



1. Application details

1.1. Permit application details

Permit application No.: 239/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Big Bell Gold Operations (Harmony Gold)**

1.3. Property details

Property:

- M20/293
- M20/322
- M21/7
- M21/10
- M21/14
- M21/24
- M21/44
- M21/49
- M21/55
- M21/56
- M21/65
- M21/69
- M21/74
- M21/75
- M21/83
- M21/89
- M21/93
- M21/96
- M21/97
- M21/99
- P21/565
- M21/100
- P21/479
- M21/103
- M21/105
- M21/133
- P21/564
- M21/135
- P21/575
- P21/584
- M21/141
- P21/458
- P21/459
- P21/473
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P21/629
P21/630
P21/631

Local Government Area:

Colloquial name:

Golden Crown tenements

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
0.5		Mechanical Removal	Mineral exploration

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard 18: Low woodland; mulga; <i>Acacia aneura</i> (Shepherd et al., 2001).	The area under notice is located on the existing Big Bell (Golden Crown) premises and is comprised of up to 50 exploration holes, or 0.5 ha over 5 years. The vegetation of the entire site comprises lower storey native species, spanning low woodland, bare areas (Lake Austin), mosaic and succulent steppe with open scrub.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	The proposal area is within a mining lease area, so is either currently subject to or surrounded by significant disturbance. The project area consists of up to 50 exploration holes, no more than 0.5ha over 5 years. Observed during site visit: confirmed the area has extensive disturbance and contains infrastructure from the historical mining activities including open pits (Great Fingal, Try Again and Yellow Taxi), abandoned railway lines, dewatering routes to Lake Austin, administration buildings and haul roads. (TRIM Ref GD240 & GD241)
Beard 240: Succulent steppe with open scrub; scattered <i>Acacia sclerosperma</i> & <i>bowgada</i> over saltbush & bluebush (Shepherd et al., 2001).	The area under application is not likely to clear vegetation from this location due to its location in relation to the overall site under application. This vegetation is located at the existing dewatering infrastructure site (TRIM Ref: GD241).	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	Beard 240 and 1127 forms the discharge area from the Great Fingal Mine in to Lake Austin. A preliminary assessment by van Etten in Harmony (2002), describes the vegetation as 'mostly in a healthy state'. However, van Etten also describes 'no evidence of impact from the previous events, and given the discharge water seems to be largely confined to the incised drainage channel which flows into Lake Austin, it appears likely that the planned discharge will not have a serious detrimental effect on the saltmarsh vegetation surrounding the discharge' (TRIM REF: GD239).
Beard 1127: Mosaic: Saltbush & bluebush/samphire (Shepherd et al., 2001).	The area under application is not likely to clear vegetation from this location due to its location in relation to the overall site under application. This vegetation is located at the existing dewatering infrastructure site (TRIM Ref: GD241).	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	As detailed above.
Beard 313: Succulent steppe with open scrub; scattered <i>Acacia sclerosperma</i> & <i>A. victoriae</i> over bluebush (Shepherd et al., 2001).	Beard 313 accounts for approximately 90% of the area under notice. Clearing application is for up to 50 exploration drill holes and no more than 0.5 ha over 5 years. The exploration holes are likely to be drilled within this vegetation type, which is well represented in the	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	The proposal area is within a mining lease area, so is either currently subject to or surrounded by significant disturbance. The project area consists of up to 50 exploration holes, no more than 0.5ha over 5 years. Observed during site visit: confirmed the area has extensive disturbance and contains infrastructure from the historical mining activities including open pits (Great Fingal, Try Again and Yellow Taxi), abandoned railway lines, dewatering routes to Lake Austin, administration buildings and haul roads. (TRIM Ref GD240 & GD241)

Beard 125: Bare areas; salt lakes (Shepherd et al., 2001).	area surrounding the project area. Area not vegetated and only represents a small portion of the overall area.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	Beard 125 is the discharge point from mining activities at Golden Crown into Lake Austin as identified in historical photographs, Big Bell Gold Mine Great Fingall Discharge to Lake Austin (April 2000) (TRIM Ref GD240 & GD241).
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3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments **Proposal is not likely to be at variance to this Principle**
 The vegetation of the site retains primarily Low woodland and succulent steppe with open scrub, which are well represented in the area surrounding the project area. The site has been extensively mined (GD242) and grazed (Austin Downs Station, Lease Number 600) and is degraded. Given its history, the site is not likely to represent an area of significant biodiversity.

Methodology Site visit.
 GIS Database: Pastoral Leases -DOLA 10/01
 Shepherd et al., 2001

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments **Proposal is not likely to be at variance to this Principle**
 The Try Again project area lies within the area under application and represents the well. CALM advice was sought in 1994 (GD254) for the Try Again/Golden Crown NOI (2002) and found no specially protected fauna known to occur in the project area.
 Ecologia consultants were commissioned in 1994 to conduct a fauna survey (GD252) for the Try Again/Golden Crown NOI.
 'Several animal species exist in the area, evident by the scats that have been deposited. These include kangaroos, emus, rabbits, goats and foxes. Kangaroos were observed around the existing open cut, whilst emus were observed on the Try Again waste rock dump' (Harmony NOI, 2002).

Methodology Site visit.
 Harmony Golden Crown Operations NOI, 2002
 Desktop survey: CALM Threatened and Priority Fauna Database. [The comprehensiveness of the database is dependent on the amount of survey carried out in the area and does not necessarily represent a comprehensive listing (CALM 2004)].

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, significant flora.

Comments **Proposal is not likely to be at variance to this Principle**
 No declared rare flora have been found in the vicinity of the area under application and within tenement number ML20/293.
 Priority 1 *Dodonaea* sp. Ninghan (H.Demarz 5121) and priority 2 *Grevillea inconspicua* were identified. The location of the flora is within the tenement ML20/293 held by Harmony. However, the exact location of the flora within this tenement is the far north east corner of ML20/293 and is within the Townsite of Cue.
 In relation to the Try Again site, which represents the likely drilling areas, Harmony (2002) confirm, from CALM (1994) that no threatened flora occur in the area.
 The proposal submitted by the proponents is for the drilling of up to 50 exploration holes and not within the Townsite of Cue.
 Two sites containing priority 4 *Grevillea inconspicua* were located approximately 1.5 km's north of Cue on the road reserve of the Great Northern Highway. *Grevillea inconspicua* was also identified within the north east section of Cue Townsite on unallocated crown land. Given the proposed location and representative floristic survey for Try Again/Golden Crown (GD253) and the small area to be cleared (0.5ha) it is not likely to be necessary for the continued existence of significant flora.

Methodology GIS database: Declared Rare and Priority Flora List-CALM 13/09/03, Threatened Ecological Communities-CALM 15/07/03, Environmentally Sensitive Areas-DOE 22/10/04.
 Flora survey Harmony Golden Crown Operations NOI, 2002.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significant ecological community.

Comments Proposal is not likely to be at variance to this Principle

No significant ecological communities occur within the main Harmony Project Area.

Methodology GIS databases: Threatened Ecological Community Database - CALM 15/07/03.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments Proposal is not at variance to this Principle

The vegetation under application is part of Beard vegetation associations (primarily numbers 313 and 18) with small areas of associations 125, 240 and 1127 occurring in the southern section of the area under application. The southern section contains Lake Austin and historic mining activities included dewatering into Lake Austin in the mid 1990's (Harmony, 2002 TRIM REF: GD240). There is greater than 50% of associations 18, 313, 125, 240 and 1127 remaining in Western Australia making them of least concern by Bioregional Conservation Status standards. The Murchison IBRA Bio region also has a vegetation extent greater than 50%, therefore this area is not considered to be extensively cleared (Shepherd et al, 2001).

	Pre-European Reserves/CALM- area (ha)	Current extent (ha)	Remaining %*	Conservation status**	managed land,
IBRA Bioregion - Murchison	28,206,195	28,206,195	100	Least concern	0
Shire - Cue	0	0	0	N/a	0
Beard veg type - 18	24,675,970	24,659,110	99.9	Least concern	4.8
Beard veg type - 313	77,838	77,838	100	Least concern	0
Beard veg type - 125	3,940,746	3,536,992	89.8	Least concern	7.4
Beard veg type - 240	134,601	132,867	98.7	Least concern	32.7
Beard veg type - 1127	78,286	78,286	100	Least concern	0

* (Shepherd et al. 2001)

** (Department of Natural Resources and Environment 2002)

Methodology TRIM REF GD240

GIS database: Interim Biogeographic Regionalisation of Australia-EA 18/10/00, Local Government Authorities-DLI 08/07/04, Pre-European Vegetation-DA 01/01, EPA Position Paper No. 2 Agriculture Region-DEP 12/00. Shepherd et al, 2001. [This reference is not up to date. The probability of the extent of clearing being greater than stated is high].

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments Proposal is not at variance to this Principle

The area under application lies within the Murchison River Catchment and Basin. There are numerous watercourses described as 'minor, non perennial' in the area under application. Historical dewatering activities of the site (Harmony, 2002 TRIM REFGD241 & 240) would suggest that these minor watercourses would not represent an ecosystem of significant environmental value.

'There are no major drainage channels running through the area and the most significant drainage tract is a small creekline located along the western edge of the Try Again open-cut. This drainage channel combines with a number of others approximately 500m south of the open-cut, from where it drains into Lake Austin' (Harmony, 2002).

Lake Austin lies at the southern end of the area under application. van Etten in Harmony (2002) provides a preliminary assessment of the dewatering activities into the site. Given the 0.5 ha of proposed clearing, and lack of detrimental effects of historical dewatering (van Etten, 2002 TRIM REF GD239) the proposed clearing is not likely to be at variance to this principle.

Methodology GIS databases: Hydrographic Catchments-Catchments DoE 03/04/03, Hydrography linear DoE 01/02/04. Harmony, 2002. TRIM REF 240 & 241 van Etten, 2002. TRIM REF 239

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments Proposal is not at variance to this Principle

Harmony, 2004 (TRIM REF GD244) and Harmony 2002 NOI (TRIM REF: GD243) describes the proponents Environmental Management Plan and rehabilitation commitments. Harmony (2002) NOI for the Try Again/Golden Crown area state 'It is the practice...to rehabilitate and will gradually progress to any further deposits'. Rehabilitation commitments as outlined in GD243 are consistent with this assessment advice. The proposed clearing does not fall within a salinity acid sulfate soils risk area and is in a low rainfall zone (300mm per year). As the Fingall permit is for exploration drilling over a large area, the historical landuse of the

site (the extensive mining and grazing) the proposed exploration drilling is not likely to increase land degradation of this site.

Methodology Harmony, 2004 TRIM REF GD244
 Harmony NOI 2002, TRIM REF GD243
 GIS Databases: Salinity Risk LM 25-DOLA 00, Acid Sulfate Soil Risk Map SC-DOE 01/02/04, Soils Statewide-DA 11/99.

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments **Proposal is not at variance to this Principle**
 The project area is not adjacent to any existing or proposed conservation areas.

Methodology GIS Databases: CALM Regional Parks-CALM 12/04/02, WRC Estate-WRC 5/99, Proposed National Parks FMP-CALM 19/03/03, Register of National Estates-EA 28/10/03.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments **Proposal is not at variance to this Principle**
 Proposed clearing of 0.5 ha is not expected to impact on groundwater tables as the proposed permit is for exploration drilling over a large area. There are 13 current WIN sites (stock, mining and monitoring purposes) within the proposed area, and numerous other sites within the vicinity of the proposal. The area under application lies within the Murchison River Catchment and Basin.

Methodology GIS Databases: Current WIN data sets.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

Comments **Proposal is not at variance to this Principle**
 Flooding impacts unlikely to occur as a result of the proposed clearing, given the proposal is for up to 50 small holes over five years, or up to 0.5ha over five years. van Etten in Harmony (2002) (TRIM REF:GD239) describes the main drainage channel of the area under application as '...natural drainage channel, is approximately one metre wide at the discharge point, but gradually increases to around 5m wide where it enters Lake Austin...mostly one or two metres below the general level of the saltmarsh, but occasionally opens out into small low-lying areas which would flood if the water level in the channel was high or the lake filled due to heavy rain. Little is known of the hydrology of the area...in the past, would have been dry most of the time. Following substantial rains, water would enter the channel from surface runoff from the surrounding catchment and perhaps from rising groundwater, which was observed at the time of survey to be only 1/2 metre or so below the channel bed in areas upstream from the discharge. When the lake is full (a rare event which last occurred in early 2000), water levels in the channel would be expected to be high and some flooding of the surrounding saltmarsh flat would be likely'.
 However, given the relatively small area of vegetation to be cleared, the land's history of mining (TRIM REF: GD243) and pastoral grazing the proposed clearing is unlikely to increase the risks associated with flooding.

Methodology Harmony, 2004. TRIM REF: GD244
 Harmony, 2002. TRIM REF: GD243
 van Etten, 2002. TRIM REF: GD239
 GIS Databases: FMD ARI Extent of Flooding & Floodway Limit-DOE 02/03, FMD Floodplain Map Index-DOE 02/03, Rainfall Mean Annual-BOM 30/09/01.

Planning instrument or other matter.

Comments **Proposal is not at variance to this Principle**
 The Shire of Cue have not indicated that there are any planning requirements/approvals that would affect the clearing.

Methodology

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mining	Mechanical Removal	0.5	Grant	The assessable criteria have been addressed and no objections were raised. The concern of the Yamatji Marlpa Barna Baba Maaja Aboriginal Corporation is clarified by advice received from the State Solicitor's Office that indicate the granting of the permit would not be invalidated by the Native Title Act 1993. The assessing officer therefore recommends that the permit should be granted. The department provides the following advice:

- 1) all sites affected by mining should be returned to a stable, non-erodible, and safe condition.
- 2) all sites should be restored to biologically sustainable ecosystems requiring minimum long term management.
- 3) rehabilitation should commence as soon as possible.
- 4) all topsoil of insignificant auriferous grade should be removed from the areas affected by mining and stored on temporary dumps.
- 5) stockpiled topsoil should be re-spread over disturbed areas at the completion of mining.
- 6) the area should then be contoured, ripped and revegetated with species native to the area or appropriate to the prevailing conditions.
- 7) rehabilitation progress should be monitored annually through Ecosystem Function Analysis techniques to determine revegetation success and remedial work undertaken as required.

5. References

- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales ; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority.
- EPA (2002) Terrestrial Biological Surveys as an element of biodiversity protection. Position Statement No. 3. March 2002. Environmental Protection Authority
- Harmony (2002) Harmony Golden Crown Operations Notice of Intent to Clear.
- Harmony (2004) Harmony letter re: Part V licence.
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- Keighery, BJ (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.