28 June 2019

Craig Clendinning
Project Manager Major Projects
Hornsby Shire Council
296 Peats Ferry Road
HORNSBY NSW 2077

Our ref: 2126457-67896
Your ref:

Dear Craig

Hornsby Quarry Rehabilitation EIS
Response to Request for Additional information - Development Application No. DA/101/2019

1 Introduction

GHD prepared an Environmental Impact Statement (EIS) to accompany a development application (DA) for the proposed rehabilitation of Hornsby Quarry. The DA was lodged by Hornsby Shire Council (Council). Council's Planning and Compliance Division has undertaken a preliminary review of the DA and has requested additional information in a letter dated 4 June 2019.

The letter requests further detail in a number of key areas:

- DA plans to provide further detail/information
- Further description of the proposed development including:
  - design (to detailed design level)
  - proposed geotechnical safety management measures (to detailed level)
  - proposed bush regeneration and tree planting (to detailed level) and complete offset strategy
  - construction method (to detailed level)
- Contamination investigation prior to determination including:
  - Preliminary Site Investigation (Stage 1)
  - Detailed Site Investigation (Stage 2) if the extent of contamination is 'significant'
  - Remediation Action Plan (Stage 3) if the Stage 2 investigation reveals contamination exceeding criteria prescribed by the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM)*
- Preparation of a Construction Environmental Management Plan (CEMP) prior to determination

The letter also identifies a number of other minor items for clarification.

This letter provides a response to the key issues raised in the request for information by the Assessment Officer. A table containing suggested draft GHD responses to each point raised are also attached. Council may wish to respond to some or all of the matters raised.

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2 Response regarding DA plans

Figures 01 to Figure 06 (attached) are being updated to include:

- Cadastre
- Additional sections
- Labelling to clarify pre-NorthConnex filling surface levels
- Work zones

Project No. 100125 Sheets 1-8 (attached) are being updated to provide:

- Further information regarding the proposed retaining walls
- Further information regarding the proposed micropiling.

3 Response regarding further description of the proposed development

Several comments and requests relate to further detail being provided with regard to the:

- design (to detailed design level)
- proposed geotechnical safety management measures (to detailed level)
- proposed bush regeneration and tree planting (to detailed level) and complete offset strategy
- construction method (to detailed level)

The description provided in the EIS includes the Project Description (Chapter 6), plus Chapters 14 and 18 (which are referred to in Chapter 6), which cover geotechnical safety measures and rehabilitation respectively.

The EIS provides a *concept design* for the project, which reflects the level of detail currently available about the works that are proposed to be undertaken. A higher level of detail would be developed in the next design phase (detailed design), which will be suited for obtaining a Construction Certificate and subsequent tendering of the works to contractors. It is not uncommon for projects of this scale, magnitude to be developed to a concept design level for the purpose of the development approval. Significant levels of further design development and associated geotechnical and other investigations are required to fully develop the design to the level being requested by the assessor.

Chapter 14 of the EIS contains as summary of the proposed geotechnical safety management measures that would be required to be developed during detailed design. Further detailed geotechnical investigations are required to confirm the concepts presented in Chapter 18 of the EIS. This would be undertaken in the next phase of the project development and details developed during the detailed design phase.

As described in Chapter 11 of the EIS, no offset is required for threatened biota listed under the EPBC Act. However Council proposes to develop an offsets package for the project in accordance with the Hornsby Shire Council Green Offsets Code to manage impacts on native vegetation. The offsets package will be developed as part of the approvals process, which will specify the works required, location, duration and funding.

Chapter 18 of the EIS provides a description of the proposed rehabilitation including potential areas for bush regeneration and tree planting. Chapter 18 describes this as including placement of top soil and tree planting – with the aim to re-establish Blue Gum High Forest. Figure 18.1 shows the areas of potential revegetation (green shaded - labelled 'revegetation and bush regeneration areas). The extent and details of bush regeneration works will be confirmed during detailed design.

Chapter 6 of the EIS includes an indicative construction methodology and describes the type of plant required to undertake the works. This is based on the concept design and best understanding of the most likely construction methods at this stage. The impacts of this particular method are assessed in the EIS, using estimated numbers of different plant items.

For example, the air and noise assessments analyse 3 different "worst case" type scenarios where the various plant items are working concurrently and in different parts of the site as it is expected that the plant items will be moved according to which areas of the site are being excavated or filled. The actual construction methods can only be confirmed once the detailed design has been completed and a construction contractor has been appointed.

4 Response regarding contamination investigation prior to determination

The letter from the Council assessor requests that a contamination investigations be undertaken prior to determination of the DA including:

- Preliminary Site Investigation (Stage 1)
- Detailed Site Investigation (Stage 2) if the extent of contamination is ‘significant’
- Remediation Action Plan (Stage 3) if the Stage 2 investigation reveals contamination exceeding criteria prescribed by the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM)*

Chapter 14 of the EIS provides the results of a preliminary site investigation (Stage 1) undertaken by Parsons Brinckerhoff if 2004 as part of the land capability study and master plan for the site as well as the soil and contamination investigation presented by AECOM in the EIS for the 2015 Planning Approval.

Section 14.3.1 identifies that the majority of the site has very little potential for contamination and that small specific areas with some potential would be subject to further investigation prior to construction commencing and in accordance with the requirements of the CLM Act and Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (OEH, 2011).

The requirements for the contamination investigation prior to works commencing, in accordance with the relevant legislation and guidelines can be included in the conditions of consent for the DA. The condition can require the contamination investigation to be prepared (and RAP if required) prior to any works commencing.

5 Response regarding preparation of a Construction Environmental Management Plan (CEMP) prior to determination

Neither a construction contractor nor certifier have been appointed at this stage. As discussed in Section 3, the EIS provides a *concept design* for the project, which reflects the level of detail currently available about the works that are proposed to be undertaken. Appointment of construction contractor(s) would occur following the next design phase (detailed design) when there is sufficient design detail to tender the construction of the project.

A CEMP will be developed prior to construction commencing. The requirement for preparation and content of the CEMP can be included in the conditions of consent for the DA. The condition can require the CEMP to be approved by Council prior to works commencing.

6 Other items

Table 1 provides suggested GHD responses to other items raised by the assessor.

Sincerely
GHD

David Gamble
Technical Director – Waste Infrastructure
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Table 1 Response to individual comments

Ref	Comment	Response
2.1	**Description of Proposed Development**	
	It is recommended that the Applicant more clearly define the description of the development	The title is considered to reflect the works required.
2.2	**DA Plans**	
	Figure 01 - Existing Site Plan - cadastre (lot boundaries) are required to be shown	Refer revised Figure 01 showing cadastre
	Figure 02 - Proposed Landform - show cadastre - additional sections are required. Attachment 1 shows locations of required additional sections. Sections are to extend across the whole of the site and include properties beyond the site as a point of reference - this plan appears to be inconsistent with Drawing - Project Number 100125, Sheet 1 of 8 and Figure 6.2 in the EIS, particularly in relation to the works associated with the south-western stockpile. Figure 6.2 shows cut in this part of the site. (NOTE: Figure 6.2 appears to be based on the proposed landform. This should be based on the existing landform).	Refer revised Figure 02 showing cadastre and additional sections. See revised drawings - Project Number 100125 (11 Sheets)
	Figure 03 - Cross Section - Confirm that the 'existing surface level' is the surface level prior to filling in accordance with the 2016 Planning Approval	Figure 03 'existing surface level' is the surface level prior to filling in accordance with the 2016 Planning Approval. Refer revised Figure 03.
	Figure 04 - Extent of work - Overlay onto an aerial photograph with cadastre - Show locations of work zones - Delete vegetation communities	Refer revised Figure 04 provided showing aerial, cadastre and work zones, but without vegetation communities.
	Figure 05 - Site Management Plan - Show location of mobile crusher (unless this is equipment that will be moved around the site, as required, in which case indicative locations should be shown) and any other equipment that will be used on site for the duration of the works.	The mobile crusher, along with most equipment will be moved around the site as required. Potential construction scenarios are provided in the appendices of the Air Quality (Appendix D) and Noise (Appendix C) reports.

Ref	Comment	Response
	- Confirm if the 'plant parking' is the storage location of equipment (as per list in Section 6.3.2 of the EIS) to be used on site	The plant parking area shown on Figure 05 will be used for storing equipment.
	Project No. 100125, Sheets 3-7 - Retaining Wall Details - Extend sections to include boundary/lot points of reference - identify the tracks by a reference name. Identify tracks as either existing or proposed. - Show RLs at level changes in the sections - In Sections B, C and D, if a safety barrier/temporary safety fencing is proposed along the upper edge of the retaining wall, include on the section drawings and on the plans - Change angle of Section E so that the upper access track is included	See revised drawings - Project Number 100125 (11 Sheets)
	Project No. 100125, Sheet 8 - Retaining Wall Details (Micropile wall details) - Is the concrete pavement slab proposed or existing? If proposed provide the following details: * Length of area to be paved * Will any retaining along that edge of the pavement away from the quarry be required? * Will there be any impacts on trees (not previously assessed) as a result of these works?	See revised drawings - Project Number 100125 (11 Sheets) The concrete pavement slab details, including edge treatment and impact on trees will be determined at the detailed design stage.
3	**Environmental Impact Statement**	
3.1	**Executive summary**	
	Has a construction phase soil and water management plan been prepared?	As described in Section 10.4 of the EIS, a Soil and Water Management Plan would be developed prior to construction in accordance with Landcom (2015) 'The Blue Book', including consideration of erosion and sediment control impacts.
	It is considered that the extent and nature of contamination in the vicinity of the former workshop and office building areas needs to be determined now so that any remediation works that might be required are captured	Refer response to Item 3.2.2 (SEPP 55 - Remediation of Land) below.

<table>
<tr><th>Ref</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>by this DA and any approval issued for these works (NB: if remediation is proposed the description of the development must include this).</td><td></td></tr>
<tr><td></td><td>More detailed descriptions of the works to be undertaken are required. Details of works for which consent is required are to be provided.</td><td>Refer response to item 3.6.1</td></tr>
<tr><td></td><td>Works in this part of the project include tree planting and reestablishment of Blue Gum High Forest however no plants showing locations of planting have been provided.</td><td>Refer response to Item 3.17</td></tr>
<tr><td></td><td>More details are required as to what constitutes a short period of time with respect to exceedances of construction noise guidelines is required.</td><td>Full details of the time periods involved are provided in the noise assessment (Chapter 8 of the EIS and Appendix C of the EIS)</td></tr>
<tr><td>3.2</td><td>Section 2 - Statutory Framework</td><td></td></tr>
<tr><td>3.2.1</td><td>Hornsby LEP 2013</td><td></td></tr>
<tr><td></td><td>We agree that, by virtue of the provisions of Clause 6.2 of the HELP, the proposed earthworks are permissible with consent, as they will facilitate development for the purposes of a permissible use (recreation area) in the RE1 Public Recreation and R2 Low Density Residential zones which apply to the site.
Clause 6.2(3) of the LEP identifies that matters the consent authority must consider prior to determining and application under this clause. These matters include:
(a) the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development
(b) the effect of the development on the likely future use or redevelopment of the land,
(c) the quality of the fill or the soil to be excavated, or both,
(d) the effect of the development on the existing and likely amenity of adjoining properties,
(e) the source of any fill material and the destination of any excavated material,
(f) the likelihood of disturbing relics
(g) the proximity to, and potential for adverse impacts on, any waterway, drinking water catchment or environmentally sensitive area,
(h) any appropriate measures proposed to avoid, minimise or mitigate</td><td>Refer responses in the table below.<table><tr><th>Matter for consideration</th><th>Response</th></tr><tr><td>(a) the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development</td><td>Chapter 10 of the EIS provides an assessment of water impacts including consideration of the potential impacts of the project on watercourse stability and morphology.

No change to the proposed upstream or downstream diversion/drainage is proposed. Water would continue to be pumped from the void and discharged as it currently is. The site is ‘inwards draining’ and minor changes to drainage patterns within the site would not affect drainage patterns in the locality. Chapter 10 also describes how the project is not expected to impact on downstream waterways.

As discussed in Section 14.2 of the EIS, the project would improve soil stability within the site</td></tr></table></td></tr>
</table>

Ref	Comment	Response	
	the impacts of the development. It would be beneficial if the various sections of the EIS that address the matters the consent authority must consider to be identified		by regrading, slope reinforcement and drainage measures to address sections of the site that are excessively steep with significant likelihood of instability.
		b) the effect of the development on the likely future use or redevelopment of the land,	The project would facilitate the future development of the site into a parkland. As described in Section 5.3.3. of the EIS, should the project not proceed, the site would be unsuitable for development into a parkland for community use and would remain closed to the public indefinitely for safety reasons.
		(c) the quality of the fill or the soil to be excavated, or both,	No fill is proposed to be imported as part of the project. The existing site soils are discussed in Chapter 14 of the EIS.
		(d) the effect of the development on the existing and likely amenity of adjoining properties,	Section 17.3 of the EIS provides a summary of the potential for amenity impacts on surrounding receivers.
		(e) the source of any fill material and the destination of any excavated material,	No fill is proposed to be imported or exported as part of the project.
		(f) the likelihood of disturbing relics	Chapter 12 of the EIS provides an assessment of potential heritage impacts including likelihood of disturbing relics
		(g) the proximity to, and potential for adverse impacts on, any waterway, drinking water catchment or	Chapter 10 of the EIS provides an assessment of water impacts including consideration of potential water quality impacts

Ref	Comment	Response	
		environmentally sensitive area,	
		(h) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.	Section 20.2 of the EIS provides a summary of the proposed mitigation and management measures
3.2.2	**SEPP 55 - Remediation of Land**		
	The EIS indicates that further investigation will be undertaken however, based on the wording of Clause 7 of SEPP 55, information as to whether parts fo the site are contaminated is required prior to determination of this DA. The following information is required to be submitted for further consideration:	A contamination investigation will be undertaken prior to construction commencing. The requirements for the contamination investigation can be included in the conditions of consent for the DA. The condition can require the contamination investigation to be prepared (and RAP if required) prior to works commencing.	
	a) a Preliminary Environmental Site Investigation (Stage 1) must be prepared for the subject site by a certified land contamination consultant as recognised under the CEnvP(SC) or CPSSC CSAM certification and submitted to Council. The Investigation must be undertaken in accordance with NSW EPA's Contaminated Sites Guidelines and the NEPM (Assessment of Site Contamination).		
	b) a Detailed Environmental Site Investigation (Stage 2) must be prepared for the subject site by a certified land contamination consultant as recognised under the CEnvP(SC) or CPSSC CSAM certification and submitted to Council. The Investigation must be undertaken in accordance with NSW EPA's Contaminated Sites Guidelines and the NEPM (Assessment of Site Contamination). Note: A detailed investigation will be required where the extent of contamination is significant in accordance with the NSW EPA Contaminated Sites Guidelines or Council considers such investigation is warranted after consideration of the Preliminary Report.		

Ref	Comment	Response
	c) A Remedial Action Plan (RAP) must be prepared for the subject site by a certified land contamination consultant as recognised under the CEnvP(SC) or CPSSC CSAM certification and submitted to Council. The Investigation must be undertaken in accordance with NSW EPA's Contaminated Sites Guidelines and the NEPM (Assessment of Site Contamination), should the preliminary/detailed investigation reveal contamination exceeding criteria prescribed by the NEPM and in accordance with the NSW EPA Contaminated Sites Guidelines.	
3.3	**Section 3 - Stakeholder and Community Engagement**	
3.3.1	**Engagement Activities**	
	Please confirm if consultation with agencies (as part of the EIS preparation) is in addition to the consultation undertaken by NSW DPE as part of the SEARs preparation? Table 3.1 might need to be amended depending on the response to this question.	Agency consultation was *in addition* to the consultation undertaken by NSW DPE via distribution of letters to each agency. Letter responses that were received during the preparation of the EIS are provided in Appendix B of the EIS.
	Please update the EIS to confirm which stakeholder groups have been consulted.	Appendix B of the EIS contains the stakeholder engagement outcomes report with details of non-statutory consultation undertaken – including stakeholder groups.
	The SEARs required consultation with *infrastructure and service providers* however it is not clear that this has been done.	The SEARS requires consultation with *relevant* local, State or Commonwealth authorities, infrastructure and service providers and any surrounding landowners that may be impacted by the development. Details of the agencies and stakeholders engaged during preparation of the EIS are described in Chapter 3 of the EIS. As the project would not require any water or power connection, consultation with these utilities was not considered to be relevant, and was not undertaken.
3.4	**Section 4 - Description of the Site**	
	Note that Summers Avenue is zoned R2 Low Density Residential (and therefore Section 4.3 might need to be updated).	It is recognised that there is a small section of land that is connected to Summers Ave, that is zoned as R2 Low Density Residential. The proposed development (recreational area) is permitted within this zoning with consent.
	Confirm (by survey) that the finished level of the NorthConnex filling is RL 55 m AHD (page 21 of EIS)	The NorthConnex filling works was ongoing during preparation of the EIS and therefore the EIS assumes filling undertaken in accordance with the 2016 Planning Approval. Final surface levels of fill placed by

Ref	Comment	Response
		NorthConnex is approximately RL58 AHD at the eastern end of the void where additional surcharge material has been placed at the request of Council to aid compaction. The western end of the void is at approximately RL53 AHD. The surcharge material will be removed as part of this project to create a lake with a finished surface (water) level of RL55 AHD or lower.
3.5	**Section 5 - Strategic Justification**	
	A Plan for Growing Sydney (Section 5.2.2. of EIS) is no longer the relevant regional planning policy. This has been supplanted by *A Metropolis of Three Cities - Greater Sydney Region Plan* and the associated District Plans. The relevant District Plan in this instance is the North District Plan. The EIS will need to be updated to reference the relevant strategic plans.	It is recognised that a Plan for Growing Sydney (Section 5.2.2. of EIS) is no longer the relevant regional planning policy, and has been superseded by A Metropolis of Three Cities - Greater Sydney Region Plan and the associated District Plans. The relevant District Plan in this instance is the North District Plan. A Metropolis of Three Cities - Greater Sydney Region Plan outlines the NSW Government's vision for Greater Sydney as a metropolis of three cities: the Western Parkland City, the Central River City and the Eastern Harbour City. The Northern District Plan is applicable for the Hornsby local government area and identifies directions and priorities for improving lifestyle and environmental assets in the District. Consistent with the Northern District Plan, the project is an important step towards development of the site in the future as a community parkland and opening up the site to allow the community to enjoy the scenic and culturally significant landscape that is currently permanently closed to the public. The project would assist in delivering: • Planning Priority N2: "Working through collaboration" • Planning Priority N6: "Creating and renewing great places and local centres, and respecting the District's heritage" • Planning Priority N17: "Protecting and enhancing scenic and cultural landscapes" • Planning Priority N20: "Delivering high quality open space"
3.6	**Section 6 - Project Description**	
	This section should be read in conjunction with the discussion in Sections 2.1 and 2.2 of this letter.	Noted

Ref	Comment	Response
3.6.1	**Proposed Works**	
	A more detailed description of the proposed works is required to: 1. Ensure all proposed works are captured by the EIS/DA; and 2. Ensure full assessment of the impacts of the proposed works can be undertaken.	The description provided in the EIS includes the Project De**s**cription (Chapter 6), plus Chapters 14 and 18 (which are referred to in Chapter 6), which cover geotechnical safety measures and rehabilitation respectively.
	In section 6.2 of the EIS the design is described as 'conceptual' however, it is our understanding that this is the final design for the proposed bulk earthworks and the levels shown on the plans submitted with the DA are the design levels. We assume this is not an application under Section 4.22 (Concept DA) of the EP&A Act. Could you please confirm this is the case?	The EIS provides a concept design for the project, which reflects the level of detail currently available about the works that are proposed to be undertaken. A higher level of detail would be developed in the next design phase (detailed design), which will be suited for obtaining a Construction Certificate and subsequent tendering of the works to contractors. The application is not for a Concept DA under Section 4.22 of the EP&A Act.
	Based on our review of the EIS, the works proposed as part of this DA include: * Bulk earthworks * Construction of retaining walls/gabion walls * Weed removal * Tree removal * Soil manufacture * Micropile wall * Rehabilitation works, including re-establishing areas of Blue Gum High Forest * Drainage works * Construction of new roads and access tracks	
	The works appear to be being undertaken in four distinct zones: * The south-west stockpile * The northern spoil area * The quarry floor and southern face * Old Mans Valley It might be useful to provide a plan identifying each of these zones, together with a detailed description of the works to be undertaken in each zone. Where there are works proposed which apply to the whole of the site, these works can be described under a separate heading.	See new Overall Site Plan showing areas of proposed works.

Ref	Comment	Response
	In relation to the bulk earthworks, details regarding the depths of excavation/filling (in more detail than Figure 6.2) would be of benefit.	Figure 6.2 of the EIS shows the proposed (concept design) surface after completion of the works as well as details of the estimated cut and fill depth in each area. No further detail is available at this current concept design stage.
3.6.2	**Construction**	
	Details of the methodology for undertaking the bulk earthworks to be specified as different methods will have different impacts	Chapter 6 of the EIS includes an indicative construction methodology and describes the type of plant required to undertake the works. This is based on the concept design and best understanding of the most likely construction methods at this stage. The impacts of this particular method are assessed in the EIS, using estimated numbers of different plant items. The Air and Noise assessments analyse 3 different "worst case" type scenarios where the various plant items are working concurrently and in different parts of the site as it is expected that the plant items will be moved according to which areas of the site are being excavated or filled. The actual construction methods can only be confirmed once the detailed design has been completed and a construction contractor has been appointed.
	Will the materials for the gabion walls be sourced from inside the quarry? If so, these details are to be provided with the DA	The materials for the gabion walls will be confirmed during detailed design. It is envisaged that the material will likely be sourced from outside the quarry.
3.6.3	**Traffic**	
	There are contrary statement throughout the EIS in relation to whether any spoil material will be transported into or from the site. It is required that definitive advice in this regard be provided.	No spoil/fill material is proposed to be transported to the site or exported from the site. This is clearly stated in the EIS.
3.7	**Section 7 - Identification and Prioritisation of Issues**	
	The following issues need to be considered as part of Table 7.1	
	* Noise, vibration and blasting - consideration of onsite rock crushing under 'source of risk'	Rock crushing has been included in the noise assessment (Chapter 8 and Appendix C)
	* Hydrology and soils, flooding - there is no discussion about drainage works required to be undertaken within the northern spoil area. Further,	The drainage design for the Northern Spoil Mound has not yet been fully developed, but the impacts associated with draining this area have been

Ref	Comment	Response
	there is no discussion regarding protocols to be implemented for the inspection and maintenance of erosion and sediment control measures on a regular basis and after storms.	assessed in the EIS. As discussed below, no water can be discharged from the void unless it is pumped, and the quality of the water can be tested before pumping. Chapter 10 of the EIS includes an assessment of water quality and proposes a number mitigation measures to address surface and groundwater water quality. A Soil and Water Management Plan will address erosion and sediment control issues during construction phase and can be conditioned.
	* Biodiversity - noise impacts on fauna have not been identified as a risk and this needs to be considered.	Noise impacts are addressed in Chapter 11 (page 102) of the EIS and the Biodiversity Assessment Report
	* Visual amenity - the visual impacts of the significant retaining walls when viewed from within the quarry site have not been considered or addressed.	Refer response to Item 3.16
	* Weeds - the management of weed waste does not appear to have been considered	Refer response to Item 3.15
3.8	**Section 8 - Noise and vibration**	
	DFP Planning will provide commentary in relation to any additional information and/or clarification required in relation to noise and vibration following receipt of initial feedback from Acoustic Logic.	Noted
3.9	**Section 9 - Air Quality**	
	DFP Planning will provide commentary in relation to any additional information and/or clarification required in relation to noise and vibration following receipt of initial feedback from Council's environmental section.	Noted
3.10	**Section 10 - Water**	

Ref	Comment	Response
	In making the comments below, we have assumed that all water within the quarry void will be required to be removed in order to undertake the bulk earthworks: There is no discussion in Section 10 regarding the drainage works (including water quality considerations) that are proposed to be undertaken in conjunction with the bulk earthworks, including, for example, the provision of a new open drainage channel as part of the earthworks in the northern spoil area.	Because construction water falling on the site drains inwards to the void, and water can only leave the void by pumping, the quality of the water being pumped can be assessed before any pumping occurs. The water level in the quarry will be kept below surface level to aid vehicle movements on the fill. As discussed in response to item 3.7, the drainage design for the Northern Spoil Mound has not yet been fully developed, but the impacts associated with draining this area have been assessed in the EIS. Chapter 10 of the EIS includes an assessment of water quality and proposes a number mitigation measures to address surface and groundwater water quality.
	We have been provided with a copy of the dewatering licence (dated 16 April 2019) issued to Hornsby Shire Council by NSW Office of Water. The terms of the licence reference two timeframes - a 12 month timeframe and a 5 year timeframe. It is not clear if the volume of groundwater for which authorisation for extraction has been issued (i.e. 370 ML) is a total annual amount or a total amount able to be extracted/removed over the 5 year term. Clarification in this regard is required.	The wording on the dewatering licence is confusing. The original licence agreement allowed for 370ML per annum to be discharged.
3.11	**Section 11 - Biodiversity**	
	The statement at the top of page 97 of the EIS that "water quality in creeks immediately adjacent to the site are likely to be poor due to the surrounding development" is contrary to the investigations detailed in Section 10 of the EIS. Contrary comments such as this should be deleted from the EIS.	Some exceedances of water quality criteria detected by monitoring events were noted in Chapter 10 of the EIS. This is not contrary to the observation that water quality can be affected by surrounding development, as the creeks are likely impacted by inflows from street stormwater systems.
	The concluding comment under the heading *Surface Water* (page 101) is also relevant to this discussion.	Regardless water quality coming from site needs to meet relevant standards and will be addressed by the Soil and Water Management Plan
	In section 11.3.1, there appears to be some confusion as to the total amount of vegetation to be removed and the amount of native vegetation to be removed as a result of these works. The text indicated that 5.89 ha of exotic and native vegetation will be removed however Table 11.2 suggests that a total of 8.28 ha (including 2.5 ha of native vegetation) will be removed. This must be clarified.	The project would remove a total of 5.89 ha of vegetation, of which 2.5 ha is native vegetation. The areas for hardstand and quarry void were incorrectly shown in the table. They should have been shown as 0.9 ha and 2.28 ha respectively. The total area should have been shown as 9.07 ha (to match Table 11.1). A revised Table 11.2 is as follows:

Ref	Comment	Response

Zone ID	PCT ID	GHD Veg Type	TSC Act Status	EPBC Act Status	Area (ha)
HN648	1841	Blackbutt Gully Forest (HN648, Moderate/good - high)	Not listed	Not listed	0.26
HN648	1841	Blackbutt Gully Forest (HN648, Moderate/good - poor)	Not listed	Not listed	1.50
HN596	1237	Sydney Blue Gum - Blackbutt - Smooth-barked Apple moist shrubby open forest (HN596, Moderate/good - poor) (CEEC)	CEEC listed under the BC Act: Blue Gum High Forest in the Sydney Basin Bioregion	Not listed	0.74
		Exotic vegetation (Blackbutt Gully Forest HN648, Low)	Not listed	Not listed	3.39
		Hardstand			0.90
		Quarry void			2.28
				Native vegetation clearing	2.50
				Total vegetation clearing	5.89
				Total area	9.07

	In addition, details of the locations of vegetation to be removed are required to be provided. It is recommended that this be shown on a plan together with estimates of the number of trees to be removed within each section.	Figure 11.1 of the EIS shows locations of vegetation to be removed (the extent of works overlaid on the vegetation zones) and areas have been provided in Table 11.2 (as amended above).
	There are a number of mitigation measures which have been identified as being necessary to include in a CEMP. Given the extent of measures identified as being necessary to include in the CEMP, it is recommended that this be prepared for consideration as part of the DA.	Refer response to Item 3.18

Ref	Comment	Response
	The draft CEMP should have particular regard to managing impacts on ecology and water systems of land immediately surrounding the work sites.	Refer response to Item 3.18
	Confirmation is required in relation to the extent of landscaping/revegetation works **occurring** as part of this DA. In the section title *Rehabilitation*, on page x in the *Executive Summary*, there is a statement that the project includes tree planting and reestablishment of Blue Gum High Forest. The second dot point at the top of page 105 of the EIS also indicates that landscape works will be undertaken however at the "completion of the project', suggesting that these works do not form part of this application. Clarification as to when vegetation rehabilitation works are proposed is required, however, given the extent of vegetation removal being undertaken as part of this application, it is considered that replacement planting should form part of this application, in the event that no further work is undertaken.	Refer response to Item 3.17
3.12	**Section 12 - Heritage**	
	There appears to be some confusion as to the extent to which the volcanic diatreme has been covered as a result of filling works approved under the 2016 Development Approval. Greater clarity is required in relation to the extent of the exposed diatreme that is currently exposed is in accordance with the NorthConnex filling works and whether more of the diatreme is likely to be exposed as a result of the works proposed as part of this DA.	The project would not change the extent of the diatreme that would be exposed compared to that proposed and approved under the 2016 Planning Approval. Refer response to Item 3.4
3.13	**Section 13 - Traffic and Transport**	

Ref	Comment	Response
	Please confirm whether the discussion regarding the *Existing intersection performance* (page 131 of the EIS) factors in the traffic associated with the NorthConnex works at the quarry or whether it predates that work. If it predates the NorthConnex works, the traffic volume assessment might need to be updated, given they are now some 4 years old (however, we are happy to be guided by Council's engineers in regard to this matter). Similarly, does the 'existing situation' modelled for the SIDRA results (first dot point under Section 13.3.3) include NorthConnex construction traffic?	Page 130 states the counts were undertaken 15 May 2015 (pre-NorthConnex filling works). Use of counts while the NorthConnex filling works are being undertaken would inflate the "existing" traffic volumes. Using the pre-NorthConnex filling works traffic volumes provides a more conservative assessment.
3.14	**Section 14 - Land Resources**	
	As previously noted, could you please confirm that the finished level of the filling undertaken in accordance with the 2016 Development Approval (NorthConnex) is RL 55 m AHD - refer paragraph of Section 14.2.3. This needs to be confirmed by survey.	The NorthConnex filling works was ongoing during preparation of the EIS and the EIS therefore assumes filling undertaken in accordance with the 2016 Planning Approval. Refer response to Item 3.4
	Also as previously noted, given the magnitude of mitigation measures that will be needed to be included in a CEMP, it is required that a draft CEMP be prepared for consideration as part of the DA.	Refer response to Item 3.18
	The discussion under the heading *further geotechnical assessment* (page 151 of the EIS), suggest that further investigation is required before the detailed design response with respect to the management of certain areas within the quarry can be determined. Given that (assuming this DA is approved) will be giving consent to the stabilisation works, these details are required to be finalised for consideration as part of this DA.	Further geotechnical assessment would be undertaken as part of the detailed design process for the project.
3.15	**Section 15 - Waste Management**	
	Clarification is required as to the management of the weeds to be removed as part of these works. We are assuming that the weeds will be removed and not mulched as part of the soil manufacturing.	All vegetation including weeds will be mulched on site as part of soil manufacturing. The mulching will be undertaken (to reach appropriate temperatures) so that the resulting product is free of pathogens.
	As such details regarding the disposal of removed weeds (including volumes, number of truck movements and location of tipping site) needs to be provided.	

Ref	Comment	Response
3.16	**Section 16 - Visual**	
	The potential impacts of retaining walls of 13 m on future users of the quarry site need to be addressed	The quarry void is characterised by dramatic topography including near vertical/steep walls. Any retaining walls would be consistent with the existing character of the site.
	Whilst it is acknowledged that as part of a future DA there will be significant landscaping undertaken, the visual impacts of the removal of vegetation as part of this DA need to be addressed.	Visual impacts of removal of vegetation have been considered in the visual impact assessment.
	We question to 'low' magnitude rating afforded to the visual impact associated with visitors of the Blue Gum Walking Track and Rosemead Road Picnic Area. Based on Table 16.1 it is our opinion that the magnitude would be at least 'moderate'. We recommend that the visual impacts from these areas be reassessed.	At its closest, the Blue Gum Walking Track is located more than 100 m from the southern most extent of proposed earthworks. The area between the walking track and the extent of earthworks is heavily vegetated with trees. This significant vegetation that would be retained between the edge of the earthworks (and vegetation clearance) and the walking track would continue to screen views to the site. Rosemead Road Picnic Area is located even further away, with retained vegetation to also provide significant screening. In addition, bush regeneration and plantings will assist in providing further vegetation in areas of earthworks in the medium to long term. Therefore the magnitude of visual impact rating has been assessed to be low at both these locations.
3.17	**Section 18 - Rehabilitation**	
	Section 18.1 also identifies that tree planting and re-establishment of Blue Gum High Forest will occur as part of this project. Details regarding this part of the project have not been provided and therefore have not been assessed. It is required that these details be submitted.	Figure 18.1 of the EIS shows the areas of potential revegetation (green shaded - labelled 'revegetation and bush regeneration areas). The extent and details of bush regeneration works would be confirmed during detailed design. Landscaping works are proposed as part of future development of the park land.
3.18	**Construction Environmental Management Plan**	
	A CEMP must be prepared by a suitably qualified environmental consultant in consultation with a qualified traffic engineer and submitted to Council for review.	Neither a construction contractor nor certifier have been appointed at this stage.

Ref	Comment	Response
	The CEMP must detail the contact information for developers, builder, private certifier and any emergency during and outside work hours.	A CEMP will be provided prior to construction commencing. The requirement for preparation and content of the CEMP can be included in the conditions of consent for the DA. The condition can require the CEMP to be approved by Council prior to issuing the Construction Certificate.
	a) The plan must include, but not limited to the following:	
	i) The plan shall detail the order of construction works and arrangements of all construction machines and vehicles being used at the same time during all stages	
	ii) the CTMP plans shall be in accordance with the approved Development Application plans and the Development Consent conditions	
	iii) In order to prevent injury, accident and loss of property, no building materials, work sheds, vehicles, machines or the like shall be allowed to remain in the road reserve without the written consent of Hornsby Shire Council.	
	iv) The plan shall be in compliance with the requirements of the RTA "Traffic Control at Worksites Manual 1998" and detailing:-	
	v) Public notification of proposed works	
	vi) long term signage requirements	
	vii) short term (during actual works) signage	
	viii) Vehicle Movement Plans, where applicable	
	ix) Traffic Management Plans	
	x) Pedestrian and Cyclist access and safety	
	xi) The plans shall indicate traffic controls including those used during non-working hours and shall provide pedestrian access and two-way traffic in the public road to be facilitated at all times	
	xii) Survey plan showing site sheds, concrete pump location, crane location and existing survey marks. The plan shall include details of parking arrangements for all employees and contractors, including	

Ref	Comment	Response
	layover areas for large trucks during all stages of works. The parking or stopping of truck and dog vehicles associated with the development will not be permitted other than on the site and the plan must demonstrate this will be achieved.	
	xiii) Confirmation that a street 'scrub and dry' service will be in operation during subdivision works	
	xiv) The plan shall include the proposed truck routes to and from the site including details of the frequency of truck movements at the different stages of the development	
	xiii) Confirmation that a street 'scrub and dry' service will be in operation during subdivision works;	
	xiv) The plan shall include the proposed truck routes to and from the site including details of the frequency of truck movements at the different stages of the development;	
	xv) The plan shall include swept path analysis for ingress and egress of the site throughout all stages of works.	
	xvi) The plan shall include site plans for all stages of works including the location of site sheds, unloading and loading areas, waste and storage areas being used.	
	xvii) The plan shall include the total volume of fill to be imported to the subject site throughout all stages to achieve approved levels. xviii) The plan shall include the total volume of fill to be exported at the subject property throughout all stages.	
	xix) The plan shall include the total quantity and size of trucks for all importation and exportation of fill on site throughout all stages of works, and a breakdown of total quantities of trucks for each stage of works.	
	xx) The plan shall include the number of total truck movements to and from the site for each stage of works.	

Ref	Comment	Response
	xxi) The plan shall include the number of weeks trucks will be accessing and leaving the site with excavated or imported fill material.	
	xxii) The plan shall include the maximum number of trucks travelling to and from the site on any given day for each stage of works.	
	xxiii) The plan shall include the maximum number of truck movements on any given day during peak commuting periods for all stages of works.	
	xxiv) The plan must include but not be limited to the location details of the licensed waste facility where excavated material required for removal will be disposed to.	
	xxv) The plan must include the location details of the source site of any proposed fill to be imported for all stages of works.	
	xxvi) The Applicant and all employees of contractors on the site must obey any direction or notice from the Prescribed Certifying Authority or Hornsby Shire Council in order to ensure the above.	
	xxvii) If there is a requirement to obtain a Work Zone, Out of Hours permit, partial Road Closure or Crane Permit, the Plan must detail these requirements and that an application to Hornsby Shire Council will be made.	
	b) A Construction Waste Management Plan detailing the following:-	
	i) Details of the importation or excavation of soil and fill, the classification of the fill, disposal methods and authorised disposal depots that will be used for the fill;	
	ii) Asbestos management requirement and procedures for removal and disposal from the site in accordance with AS 2601-2001 - 'The	

Ref	Comment	Response
	Demolition of Structures', and the Protection of the Environment Operations (Waste) Regulation 2005;	
	iii) General construction waste details including construction waste skip bin locations and litter management for workers.	
	c) Management of stormwater disposal from the detention basin or basement throughout all development phases in accordance with the ANZECC Guidelines trigger values for the area.	
	d) Sediment and Erosion control including during rainfall events and site plans showing entry to or exits from the site, all in accordance with the *'Soils and Construction 2004* (Bluebook)'.	
	e) Air quality management on site, including dust suppression measures during demolition and construction.	
	f) Details on the general operating procedures to manage environmental risk throughout all stages of works on the site;	
	g) To ensure Council assets are maintained throughout the development, a detailed survey plan showing existing survey marks, vehicle entry, footpath and hoarding (fencing) locations; and	
	h) Noise and vibration control information to address any noise nuisances such as rock sawing or breaking, the mitigation methods implemented and how complaints will be managed or prevented.	

Geotechnical Investigation Report

J&K Ref	Page No.	Heading	Para/ dot point	Comment Made by J&K	GHD Response	JKG Replies	Status / GHD Response Where Applicable
1	General			At this stage we have been unable to check the geometry of the slope and rockfall models as we do not seem to have a survey of the site. Would you please forward a survey plan if one exists so we can do some spot checking on the models.	Council to provide	No survey plan has been provided to us, and as such we have not been able to complete any checking of these models.	Assumed closed
2	21			Soil and weathered rock parameters. Some of the parameters appear to be quite high, such as the granular fill where a cohesion of 10 kPa has been adopted (where theoretically you would use 0 in a granular soil), cohesion of 110 kPa in weathered dolerite (though we don't know just what is referred to as weathered dolerite, such as is this a residual soil from the dolerite, or moderately weathered etc). the weathered sandstone also seems to have unusual properties of a quite precise number of 62 kPa for cohesion which may also be a bit high, but the friction angle of 15 degrees looks way too low (you would normally have say 30 degrees or above for sandstone, but again we don't know whether this is residual soil or a more competent rock). Could GHD please provide some details on how these parameters were derived.	Prior to GHD's involvement PSM conducted extensive studies on the site and developed soil and rock parameters accordingly which GHD adopted (PSM 2017a) as referenced in GHD's report (2.4.5 para 1). Therefore please refer to PSM report 2017a for details of parameter derivation. Furthermore, significant additional investigation as described in Section 8 of GHD's report is recommended prior to issuance of a Construction Certificate as part of normal refinements leading up to the issuance of a Construction Certificate. The parameters derived by PSM will be amended if needs be through that process of additional data gathering and refinement.	We agree, on the basis that Council accept there is still significant investigation and design work to be undertaken prior to Construction Certificate issue.	Closed
3	22	Section 2.4.7	Hazard 1	Page 22, Section 2.4.7, Hazard 1. The FOS=1.2 is stated to be 'unrealistic' due to no 10 m long defects being present in the face, but on Page 7 in PSM 2017a the summary says joint persistence is less than 10 m. So it is not clear on review whether these defects were or were not present. Can GHD please clarify this.	GHD has conducted multiple inspections during the NorthConnex filling operation and defects of this size are not expected. There will be further confirmatory rock mapping exercises prior to issuance of a Construction Certificate. There is no evidence to suggest such defects exist and no movements recorded since monitoring started in ten years despite significant rainfall events in that time and noting the quarry is not active, therefore problem discontinuities will no longer the exposed as a consequence of quarrying operations.	To be complete, it would be better for this comment to be included in the report, and again, Council must accept the further mapping is required.	Closed
4	22	Section 2.4.7	Hazards H3/H4	Page 22, Hazards H3/H4. FOS reported as being greater than 2.2 with 'generally reasonable' parameters, but as per point 2 above some of the parameters appear to be quite high - the inclusion of 10 kPa of cohesion in a soil slope of a couple of metres height makes a huge difference to FOS. This needs to be reconsidered following review of the soil parameters.	GHD refers to the response given to Item 2 above. Further, adopting the 10 kpa from previous (extensive) work was, on balance, considered reasonable (GHD also considered this value to be unusual) in the broader context of the measured performance of the slopes over a considerable time period and the unusual nature of some materials (e.g. quarry spoil with a high percentage of angular boulder size particles not easily assessed with traditional GI). We expect these parameters will be amended at some point leading up to the issuance of a Construction Certificate but do not believe that will materially influence the proposed scheme for the reasons given above.	We agree, on the basis that Council accept there is still significant investigation and design work to be undertaken prior to Construction Certificate issue.	Closed
5	23		H3/H4	Page 23, H3/H4. Despite the FOS being reported as greater than 2.2, paragraph 1 states there are steep slopes and slumping in the weathered profile below the track, and a significant likelihood of instability. Would GHD please comment on how this is consistent with the relatively high FOS of 2.2.	The FOS of 2.2 is assessing the global stability of the slope through competent (weathered rock) materials. However, it has been observed on site however that the quarry edge is susceptible to erosional and vegetation action causing slumping of the face which the 'A frame' micro-pile solution is designed to address to provide a 'hard edge'. Further vegetation management and erosion protection will form part of the final scheme. Also note geophysical survey has now been conducted in the area and additional boreholes in the area are planned prior to issuance of a Construction Certificate.	We now understand this relates to differences between deep seated and more surficial potential landslide features, and note that additional investigation and design will be conducted prior to the issue of a Construction Certificate, and so we agree provided Council accept such work will need to take place.	Closed
6				Option 1 for the access track is 'preferred', but there is not an assessment of risk to life for that option.	A risk to life assessment has been undertaken for Option 1. Please refer to Table 5 for summary outcomes.	While a risk assessment may have been undertaken, no details of this have been provided in the report, only the concluding comment in Table 5. Further, Table 5 lists the risk to the person most at risk as '"intolerable" and the societal risk as being within the "ALARP" region. The basis on which an "intolerable" risk is considered to be appropriate must be explained.	Full assessments and details will be provided leading up to and prior to issuing a Construction Certificate. GHD has now been engaged to undertake the detailed design which includes detailed design level risk assessments where required with corresponding design responses where required (e.g. stabilisation measures, drainage improvements, monitoring and preventative maintenance schemes and the like).

J&K Ref	Page No.	Heading	Para/ dot point	Comment Made by J&K	GHD Response	JKG Replies	Status / GHD Response Where Applicable
7	29			Page 29 - northern spoil mound. There has been an assumption on the phreatic surface in the soil mound and this exists the slope above the weathered dolerite. Where this occurs there will be seepage through the toe of the fill, which is usually associated with sloughing (erosion) of the soil which can then regress back into the spoil mound. Can GHD advise whether this has been considered or how this is controlled?	A significant portion of the northern spoil mound will be regraded to a shallower angle and drainage measures installed to improve the overall condition of this area thus removing or significantly controlling the mechanism discussed. Further comprehensive park maintenance and operating protocols will be in operation when the park is opened to ensure any residual potential stability issues are managed down to acceptable levels. This is an integral part of the broader strategy for the park to maximise the use of the space, where risks cannot be 'designed out' entirely a robust drainage, monitoring, maintenance and park closure protocol is provided will be provided.	We agree, on the basis that Council accept there is still significant design work to be undertaken prior to Construction Certificate issue, and long term monitoring, maintenance and closure protocols.	Closed
8	33			Page 33. It is mentioned that the likelihood level of 'L3' is conservative, but L3 would be appropriate (not conservative) for 5e-3.	Noted, as with similar aspects, the proposed likelihood and related aspects important to overall park operational safety will be subject to further assessment and refinement prior to issuance of a Construction Certificate.	We agree, on the basis that Council accept there is still significant design work to be undertaken prior to Construction Certificate issue.	Closed
9	35		Table 6	Do Council agree with the visitor number in the tables. On the face of it, the numbers appear quite low for such a significant project (funding).	GHD refers to the response in Item 8 above. Visitor numbers to particular areas are proposed to be controlled in a number of ways including public exclusion during particular conditions or outright exclusion in some cases (except for maintenance) in other areas. The visitor numbers and the corresponding risk management response will be refined commensurate with projected visitor numbers and exclusions / other management strategies that will be in place prior to issuance of the construction certificate. Council will be party to those assessments as the future asset manager and maintainer.	We agree, on the basis that Council accept there is still significant design work to be undertaken prior to Construction Certificate issue.	Closed
10	35			In the calculation there is a factor of 0.1 stating that Council will control access during wet periods so there is no access when risk levels are elevated. Do Council agree they will be responsible for ongoing monitoring of the situation so they know when to go and evacuate the quarry and prevent access, and understand what will be required before the quarry can be reopened for access. It may be very difficult to actually/physically block access to the road, especially to pedestrians.	Council are aware of this potential requirement. Monitoring and temporary park closure protocols are an integral part of maximising the potential usage of this unique urban space while accepting some specific (manageable) access related limitations and weather related closures are an inherent part of that overall strategy. Clear protocols will be developed and in some cases automated (automatic barriers) or pre-emptive closure based on expected weather conditions required. All these protocols are developed in conjunction with the future park maintainer and operator (Council).	Agreed provided Council accept this responsibiliy.	Closed
11	39			If 300 m of the northern spoil mound were to flow over the access track and presumably suspended deck structures, would the cleaning, repair and stabilisation costs not exceed $2M? If so that would result in a C2 consequence, increasing risk, and requiring higher factors of safety. Would GHD please comment on whether rectification costs would really be less than $2M.	A significant portion of the northern spoil mound will be regraded and removed along with the installation of new drainage measures plus proactive maintenance and monitoring as described. Thus it is considered <$2 M in rectification costs is a reasonable estimate, while noting this is a subjective judgement, and the combination of likelihood and consequences may be amended prior to the issuing of a Construction Certificate based on the various investigations; balancing design options against monitoring and maintenance requirements in consultation with the asset owner as described above. These evaluations may be refined leading up to the issuance of a Construction Certificate but GHD does not consider they will materially influence the proposed scheme for the reasons given above.	We agree, on the basis that Council accept there is still significant design work to be undertaken prior to Construction Certificate issue.	Closed
12	40	Section 3.5	Bullet 1	It is stated that the works would require regrading of portions of the northern spoil mound, but on Page 28 (last paragraph) it is assumed effective drainage measures would be in place. Do GHD not consider it essential to confirm the drainage is in fact present and is appropriate and robust?	GHD agrees that it is essential that appropriate and robust drainage measures are in place which will be required to be maintained regularly in accordance with the park monitoring and maintenance operational requirements as discussed above.	Noted.	Closed

J&K Ref	Page No.	Heading	Para/ dot point	Comment Made by J&K	GHD Response	JKG Replies	Status / GHD Response Where Applicable
13	40	Bullet 3	Sub Bullet 1	It is stated that the presence of trees provides drainage and increase the shear strength. While that is true, have GHD ever relied on these actions and if so, how are they quantified? Other considerations are that if the trees are providing 'drainage paths' in the soil, these can also allow the ingress of water to help saturate the soil (which is of course detrimental) and the trees are also an additional load on the steep slopes.	Sub bullet one discusses in general terms factors which influence and could be considered when evaluating slope stability assessments of this type. As with many geotechnical engineering evaluations, experienced professional judgement plays a part and (for example) a heavily wooded and vegetated slope may prompt the assessing engineer to err less on the side of caution when assigning parameters within the normal range to soil materials within the root zone. There is no definitive way to calculate the effect of roots specifically, however experience does play a part in geotechnical evaluations and should influence decisions where a range of potentially reasonable parameters are justifiable in such assessments.	Noted.	Closed
14	43			The Rn and Rt parameters for the rocks seem to be straight out of the text book, but would GHD please clarify the method in which the parameters have been assigned for the other materials, say with a worked example for one of the materials. Would GHD also please confirm where the parameters for DFC, RFC, roughness spacing and amplitude come from.	In accordance with the Geotechnical Report recommendations (Section 8) real world data has now been obtained from rock fall trials conducted on the site in June 2019. Previously in the absence of such data, published typical values for the parameters mentioned were used in the report. The real world data shows the initial published values are conservative, however the proposed park exclusion zone geometry on critical faces will remain unchanged to those proposed for planning.	Noted, however we do not have the data and assume this will be confirmed in a further issue of the report prior to Construction Certificate.	Closed
15	43	4.1.3	Para 2	The density of 2700kg/m3 seems quite high. Can GHD confirm all of the boulders in the possible rockfall areas are fresh dolerite, or will there be sandstone and breccia rocks as well. If the latter is the case, how would this affect the runout distances for densities of say 2300-2400kg/m3?	Rock fall trials have now been conducted for a range of block geometry and sizes as part of ongoing activities as recommended in the report (Section 8). The theoretical values have thus been refined based on the real world data. Laboratory testing of rock fragments from the field trials show a density of 2,650kg/m3.	Noted, however we do not have the data and assume this will be confirmed in a further issue of the report prior to Construction Certificate.	Closed
16	62		Table 22	The FOS of 1.35 seems quite low, but this seems to only apply for the more extreme load cases of parid drawdown and earthquake for which FOS=1.35 would probably be fair.	Noted.	Noted.	Closed
17	64		Table 23	Would GHD please confirm that the (%) after 'alpha' in the heading and the 'sigma' at the end of the first line of the table are just typo's. If not we will need to reassess. Also does the 'alpha' parameter have a depth range to which it applies?	GHD can confirm the % are typographical errors. Notional depth ranges have been used, however please refer to our response to Item 19 for further relevant background information.	We understand there will be further monitoring, analysis and design prior to Construction Certificate stage and so we agree on that basis.	Closed
18	65		Para 1	Would GHD please provide the reasoning behind the density profile of the fill. Is there a knowledge of the different ways in which these fill materials have been placed, or just estimates? Are there any other settlement sensitive elements on the backfill or just the retaining walls?	The quarry infilling was a bulk materials handling operation. Broadly materials were placed using a long drop conveyor fed stockpile spread with secondary conveyors and dozers with the only compaction achieved by the movement of dozers (track packed) through the spreading process, and self-weight compaction as the operation progressed. Notably a significant surcharge was present under the conveyor and also left in place over the proposed lake area where the landform will not be further built-up in future. None of these elements were subject to precise engineering control. Therefore the density profile is only a notional estimate in the report pending the investigation works specified in Section 8 of the report. The infilled quarry void will be a parkland area, the majority being landscaping type features not generally anticipated to be settlement sensitive. The potentially settlement sensitive structures are the retaining structures and the lake. However, the settlements estimated in the report are now significantly diminished (see note on Table 24 of the report) based on monitoring data acquired since filling completed. Note filling was still ongoing at the time the geotechnical report was issued. See item 19 below for details.	We understand there will be further monitoring, analysis and design prior to Construction Certificate stage and so we agree on that basis.	Closed. Note monitoring of infill material has been ongoing for over 6 months and the groundwater recovered to the top of the infill for the same period. In 6 months settlement has been very small (<5mm total) strongly suggesting inundation / collapse settlement is complete and creep settlement values are very low in the long term even for deep fill areas. Additional investigations are planned and the monitoring will be ongoing such that approaching 1 year of settlement data will be available before the detailed design is finalised and will take full account of all the latest settlement data and additional investigations planned.

J&K Ref	Page No.	Heading	Para/ dot point	Comment Made by J&K	GHD Response	JKG Replies	Status / GHD Response Where Applicable
19	66		Table 24	Does Table 24 include the sum of collapse and creep settlements, or the creep settlement only? We are not aware of the grading of the material and suspect there may be a reasonably fines content, though can GHD confirm the saturated fill would not be subject to liquefaction in the case of earthquake.	Table 24 includes an estimate of both collapse and creep settlement while noting many assumptions combined with published values from case studies were used at the time of the assessment pending additional data acquisition. The fill source was almost exclusively from road header excavations in slightly weathered or fresh Hawkesbury Sandstone, although some shales / and dykes were also excavated in much smaller quantities. Consequently the fill material overwhelmingly comprises a well graded granular material with few fines. Given the nature of the infilling operation it is also reasonable to assume that any material derived from shale / dyke material deposited would have been distributed evenly about the site during the conveyor drop / stockpile / secondary conveyor and large scale spreading operations. No formal liquefaction assessment has been undertaken at this stage pending investigation using CPT methods as the preferred method for such assessments. While saturated granular material near surface will meet the basic screening criteria for liquefaction susceptibility, the low seismicity of the region and nature of the proposed structures makes this a very unlikely hazard to be realised. Nevertheless, this will be confirmed during the CPT assessment process and if necessary simple measures specified (e.g. near surface densification with vibro-flot) to mitigate the risk. This will be assessed as a matter of routine leading up to the issue of a Construction Certificate.	. Also note comments provided in item 18 above	Closed. Also refer to comments provided in Item 18 above.
20	68			The settlement profiles along the retaining walls are provided, but will there also be differential settlement across the width of the reinforced earth walls? If the fill is settling over a metre in places over the top of buried sloping quarry batters, there could be additional horizontal strain at the base of the reinforced earth walls. Can GHD advise whether this has been considered.	As noted above, at the time the Geotechnical Report was written filling operations and groundwater recharge were still active. Since that time the NorthConnex filling is completed and groundwater has fully recharged to the top of infill level (and is being pumped to remove surplus to maintain levels below ground level). Upon those conditions being attained (note the groundwater recovery occurred much quicker than initially expected), long term settlement monitoring plates were installed on the site and readings are available for approx. 3 Months at time of writing. At this point in time, minimal (1-3 mm total settlement) has been recorded over a three month period at the four locations monitored, covering the deepest and shallowest filled areas of the site. The groundwater recharge effectively means that collapse settlement is complete and the monitoring results indicate only creep settlements are occurring and at a rate low enough to reasonably anticipate future movements will be manageable by flexible retaining techniques noting these structures will not be constructed for some time, reducing the remaining creep further. Therefore while GHD acknowledges the settlement across the embankment width was not estimated at the time of reporting, the evidence clearly points to relatively easily manageable levels of long term creep for the type of development proposed. Creep levels will continue to be monitored throughout future activities prior to issuance of a Construction Certificate and, if necessary, the design amended accordingly in line with normal practice for developments of this type.	We understand there will be further monitoring, analysis and design prior to Construction Certificate stage and so we agree on that basis.	Closed. Also refer to comments provided in Item 18 above.
21	69			For the column supported deck, what approximate height range would be required for the supporting columns, and are these heights feasible with regard to buckling of the columns? Would these columns always be supported on level rock benches and not on sloping faces or quarry backfill?	Columns will be sized accordingly and cross bracing provided if needed to prevent buckling. For the geometries proposed, the deck footings would be placed on existing benches (which may in themselves require stabilisation) or otherwise carried deeper via bored shafts if needs be.	Noted.	Closed.

J&K Ref	Page No.	Heading	Para/ dot point	Comment Made by J&K	GHD Response	JKG Replies	Status / GHD Response Where Applicable
22	71			Can durability be guaranteed with self-drilling bar? Presumably there is no protection for the scratching of galvanised coatings or for the maintenance of a minimum cover of grout etc.	Durability can be guaranteed. Often stainless steel reinforcement is specified for buried elements to address durability concerns with micro piles. Given the small quantities this does not impact the economics of this type of solution for challenging situations as present on this site. This approach has been successfully used on a number of projects including projects to support highway edges in similar geological / geometrical conditions and in coastal (aggressive environment) areas with the approval of regulatory authorities.	The report did not mention stainless steel bar but we are satisfied if stainless steel is used.	Closed
23	71			If the downhill soil and weathered rock slope regresses, as is suggested as being a significant likelihood in Page 23, would that not result in shear forces being applied to the micro piles which are probably inadequate to resist such lateral forces?	Vegetation management and erosion control measures will be specified to limit the future potential occurrence of the failure measures mentioned. Furthermore the micro-pile wall will remove all loading from the vulnerable quarry edge and transmit the loads to competent strata at depth, reducing the potential for such failures. As mentioned previously this solution has been used in very similar applications previously. Design challenges including the limited shear capacity of the individual micro piles can be addressed (e.g. use of micro pile clusters or upsizing to mini piles in particular areas). There is no reason to believe this approach cannot also be successful on this site.	Noted that further work will be required for investigation and design at a later date.	Closed
24	77			There seems to be a relatively low allowance for additional investigations. While we are not privy to all of the existing information, 2 boreholes and 1 CPT would seem to be very light to investigate something like 2-3 hectares of fill up to 55m deep. Have GHD considered whether DMT (dilatometer) testing of the fill would be preferable to CPT? Similarly shallow hand dug test pits o the northern quarry mound would seem to be inadequate unless there is extensive existing data.	As mentioned in response to earlier comments provided above; settlement monitoring has been ongoing for three months, and the materials used for infilling are expected to be granular with a relatively uniform grading and grain size. Note it was not suggested that only one CPT position would be completed (Section 8.5 of the report) but the field work would be completed in one week and involve two boreholes and CPT. GHD's expectation is that multiple CPT positions would be completed within the one week time scale for site works. DMT may also be considered at a later date, however given the very encouraging settlement performance of the placed fill material thus far, extensive specialised testing is considered less likely to be required. The suggestion of shallow hand dug pits in Section 8.2 was more related to the access difficulties in the area. Since the Geotechnical Report was issued geophysical survey (seismic refraction and GPR) has been conducted in the area combined with test pit excavations using a spider excavator. This data combined with historical records of the underlying rock bench profile will inform any refinements to slope stability models in the area in question prior to issuance of a Construction Certificate.	Noted.	Closed
25	Whole document			Within this geotechnical report, there appears to be a lot of flicking between RMS and limit equilibrium approaches, with references to the AGS risk assessment approach. However, apart from one reference to the risk likely to be above the tolerable limit, there does not appear to be an overall assessment of risk to life to users of the quarry/parkland where the risks to the persons at risk (and risks to property) are systematically combined to provide a measure of total risk. We consider that a risk analysis based approach would be essential for this type of public space. Would GHD please advise whether they do not require such an assessment would be required to comply with the general and site specific SEARs.	The RMS, limit equilibrium and AGS approaches to evaluating a complex site of this nature are not mutually exclusive approaches, they are complimentary. RMS and AGS guidelines take consideration of limit equilibrium calculation outcomes and the RMS guidance also includes elements of AGS type assessments. GHD considers it is appropriate to explore a range of different approaches for a challenging site of this nature in order to maximise the opportunity for the safe use of this unique urban space for the community in future. GHD considers that sufficient work has been undertaken using a range of industry accepted complimentary approaches to demonstrate that a suitably risk managed outcome, which combines engineering and maintenance, monitoring and exclusion protocols is achievable. The exact final details of engineering measures and risk management approaches adopted will evolve to an extent until the Construction Certificate is issued. However, GHD do not consider that process will materially influence the proposed scheme as currently presented for the reasons given above.	1. While we agree that differing risk assessments have their place in assessing landslide risk on a complex project such as this, where we do not agree is that the AGS 2007c guidelines have not been fully complied with. The risk to a park user (including maintenance workers and visitors) requires the summation of risk to a person from all of the hazards. Currently an AGS2007c assessment of risk has been provided for the northern and southern walls, though to assess the risk to the person most at risk, the components of the risk associated with the person most at risk accessing the quarry, risk from the southern access track and risk from instability of the northern spoil mound must also be added to determine the total risk which is then compared to the tolerable and acceptable risk levels.	Full assessments and details will be provided leading up to and prior to issuing a Construction Certificate. GHD has now been engaged to undertake the detailed design which includes detailed design level risk assessments where required with corresponding design responses to meet 'new build' criteria where required or a risk management approach in established areas (stabilisation measures, drainage improvements, monitoring and preventative maintenance schemes and the like). These principles will be applied to all relevant areas of the site in tandem with developing an understanding of the nature of the 'person most at risk' as the park usage aspirations are also developed.

J&K Ref	Page No.	Heading	Para/ dot point	Comment Made by J&K	GHD Response	JKG Replies	Status / GHD Response Where Applicable
						2. GHD should also provide justification for using the 'Existing Development' critera for this comparison. While this is suitable for during the construction period where it is compared with 'tolerable risk', we consider that the completed project would have to be considered to be new development as it comprises additional structures and a new land use. We also consider that the new development should meet 'acceptable' risk criteria rathern 'tolerable' risk (acceptable risk is one order of magnitude lower risk). However, we also note that the Council as the 'owner' and the Department of Planning as the 'regulator' can accept increased risk levels.	Each structure, usage and area of the site will be evaluated on a case by case basis commensurate with the level of intervention required to achieve stability outcomes in defining whether existing or new development criteria apply. GHD have commited to establish a project risk register as an integral part of the park design development ,where project risks both generic and relating to specific areas will be listed evaluated and design or control measures developed accordingly with the full engagement of regulators. Under such an approach it is not intended regulators will be asked to "accept increased risk levels" but rather appropriate risk levels will be assigned based on the relevant data and engineering requirements on a case-by-case, documented and transparent basis to provide the required confidence to regulators.
26	Whole document			There are also quite a number of typo's in the report including note numbers on tables which do not match the notes underneath etc, and it would probably be worth GHD going over the text before the report is finalised.	Noted ‘typo’s’ [Sic: typos] are normally removed as part of GHD’s internal review process but the process is not infallible.	Noted.	Closed

Biodiversity impact assessment

Page No.	Heading	Paragraph/ dot point	Comment made by Eco Logical	Eco Logical Recommendation	GHD response
i	Executive Summary	4	The report says "14.83 ha would be retained within the wider Hornsby Quarry site". The wider Hornsby Quarry site is not defined and so it is not possible to judge what this really means. Stating clearly the size of the wider Hornsby Quarry site here would allow the reader to understand what is meant.		"The wider Hornsby Quarry site" refers to the area identified on Figure 1.1 as "The site". "The site" is also defined in Section 1.4, dot point 1. The wider Hornsby Quarry site is 62 ha in size.
i	Executive Summary	6	It is stated that only small hollows are to be removed, but small is not defined and could mean very different things to different people.	Define the size of the hollow to clearly indicate why it is small.	Hollows are identified as "up to 10 cm" in size in Section 4.3.2 Fauna habitats (paragraph 3 of row 1 in Table 4.5). Given this is the executive summary, that level of detail is not considered necessary.
ii	Executive Summary	2nd dot	A recurring issue with this report is its confusing definition of vegetation condition. It is stated that 0.74 ha of poor condition vegetation is to be removed, but later notes that this vegetation has a range of conditions, not all of which is poor. So the quality of vegetation looks may be devalued over its true state.	Be consistent in the terminology of the vegetation condition. But note that there looks to be a strong case to break up the 0.74 ha into more condition classes (see later points).	Additional information can be provided in Section 3.3.3 (current survey methods) and Section 4.2.2 (vegetation) that defines vegetation condition more clearly. Notwithstanding, this level of detail is inappropriate in an Executive Summary.
ii	Executive Summary	2	This is a very vague statement and mirrors the problem noted in regards to addressing the SEARs. The statement simply says that some area of vegetation will be revegetated in some way at some point in time in the future. None of this is detailed or specific and leaves no way for Council to	Be specific in stating how large an area is to be revegetated and what level of condition it should reach and when. This is important detail as it shows just what improvement is intended compared to what is being lost.	More detail can be added at Hornsby Shire Council's (HSC) discretion in Section 6.2.2 regarding revegetation, however given this is identified as a separate project that will be the subject of a separate assessment, this is not necessarily appropriate for inclusion in any level of detail as part of this assessment.

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			demonstrate what targets are being aimed for and so if the proposed regeneration would achieve any outcomes.		Specific details of revegetation are not suitable for inclusion in an executive summary.
ii	Executive Summary	3	The word **gen** looks like it should be removed.		Minor spelling error. Does not change findings or outcome of assessment.
ii	Executive Summary		Species are to be sourced from Blue Gum High Forest. This does not guarantee local provenance, which is preferable to avoid mixing up genetics and ensures plants suited to local conditions	State that species will be sourced from Blue Gum High Forest within the local population.	Not appropriate to collect seed from the local population within the construction footprint, given it is of unknown origin.
ii	Executive Summary		The statement that rehabilitation will use salvaged fauna habitat features is again very vague and does not provide any clear guidance as to what is to happen. So there is no clear way to fail implementing rehabilitation as what is to be done is not clearly stated. If it is just logs it will not be anywhere nearly as effective as moving logs, hollows and rocks.	State exactly what features are to be moved and what the expected amount of effort is that will be completed.	This level of detail is not appropriate in an Executive Summary. Section 6.2.1/Table 6.2 outlines the need for a flora and fauna management plan as part of the CEMP, which will incorporate the recommendations provided in Table 6.2, which include salvage of habitat resources if practical.
1	1.1	1	Was the quarry ever open to the public? I don't know of many quarries that have public access.	If it wasn't then change the statement or clarify the true extent of access.	This doesn't change the outcome or findings of this assessment and is purely a description of the current state of the quarry.
6	Table 1.2	3rd cell	Should be "In determining an appropriate offset package".		Minor spelling error. Does not change findings or outcome of assessment.
10	2.1.1	1	Should Environment Planning and Assessment Regulation be in italics?	Italicise if needed.	Minor formatting issue. Does not change findings or outcome of assessment.
12	2.1.4		There is no mention of Key Fish Habitat Map. I appreciate that there is nothing obvious on site, but it should still be consulted as	Consider consulting and including a statement about the DPI Key Fish Habitat Map.	Unnecessary at this point given no key fish habitat on site. GHD assessed the current state of the site, not what was in

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			it may indicate that there was once habitat that has now been lost/degraded by the Quarry.		place prior to the site being used as a quarry in the early 1900s. Section 4.3.2, Table 4.5, Aquatic Habitat notes that "No key fish habitat is present within the site. Berowra Creek, located downstream of the site, is mapped as having a freshwater fish community in fair condition (DPI 2016)"
13	2.1.5	2	The mentioning of finding one priority weed is out of place. That is a result and should be included only later. For consistency this section should only talk about legislation needing consideration, not outcomes.	Remove this paragraph.	All other legislative context sections discuss how the legislation was considered or relevant to the proposal, so it isn't out of place to discuss how the Biosecurity Act was considered as part of the assessment.
15	3.3.1	Dot point 1	In relation to a previous ELA field survey it says, "much of which is encompassed by the project site for this project, but has been excised from within the project site boundary". This is a very confusing statement to me. What has been excised? The area that was surveyed? The data for the surveys? I think it means that the area considered in the ELA study is interconnected with this project's site boundary, but has been removed from consideration for this project – maybe because it has been dealt with by that approval? I am not sure what it is saying and why the data would still not be valid to consider and maybe it has been, or it has been excised. And based on Figure 4.1 much of represents no more than	Clarify what is meant by this statement.	The ELA site is identified on Figure 1.1 as "NorthConnex impact area". This is the "construction footprint" identified in the ELA (2015) report, which was approved for the Hornsby Quarry Road Construction Spoil Management project and as such, was not included for additional approvals as part of this assessment as impacts on this area had already been offset. As such, this area was 'excised' from the report for the vegetation loss calculations. The construction footprint considered by ELA overlaps with a lot of the current site boundary. Ecological data collected by ELA was considered in this assessment, where relevant, and where it hadn't been lost to the NorthConnex project works. The current project site (ie area of disturbance) is 18.92 ha.

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			20% and probably closer to 10%, which does not sound like "much", rather a small proportion.		The NorthConnex impact area is 11.18 ha. The area of the project site overlapped by the NorthConnex impact area is 9.84 ha, which represents 52.02%.
15	3.3.2	Dot point 1	What is meant by floristic surveys? There are a wide range of floristic survey methods and such a simple statement makes it unclear what actually was done and so the extent and effectiveness of the work undertaken; Meanders? Transects? Rapid data points? This contrasts with the next point which says biometric plots – which are very specific.	Provide specifics on what the floristic surveys actually consisted of.	'Floristic survey' was the overarching term used by ELA (2015): "Floristic surveys as part of the plot / transect survey plots (20 metre by 20 metre quadrats)". The term "floristic survey" is also used in the ELA (2015) summary or survey effort. To be clear that the current assessment relied upon the past work of ELA, AECOM and Kleinfelder, their respective terms were used to describe survey effort to date.
16	3.3.2	1	What is the wider Hornsby Quarry site? This is not defined by the report and could mean anything. It is important to know just what areas were covered and what were not and how relevant the surveys would be for this study. Is this within 50 m or 500 m or 5000 m? Is the wider Hornsby Quarry site actually defined by anyone anywhere? I presume it means all areas of the Quarry that are being subject to assessment and redevelopment, but I cannot tell from this report.	Define and clearly map the meaning of the term "wider Hornsby Quarry site".	The "wider Hornsby Quarry site" refers to the area identified on Figure 1.1 as "The site". "The site" is also defined in Section 1.4, dot point 1. The wider Hornsby Quarry site is 62 ha in size.
16	3.3.3 Site stratification	1	It is stated that native vegetation was divided into vegetation zones which represented a distinct PCT and broad condition state. A PCT	Define what is meant by a broad condition state. Justify the reason for choosing to use a broad condition state in	Vegetation types were split into 'Moderate/good' and 'Low' broad condition states according to the criteria

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			is a very defined unit, but why then use a broad condition state and what is a broad condition state exactly? There are specific condition classes and why not separate them out into those classes? I say this because later there clearly is a combining of several condition classes into one, with no justification for doing so and it has some potential problems. the BAM provides 'Broad condition state: areas of the same PCT that are in relatively homogenous condition'. Broad condition is used for stratifying areas of the same PCT into a vegetation zone for the purpose of determining the vegetation integrity score. Given the very mixed nature of vegetation was this appropriate to do? Might be, but there is no real detail or discussion provided on this point. This is done under BBAM of course, but condition is still a consideration under BBAM that needs to be clearly defined and justified so that following assessments can be confidently carried out.	the manner that it has been. Show that using a broad condition states has not resulted in areas of vegetation being clumped that could reasonably be split using a different approach and, if this could be the case, why the approach used here is suitable.	specified in the BBAM, with Moderate/good vegetation featuring native over storey cover and/or predominantly native groundcover (OEH 2014). Moderate/good condition vegetation zones that included notable variation in vegetation structure or other indicators of condition were further split into the following groups as appropriate, based on the condition of vegetation on site. • Moderate/good – high • Moderate/good – poor Condition states are largely arbitrary and simply serve to split up the same PCT into different condition states. As a general rule, they only need to be relative to condition states within a particular site. Vegetation that was primarily composed of remnant stands of vegetation with natural regeneration on relatively intact landforms was mapped as 'Moderate/good – high', while vegetation that was primarily composed of revegetation (identified by trees of the same age class planted in rows) with occasional regeneration, was mapped as 'Moderate/good – poor'. The division was considered appropriate given the uncertainty over the provenance of the revegetation, and the presence of weed infestations and below-benchmark conditions across all condition markers in this vegetation type.

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16	Plot/transect surveys	2	The number if plots chosen was based on the initial site stratification. I presume that this was designed to meet survey effort provided in the BBAM, but was that the case?	State if the chosen number and placement of plots was designed to meet minimum survey effort set out in the BBAM.	The first sentence states “Plot and transect surveys were conducted in the project site in accordance with the BBAM”. This reaffirms that the survey effort was designed to meet the requirements of the BBAM.
16	Targeted threatened flora surveys	1	Who were the GHD ecologists who used their experience and judgement to decide on habitat for threatened flora? Were they the same people who attended the site? What were their relative skills and experience with the flora under consideration? It would be valuable to demonstrate that they did have those skills to ensure that all potential plants were appropriately considered. Many surveys are done by the most junior staff possible to keep costs down. Those people generally do not have much experience and knowledge and can represent a risk in undertaking assessments. I don’t know if this is the case in this study, but the easy way to show the risk does not exist is to detail the skills of the team members making the decisions and surveys.	State who the GHD ecologists were, note which aspects of work they completed and their relevant skills/experience for that, whether they were BBAM accredited and/or where all of this information can be found. This is a relevant point for all surveys as no details are provided on who did the surveys and what their level of skill was. Detailing this would confirm the staff used were suitably qualified and experienced for the required works.	Field staff were as follows: Two senior GHD ecologists (one fauna specialist, Dr Kirsten Crosby; one botanist, Kath Chesnut) and one graduate botanist; Bridie Halse). Both senior ecologists are BBAM accredited. At the time of the field surveys, the senior botanist had nine years’ experience as a consultant botanist, primarily in the Sydney Basin bioregion, as well as three years as a bushland regenerator throughout Sydney. The two senior ecologists were responsible for completing all reporting and BBAM credit calculations. The graduate ecologist was on site to provide assistance to the two seniors, and then completed data entry and formatting assistance with reporting. Credit calculations were reviewed by the GHD team leader of biodiversity offsets (an accredited BBAM assessor), and the biodiversity report was reviewed by the GHD team leader of biodiversity in NSW and ACT. GHD considers that the above staff have suitable experience to complete the assessment.
18	Anabat surveys	1	It is not stated who completed the anabat analysis and what skills they have in bat call identification. This takes some skill to avoid incorrect identifications or having	State who completed the analysis and their skills and experience in doing so, or where those skills can be found.	The Anabat analysis was completed by Craig Grabham, a senior GHD ecologist who specialises in bat survey and assessment, with over 20 years’ experience in ecological survey and

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			to produce a larger proportion of uncertain identifications. The person also has to have a good call library and understanding of that library to be accurate. The actual anabat effort, one evening, is really well below what is normally completed and would not be enough to make any decisions on. I presume that this is because other bat detector work has been completed, but this is not clear.	State how much ultrasonic bat detection effort is available overall for this project to make its assessments on.	assessment. Craig has completed the following training courses: • Anabat system training course (Titley Scientific, December 2012) • Wildlife Accoustic's Song Meter/SongScope training (Faunatech, July 2015) Craig has completed echolocation (ultrasonic) analysis and reporting for over 150 GHD projects from WA, NSW, NT, QLD and Vic. Section 3.3.2 of the report notes the survey effort completed by ELA and Kleinfelder. This survey effort and information was built on by the GHD surveys. ELA (2015) completed 2 nights of overnight anabat surveys in December (December 15 and 17, 2014): "two Anabat detectors were placed in four separate locations (Figure 3) over two separate nights on the 15 and 17 December 2014. Each Anabat device was programmed to begin recording prior to dusk at 1800hr and turn off the following morning at 0600hr." Kleinfelder (2017) did not complete any anabat surveys. ELA (2015) stated that "The survey revealed that there were no Large-eared Pied Bats present" and that *Chalinolobus*

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					dwyeri (Large-eared Pied Bat) "was not detected and there is unlikely to be breeding habitat present. Therefore this species is excluded from further assessment and an offset is not required". Further, the ELA (2015) report only considered *Chalinolobus dwyeri* (Large-eared Pied Bat) and *Pteropus poliocephalus* (Grey-headed Flying-Fox) as having a 'potential' and 'likely' respectively likelihood of occurrence in the study area. In acknowledgement of the amount of anabat survey completed, GHD took a conservative approach and considered the following microbat species to have the potential to occur on site, given the presence of suitable habitat, possible anabat call ID and/or previous records in the locality: • Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*) • Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) • Eastern Freetail Bat (*Mormopterus norfolkensis*) • Greater Broad-nosed Bat (*Scoteanax rueppellii*) • Little Bentwing Bat (*Miniopterus australis*) • Yellow-bellied Sheathtailed Bat (*Saccolaimus flaviventris*) The biodiversity assessment was completed on these assumptions.

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					Given OEH's agency requirements recommended that the Biobanking Assessment Methodology (BBAM) (OEH 2014) be used to determine the quantum of offsets required to compensate for residual impacts on biodiversity, this approach is considered acceptable.
18	Spotlighting and call playback	1	One large hollow-bearing stag was viewed. What is large? The size helps to determine what species might or might not use the stag and stating what size classes are being used in this report will clarify this.	Include the size of the stag that was surveyed and confirm that it was the only one in the large size class suitable for owls and larger mammals.	The large stag surveyed was outside of the site (but within the wider study area). This tree had one spout of about 20cm diameter. No evidence of usage by owls (eg whitewash, pellets, feathers, etc) was observed under this tree. The five hollows present within the site are all less than 10cm in size.
18	General		There is no summary of survey effort on which all of this assessment is based. Three different surveys are noted, but only effort for the GHD survey is provided. One night of call playback and one night of Anabat work is well below standard, presumably this is because it is being combined with the other works, but these are not detailed. They should be as the level of work completed determines the confidence in the results. There is no means at this time of determining if the work relied on meets minimum survey standards.	A table should be included that provides details of all of the surveys being used to complete the current assessments and details total survey effort for each technique.	Section 3.5 states that "Surveys carried out by GHD built on previous work conducted in the Hornsby Quarry site by Ecological (2015) and Kleinfelder (2017)." Throughout this assessment, GHD has taken the conservative approach and has not discounted species from occurring due to not finding them on site as a result of insufficient survey effort. Rather, if suitable habitat is present, and there are local records, the species have been considered as potential candidate species and assessed as such.
18	Aquatic habitat assessment		It is stated that habitat descriptions were documented	Either more clearly state what the method was that was	The rest of the paragraph continues on to say:

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			with reference to AUSRIVAS and Turack et al. But what does that mean? The approach may be reasonable, but there is not the information to know if the work provided a suitable approach to undertaking an aquatic habitat assessment.	used or refer to where the methods can be read and assessed.	'and included assessment of different instream habitat types, and the structure and condition of riparian vegetation. The information recorded was used to describe the nature of aquatic habitats present within the study area, and identify any areas of potential habitat for threatened aquatic fauna species or key fish habitat. Descriptions of aquatic habitat were based on visual estimates of characteristics such as streambed composition (percentage of total composition for each substrate category), aquatic and riparian vegetation cover, amount of in stream organic material, and area of aquatic habitat and canopy cover. Estimates of channel morphology characteristics were made including width (wetted width in metres), bank full width (mean width between top of banks), and estimated depth.' These are the habitat characteristics identified in Turack, E., Waddell, N., and Johnstone, G. (2004). *New South Wales (NSW) Australian River Assessment*

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					System (AUSRIVAS) Sampling and Processing Manual 2004 for the visual assessment of aquatic habitat.
21	Sydney Basin Diatremes	1	The information provided suggests that the local diatreme environment is relatively unique – "they always contain locally different landform, soil and vegetation". Based on this, any part of the diatreme that is affected is affecting an area that is actually not to be found anywhere else outside of the local diatreme. This indicates that the local diatreme has much greater importance that would be normally the case when assessing impacts to vegetation and the environment. It is not clear that this has been taken into any further consideration later in the document.	Detail how different and unique the local diatreme is compared to other diatremes in the Sydney Basin to demonstrate if it is or is not so unique that it should be considered as the only representative of its type or can be reasonably combined with other diatreme areas. Smith and Smith (2008) pages 18 and 49 could be relevant here.	Smith and Smith note that a total of 14 ha of Blue Gum Diatreme Forest occurred within the Hornsby LGA in 2007. The proposal will impact about 0.74 ha of this, or about 5% of the remaining amount. Notwithstanding, the assessment conforms to the legislative impact assessment requirements.
22	4.2.2	2	It is stated that vegetation was split into broad condition states yielding the vegetation zones as shown in Figure 4.1. Table 4.2 indicates that the broad condition states are moderate/good-high and moderate/good-poor. Why broad condition states? Why not finer states? Using broad states leaves the potential that important vegetation distinctions are not being made. It looks to be most important here in that all of the Blue Gum High Forest has been rated as poor. Would a less broad	Explain the reasoning for using broad condition states. It may be the word broad is misleading, but this needs to be clear.	Broad condition states is the standard term used to describe vegetation condition for BBAM assessments that has been routinely accepted by OEH – so much so, that under the new scheme, it is the terminology used and defined by OEH when splitting PCTs up into conditions. Within the subject site, all of the BGHF <u>is</u> in poor condition. Changing the word "broad" will not change that.

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			category result in some of the forest being not classified as poor? Would that then have an impact on impact assessment and offset requirements?		
29	Conservation significance	1	This paragraph (continuing on from the previous page) is vague. There is an assumption made that the lack of natural and intact profile across much of the site means that the vegetation is unlikely to be from remnant or indigenous specimens. What is much of the site? This is not quantified. No specific evidence is provided that shows that the it could not all be regeneration from remnant vegetation. If it is actually regeneration rather revegetation, then the resilience is much higher and the quality of vegetation would likely rate higher. Can regular disturbance or regenerating vegetation result in the same structure as revegetation works? Interestingly, below in condition it states specifically that it was unclear if regeneration of canopy species was a result of natural regeneration, regeneration of planted specimens or recent revegetation works. This is contradictory to the above assertions and does not take a precautionary approach.	Provide clear evidence that this community cannot regenerate from soils disturbed at the level in the quarry. Provide argument that the structure of the vegetation would lead to a logical conclusion that it was planted rather than regenerating.	Vegetation within the study area comprises a mixture of natural regeneration (outside of the subject site), revegetation, regeneration from planted specimens, and rehabilitation. The provenance of revegetation is unclear, and species used for revegetation are only broadly characteristic of those that would naturally occur (eg are sometimes comprised of monoculture stands of River Oak (*Casuarina cunninghamiana* subsp. *cunninghamiana*), which is not a diagnostic or characteristic species of the BGHF community). The topographic location of some patches of vegetation means revegetation is the only likely and sometimes feasible source of vegetative cover, as are the benched landforms and unnatural topography resulting from quarrying activities. In some instances, it was unclear if regeneration of canopy species was a result of natural regeneration, regeneration of planted specimens of recent revegetation works, given the lower topographic location (ie below stands of intact vegetation outside the site that could be contributing to seed banks, supplementing the vegetation that has been planted on site.

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29	Condition	1	It is stated that planted vegetation includes species that are broadly characteristic of the community. How then was it determined it was planted vegetation? Seems to be unclear what class the vegetation falls into.	Clarify how this vegetation was known to be planted vegetation or assume it was not and alter the assessment accordingly.	In this instance, broadly is used to describe a vegetation type that is only broadly characteristic of the vegetation type; ie, some species on site do not naturally occur in the vegetation community, or key diagnostic or characteristic species are missing within the subject site, despite their presence outside of the subject site and study area. It was determined that some patches were planted because they were clearly planted in rows, were of an even age class, lacked natural diversity, and were located on benched landforms that were not naturally formed, and/or which were comprised predominantly of ballast. Historical photos provided by HSC of the quarry site clearly demonstrate the areas of land that were cleared of vegetation and which were the subject of significant landform modifications from the 1960s onwards.
30	Overstorey	1	This cell seems to be clear in stating that the trees must be planted because they occur in rows. This would be a fair conclusion to reach, but would there not be records to show this? Which is to say the status of the vegetation in the quarry would be much easier to determine if records of vegetation management were available. Is there not any? And what proportions and areas of each of the monocultures, planted rows and mixed species patches?	Include any records of vegetation plantings and management as references in the report. Justify how the single species areas can be combined as the same condition class as the multi-species areas. Take a precautionary approach and assume the most significant levels of impact unless it is clearly able to be demonstrated otherwise.	As is standard and required in the BBAM methodology, vegetation zones that have an area of less than 0.25 ha must be combined with the nearest possible match in order to complete credit calculations and perform the assessment. Sydney Blue Gum - Blackbutt - Smooth-barked Apple moist shrubby open forest (HN596, Moderate/good - poor) was considered to be the best fit for the vegetation included within this vegetation type, hence the range of different types of vegetation that occur within this vegetation zone.

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			Goes back to the comment regarding the broad classification of this community. This seems quite a range of vegetation conditions and styles seemingly lumped together, so how do you justify combining them all into one class? The cell below notes that those mixed overstorey areas also tend to have a more diverse mid-storey – so can it really be the same condition?		
35	Table 4.5	Description	It says that the location of hollows is presented in Figure 4.1. This does not appear to be the case. Looks to be Figure 4.2. How many larger hollows and of what size were located in the surrounding Hornsby Quarry Site? Knowing this would help to understand how likely it is that species that use such hollows may be found using the Quarry site. It would be a much different result if there were 3 tree with five hollows > 30 cm compared with 30 trees with 70 hollows of > 30 cm. Much, much more likely that large hollow using species would be in the area in the latter case. Why are small hollows present not also potentially used by bats?	Include the locations in Figure 4.1 or provide the correct figure. Detail the number of larger hollows present within the surrounding area. Can do this as numbers of hollows in small, medium and large size classes. Include an explanation as to why bats would not use the smaller hollows.	Typo. As per comment, should be Figure 4.2. Figure 4.2 provides the locations of hollows within the study area. The assessment does not rule out species that use hollows of different sizes (eg Powerful Owl and microbats) from using the wider Hornsby Quarry area, but it does rule out species that require large hollows from roosting/nesting within the subject site given the lack of large hollows within that area. The report states that “Hollow-dependent fauna recorded at the site that could use hollows present included various microchiropteran bats” (Section 4.3.2, Table 4.5, page 36, row 2, paragraph 3).
38	Table 4.5	Aquatic habitat	If there is water that an Emerald Spotted Tree Frog can call from, then why can there not be Green	Explain why the Green and Golden Bell Frog could not be present.	One small concrete pond of about 2 m x 2 m was present and contained emergent vegetation. No Green and Golden Bell

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			and Golden Bell Frogs in the Hornsby Quarry Site? There may be good reasons, but this species appears to have been over-looked and the habitat certainly is potentially suitable given that this species is very well known for living in highly disturbed environments. Whilst it is likely that the presence of surrounding development is reducing water quality in the creeks and gully lines, this is not really an assumption that can be made when considering impacts to threatened species. If there is no evidence to show the water quality is reduced then it should be assumed to be still acceptable.	Provide clear evidence that water quality is reduced to unsuitable levels or assume it is suitable for frogs to breed in. Then reassess the potential impacts.	Frogs were heard or observed. No other potentially suitable habitat is present at the site, or in downstream sections of Old Mans Creek near the site. There are no records of the species in the Berowra Creek catchment area in the last 20 years. ELA (2015) considered that this species was unlikely to occur in the site, given there was no suitable habitat on site. GHD concurs with this assessment, especially given the quarry void itself was not within our area of consideration.
43	Table 4.7	Powerful Owl	It says that the hollow-bearing trees present tend to have small hollows. What does that mean? How many hollows actually are not small? Previous statements suggested that there were no large hollows present in the immediate area.	Clarify what is meant by tend.	Reflects the young age classes of the trees in the subject site, that have not had time to develop large hollows. All hollows within the subject site are less than 10cm in size.
48	5.1.1	1	It is stated that around 15 ha of Blue Gum High Forest will be retained. 0.74 ha will be lost. That is 5%. Justify why 5% of the loss of this vegetation type, which is a Critically Endangered Ecological Community, is suitably described as only a minor reduction. If I cut out 5% of a budget or pay-check I doubt that people would see that	Justify why the loss of 5% of the CEEC can be viewed as only a minor reduction.	Removal of 5% of the vegetation classified as BGHF from within the Hornsby Quarry site is necessary in order to rehabilitate the quarry by creating a landform suitable for a public reserve and recreation facility. It is a loss of a CEEC, however in the long term it is expected that this will have a positive outcome for the community as Council will be better able to manage the remainder of this

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			as a minor reduction. Remember that this is on a diatreme and is probably unique compared to other areas of Blue Gum High Forest for that reason. This could look rather dismissive of the impact to a highly threatened community. Only 19 more minor reductions and there will be none left! Not very minor then is it.		vegetation on site, and are likely to increase the overall amount of this vegetation through revegetation in the future. The impact is considered minor in that there will be no removal of remnant vegetation, rather removal of revegetation, regeneration from planted specimens, and rehabilitation areas. Future rehabilitation will aim to improve the condition of the vegetation for the long term, through the use of near natural soil profiles, use of locally sourced plant stock and weed management.
48	5.1.1	2	It says “a number of priority or environmental weeds” have been recorded. What is that number? This can be specific and so clearer. It is also stated that “a small number of individuals of non-threatened plants and noxious and environmental weeds” will be removed. What is a small number? I expect that it may be very hard to quantify, in which case stating the number is small has little meaning. Why not just use the area of land to be cleared, unless the actual number of plants can be quantified? Noxious has been replaced in the Biosecurity Act by State priority, regional priority and other regional priority weeds as indicated in the Greater Sydney Regional Strategic Weed Management Plan 2017-2022.	Provide the exact number of weeds recorded. Note the area of land to be cleared rather than an indeterminate small number. Use the suggested weed categories if they are relevant.	Three priority weeds were recorded, as outlined in Table 4.4 in Section 4.2.3. With regards to the statement “a small number of individuals of non-threatened plants and noxious and environmental weeds” [will be removed], the statement is perhaps poorly worded, likely reflecting editorial changes in track changes not properly accepted during the review process and would better read “Vegetation clearing would remove a small area of native vegetation, that supports priority and environmental weeds.” The sentiment of the statement is correct.

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			There are also Weeds of National Significance at Commonwealth level. Would it not be better to classify the present weeds according to these criteria?		
48	Impacts on Blue Gum HF	1	It is stated that much of the vegetation has been planted as part of previous rehabilitation activities. What is much? More importantly, this does not fit with other sections of the report that suggest it is not clear what areas have been planted and what may be regeneration. There is a lack of consistency in the reporting in this regard and, as mentioned, this is an important point to understanding the relative quality and importance of the Blue Gum HF to be cleared. If it is regenerating naturally it is likely to be much more resilient and significant as a community than if it is planted. This needs to be clarified and the decision on what is planted and what is regenerating consistent and justified.	Quantify what percentage/area is considered or known to be planted. Be consistent through the document as to what is determined to be regenerating vegetation and what is planted vegetation and have an initial clear justification for these categorisations. If there is uncertainty, be cautious and assume it is natural regeneration.	It is likely that some of the confusion experienced by the reader has resulted from a reduction in subject site size following completion of the first draft of the report. The previous subject site was larger and encompassed areas of the site where the source of vegetation was less clear. Within the current subject site, it is more obvious that vegetation is planted, for reasons already discussed. While there is some regeneration of vegetation mapped as BGHF, the BGHF that is regenerating is planted, rather than remnant or natural regrowth, and as such, is not considered to be resilient or significant.
48	Removal of habitat resources	1	How extensive are the “extensive areas of similar habitat in surrounding protected areas”? It is much clearer what extensive means when the numbers are actually provided and a much better argument that it is extensive. The same for the following paragraph where it	Provide the actual area. Page 47 states that there is over 19,000 ha in Berowra Valley National Park and so this is a good option.	Given the report states that 19,000 ha of vegetation is protected in the nearby Berowra Valley NP on the previous page, as noted by the reviewer, it is clear that there are extensive areas of similar habitat in surrounding protected areas.

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			says, “Large areas of better quality habitat”.		
49	Removal of habitat resources	1	It is stated that rehabilitation would replace **many** of these resources. This is a very vague and unquantified statement. Especially so given that the details on the actual site rehabilitation are extremely vague as to what is going to happen (see later issue).	State the area of rehabilitation that will occur and contrast it with the size of the area that is being removed. Note what habitat features are to be included as part of the rehabilitation to clarify which features are the ones being replaced.	No detailed information was available on the proposed rehabilitation at the time of writing. This will be determined at some point in the future when plans for the site are finalised and approved.
49	Fauna injury and mortality resources	1	Displaced fauna will also suffer stress from a loss of known and familiar feeding and shelter habitat and will likely need to invade the territories of other individuals, leading to conflict and other displacements.		As noted in section 5.1.1, displaced individuals may suffer stress, increased energy costs or increased risk of predation.
50	Weed invasion and edge effects	3	How much would revegetation reduce edge effects? Giving a number assists the reader to understand how effective the revegetation can be expected to be. There will still be edges even if the vegetation grows up. Presumably this means the extent of edges will be reduced as gaps and fragmentation is filled in.	Provide an estimate of how much the edge effect will be reduced in the long-term.	No detailed information was available on the proposed rehabilitation at the time of writing. This will be determined at some point in the future when plans for the site are finalised and approved.
51	Pathogens	1	There is no indication that the surveyors actually looked for pathogens or would know what the effects would look like. Therefore, the line stating that no evidence was seen could be misleading as it suggests that	Clarify the effort made to look for signs of pathogens, if this was undertaken in any systematic way. Or remove the suggestion that signs of pathogens were looked for.	Both senior ecologists are familiar with the signs of dieback associated with phytophthora and myrtle rust. The senior botanist spent several years working in areas infected with phytophthora in lands owned/managed by the Sydney Harbour Federation Trust and in Sydney Harbour

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			they did look. If they did look, then there should be a description of that activity to indicate what sort of pathogen search was conducted and by whom. If there are other processes in place that provided that information then it has not been included and should be.		National Park around Bradleys Head and Middle Head where there is extensive dieback associated with this pathogen, and became familiar with the signs of this pathogen. There was no dieback likely to be associated with phytophthora evident at this site. The senior botanist completed an honours thesis on the impacts of psyllid attack on eucalypts and is very familiar with the signs of bell minor associated dieback (BMAD) and psyllid attack. While not a pathogen, this would also be discussed in terms of dieback if present, in the vegetation condition descriptions. Myrtle rust is generally easily identifiable, and both senior ecologists are familiar with the signs of infection, having worked extensively along the east coast of NSW since it was first detected in 2010. It is standard practice to note the presence of dieback (if present) when discussing the condition of vegetation. Survey effort associated with this is always opportunistic while traversing the site, unless otherwise required by the scope of the project.
51	Dust generation	1	Same comment as above. There is no indication that dust was specifically looked for and recorded so the comment that it was not evident may be misleading.		There was no evidence of dust on the leaves or foliage of plants within the subject site. Should it have been obvious or present, it would be discussed in the existing environment section of the report (Section 4). Both senior ecologists have worked in environments were dust is evident, such as areas adjacent to quarries and landfills in the past.

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52	Noise	1	How unlikely is unlikely? This seems to be a bit of a throwaway line. Have there been no noise studies to determine if noise will remain the same or increase over that produced by the NorthConnex work? If not, then such a statement is speculation and should not be made. On that point, how are they reshaping the quarry in future to allow development into whatever the design is that is decided on? If blasting or excavating walls, this could easily be louder than truck movements.	Provide justification that noise levels will not increase or be different.	The noise generated by works associated with the infilling of the Hornsby Quarry void by NorthConnex spoil was significant and fairly constant during the day. Noise impacts are discussed in the noise section of the EIS. There was no information available on likely methods for reshaping at the time of writing. This information would be available once the plans for the site are finalised.
52	5.2	1	This is not a detailed assessment of cumulative impacts. Statements that “recent projects include” and “other developments” are very non-specific in nature. It provides no indication of exactly how much impact other actions are having or have had or may have in the future. Are other projects likely to remove more Blue Gum High Forest? This section provides no indication one way or another. Has much been removed by the Thornleigh Third Track and NorthConnex? What happens if both of those removed 10 ha each of Blue Gum High Forest and this now means that the extent has dropped recently by >50%. That would put a different	A much more detailed review that lists all of the relevant projects that have or are impacting similar vegetation types within the wider Hornsby Quarry site (whatever that is). Then compare the expected increases as a result of revegetation resulting from this project with that removed by the others.	There is no legislative requirement under BBAM to provide a detailed assessment and review of cumulative impacts associated with a proposal. The report identifies that major projects such as Thornleigh Third Track and NorthConnex would have had an impact on vegetation and habitats in the locality. The Thornleigh Third Track project identifies the cumulative impact of projects in the locality on BGHF as being 3.3 ha, or 0.5% of the total vegetation within the region (assumed to be 616.33ha). It is not reasonable to expect the proponents of one project to know the possible impacts of all other projects in the area, when those details are not necessarily publicly available or finalised.

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			light on the remaining vegetation. This review lacks any detail and complete listings of cumulative impacts. It currently does not provide an understanding of what has been happening and will happen.		
53	Table 5.2		The table almost universally provides means to mitigate key threatening processes that are only recommendations or considerations. Which means that they are not necessarily being put in place. If they are not used then the impact assessments could change greatly. There needs to be a statement up front that the impacts of Key Threatening Processes need to be managed and assessments of their level of threat are based on the assumption that the recommended mitigation is to be used.	Include a statement that the current decisions on impact assessments are dependent on mitigation proceeding as suggested and would need reconsideration if the measures as not implemented, if that would be the case.	Wording provided in this section is standard to all GHD impact assessments reports which are routinely accepted by OEH and DPE and is considered sufficient.
54	5.4.1	1	Again, there is no evidence or extent provided for planted vs regenerating vegetation. This needs to be determined or all should be assumed to be regenerating and have greater resilience.	Confirm and justify the quantity of planted vegetation or assume all is regenerating vegetation.	As above.
54	5.4.1	2	As noted before, it is a matter of opinion whether 0.74 ha is a minor loss for this CEEC given this is still 5% of that remaining. Cumulative impacts have not	Justify why clearing 5% of an already over-cleared vegetation type is a minor loss.	Assessments of significance are always subjective. It is the view of the GHD assessors and internal reviewers that loss of 5% of poor condition revegetation commensurate with BGHF is a minor

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			been clearly defined and the actual condition class of this CEEC remains potentially uncertain as it has been broadly grouped and there is no clear understanding of how much is regeneration and how much is planting. This needs to be resolved in order to properly assess the impacts. I would be very reluctant to state that 15 ha of not all directly connected Blue Gum High Forest is extensive. It is already at <5% of what once existed.		loss, especially given the context of this project where the vegetation is planted and further rehabilitation and planting is proposed to increase the extent and condition of the community. Impacts are thus temporary.
55	5.4.2	Dot point 3	Blue Gum High Forest is to be improved. How large an area is to be revegetated? What level of improvement is being aimed for? 100% of benchmark?	Define the extent of improvement	No detailed information was available on the proposed rehabilitation at the time of writing. This will be determined at some point in the future when plans for the site are finalised and approved.
55	5.4.4	1	Statements of small hollows, large areas of good quality habitat and large areas of forest are very non-specific.	Provide an actual number for quantities.	Small hollows defined as less than 10cm in Section 4.3.2. Large areas of habitat are noted to be adjacent to the site, which can be assumed to be Berowra Valley NP, which is noted to be linked to the western portion of the site in Section 4.1.1. Repetition of this information is not necessary.
55	5.4.4	3	The Powerful Owl is stated to be more likely to roost away from the site, even though it has been found roosting at the site. This statement appears to be contradictory and needs clarification.	Explain clearly where the owls would be expected to roost and why.	The Powerful Owl was identified within the wider Hornsby Quarry study area by Kleinfelder, in an area with large mature trees and adequate hollows, and feathers were also identified by GHD. The report states that: “These owl species is likely to forage at the site on a regular basis. A

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					small area of roosting habitat is present, however the species is more likely to roost away from disturbed edges." Given the lack of mature trees with adequate hollows within the subject site, this assessment is considered appropriate.
56	5.4.4	1	The Varied Sitella has been recorded on the site, yet is considered likely to only be a transient because the vegetation is disturbed. This looks to really be speculation and it would seem more reasonable to precautionarily assume it is present. My understanding is that Paul Burcher has been undertaking a monitoring study of the Varied Sitella along the Mountain Bike Track. That would seem to suggest a local and not so transient population?	Assume the Sitella is not a transient in the area unless this can be clearly demonstrated to be otherwise.	The assessment of significance prepared for this species states that the species has been recorded roosting on site and that it would forage in forest patches in the study area. Similarly, S.5.4.4 notes that the proposal would remove about 2.5 ha of habitat for this species. The reference to transience of this species relates to it being unlikely that the species would rely or regularly utilise the low and poor condition vegetation comprised of disturbed edges within the subject site, and that instead, it would use the better quality, intact, well-connected patches of vegetation elsewhere within the wider Hornsby Quarry site, as well as the 19,000 ha of Berowra Valley NP adjacent to the site, where suitable habitat for prey species is present. GHD does not dispute that the species could be resident within the Hornsby Quarry site, but given the poor quality habitat within the subject site, it is considered unlikely that the species would choose to use that vegetation when better quality habitat is available elsewhere. Vegetation around the mountain bike trails is mature, diverse, connected, well established, and supports a suite of

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					habitat features across all stratum, unlike that within the subject site.
56	5.4.4	2	What are large areas of potential roosting and breeding habitat. May as well quantify to demonstrate clearly what is meant. Assessments were completed for the group of species, not just one species.	Quantify what is large. Change text to group of hollow nesting species.	Large areas of habitat are noted to be adjacent to the site, which can be assumed to be Berowra Valley NP, which is noted to be linked to the western portion of the site in Section 4.1.1. Repetition of this information is not necessary.
57	Table 5.3		Most species have a loss of potential roosting habitat as well as foraging habitat. If the Powerful Owl can roost on the site, so can the others. I would think that the Quarry Habitat is likely to be used by the Grey-headed Flying-fox rather than being potential. Is there any reason they would not forage there? Nothing that comes to mind.	Change to include loss of potential roosting habitat. Justify why the GHFF would not forage in the Quarry vegetation.	Re: Powerful Owl – error resulting from numerous iterations of the report. Previously the site included areas of potential roosting habitat with larger hollows. Site is now smaller in area, and no large hollows suitable for use for roosting by this species are present. Table should read “loss of known foraging habitat”. Re: GHFF – assessment considers that this species is likely to occur (see appendix A) and the proposal would result in the loss of a small area of potential foraging habitat. Species has not been recorded within the subject site previously.
62	Table 6.2		As for Table 5.2, the mitigation is all about should. But what happens if the decision is made to not do these things? Once the approval is provided then what happens if they are not implemented? Probably nothing. I would consider it important to state up front what is essential to	Note that the impact assessments are based on the proposed mitigation being implemented. These would need to be re-evaluated if the mitigation is not carried out.	Standard wording for a mitigation section in an EIS that is widely accepted by OEH and DPE. Mitigation measures are typically used by DPE to write conditions of consent, which provide impetus for implementation for the proponent.

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			carry out and what is not. In this case, what is essential is what mitigation is necessary to ensure that impacts are not significant. If not carried out, the assessments of impacts would change.		
65	6.2.2	1	As noted in the assessment of adequacy of addressing the SEARs, this section is far from detailed when it comes to actions to be taken for mitigation. There is no quantification of the actions to be taken so it could be as little as planting one plant, re-using one log and half a day of managing weeds. There is no detail as to what is proposed, needed and expected to be done so that the value of the mitigation can be understood. I understand that this is to be a separate project, but this assessment cannot be completed without knowing what is actually going to happen with mitigation.	Complete a detailed plan of management for the future Hornsby Park and carry over those determined mitigations into this assessment report. Alternatively make minimum recommendations on what needs to go into the plan of management and ensure that those are met.	The mitigation measures include the requirement for preparation of a Flora and Fauna Management Plan as part of the CEMP. It is outside the scope of this project to complete a detailed PoM for the future Hornsby Park.
66	6.4	1	The lake is suddenly mentioned, essentially the first time in the document. Does it not represent habitat for migratory birds and frogs? Does it's presence indicate potential impacts that need consideration for this reason? Given its last minute mention there has been no real consideration provided on the impacts of its presence before this time.	Note the presence of the lake as aquatic habitat in the initial descriptions of available habitats.	The quarry void is excluded from this impact assessment and as such, details on potential habitat resources associated with it have not been included in this assessment. Impacts to the quarry void were considered by ELA (2015) in relation to the Road Construction Spoil Management project EIS. The final landform will include a lake in the remnant of the quarry void, which is the lake referenced in this section of the report. This lake is not currently in

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					existence, which is why it is mentioned first in this section.
67	7	7	Future revegetation would indeed improve biodiversity values in the long-term, but there is no means to tell what level of improvement, if any will occur because the extent of revegetation is unknown.		No detailed or specific information was available on the proposed rehabilitation at the time of writing. This will be determined at some point in the future when plans for the site are finalised and approved.
68	8		Note that the references have various style and formatting errors. Just for the information of the authors	Choose and stick to one reference style.	Noted. Minor editorial errors.
Appendix A	*Acacia bynoeana*		The species is able to tolerate disturbance and lives on sandy soils, but it is considered unlikely to occur. There is no clear reasoning why this decision is then reached	Clarify why the habitat on site is not suitable.	ELA (2015) excluded this species due to a lack of ironstone gravel within the study area. GHD excluded the species from occurring given its preference for heath or dry sclerophyll forest on dry sandy soils, which does not describe the vegetation types present on site, which are wet sclerophyll forests. Only a portion of the substrate and geology of the Hornsby soil type would yield sandy soils, and the rest would likely be loams or finer. Notwithstanding, the impacts of quarrying activities means soil profiles within the subject site are highly modified and unnatural and lack an intact soil profile or soil seed bank. While sandstone remaining around the edges of the quarry may yield sandy soils, three surveys in the area (Kleinfelder, ELA and GHD) all failed to find this species. This was summarised as “No suitable habitat present on site”.

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Appendix A	Various		Ecological (2015)	Should be Eco Logical (2015).	Noted. Minor editorial error.
Appendix A	*Grevillia parviflora*	Both subspecies	Both are noted that they are able to tolerate disturbance and lives on sandy soils, but it is considered unlikely to occur. There is no clear reasoning why this decision is then reached.	Clarify why the habitat on site is not suitable.	The impacts of quarrying activities means soil profiles within the subject site are highly modified and unnatural and lack an intact soil profile or soil seed bank. While sandstone remaining around the edges of the quarry may yield sandy soils, three surveys in the area (Kleinfelder, ELA and GHD) all failed to find these species. This was summarised as “No suitable habitat present on site”.
Appendix A	*Callocephalon fimbriatum*		Minimal breeding habitat present on site is not an informative statement. There is obviously some. How many suitable hollows are there?	State the number of suitable hollows that are present.	No hollows suitable for breeding are present within subject site.
Appendix A	*Tyto novaehollandiae*		Few suitable large hollows present is not an informative statement. There is obviously some. How many suitable hollows are there and how large is large?	State the number of suitable large breeding hollows that are present.	No large hollows within subject site.
Appendix A	*Litoria aurea*		As noted previously, there is clearly currently a pond on site that can represent habitat for this species. Why is it stated that no wetland habitat is present? It might not be in the area of impact, but the frog may still use the impact area for foraging and shelter.	Justify the decision to state that there is no suitable habitat present.	Species excluded by ELA (2015). GHD supports this assessment.
Appendix A	Hollow roosting bats	All species	Minimal suitable breeding habitat present on site is not an informative statement. And what about hollows as roosting habitat? There is obviously some.	State the number of suitable hollows that are present in both categories.	Five small hollows (less than 10 cm in size) are present within the subject site which are suitable for microbats to roost or breed in. Given the large areas of hollows present in the surrounding area,

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			How many suitable hollows are there for both breeding or roosting?		these hollows are a negligible proportion of available roosting habitat for these species.
Appendix A	*Petauroides volans*		Few suitable hollow-bearing trees present is not an informative statement. There is obviously some. How many suitable hollows are there?	State the number of suitable hollows that are present.	There are 5 small hollows within the subject site. Hollows are less than 10cm in size, which is too small for this species to utilise. Species prefers old trees with abundant hollows, which does not describe the subject site. Similarly, prefers tall, montane moist eucalypt forest. Vegetation on site is wet sclerophyll forest, not tall, montane moist forest.
Appendix B	All plants		What do 0 and P refer to when talking about TSC and EPBC status? This is unclear. Why not use the same for fauna?	Be consistent with use of terms and explain what they mean.	Noted. These items should have been deleted during the review process.
Appendix C	Blue Gum High Forest	ci	Says there will be extensive revegetation activities. This is non-descriptive (what is extensive?) and uninformative as this provides no explanation of what exactly is planned. So extensive could be 1 ha, 10 ha or 100 ha. Compared to what is lost, they can be extensive, but there is no way to know. If the assessment of no significant impact is dependent on the extensive revegetation then a minimum acceptable level and quality of revegetation needs to be stated.	Include figures on what extensive is and demonstrate that this can be considered extensive.	No detailed or specific information was available on the proposed rehabilitation at the time of writing. This will be determined at some point in the future when plans for the site are finalised and approved. The assessment of no significant impact was not dependant on reveg/rehab works being completed.
Appendix C	Blue Gum High Forest	cii	Should be native and exotic <u>species</u>.	Change. Confirm that the NP vegetation, including the Blue	Minor editorial error.

Page No.	Heading	Paragraph/ dot point	Comment made by Eco Logical	Eco Logical Recommendation	GHD response
			If the vegetation in the study area is **unlikely** to significantly contribute to florist or genetic composition or variability of other vegetation in the locality, then that suggests that the vegetation in the study site forms the local population. The report needs to confirm that the Blue Gum in the National Park is still part of the study area. It is not entirely clear. This is especially the case when dii states that "the vegetation within the project site is effectively isolated from adjacent and nearby vegetation". If that is the case, is the vegetation in the Project Site not the local population? And, if so, how can the vegetation in the National Park be included in calculations of the area of available Blue Gum High Forest?	Gum High Forest, is actually connected to the Quarry vegetation in a way that they intermix. If it is not, then the report will need significant re-writing.	Berowra Valley NP is immediately adjacent to the western edge of the wider Hornsby Quarry site, as per EIS Figure 4.1, and Biodiversity Figure 1.1. Rationale behind statement that vegetation in the study area is unlikely to significantly contribute to the floristic of genetic composition or variability of other vegetation in the locality is based on premise that vegetation within the subject site lacks floristic or structural diversity compared to adjacent vegetation within the wider Hornsby Quarry area and Berowra Valley NP. Species diversity is below benchmark in all stratum, vegetation provenance within subject site is unknown given it is planted vegetation. The statement provided by the review is missing the word "much". The report states "much of the vegetation within the project site is effectively isolated from adjacent or nearby vegetation" with reference to the surrounding topography and development. However, figures that accompany the report clearly show that vegetation in the western portion of the wider Hornsby Quarry area is clearly connected to adjacent vegetation in the Berowra Valley NP.
Appendix C	Powerful Owl	F	Includes the retention of hollow-bearing trees **where possible**? If not possible would this change the decision on the extent of impacts?	Clarify that the loss of all possible hollow-bearing trees will not result in a significant impact to this species.	Given the 5 hollows to be removed are all small (less than 10cm), the loss of these hollows is not expected to result in any impact to the Powerful Owl.
Appendix C	Powerful Owl	Conclusion	Says the REF proposal. Is this correct?	Change as needed.	Minor editorial error.

Page No.	Heading	Paragraph/ dot point	Comment made by Eco Logical	Eco Logical Recommendation	GHD response
			REF proposal is also used in the profile for the Varied Sitella.		
Appendix C	Varied Sitella	dii	On one hand the Sitella is stated as being relatively sedentary and on the other highly mobile. It cannot really be both. Which one is it? Needs to be consistent.	Change as needed and consider if this alters at all the impact assessment.	LoO table lists species as sedentary. Part 5A assessments notes species is highly mobile. The Varied Sittella is sedentary in that it is a resident in the area not transient or nomdaic. Meaning of 'highly mobile' in this context means the species can fly, so widening a gap by a small area is unlikely to prevent it from traversing through the environment in the same way it would prevent something like a snail, frog or mammal that requires vegetative cover or equivalent to move through the landscape. Does not alter the findings of the impact assessment.

20 Aug 2019

Hornsby Shire Council
Craig Clendenning
296 Peats Ferry Road,
Hornsby 2077

Our ref: 2126457-77347
Your ref:

Dear Craig

Hornsby Quarry Rehabilitation EIS
Response to Renzo Tonin's independent review

1 Introduction

GHD prepared a Noise and Vibration Impact Assessment (NVIA) for the construction activities associated with the Hornsby Quarry Rehabilitation EIS. It is acknowledged that an independent assessment has been undertaken by Renzo Tonin & Associates with comments relating to the NVIA prepared by GHD.

This letter provides a response to the following document: *Hornsby Quarry – Independent Assessment of EIS Acoustic Assessment* - Renzo Tonin & Associates, dated 26 July 2019

2 GHD response to Renzo Tonin's independent assessment

GHD's responses to each of the comments made by Renzo Tonin are provided in Table 1 below.

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Table 1 GHD response to the independent assessment

Comment Number	**Renzo Tonin's Comments**	**GHD Response**
1	Table 1.1: The first Secretary's Environmental Assessment Requirements (SEARs) condition under the Noise heading states that 'construction noise impacts of the proposal in accordance with the Interim Construction Noise Guideline (DECC, 2009) and NSW Industrial Noise Policy (EPA, 2000) respectively. Note: This has been superseded by the NSW Policy for Industry (EPA, 2017)'. GHD has undertaken the construction noise assessment in accordance with the 'Interim Construction Noise Guideline' (ICNG) and the NSW 'Noise Policy for Industry' (NPfI) [which supersedes the NSW 'Industrial Noise Policy' (INP)], in order to address the SEARs condition for noise. Our interpretation of this SEARs assessment requirement is that the noise monitoring should be undertaken in accordance with the NPfI / INP in order to establish the rating background levels (RBL). On page 12 of the ICNG, the document states that the RBL is used when determining the management level and refers to the INP for details in establishing RBL. Therefore, we believe the use of the NPfI / INP is only to establish RBL and the ICNG is used for determining noise management levels and the subsequent assessment. All reference to and assessment against the NPfI / INP should be removed from the Report.	GHD agrees with RTs interpretation of the SEARs conditions regarding the appropriate document for the assessment of noise from construction activities and considers the NPfI inappropriate. This was stated in the original report and re-confirmed in GHD's letter to Council dated 31 May. Section 1.5 of the NPfI specifically states that it does not apply to "Construction Activities".
2	Table 3-7: In Figures 4.1, 4.4 and 4.5 of the Report, the noise monitoring location NL01 is shown as being within NCA1 but within Table 3-7 the noise monitoring location corresponding to NCA1 is NL04. No explanation is given as to why NL04 data was used. No noise monitoring results are presented for NL01.	These measurements were taken from the Hornsby Quarry – Road Construction Spoil Management EIS Chapter 6.2 (RMS & AECOM 201) as shown from the excerpt below:

Comment Number	Renzo Tonin's Comments	GHD Response
		Table 6-15 Background noise monitoring **Noise catchment area** / **Noise measurement location** / **Rating background level dB(A) ($L_{A90,15\ minute}$)[1]**: **Day (7 am to 6 pm)** / **Evening (6 pm to 10 pm)** / **Night (10 pm to 7 am)** NCA01 / NL04[1] / 34 / 34 / 31 NCA02 / NL02 / 39 / 33 / 33 NCA03 / NL03 / 37 / 37 (39)[2] / 32 NCA04 / NL04 / 34 / 34 (36)[1] / 31 Note 1: Previous noise logging (undertaken by others) in the area has identified that noise levels can be considerably lower compared to those measured for this project. The higher noise levels measured for this project have been attributed to seasonal variability. To account for the lower noise levels a more conservative representative noise logger from the project was selected and the results presented in the table above. Note 2 : Application notes to the NSW Industrial Noise Policy indicate that the community generally expects a greater control of noise during the evening and night as compared to the daytime. Therefore the RBL for the evening is set to no more than that for the daytime and the night-time to no more than the evening. The measurements undertaken at NL01 were not provided, however it is stated that the measured levels were higher than what was expected for the area. As such, the measured levels from NL04 were used as the area was considered representative of the noise environment in NCA01. GHD's assessment uses the minimum rating background noise levels for the day period for both NCA01 and NCA04.
3	Section 3.8: The relevant period for incorporating noise enhancement due to temperature inversion is the night time period (10pm to 7am), which falls outside of the standard construction hours and therefore, temperature inversion effects should not be considered. Furthermore, the ICNG does not consider temperature inversion effects for construction noise predictions and assessment.	The ISO 9613-2 algorithm, by default, assumes a moderate temperature inversion. As such, the model is conservative in its predictions and provides a more robust assessment of potential noise impacts. Given the duration of the works, GHD considers this appropriate.
4	Section 3.9: It is noted that the ICNG does not specifically state that noise enhancing conditions due to adverse wind effects are to be considered. Therefore, any noise predictions taking into account wind affects are not required.	GHD understands that wind enhancing conditions are not mentioned in the ICNG, however the inclusion of wind affects provides a more robust assessment of noise impacts and the adoption of the ISO 9613-2 algorithm assumes downwind noise

Comment Number	**Renzo Tonin's Comments**	**GHD Response**
		enhancing conditions. Given the duration of the works, GHD considers this appropriate.
5	Table 4.2.4: Comparing the noise monitoring results from Table 3-6 and Table 3-7 of the Report shows that for some NCAs the measured evening and night time background noise levels were lower in 2018 compared to the 2015 noise monitoring. The lower evening and night background noise levels from the two sets of data should be considered for a more stringent criteria and assessment. Nevertheless, given that construction activities are to be conducted during the standard construction hours, provision of outside of standard construction hours NMLs are not required.	This is noted and it is not relevant to this project given that construction activities are to be conducted during the standard construction hours.
6	Section 4.3: As per Comment 1, the use of NPfI criteria is considered inappropriate.	See GHD Response 1. The criteria were provided to address the SEARs however the ICNG is adopted to managing noise impacts from the project.
7	Section 4.5.2: In Section 6.5.1 of the Report it is stated that the Construction Noise Vibration Guideline (CNVG) and The German Standard 'DIN 4150-3: 1999 Structural Vibration – Part 3: Effects' (DIN 4150-3) are used for determining vibration safe working distances. However, the vibration criteria from DIN 4150-3 is not presented in this section. In addition, no safe working distances are presented in DIN 4150-3. In the CNVB, the buffer distances for cosmetic damage are based on DS7385 for reinforced and unreinforced buildings and not DIN4150-3. The CNVG only uses DIN 4150-3 for heritage structures. No commentary or criteria has been presented for vibration sensitive equipment. As there are medical facilities identified in the vicinity of the project, hospitals and laboratories may utilise equipment that is highly sensitive and susceptible to vibration impacts and may require	GHD agrees that for heritage structures the DIN 4150-3 can be adopted for a conservative assessment. Our calculations indicate that an 18 tonne vibratory roller (worst-case scenario – peak particle velocity of 18 mm/s at 10 metres) is predicted to exceed the DIN criteria within 45 metres of construction works. As such, the buffer distance of 50 metres is still appropriate. The closest TAFE building is approximately 50 metres away from the nearest construction works and as such, cosmetic damage vibration impacts are not expected. Vibration impacts to sensitive medical equipment 300 metres from the site are highly unlikely and it should not be deemed necessary to undertake an assessment of potential vibration impacts to medical equipment 300 metres

Comment Number	**Renzo Tonin's Comments**	**GHD Response**
	assessment against vibration criteria other than those nominated for structural damage.	
8	Table 4-11 and Table 4-12: Following from Comment 7, vibration criteria for heritage structures should be in accordance with DIN 4150-3. The nominated criteria for heritage structures in Table 4-12 of the Report is incorrect.	See GHD Response 7.
9	Section 5.1.1: (It is noted that the use of Section 5.1.1 is repeated, and this is referring to the occurrence on page 39 of the Report): SoundPLAN 7.4 was the modelling software used which is an outdated version of the software. The current version of SoundPLAN is version 8.0 which was released on 17 August 2017 and over a year prior to the release of the Report.	GHD does not immediately use the newest version of noise modelling software upon its release as experience has shown that new versions of SoundPLAN contain bugs which are fixed through later releases of service packs. SoundPLAN 8.0 at the time was not immediately stable and often crashed during calculations. SoundPLAN 8.1 has now been released (subsequent to our noise modelling) as a more stable update compared to SoundPLAN 8.0. SoundPLAN 7.4 and SoundPLAN 8.0 implement the same ISO9613-2 algorithm, our experience indicates minimal differences in predicted levels between SoundPLAN 7.4 and SoundPLAN 8.0 (after the service packs have been installed).
10	Section 5.1.2: It is noted that for a worst-case scenario, the two noisiest items of equipment within each scenario was modelled for each scenario. Given the size of the construction fleet it is questionable as to whether the consideration of just two noisiest items of equipment is sufficient for the worst-case. A true worst-case would be all items of equipment within each scenario operating concurrently and a typical case would be two to five of the noisiest items of equipment within each scenario operating concurrently.	It is unknown at this stage exactly what the construction scenarios, fleet sizes and work methodologies will be. It is unlikely that more than 2 items of equipment would be located in such a way to result in significant cumulative impacts on any given receiver. The predictions assume the two noisiest items of equipment operating concurrently at the shortest distance between the source and receiver and is representative of the worst- case scenario. For the majority of the time, the distance between the source and receiver will be greater.

Comment Number	**Renzo Tonin's Comments**	**GHD Response**
11	Table 5-4: The parameter used for the receiver heights variable is "1.5 metres above building ground level". As per the ICNG, the assessment point should be at the property boundary that is most exposed to construction and at a height of 1.5m above ground level i.e. 1.5m above the ground and at the boundary, not at the building. It is unclear whether the modelling has taken this into account.	The assessment point is to be a location within the property boundary that is most exposed to construction noise. This can either be at the most affected facades of the dwelling (windows) or at a location within the property boundary and within 30 metres of the dwelling (1.5 metres above the ground level). Adding receiver points at the residential boundary of every receiver in the study area was deemed unnecessary detail for modelling purposes as the difference in noise levels (between the boundary and the façade) was insignificant. Having receivers points at the highest storey of the dwelling was considered more appropriate for the receivers in the study area as generally there was clearer direct line-of-sight from the source to the receiver (due to the topography of the area).
12	Section 6: As the construction NMLs presented in Table 4-2 provide NMLs for standard construction hours and outside standard construction hours for Day, Evening and Night, the NML used in this section should clarify that this is the NML for standard construction hours. It is also unclear as to what the average LAeq noise level refers to.	The NMLs presented in Table 4-2 are for standard construction hours. The average LAeq refers to the arithmetic mean of the noise levels for the NCA.
13	Section 6.2: As per Comment 1, the use of NPfI criteria is considered inappropriate.	GHD agrees and this is discussed in GHD Response 1.
14	Section 6.4 Road Noise Policy (RNP): The Report states that the use of construction vehicles along Dural Street and Quarry Road is predicted to comply with the acoustic requirements of the RNP but then states that mitigation measures to reduce potential construction traffic noise impact along Dural Street and Quarry Road are provided in Section 7.2. If the predicted levels are compliant then no mitigation should be required.	The road traffic noise levels are predicted to comply assuming only one heavy vehicle per hour during the night period. As such, vehicles along Dural Street and Quarry Road should be limited to one vehicle per hour during the night period. More than one heavy vehicles per hour in the night period is predicted to result in an exceedances of the RNP noise criteria

Comment Number	**Renzo Tonin's Comments**	**GHD Response**
15	**Section 7.3**: It is noted that noise control measures presented in the Report are generic in nature and there is no confirmation on which specific recommended noise mitigation measures would be implemented. These should be presented together with the expected noise reductions.	As discussed in GHD's letter dated 31 May 2019 in response to EPA's letter dated 20 May 2019, the ICNG provides guidance on the level of detail required at each stage of the application process. At the EIA stage, specific mitigation recommendations are not required as the specific details of the construction activities are not known. The ICNG states that "Conceptual description of feasible and reasonable work practices to minimise noise impacts" is typical of information included within the pre-approval EIA documentation. Never-the-less, further discussion of the proposed mitigation measures are provided in the response to EPA below

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Please do not hesitate to contact me if you would like to discuss any of this further.

Sincerely
GHD

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