Hornsby Shire Council

Hornsby Quarry Rehabilitation works including bulk earthworks (and associated civil works including construction of access tracks, drainage and retaining walls), site remediation, tree removal, revegetation work and site rehabilitation

Response to Submissions and Revised Project Scope

VOLUME 1 – MAIN REPORT

November 2019

Executive summary

Hornsby Quarry is a former breccia hard rock quarry that was operated by private business from the early 1900s and ceased in the late 1990s. The quarry is considered a safety risk and has therefore been closed to the public since that time.

Hornsby Shire Council (Council) acquired the site in 2002 and has since undertaken a number of investigations and studies with regard to the future use of the site and the environmental and technical constraints that the site poses. Through these studies, Council identified the need to:

- stabilise the quarry
- manage the site in a safe and environmentally sustainable manner, and
- actively seek opportunities to fill the quarry void with spoil arising from major infrastructure projects in the region

Council also resolved to ultimately develop the site into a community parkland.

In 2016 approval was granted to Roads and Maritime Services (Roads and Maritime), to beneficially reuse up to 1.5 million cubic metres of excavated rock and soil (spoil) from the construction of the NorthConnex tunnel to partially fill the Hornsby Quarry (the '2016 Planning Approval'). Filling has been undertaken at the site under this approval.

Following completion of filling by NorthConnex, Council is proposing to rehabilitate and reshape the site in a suitable way to ensure public safety and allow future development into a parkland for community use (the project).

The project involves:

- Bulk earthworks (and associated civil works including construction of access tracks, drainage and retaining walls)
- Site remediation
- Tree removal
- Revegetation work and site rehabilitation.

An Environmental Impact Statement (EIS) was prepared in accordance with the requirements of the Secretary of the NSW Department of Planning and Environment (the Secretary's Environmental Assessment Requirements (SEAR No 1167) dated 6 September 2017. The development application was placed on exhibition from 5 March to 17 May 2019.

The development application has been notified by Council and is being assessed by an independent planning consultant. The consent authority is the Sydney North Planning Panel.

Forty six (46) submissions were received from the public during exhibition. In addition, a number of requests for further information were received from the independent planning consultant and government agencies.

In response to submissions received or requests for clarification, the project description and earthworks design has been updated and a tree inventory has been prepared. The changes to the design has reduced the impact area particularly in the south-west fill area and Old Mans Valley. This has resulted in a reduced extent of earthworks, reduced construction cost and reduced tree removal.

The changes to the project will result in:

- A reduction in removal of native vegetation by 0.95 ha (represents a 38% reduction compared to the project presented in EIS)
- A reduction in removal of total vegetation by 2.03 ha (represents a 34% reduction compared to the project presented in EIS)

The Revised Extent of Vegetation Mapping plan in Appendix A shows the changes to the extent of works.

The removal of a part of the Blue Gum High Forest is necessary in order to remove unstable areas and make the site safe. This removal and associated works will ensure the whole of the northern spoil mound is stable and guard against a far more extensive area of Blue Gum High Forest loss resulting from instability and embankment failure due to natural processes in the future. Tree loss has been limited to the fullest extent possible and will be offset as part of the site revegetation works.

As well as the reduction in biodiversity impacts, the changes to the earthworks design would also reduce the intensity and duration of construction activities in the south-west fill works area and quarry void. This will reduce the estimated construction timeframe down to 21 months (from 24 months). The changes are expected to therefore also reduce the potential for associated air quality (dust) and noise impacts as a result of reduced construction activities.

The project also does not change the extent of the diatreme that would be exposed compared to the 2016 Planning Approval for NorthConnex filling works. The 2016 Planning Approval allowed fill to be placed up to RL64 m AHD and this DA proposes an approximate level of RL53 m AHD, 11 metres lower.

Additional assessments, investigations, reports and plans have also been developed to provide clarity around the proposed project and mitigation measures proposed and respond to specific requests for clarifications.

This Response to Submissions Report has documented the following:

- The public submissions received during exhibition
- Requests for information received from the independent planning consultant (and specialists) and government agencies
- A summary of the communications and engagement undertaking during EIS exhibition and outcomes
- Responses to the submissions received including
  - A summary of actions undertaken during and after EIS exhibition including design refinement, further environmental assessment and investigations, development of additional reports and plans
  - Responses to the public submissions received, requests for information and engagement activities
- An overview of the changes to the project and comparison with the project presented in the EIS
- An updated project description, including revised plans and figures
- An assessment of the updates to the project description
- An updated evaluation of the project taking into consideration the updated project description and additional environmental assessments and plans

The EIS and the additional assessments, investigations and report prepared as part of this Response to Submissions Report have demonstrated that the project would not have a

significant impact on the community or environment with implementation of the proposed mitigation measures.

This report is subject to, and must be read in conjunction with, the limitations set out in section 9 and the assumptions and qualifications contained throughout the Report.

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Glossary and abbreviations

Term	Definition
2016 Planning Approval	The approval granted to Roads and Maritime Services to beneficially reuse up to 1.5 million cubic metres of excavated rock and soil from the construction of the NorthConnex tunnel to partially fill the Hornsby Quarry
AHD	Australian Height Datum
Approved Methods	'Approved Methods for the Modelling and Assessment of Air Pollutants in NSW' (EPA, 2016)
CEEC	Critically endangered ecological community
CEMP	Construction environmental management plan
Council	Hornsby Shire Council
CNMP	Construction noise management plan
DA	Development application
dB	Decibel is the unit used for expressing the sound pressure level (SPL) or power level (SWL) in acoustics.
dBA	Decibel expressed with the frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms approximately to the human ear response, as our hearing is less sensitive at low and high frequencies.
Dilution factor	A factor representing the potential accumulation of concentrations above the concentration in incoming groundwater.
DP	Deposited Plan
DPE	Department of Planning and the Environment
EIS	Environmental Impact Statement
ENM	Excavated natural material
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
Extent of works	Refers to both the quarry pit filling extent and the earthworks design extent plus an additional 2 to 5 m outside these areas to allow for construction fencing, etc. This can be considered the proposed disturbance footprint. It incorporates site access and internal roads/tracks.
GHD	GHD Pty Ltd
ICNG	Interim Construction Noise Guidelines
km	kilometres
$L_{Aeq(period)}$	Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
$L_{A90(period)}$	The sound pressure level that is exceeded for 90 per cent of the measurement period.
$L_{Aeq(15hr)}$	The L_{Aeq} noise level for the period 7:00 to 22:00 hours.
$L_{Aeq(9hr)}$	The L_{Aeq} noise level for the period 22:00 to 7:00 hours.
L_{Amax}	The maximum A-weighted sound pressure level occurring in a specified time period.
LEP	Local Environmental Plan
LGA	Local government area
LoS	Level of Service

Term	Definition
NCA	Noise catchment area
NML	Noise management level
NPI	Noise Policy for Industry
NPW Act	*National Parks and Wildlife Act 1974*
NSW	New South Wales
NVIA	Noise and visual impact assessment
NVSR	Noise and vibration sensitive receiver
OEH	Office of Environment and Heritage
PCT	Plant community type
POEO Act	*Protection of the Environment and Operations Act 1997*
REHV	Regional environmental health values
RL	Reduced level
Roads and Maritime	Roads and Maritime Services
RTS Report	Response to Submissions Report (this report)
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SESL	Sydney Environmental Soil Laboratory
SHR	State Heritage Register
SoHI	Statement of Heritage Impact
The Blue Book	Landcom. (2005). Managing Urban Stormwater, Soils and Construction 'The Blue Book' Vol 1.
The detwatering licence	Bore licence 10BL602742
TSC Act	*Threatened Species Conservation Act 1995*
TSS	Total suspended solids
UST	Underground storage tank
VENM	Virgin excavated natural material
Vibration	The variation of the magnitude of a quantity which is descriptive of the motion or position of a mechanical system, when the magnitude is alternately greater and smaller than some average value or reference. Vibration can be measured in terms of its displacement, velocity or acceleration. The common units for velocity are millimetres per second (mm/s).

1. Introduction

1.1 Background

Hornsby Quarry is a former breccia hard rock quarry that was operated by private business from the early 1900s and ceased in the late 1990s. The quarry is considered a safety risk and has therefore been closed to the public since that time.

Hornsby Shire Council (Council) acquired the site in 2002 and has since undertaken a number of investigations and studies with regard to the future use of the site and the environmental and technical constraints that the site poses. Through these studies, Council identified the need to:

- stabilise the quarry
- manage the site in a safe and environmentally sustainable manner, and
- actively seek opportunities to fill the quarry void with spoil arising from major infrastructure projects in the region

Council also resolved to ultimately develop the site into a community parkland.

In 2016 approval was granted to Roads and Maritime Services (Roads and Maritime), to beneficially reuse up to 1.5 million cubic metres of excavated rock and soil (spoil) from the construction of the NorthConnex tunnel to partially fill the Hornsby Quarry (the '2016 Planning Approval'). Filling has been undertaken at the site under this approval.

Following completion of filling by NorthConnex, Council is proposing to rehabilitate and reshape the site in a suitable way to ensure public safety and allow future development into a parkland for community use (the project). This would include bulk earthworks (and associated civil works including construction of access tracks, drainage and retaining walls)), site remediation, tree removal, revegetation work and site rehabilitation.

The project is development for the purpose of recreational area, which is permissible with consent requiring submission of a new development application. GHD Pty Ltd (GHD) was engaged by Council to prepare documentation to support the development application for approval of the project under Part 4 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (the EP&A Act).

As a result of the proposed earthworks, the project triggers designated development provisions for crushing, grinding and separating works. Therefore an Environmental Impact Statement (EIS) was prepared in accordance with the requirements of the Secretary of the NSW Department of Planning and Environment (the Secretary's Environmental Assessment Requirements (SEAR No 1167) dated 6 September 2017.

The project has a capital investment value of more than $5 million, and therefore is also defined as regional development under Clause 4 of Schedule 4A of the EP&A Act. Hence the development application is being notified by Council and assessed by an independent planning consultant and the consent authority is the Sydney North Planning Panel.

The development application was placed on exhibition from 5 March to 17 May 2019.

A number of submissions were received from the public during exhibition. In addition, a number of requests for further information were received from the independent planning consultant and government agencies. This Response to Submissions (RTS) Report has been prepared in response to these submissions and requests for information.

1.2 Purpose of this report

This RTS Report provides:

- An analysis of the public submissions received during exhibition
- A summary of requests for information received from the independent planning consultant and government agencies
- A summary of the communications and engagement undertaking during EIS exhibition and outcomes
- Responses to the submissions received including
  - A summary of actions undertaken during and after EIS exhibition including design refinement, further environmental assessment and investigations, development of additional reports and plans
  - Responses to the public submissions received, requests for information and engagement activities
- An overview of the changes to the project and comparison with the project presented in the EIS
- An updated project description, including revised plans and figures
- An assessment of the updates to the project description
- An updated evaluation of the project taking into consideration the updated project description and additional environmental assessments and plans

This report should be read in conjunction with the EIS.

2. Submissions and requests for information received

2.1 Public submissions

The EIS was placed on exhibition from 5 March to 17 May 2019.

A total of 46 public submissions were received during this time.

Table 2.1 provides a summary of the issues and main points raised in public submissions received during this time. This summary was provided to GHD by the independent planning consultant.

Responses to the key issues and main points are provided in Section 4.2 of this RTS Report.

Table 2.1 Summary of public submissions

Issue	Main points	Number of submissions in which this issue has been raised
Concern over tree removal	• Removal of Blue Gum High Forest as the ecological community in protected under both the Commonwealth and State Legislation • Concern over the number of large trees being removed and visual impacts • Residents are concerned because a large number of trees are marked with pink tape (usually an indication of trees being removed). • Pink tape is seen on trees where no works supposed to be undertaken in these areas	31
Funding	• It will cost around $31 million to part-fill the quarry • Costs of the proposal and acquisition of the quarry have been high. It is therefore vital assessments are thorough • Ability to fund the ongoing costs to ensure rehabilitation and biosecurity	1
Unwanted weeds and flora	• Concerns over future weeds and unwanted flora growing in the possible future park	1
Resident extremely opposed to having mountain bike track built	• Disturbance towards wildlife and possibly drive them away	3
Objections made against having any stadiums or large grandstands or professional football use	• Will create noise and pollution	2
During the construction period	• J and H blocks are close to the vibration and noise areas on the DA • How long will it take? • Will council close off Bridge Road to access the site? • If Bridge Road is closed off a two-storey car park will be closed off	1

Issue	Main points	Number of submissions in which this issue has been raised
Preservation of the soil	• Emphasis on appropriate soil properties throughout the soil profiles • Maintaining soil quality	4
Noise and vibration	• Noise has an effect on the wildlife • Irritating for the nearby residents	5
Question need for works in south west fill works area	• Unnecessary loss of trees • Need for works has not been adequately demonstrated	6
Biodiversity	• No SIS • Loss of habitat • Impacts on fauna • Threatened species such as the Powerful Owl, the Varied Stella and Grey-headed flying fox • Tree preservation • The tree removal will affect the habitats of the fauna and especially the threatened species • They would like it to be a sanctuary	18
Objections to cafes and restaurants in the park	• This will create more general waste that may end up in the bush land • Because of this rubbish it will attract unwanted animals like rats	1
Aboriginal remains and heritage	• The project is likely to impact any archaeological aboriginal remains • Need to preserve heritage	3
Replacing bike track with walking track	• Close proximity to home/ noise and privacy	1
Tree inventory	• EIS is vague regarding no. of trees that will be removed • A tree inventory/arborist report should be prepared	12
Water quality	• Lack of detail in relation to water quality impacts	4
Rehabilitation	• No details regarding off set planting/revegetation	9
Lack of information	• Exhibition material was difficult to understand for the layman • Lack of detail in relation to equipment to be used, dust control access routes, timeframes for work etc • Public consultation was poor	3 7 2
Contamination	• No details in relation to potential contamination of the quarry	1
Option to works	• Lack of detail in relation to what options have been considered (to reduce/eliminate tree removal) and why these were rejected	3
Heritage – European	• Impacts on Higgins Family Cemetery • Crusher plant to be retained and revised	3
Heritage – Diatreme	• Diatreme to be retained/not covered • Scientific significance to be further investigated	12

Issue	Main points	Number of submissions in which this issue has been raised
Heritage – General	• Quarry has special scientific significance	3
Acquisition	• Properties in Manor Road to be acquired by Council	2
Support	• Submissions in support of works that will allow future use as a parkland	7
Options for future use	• Suggestions for future use of the area once works are completed	3

2.2 Requests for information and clarifications

2.2.1 Independent planning consultant

Following exhibition of the EIS, a number of requests for additional information were received from the independent planning consultant. The key issues raised and information requested included:

- Provide further detail/information on the development application plans
- Provide further (more detailed) description of the proposed development including:
  - The design (including related civil works, retaining walls and other geotechnical safety management measures)
  - Proposed bush regeneration and tree planting and biodiversity offsets
  - Construction method
- Contamination investigation including:
  - Detailed site investigation
  - Remedial Action Plan
- Preparation of a Preliminary Construction Environmental Management Plan (CEMP)
- A number of other minor items for clarification

The independent planning consultant also requested that Table 1.1 of the EIS be updated to provide references to where each of the SEARs has been addressed both in the EIS and with supplemental information in this RTS Report and attachments.

A summary of response to the issues raised and information requested is provided in Section 4.3 and a detailed response is provided in Appendix C.

2.2.2 Government agencies

The NSW EPA requested further information in relation to noise and water. An overview is provided below. A summary of responses to the information requested is provided in Section 4.4 and copies of the detailed responses are provided in Appendix D.

Noise

The NSW EPA requested further information in relation to the noise impact assessment including:

- The duration and extent of noise impacts from each work phase at each noise catchment area
- Proposed mitigation measures to be applied to manage noise from each work phase
- The likely effectiveness of proposed mitigation measures
- Procedures to manage residual noise impacts

Water

The NSW EPA also requested further information in relation to impacts of the ongoing and proposed void water discharge on the receiving waters and requested further information including:

- The relevant environmental values for the receiving waterways
- Details of how site specific guideline values (the Regional Environmental Health Values) were derived

- Updated characterisation of the quality of the proposed discharge in terms of the concentrations and loads of all pollutants potentially present at non-trivial levels based on a risk assessment of the potential pollution sources
- A revised assessment of the potential impact of the proposed discharge on the environmental values of the receiving waterways based on the updated discharge characterisation and with reference to relevant guideline values.

The NSW EPA also noted that the level of detail of the discharge impact assessment should be commensurate with the risk.

3. Communications and engagement

3.1 Community engagement undertaken during EIS exhibition

Council along with its engagement consultant, Elton undertook communications and engagement activities during the EIS public exhibition period in order to:

- Raise awareness and understanding of the development application and EIS amongst key stakeholders, including those who participated in prior engagement rounds, and the broader community
- Support the community and stakeholders to make submissions.

Engagement tools and techniques used to support the EIS exhibition process included:

Project website

- Provide project update
- Inform about opportunities for engagement
- Encourage feedback through providing a link to development application
- Keep public engaged and generate a sense of continuity and project progression

Emails to the Community Deliberative Forum and Environmental Stakeholders

- Inform about progress and status of project
- Encourage feedback by providing a link to development application
- Inform about opportunities for engagement
- Keep stakeholders engaged and generate a sense of continuity and project progression

Community Swing-By Sessions

- Reaches those not previously engaged with the project - particularly Culturally and Linguistically Diverse communities, and young people
- Opportunity for project team and technical experts to directly engage with the community
- Provide information and generate and collect feedback
- Supported by collateral with images designed to enhance understanding and foster engagement

Site Tour for Manor Road and Ferntree Close residents

- Followed a letter that was issued to residents informing of the exhibition process
- Organised following a request from a Manor Road resident
- To answer specific questions about the impact on adjacent neighbours

Outcomes report

- Details engagement methodology, tools and techniques
- Sets out key outcomes of engagement strategy
- Promotes transparency and openness of the engagement process

A report summarising the engagement activities and the outcomes of the engagement is provided in Appendix E.

3.2 Summary of outcomes

3.2.1 Mall swing-by sessions

594 people were actively engaged – that is, stopped and read the information boards. Conversations were had with over 100 people during the four mall swing-by sessions.

A thematic analysis was completed, with themes listed below in order of frequency, as shown in Table 3.1.

Table 3.1 Thematic analysis of mall swing-by sessions

Theme	Comments
General support	'Very excited; 'can't wait'; 'superb'; 'bring it on'; 'Great! It will change Hornsby!; 'Very Happy!'; 'Looks very good' ; 'This is fantastic' ; 'Looks awesome. Council doing a great job'; 'This is a great project….need to do this now'; 'Great idea, looks like a wonderful park proposal'; 'Looking forward to when the park is open, should be wonderful. Thanks!'; 'Great proposal – HSC is very progressive'; 'Very brilliant idea'; "This will be brilliant."; 'I thinks it's fabulous it's going back to the people'; 'This is great, I love it'; ' I think it is great'; 'Very nice, will be a lovely park, excellent'; 'Fantastic, just amazing – let's get on with it!'
Support for the DA and EIS	"That makes sense, I agree with that." "That's a positive; giving access and safety….and to open up and let people see the crusher plant." "Accessible and safe, that sounds good." "This is the right thing to do. It is such an eyesore. Make it look nice and use it." "Make it safe to use" "No concerns. It's a great use of space" "It will otherwise be wasted land…since we've messed it up, we should use it". "Excellent. No concerns, good stuff" "It's a good use of a hole" "It is very hilly. I agree that we need to do the works to provide a flat space people can use." "It is important for kids to be on the site so they can understand its history." "It is for the community's benefit." "Long term benefits to the community will be tremendous." "The landform looks great."
Impacts on the environment	"As long as the trees and nature will be improved, temporary disturbance is fine. It's good for the long-term. It's abandoned, so it will all be cleaned" "It's not accessible, so it makes sense to disturb it now so we can enjoy it later." "If they (Council) are going to make a decent facility, they have got to do it (complete earthworks)." "Trees grow, it's fine to lose a few in the short term." "It doesn't matter if you cut down extra trees to make it safe because we want to have access." "I have no problem about the loss of trees in the short term." "I agree with what you are doing. I don't want it locked up." "It has already been farmed and quarried. It's time to open it up to the public" "It's not exactly virgin wilderness. It is a quarry."
Support for Council's approach to enhancing the	"Putting trees back is good. It fits in with your planting of 25,000 extra trees." "I'm pleased you will be replanting with endemic species. It's very important."

Theme	Comments
natural environment	“It’s great to hear you will be concentrating on the lower storey and native grasses.” “I’m impressed you want to create a wetland area. It will be great for animals.” “It is great to hear about what is being done to look after the environment.” “I’m glad to hear that remnant won’t be touched, that was my biggest concern. You have now allayed my concerns.” “Keep the bushland as its perfect Koala habitat.”
Introduced species and weeds	“At the moment it’s all loose slopes and weeds.” “Half that valley is weeds.” “All the Blue Gum is getting strangled by the weeds.” “I want the weeds removed so the Blue Gum can thrive.” “Please make sure any planting is with provenance species.”
Future uses	“I trust the Council.” “If you think this is the best way forward, I trust you.” “You have my full support. There are more people in the area and we need more spaces for kids.”
Supportive of the transformation	“It is very important to keep and preserve the cemetery, this is an important part of Australia’s history.” “I’d like to see the Aboriginal heritage of the area recognised.” “It is good to hear about the regeneration work. The space should be used and protected.” “I have no issues. I use the mountain bike trails and have experienced very little down time so far.” “I use the mountain bike trails twice a week. I am very happy about plans for them to be maintained and improved. There is very easy access to the site from the train.” “I use the bike trails. The site is already so much better than it was. The regeneration work is already making a difference. People need to know about this great work, if it wasn’t for the parklands project the area would not be able to be used.”
Impacts on adjoining residents in Manor Road and Ferntree Close	A handful of residents from both Manor Road and Ferntree close attended the Swing-By sessions and asked specific questions about the notification letters they had received in the mail as part of the DA process, as they were confused by the terminology ‘area of impact’ and what that would mean for them. In response to a request from one resident, Council decided to issue invitations to all residents on these streets to a site tour, to answers any questions residents may have about the ‘area of impact’ and the DA/ EIS process.
Council’s commitment to ongoing engagement	“It is great that Council is engaging with the community. We really appreciate this.” “It is great that you are keeping the community informed.” “Very good that you are open to presenting information. We need more of it.” “‘I’m really happy with the engagement. Good job”

3.2.2 Site tour

In total, 21 residents of Ferntree Close and Manor Road attended the site tour. The tour was planned with a number of stops where information regarding the DA and EIS were discussed, and then open for questions and answers.

The main themes raised during the site tour included:

- Discussion about the earthworks:
  - visually showing attendees where earthworks will be occurring

  - explaining the required stabilisation works
  - detailing where vegetation will be lost and replanted
  - outlining the preservation and enhancement of EEC
  - acoustic implications
- Explanation about the vegetation mapping and condition assessment:
  - discussion and questions about mapped categories of Blue Gum and Blackbutt Forest communities (including un-forested areas)and implications for how they will be treated
- Details about quarry fill:
  - broad explanation for the graded landform/ amphitheatre and lake proposal and how and why the proposed levels have been determined
  - discussion about what is hoped and may be achieved with the water that continues to fill the quarry void from the groundwater table, including such as necessary release of some water, returns to the creek, recirculation within the quarry for lake quality, potential harvesting for other uses such as irrigation and amenities
- General question and answer:
  - about next steps
  - more site tours

Minutes were produced and sent to all residents of Manor Road and Ferntree Close.

4. Response to submissions

4.1 Summary of actions taken

A number of actions were taken since the EIS exhibition in response to public submissions received, feedback from the community engagement activities and requests for clarifications/information from agencies. These are summarised below and specific responses are provided in Sections 4.2, 4.3 and 4.4.

4.1.1 Further refinement to earthworks design to reduce potential impacts to vegetation

In response to public submissions and communication and engagement activities, the earthworks design has been further refined to reduce the extent of excavations required in the south-west fill works area and Old Mans Valley, and therefore the extent of vegetation removal in this area. The refinements considered the results of additional tree surveys (Appendix G) undertaken since the EIS submission and focussed on reducing the number of trees requiring removal and impacts to native vegetation.

The changes to the project will result in:

- A reduction in removal of native vegetation by 0.95 ha (represents a 38% reduction compared to the project presented in EIS)
- A reduction in removal of total vegetation by 2.03 ha (represents a 34% reduction compared to the project presented in EIS)

The Revised Extent of Vegetation Mapping plan in Appendix A shows the changes to the extent of works.

The removal of a part of the Blue Gum High Forest is necessary in order to remove unstable areas and make the site safe. This removal and associated works will ensure the whole of the northern spoil mound is stable and guard against a far more extensive area of Blue Gum High Forest loss resulting from instability and embankment failure due to natural processes in the future. Tree loss has been limited to the fullest extent possible and will be offset as part of the site revegetation works.

The earthworks design refinements has resulted in a lower volume of fill available for reshaping the quarry void landform and therefore some changes to final levels and retaining structures in the void. Full details are provided in the updated project description and associated updated drawings and plans (Section 6, Appendix A and Appendix B).

As well as the reduction in biodiversity impacts, the changes to the earthworks design would also reduce the duration of construction activities in the south-west fill works area, Old Mans Valley and quarry void. This will reduce the estimated construction timeframe down to 21 months (from 24 months). The changes are expected to therefore also reduce the potential for associated air quality (dust) and noise impacts as a result of construction activities in these two works areas.

4.1.2 Project description clarifications and updates

The project for which development consent is being sought has been updated with the changes to the earthworks design (Section 4.1.1). An updated (and more detailed) project description has been developed to show the amended earthworks design and provide further clarity around the proposed development. This comprised preparation of an updated project description which includes:

- Updated and more detailed design drawing/plans – including provision of additional plans, additional sections and further engineering detail, particularly around the proposed geotechnical safety management measures such as retaining walls and associated civil works
- More details of the proposed rehabilitation and revegetation – with reference to a new Preliminary Vegetation Management Plan
- Inclusion of the remediation of the existing underground storage tank as a result of additional contamination investigations completed since EIS exhibition

The updated project description is provided in Section 6 and is supported by the additional drawings and plans provided in Appendix A and Appendix B.

In addition Section 5 provides an explanation of what has changed compared to the project scope presented in the EIS.

4.1.3 Further assessment, reports and plans

In response to public submissions and/or requests for information/clarification received from the independent planner or government agencies, a number of additional assessments, clarifications, reports and plans have been developed. These included:

- Preliminary Vegetation Management Plan (Appendix F)
- Tree survey reports (Appendix G)
- Updated traffic impact statement (Appendix H)
- Additional noise assessment clarifications (Appendix D)
- Contamination investigation (Appendix I) and associated Remedial Action Plan (Appendix J)
- Preliminary Construction Environmental Management Plan (Appendix K)

Further detail on these additional supporting documents is provided in Section 4.3.

4.2 Public submissions

Table 4.1 provides responses to the summary of public submissions received during exhibition of the EIS.

Table 4.1 Response to public submissions

Issue	Main points	Number of submissions in which this issue has been raised	Response to submissions
Concern over tree removal	• Removal of Blue Gum High Forest as the ecological community in protected under both the Commonwealth and State Legislation • Concern over the number of large trees being removed • Resident are concerned because a large number of trees are marked with pink tape (usually an indication of trees being removed. • Pink tape is seen on trees where no works supposed to be undertaken in these areas	31	The EIS provided a detailed assessment of the potential biodiversity impacts of the project including removal of Blue Gum High Forest. The EIS assessment found that the project is highly unlikely to have a significant adverse effect on the local occurrence of Blue Gum High Forest. Since the EIS exhibition, a Preliminary Vegetation Management Plan has been developed to provide information on how the site's biodiversity will be restored, enhanced and protected in-perpetuity. This is attached in Appendix F of this RTS Report. Council has also undertaken tree surveys to inform the design development and the Preliminary Vegetation Management Plan. These surveys resulted in trees on the northern spoil mound being marked with pink tape to indicate that a tree had been surveyed. The marking with pink tape is not an indication of whether or not a tree will be removed. Copies of the tree surveys are provided in Appendix G of this RTS Report. The removal of a part of the Blue Gum High Forest is necessary in order to remove unstable areas and make the site safe. This removal and associated works will ensure the whole of the northern spoil mound is stable and guard against a far more extensive area of Blue Gum High Forest loss resulting from instability and embankment failure due to natural processes in the future. Tree loss has been limited to the fullest extent possible and will be offset as part of the site revegetation works. Council has also reviewed the community concerns raised over tree removal and has revised the design significantly to reduce the amount of tree removal required in the south west fill works area and Old Mans Valley. Section 7.3 of this RTS Report provides further detail on this.

Issue	Main points	Number of submissions in which this issue has been raised	Response to submissions
Funding	• It will cost around $31 million to part-fill the quarry • Costs of the proposal and acquisition of the quarry have been high. It is therefore vital assessments are thorough • Ability to fund the ongoing costs to ensure rehabilitation and biosecurity	1	The earthworks design has been developed to provide a cost effective way of stabilising the site and providing a final earthworks landform suitable for public access and future park development. Sufficient financial resources will be made available to implement the revegetation and rehabilitation measures as outlined in the Preliminary Vegetation Management Plan in Appendix F of this RTS Report. The State Government has also provided significant funding to support the preparation and development of the site into parkland. Future development of the site beyond this DA will consider opportunities for minimising on-going maintenance costs.
Unwanted weeds and flora	• Concerns over future weeds and unwanted flora growing in the possible future park	1	Section 3.2 of the Preliminary Vegetation Management Plan provides details of the proposed weed control methods that will be implemented to protect the site. The Preliminary Vegetation Plan is attached in Appendix F of this RTS Report.
Resident extremely opposed to having mountains bike track built	• Disturbance towards wildlife and possibly drive them away	3	The project covered by this DA does not include construction of mountain bike tracks. The creation of the future parkland (including any potential for future mountain bike tracks) would form part of a separate Development Application. As part of this future, separate process, Council will engage with the community and provide opportunity for the community to have their say.
Objections made against having any stadiums or large grandstands or professional football use	• Will create noise and pollution	2	The project covered by this DA does not include construction of stadiums or large grandstands or professional football use. The creation of the future parkland (including any future sports fields and associated seating and uses) would form part of a separate Development Application. As part of this future, separate process, Council will engage with the community and provide opportunity for the community to have their say.

Issue	Main points	Number of submissions in which this issue has been raised	Response to submissions
During the construction period	• J and H blocks are close to the vibration and noise areas on the DA • How long will it take? • Will council close off Bridge Road to access the site? • If Bridge Road is closed off a two-storey car park will be closed off	1	The CEMP will manage vibration, noise and dust associated with construction activities. The TAFE carpark access will be maintained throughout the works. In addition, the revised design will allow the construction period to be reduced to 21 months.
Preservation of the soil	• Emphasis on appropriate soil properties throughout the soil profiles • Maintaining soil quality	4	All topsoil from the proposed earthworks would be retained on site for reuse in bush regeneration work. To supplement retained topsoils, it is proposed to 'manufacture' soils that replicate the natural soils of the area from proposed areas of cut and by blending it with mulch or compost generated onsite from cleared vegetation. A soil assessment report was prepared to identify the feasibility of and requirements for engineering the site soil to re-establish and support Blue Gum High Forest and Blackbutt Gully Forest vegetation. The soil assessment report was included as Appendix K of the EIS. Further detail is also provided in the Preliminary Vegetation Management Plan which is attached in Appendix F of this RTS Report.
Noise	• Noise has an effect on the wildlife • Irritating for the nearby residents	5	The EIS provided a detailed assessment of the potential biodiversity impacts of the project including consideration of noise impacts on wildlife. The assessment found that any localised and temporary increase in noise levels during construction activities are unlikely to substantially impact on native biota. The potential for noise impacts during construction would be temporary and would be significantly reduced by implementation of appropriate environmental controls guided by the construction environmental management plan for the project. Additional detailed noise mitigation measures have been identified and documented in Section 4.4.1. These have been incorporated into

Issue	Main points	Number of submissions in which this issue has been raised	Response to submissions
			the preliminary construction environmental management plan (Appendix K of this RTS Report).
Question need for works in south west fill works area	• Unnecessary loss of trees • Need for works has not been adequately demonstrated	6	Council has reviewed the community concerns raised over tree removal and has revised the design significantly to reduce the amount of tree removal required in the south west fill works area and Old Mans Valley. Section 7.3 of this RTS Report provides further detail on this.
Biodiversity	• No SIS • Loss of habitat • Impacts on fauna • Threatened species such as the Powerful Owl, the Varied Stella and Grey-headed flying fox • Tree preservation • The tree removal will affect the habitats of the fauna and especially the threatened species • They would like it to be a sanctuary	18	The EIS provided a detailed assessment of the potential biodiversity impacts of the project including impacts to threatened species (including habitat). As outlined in Section 11 of the EIS, the biodiversity assessment included assessments of significance pursuant to s5A of the *Environmental Planning and Assessment Act 1979* for the Powerful Owl, Varied Sittella and hollow-roosting microchiropteran bats. The assessments found that project is unlikely to have a significant impact on any threatened biota within the study area. As such, a species impact statement is not required. The removal of a part of the Blue Gum High Forest is necessary in order to remove unstable areas and make the site safe. This removal and associated works will ensure the whole of the northern spoil mound is stable and guard against a far more extensive area of Blue Gum High Forest loss resulting from instability and embankment failure due to natural processes in the future. Tree loss has been limited to the fullest extent possible and will be offset as part of the site revegetation works. Council has reviewed the community concerns raised over tree removal and potential impacts on threatened species and has revised the design further to significantly to reduce the amount of tree removal required in the south west fill works area. Section 7.3 of this RTS Report provides further detail on this.

Issue	Main points	Number of submissions in which this issue has been raised	Response to submissions
			Furthermore, since the EIS exhibition, a Preliminary Vegetation Management Plan has been developed to provide information on how the site's biodiversity will be restored, enhanced and protected in-perpetuity. This includes extensive rehabilitation and revegetation works across the site. This is attached in Appendix F of this RTS Report. Rehabilitation would include re-plantings using species sourced from Blue Gum High Forest and the use of salvaged habitat features. The rehabilitation would therefore improve biodiversity values at the site in the long term. In addition to the revegetation and rehabilitation that would occur following construction, a range of mitigation measures have been proposed to ameliorate potential impacts of the project on habitat throughout the site and surrounds, as well as downstream of the proposed works. These include provision of no-go zones to protect native vegetation, fauna management protocols, site specific erosion and sedimentation management strategies.
Objections to cafes and restaurants in the park	• This will create more general waste that may end up in the bush land • Because of this rubbish it will attract unwanted animals like rats	1	The project covered by this DA does not include construction of cafes or restaurants. The creation of the future parkland (including any potential for future cafes or restaurants) would form part of a separate Development Application. As part of this future, separate process, Council will engage with the community and provide opportunity for the community to have their say.
Aboriginal remains and heritage	• The project is likely to impact any archaeological aboriginal remains • Need to preserve heritage	3	The EIS included assessment of Aboriginal heritage. The Aboriginal Survey Report concludes that no significant impact to Aboriginal heritage is expected. Mitigation measures have been identified to further minimise any potential for heritage impacts.
Replacing bike track with walking track	• Close proximity to home/ noise and privacy	1	The project covered by this DA does not include construction of mountain bike tracks or walking tracks. The creation of the future parkland (including any potential for future mountain bike tracks or walking tracks) would form part of a separate Development Application. As part of this future, separate process, Council will engage with the community and provide opportunity for the community to have their say.

Issue	Main points	Number of submissions in which this issue has been raised	Response to submissions
Tree inventory	• EIS is vague regarding no. of trees that will be removed • A tree inventory/arborist report should be prepared	12	Since the EIS exhibition, Council has undertaken tree surveys to inform the design development and the Preliminary Vegetation Plan. Copies of the tree surveys are provided in Appendix G of this RTS Report. Council has also reviewed the community concerns raised over tree removal and has revised the design significantly to reduce the amount of tree removal required in the south west fill works area and Old Mans Valley. Section 7.3 of this RTS Report provides further detail on this.
Water quality	• Lack of detail in relation to water quality impacts	4	Chapter 10 of the EIS and the accompanying Water Specialist Report provided an assessment of existing water quality, discharge concentrations and conditions, potential water quality impacts of the proposed works, and the impact of fill introduced through the NorthConnex project. This assessment found that risks to discharge water quality for the project is low. Further clarifications regarding water quality is also provided in Section 4.4.2 of this RTS Report.
Rehabilitation	• No details regarding off set planting/revegetation	9	Since the EIS exhibition, a Preliminary Vegetation Management Plan has been developed to provide information on how the site's biodiversity will be restored, enhanced and protected in-perpetuity. This includes extensive rehabilitation and revegetation works across the site. This is attached in Appendix F of this RTS Report. Rehabilitation would include re-plantings using species sourced from Blue Gum High Forest and the use of salvaged habitat features. The rehabilitation would improve biodiversity values at the site in the long term.
Lack of information	• Exhibition material was difficult to understand for the layman • Lack of detail in relation to equipment to be used, dust control access routes, timeframes for work etc	3 7	Noted. This RTS Report has been developed to provide clarification on the project and assessment outcomes. Section 6.3.2 of the EIS provided a list of plant and equipment expected to be required during construction. Section 6.3.5 of the

Issue	Main points	Number of submissions in which this issue has been raised	Response to submissions
	• Public consultation was poor	2	EIS identified that the project is expected to take approximately two years to complete. However the majority of key earthworks activities are expected to be completed in an approximate 60 week period. Section 6.3.4 identifies the proposed main site access via Bridge Road and Quarry Road for occasional deliveries of large equipment (due to steepness of Bridge Road access). A draft Construction Environmental Management Plan has been prepared and is attached in Appendix K of this RTS Report. Public consultation during EIS preparation was comprehensive. Chapter 3 of the EIS provides a summary of the consultation activities undertaken and outcomes. Consultation included: **Communication channels** • Email blast to 40,000 residents • Letters and emails to stakeholders • Updated project website • Community Deliberative Forum & Stakeholder meeting presentations • Information boards at Hornsby Mall community 'swing by' • Social media posts, media release **Engagement activities** • Presentation to Hornsby Shire Council • Reconvene the Community Deliberative Forum • Stakeholder meeting with Environmental and Bushwalking Stakeholder groups • Community 'swing by' in the Mall • Consultation with neighbours (letters, factsheets, meetings and phone calls)
Contamination	• No details in relation to potential contamination of the quarry	1	Chapter 14 of the EIS provided information on the potential contamination impacts of the project. This identified a number of potential contamination sources and associated contaminants of concern. The EIS identified the need for further investigations prior to undertaking the works.

Issue	Main points	Number of submissions in which this issue has been raised	Response to submissions
			Since EIS exhibition a targeted Detailed Site Contamination Investigation was undertaken at the site. A summary of results is provided in Section 4.3.5 and the detailed report is provided in Appendix I of this RTS Report. In addition a Remedial Action Plan has been prepared for the removal of the underground storage tank. A copy of the Remedial Action Plan is provided in Appendix J of this RTS Report.
Option to works	• Lack of detail in relation to what options have been considered (to reduce/eliminate tree removal) and why these were rejected	3	Section 11.4.1 of the EIS describes how the iterations to the project design have been made with each one further minimising impacts on native vegetation and fauna habitat. Table 11.4 quantifies the changes to vegetation clearing required for the design iterations. This demonstrates a reduction in total clearing area, native vegetation and Blue Gum High Forest.
Heritage – European	• Impacts on Higgins Family Cemetery • Crusher plant to be retained and revised	3	The project has been developed as far as possible to minimise direct impact on heritage items. The EIS included a Statement of Heritage Impact (summarised in Chapter 11 of the EIS) which found that the project would not result in any direct physical impact to the State listed Old Man's Valley Cemetery (SHR 01764), or locally listed items within the site including the 'Old Man's Valley Cemetery, including Higgins' Family Cemetery, sandstone receptacle, cool room and site of Higgins homestead on which the Higgins Family Memorial is located' heritage item (LEP A55), 'Hornsby Park—Lone Pine and sandstone steps' heritage item (LEP 513) and 'Sandstone steps' heritage item (LEP 537). The former Crushing Plant would not be affected by the project.
Heritage – Diatreme	• Diatreme to be retained/not covered • Scientific significance to be further investigated	12	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 for the NorthConnex filling works. The 2016 Planning Approval allowed for the diatreme face to be covered up to a level of RL64 m AHD. This DA proposes to cover the diatreme face to appropriately RL53 m AHD; 11 metres lower.

Issue	Main points	Number of submissions in which this issue has been raised	Response to submissions
			It is also noted that at present, the diatreme and other heritage items are inaccessible to the public due to safety risks. The project would address the safety risks and enable a public park to be created in the future. The project, by improving safety and accessibility of the site, would potentially result in enhanced community visitation and engagement with the heritage items located within this historic precinct (including the diatreme), and provide opportunities for greater understanding of their significant values and associations.
Heritage – General	• Quarry has special scientific significance	3	The heritage assessments undertaken as part of the EIS acknowledged the scientific (historical) significance of parts of the site particularly in the area of Old Mans Valley (a rare example of a complex of sites owned and occupied by one family – the Higgins Family – from the initial settlement of the place until the middle of the twentieth century) as well as the diatreme. These have been considered in the heritage assessments that were undertaken for the EIS. Refer to the above two items (Heritage – Diatreme and Heritage – European) for further responses.
Acquisition	• Properties in Manor Road to be acquired by Council	2	No properties are proposed to be acquired as part of this project. In the past, some properties along Manor Road have subdivided and bequeathed land which cannot be developed to Hornsby Council to be incorporated into the park.
Support	• Submissions in support of works that will allow future use as a parkland	7	Noted.
Options for future use	• Suggestions for future use of the area once works are completed	3	The creation of the future parkland (including future uses of the area once this project has been completed) would form part of a separate Development Application. As part of this future, separate process, Council will engage with the community and provide opportunity for the community to have their say.

4.3 Response to requests for clarifications from the Independent Planning Consultant

This section provides a summary of the responses to requests for clarifications from the Independent Planning Consultant (and a number of specialists for air quality, noise and vibration, heritage, biodiversity and geotechnical). Detailed response tables are provided in Appendix C including responses to independent reviews of:

- Noise and Vibration Impact Assessment
- Biodiversity Impact Assessment
- Geotechnical Investigation

4.3.1 Updated EIS Table 1.1

Table 4.2 provides an update to Table 1.1 of the EIS. It provides references to where the SEARs have been addressed. References are provided to the EIS as well as clarifications and supplementary information provided in this RTS Report.

Table 4.2 Secretary's Environmental Assessment Requirements

Requirement	Reference
The Environmental Impact Statement (EIS) for the development must comply with the requirements in Clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000. In particular, the EIS must include:	
• an executive summary;	EIS pages i to xii
• a comprehensive description of the development, including:	
– a detailed site description and brief history of previous quarrying and fill emplacement on the site, including a current survey plan;	EIS Chapter 4 provides a detailed site description. EIS Section 4.7 provides a brief history of previous quarrying and fill emplacement. Figure 01 in Appendix A of this RTS Report shows the current site survey.
– the layout of the proposed works and components (including any existing infrastructure that would be used for the development);	Figure 02 and Figure 04 in Appendix A of this RTS Report show the proposed final landform and the extent of works and various works areas respectively. Further detail is also provided in Appendix B of this RTS Report.
– an assessment of the potential impacts of the development, as well as any cumulative impacts, including the measures that would be used to minimise, manage or offset these impacts;	EIS Chapters 7 to 20 assess the impacts of the development and proposed mitigation measures. A summary of mitigation measures is also provided in EIS Chapter 20 and the Preliminary Construction Environmental Management Plan (Appendix K of this RTS Report)
– a detailed rehabilitation plan for the site;	The Preliminary Vegetation Management Plan provides details of the proposed rehabilitation for the site (Appendix F of this RTS Report)
– any likely interactions between the development and any existing/approved developments and land uses in	EIS Chapters 7 to 20

Requirement	Reference
the area, paying particular attention to construction impacts on nearby residential development;	
–a list of any other approvals that must be obtained before the development may commence;	EIS Section 2.1.7
–the permissibility of the development, including identification of the land use zoning of the site;	Permissibility is addressed in EIS Section 2.1. Land zoning is addressed in EIS Section 4.3 and clarified in Section 4.3.7 of this RTS document.
–identification of sensitive receivers likely to be affected by the development using clear maps/plans, including key landform areas, such as conservation areas and waterways;	EIS Chapter 4 provides details of the surrounding land uses including conservation areas. Impact assessment chapters provide maps of identified sensitive receivers (EIS Figure 8.1 and EIS Figure 9.1). EIS Figure 10.1 shows the existing surface water environment.
• a conclusion justifying why the development should be approved, taking into consideration: –alternatives; –the suitability of the site; –the biophysical, economic and social impacts of the project, having regard to the principles of ecologically sustainable development; and –whether the project is consistent with the objects of the *Environmental Planning and Assessment Act 1979*; and	EIS Chapter 21 and Section 7 of this RTS document.
• a signed declaration from the author of the EIS, certifying that the information contained within the document is neither false nor misleading.	At front of EIS document
In preparing the EIS for the development, you should consult with relevant local, State or Commonwealth Government authorities, infrastructure and service providers and any surrounding landowners that may be impacted by the development. The EIS must describe the consultation that was carried out, identify the issues raised during this consultation, and explain how these issues have been addressed in the EIS.	EIS Chapter 3 provides a summary of the consultation and EIS Appendix B provides further detail including consultation outcomes reports and copies of correspondence. Additional consultation and correspondence with the NSW EPA has occurred post exhibition. Details are provided Section 4.4 of this RTS Report.
The EIS must assess the potential impacts of the proposal at all stages of the development, including the construction, rehabilitation and final land use of the development.	EIS Chapters 7 to 20
The EIS must address the following specific issues: • **Noise** – including a quantitative assessment of potential: –construction noise impacts of the development in accordance with the *Interim Construction Noise Guideline* and *NSW Industrial Noise Policy* respectively; –reasonable and feasible mitigation measures to minimise noise emissions; and –monitoring and management measures;	EIS Chapter 8 provides a summary of the noise and vibration impact assessment. The detailed assessment is provided in EIS Appendix C EIS Section 8.4 includes proposed mitigation measures. More detailed monitoring and management measures are provided in the Preliminary Construction Environmental Management Plan (Appendix K)

Requirement	Reference
• **Blasting & Vibration** – –proposed hours, frequency, methods and impacts; and –an assessment of the likely blasting and vibration impacts of the development, having regard to the relevant ANZEC guidelines and paying particular attention to impacts on people, buildings, livestock, infrastructure and significant natural features;	No longer required (no blasting proposed)
• **Air** – including an assessment of the likely air quality impacts of the development in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*. The assessment is to give particular attention to potential dust impacts on any nearby private receivers due to construction activities;	EIS Chapter 9 provides a summary of the air quality assessment. The detailed assessment is provided in EIS Appendix D
• **Water** – including:	EIS Chapter 10 provides a summary of the water impact assessment. The detailed assessment is provided in EIS Appendix E. An updated assessment including revised water balance for the revised design is also provided in Section 7.2 of this RTS Report.
–an assessment of any volumetric water licensing requirements, including a description of site water demands, water disposal methods (inclusive of volume and frequency of any water discharges), water supply infrastructure and water storage structures;	EIS Section 10.3 and EIS Appendix E Sections 2.3, 5.4 and 6.1
–identification of any licensing requirements or other approvals required under the *Water Act 1912* and/or *Water Management Act 2000*;	EIS Appendix E Section 3 and 7
–demonstration that water for the construction and operation of the development can be obtained from an appropriately authorised and reliable supply in accordance with the operating rules of any relevant Water Sharing Plan (WSP)	EIS Appendix E Section 6.1 and 7
–a description of the measures proposed to ensure the development can operate in accordance with the requirements of any relevant Water Sharing Plan;	
–an assessment of activities, including but not limited to watercourse reestablishment, that could cause erosion or sedimentation, and the proposed measures to prevent or control these impacts;	EIS Appendix E Section 4.2, 6.2 and 7
–an assessment of any likely flooding impacts of the development; an assessment of potential impacts on the quality and quantity of existing surface and ground water resources, including a detailed assessment of proposed water discharge quantities and quality against receiving water quality and flow objectives; and	EIS Appendix E Section 2.4, 4.2, 5.4, 6.2, 6.3 and 7
–a detailed description of the proposed water management system, water monitoring program and other measures to mitigate surface and groundwater impacts;	EIS Appendix E Section 4.1 and 7
• **Biodiversity** – including:	EIS Chapter 11 provides a summary of the water impact assessment. The detailed assessment is provided in EIS Appendix F.

Requirement	Reference
–accurate predictions of any vegetation clearing on site;	EIS Appendix F Section 5.1.1 and clarified in Section 4.3.7 of this RTS document.
–a detailed assessment of the potential biodiversity impacts of the development, paying particular attention to threatened species, populations and ecological communities and groundwater dependent ecosystems;	EIS Appendix F Section 5
–a detailed description of the proposed measures to maintain or improve the biodiversity values of the site in the medium to long term, as relevant; and	EIS Appendix F Section 6.2.2 with further detail provided in the Preliminary Vegetation Management Plan (Appendix F of this RTS document).
–an assessment of whether a Species Impact Statement is required;	EIS Appendix F Section 5.4
Heritage – including:	EIS Chapter 12 provides a summary of the heritage assessments. The detailed assessments are provided in EIS Appendix G and H.
–an assessment of the potential impacts on Aboriginal heritage (cultural and archaeological), including evidence of appropriate consultation with relevant Aboriginal communities/parties and documentation of the views of these stakeholders regarding the likely impact of the development on their cultural heritage; and	EIS Appendix G
–identification of Historic heritage in the vicinity of the development and an assessment of the likelihood and significance of impacts on heritage items, having regard to the relevant policies and guidelines listed in Attachment 1;	EIS Appendix H
• **Traffic & Transport** – including: –accurate predictions of the road traffic generated during construction of the development, including a description of the types of vehicles likely to be used; –an assessment of potential traffic impacts on the capacity, condition, safety and efficiency of the local and State road networks, detailing the nature of the traffic generated, transport routes, traffic volumes and potential impacts on local and regional roads; –a description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road network (particularly the proposed transport routes) over the life of the development; –evidence of any consultation with relevant roads authorities, regarding the establishment of agreed contributions towards road upgrades or maintenance; and –a description of access roads, specifically in relation to nearby Crown roads and fire trails;	EIS Chapter 13 provides a summary of the traffic and transport assessment. The detailed assessment is provided in EIS Appendix I and supplementary information is provided in Section 4.3.4 of this RTS document and attached in Appendix H of this RTS document.
• **Land Resources** – including an assessment of:	EIS Chapter 14 provides a summary of impacts on soil, land capability and landform. Additional detail is provided in EIS Appendix J and the detailed site contamination assessment (Appendix I of this RTS).

Requirement	Reference
–potential impacts on soils and land capability (including potential erosion and land contamination) and the proposed mitigation, management and remedial measures (as appropriate); and	EIS Section 14.3 and the detailed site contamination assessment (Appendix I of this RTS).
–potential impacts on landforms (topography), paying particular attention to the long-term geotechnical stability of any new landforms;	EIS Section 14.3 and EIS Appendix J
• **Waste** – including estimates of the quantity and nature of the waste streams that would be generated or received by the development and any measures that would be implemented to minimise, manage or dispose of these waste streams;	EIS Chapter 15 and clarified in Section 4.3.7 of this RTS document.
• **Visual** – including an assessment of the likely visual impacts of the development on private landowners in the vicinity of the development and key vantage points in the public domain, including with respect to any new landforms;	EIS Chapter 16 and clarified in Section 4.3.7 of this RTS document.
• **Social & Economic** – an assessment of the likely social and economic impacts of the development, including consideration of both the significance of the resource and the costs and benefits of the project; and	EIS Chapter 17
• **Rehabilitation** – including:	EIS Chapter 18 and Chapter 5 provide summary information. The Preliminary Vegetation Management Plan provides details of the proposed rehabilitation for the site (Appendix F of this RTS Report)
–a detailed description of the proposed rehabilitation measures that would be undertaken throughout the development;	Preliminary Vegetation Management Plan (Appendix F of this RTS Report)
–a detailed rehabilitation strategy, including justification for the proposed final landform and consideration of the objectives of any relevant strategic land use plans or policies; and	Preliminary Vegetation Management Plan (Appendix F of this RTS Report)
–the measures that would be undertaken to ensure sufficient financial resources are available to implement the proposed rehabilitation strategy.	EIS Section 18.2
–a description of the biosecurity measures to prevent the introduction of weeds and pests.	Preliminary Vegetation Management Plan (Appendix F of this RTS Report)

4.3.2 Development application plans to provide further detail/information

The development application plans have been updated with the revised earthworks design and to include additional detail and information. Updates to the figures (Appendix A) included:

- Further refined earthworks design
- Revised extent of works
- Addition of the cadastre
- Production of a number of additional sections
- Labelling to clarify pre-NorthConnex filling surface levels
- Addition of work zones

Project No. 100125 Sheets 1-9 and the Overall Site Plan (attached in Appendix B) have also been updated to provide:

- Further information regarding the proposed civil works including retaining walls
- Further information regarding the proposed micropiling.

The revised figures and drawings are attached to the RTS Report in Appendix A and Appendix B.

4.3.3 Further description of the proposed development

Revised project description

A revised project description been prepared. This is provided in Section 6 and should be read as a replacement for Chapter 6 of the EIS and in conjunction with the figures/drawings and associated reports referenced.

This includes an indicative construction methodology and describes the type of plant required to undertake the works. This is based on the design and best understanding of the most likely construction methods at this stage of project development. 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.

Preliminary Vegetation Management Plan

A Preliminary Vegetation Management Plan has been prepared in response to issues raised in public submissions and the information request for further detail regarding rehabilitation and conservation of the biodiversity values of the site.

The Preliminary Vegetation Management Plan has been developed to provide information on how the sites biodiversity will be restored, enhanced and protected in-perpetuity. It describes the management actions that will be undertaken across the site supporting the conservation of biodiversity values in accordance with any conditions of approval.

The detail provided within the Preliminary Vegetation Management Plan will provide guidance on the development of a more detailed Vegetation Management Plan which will form part of a holistic Offsets Package for the project.

A copy of the Preliminary Vegetation Management Plan is provided in Appendix F.

Tree survey reports

Additional tree surveys have been undertaken to inform the design development process and the preparation of the Preliminary Vegetation Management Plan. The results of these surveys are provided in the tree survey reports attached in Appendix G.

4.3.4 Updated traffic impact statement

Following exhibition of the EIS, the independent planning consultant requested that traffic impacts be reassessed with updated traffic count volumes obtained in August 2019 and with consideration of potential impacts associated with the delivery of construction materials for civil works.

A Traffic Impact Statement has been prepared to provide the updated traffic assessment of the operation of the surrounding road network for the base case (year 2019) with comparison to the potential construction period scenario.

The assessment used SIDRA 8 intersection modelling to investigate the intersection operations associated with adjoining roads including Bridge Road, Peats Ferry Road, Jersey Street and George Street.

The modelling identified that the intersections perform with an acceptable Level of Service (i.e. better than Level of Service E) and spare capacity during the weekday AM and PM peak periods. The exception being the Railway Parade / Bridge Road / George Street intersection, which currently operates at Level of Service F in the PM peak period.

Additionally, the expected increase in construction traffic associated with the proposed Hornsby Quarry construction activity would have negligible impacts to the operation of the Peats Ferry Road / Bridge Road, Jersey Street (South) / Bridge Road, Jersey Street (North) / Bridge Road and Railway Parade / Bridge Road / George Street intersections compared to the existing scenario.

The Traffic Impact Statement supplements the traffic impact assessment report prepared as part of the EIS. A copy of the Traffic Impact Statement is provided in Appendix H.

4.3.5 Contamination investigation prior to determination

A targeted Detailed Site Contamination Investigation was undertaken at the site. The investigation included a desktop study, site walkover and limited soil and surface water sampling.

The field investigation conducted on 6 August 2019 included:

- four push tube / solid stem augered boreholes and three shallow hand augered holes at the former workshop area
- three trenches across selected areas of the south-west fill area
- three trenches across the eastern fill area
- three soil grab samples from the northern spoil mound works area, and
- one surface water sample from the diversion channel at the base of the northern fill slope.

All analytical results were reported below the nominated human and ecological criteria, with the exception of nickel and zinc results in some soil samples. GHD consider these results to be related to the natural rock and soil properties of the sampled material, and are not considered to be indicative of contamination.

Visual and olfactory indicators of hydrocarbon contamination were noted in two boreholes adjacent to the southern and eastern sides of the existing underground storage tank. These samples reported results below the selected site assessment criteria.

Based on the findings of the investigation, the risk of exposure to contaminants of potential concern for on-site and off-site receptors was confirmed to be low. However it was acknowledged there is the potential for contamination to exist associated with the underground storage tank. The investigation included a recommendation to remove the underground storage tank and develop a Remedial Action Plan for its removal.

The investigation also recommended that the construction environment and management plan for the project include:

- An unexpected finds protocol should be developed to manage potential unexpected finds, including asbestos containing material, at the workshop area, and also at the fill areas.
- The management of surface aesthetics (with regard to anthropogenic materials in soils) during removal and reshaping of spoil in the fill areas.

- A remedial action plan should be developed for the removal of the UST and associated impacted soils (if required).

A copy of the Detailed Site Contamination Investigation is provided in Appendix I.

A Remedial Action Plan has also been prepared for the removal of the underground storage tank. A copy of the Remedial Action Plan is provided in Appendix J. The project would include implementation of the Remedial Action Plan.

4.3.6 Preparation of a Construction Environmental Management Plan (CEMP) prior to determination

A Preliminary Construction Environmental Management Plan has been developed to provide further information on the proposed environmental management framework and associated management procedures to be implemented as part of the project.

The plan provides details of the proposed site, work zones, site management and safety, incident and complaints protocols, construction traffic management, proposed site facilities and soil manufacturing.

The plan includes details of the proposed mitigation and management measures that will be undertaken during the construction of the project for each of the key environmental aspects, including:

- Noise
- Vibration
- Air quality
- Water quality
- Biodiversity
- Aboriginal heritage
- Non-Aboriginal heritage
- Traffic and transport
- Land resources and contamination
- Waste management
- Visual amenity

The plan also includes an overview of how the plan would be implemented and identifies the individual plans and procedures to be prepared by the Contractor prior to commencement of the works.

A copy of the Preliminary Construction Environmental Management Plan is provided in Appendix K.

4.3.7 Other minor items for clarification

The following sections provide some minor clarifications for the EIS. References to the sections in the EIS where the clarifications apply are provided.

EIS Section 3.2.1 – Matters for consideration in Hornsby LEP 2013 Clause 6.2(3)

Clause 6.2(3) of the LEP identifies that matters the consent authority must consider prior to determining and application under this clause. The sections of the EIS that address the matters the consent authority must consider are identified in Table 4.3.

Table 4.3 Matters the consent authority must consider per Clause 6.2(3) of the LEP

Matter for consideration	Response
(a) the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development	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. A large portion of 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 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 environmentally sensitive area,	Chapter 10 of the EIS provides an assessment of water impacts including consideration of potential water quality impacts
(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

EIS Section 3.3.1 – Engagement activities

The agency consultation that formed part of EIS preparation 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.

Appendix B of the EIS contains the stakeholder engagement outcomes report with details of non-statutory consultation undertaken – including stakeholder groups.

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.

EIS Section 4 – Description of the site

Section 4.3 of the EIS identifies the zoning of the site as RE1 Public recreation. However it is noted that there is also a small section of land within the project site that is connected to Summers Avenue that is zoned as R2 Low Density Residential. The proposed development (recreational area) is also permitted within this zoning with consent.

Figure 4.2 of the EIS shows the site layout and contours of the site prior to the NorthConnex filling works.

The NorthConnex filling works was ongoing during preparation of the EIS and therefore for the purpose of the EIS assessments, it was assumed that filling would be undertaken in accordance with the 2016 Planning Approval prior to the commencement of works for the project. It is now known that the final surface level of fill placed by NorthConnex is approximately RL58 mAHD 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 mAHD. The surcharge material placed at the eastern end of the void will be removed as part of this rehabilitation project. Figure 01 of Appendix A of this RTS Report provides a plan showing this filling complete.

EIS Section 5 – Strategic justification

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"

EIS Section 11.3.1 – Biodiversity

The project described in the EIS was to have removed 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 Table 11.2 of the EIS. 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 of the EIS). The quantities of native vegetation clearing and total vegetation clearing shown in Table 11.2 of the EIS are correct.

Since EIS exhibition, further refinements to the earthworks design have been made in order to reduce the extent of native vegetation requiring removal in the south-west fill works area and Old Mans Valley.

Table 7.1 shows the revised extent of impacts on vegetation within the site – based on the updated earthworks design. This shows that a total of 3.86 ha of vegetation would be removed, of which 1.55 ha is native vegetation. This represents a 2.03 ha reduction in total vegetation removal and a 0.95 ha reduction in native vegetation removal compared to the design presented in the EIS.

EIS Chapter 12 – Heritage

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.

The final surface level of fill placed by NorthConnex is now known to be at approximately RL58 m 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 m AHD. The surcharge material will be removed as part of this.

EIS Chapter 15 – Waste management

All vegetation including weeds would be mulched on site as part of soil manufacturing. The mulching would be undertaken (to reach appropriate temperatures) so that the resulting product is free of pathogens.

The Preliminary Vegetation Management Plan for the project also provides further detail on soil manufacturing (see Appendix F).

EIS Chapter 16 – Visual

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. Visual impacts of removal of vegetation have been considered in the visual impact assessment undertaken for the EIS.

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 in the EIS to be low at both these locations.

In addition, a reduction in the amount of vegetation requiring removal in the south-west fill works area would further reduce any potential for visual impacts from viewpoints along the Blue Gum Walking Track and Rosemead Road Picnic Area.

The proposed revegetation and rehabilitation works are outlined in the Preliminary Vegetation Management Plan (see Appendix F).

4.4 Requests for clarification from Government agencies

4.4.1 Additional noise assessment clarifications

The NSW EPA requested some clarifications regarding the noise and vibration impact assessment (NVIA) prepared for the EIS. Additional information was prepared regarding:

- the duration and extent of noise impacts from each work phase at each noise catchment area
- proposed mitigation measures to be applied to manage noise from each work phase
- the likely effectiveness of proposed mitigation measures
- procedures to manage residual noise impacts

A summary is provided below and details including the correspondence and clarifications are provided in Appendix D.

Duration and extent of noise impacts

The NVIA prepared for the EIS considered four main construction work areas, being the northern works, western works, the eastern works and the quarry works. The exact duration for the works in each area is not yet known, however it can be estimated that the works in each area would be approximately 20 weeks in duration. The works in each area are likely to occur concurrently at some point throughout the project and as such, three worst-case scenarios were modelled in the NVIA report, being:

Scenario 1 – approximately 20 weeks in duration

- West: Excavation and rock breaking/ripping/crushing works
- Quarry: Rock ripping, filling works, screening and excavation

Scenario 2 – approximately 20 weeks in duration

- North: Excavation works
- Quarry: Excavation, Rock breaking/sawing/crushing, filling and screening
- East: Excavation and filling

Scenario 3 – approximately 20 weeks in duration

- West: Excavation and rock sawing
- Quarry: Filling
- East: Rock ripping/sawing/crushing, filling, excavation and screening

Based on this information, the NVIA provided conservative predictions of construction noise at receivers based on an indicative construction schedule of likely activities.

Once the contractor has been selected and the exact construction methodology and program have been determined, a Construction Noise Management Plan (CNMP) should be prepared to describe in further detail the methods that will be implemented for each construction work phase to minimise noise impacts.

The CNMP should identify any further noise modelling to be undertaken (if required), and should provide further detail for mitigation measures once all the required construction methodology information has been received. The ICNG states the CNMP should be undertaken during the post-approval phase of the project and not during the pre-approval stage (limited information is available).

The predicted exceedances above the NML for scenarios CS1B, CS2D and CS3D are shown graphically for all receivers in the study area in Figure 4.1, Figure 4.2 and Figure 4.3. Refer to the NVIA for further detail on the scenarios.

It should be noted that these results are for construction scenarios assessed in the NVIA for the EIS. The recent changes to the design following EIS exhibition would reduce the earthworks design extent and therefore ‘construction boundary’ compared to what is shown on these figures. The changes would also reduce the duration of earthworks activities and associated noise.

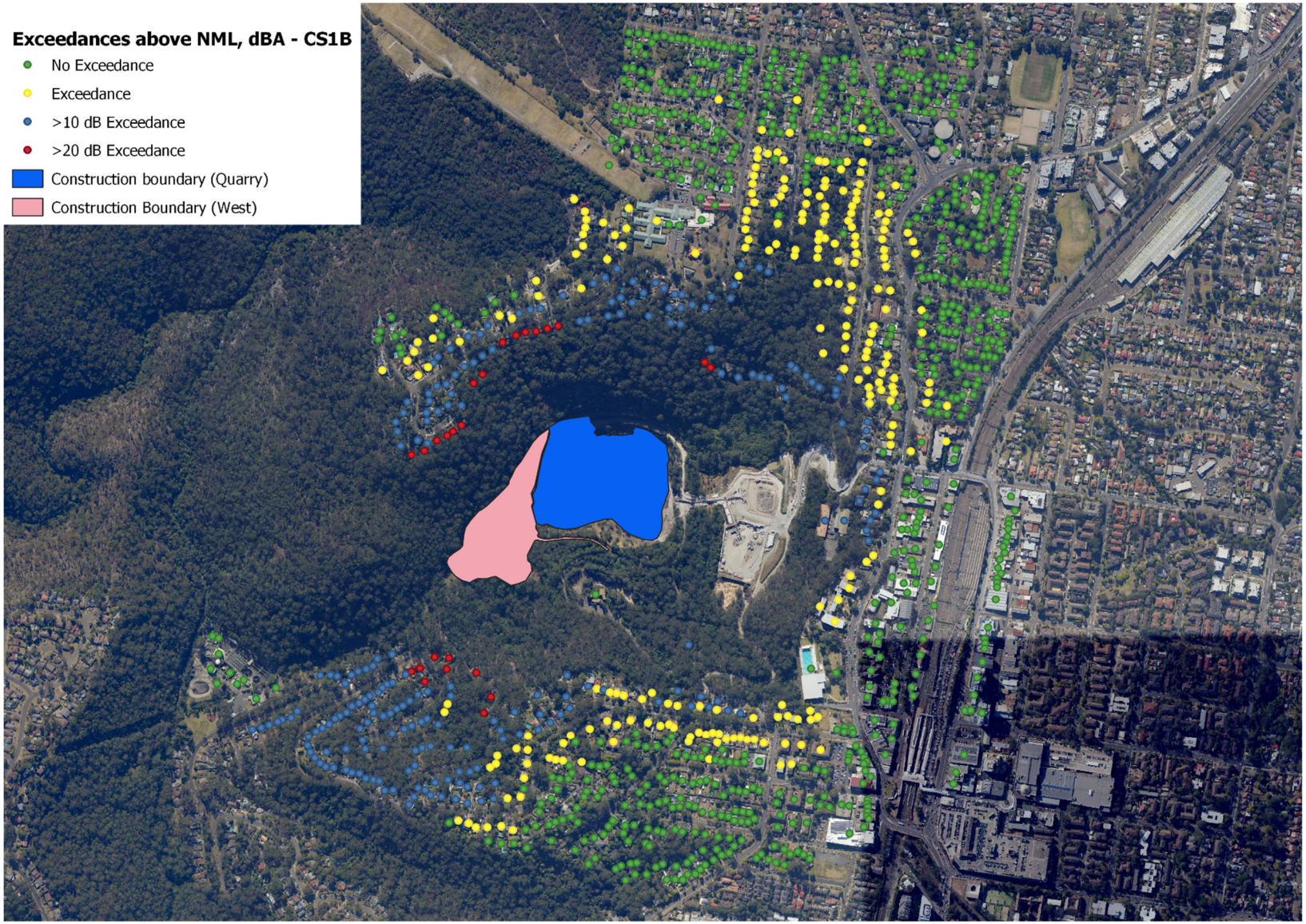


Figure 4.1 Exceedances above the NML, dBA – CS1B (includes rock-breaking works)

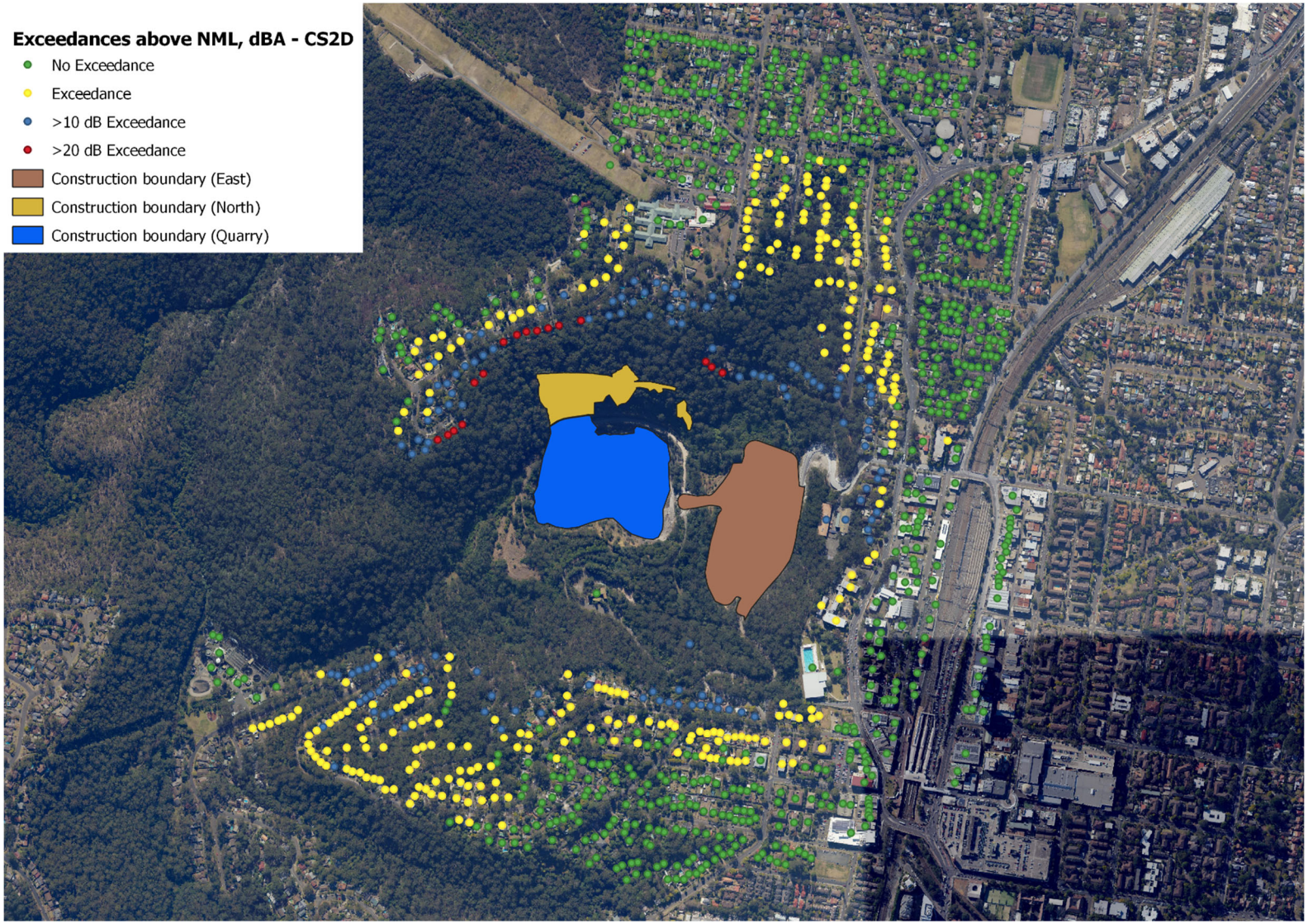


Figure 4.2 Exceedances above the NML, dBA – CS2D (includes rock-breaking works)

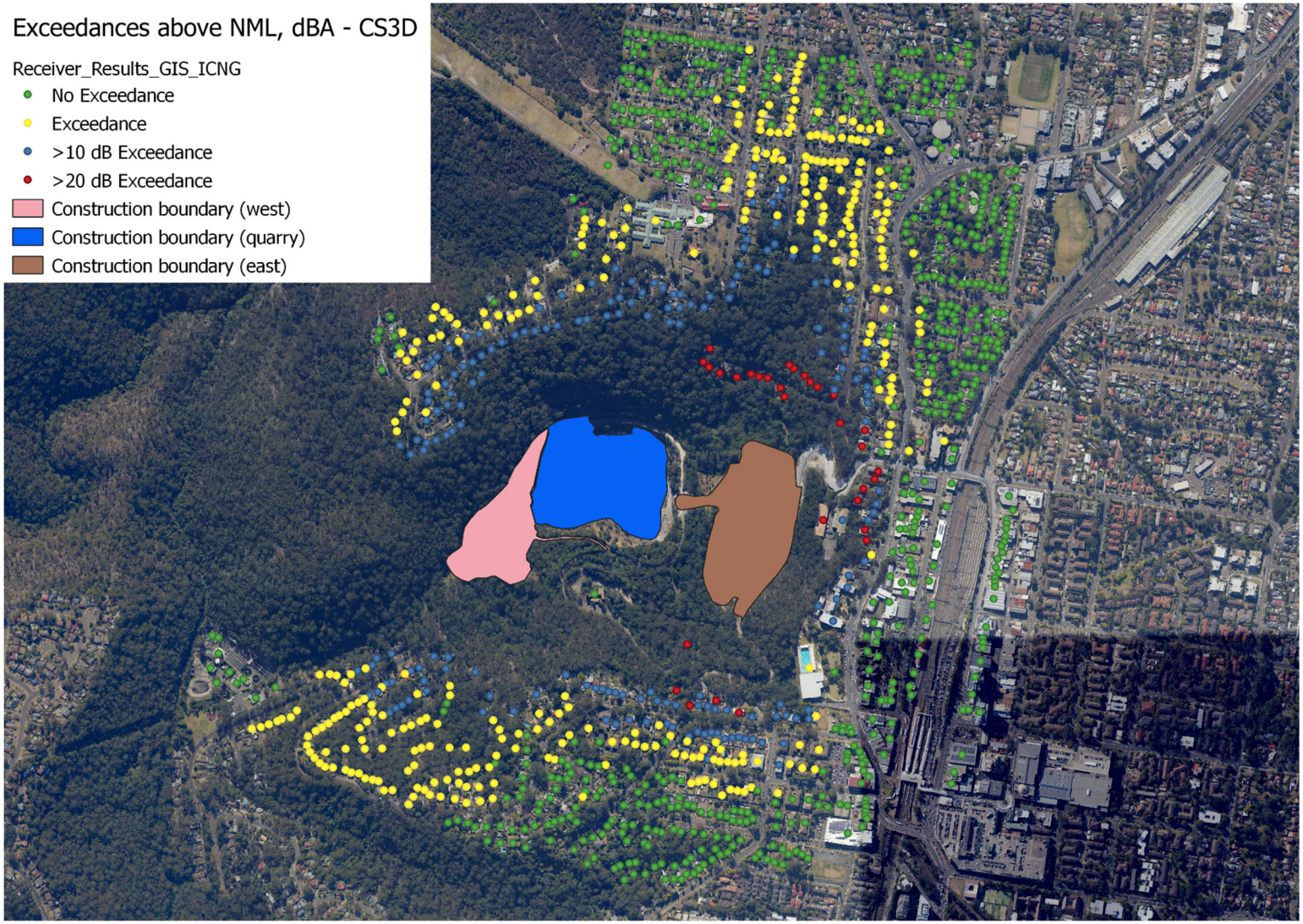


Figure 4.3 Exceedances above the NML, dBA – CS3D (includes rock-breaking works)

Proposed mitigation measures

The proposed mitigation measures to be applied have been re-evaluated and are presented in Table 4.4 below.

Table 4.4 Management measures to reduce construction noise and vibration impacts

Action required	Detail of the mitigation measure	Responsible party	Timing
Implementation of any project specific mitigation measures required	Any project specific mitigation measures identified in the EIS documentation or approval or licence conditions must be implemented.	Contractor	Throughout project duration
Implement stakeholder consultation measures	Periodic notification (monthly letterbox drop and website notification) detailing all upcoming construction activities delivered to sensitive receivers at least 7 days prior to commencement of relevant works. In addition to Periodic Notification, the following strategies may be adopted on a case-by-case basis: • Project Specific Website • Project Infoline • Construction Response Line • Email Distribution List • Web-based Surveys • Social Media • Community and Stakeholder Meetings and • Community Based Forums (if required by approval conditions).	Contractor	Throughout project duration
Register of noise and vibration sensitive receivers	A register of most affected noise and vibration sensitive receivers (NVSRs) would be kept on site (receivers that have been identified as receiving noise levels greater than 20 dB above the noise management level). The register would include the following details for each NVSR: • Address of receiver • Category of receiver (e.g. Residential, Commercial etc.) • Contact name and phone number (if available) • The register may be included as part of the project's Community Liaison Plan or similar document and maintained in accordance with the requirements of this plan.	Contractor	Throughout project duration
Construction hours and scheduling	All activities on site should be confined between the hours: daytime hours of 7:00 am to 6:00 pm from Monday to Friday and 8:00 am to 1:00 pm on Saturday	Contractor	Throughout project duration
Construction respite period	Noise with special audible characteristics and vibration generating activities (including rock hammering, rock breaking and vibratory rolling) may only be carried out in continuous blocks, not exceeding 3 hours each, with a	Contractor	Throughout project duration

Action required	Detail of the mitigation measure	Responsible party	Timing
	minimum respite period of one hour between each block. 'Continuous' includes any period during which there is less than a 1 hour respite between ceasing and recommencing any of the work.		
Site inductions	All employees, contractors and sub-contractors are to receive an environmental induction. The induction should include: • all relevant project specific and standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/ unloading areas and procedures • construction traffic routes • site opening/closing times (including deliveries) • environmental incident procedures • all personnel on site should be made aware of the potential for noise impacts and should aim to minimise impact or elevated noise levels, where possible. • regular identification of noisy activities and adoption of improvement techniques	Contractor	Prior to construction works and throughout project duration
Behavioural practices	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors. No excessive revving of plant and vehicle engines. Controlled release of compressed air.	Contractor	Throughout project duration
Noise monitoring	A noise monitoring procedure and program should be carried out for the duration of works in accordance with the Construction Noise and Vibration Management Plan and any approval and licence conditions. Noise monitoring reports should be prepared in accordance with the requirements of the noise monitoring procedure.	Contractor	Throughout project duration
Update Construction Environmental Management Plans	The CEMP must be regularly updated to account for changes in noise and vibration management issues and strategies.	Contractor	Throughout project duration
Source mitigation measures			
Plan worksites and activities to minimise noise and vibration	Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site.	Contractor / construction employees	Prior to construction works and throughout project duration

Action required	Detail of the mitigation measure	Responsible party	Timing
Construction vehicles traffic routes	Construction heavy vehicles utilising Dural Street and Quarry Road should be limited to one vehicle per hour during the night period	Contractor / construction employees	Throughout project duration
Equipment selection	Use quieter and less vibration emitting construction methods where feasible and reasonable	Contractor / construction employees	Prior to construction works and throughout project duration
Maximum noise levels	The noise levels of plant and equipment must have operating Sound Power equal or less than the levels stated in Table 5-1 of the Hornsby Quarry Rehabilitation EIS (NVIA Nov 2018)	Contractor	Prior to construction works and throughout project duration
Use and siting of plant	Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided. The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers.	Contractor / construction employees	Throughout project duration
Non-tonal reversing alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work, including delivery vehicles.	Contractor	Throughout project duration
Construction related traffic	Schedule and route internal vehicle movements away from sensitive receivers and during less sensitive times. Limit the speed of vehicles and avoid the use of engine compression brakes.	Contractor / construction employees	Throughout project duration
Silencers on Mobile Plant	Where possible reduce noise from mobile plant through additional fittings including: • Residential grade mufflers • Damped hammers such as “City” Model Rammer Hammers • Air Parking brake engagement is silenced.	Contractor / construction employees	Throughout project duration
Engine compression brake	Limit the use of engine compression brakes at night and in residential areas. Ensure vehicles are fitted with a maintained original equipment manufacturer exhaust silencer or a silencer that complies with the National Transport Commission’s ‘In-service test procedure’ and standard.	Contractor / construction employees	Throughout project duration
Transmission path mitigation measures			
Shield stationary noise sources such as pumps, compressors, fans etc	Stationary noise sources should be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained.	Contractor / construction employees	Throughout project duration

Action required	Detail of the mitigation measure	Responsible party	Timing
Shield sensitive receivers from noisy activities	Use structures to shield residential receivers from noise such as site shed placement; earth bunds; fencing; erection of operational stage noise barriers (where practicable) and consideration of site topography when situating plant.	Contractor / construction employees	Prior to construction works and throughout project duration

Likely effectiveness of proposed mitigation measures

Table 4.5 and Table 4.6 present the likely effectiveness of the proposed mitigation measures at the source and in the transmission path.

Table 4.5 Relative effectiveness of various forms of noise control at the source

Control by	Nominal noise reduction possible (dBA)	Discussion of effectiveness	
		Mobile plant[1]	Stationary plant[2]
Distance	Approximately 6 for each doubling of distance	Very effective when implemented	Very effective when implemented
Screening	Normally 5 to 10 (maximum of 15)	Not generally possible and not effective, This is not recommended as most plant are mobile	The noise due to the project is dominated by mobile plant. Screening will likely have a negligible effect on noise levels at receivers.
Enclosure	Normally 15 to 25 (maximum 50)	Not generally possible and not effective for this project. This is not recommended as the majority of the noise plant are mobile.	The noise due to the project is dominated by mobile plant. Screening of stationary sources will likely have a negligible effect on noise levels at receivers.
Silencing / mufflers	Normally 5 to 10 (maximum 20)	Very effective when implemented – expected reduction of 10 dB. Not effective for rock breaking/ripping as the dominant noise source is from the impact of the attachment to the rock	N/A

1. Mobile plant refers to excavators (with attachments), dump trucks, bulldozers, mobile crushers, loaders, mobile screens, rollers/compactors, water cart, tub grinder and mulcher
2. Stationary plant refers to generators, A/C units, compressors, pumps etc.

Table 4.6 Relative effectiveness of various forms of noise control in the transmission path

Control by	Nominal noise reduction possible (dBA)	Discussion of effectiveness	
		Mobile plant	Stationary plant
Shield stationary noise sources such as pumps, compressors, fans etc.	Depends on the location of source and the receiver (normally 5 to 15)	N/A	Effective when it breaks the line of sight between the source and receiver. Not

Control by	Nominal noise reduction possible (dBA)	Discussion of effectiveness	
		Mobile plant	Stationary plant
			effective if it doesn't.
Shield sensitive receivers from noisy activities	Depends on the location of source and the receiver (normally 5 to 15)	Effective when it breaks the line of sight between the source and receiver. Not effective if it doesn't.	Effective when it breaks the line of sight between the source and receiver. Not effective if it doesn't

Procedures to manage residual noise impacts

The assessment and management of residual noise impacts is a requirement of the Noise Policy for Industry and does not form part of the quantitative assessment procedure in the Interim Construction Noise Guideline.

Subsequent to all the feasible and reasonable work practices being applied, the ICNG recommends that if the predicted levels are below the highly affected noise level, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and inform of any respite periods. This has been proposed as presented in the management mitigation measures to reduce construction noise and vibration impacts (Table 4.4).

In lieu of any framework within the ICNG to assess and manage residual construction noise impacts, it is proposed that guidance be taken from Transport for NSW's Construction Noise Strategy as a suitable framework to manage additional noise mitigation measures.

These mitigation measures are dependent on how far the predicted construction noise levels are above the noise management level (NML). Note no receivers have been predicted to exceed the highly noise affected level of 75 dBA, however compliance monitoring would be required to confirm these levels. Reference can be made to Figure 4.1, Figure 4.2 and Figure 4.3 to determine the additional mitigation measures applicable for the receivers within the moderately intrusive and highly instructive ranges.

Table 4.7 Implementing additional noise management measures

Construction hours	Receiver perception	dB(A) above NML	Additional mitigation measures (refer to Table 4.8)
Standard hours	Noticeable	0	-
	Clearly audible	< 10	-
	Moderately intrusive	> 10 to 20	PN, V
	Highly intrusive	> 20	PN, V
	75 dBA or greater	N/A	PN, V, SN

Table 4.8 Details of the additional noise mitigation measures to be applied

Mitigation measure	Details of mitigation measure
Periodic notification (PN)	A notification entitled 'Project Update' or 'Construction Update' is produced and distributed to stakeholders via letterbox drop and distributed to the project postal and/or email mailing lists. Periodic notifications provide an overview of current and upcoming works across the project and other topics of interest. The objective is to engage, inform and provide project-specific messages. Advanced warning of potential

Mitigation measure	Details of mitigation measure
	disruptions (e.g. traffic changes or noisy works) can assist in reducing the impact on stakeholders. The approval conditions for projects specify requirements for notification to sensitive receivers where works may impact on them.
Verification monitoring (V)	Long-term verification monitoring of noise during construction should be conducted at a minimum of four affected receiver(s) surrounding the project area. Monitoring should provide alerts to the contractor when the highly noise affected level is exceeded (or a level agreed with the regulator). The purpose of monitoring is to confirm that: • construction noise and vibration from the project are consistent with the predictions in the noise assessment • mitigation and management of construction noise and vibration is appropriate for receivers affected by the works Where noise monitoring finds that the actual noise levels exceed those predicted in the noise assessment then immediate refinement of mitigation measures may be required and the construction noise and vibration management plan amended
Specific Notification (SN)	Specific notifications are in the form of a personalised letter or phone call to identified stakeholders no later than seven calendar days ahead of construction activities that are likely to exceed the noise objectives. Alternatively (or in addition to), communications representatives from the contractor would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities and provide an individual briefing. Letters may be letterbox dropped or hand distributed Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and their specific needs Individual briefings are used to inform stakeholders about the impacts of noisy activities and mitigation measures that will be implemented. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project

4.4.2 Water impact assessment clarifications

A revised discharge assessment was requested by the EPA which also noted that the detail of the discharge impact assessment should be commensurate with the risk. A discharge assessment was provided in the Water Specialist Report which includes assessment of existing water quality, discharge concentrations and conditions, potential water quality impacts of the proposed works, and the impact of fill introduced through the NorthConnex project.

The risk to discharge water quality for the project is low. This is partially on the basis that the impact on water quality due to introduction of fill material is assessed, and subsequently approved, in the EIS prepared for the emplacement project. This EIS also proposed ongoing discharge after completion of the emplacement project. Therefore, the risks associated with this project should be assessed to the extent that they are in addition to the baseline (assessed and approved) conditions with the baseline conditions including filling of the void and ongoing dewatering. These risks are low and are considered in the Water Specialist Report to a level commensurate with the risk.

Notwithstanding the above, responses to the specific information requests raised by the EPA are listed in Table 4.9.

Table 4.9 Response to request for water impact clarifications

EPA requested information	Response
The relevant environmental values for the receiving waterways.	Flows discharged from the quarry void enter Old Mans Creek which is a tributary of Waitara Creek and ultimately Berowra Creek. Relevant environmental values for the receiving waterways in the vicinity of this project include aquatic ecosystem health and visual amenity.
Details of how site specific guideline values (the Regional Environmental Health Values) were derived demonstrating that this is consistent with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality ANZG (2018).	Council has historically compared water quality results from these catchments against default trigger values for aquatic ecosystem protection in South East Australian lowland east flowing rivers - slightly to moderately disturbed systems (ANZECC, 2000). As recommended in the Guidelines (2000), Council established Regional Environmental Health Values in 2012, based on long term (15 years) monitoring data from two local reference sites. These sites are considered to represent the highest quality of water health against which the water quality in other water bodies can be compared. Monitoring of physical, chemical and biological indicators at these sites provide a benchmark for assessing and maintaining aquatic ecosystem health in waterways in the local region. Further detail on the development of the REHVs can be found in Section 6 of the Hornsby Shire Council (2012) 'Water Quality Companion Technical Report'.
Updated characterisation of the quality of the proposed discharge in terms of the concentrations and loads of all pollutants potentially present at non-trivial levels. These pollutants should be based on a risk assessment of the potential pollution sources, such as potential contaminants mobilised from the NorthConnex tunnel spoil, and may include:	Risks in relation to water quality impacts were assessed and approved through the EIS for the NorthConnex emplacement project. The works associated with the project would not introduce significant additional risks as they would not significantly change the nature of the material in the void, and the requirement (and approval) to dewater the void would exist regardless of the current proposal. Nevertheless, an assessment in relation to the NSW EPA identified analytes is provided below.
• Metals • Salinity/electrical conductivity	The dewatering is not anticipated to result in significant impacts with relation to these analytes based on the imported material being ENM, as assessed in the EIS for the emplacement project.
• pH	Discharge quality monitoring is now available from the NorthConnex project. This corresponds to discharge of water from the void that has come into contact with the emplaced material. The 12 samples since 11 September 2019 are within the allowable range of Council's dewatering licence and very similar on average to the quarry dewatering before the material emplacement. As noted in the Water Specialist Report, the historical dewatering of the void at these levels is likely to have not altered the pH in the downstream waterway above natural levels for similar environments. Therefore, as the proposed dewatering is similar to the historical dewatering with relation to pH, no significant impacts downstream with relation to pH are anticipated.
• Turbidity	Discharge quality monitoring is now available from the NorthConnex project. This corresponds to discharge of water from the void that has come into contact with the emplaced material. Out of 12 samples since 11 September 2019 all

EPA requested information	Response
	measured a turbidity within the allowable range of Council's dewatering licence. This is the most accurate indicator of potential future pumped dewatering from the void.
• Suspended solids	In-field monitoring of turbidity, as discussed above, is the most appropriate indicator of suspended solids in the absence of laboratory total suspended solids (TSS) analysis. As such, the above turbidity monitoring is the most accurate indicator of future performance with relation to suspended solids. Furthermore, TSS is proposed to be monitored throughout the project as outlined in the Water Specialist Report. Treatment and pumping practices would be altered in the case that elevated TSS concentrations occur in discharged water
• Oil and grease	There are no significant potential sources for oil and grease in the proposed works other than from vehicular movements during the construction phase. This would be mitigated through implementation of spill control measures, as well as through the extraction of water for discharge at some depth and not directly on the surface where hydrocarbons would accumulate, if present
• Nutrients	Monitoring of nutrients is proposed in the Water Specialist Report, with triggers also proposed to prompt further action.
A revised assessment of the potential impact of the proposed discharge on the environmental values of the receiving waterways based on the updated discharge characterisation and with reference to relevant guideline values.	The proposed discharge is not anticipated to result in significant impacts on the basis of the following: • pH would be monitored and is anticipated to be within the range of the dewatering licence based on available monitoring of dewatering after emplacement of fill from the NorthConnex project • Turbidity would be monitored and is anticipated to be within the allowable range of Council's dewatering licence based on available monitoring of dewatering after emplacement of fill from the NorthConnex project • Risks with relation to other analytes are anticipated to be low on the basis of the nature of the ENM material which is predominately crushed sandstone and some shale, and also based on consideration that the baseline approved conditions already include placement of the ENM material and subsequent dewatering. Notwithstanding this, monitoring and trigger response actions are nominated in the Water Specialist Report as a further level of protection.

5. Changes to the project

In response to public submissions and communication and engagement activities, the earthworks design has been further refined to reduce the extent of excavations required in the south-west fill works area and Old Mans Valley, and therefore the extent of vegetation/tree removal in this area.

Table 5.1 presents a summary of the changes to the project scope in response to submission received. A full description of the revised project is provided in Section 6.

Table 5.1 Summary of changes to the project scope in response to submission received

Aspect	EIS project	Revised project	Comments/issues addressed
Project title	The project title of the EIS is "Hornsby Quarry Rehabilitation"	The revised project title is: "Hornsby Quarry Rehabilitation works including bulk earthworks (and associated civil works including construction of access tracks, drainage and retaining walls), site remediation, tree removal, revegetation work and site rehabilitation"	Project title updated to include more detailed description of the works included in the development application
Extent of works	Total area of the extent of works presented in the EIS is 9.07 ha Refer to Figure 6.1 of the EIS which shows the extent of works proposed in the EIS	Total area of extent of works for the revised project is 6.97 ha Refer to Figure 04 in Appendix A of this RTS Report for revised extent of works	The changes to the project will result in a reduction in the extent of works by 2.1 ha
Final landform, bulk earthworks and spoil volume	Earthworks design is presented in Figure 6.2 of the EIS along with cut and fill details The design in the EIS would generate approximately 500,000 m^3 of spoil from onsite earthworks	Figure 02 in Appendix A of this RTS Report presents the revised earthworks design and Figure 06 in Appendix A of this RTS Report presents the revised cut and fill details. The revised design would generated approximately 240,000 m^3 of spoil from onsite earthworks	The changes to the project will result in a reduction in onsite spoil generation by approximately 260,000 m^3 The changes to the design resulting from the submissions raised has reduced the impact area in the south-west fill area and Old Mans Valley. This has resulted in a reduced extent of earthworks, reduced construction cost and reduced tree removal. The revised design will result in a reduction to impacts on biodiversity and will also reduce the duration and intensity of construction activities. These changes are also expected to reduce potential for associated air quality (dust) and noise impacts as a result of reduced construction activities.
Civil works including retaining walls	Figure 14.1 of the EIS and Drawing Set 100125 Sheets 1 to 8 of the Development Application Summary and Supporting Plans	Appendix B of this RTS Report presents the revised retaining wall and micropile wall details	The changes to the earthworks design and fill levels resulted in a reduction in fill in the quarry void. This required some

Aspect	EIS project	Revised project	Comments/issues addressed
	presents the locations and details of the retaining walls proposed for project presented in the EIS		amendments to the retaining walls in the void to accommodate the reduced fill volumes
Estimated duration of works	Estimated duration of 24 months (2 years)	Estimated duration of 21 months	The changes to the project will result in a reduction in the estimated duration of construction by 3 months
Removal of vegetation / trees	The project presented in the EIS includes: • Removal of 2.5 ha of native vegetation • Removal of 5.89 ha of total vegetation	The revised project includes: • Removal of 1.55 ha of native vegetation • Removal of 3.86 ha of total vegetation Further information is provided in Section 7.3 of this RTS Report	The changes to the project will result in: • A reduction in removal of native vegetation by 0.95 ha (38% reduction) • A reduction in removal of total vegetation by 2.03 ha (34% reduction)
Contamination	The project includes further investigation of contamination prior to works commencing	Following further detailed contamination investigations, the project now includes the removal of the existing underground storage tank located in the old quarry workshop area in the north west corner of the site in accordance with the Remedial Action Plan (provided in Appendix J of this RTS Report)	The additional investigations and resultant inclusion of remediation works as part of the project will provide clarity around how contamination will be managed during the works
Revegetation and rehabilitation	Chapter 18 of the EIS identifies potential areas for bush regeneration	The revised project includes revegetation and rehabilitation to be undertaken in accordance with the Preliminary Vegetation Management Plan that has been developed for the project (provided in Appendix F of this RTS Report). This plan includes • Identification of management zones and actions • Weed treatment • Bush regeneration, assisted regeneration and revegetation • Monitoring, reporting, evaluation and adaptive management	The Preliminary Vegetation Management Plan provides details and clarifications about the proposed bush regeneration, revegetation and ongoing management to be undertaken as part of the project

6. Updated project description

This section should be read as a replacement for Chapter 6 of the EIS and in conjunction with the figures/drawings and associated reports referenced herein. Section 5 provides a summary of the changes to the project compared to the project presented in the EIS.

6.1 Overview

Key features of the revised project include:

- Bulk earthworks (and associated civil works including construction of roads, access tracks, drainage and retaining walls)
- Site remediation
- Tree removal
- Revegetation work and site rehabilitation.

Approximately 240,000 m^3 of spoil is expected to be generated onsite from earthworks. Much of this material would be placed on the NorthConnex spoil to create a landform within the quarry void that has large level platforms and would allow for the creation of a new parkland to be constructed within the quarry void. The landform would include a lake directly below the exposed eastern face of the quarry. There would also be cut and fill works on Old Mans Valley to create a landform suitable for future development into playing fields and other recreational activities.

It is expected that a combination of ripping, rock breaking and rock sawing will be required to shift the material. Rock fragments would be crushed onsite using a mobile crusher or rock breaker prior to placement as fill.

No additional spoil is proposed be imported to the site for filling purposes nor would the excavated material be transported off the site.

The following sections describe the project in further detail.

6.2 Proposed works

A design for the proposed reshaping and stabilisation works has been developed by Council. The design has been developed in parallel with the planning for the proposed future parkland. As discussed in Section 5.3.1 of the EIS, the design has been developed through an extended iterative process, taking into consideration the various requirements for the future parkland, site safety, geological and geotechnical challenges, constructability and environmental constraints. Further refinements have also been made as a result of public submissions received during EIS exhibition.

Figure 04 in Appendix A shows the proposed extent of works on the site and the four main works areas:

- Northern spoil mound works area
- South-west fill works area
- Quarry void works area
- Old Mans Valley works area

The ‘extent of works’ refers to the earthworks design extent (including associated civil works) plus an additional 2 to 5 m outside these areas to allow for silt fence and construction fencing,

etc. This can be considered the proposed disturbance footprint. It incorporates site access and internal tracks.

Vegetation would be required to be removed within the disturbance footprint to allow bulk earthworks and associated civil and geotechnical safety management works to be undertaken. It should be noted that there has been further refinement of the earthworks design following exhibition of the EIS and review of community submissions which has reduced the earthworks extent within the south-west fill works area and Old Mans Valley compared to the design presented in the EIS.

This has resulted in a reduction in the area of vegetation requiring removal to facilitate earthworks activities.

6.2.1 Bulk earthworks (and associated civil works including construction of access tracks, drainage and retaining walls)

Bulk earthworks would be undertaken to create a landform suitable for development into a future parkland, as shown on Figure 02 in Appendix A. This shows the proposed landform design surface. Figure 06 in Appendix A provides the proposed cut and fill volumes associated with creating this landform.

Figure 03 (Sheets 1-7) in Appendix A provides cross-sections through the proposed landform design surface. Bulk earthworks would occur across all of the main work areas.

Associated civil and geotechnical safety management works would include:

- Engineering works to improve stability issues in the northern spoil mound works area including regrading to a shallower angle and slope reinforcement. This includes:
  - works to release a trapped low point to the north of the northern spoil mound that used to be drained via a corrugated steel pipe, but which has subsequently collapsed creating an area that is now not drained and with potential for failure
  - works to address a section of spoil to the eastern end of the northern spoil mound that is excessively steep with a significant likelihood of instability
- A structural solution in the vicinity of the southern access track at the crest of the southern quarry wall (which has localised instability issues associated with residual soils and fill material eroding and ‘slipping off’ the rock profile beneath). This would be in the form of a raked micropile wall including capping beam with edge protection.
- Widening, re-alignment and extension of access tracks to improve access into the quarry space in the northern spoil mound works area and quarry void works area.
- Reinforced earth retaining walls or steep reinforced earth slopes with gabion facings (or similar) and earthworks to form the foundation for retaining walls in the quarry void works area.
- Mapping of existing and proposed new cut slopes in rock during and post excavation to identify any rock reinforcement that may be required for geotechnical safety (assessment would be on a case by case basis) such as rock bolts, shotcreting or mesh facings in the quarry void works area and Old Mans Valley works area.

These associated civil works would be undertaken as shown in the drawing set provided in Appendix B. This identifies proposed locations of access tracks, retaining walls and the micropile wall on the existing southern access track.

6.2.2 Site remediation

The project also includes the removal of the existing underground storage tank (UST) located in the old quarry workshop area in the north west corner of the site in accordance with the Department of Environment, Climate Change and Water NSW, 'Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008'.

The UST would be removed in accordance with the Remedial Action Plan for the project (Appendix J). This includes:

- Preparation of a site management plan by the nominated contractor
- A dial before you dig search and underground service identification prior to any excavation works
- Removal of concrete and excavation to expose the UST
- Removal of all fuel from drainage points, pipework and the UST and de-gassing of the UST prior to safe removal and transport for off-site destruction
- Disposal of the UST off-site by a licensed waste contractor
- Removal of the associated infrastructure including pipework
- Collection of validation soil samples from the walls and base of the excavations for the UST and fuel line excavations for laboratory analysis
- Stockpiling and separation of any impacted soils that are considered unsuitable, which would be classified and disposed off-site to an EPA approved waste facility
- Backfilling the resulting excavations with approved material
- Preparation of a validation report on completion of remediation works.

6.2.3 Revegetation and site rehabilitation

Revegetation and rehabilitation would be undertaken in accordance with the Preliminary Vegetation Management Plan (Appendix F).

The removal of a part of the Blue Gum High Forest is necessary in order to remove unstable areas and make the site safe. This removal and associated works will ensure the whole of the northern spoil mound is stable and guard against a far more extensive area of Blue Gum High Forest loss resulting from instability and embankment failure due to natural processes in the future. Tree loss has been limited to the fullest extent possible and will be offset as part of the site revegetation works.

Vegetation management would focus on areas within the impact area (extent of works) as well as the surrounding bushland. The strategy is to work with the staging of the project and beyond to ensure the aims and objectives of the Preliminary Vegetation Management Plan are achieved.

Strategies that have been identified to achieve these are as follows:

- Prepare a buffer on the interface prior to disturbance of an area and reduce fragmentation
- Propagate plant material
- Strategically stage weed removal
- Engineer site soils to reflect benchmark data for both plant communities
- Identify future threats to the natural environment and mitigate effects

6.3 Construction

6.3.1 Construction method

A combination of excavation techniques would be required to shift the material in accordance with the proposed design. The cut material would be won by mechanical excavation. No blasting would be used.

Geotechnical safety management works would include installation/placement of gabion retaining walls or reinforced earth walls and facings, rock slope treatment and micro-piling.

The cut/fill operation can be undertaken in two different ways:

- Conventional load and haul with mid-size dump trucks, and
- Conveyor transfer.

The construction method would be determined by the construction contractor. For the purposes of the EIS it was assumed that a conventional load and haul operation would be undertaken, as this is the more likely scenario. For the purpose of impact assessment, this is also considered to be a conservative assumption. Similar equipment would be required for a conveyor transfer method, but fewer items of plant would be required for the load and haul to the conveyor feed hopper.

The expected plant and equipment to be used during construction is listed in Section 6.3.2.

6.3.2 Plant and equipment

Typical plant required to undertake the construction works by load and haul operation include:

- Excavators – with rippers or rock-breakers
- Rock saw
- Vibratory roller/compactor
- Bulldozers
- Loaders
- Articulated dump trucks
- Mobile screen
- Mobile crusher
- Fuel truck
- Off-road - water cart
- Tub grinder and mulcher

Proposed geotechnical safety management works would also be installed using the same equipment. However specific attachments may be used (such as drilling equipment applied to excavators for micro-piling, grab arms for placing gabion/facings etc) where required.

6.3.3 Construction workforce

The peak construction workforce is expected to be 25-30 people including supervising personnel.

6.3.4 Site offices/amenities

A site office and amenities block would be located on the eastern side of the site near Bridge Road and Quarry Road access roads.

The proposed location of the site office and amenities block is shown on Figure 05 in Appendix A.

6.3.5 Traffic management and access

The site is accessible via Quarry Road (off Dural Street and other local roads) from the south east and from Bridge Road (off Peats Ferry Road) from the north east. Apart from the delivery of heavy plant and equipment, all other construction vehicles would be accessing the site via Bridge Road.

Low loaders will transport large plant and equipment via Quarry Road (due to the steepness of Bridge Road). These deliveries would only happen predominately at the start and end of construction activities and would be scheduled outside of peak times.

The access roads are shown on Figure 05 in Appendix A.

No spoil would be delivered to the site or transported off the site.

Construction traffic would be managed through a construction traffic management plan that would form part of the construction environmental management plan for the works. A Preliminary Construction Environmental Management Plan is provided in Appendix K.

6.3.6 Hours of construction

The proposed works would be carried out during the following standard construction times:

- Monday to Friday 7 am to 6 pm
- Saturday 8 am to 1 pm
- No work on Sundays or public holidays

While no works are anticipated to occur outside of standard hours there may be circumstances where out-of-hours activities associated with the project are necessary. Activities which may be undertaken outside of standard daytime hours (in accordance with Section 2.3 of the Interim Construction Noise guidelines (ICNG) would include the following circumstances:

- The delivery of materials or oversized plant as required by the Police or other authorities for safety reasons.
- Where it is required to avoid the loss of lives, property and/or to prevent environmental harm in an emergency.
- Activities which are determined to comply with the relevant Noise Management Level (NML) at the most affected sensitive receiver, excluding activities associated with the transport and handling of spoil. Such activities may include refuelling of plant and equipment maintenance.
- Where agreement is reached with affected receivers.

6.4 Staging/timing

The project is expected to take approximately 21 months to complete. However the majority of key earthworks activities are expected to be completed in an approximate 15 month period. The estimated duration of works in each work zone is shown in Table 6.1.

Table 6.1 Estimated duration of works

Work area	Months							
	0	3	6	9	12	15	18	21
Quarry void	X	X	X	X	X	X	X	X
Northern spoil mound	X	X	X	X	X	X		
South west fill area		X	X	X	X			
Old Mans Valley					X	X	X	X

7. Assessment of updates to project description

7.1 Noise, vibration and air quality

The changes to the project, and particularly the earthworks design, would require less excavations in the south-west fill works area and Old Mans Valley. This has resulted in a lower volume of fill available for reshaping the quarry void landform and therefore some changes to final levels and retaining structures. Full details are provided in the updated project description and associated updated drawings and plans (Section 6, Appendix A and Appendix B).

This would have the effect of reducing the construction activity in the south-west fill area, Old Mans Valley and quarry void. The changes are expected to therefore also reduce the potential for associated noise and vibration and air quality (dust) impacts as a result of reduced construction activities in these two works areas.

The estimated duration of construction activities has also been reduced from 24 months to 21 months.

It is noted that additional detail around the proposed mitigation measures for noise is provided in Section 4.4.1.

7.2 Water

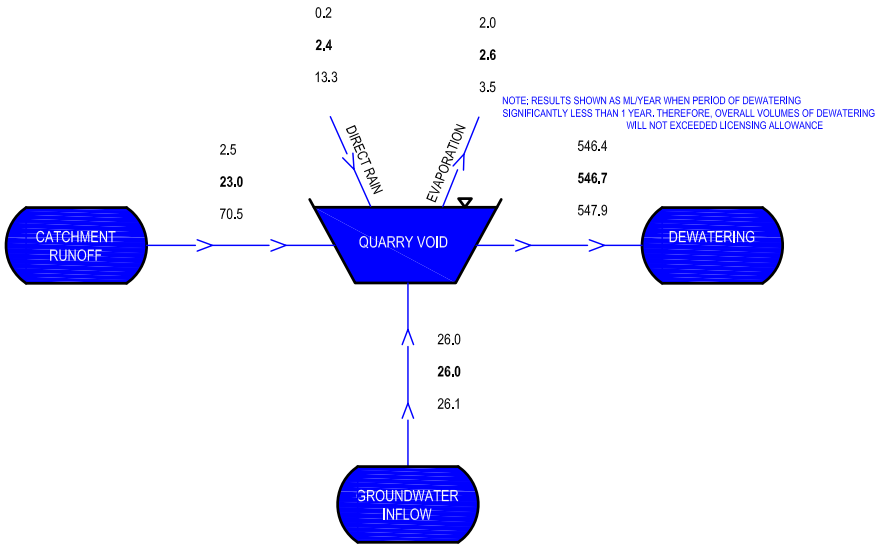
The applicability and the currency of the EIS Water Specialist Report was reviewed in light of changes the project description and since the water balance prepared for the EIS was undertaken with a starting point in time that has already passed.

The review determined that updating the water balance to consider the current point in time was required in order to ensure the assessment was relevant and provide an up to date assessment of potential impacts. The water balance was updated (compared to that presented in the EIS Water Specialist Report), with the following changes:

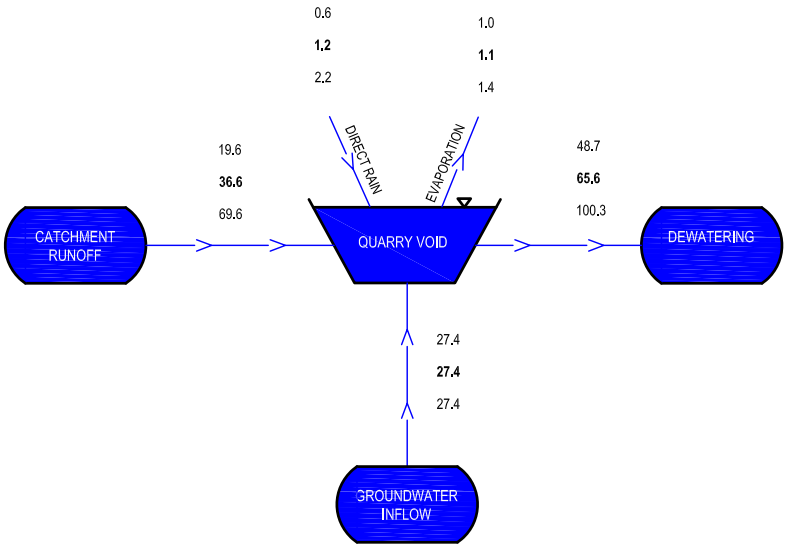
- Representing the new proposed final topography of the landform, which impacts on the exposed water area and therefore evaporation and direct rainfall volumes.
- Representing the new proposed ongoing operational water level of approximately 53 m AHD.
- Modelling a revised sequence of future operating stages, more relevant to the current condition of the void with the water level already at approximately 53 m AHD, being the following stages in chronological order:
  - Dewatering of the void down to approximately 47 m AHD (within the allowable limits of Council's existing dewatering licence) such that it is approximately 2 metres below the lowest final landform level to allow earthworks activities.
  - Maintaining this water level during the construction activities (represented as 12 months in the water balance, to provide a general indicate year of operations at this stage)
  - After construction is completed, allowing the water level to rise up to the ongoing operational level of approximately 53 m AHD by not undertaking any dewatering
  - After the water level reaches approximately 53 m AHD maintaining it at this level into the future to represent the operational phase of the site.

Groundwater inflow representation was represented as unchanged from the EIS assessment since sufficient additional observations are not available to warrant alteration. That is, the revised water balance is based on analytical calculations calibrated to observations taken as the void was previously filling with water. The review also determined that analysis of the time taken for the void to fill is no longer of major significance (as it was previously) as the void water level is now currently approximately 53 m AHD and substantially already full.

Revised water balance results are presented in Figure 7.1 and Figure 7.2 with respect to the above identified stages. They have been simulated for the 30% runoff scenario as outlined in the EIS Water Impact Assessment. The results indicate that the proposed dewatering can be undertaken in accordance with the dewatering licence held by Council, during all proposed stages.



WHEN DEWATERING DOWN TO BELOW EXCAVATION LEVEL



WHEN WATER LEVEL BELOW EXCAVATION LEVEL

LEGEND

MINIMUM (ML/YR)
AVERAGE (ML/YR)
MAXIMUM (ML/YR)

HORNSBY SHIRE COUNCIL
HORNSBY QUARRY REHABILITATION

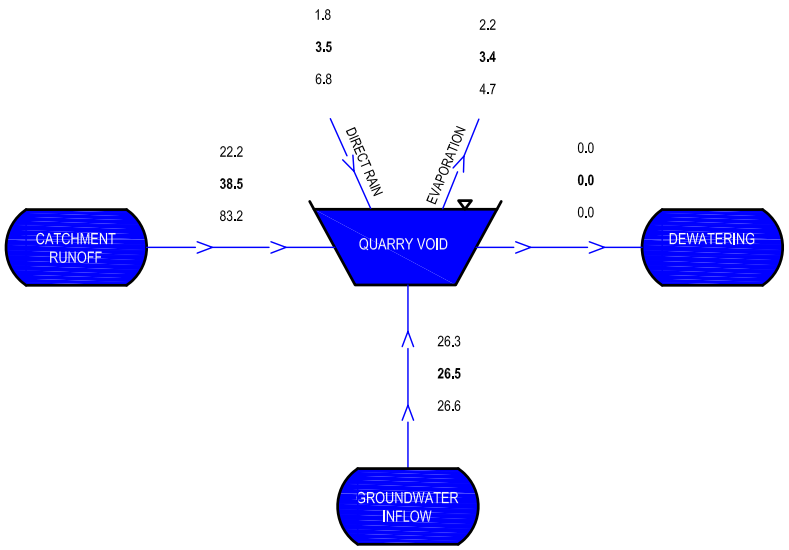
WATER BALANCE RESULTS

Job Number 21-26457
Revision A
Date OCT 2019

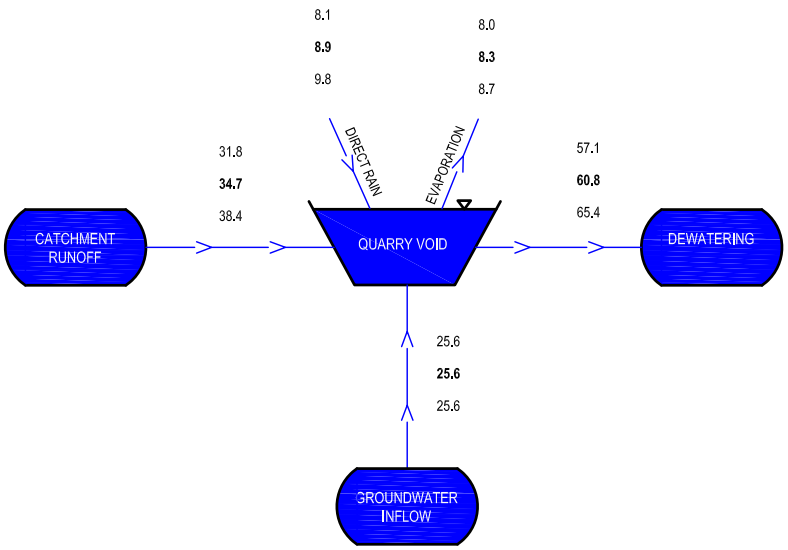
Figure 7-1

145 Ann St Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Plot Date: 28 October 2019 - 11:19 AM Plotted by: Rod Towner Cad File No: N:\AU\Sydney\Projects\21\26457\Tech\Water\WaterBalance\Hornsby Water Cycle Schematic.dwg



WHEN WATER LEVEL RISING UP TO OPERATIONAL WATER LEVEL



WHEN WATER LEVEL AT OPERATIONAL LEVEL

LEGEND

MINIMUM (ML/YR)
AVERAGE (ML/YR)
MAXIMUM (ML/YR)

HORNSBY SHIRE COUNCIL
HORNSBY QUARRY REHABILITATION

WATER BALANCE RESULTS

Job Number 21-26457
Revision A
Date OCT 2019

Figure 7-2

145 Ann St Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Plot Date: 28 October 2019 - 11:33 AM Plotted by: Rod Towner Cad File No: N:\AU\Sydney\Projects\21\26457\Tech\Water\WaterBalance\Hornsby Water Cycle Schematic.dwg

Figure 7.3 shows that the updated dilution factor results for the final quarry lake after the target water level is reached for the 30% runoff scenario.

The results indicate the dilution factors expected are similar to 1 and less than or equal to 1.05 at all times, suggesting no significant ongoing accumulation and concentration. This factor represents the potential accumulation of concentrations above the concentration in incoming groundwater. Final predicted concentrations equal the factor multiplied by the concentration of incoming flows.

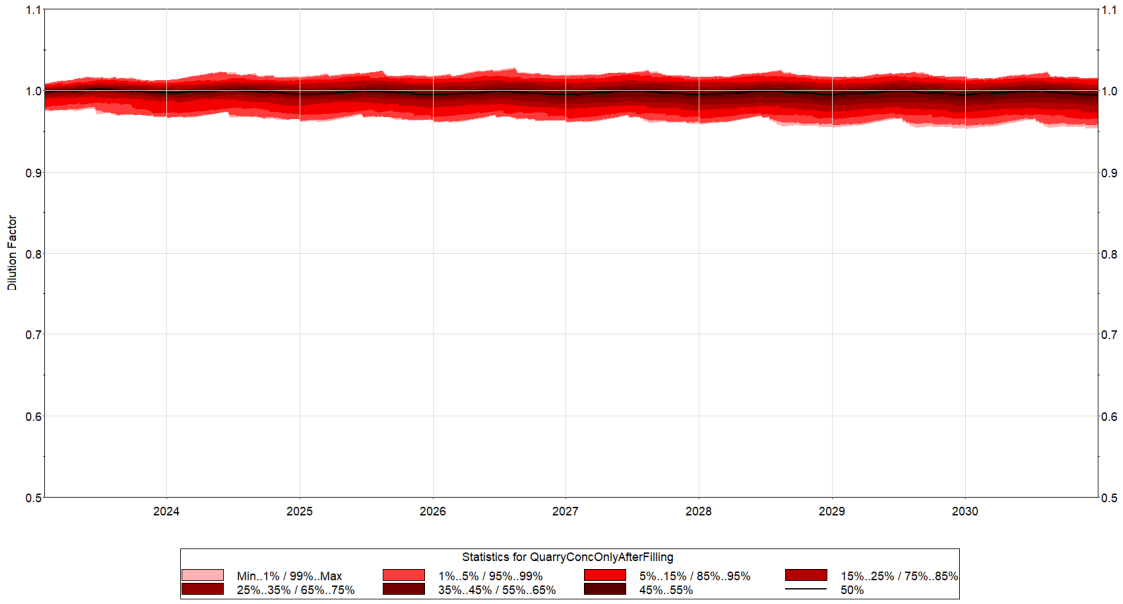


Figure 7.3 Dilution results

In summary, the water balance was re-simulated based on the updates to the project description and to represent the current point in time. The results of the re-simulation confirm that the revised project can operate in accordance with the dewatering licence held by Council and that significant impacts are not anticipated with respect to accumulation of analytes of concern at concentrations above those in surrounding groundwater. Other potential impacts assessed in the Water Impact Assessment are not anticipated to be impacted by the amendments to the project description and therefore the outcomes of the Water Impact Assessment are still applicable in relation to these items.

7.3 Biodiversity

The earthworks design has been further refined to reduce the extent of excavations required in the south-west fill works area and Old Mans Valley, and therefore the extent of vegetation removal in this area (Table 7.1). Clearing of Blackbutt Gully Forest has been reduced substantially. A total of 0.68 hectares of Blue Gum High Forest would be removed by the project, which is a reduction from 0.74 hectares. Removal of much of this vegetation is unavoidable as it is required for stabilisation and geotechnical safety management works required for the development of the community parkland. The areas to be removed have been minimised as much as possible and comprise the disturbed and heavily modified edges of larger patches of vegetation, and much of this vegetation has been planted as part of previous rehabilitation activities. Clearing of exotic vegetation has also been reduced. The revised project would therefore require less vegetation removal compared to the design presented in the EIS.

Reduction in the clearing of native vegetation will also reduce removal of habitat for threatened fauna, including foraging habitat for the Powerful Owl (*Ninox strenua*), Grey-headed Flying-fox

(*Pteropus poliocephalus*), Varied Sittella (*Daphoenositta chrysoptera*) and Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*).

The areas no longer being cleared are located in the south-west of the site. Lack of clearing in this area will reduce the risk of indirect impacts on the creek downstream of the site, such as erosion and mobilisation of sediments. Lack of clearing in the area near Old Mans Creek will also reduce the risk of indirect impacts such as edge effects on adjacent areas of Blue Gum High Forest.

Vegetation to be impacted by the new layout is shown on Figure 7.4.

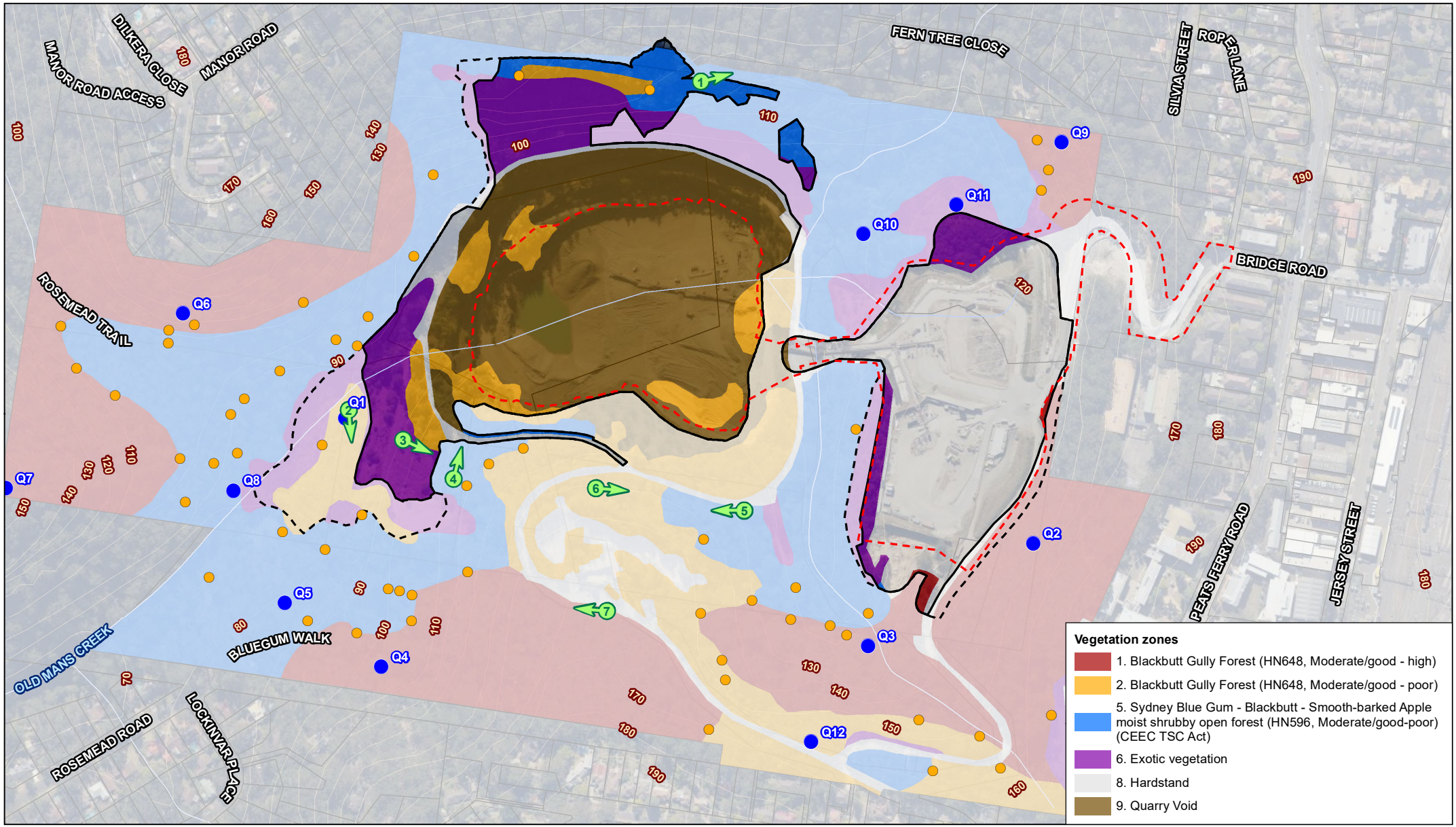
Table 7.1 Comparison of vegetation impacts between EIS and updated design

Zone ID	PCT ID	GHD Veg Type	TSC Act Status	EPBC Act Status	EIS area (ha)	Updated clearing area (ha)
HN648	1841	Blackbutt Gully Forest (HN648, Moderate/good - high)	Not listed	Not listed	0.26	0.06
HN648	1841	Blackbutt Gully Forest (HN648, Moderate/good - poor)	Not listed	Not listed	1.50	0.80
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	0.68
		Exotic vegetation (Blackbutt Gully Forest HN648, Low)	Not listed	Not listed	3.39	2.31
		Hardstand			0.90	0.85
		Quarry void			2.28	2.27
Native vegetation clearing					**2.50**	**1.55**
Total vegetation clearing					**5.89**	**3.86**

In addition, a Preliminary Vegetation Management Plan has now been developed to provide information on how the sites biodiversity will be restored, enhanced and protected in-perpetuity. It describes the management actions that will be undertaken across the site supporting the conservation of biodiversity values in accordance with any conditions of approval.

The detail provided within the Preliminary Vegetation Management Plan will also provide guidance on the development of a more detailed Vegetation Management Plan which will form part of a holistic Offsets Package for the project.

A copy of the Preliminary Vegetation Management Plan is provided in Appendix F.



Paper Size A4

0 25 50 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Project site
- Previous site boundary
- NorthConnex impact area
- Cadastre
- Waterways
- Contours (10m)
- Kleinfelder Quadrat
- Kleinfelder Rapid Data Points
- GHD plot/transect

Hornsby Shire Council
Hornsby Quarry Rehabilitation

Job Number 21-26457
Revision A
Date 08 Nov 2019

Vegetation

Figure 7.4

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Level 15, 133 Castlereagh Street Sydney NSW 2000 T 61 2 9239 7100 F 61 2 9239 7199 E sydmail@ghd.com.au W www.ghd.com.au

Data source: Aerial imagery - SIXmaps 2017; General topo - NSW LPI DTDB 2017, 2015, & 2012; Vegetation mapping - Kleinfelder 2017. Created by:jrprice

7.4 Heritage

The revised project (including changes to earthworks design) would not change the extent of the diatreme that would be exposed compared to that proposed and approved under the 2016 Planning Approval.

The changes to the earthworks design would reduce the extent of work and would not result in any change to the potential for impacts to either Aboriginal or non-Aboriginal heritage compared to the EIS.

7.5 Land resources

As a result of additional detailed contamination investigations (Appendix I), the revised project now includes the removal of the existing UST in accordance with the Remedial Action Plan (Appendix J). The Remedial Action Plan identifies measures and procedures to be implemented during the works to manage potential contamination.

The refined earthworks design would change the final landform surface compared to the design presented in the EIS. Further detail is provided in updated drawings and figures in Appendix A and Appendix B. The final landform would still be suitable for future use as a community parkland.

7.6 Waste management

The changes to the earthworks design would not change the proposed management of waste compared to that outlined in the EIS.

It is noted that the Preliminary Vegetation Management Plan for the project now provides further detail on soil manufacturing (see Appendix F) including the mulching of vegetation cleared as part of the project.

7.7 Visual

The reduction in the amount of vegetation requiring removal in the south-west fill works area would further reduce any potential for visual impacts from viewpoints along the Blue Gum Walking Track and Rosemead Road Picnic Area.

7.8 Socio-economic

The changes to the earthworks design reduce the potential for temporary amenity impacts (noise and vibration and air quality) as a result of a reduction in the duration of construction activities in the south-west fill works area, Old Mans Valley and quarry void compared to the design presented in the EIS. The social benefits of the project in the long term, as outlined in the EIS would still be realised.

7.9 Other issues

The changes to the earthworks design would further reduce the potential for human health risks as a result of the expected reduction the potential for temporary amenity impacts (noise and vibration and air quality) during construction compared to the EIS earthworks design.

Hazards and risks associated with the project are expected to be similar or reduced compared to those assessed in the EIS.

8. Conclusions

Hornsby Shire Council is proposing to rehabilitate and reshape the Hornsby Quarry site to ensure public safety and allow future development into a parkland for community use.

The project involves:

- Bulk earthworks (and associated civil works including construction of access tracks, drainage and retaining walls)
- Site remediation
- Tree removal
- Revegetation work and site rehabilitation.

An EIS was prepared in accordance with the requirements of the Secretary of the NSW Department of Planning and Environment (SEAR No 1167) dated 6 September 2017. The development application was placed on exhibition from 5 March to 17 May 2019.

The development application has been notified by Council and is being assessed by an independent planning consultant. The consent authority is the Sydney North Planning Panel.

Forty six (46) submissions were received from the public during exhibition. In addition, a number of requests for further information were received from the independent planning consultant and government agencies.

In response to submissions received or requests for clarification, the project description and earthworks design has been updated and a tree inventory has been prepared. The changes to the design has reduced the impact area in the south-west fill area and Old Mans Valley. This has resulted in a reduced extent of earthworks, reduced construction cost and reduced tree removal.

The changes to the project will result in:

- A reduction in removal of native vegetation by 1.55 ha (represents a 38% reduction compared to the project presented in EIS)
- A reduction in removal of total vegetation by 2.03 ha (represents a 34% reduction compared to the project presented in EIS)

The Revised Extent of Vegetation Mapping plan in Appendix A shows the changes to the extent of works.

The removal of a part of the Blue Gum High Forest is necessary in order to remove unstable areas and make the site safe. This removal and associated works will ensure the whole of the northern spoil mound is stable and guard against a far more extensive area of Blue Gum High Forest loss resulting from instability and embankment failure due to natural processes in the future. Tree loss has been limited to the fullest extent possible and will be offset as part of the site revegetation works.

As well as the reduction in biodiversity impacts, the changes to the earthworks design would also reduce the intensity and duration of construction activities in the south-west fill works area, Old Mans Valley and quarry void. This will reduce the estimated construction timeframe down to 21 months (from 24 months). The changes are expected to therefore also reduce the potential for associated air quality (dust) and noise impacts as a result of reduced construction activities.

The project description has also been updated to show the amended earthworks design and provide further clarity around the proposed development. This included:

- Updated and more detailed design drawing/plans – including provision of additional plans, additional sections and further engineering detail, particularly around the proposed geotechnical safety management measures such as retaining walls and associated civil works
- More details of the proposed rehabilitation and revegetation – with reference to a new Preliminary Vegetation Management Plan
- Inclusion of the remediation of the existing underground storage tank as a result of additional contamination investigations completed since EIS exhibition

The project also does not change the extent of the diatreme that would be exposed compared to the 2016 Planning Approval for NorthConnex filling works. The 2016 Planning Approval allowed fill to be placed up to RL64 m AHD and this DA proposes an approximate level of RL53 m AHD, 11 metres lower.

Additional assessments, investigations, reports and plans have also been developed to provide clarity around the proposed project and mitigation measures proposed and respond to specific requests for clarifications. This included:

- Preparation of a Preliminary Vegetation Management Plan to provide information on how the site's biodiversity will be restored, enhanced and protected in-perpetuity. This includes extensive rehabilitation and revegetation works across the site.
- Tree survey reports to inform the design development and the Preliminary Vegetation Management Plan
- Updated traffic impact statement with recent traffic count volumes (August 2019) and considering potential traffic associated with delivery of construction materials for civil work
- Additional noise assessment clarifications regarding the duration and extent of noise impacts, mitigation measures and measures to manage residual noise impacts
- A targeted detailed site contamination investigation, associated Remedial Action Plan for removal of the existing UST
- Preliminary Construction Environmental Management Plan to provide further information on the proposed environmental management framework and associated management procedures to be implemented as part of the project.

This RTS Report has documented the following:

- The public submissions received during exhibition
- Requests for information received from the independent planning consultant (and specialists) and government agencies
- A summary of the communications and engagement undertaking during EIS exhibition and outcomes
- Responses to the submissions received including
  - A summary of actions undertaken during and after EIS exhibition including design refinement, further environmental assessment and investigations, development of additional reports and plans
  - Responses to the public submissions received, requests for information and engagement activities
- An overview of the changes to the project and comparison with the project presented in the EIS
- An updated project description, including revised plans and figures

- An assessment of the updates to the project description
- An updated evaluation of the project taking into consideration the updated project description and additional environmental assessments and plans

The EIS and the additional assessments, investigations and report prepared as part of this RTS Report have demonstrated that the project would not have a significant impact on the community or environment with implementation of the proposed mitigation measures.

9. Scope and limitations

This report: has been prepared by GHD for Hornsby Shire Council and may only be used and relied on by Hornsby Shire Council for the purpose agreed between GHD and the Hornsby Shire Council.

GHD otherwise disclaims responsibility to any person other than Hornsby Shire Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Hornsby Shire Council and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

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Document Status

Revision	Author	Reviewer		Approved for Issue		
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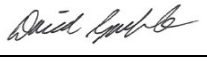
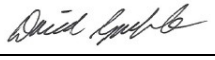
0	A Montgomery	D Gamble		D Gamble		11/11/19

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