementioned threatened species, and others potentially in the proposal area, have been adequately searched for.

OEH notes that community groups raised during submissions on the CCP the rich flora diversity of the region and the presence of many plants species that are recognised as rare and threatened (ROTAP).

Recommendations

5.1. DP&I note that OEH's previous concerns regarding the adequacy of flora surveys have not been addressed.

5.2. The Proponent provides complete data regarding the random meander surveys and other targeted species effort in the survey area.

5.3. Further targeted surveys for relevant threatened flora and RoTAP species are conducted within and around the areas proposed for open cut operations.

6. Indirect Impacts and Edge Effects

In addition to the direct impacts resulting from the removal of native vegetation and habitats, the following indirect impacts on biodiversity are discussed in the EA; subsidence, edge effects, habitat degradation, competition for resources, noise, light, dust, erosion, vehicle strike, weeds, feral animals and overabundant native species. These are discussed in Appendix C, section 4.3, p 4.24. The effect of blasting and vibration are not discussed in this section.

Subsidence is dismissed as the Proponent expects no surface subsidence greater than 20 mm. However the PAC stated that this was uncertain and could not be relied on, particularly where operations are in close proximity to pagodas and other sandstone features (see above in section 4).

Regarding edge effects the Proponent alludes to abiotic edge effects (noise, light, nutrient run-off), and the low likelihood that such edge effects would have a significant impact on retained vegetation upslope of mined areas. However, OEH reiterate that edge effects also include the promotion of edge-tolerant species, including feral predators and native competitors.

In general indirect and edge effects are acknowledged to be present by the Proponent but few, if any, measures are proposed to minimise the effect of these on neighbouring biodiversity. In most cases it is simply stated that the effect is real but that it will diminish as areas are progressively rehabilitated and will return to normal following cessation of mining activities.

The Proponent states that edge effects will be mitigated by the implementation of "appropriate surface water management practices" (p 4.29) and a "weed and feral animals control program" (p. 4.30).

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Recommendations

6.1. That the effects of blasting and vibration and potential draining of groundwater acquifers on biodiversity and their habitats in close proximity to the area of mining operations are addressed.

6.2. That DP&I note the uncertainty regarding subsidence identified by the PAC.

7. Cumulative Impact

In its review of the CCP the Planning Assessment Commission recommended "*that the cumulative impacts on the biodiversity values of Ben Bullen State Forest and the region of this project, together with the proposed Pine Dale Stage 2 Extension, be considered before any assessment of this project is finalised.*"

There has been no attempt in the EA to address the cumulative impacts on biodiversity of other mining applications in the local area, particularly the Pine Dale Stage 2 Extension Project and the Neubeck Coal Project. Any analysis of cumulative impact also needs to include not just areas currently being impacted, but those areas that have already been impacted from past activity in terms of impacts on fragmentation in the landscape and the loss of habitat for threatened and non-threatened species.

Recommendations

7.1. The proponent addresses the cumulative impact of existing mining areas and other known proposals in the area along with this proposal. Aspects which may be affected are; fragmentation, loss of habitat on the local area, effect on Ben Bullen State Forest and the loss of potential for reservation in the area.

References

DEC (NSW) (2005b). *Broad-headed Snake - profile,* Hurstville, Department of Environment and Conservation (NSW).

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Keith DA (2004). Ocean shores to desert dunes; the native vegetation of New South Wales and the ACT. Department of Environment and Conservation, Hurstville

NSW Planning and Assessment Commission (2012). *Coalpac Review Report (14 December 2012).*

Webb JK, Shine R (1997). A field study of spatial ecology and movements of a threatened snake species, *Hoplocephalus bungaroides*. *Biological Conservation* **82**, 203-217.

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Attachment 2. Summary Table of Results for Biobanking Assessment Using Simulated Data.

Vegetation Type				Impact Sites					Offset Properties			Excess/ Shortfall based on BBAM matching		Hectares required to meet shortfall	
EA Veg No	EA Vegetation Type	Biometric Veg No	Biometric Vegetation Type	Total Impact (ha)	Total Impact (eco credits) at 70% benchmark	Total Impact (eco credits) at benchmark	Impact (credits/ha) at 70% benchmark	Impact (credits/ha) at benchmark	Total Offset (ha)	Total Offset (eco credits)	Offset (credits /ha)	Excess/ Shortfall at 70% benchmark	Excess/ Shortfall at benchmark	Shortfall at 70% benchmark	Shortfall at 100% benchmark
MU20	Capertee Rough-barked Apple - Red Gum - Yellow Box Grassy Woodland (EPBC)	CW102	Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands	0	0	0	0	0	5.5	57	10.4	57.0	57.0	-5.5	-5.5
MU20a	Capertee Rough-barked Apple - Red Gum - Yellow Box Woodland: non grassy	CW102	Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands	0.1	6	8	60.0	80.0	0	0	0	-6.0	-8.0	0.6	0.8
MU20 DNG	Capertee Rough-barked Apple - Red Gum - Yellow Box Grassy Woodland (EPBC) Derived Native Grassland	CW102 DNG	Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands Derived Native Grassland	0	0	0	0	0	29.3	304	10.4	304.0	304.0	-29.3	-29.3
MU37	Cox's Permian Red Stringybark - Brittle Gum Woodland	CW117	Broad-leaved Peppermint - Brittle Gum - Red Stringybark dry open forest on the South Eastern Highlands	0.1	3	4	30.0	40.0	0	0	0	-3.0	-4.0	0.4	0.6
MU34	Tableland Slopes Brittle Gum – Broad-leaved Peppermint Grassy Forest	CW117	Broad-leaved Peppermint - Brittle Gum - Red Stringybark dry open forest on the South Eastern Highlands	59.4	1836	4855	30.9	81.7	130.5	947	7.3	-889.0	-3908.0	122.5	538.5
MU34 DNG	Tableland Slopes Brittle Gum – Broad-leaved Peppermint Grassy Forest Derived Native Grassland	CW117 DNG	Broad-leaved Peppermint - Brittle Gum - Red Stringybark dry open forest on the South Eastern Highlands Derived Native Grassland	0	0	0	0	0	11.7	85	7.3	85.0	85.0	-11.7	-11.7
MU13	Tableland Gully Ribbon Gum Blackwood Applebox Forest	CW154	Mountain Gum - Manna Gum open forest of the South Eastern Highlands	7.9	474	645	60.0	81.6	36	264	7.3	-210.0	-381.0	28.6	52.0
MU13 DNG	Tableland Gully Ribbon Gum Blackwood Applebox Forest Derived Native Grassland	CW154 DNG	Mountain Gum - Manna Gum open forest of the South Eastern Highlands Derived Native Grassland	0	0	0	0	0	2	15	7.5	15.0	15.0	-2.0	-2.0
MU35	Tableland Gully Mountain Gum - Broadleaved Peppermint Grassy Forest	CW154	Mountain Gum - Manna Gum open forest of the South Eastern Highlands	8	480	653	60.0	81.6	17.8	131	7.4	-349.0	-522.0	47.4	70.9
MU35 DNG	Tableland Gully Mountain Gum - Broadleaved Peppermint Grassy Forest Derived Native Grassland	CW154 DNG	Mountain Gum - Manna Gum open forest of the South Eastern Highlands Derived Native Grassland	2.4	0	0	0	0	0	0	0	0	0	0	0
MU32	Tableland Scribbly Gum – Narrow-leaved Stringybark Shrubby Open Forest	CW176	Red Stringybark - Scribbly Gum - Red Box - Longleaved Box shrub - tussock grass open forest of the NSW South Western Slopes Bioregion	35.2	2874	2874	81.6	81.6	405.3	2817	7.0	-57.0	-57.0	8.2	8.2
MU30	Exposed Blue Mountains Sydney Peppermint - Silvertop Ash Shrubby Woodland	CW228	Sydney Peppermint - Silvertop Ash shrubby low open forest of the upper Blue Mountains	37.4	2033	2558	54.4	68.4	1.2	14	11.7	-2019.0	-2544.0	173.1	218.1
	Riparian River Oak Forest	CW180	River Oak riparian woodland of the Brigalow Belt South and Nandewar Bioregions	0	0	0	0	0	5.6	39	7.0	39.0	39.0	-5.6	-5.6

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