PGH Bricks & Pavers Pty Ltd

Post Submission Matters for Environmental Impact Statement for Andersons Clay Mine Extension DA10.2018.36584.1

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Prepared by:

VGT Environmental Compliance Solutions Pty Ltd

in conjunction with:

PGH Bricks & Pavers Pty Ltd

Environmental
Compliance
Solutions Pty Ltd

PO Box 2335 Greenhills NSW 2323
P (02)4028 6412 E mail@vgt.com.au
www.vgt.com.au ABN 26 621 943 888

Project Site	Andersons Clay Mine, ML1229 (Act 1973)
Report Title	Post Submission Matters for Andersons Clay Mine Extension

Revision Table

Date	Version	Author	Reviewed	Approved
17/09/2019	D0	TO	GT	GT
19/09/2019	F0	TO	JC	JG

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Section 1. Introduction

A development application (DA10.2018.36584.1) is being sought for the proposed expansion of an existing clay mine located at 253 Shaw Street, Springdale Heights. The proposed development is deemed to be a Designated Development in Schedule 3 of the Environmental Planning and Assessment Regulation 2000 and a request for the Secretary's Environmental Assessment Requirements (SEARs) was made in April 2017. The SEARs were issued by the Secretary on the 18th of May 2017. An EIS was submitted to Council in December 2018 to address the SEARs with a development application. Council provided the EIS for public review and sought comment from other stakeholders and authorities. A number of submissions were received and Council requested that additional information be provided to in correspondence dated 17 March 2019.

The aim of this report is to provide address the issues raised in the Council correspondence and provide additional information to assist Council in the determination of the development application.

Section 2. Post Submission Matters and Response

The post submission matters raised and response have been itemised in the table below.

Table 1. Additional Information Requests and Responses

1. Current Consent	
Albury City Council	*It is noted that the current extractive industry is operating under a number of consents and licences, for example:* • *Development Permit N72 (granted 1983)* • *Mining Licence ML1229 (expiry 23 August 2032)* • *EPA Licence 20938 (anniversary date 21 June)* *Part 2.4.3 of Volume 1 of the EIS addresses the current consent and compares it with the proposal. It simply states "No Change" to several of the conditions in its assessment, however, does not specify if or how each condition is being complied with. Council requests a comprehensive statement of compliance regarding operations, monitoring and reporting with all the various conditions, including specific reference to:* *i. Annual Working Plans (Conditions 1 and 2 of N72)* *ii. Water discharge (Condition 6 of N72 and Condition 12 of ML 1229)* *iii. Dust Control (Condition 8 of N72; Condition 12 of ML 1229 and Conditions L2.4, O3.1 & M2.2 of EPA 20938)* *iv. Condition of roads (Condition 9 of N72)* *v. Parking areas (Condition 10 of N72)* *vi. Stock control (Condition 12 of N72)* *vii. Extraction boundary posts (Condition 13(1) of N72)* *viii. Total area of topsoil disturbed at any given time (Condition 18 of N72)* *ix. Stockpiling of clay (Condition 19 of N72)* *x. Extraction of any material other than clay, structural clay or shale, such as rock (ML1229)*
Response	See *Appendix B*
2. Need for the proposal	
Council	*The applicant does not provide sufficient information on the type, quality and quantity of extractive material in the proposed expansion areas. Whilst some detail is provided on the amount of material currently extracted and estimated to be left within the current area of operations, further detail is requested on the anticipated yield of the proposed expansion area, and how this will satisfy the demand for both shale and clay over the lifetime of the mine.*
Response	The Resource Calculation (Section 7.2.2 of the EIS) provides the estimated resource remaining in the site for both the current consent and the extension. As can be seen from the tables (see *Appendix C*), the remaining volume of the Clay, sourced from the currently consented southern portion of the mine, does not change. The Shale resource is the target material within the extension area and volumes are given for both the total resource and extraction to a depth of 298m RL as has been determined as practical and safe to do so.

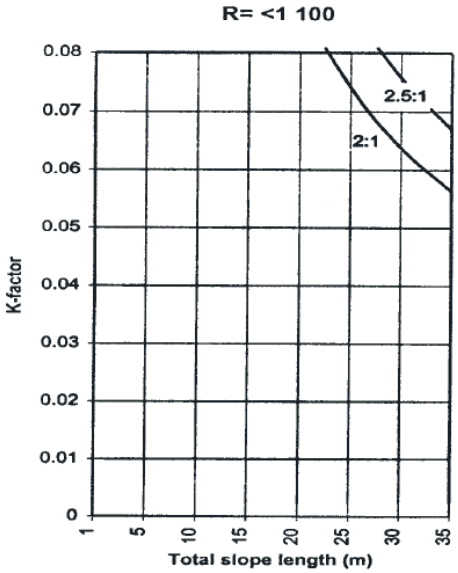
3. Biodiversity	
Point i.	*The biodiversity assessment does not include the Bio-banking plot survey data. The original consultant report provided a recommendation that further survey be undertaken, however evidence of this was not provided in the update to the report. Please clarify whether this further survey was done and if so, provide the floristic data.*
Response	Flora surveys undertaken in November 2016 have been updated and the report is attached for Council's reference (see *Appendix G*).
Point ii	*The buffer to adjoining lands (particularly containing EPBC listed vegetation) should be increased. A 15-metre buffer is not considered to be an adequate distance to ensure that the adjoining critically endangered ecological community is not impacted.*
Response	In consideration of point ii, it is understood that this opinion is based on a desktop assessment. Based on the actual site, it is thought reasonable to justify that the EEC could be adequately protected through means other than an increased buffer given the site has been actively mined since 1979, in accordance with the development approval. Furthermore, the current consent restricts extraction activities to within 15 metres of the boundary of the permit area by way of condition 13.(i), which states: *The permit holder shall ensure that no extraction takes place within 15 metres of the boundary of the permit area. Within one month of the date of the permit issue, the licensee shall erect squared wooden posts, 8cm x 8cm, painted yellow, to stand not less than 0.75m in height at intervals of 30m.* Excavation activities have been monitored since commencement to ensure the buffer is maintained. Additionally, the land comprising the buffer has been actively maintained to prevent the manifestation and spread of weeds. The EPBC listed Plant Community Type (PCT) is located further than the property boundary, resulting in actual buffer exceeding 15 m (20 to 25 m for much of the development footprint). It is considered that 15m is well outside the dripline of large trees and would be sufficient for regenerating vegetation to become established within the plant community type (PCT) boundary. Other methods to mitigate adverse impacts such as dust suffocating plant life and erosion of the mining pit edges exposing plant root systems are discussed further below. **Dust suppression to mitigate dust suffocating plant life** Dust can be suppressed during the early stages of excavation (via watercart) until ground works are undertaken at sufficient depth to prevent dust blowing up to impact vegetation. **Erosion controls reduce impacts on PCT root systems - including water loss** As no underground activities are undertaken on the site and there is no history of underground working, the risk of subsidence or destabilisation of the sides of the mining pit is low. The Clay and Shale material remaining in the final landform is geotechnical and chemically stable and is unlikely to fail at the proposed batter angles. Current faces, at much steeper slopes, have proved resistant to failure over the life of the operation and the risk of failure of the final landform is minimal. Therefore, it is considered reduces and controls erosion and impacts on PCT root systems including water loss. There is no evidence that existing PCT

	have been adversely impacted by the proximity of the mine at the current buffer distance. **Noise and vibration matters considered** Noise and vibration impacts would be short term and can be undertaken outside of key breeding times (spring) to minimise impacts on ecosystem fauna.
Point iii	*The EPBC Significant Impact Criteria assessment is lacking detail and does not provide sufficient justification that a significant impact is not likely.*
Response	The EPBC Significant Impact Criteria assessment, prepared by NGH Environmental, has since been amended and updated to provide sufficient justification that a significant impact is not likely. A copy of this report is attached for Council reference (see A*ppendix G*).
Point iv	*The site is located within an E3 Environmental Management zone. The EIS does not provide any details regarding proposed offsets for losses within the E3 zone. Please provide offset details for the proposed works.*
Response	The project is assessed under the *Threatened Species Conservation Act 1995*. The TSC Act does not mandate any offset requirements. However, in consideration of the provisions contained in Part 7 of the Albury Local Environmental Plan 2010 the Development Control Plan guidelines, it is agreed that the proponent would work with Council and commit to an offset, which may potentially progress with excavation work carried out within the E3 zone. In this regard, it is thought that the commitment to the offset by the proponent, would be best enforced via a condition of consent.
Point v	*OEH have stated in their comments: "It appears that an Aboriginal object (Andersons PAD 1-1) was collected and removed from site during the test excavation. If so, this is not in accordance with the 'Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW'. In addition, this Aboriginal object has not been registered on the Aboriginal Heritage Information Management System (AHIMS)."* *Council require the proponent to advise on the present location of the Aboriginal object - Isolated Artefact Andersons PAD 1-1, a quartz flake identified in the ACHAR, why the Aboriginal artefact Andersons PAD 1-1 has not been registered on AHIMS and to revise the ACHAR in accordance with the comments provided.*
Response	The isolated quartz artefact was not removed from site, the ACHA does not state that it was. The artefact remains where it was recorded during the fieldwork. The site has now been registered with AHIMS (#60-3-0146).

<table>
<tr><td>Point vi</td><td>Further detail regarding a rehabilitation plan is required (e.g. proposed final land use, staging or sequencing details, targets, monitoring and evaluation, detailed adaptive management measures, diverse understory planting etc.).</td></tr>
<tr><td>Response</td><td>A Rehabilitation Plan was attached as Appendix O in the EIS that discusses the above items. The Rehabilitation Plan is included in Appendix D.

The submitted rehabilitation plan details the requirements as tabulated below.

<table>
<tr><th>Item</th><th>Where located in the Rehabilitation Plan</th></tr>
<tr><td>Proposed Final land Use</td><td>Section 4- Post Mining Land Use Options, Section 6.5- Conceptual Final Landform and Figure 8 for the proposed Final Landform.</td></tr>
<tr><td>Rehabilitation Staging</td><td>Section 6.2- Mine Staging and Progressive Rehabilitation.</td></tr>
<tr><td>Targets</td><td>Section 5.1- Rehabilitation Objectives, Section 8- Performance Criteria.</td></tr>
<tr><td>Monitoring and Evaluation</td><td>Section 8- Performance Criteria and Section 11- Monitoring and Maintenance.</td></tr>
<tr><td>Adaptive Management Measures</td><td>Section 10- Intervention and Adaptive Management.</td></tr>
<tr><td>Diverse Understory Planting</td><td>Section 3.5- Vegetation Communities, Section 6.6- Revegetation and Section 9.5- Vegetation</td></tr>
</table></td></tr>
<tr><td>Point vii</td><td>The proposed final landform slopes of 3:1 (horizontal to vertical) for the final landform are not recommended given the poor soil condition and the dispersive nature of the soil, which will prove to be very challenging, flatter slopes as per the original consent 5:1 (horizontal to vertical) would have far greater success in achieving the rehabilitation objectives for the site. The minimum slope that would be acceptable would be 4:1 (horizontal to vertical).</td></tr>
</table>

Response	Soil and Erosion management is addressed in the Rehabilitation Plan, Land Resources Plan and the Water Management Plan contained in the Appendices and discussed in the EIS. The Principles of the DECC's guideline, *Managing Urban Stormwater*, also known as the Blue Book and the *Managing Urban Stormwater Soils and Construction –Volume 2E Mines and Quarries* have been used to design the rehabilitation and soil stabilisation measures for the site. These guidelines are recognised as Best Practice with regard to management of soil and erosion. There are a number of factors that influence soil erosion and measures to minimise soil erosion on various slopes and these are discussed in the Rehabilitation Plan and Land Resources Plan and are summarised here. **Slopes Management** The Blue Book recommends slope lengths and gradient relationships base on the Soil Erodibility (k-factor) and Rainfall Erosivity (R-factor). BOM IFD data indicates the site has an R-factor of 1,010 and the k-factor has been assumed to be high i.e. 0.050. Using *Figure 4.7* from provided in the Blue Book, the maximum slope length recommended on a 3 horizontal to 1 Vertical slope before a cross drain is installed is greater than 35 metres as shown below.  *Figure 4.7 Maximum batter gradient (H:V) where the R-factor is 1,100, 1,400, 1,800 and 2,400 (adapted from Morse and Rosewell, 1993) (Appendix A)* The Blue Book recommends slopes generally be no greater than 80 metres before an earth bank or catch drain be installed. Catch drains are designed to convey surface water from the slope before it has reached sufficient velocity volume that erosion may occur (due to the transition from sheet flows to turbulent flows). In the Rehabilitation Plan *Section 8- Performance Criteria*, *Landform Establishment* it describes the slopes lengths permitted for the site in order to minimise erosion (see below) which are less than the Blue Book recommendations illustrated above. 1

Objective¤	Performance Indicator¤	Completion Criteria¤	Monitoring Methodology and Responsibility¤	Monitoring Frequency¤	Justification /Source¤	Progress at start of MOP and Expected Completion¤
Phase 2 – Landform Establishment (continued)¤						
Domain 6 – Open Cut Void¤						
Domain is safe, stable and non-polluting, fit for the purpose of the intended post-mining land use(s)¤	Final landform contours similar to final landform in MOP or that which is decided in the future¤	Final slopes are between 3 horizontal to 1 vertical and 4 horizontal to 1 vertical. ¶ Slope lengths shall not exceed 25m for a 3H:1V batter¶ Slope lengths shall not exceed 35m for a 4H:1V batter¶ Slope lengths shall not exceed 60m for batters <4H:1V¤	Survey on completion by registered surveyor. Geotechnical assessment report ¶ Mine Manager and Surveyor responsible¤	Upon completion of landform establishment phase. ¶ Progress reported in AEMR¤	DECC- Managing Urban Stormwater, ¶ MOP. ¤	Not commenced/Post extraction completion¤

	These Performance Criteria have been derived from the Mine Operation Plan (MOP) approved by the DPIE. The final slopes of 3H:1V and catch drain intervals proposed are well within best practice according to the Blue Book and provide for a safe and stable final landform. **Topsoil Quality** As stated in the Rehabilitation Plan topsoil (onsite or imported) will be assessed prior to emplacement on the final slopes in order to determine if any ameliorants are required. Dispersive soils can be treated with gypsum to reduce the risk of dispersion and therefore erosion and this should not be a barrier to reuse on final slopes where the base material stability has been assessed as satisfactory at slopes of 3H:1V (see above). As stated in *Section 9.4.1* of the Rehabilitation Plan, other ameliorants may be added to promote vegetation growth as required after testing. **C-Factors** *Section 9.3- Soils and Erosion* addresses the management of soils on the site to minimise erosion and is discussed in terms of achieving C-factors (coverage factor) as a measure of soil stability and resistance to erosion impacts. The cover factor, C, is the ratio of soil loss from land under specified crop or mulch conditions to the corresponding loss from continuously tilled, bare soil. A C-factor of 1.0 corresponds to that of bare soil. Rehabilitation within the Plan and EIS is defined as final surfaces having achieved a C-Factor of less than 0.1 which is the equivalent of 60% groundcover for recently disturbed soils. The Desired C factor can be achieved via vegetation, mulch or suitable soil binders such as hydromulch as discussed in the plan. Regardless of how the desired C-Factor is achieved, it indicates that the site is resilient to erosion impacts. **Vegetation** Vegetation will be established in order to achieve the C-Factors described above. As discussed, there are several means to achieve the desired C-Factor immediately such as mulch and hydromulch. These can be used to stabilise the topsoil until such time as the native vegetation and grasses establish. Both mulch and hydromulch are suitable for use on slopes up to 3H: 1V. As can be seen from the photo below, there are a number of areas where the slopes are a 3H: 1V or steeper where native vegetation is established. The local species to be utilised in the rehabilitation is also well adapted to the soils in the area. Further, temporary rehabilitation established on the site on steeper slopes has been successful and shows no indication of erosion or lack of stability as shown below on the northern highwall where slopes are up to 2H: 1V.

	 **Conclusion** The proposed final slopes are in accordance with Best Practice as outlined in the Blue Book. As shown above, the risk of erosion to slopes up to 3H: 1V is manageable with groundcover and reduction of slope lengths and the site has already proven that successful revegetation can be established on slopes up to 3H: 1V. Further, it has been shown that slopes of 3H: 1V or greater are not uncommon within the surrounding area and have successfully maintained vegetation cover.
4. External Referrals	
Council advised	***External Referrals*** *The application was referred to the following NSW authorities:* • *Rural Fire Service;* • *Roads and Maritime Services,* • *Environment Protection Authority; and* • *Office of Environment and Heritage.* *All of these authorities have now submitted their responses, copies of which are attached to this letter for your consideration.*
5. Submissions received	
Council advised	*During the notification period Council received one submission on the proposed Development. A redacted copy is attached for your information and response, if you wish to do so.*
Notes	*Appendix E* details responses to the Submission received by Council.