

Hornsby Shire Council Hornsby Quarry Rehabilitation Environmental Impact Statement

DEVELOPMENT APPLICATION SUMMARY AND SUPPORTING PLANS

February 2019

Table of contents

1.	Summary	1
1.1	Introduction	1
1.2	Site location	1
1.3	Land zoning	2
1.4	Land ownership.....	2
1.5	Project overview.....	1
1.6	The proponent.....	1
1.7	Planning pathway.....	1
1.8	Consultation	1
1.9	Environmental assessment.....	2
1.10	Justification and conclusions	10
2.	Supporting plans and documents	12

1. Summary

1.1 Introduction

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).

GHD Pty Ltd (GHD) has been engaged by Council to prepare documentation to support a 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). The Environmental Impact Statement (EIS) has been prepared in accordance with the provisions of the EP&A Act.

It addresses 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).

1.2 Site location

The project is located in the Hornsby local government area (LGA), approximately 21 kilometres (km) to the north west of the Sydney central business district.

The site can be defined as:

- Lots A, B, C, D and E in Deposited Plan (DP) 318676
- Lot 1 DP 926103
- Lot 1 DP 926449
- Lot 1 DP 114323
- Lots 1 and 2 in DP 169188
- Lot 7306 DP 1157797
- Lot 1 DP 859646
- Lot 1 DP 926449

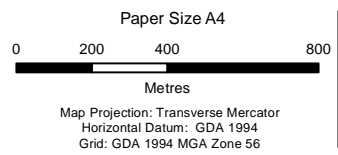
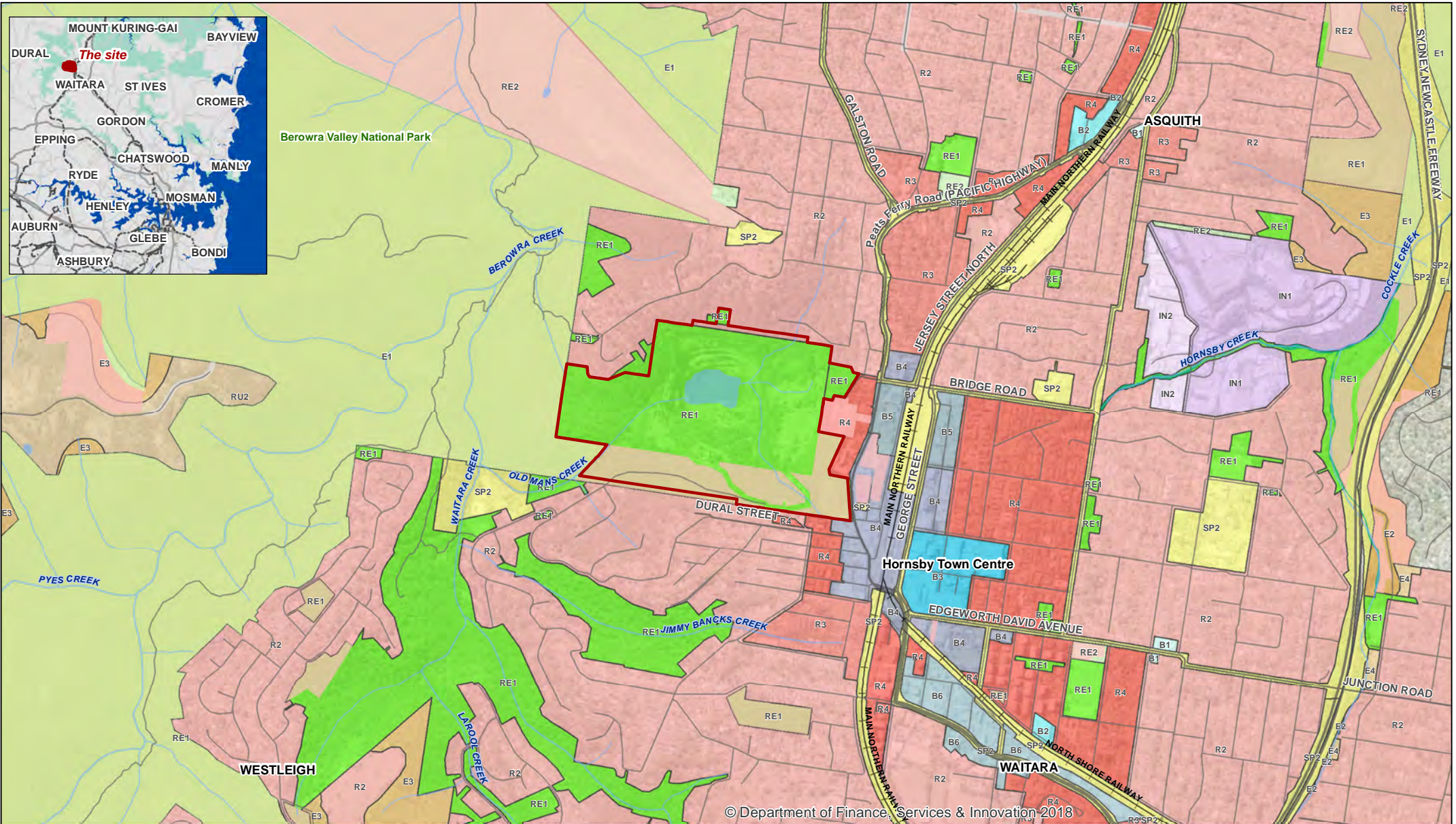
- Lot 13 DP 734459
- Lot 114 DP 749606
- Lot 213 DP 713249
- Summers Avenue, Hornsby partly formed
- Old Mans Valley Trail

1.3 Land zoning

The majority of the site is zoned RE1 Public Recreation and a small part of the site is Crown parcel. Refer following figure.

1.4 Land ownership

The majority of the site is owned by Council. A portion of the site is Crown land.



- Legend**
- The site
 - Watercourses
 - Parks and reserves



Hornsby Shire Council
Hornsby Quarry Rehabilitation

Job Number | 21-26457
Revision | A
Date | 09 Nov 2018

Site location, surrounding land uses and zoning

1.5 Project overview

Key features of the project include:

- Rehabilitation, stabilisation and geotechnical safety management works around various parts of the site
- Earthworks and placement of material won from within the site to create a final landform generally in accordance with Option 1 in the Clouston Associates (2014) Recreation Potential Study for Hornsby Quarry and Old Mans Valley Lands (p. 88).

Approximately 500,000 m³ 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 that generally slopes from a proposed lake up to the top of the western quarry face 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.

The project also includes geotechnical safety management measures and rehabilitation works including bush regeneration.

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

The project is expected to take two years to complete.

1.6 The proponent

The proponent is Hornsby Shire Council.

1.7 Planning pathway

The project is development for the purpose of recreational area, which is permissible with consent requiring submission of a new development application (DA) to Council.

The project involves processing of materials for recycling and reuse and therefore is considered to trigger designated development provisions for crushing grinding and separating works, requiring an EIS to be prepared to support the DA.

If the project has a capital investment value of more than \$5 million, it is also defined as regional development under Clause 4 of Schedule 4A of the EP&A Act. The development will therefore be notified and assessed by Hornsby Shire Council (using an independent planning consultant), however the consent authority is the Sydney North Planning Panel.

1.8 Consultation

In accordance with the SEARs, consultation activities were undertaken to provide details of the project and seek input from relevant stakeholders.

A wide range of activities and tools were used to engage with government agencies, stakeholders and the community during development of the EIS. This included:

- Information distribution (letter and newsletter) to nearby neighbours and opportunity for face-to-face meetings

- Letters to key government agencies
- Email blast to 40,000 residents
- Letters and emails to stakeholders
- Dedicated project website created (hornsbypark.com.au)
- Community Deliberative Forum and stakeholder meeting presentations
- Information boards at Hornsby Mall community 'swing by'
- Social media posts, media release
- Presentations to Hornsby Shire Council
- Reconvene the Community Deliberative Forum
- Stakeholder meeting with Environmental and Bushwalking Stakeholder groups
- Community 'swing by' in the Mall

The key issues raised during consultation are addressed in the EIS.

1.9 Environmental assessment

1.9.1 Noise and vibration

Three scenarios containing worst case location of plant and equipment with expected throughput rates were modelled. Noise levels are predicted to exceed the construction noise management levels (NMLs) at most of the sensitive receivers within the study area during recommended standard hours. Noise levels are not predicted to exceed the highly noise affected criteria at any residential receivers.

It is typical for construction projects to exceed the construction noise management levels. Any impacts due to construction works will be temporary during the construction period and would not represent a continuous impact on the community and surrounding environment due to changes in activities and plant used. The predicted noise levels are generally considered conservative and would likely only be experienced for limited periods during construction. Potential impacts would be reduced through the introduction of feasible and reasonable mitigation measures which have been identified in the EIS.

Safe working distances for vibration activities have been identified for structural damage to standard/heritage structures and for human comfort. No adverse structural damage impacts to buildings are anticipated as a result of the project. One building within Hornsby TAFE has been identified within the safe working distance for human comfort. Mitigation measures have been recommended to reduce potential construction vibration impacts.

Traffic noise levels resulting from construction vehicle movements are predicted to meet the Road Noise Policy (DECCW, 2011) noise criteria when assessed at residences adjacent to Bridge Road, Peats Ferry Road, Dural Street and Quarry Road.

Three scenarios containing worst case location of plant and equipment with expected throughput rates were modelled to account for likely particulate matter dispersion impacts. Predicted particulate matter concentrations were assessed against criteria provided in the EPA (2016) Approved Methods.

No particulate matter criteria exceedances were predicted. Based on assumptions as outlined in the assessment, the predicted particulate matter emission from the reshaping and rehabilitation of the quarry are expected to comply with the relevant criteria when assessed in accordance

with the Approved Methods (EPA, 2016). The application of standard dust mitigation measures outlined in this report will assist to minimise potential particulate matter impacts.

1.9.2 Soils and water

A risk assessment was undertaken to assess the water related risks of the project such that a subsequent impact assessment could be undertaken. The primary risks identified were with relation to impacts on groundwater levels and availability, non-compliance with water licencing requirements, impact on the quality of external groundwater and impact on the quality or quantity of water in downstream surface water systems due to dewatering activities.

Impact assessment was undertaken finding that the water related impacts of the project are not anticipated to be significant. This is on the basis of:

- A water balance and groundwater flow assessment identifying that groundwater pumping would be significantly less than current licence entitlements, with the pump out requirement predicted to be less than under historic dewatering activities.
- The water quality of water discharged from the void is anticipated to be generally similar to that of the receiving environment. This is supported by existing void water quality monitoring data, assessment of the impacts of emplacing material undertaken for the NorthConnex project, and water balance results showing no increasing accumulation of concentrations of water quality constituents.
- The flow direction of groundwater being inwards to the void, mitigating the risk of discharging lower quality water to the groundwater system (noting that this lower quality water is not anticipated).
- Dewatering rates are anticipated to be less than under historical dewatering activities and therefore not result in geomorphological or waterway formation impacts.

1.9.3 Biodiversity

The majority of the site has been highly modified as a result of historical quarrying and rehabilitation works, and the landform and soil profile has been significantly altered. Vegetation within the site is a mixture of remnant, regrowth, revegetation and rehabilitation. Two native plant community types are present at the site:

- Sydney Blue Gum - Blackbutt - Smooth-barked Apple moist shrubby open forest (HN596, Moderate/good - poor), which is commensurate with Blue Gum High Forest in the Sydney Basin Bioregion (BGHF), a critically endangered ecological community (CEEC) listed under the TSC Act. This form of the community does not meet the condition criteria for inclusion as the EPBC Act-listed community.
- Blackbutt Gully Forest (HN648) (not a threatened community).

The project would remove 0.74 ha of Blue Gum High Forest, 1.76 ha of Blackbutt Gully Forest and 3.39 ha of exotic grassland. Mapping of biodiversity values, in particular threatened ecological communities, early in the project has allowed some avoidance of impacts in the detail design phase. Notably the project has been purposefully designed to minimise direct impacts on areas of good condition Blue Gum High Forest. A number of iterations of the proposal design have been made, each one further minimising impacts on native vegetation and fauna habitat. This has allowed impacts on biodiversity values to be substantially reduced.

The site generally has patches of good fauna habitat values, due to moderate habitat complexity, allowing for a moderate diversity of fauna species. Species recorded included species that require large tracts of native vegetation to persist, as well as generalist species able to utilise disturbed urban areas. Threatened species recorded at the site during recent and

previous surveys include the Powerful Owl (*Ninox strenua*), Varied Sittella (*Daphoenositta chrysoptera*), Grey-headed Flying-fox (*Pteropus poliocephalus*) and Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*) (possible identification based on anabat analysis).

The project would remove up 2.50 hectares of canopied native vegetation and 3.39 hectares of exotic grassland vegetation within the project site. This habitat is highly modified and subject to disturbance including edge effects and noise from the surrounding urban environment. Up to five hollow-bearing trees would be removed. These have small hollows and would not provide breeding habitat for forest owls or cockatoos, but may provide roosting habitat for microchiropteran bats.

An assessment of significance pursuant to s5A of the EP&A Act has been prepared for Blue Gum High Forest. The project is highly unlikely to have a significant adverse effect on the local occurrence of Blue Gum High Forest as:

- The project has been designed specifically to avoid impacts on good quality patches and to minimise impacts on poor quality patches.
- While up to 0.74 ha of poor condition will be removed, extensive, better condition areas of this community will be retained within the wider Hornsby Quarry site outside of the project footprint.
- The vegetation to be impacted comprises the highly modified and degraded, poor condition edges of larger tracts of vegetation, and the project will not substantially increase existing levels of fragmentation and isolation from other areas of habitat

Landscaping works following completion of the project will focus on revegetating areas of Blue Gum High Forest, and will improve the condition of the community at the site in the long-term.

An assessment of significance pursuant to s5A of the EP&A Act has been prepared for the Powerful Owl. Given the small area of disturbed edge-effected vegetation, and the very large areas of surrounding good quality habitat, and lack of impact on breeding habitat, the project is unlikely to result in a significant impact on this species. Similarly, due to the small area of disturbed edge-effected vegetation, and the very large areas of surrounding good quality habitat, the project is unlikely to have a significant impact on the Varied Sittella or hollow-roosting microchiropteran bats.

Given that the project would not have a significant impact on any threatened biota, a Species Impact Statement is not required. Given that the project would impact native vegetation, offsets are proposed in accordance with Council's Green Offsets Code. As there would be no significant impacts on threatened biota, no calculation of offsets in accordance with the Biobanking Assessment Methodology has been provided. As the project is unlikely to have a significant impact on any MNES, no referral is considered necessary and no offset is required for threatened biota listed under the EPBC Act.

A range of mitigation measures have also been proposed to ameliorate potential impacts of the project on habitat throughout the study area, as well as areas 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 and revegetation following construction. The future rehabilitation of the project site, including replantings using species sourced from Blue Gum High Forest and the use of salvaged fauna habitat features, would improve biodiversity values at the site in the long-term.

1.9.4 Aboriginal heritage

During the early stages of the design process, an Aboriginal heritage due diligence assessment of the project was prepared by Artefact Heritage in accordance with the OEH (2010) 'Due

Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales'. The due diligence assessment identified two portions of the investigation area as archaeologically sensitive and recommended further investigation in consultation with the Metropolitan Local Aboriginal Land Council (LALC) be undertaken.

Artefact Heritage subsequently undertook an Aboriginal Archaeological Survey Report (ASR) to assess and identify any Aboriginal sites or areas of archaeological potential that might be impacted by the project. The ASR was undertaken in accordance with the 'Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales' (the Code of Practice) (DECCW, 2010).

The ASR was attended by representatives of Artefact Heritage, the Metropolitan LALC and Council. The survey did not result in the identification of any Aboriginal sites or areas of PAD.

The ASR concluded that the project is unlikely to impact any intact archaeological remains and therefore no further archaeological investigation or mitigation is required. However an unexpected finds policy would be implemented in the event of Aboriginal archaeological deposits being identified during ground works and excavation.

1.9.5 Non-Aboriginal heritage

The project has been developed as far as possible to minimise direct impact on heritage items.

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). Neutral to negligible impacts are anticipated for heritage items located adjacent to the site.

The majority of areas identified as having archaeological potential would be avoided in the project.

Two areas of archaeological potential have been identified within the extent of works. There is some chance archaeological remains associated with the Higgins family occupation of the site may be impacted in one of these areas to the north, which is partially within the earthworks extent. Mitigation and management measures have been identified to address potential impacts.

There is potential for indirect physical impact by way of vibration during the proposed works to heritage items in the vicinity. This particularly relates to the headstones located within the Old Man's Valley Cemetery.

The project would result in visual changes to the 'Diatreme Hornsby Quarry and surrounding vegetation' heritage item and its setting. The project would therefore result in direct impacts across much of the locally listed curtilage of the 'Diatreme Hornsby Quarry and surrounding vegetation' heritage item.

It is noted that preservation of the exposed diatreme and reinstatement of surrounding vegetation in the site generally as part of the future parkland development would assist in mitigating any potential physical and visual impacts and, as such, the project is considered acceptable from a heritage perspective.

In addition, at present the diatreme and heritage items including Old Man's Valley Cemetery and Diatreme 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, and provide opportunities for greater understanding of their significant values and associations.

1.9.6 Traffic and transport

For the purpose of the traffic assessment, it was estimated that there would be 30 veh/h entering the project site in the AM peak and 30 veh/h leaving the project site in the PM peak for a worst-case, conservative scenario. In reality, workers would likely be arriving to the site prior to the road network peak. There would also be a fuel truck and approximately 26 heavy plant and equipment deliveries during off-peak hours.

The traffic assessment found that construction traffic generated during both AM and PM peak periods are not likely to be significantly different to that of the existing situation (level of service B; intersection experiences acceptable delays and has available capacity).

The proposed site access is adjacent to Roper Lane and directly provided from Bridge Road, linking to Peats Ferry Road. In accordance with Section 3.2.2 of the *Austroads Guide to Road Design Part 4A: Un-signalised and Signalised Intersections*, both the approach sight distance and safe intersection sight distance were satisfactory in both directions.

The impacts on the public transport services operating in proximity to the subject site as a result of the low volumes of vehicle movements associated with the construction phase, are expected to be insignificant.

1.9.7 Land resources

Erosion

While the erosion potential of many areas of the site is high, the 'inwards draining' nature of the site reduces sedimentation risks dramatically and water quality risks from erosion and sedimentation are anticipated to be manageable through the development of a construction phase soil and water management plan (including consideration of erosion and sediment control) and water quality monitoring program.

Acid sulphate soils

Acid sulfate soils are not expected to occur at the site.

Contamination

A number of areas of potential contamination have been identified as still being present on the site with some having potential to be disturbed as a result of the project. However the majority of the site has very little potential for contamination. Further investigation would be undertaken prior to any works in the immediate vicinity of the former workshop and office building areas to identify appropriate management measures and procedures to manage contamination during construction.

Landform (topography) and geotechnical stability

The project includes extensive earthworks and changes to the landform (topography of the site). The reshaping works would create a landform that is generally in accordance with Option 1 in the Clouston Associates (2014) Recreation Potential Study for Hornsby Quarry and Old Mans Valley Lands (p. 88). The landform has been designed to be suitable for future development of a parkland with the flexibility to host a range of recreational activities. The future parkland design would be subject to a separate approval and developed in consultation with the community.

In response to the identified geotechnical challenges, a series of Factor of Safety and risk-based assessments were undertaken. These found:

- Further detailed assessment of the southern quarry wall global stability shows that the stability is acceptable. Therefore, no access constraints or design response are proposed to address the global stability of the southern quarry wall. The existing quarry access road arrangements can be maintained and monitored to keep the factor of safety within acceptable limits. Details can be found in Section 2 of this report.
- The Southern Access Track at the crest of the southern quarry wall has localised instability issues associated with residual soils and fill material eroding and ‘slipping off’ the rock profile beneath. A robust structural solution (raked mini-pile wall including capping beam with edge protection) is suggested. It is envisaged that this will enable the existing southern access track to continue to be used for maintenance and pedestrian access in the long term. Details of the concept level proposed solution are contained in Section 6 of this report.
- Northern Spoil Mound stability issues are proposed to be addressed by a combination of proactive engineering measures to improve stability (regrading to a shallower angle, slope reinforcement and drainage measures) with a continuance of long term monitoring and maintenance preferred in some areas.
- Throughout the site a combined approach is proposed to address the localised effects of erosion and small scale slope failures in soil and rock slopes. A ‘tool box’ of measures is proposed including:
 - Toe exclusion zones to prevent park users from exposure to rock-fall and small-scale soil slope failure hazards.
 - Preventative measures such as rock bolts, face mesh, catch fences, catch ditches, facing ‘skin’ walls (e.g. gabions secured to exposed rock faces) and maintained erosion protection on soil slopes (vegetation erosion protection envisaged in most areas).
 - Monitoring and maintenance as required, in all areas.

The future parkland layout proposes widening, re-alignment and extension of access roads to improve access into the quarry space. This generates several new retaining / deck structures and new cuttings of differing heights and curved geometries.

Some of the proposed new retaining structures will be founded over deep (up to 55 m) fill material and in some areas founded within a few metres of dolerite bedrock at the edges of the park. This situation creates the potential for high differential settlement within the same structure and between adjacent structures.

The structures will need to be carefully designed to minimise the potential for high differential settlements.

1.9.8 Waste management

The following wastes may be generated during the project:

- Vegetation from clearing activities
- Top soil and spoil from earthworks/excavations
- General waste from site personnel (such as food scraps, aluminium cans, glass bottles, plastic and paper containers, paper, cardboard and other office wastes)
- Wastewater and sewage from site office/compounds and amenities

The management of wastes generated during the project would be in accordance with relevant NSW legislation and the principles of the waste management hierarchy set out in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (EPA, 2014a).

The project has been designed so that top soil or spoil from earthworks activities would be reused on site. Top soil would be retained for use on other parts of the site as part of proposed rehabilitation and regeneration programs/activities. Vegetation removed would also be mulched on site and blended with retained top soil or directly reused as part of rehabilitation works.

1.9.9 Visual

The visual assessment considered impacts on six groups of potential receptors, including residential receptors, users of nearby educational and recreational facilities and visitors to recreational biking and walking trails. All receptor groups were determined to have a sensitivity of moderate or high. This was largely due to the quality of natural views and landscapes and the type of outlooks.

The magnitude of impacts on each identified receptor group was determined to be moderate or less, largely due to the location, topography and surrounding vegetation screening which would limit the potential visual impacts or due to the intermittent nature of visitors/users of facilities/trails.

It is noted that following completion of the project, Council intends to develop the site for future community use as a parkland. This future development would improve the visual and landscape aspects of the site and have an overall beneficial visual impact on existing visual receivers.

Works would also be limited to standard work hours only. Therefore, there would be no visual impacts during night time hours as a result of lighting or other activities.

1.9.10 Socio-economic

Social impacts

The site has been closed to the public for a long time. However the project would provide a landform suitable for future development into a community parkland and make the site safe for the community. While this project does not include the parkland development, it is a critical step in the process of opening the site up to the public for recreational use. Potential future social benefits of the change in land use from quarry to community park include improvements to house prices, mental and physical well being from leisure and recreation activities and nature experience, tourism, social cohesion/identify.

It is also noted that by improving safety and accessibility of the site, the project would ultimately allow for enhanced community visitation and engagement with the heritage items located within the site, and provide opportunities for greater understanding of their significant values and associations.

These positive long-term social benefits of development of the future parkland need to be considered against the potential short-term social and amenity impacts of the construction associated with the project

The project is expected to require the direct employment of up to 30 full time equivalent staff on site during the construction works. There would also be indirect employment benefits related to detailed design, investigations, procurement and tendering.

The project has potential to result in amenity impacts (noise and visual) to residents and businesses located in close proximity to the site. The potential negative impacts during construction would be temporary and would be significantly reduced by the implementation of

appropriate design features and stringent environmental management controls guided by the Construction Environmental Management Plan.

Economic impacts

The estimated capital investment value of the project is \$28 million dollars. The project would also directly employ up to 30 full time equivalent personnel during construction. This would provide a one off boost to the Hornsby economy in terms of local output, employment, wages and salaries and value added.

There would also be economic flow on benefits of the construction spend including flow on industrial effects in terms of local purchases of goods and services and flow on consumption effects.

The project would allow the development of a parkland for community use in the future. The parkland would result in additional tourist visits to the Hornsby region once the park has opened. These benefits would be permanent due to ongoing future parkland visitation.

1.9.11 Rehabilitation

Council is proposing to undertake extensive bush regeneration work across the site. In addition to this, general landscaping is proposed as part of the future parkland development (which will be subject to a separate approval). The bush regeneration measures proposed as part of this project include:

- Retainment of top soil and manufacture of soils
- Tree planting and reestablishment of Blue Gum High Forest

All topsoil from the proposed earthworks would be retained on site for reuse in the bush regeneration work. To supplement the 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 (green waste).

There is potential for approximately 32,000 m² of the site to be subject to targeted bush regeneration (placement of retained and manufactured soils and tree planting) as part of the project.

In addition to the proposed bush regeneration works for this project, as part of the future parkland development, approximately 89,300 m² is expected to be landscaped and approximately 16,000 m² is expected to be turfed for sportsfield(s).

The State Government recently provided funding for the preparation and development of the site into a parkland. Council has also set aside additional funding to ensure the rehabilitation elements of the project can be undertaken.

1.9.12 Other issues

Human health

Air quality goals for PM₁₀, and advisory goal for PM_{2.5}, have been established by NEPC (NEPC 2002, 2003) that are based on the protection of human health and well-being. The assessment of impacts from any development also requires consideration of air quality goals/guidelines that are outlined in the Approved Methods (EPA, 2016). The guidelines are primarily derived from the NEPC, with the exception of an annual average PM₁₀ guideline which is derived from older goals adopted by the EPA (EPA, 1998).

The air quality assessment undertaken for the EIS found that the project is not expected to exceed the air quality goals identified in accordance with the Approval Methods (EPA, 2016) at any nearby private receptors.

While the project is not expected to exceed air quality goals, a number of mitigation measures are also proposed to further reduce the potential exposure associated with the project.

Therefore the project is not expected to result in any significant air quality impact or significant air quality health risk.

The construction noise guidelines applicable to the project (ICNG) has considered the health effects of noise and the relevant guidance from the World Health Organisation and the Environmental Health Council of Australia in determining appropriate noise management levels (criteria).

Noise levels that do not comply with these guidelines/criteria may have the potential to have negative health outcomes for the community adjacent to the project. The ICNG requires feasible and reasonable management measures to be implemented to minimise impacts. Where this process is followed, and where project works are only expected to occur for a short period of time (as is the case with the project) no adverse health effects are expected to occur in the community.

The noise and vibration impact assessment predicts noise levels would exceed the construction noise management levels at most of the sensitive receivers within the study area during recommended standard hours. Noise levels are not predicted to exceed the highly noise affected criteria at any residential receivers. Potential impacts would be reduced through the introduction of a number of feasible and reasonable mitigation measures.

The noise and vibration impact assessment identified safe working distances for vibration activities for structural damage to standard/heritage structures and for human comfort. No adverse structural damage impacts to buildings are anticipated as a result of the project. One building within Hornsby TAFE has been identified within the safe working distance for human comfort. Mitigation measures have been recommended to reduce potential construction vibration impacts.

Where the proposed noise and vibration management and mitigation measures are adopted, no adverse health impacts are expected in the local community.

Hazard and risk

According to SEPP 33, if any of the screening thresholds are exceeded then the proposed development (the project) should be considered a 'potentially hazardous industry' or a 'potentially offensive industry' and a PHA is required.

The results of the Dangerous Goods storage and transport screening indicate that the project would not result in any of the thresholds being exceeded. As a result, the project is not considered to be a 'potentially hazardous industry' and a PHA is not required.

To demonstrate that potential hazards have been identified and control measures are in place, a hazard identification process has been completed. The hazard identification process did not identify any significant hazards with the potential for offsite impact that would not be suitably controlled.

1.10 Justification and conclusions

The project is considered justified because:

- It is consistent with strategic land use planning for the site

- It provides a number of benefits
- It would not have any significant long term negative environmental or social impacts
- It is in the public interest and the site is suitable for the project
- It is consistent with the objects of the EP&A Act
- It is consistent with the principles of ecologically sustainable development
- The consequences of not proceeding with the project are not considered to be acceptable.

This EIS has been prepared in accordance with the provisions of the EP&A Act. It addresses the requirements of the Secretary of the NSW Department of Planning and Environment (the SEARs).

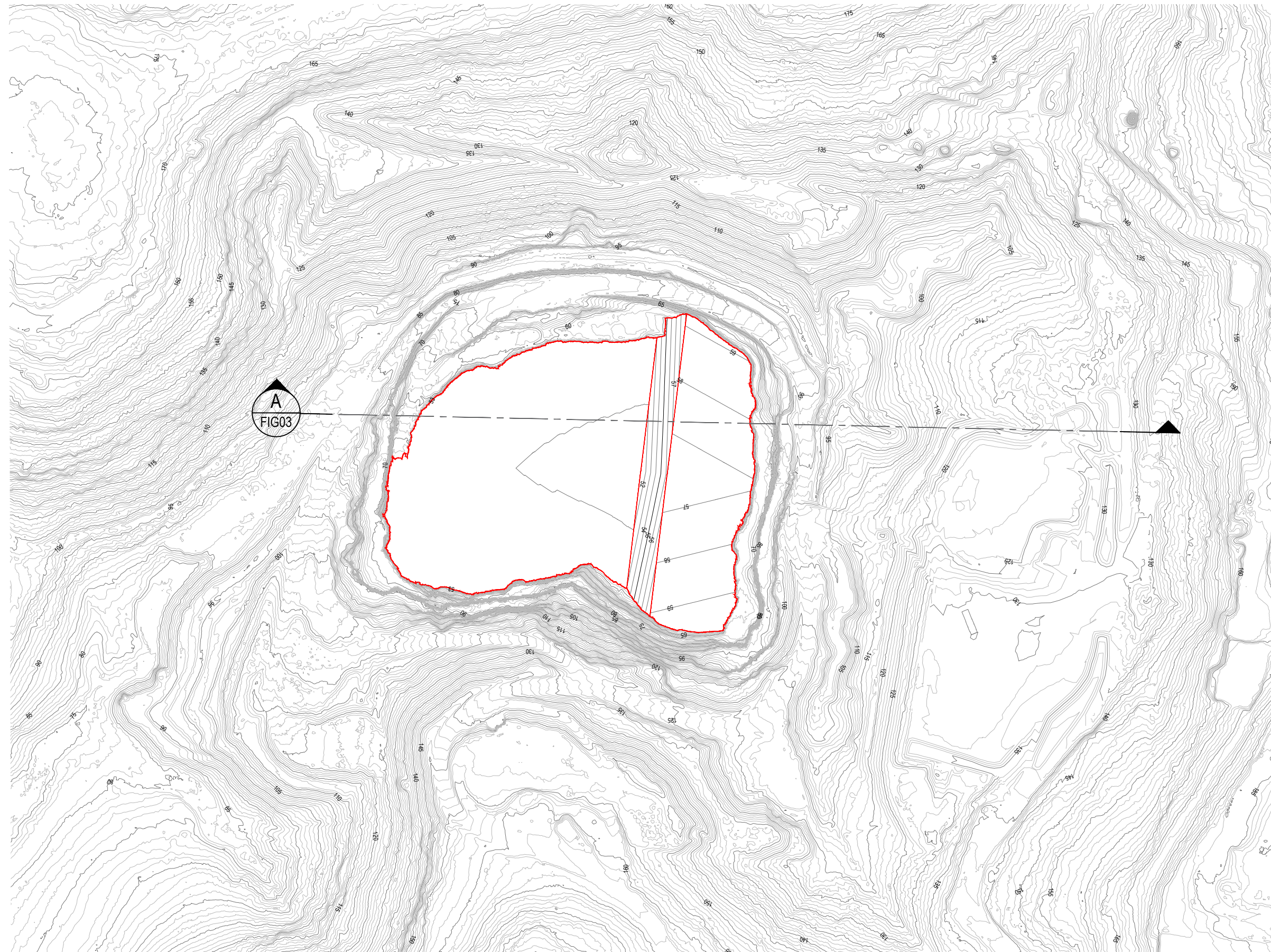
Detailed environmental investigations have been undertaken to assess the potential environmental impacts of the project. These included specialist assessments of noise and vibration, air quality, soils and water, biodiversity, heritage, traffic and transport, land resource, waste management, visual amenity and socio-economics. The EIS has documented the potential environmental impacts, considering both negative and positive impacts (and benefits).

Many of the potential issues identified in the initial risk assessment of the project would be effectively managed/eliminated through careful design features. To manage other issues, and in some cases eliminate them completely, the EIS chapters outline a range of mitigation measures that would be implemented during the project construction. The EIS has demonstrated that the project would not have a significant impact on the community or environment, with implementation of the proposed mitigation measures.

2. Supporting plans and documents

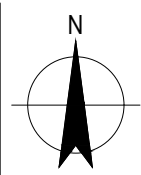
The following plans and documents are attached:

- Figure 01 – Existing Site Plan
- Figure 02 – Proposed Landform
- Figure 03 – Cross Section
- Figure 04 – Extent of Works
- Figure 05 – Site Management Plan
- Retaining Wall Details
- Stormwater Drainage Layout



- LEGEND**
- ==== SURVEY SURFACE
 - ==== APPROX. FILL SURFACE (NORTHCONNEX)
 - APPROX. FILL BOUNDARY (NORTHCONNEX)

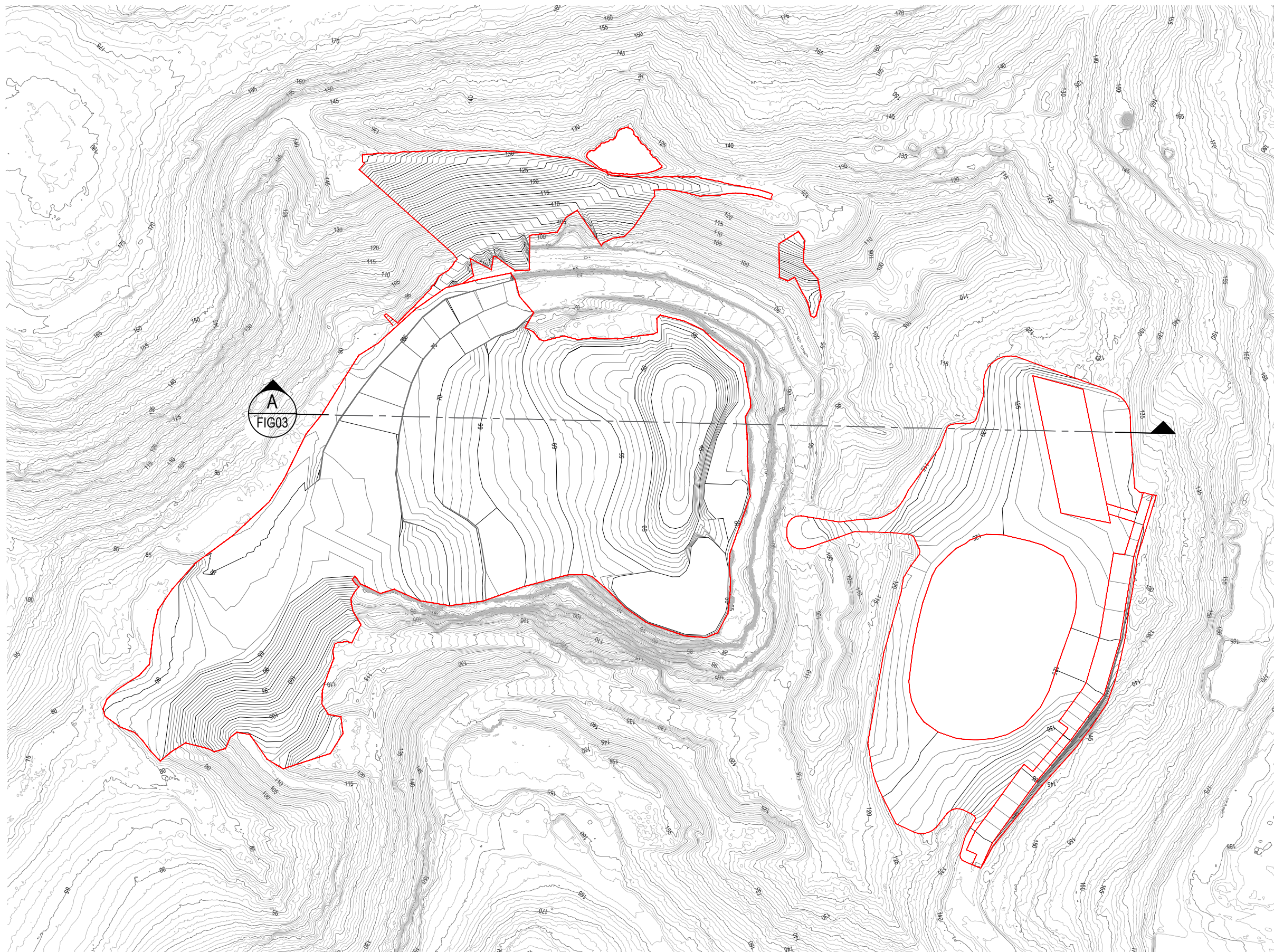
0 30 60 90m
SCALE 1:3000 AT ORIGINAL SIZE



HORNSBY SHIRE COUNCIL
HORNSBY QUARRY REHABILITATION
EXISTING SITE PLAN

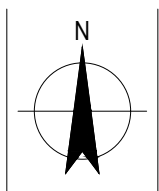
Job Number | 21-26457
Revision | B
Date | FEB 2019

Figure 01



- LEGEND**
- ==== ASSUMED EXISTING SURFACE
 - ==== PIT AREA DESIGN SURFACE
 - DESIGN BOUNDARY

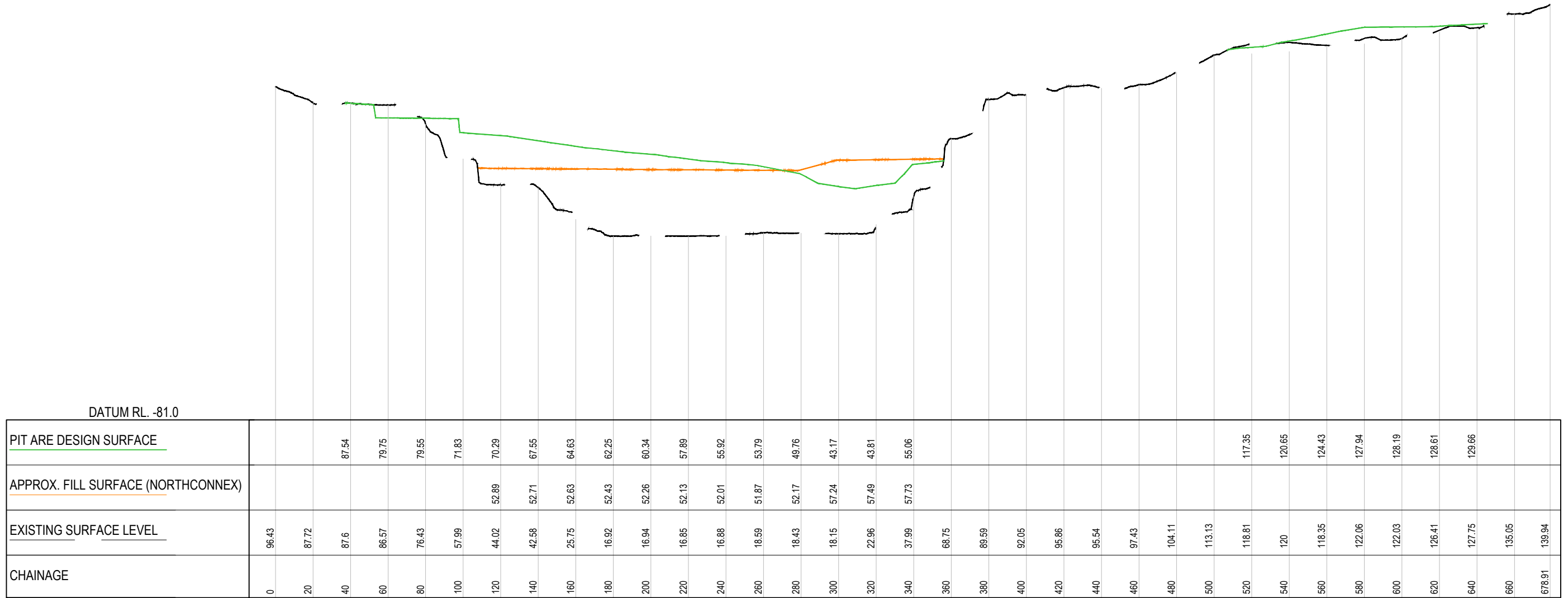
0 30 60 90m
SCALE 1:3000 AT ORIGINAL SIZE



HORNSBY SHIRE COUNCIL
HORNSBY QUARRY REHABILITATION
PROPOSED LANDFORM

Job Number | 21-26457
Revision | B
Date | DEC 2018

Figure 02

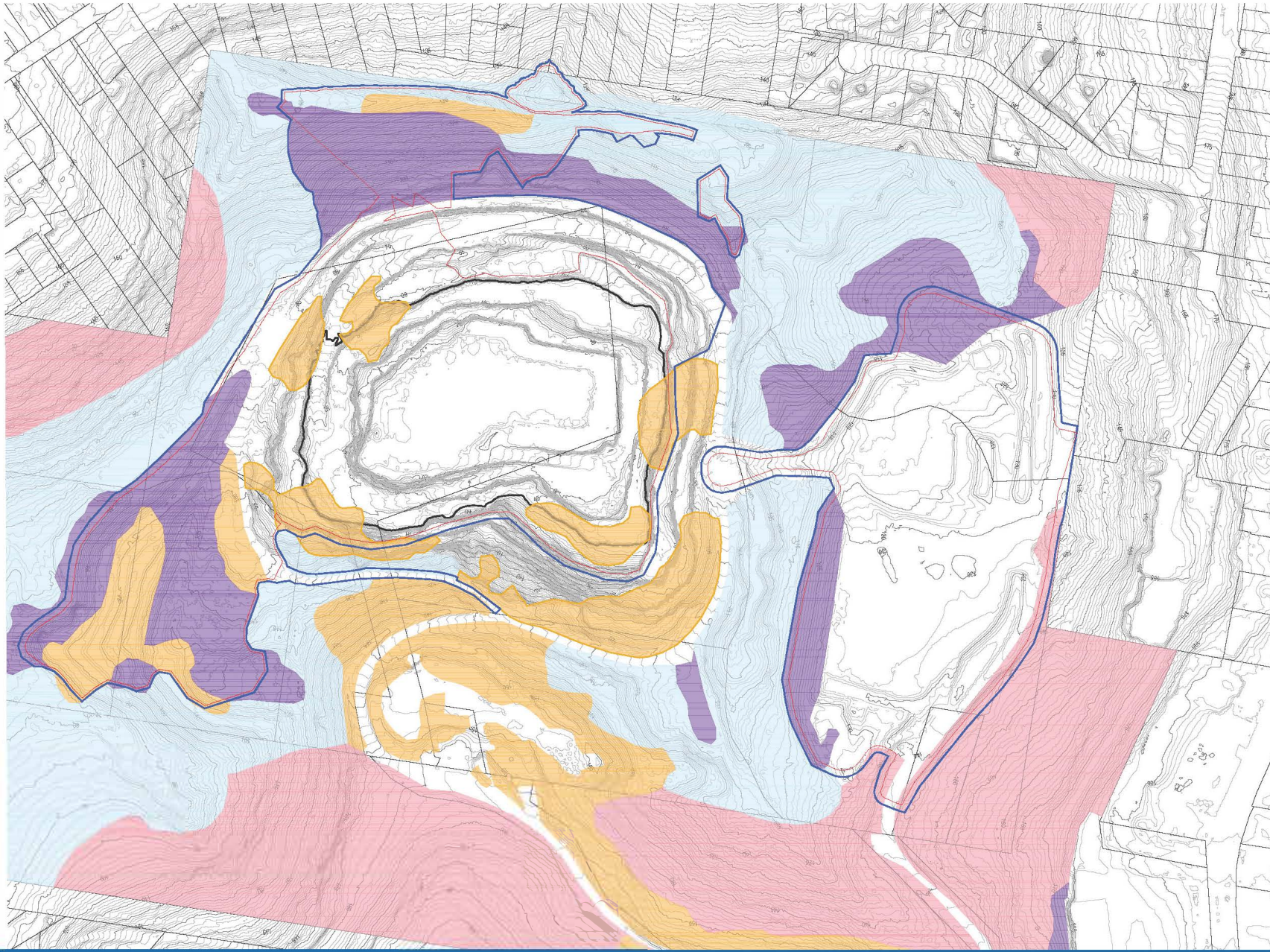


A SECTION
 FIG01.02 SCALE 1 : 1500



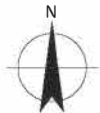
HORNSBY SHIRE COUNCIL
 HORNSBY QUARRY REHABILITATION
CROSS SECTION

Job Number | 21-26457
 Revision | B
 Date | DEC 2018
Figure 03



- LEGEND**
- CADASTRE
 - ASSUMED EXISTING SURFACE
 - PIT FILLING EXTENT
 - EARTHWORKS DESIGN EXTENT
 - ▭ EXTENT OF WORKS
- VEGETATION COMMUNITY**
- SYDNEY BLUE GUM - BLACKBUTT
SMOOTH-BARKED APPLE MOIST SHRUBBY
OPEN FOREST (CEEC TSC Act)
(MODERATE/GOOD - POOR)
 - BLACKBUTT GULLY FOREST
(POOR)
 - BLACKBUTT GULLY FOREST
(MODERATE/GOOD - HIGH)
 - BLACKBUTT GULLY FOREST
(MODERATE/GOOD - POOR)

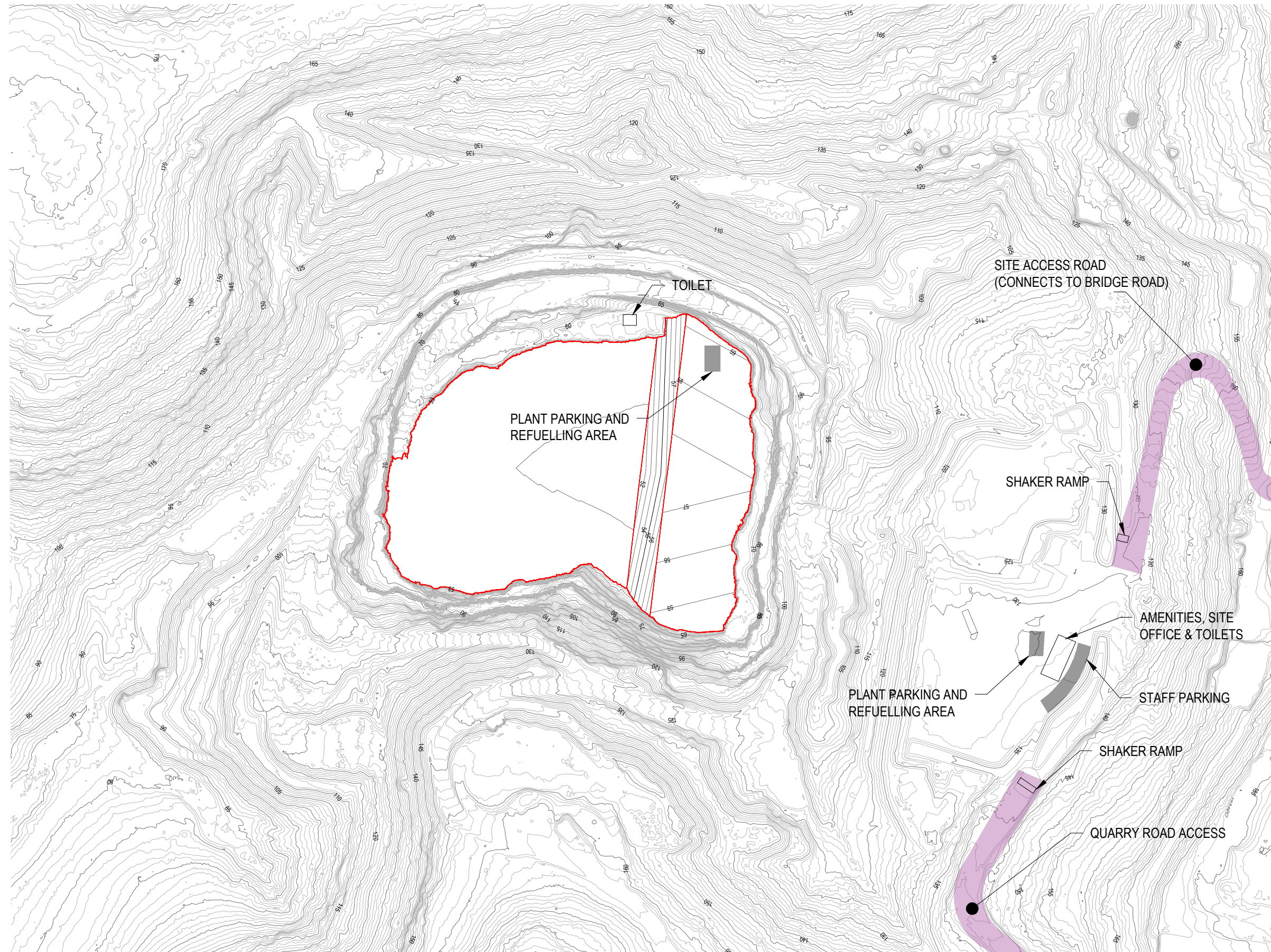
0 30 60 90m
SCALE 1:3000 AT ORIGINAL SIZE



HORNSBY SHIRE COUNCIL
HORNSBY QUARRY REHABILITATION
EXTENT OF WORKS

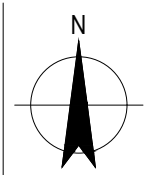
Job Number 21-26457
Revision A
Date SEP 2018

Figure 04



- LEGEND**
- ≡ SURVEY SURFACE
 - ≡≡≡ APPROX. FILL SURFACE (NORTHCONNEX)
 - APPROX. FILL BOUNDARY (NORTHCONNEX)

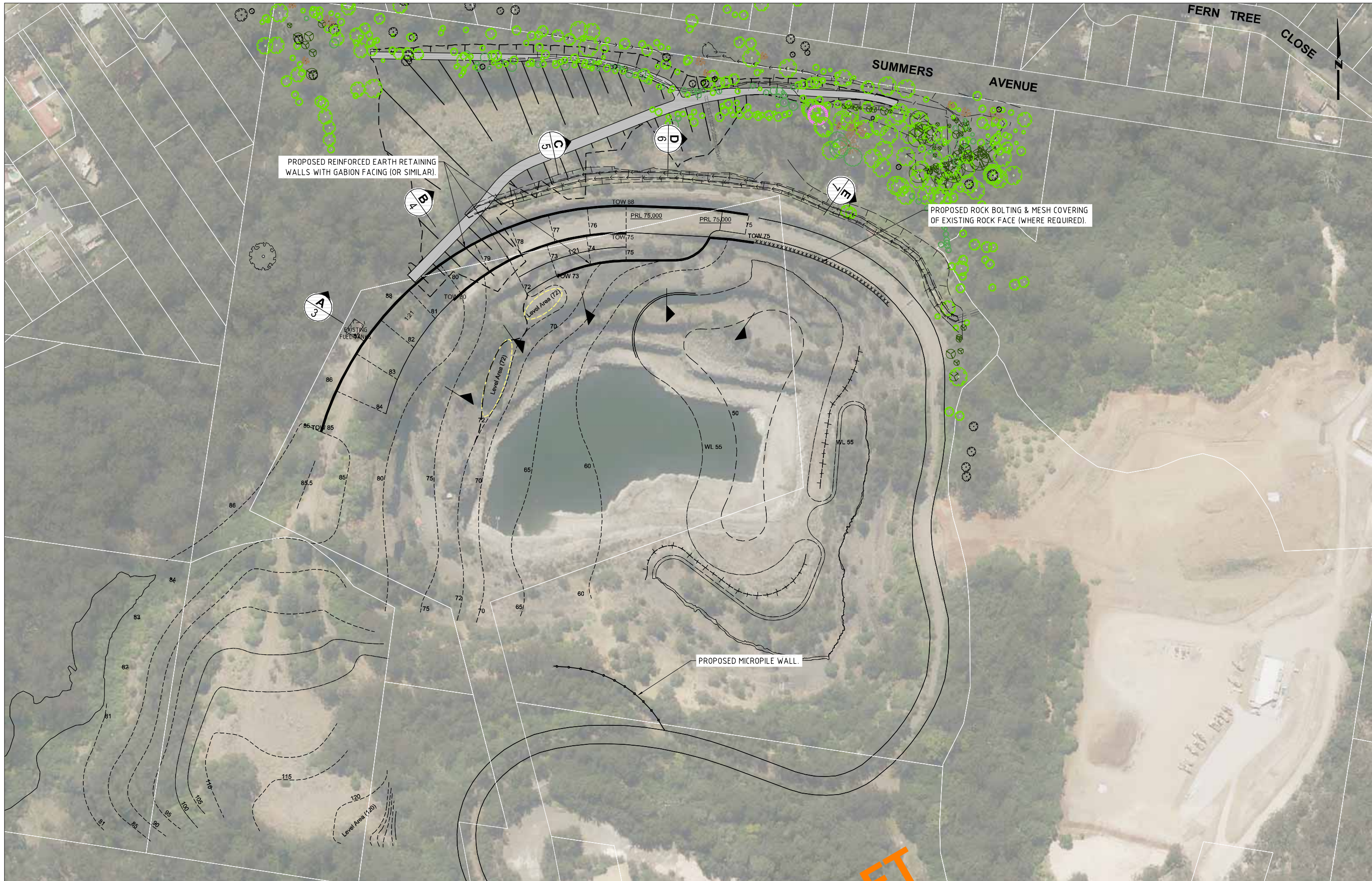
0 30 60 90m
SCALE 1:3000 AT ORIGINAL SIZE



HORNSBY SHIRE COUNCIL
HORNSBY QUARRY REHABILITATION
SITE MANAGEMENT PLAN

Job Number | 21-26457
Revision | B
Date | FEB 2019

Figure 05

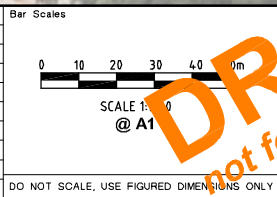


**Hornsby Shire Council
Design & Construction
Branch**

TELEPHONE: 021 9847 6666
FACSIMILE: 021 9847 6999
Authorised for release - Manager Design & Construction
Name: R. RAJCA Signed: Date:

Designer S. COMISH	Design Checked-Design Team Leader		
Drawn S. COMISH	Signed:		
Surveyor LODAR	NA Field Book	NA Level Book	AHD Datum
Project Identifier\VCAD File Name H:\12d\Southwest Fill Option\BASE JUNK.dwg			
TRIM Document Number			

Issue	Description	Name	Initial	Date
Design not to be amended without authorisation by Manager Design & Construction				



DRAFT
not for construction

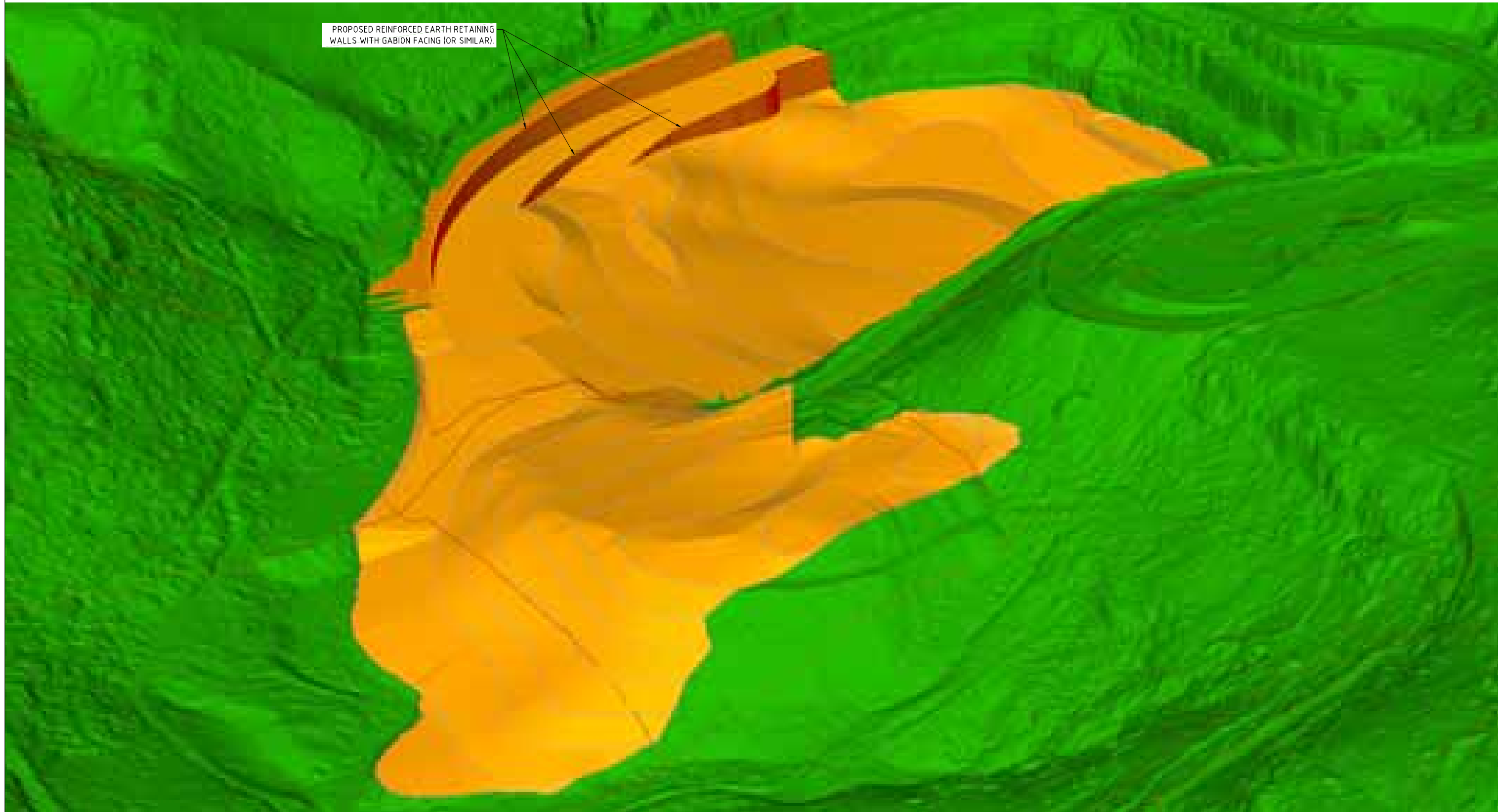
**HORNSBY
SHIRE COUNCIL**
PO BOX 37, HORNSBY NSW 1630
DX 9855 HORNSBY

**HORNSBY QUARRY, HORNSBY
PROPOSED REDEVELOPMENT
RETAINING WALL DETAILS**

OVERALL CONCEPT PLAN

Project Number 100125	Sheet 1	of 8	Issue -
HSC Drawing Number -			

PROPOSED REINFORCED EARTH RETAINING WALLS WITH GABION FACING (OR SIMILAR).



CONCEPTUAL DESIGN - LOOKING NORTHEAST

**Hornsby Shire Council
Design & Construction
Branch**

TELEPHONE: (02) 9847 6666
FACSIMILE: (02) 9847 6999
Authorised for release - Manager Design & Construction
Name: R. RAJCA Signed: Date:

Designer S. COMISH	Design Checked-Design Team Leader								
Drawn S. COMISH	Signed:								
Surveyor LODAR	NA	NA	AHD						
	Field Book	Level Book	Datum						
Project Identifier\VCAD File Name									
H:\12d\Southwest Fill Option\BASE JUNK.dwg									
TRIM Document Number				Issue	Description	Name	Initial	Date	
				Design not to be amended without authorisation by Manager Design & Construction					

Bar Scales

NOT TO SCALE

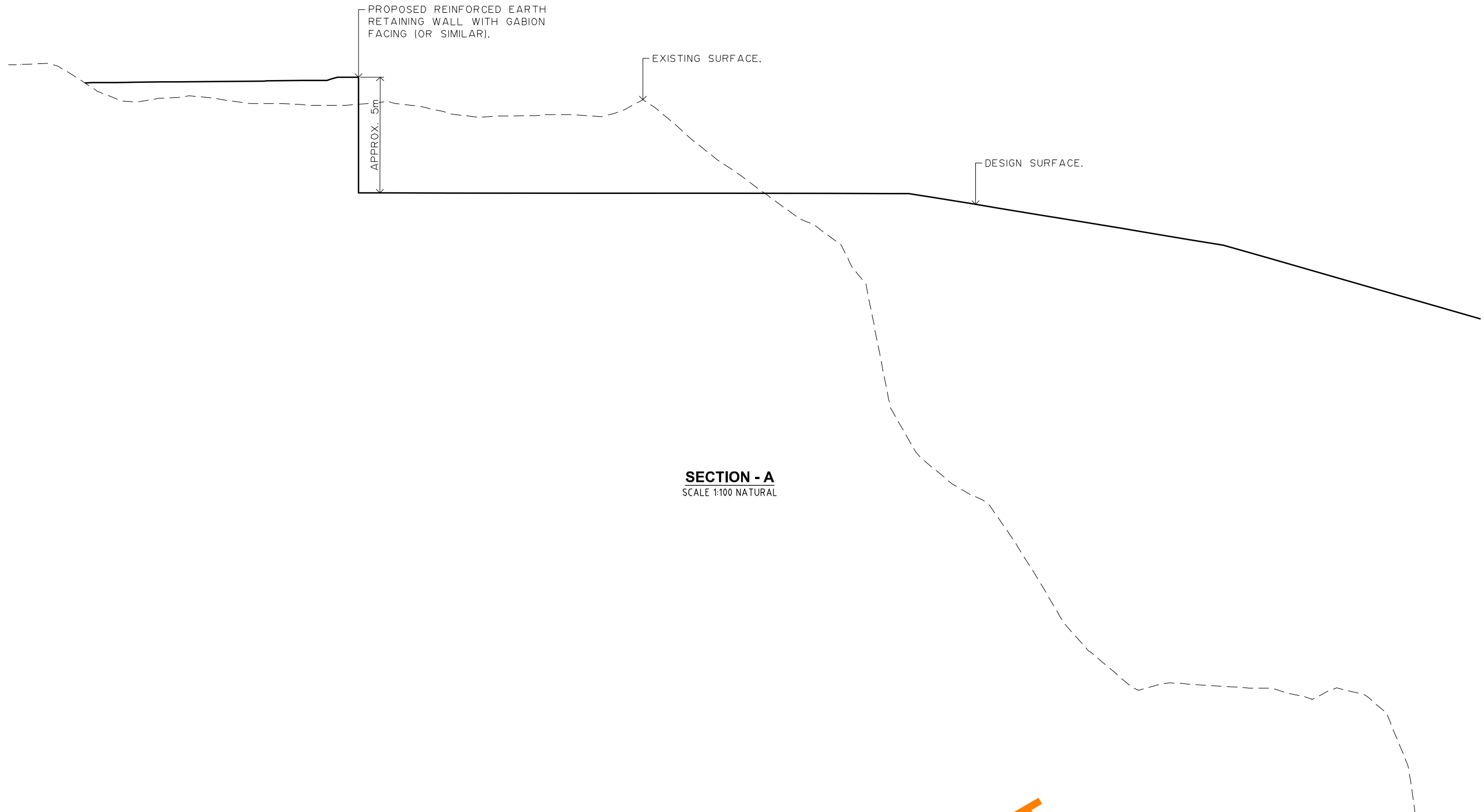
DRAFT
not for construction

**HORNSBY
SHIRE COUNCIL**
PO BOX 37, HORNSBY NSW 1630
DX 9855 HORNSBY

**HORNSBY QUARRY, HORNSBY
PROPOSED REDEVELOPMENT
RETAINING WALL DETAILS**

PERSPECTIVE VIEW OF PROPOSAL

Project Number 100125		
Sheet 2	of 8	Issue -
HSC Drawing Number -		



SECTION - A
SCALE 1:100 NATURAL

**Hornsby Shire Council
Design & Construction
Branch**
TELEPHONE: (02) 9847 6666
FACSIMILE: (02) 9847 6999

Designer S. COMISH	Design Checked-Design Team Leader						
Drawn S. COMISH	Signed:						
Surveyor LODAR	NA	NA	AHD				
	Field Book	Level Book	Datum				
Project Identifier\VCAD File Name H:\12d\Southwest Fill Option\BASE JUNK.dwg							
TRIM Document Number							
Issue	Description			Name	Initial	Date	
	Design not to be amended without authorisation by Manager Design & Construction						

Bar Scale
0 1 2 3 4 m
SCALE 1:100
@ A1

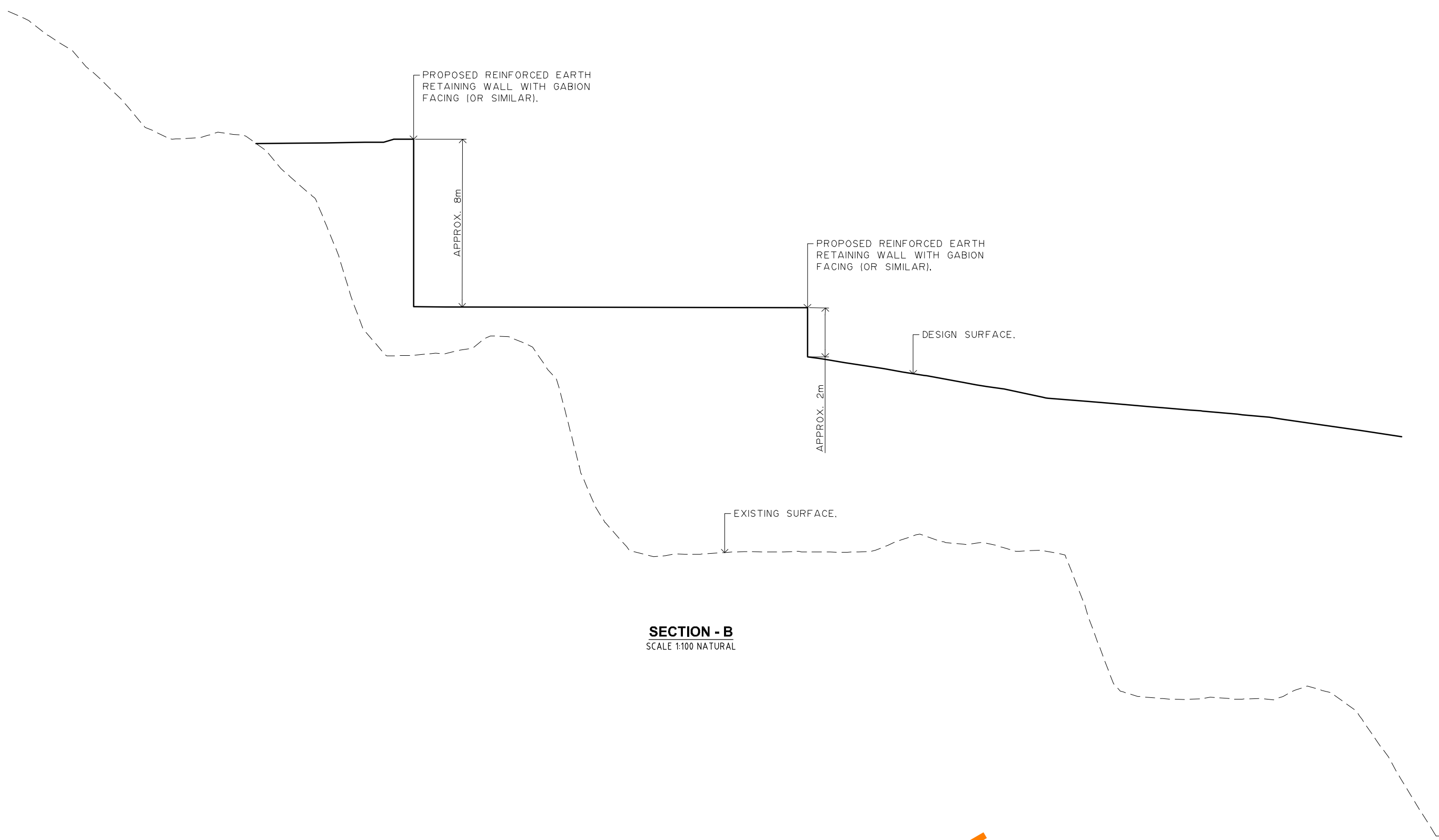
DRAFT
not for construction

HORNSBY SHIRE COUNCIL
PO BOX 37, HORNSBY NSW 1630
DX 9855 HORNSBY

**HORNSBY QUARRY, HORNSBY
PROPOSED REDEVELOPMENT
RETAINING WALL DETAILS**

SECTION A

Project Number 100125		
Sheet 3	of 8	Issue -
HSC Drawing Number -		



SECTION - B
SCALE 1:100 NATURAL

**Hornsby Shire Council
Design & Construction
Branch**
TELEPHONE: (02) 9847 6666
FACSIMILE: (02) 9847 6999

Designer S. COMISH	Design Checked-Design Team Leader Signed:				
Drawn S. COMISH	Drawing Checked Signed:				
Surveyor LODAR	NA Field Book	NA Level Book	AHD Datum		
Project Identifier\VCAD File Name H:\12d\Southwest Fill Option\BASE JUNK.dwg					
TRIM Document Number					
Issue	Description	Name	Initial	Date	
	Design not to be amended without authorisation by Manager Design & Construction				

Bar Scale
0 1 2 3 4 m
SCALE 1:100
@ A1

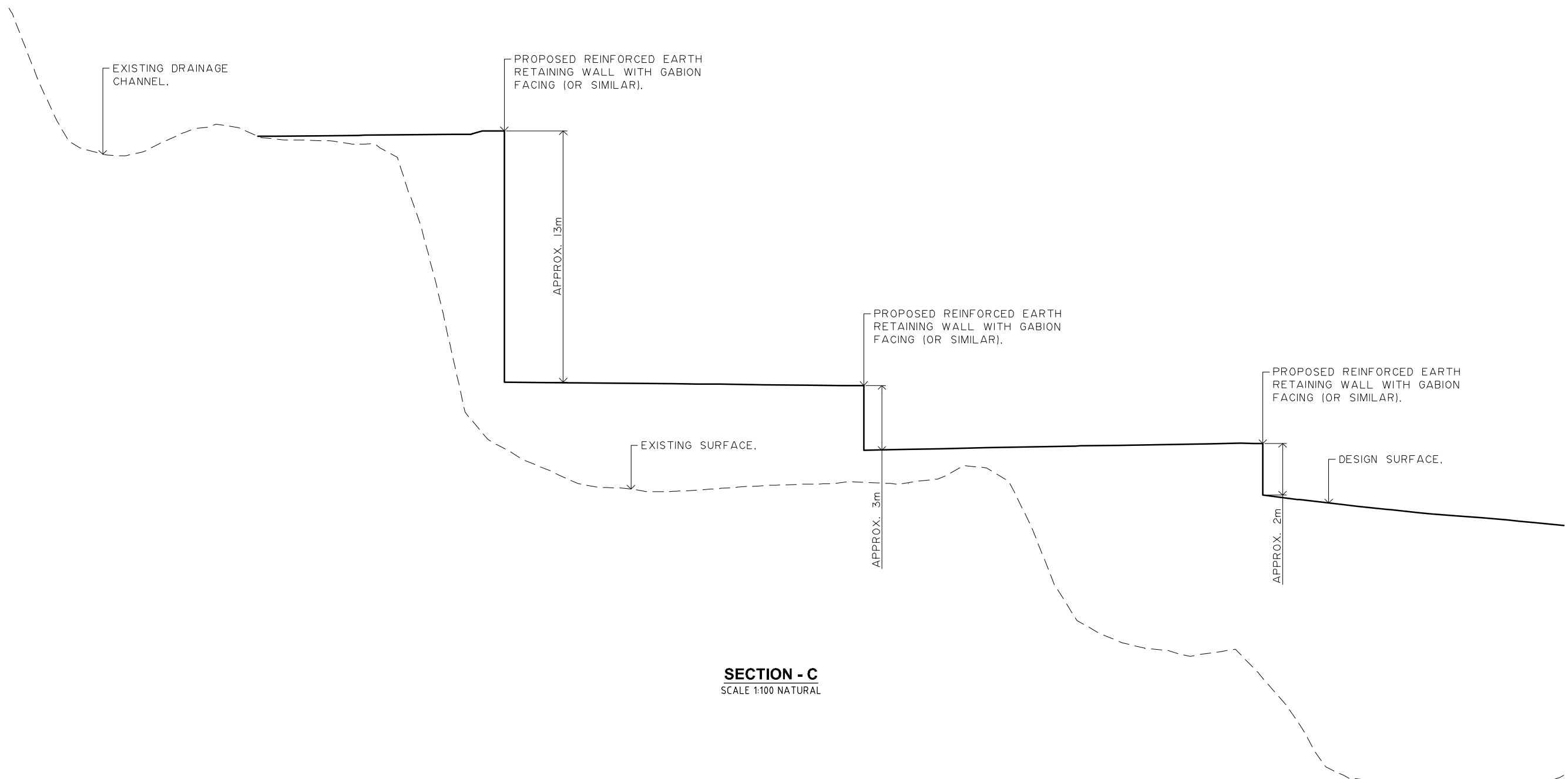
DRAFT
not for construction

**HORNSBY
SHIRE COUNCIL**
PO BOX 37, HORNSBY NSW 1630
DX 9855 HORNSBY

**HORNSBY QUARRY, HORNSBY
PROPOSED REDEVELOPMENT
RETAINING WALL DETAILS**

SECTION B

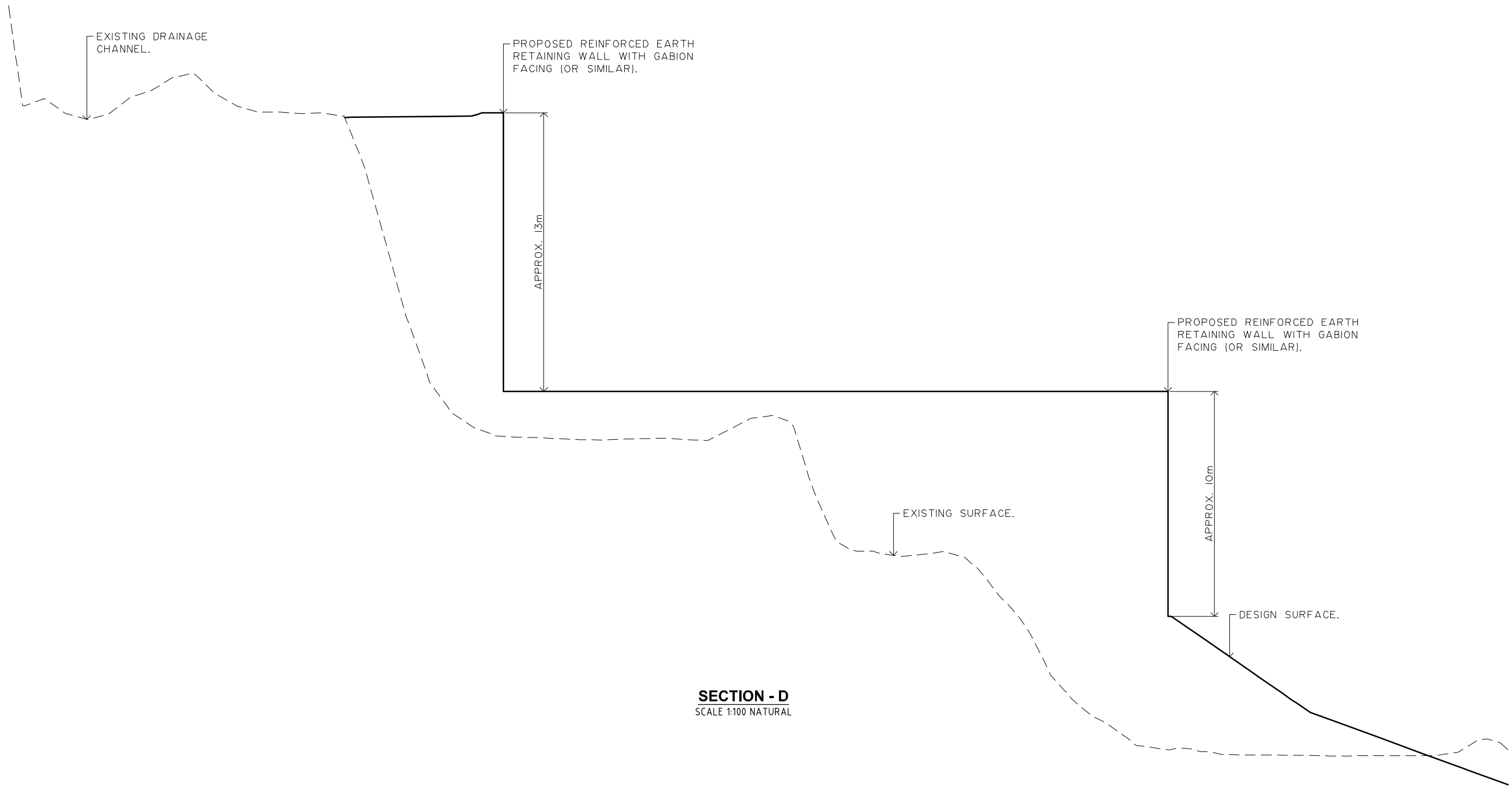
Project Number 100125	Sheet of 4 8	Issue -
HSC Drawing Number -		



SECTION - C
SCALE 1:100 NATURAL

Hornsby Shire Council Design & Construction Branch <small>TELEPHONE: (02) 9847 6666 FACSIMILE: (02) 9847 6999</small>	Designer S. COMISH	Design Checked-Design Team Leader Signed:								 HORNSBY SHIRE COUNCIL <small>PO BOX 37, HORNSBY NSW 1630 DX 9855 HORNSBY</small>	HORNSBY QUARRY, HORNSBY PROPOSED REDEVELOPMENT RETAINING WALL DETAILS SECTION C	Project Number 100125		
	Drawn S. COMISH	Drawing Checked Signed:										Sheet of 5 8	Issue -	
	Surveyor LODAR	NA Field Book	NA Level Book	AHD Datum									HSC Drawing Number -	
	Project Identifier\VCAD File Name H:\12d\Southwest Fill Option\BASE JUNK.dwg	TRIM Document Number		Issue	Description	Name	Initial	Date	Design not to be amended without authorisation by Manager Design & Construction					

DRAFT
not for construction



SECTION - D
SCALE 1:100 NATURAL

**Hornsby Shire Council
Design & Construction
Branch**

TELEPHONE: (02) 9847 6666
FACSIMILE: (02) 9847 6999
Authorised for release - Manager Design & Construction
Name: R. RAJCA Signed: Date:

Designer S. COMISH	Design Checked-Design Team Leader		
Drawn S. COMISH	Signed:		
Surveyor LODAR	NA Field Book	NA Level Book	AHD Datum
Project Identifier\VCAD File Name H:\12d\Southwest Fill Option\BASE JUNK.dwg			
TRIM Document Number			

Issue	Description	Name	Initial	Date
Design not to be amended without authorisation by Manager Design & Construction				

Bar Scale

SCALE 1:100
@ A1

DO NOT SCALE, USE FIGURED DIMENSIONS ONLY

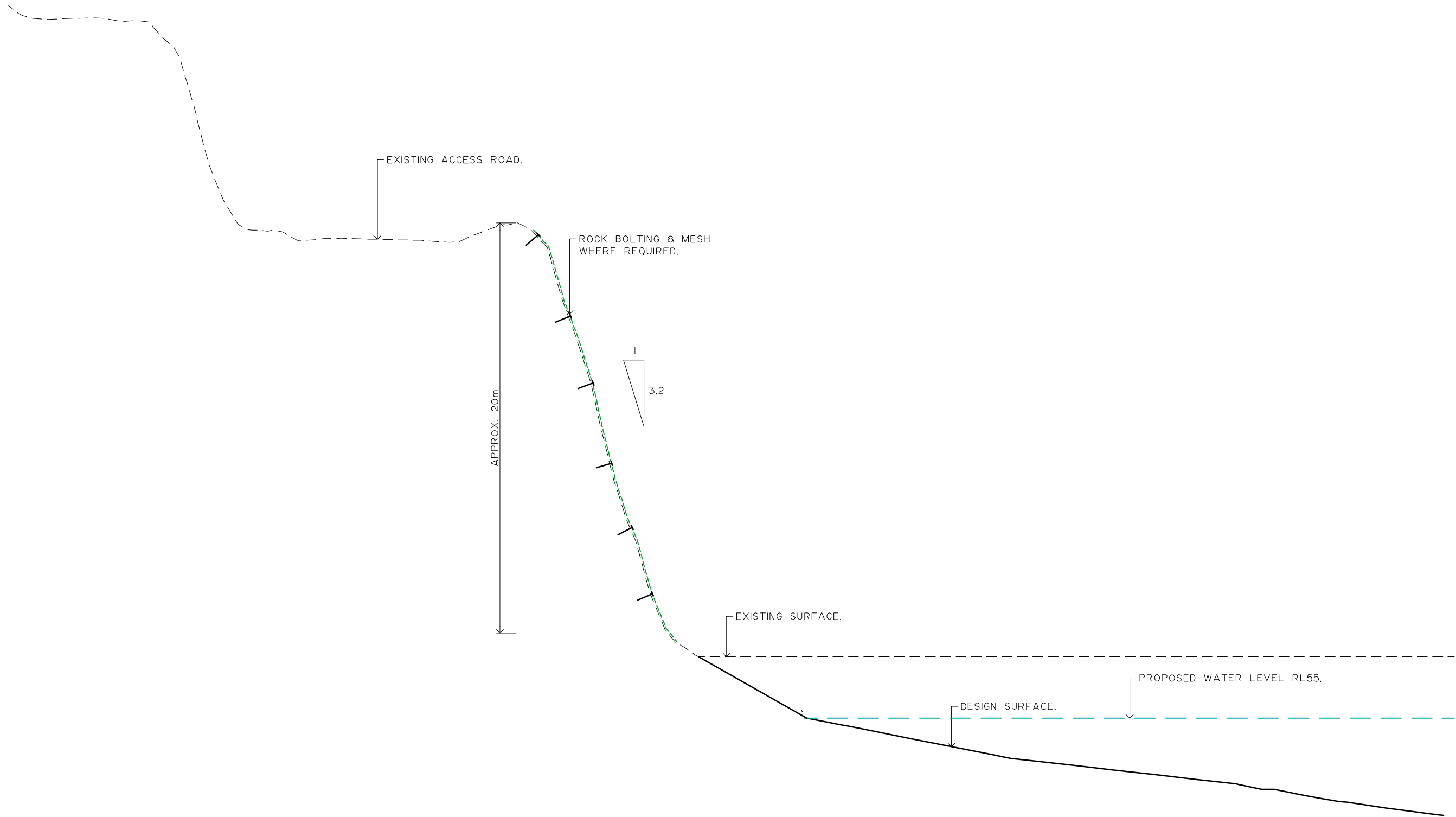
DRAFT
not for construction

**HORNSBY
SHIRE COUNCIL**
PO BOX 37, HORNSBY NSW 1630
DX 9855 HORNSBY

**HORNSBY QUARRY, HORNSBY
PROPOSED REDEVELOPMENT
RETAINING WALL DETAILS**

SECTION D

Project Number 100125		
Sheet 6	of 8	Issue -
HSC Drawing Number -		



SECTION - E
SCALE 1:100 NATURAL

**Hornsby Shire Council
Design & Construction
Branch**
TELEPHONE: (02) 9847 6666
FACSIMILE: (02) 9847 6999

Designer S. COMISH	Design Checked-Design Team Leader Signed:				
Drawn S. COMISH	Drawing Checked Signed:				
Surveyor LODAR	NA Field Book	NA Level Book	AHD Datum		
Project Identifier\VCAD File Name H:\12d\Southwest Fill Option\BASE JUNK.dwg					
TRIM Document Number					
Issue	Description	Name	Initial	Date	
	Design not to be amended without authorisation by Manager Design & Construction				

Bar Scale
0 1 2 3 4 m
SCALE 1:100
@ A1

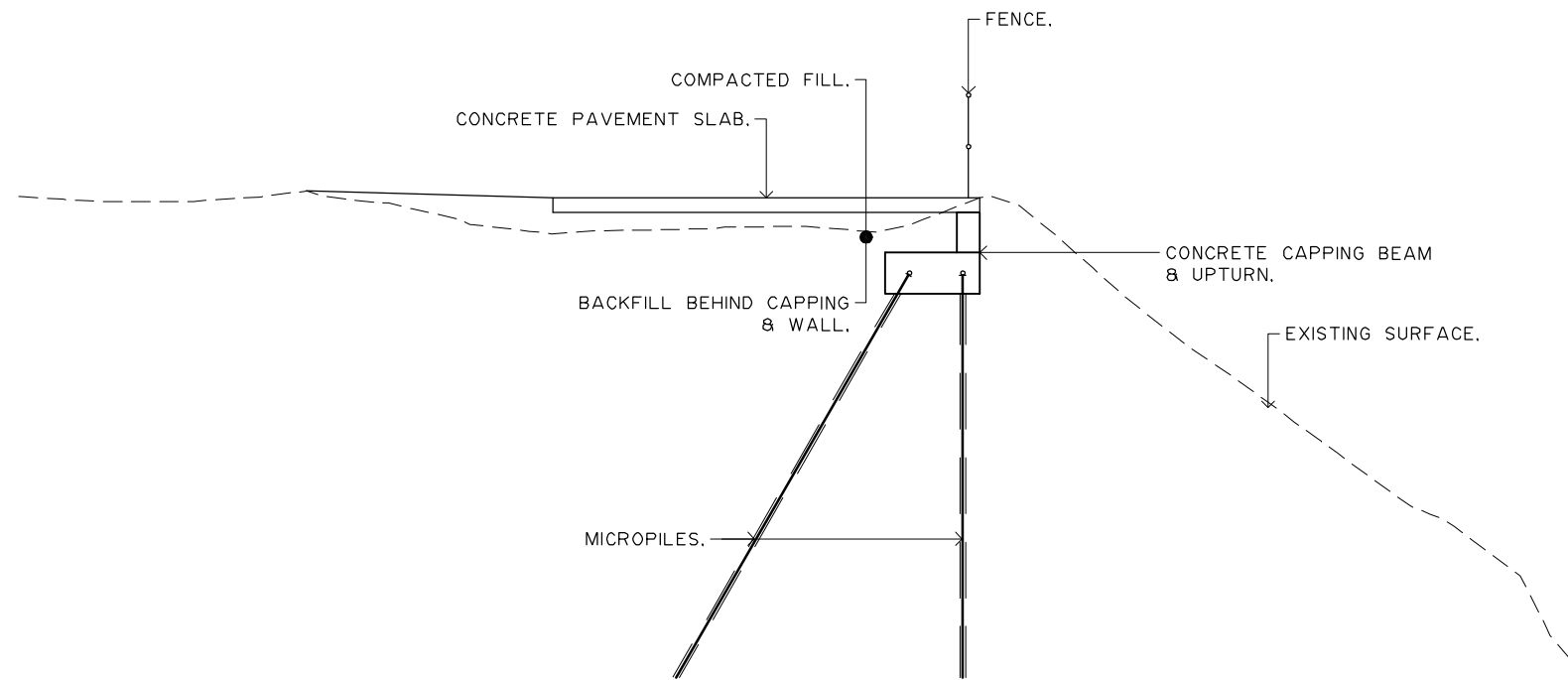
DRAFT
not for construction

HORNSBY SHIRE COUNCIL
PO BOX 37, HORNSBY NSW 1630
DX 9855 HORNSBY

**HORNSBY QUARRY, HORNSBY
PROPOSED REDEVELOPMENT
RETAINING WALL DETAILS**

SECTION E

Project Number 100125	Sheet 7	of 8	Issue -
HSC Drawing Number -			



DRAWING SHOWING TYPICAL LAYOUT DETAILS OF MICROPILE WALL
NOT TO SCALE

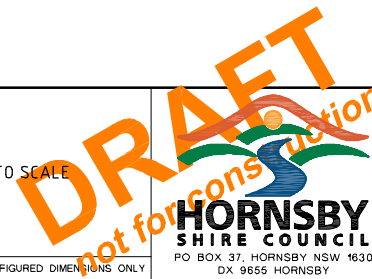
**Hornsby Shire Council
Design & Construction
Branch**

TELEPHONE: (02) 9847 6666
FACSIMILE: (02) 9847 6999
Authorised for release - Manager Design & Construction
Name: R. RAJCA Signed: Date:

Designer
S. COMISH
Signed:
Drawn
S. COMISH
Signed:
Surveyor
LODAR
Project Identifier \ CAD File Name
H:\12d\Southwest Fill Option\BASE JUNK.dwg
TRIM Document Number

Issue	Description	Name	Initial	Date
	Design not to be amended without authorisation by Manager Design & Construction			

Bar Scales
NOT TO SCALE
DO NOT SCALE, USE FIGURED DIMENSIONS ONLY



**HORNSBY QUARRY, HORNSBY
PROPOSED REDEVELOPMENT
RETAINING WALL DETAILS**

MICROPILE DETAILS

Project Number 100125		
Sheet 8	of 8	Issue -
HSC Drawing Number -		



HORNSBY PARK STORMWATER DRAINAGE LAYOUT

www.ghd.com

