

ASSESSMENT REPORT

Section 75W Modification Tharbogang Quarry and Landfill (06_0334 MOD 2)

1 BACKGROUND

The purpose of this report is to assess a modification application to the approved project known as the Tharbogang quarry and landfill (06_0334 MOD 2) under Section 75W of the *Environmental Planning and Assessment Act 1979* (the **Act**). The modification application proposes amendments to the approved quarry sequence and landfill layout.

Griffith City Council (**Council**) operates the Tharbogang quarry and landfill at Hillside Drive, Tharbogang, which is about 6.2 kilometres (km) northwest of Griffith in the Griffith local government area (see **Figure 1**).

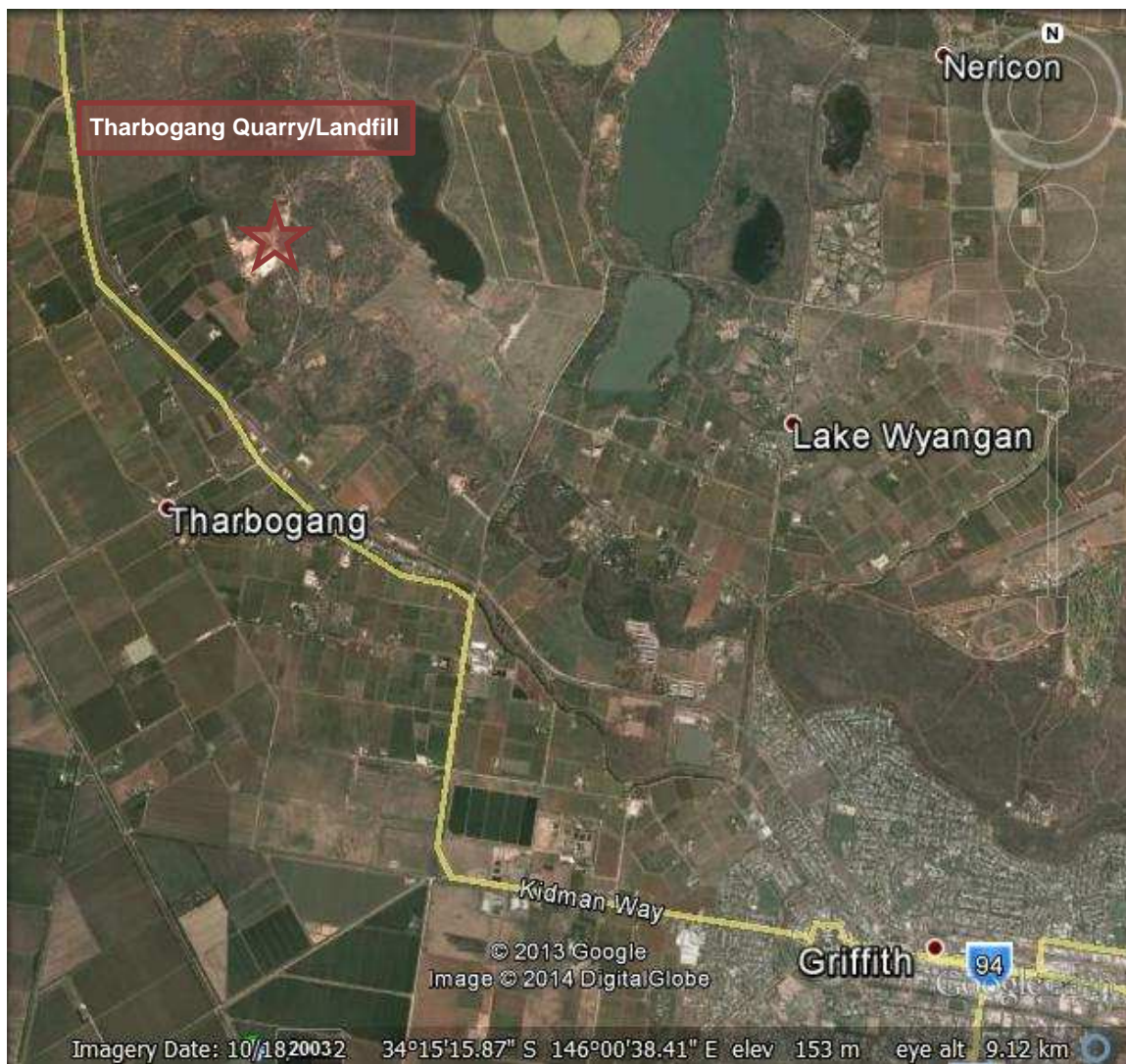


Figure 1 – Location of the Tharbogang Quarry and Landfill

Council acquired the site from the Crown in 1984 and shortly afterwards obtained approval to operate a landfill from the (then) Department of Health. In 1991 following a feasibility study of extractive resources in the district, Council obtained consent for and began quarrying road aggregate from an area adjacent to the landfill.

In 2001, Council proposed to expand both the quarry and landfill, but withdrew its application to then Department of Land and Water Conservation. Later, in 2005, Council initiated a Part 3A Project Application (06_0334) to expand the quarry and landfill. The project included use of the existing quarry void as a new landfill of 500,000m³ capacity; and expansion of quarrying into 2 new pits to the southeast to recover about 6.1 million tonnes of gravel (see **Figure 2**).



Figure 2 – Location of the approved quarry pits (06_0334)

The project received Ministerial approval in July 2010, but it has not yet commenced. The approval allows Council to extract up to 315,000 tonnes per year of gravel and landfill 35,000 tonnes per year of general solid waste. The quarry and landfill operation will also require an Environment Protection Licence (**EPL**) from the Environment Protection Authority (**EPA**).

The project approval was previously modified in May 2012 to reduce the size of the approved biodiversity offset. The approved offset was about 181 hectares (**ha**) in area, whereas under the new Bio-banking Assessment Methodology, an appropriate biodiversity offset was calculated to be about 35 ha. An offset of 95 ha for the project was ultimately approved, which is substantially larger than is strictly required.

1.1 Site and surrounding land uses

The site is legally known as lots 201 and 202 DP 756035. The combined area of the 2 lots totals 357.1 hectares (**ha**). However, the quarry and landfill occupy an area of about 15 ha in

a natural depression at the centre of lot 202. Vehicular access to the site is off Hillside Drive. The surrounding area is rural. There are orchards immediately to the south and west, while citrus, stone-fruit, almond and wine grape growing is common in the wider district. A motor-racing speedway circuit occupies the south western portion of lot 202.

There are a number of rural dwellings associated with the orchards to the south and west. The nearest dwelling to the quarry is 570 metres (m) to the southwest. Tharbogang is a rural locality of about 450 people and it is located about 3 km south of the existing quarry.

The Griffith local government area is in the Riverina region of New South Wales. It has a population of around 24,000 people and it is known for its semi-arid climate and modest annual average rainfall of about 400 millimetres (mm).

2 PROPOSED MODIFICATION

The proposed modification is described in Council's Environment Assessment (EA), which is attached at **Appendix B**. The modification involves reconfiguring the approved development to reduce unit costs for the new landfill from about \$17 per cubic metre (m³) to about \$5.

In the approved development, landfilling was to commence immediately within the extant quarry void. In the proposed modification, landfilling in the void would be delayed and an additional 482,000m³ of quarry resources would be extracted.

The additional extraction would provide a level floor in the quarry void for the new landfill, allowing simpler gravity leachate drainage and fewer constructed bunds to contain the landfilled waste. The additional extraction would occur under the existing consent and would continue to supply material from the existing quarry until 2021 at the current level of demand.

The proposed changes to the landfill cell layout and leachate drainage system are shown in **Figures 3, 4 and 5**. Capacity in the revised landfill layout would increase from the approved 500,000m³ to 660,129m³.

The proposed modification also involves changes to the extraction sequence in the new quarry pits. In the approved development, extraction from quarry pit 103 was to commence first by way of blasting through the southeast wall of the existing quarry. The overburden from pit 103 was to be used for capping material in the new landfill.

In the proposed modification, the south east wall would remain intact to contain waste. As a result of retaining the wall, the potential yield in pit 103 (and particularly the overburden yield for capping material) reduces. Therefore, in the proposed modification, extraction commences in pit 101 first, with quarrying in pit 103 to commence much later.

The modification also involves:

- a new greenwaste stockpile to facilitate improved resource recovery (see **Figure 6**);
- direct draining of leachate to the leachate dam for evaporation; and
- a minor extension to the southern footprint in order to construct a stable batter.

Council has a concept plan for the landfill that shows an additional piggy-back cell on the new landfill with an additional 600,000m³ of landfill capacity. However, this concept plan is *not* part of the current modification application and it would need to be the subject of a future development application.

NEW LANDFILL CELL FLOOR AND WALL CONCEPT DESIGN

SCALE 1:2000

SUMMARY CALCULATIONS				
	BUND MATERIAL QUANTITY m ³	LINER AREA m ²	LEACHATE PIPE m	SUBSURFACE DRAINAGE PIPE m
C1	3,683.8	18,523	834.8	309.2
C2	3,757.5	19,361	789.9	300.8
C3	2,228.8	20,103	873.4	418.6
C4	1,138.8	22,252	417.9	171.7
C5	—	19,491	287.2	139.1
TOTAL	10,808.9	99,730	3,203.2	1,339.4



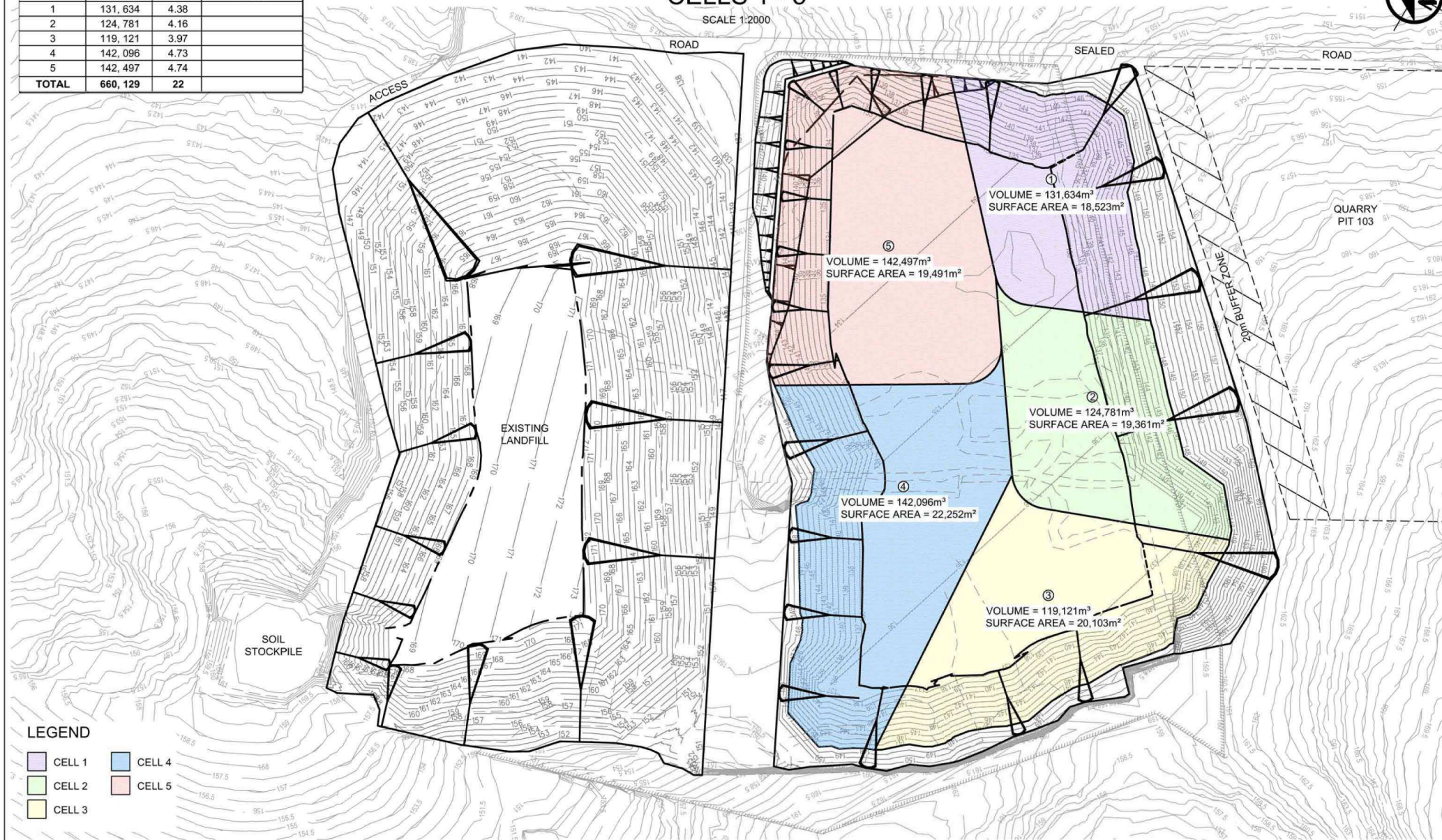
D	ISSUE FOR REVIEW	04.03.2013	SGY	CH	 PO Box 3009 Phone 02 4402 9392 Nowra North NSW 2541 Fax: 02 4446 0511	DRAWN: S.G.Y	SHEET D1	SCALE AS NOTED
C	ISSUE FOR REVIEW	21.02.2013	SGY	CH		CHECK: C.H	THARBOGANG LANDFILL PROJECT NEW LANDFILL CELL FLOOR AND WALL CONCEPT DESIGN	
B	ISSUE FOR REVIEW	18.12.2012	SGY	CH		APPR. P.H		
A	ISSUE FOR REVIEW	11.12.2012	SGY	CH		REV: D		
RevNo	Revision note	Date	Signature	Checked				

Figure 3 – Proposed quarry floor and leachate drainage

CALCULATION SUMMARY			
CELL	CAPACITY	LIFE YEARS	CAPITAL ESTABLISHMENT COST
1	131,634	4.38	
2	124,781	4.16	
3	119,121	3.97	
4	142,096	4.73	
5	142,497	4.74	
TOTAL	660,129	22	

NEW LANDFILL STAGING PLAN CELLS 1 - 5

SCALE 1:2000

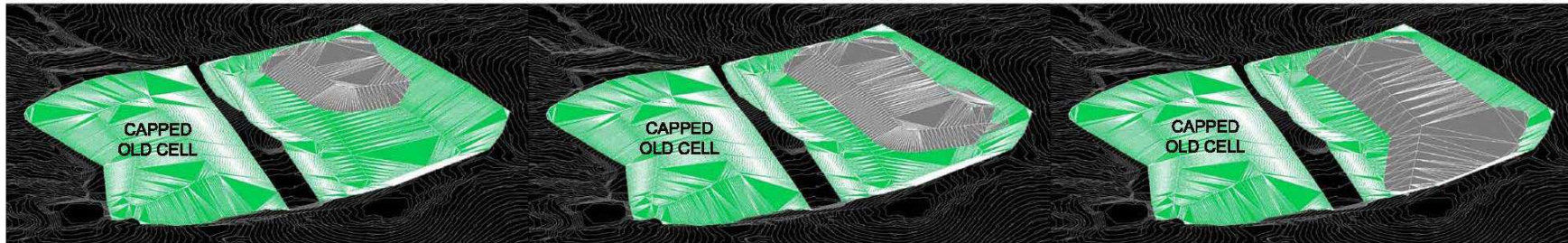


D	ISSUE FOR REVIEW	04.03.2013	SGY	CH	 PO Box 3009 Phone 02 4402 9392 Nowra North NSW 2541 Fax. 02 4446 0511	DRAWN: S.G.Y	SHEET D2	SCALE AS NOTED
C	ISSUE FOR REVIEW	21.02.2013	SGY	CH		CHECK: C.H	THARBOGANG LANDFILL PROJECT NEW LANDFILL STAGING PLAN CELLS 1 - 5	
B	ISSUE FOR REVIEW	18.12.2012	SGY	CH		APPR. P.H		
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Figure 4 – Proposed landfill layout

3D NEW LANDFILL STAGING PLAN

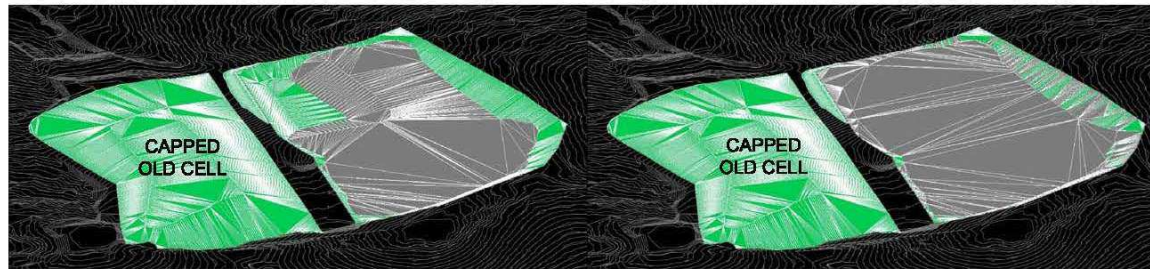
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CELL 1
CAPACITY = 131,634m³
LIFE = 4.38 YEARS
COST =

CELL 2
CAPACITY = 124,781m³
LIFE = 4.16 YEARS
COST =

CELL 3
CAPACITY = 119,121m³
LIFE = 3.97 YEARS
COST =



CELL 4
CAPACITY = 142,096m³
LIFE = 4.73 YEARS
COST =

CELL 5
CAPACITY = 142,497m³
LIFE = 4.74 YEARS
COST =

D	ISSUE FOR REVIEW	04.03.2013	SGY	CH	 PO Box 3009 Nowra North NSW 2541 Fax. 02 4446 0511 Phone 02 4402 9392	DRAWN: S.G.Y	SHEET	SCALE
C	ISSUE FOR REVIEW	21.02.2013	SGY	CH		CHECK: C.H	G1	AS NOTED
B	ISSUE FOR REVIEW	18.12.2012	SGY	CH		APPR. P.H	THARBOGANG LANDFILL PROJECT 3D LANDFILL STAGED DEVELOPMENT SEQUENCE PLANS - SHEET 1	
A	ISSUE FOR REVIEW	11.12.2012	SGY	CH		REV: D		
RevNo	Revision note	Date	Signature	Checked				

Figure 5 – Proposed landfill sequence



Figure 6 – Proposed location of green waste stockpile

3 STATUTORY CONTEXT

3.1 Approval Authority

Under Clause 3 of Schedule 6A of the Act, Section 75W of the Act as in force immediately before its repeal on 1 October 2011, continues to apply to transitional Part 3A projects. Consequently, the Minister for Planning is the approval authority for the proposed modification.

Under the Ministerial delegation of 14 September 2011, the Director – Industry, Key Sites & Social Projects may determine the modification application as Council did not object, there were no political donation disclosures, and there were no public objections.

3.2 Modification

The department is satisfied that the application can properly be characterised as a modification to the original project approval, and can therefore be assessed and determined under Section 75W of the Act.

In this respect, the department notes that there is no change to either of the annual limits in the project approval for quarrying or landfilling. There is a moderate increase in the total volumetric capacity of the landfill and a related decrease in the total resource available for quarrying. These marginal adjustments are within the scope of Section 75W.

3.3 Consultation

The EA for the modification was made publicly available on the department's website. The department also invited a submission from the Environment Protection Authority (**EPA**). Consultation with other agencies and adjoining landowners was considered to be unnecessary owing to the limited reach of predicted impacts associated with the proposed modification.

The **EPA** raised no objections to the proposal and advised that the landfill capping and leachate systems would be managed under a revised Environment Protection Licence (**EPL**) for the site.

There were no public submissions.

4. ASSESSMENT

In its assessment of the modification application, the department has considered the following:

- the EA for the proposed modification (see **Appendix B**);
- all submissions received by the Department (see **Appendix C**); and
- the Director-General's assessment reports for the original project application and earlier modification approvals.

The department assessment of the proposed modification is outlined in **Table 1** below.

Table 1: *Assessment of issues*

Issue	Consideration	Recommendation
Landfill capping	<ul style="list-style-type: none">• The department is aware that Council has secured agreement from the EPA to trial a new style of landfill capping for the existing landfill, which is expected to be better suited to the area's semi-arid climate.• Known as phytocapping, the new method replaces the usual compacted clay cap, which is designed to prevent water ingress (but would be prone to dryness and cracking in this semi-arid area), with a more permeable	Require applicant to: <ul style="list-style-type: none">• revise landfill operations condition to facilitate EPA's assessment of new

Issue	Consideration	Recommendation
	<p>cover, which relies on vegetation to transpire water away from the waste.</p> <ul style="list-style-type: none"> The department expects that if the trial is successful, Council will implement the method at the new landfill. Consequently, the department proposes to amend an existing approval condition to facilitate the EPA's assessment and endorsement of the phytocapping method for the new landfill, if appropriate. The EPA advises that it will accept phytocapping provided certain criteria are met. These criteria can be specified in a revised EPL for the site. 	<p>phytocapping method for the new landfill.</p>
Ecology	<ul style="list-style-type: none"> The proposed green waste stockpile would be located on a capped part of the former landfill. As the cap must be maintained without vegetation, there would be no additional bio-diversity impacts resulting from its dual use as a base for the green waste stockpile. At the southern extent of the new landfill layout an additional 500m² or so of White Cypress-Bimble Box woodland would need to be cleared to allow for a new battered landfill wall to be constructed. This vegetation community is not an Endangered Ecological Community and any biodiversity impacts from its removal would be amply accommodated by the approved biodiversity offset for the project, which is about 3 times larger than is strictly required. 	<p>No additional conditions necessary.</p>
Air quality and odour impacts	<ul style="list-style-type: none"> The existing approval has a suite of air quality and odour related conditions including emission limits, a requirement for quarry dust control and other mitigation measures, tip-face management, and ongoing emissions monitoring and improvement. The proposed modification includes the following two changes that may affect odour emissions: <ul style="list-style-type: none"> stockpiling of greenwaste in an area separate to the landfill (instead of within the landfill); and a greater reliance on evaporation from the leachate pond to manage leachate, including the possibility of over-pond spraying to increase evaporation. The day-to-day management of these activities would be governed by the EPA under the EPL for the site so that odour emissions are minimised in accordance with the existing approval conditions. The department notes that the leachate pond for the existing landfill is frequently empty owing to the semi-arid climate, and that greenwaste would be processed for re-use and not composted. The odour profile of the original project application shows the 6 odour unit (OU) contour, which is the relevant assessment criterion, within the site boundaries and at least 500m from the nearest residence. Any changes to the 6 OU contour resulting from the proposed modification would be minor and very unlikely to be observed at the nearest residence. The EPA has not raised any air quality or odour issues and would govern landfill and landfill cap specifications under the EPL. Any ongoing odour (or other air emission) issues from the site would be detected and remedied as part of the 	<p>Require applicant to:</p> <ul style="list-style-type: none"> revise the air quality related environmental management plans and monitoring programs to reflect the revised layout.

Issue	Consideration	Recommendation
	<p>annual compliance reviews and/or triennial compliance audits.</p> <ul style="list-style-type: none"> Air quality related monitoring and management plans for the quarry/landfill should be updated to reflect the proposed modification. 	
Surface and groundwater	<ul style="list-style-type: none"> The existing approval has an extensive suite of water related conditions dealing with surface and groundwater impacts from both the quarry and landfill. The conditions include, in particular, requirements for the handling, treatment and monitoring of leachate. The proposed modification includes: <ul style="list-style-type: none"> a gravity leachate system in the landfill, which avoids the need for mechanical pumps; a new greenwaste area, which will require an additional leachate barrier; and greater reliance on leachate evaporation from the leachate pond. Leachate recirculation in the landfill, as in other landfills, is not practical because of the low annual rainfall of the area, although it could be carried out infrequently to manage leachate balance during heavy rainfall. The modifications are relatively minor and would be amply accommodated by the existing approval conditions. The EPA advises that criteria for new leachate barriers would be specified in the EPL for the site. Any ongoing surface or groundwater issue would be identified by periodic monitoring, and remedied as part of the annual compliance reviews and triennial independent audits. All water related management and monitoring plans for the quarry landfills should refer to the modified landfill. 	<p>Require applicant to:</p> <ul style="list-style-type: none"> update related environmental management and monitoring programs to reflect the new quarry-landfill layout.
Noise and blasting	<ul style="list-style-type: none"> The noise and blasting related conditions in the existing approval were based on the department's and the EPA's assessment of the original project application under the <i>Industrial Noise Policy</i> and other noise and blasting related guidelines. The conditions include maximum limits for noise and blast overpressure, operating hours and ongoing monitoring and improvement. There are no new noise sources in the modification or significant changes to the acoustic properties of the development or its site. Therefore, noise impacts associated with the proposed modification are expected to remain materially the same as in the approved development and would be subject to the existing conditions. The EPA has not raised any noise related issues. Should any ongoing noise or blasting issue with the quarry-landfill operation arise, it would be captured and remedied by the annual compliance reviews and/or triennial independent environmental audits. Related environmental management and monitoring programs for the quarry-landfill should be updated to reflect the modified layout. 	<p>Require applicant to:</p> <ul style="list-style-type: none"> update related environmental management and monitoring programs to reflect the new quarry-landfill layout.
Traffic	<ul style="list-style-type: none"> The modification does not change the annual limits for either quarry extraction or landfilling and consequently there are no changes to the traffic impacts of the 	No additional conditions necessary.

Issue	Consideration	Recommendation
	approved development.	
Aboriginal heritage	<ul style="list-style-type: none"> The existing approval condition relating to Aboriginal heritage was based on a site survey conducted by a Site Officer of the Griffith Local Aboriginal Lands Council. The survey found a number of scar trees near the northern boundary fence, and in the far west of the site in the vicinity of a dried creek. 	No additional conditions necessary.
	<ul style="list-style-type: none"> However, the survey found no evidence of Aboriginal cultural material in the proposed development area. The new greenwaste stockpile and the minor footprint extension are not in the vicinity of the scar trees. Consequently, the department is satisfied that these areas are unlikely to yield any significant items of cultural heritage. The approved Cultural Heritage Management Plan includes provisions for unexpected cultural heritage finds, and this condition would be sufficient to govern works for the proposed modification. 	

5. CONCLUSION

The Department has assessed the proposed modification in accordance with the requirements of the Act. This assessment has found that the modified landfill layout can be carried out with minimal additional environmental impact and in particular with minimal risk of exceeding the relevant residential amenity criteria at the nearest sensitive receivers.

In addition, approval of the modification would allow Council to better utilise the existing resource in the active quarry as well as reducing the unit price in the new landfill from around \$17 per cubic metre to \$5 per cubic metre.

The existing suite of approval conditions include a range of ongoing impact mitigation and auditing requirements, which would apply to the modified quarry/landfill in the same way as they applied to the existing development. All existing relevant management plans could readily be updated to reflect the location and specifications of the new quarry-landfill.

Consequently the Department believes the proposed modification is in the public interest should be approved subject to some minor changes to the existing conditions of approval, as set out in the recommended notice of modification at **Appendix A**.

6. RECOMMENDATION

Under delegation of the Minister, it is RECOMMENDED that the Director – Industry, Key Sites & Social Projects:

- approve of the proposed modification under Section 75W of the Act; and
- sign the attached instrument (Appendix A).

David Mooney
Senior Planner



Chris Ritchie
Manager
Industry, Key Sites & Social Projects

22/7/14



Daniel Keary
Director
Industry, Key Sites & Social Projects

22/7/14

APPENDIX A – NOTICE OF MODIFICATION

APPENDIX B – ENVIRONMENTAL ASSESSMENT

APPENDIX C – SUBMISSIONS