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Enspire Solutions Pty Ltd
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DATE
12 November 2025

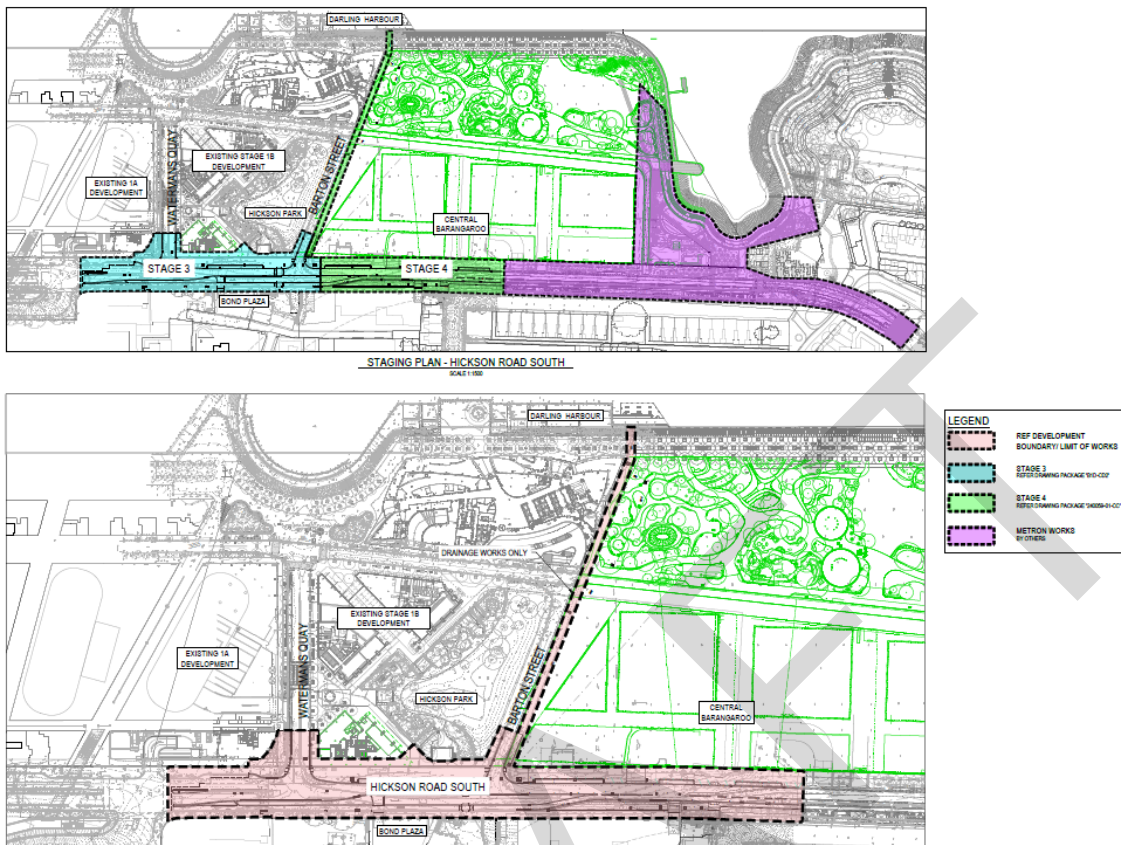
SUBJECT
Letter of Opinion - Air Quality
Considerations In Relation to the
Proposed Hickson Road Upgrade and
Refurbishment Works

REFERENCE
0722434L01

Dear Monique:

1. INTRODUCTION

This Letter of Opinion has been prepared by Environmental Resources Management Australia Pty Ltd (ERM) to support the Review of Environmental Factors (REF) for the Hickson Road South upgrade and refurbishment (the Activity). The Hickson Road South (refer to **Figure 1-1** below) upgrade and refurbishment design comprises of the upgrade of Hickson Road from the northern side of the Napoleon Street intersection connecting to the existing road upgrade north of the High Street Steps, along with utility upgrades running adjacent to Barton Street and intersection upgrades. This area is referred to within this air quality advice report as 'the site' and incorporates Stage 3 and Stage 4 of the upgrade and refurbishment works.



Source: *Context Staging Plan Showing Delineation Between Stage 3 and Stage 4*, drawing number 240059-00-REF-C01.31 (Enspire Solutions, 2025e).

FIGURE 1-1 EXTENT OF HICKSON ROAD SOUTH UPGRADE AND REFURBISHMENT WORKS (ENSPIRE, 2025E)

ERM was engaged by Lendlease Construction Pty Ltd (Lendlease) and Enspire Solutions Pty Ltd (Enspire) on behalf of Infrastructure NSW (INSW) to undertake a review of existing information regarding potential air quality management requirements for the Activity. The Activity involves the following works:

- Adjustment to horizontal geometry of the existing Hickson Road, enabling the provision of:
 - Additional short term parking bays along the western side of the roadway;
 - A new two-way separated cycleway along the eastern edge of the roadway;
- Adjustments to two (2) existing un-signalised pedestrian crossing intersections along Waterman's Quay and Barton Street respectively;
- Installing of a formal left turn slip lane into Waterman's Quay from the north-bound approach on Hickson Road ;
- Constructing new footpaths on the western and eastern sides of Hickson Road to match the already completed footpath works to the north and south of the existing extent of proposed works;
- Provision of permeable paving to accommodate existing trees;

- Landscaping works including the establishment of low-median planting between the eastern edge of the road carriageway and eastern footpath and installation of additional medium sized trees along both the eastern and western footpaths and within the landscape medians;
- Relocation and augmentation of utilities where necessary, including electrical, gas, water and telecommunications;
- Final roadworks, including kerb and gutters, road and footpath pavements, signage, lighting and line marking;
- Installation of new stormwater drainage pit and pipe infrastructure, including a trunk drainage line running adjacent Barton Street to an existing outlet to Sydney Harbour; and
- Ancillary works for the project including, but not limited to, road furniture, tie-in works, earthworks, adjustments to existing stormwater drainage infrastructure and flood mitigation works.

2. OBJECTIVE

The objective of this review is to prepare a Letter of Opinion (this letter) assessing the potential for the proposed works to produce adverse air quality impacts.

ERM understands that the determining authority for the Hickson Road South upgrade and refurbishment works is INSW.

3. DOCUMENTATION REVIEWED

3.1 PROPOSED DEVELOPMENT WORKS DOCUMENTATION

To enable the preparation of this letter, ERM reviewed the following documentation provided by Lendlease and Enspire regarding the scope of the proposed civil works as set out in **Table 3-1**.

TABLE 3-1 DEVELOPMENT WORKS DOCUMENTATION SOURCES

Document Title	Author	Document Date	Document Reference
Hickson Road Upgrade – Stage 3, Civil Engineering Works, Bulk Earthworks Cut and Fill Plan, Sheet 01	Enspire	27/8/2025	B1D-CD2-200050
Hickson Road Upgrade – Stage 3, Civil Engineering Works, Bulk Earthworks Cut and Fill Plan, Sheet 02	Enspire	27/8/2025	B1D-CD2-200051
Hickson Road Upgrade – Stage 4, Civil Engineering Works, Bulk Earthworks Cut and Fill Plan, Sheet 01	Enspire	27/8/2025	240059-01-CC-C04.01
Hickson Road Upgrade – Stage 4, Civil Engineering Works, Bulk Earthworks Cut and Fill Plan, Sheet 02	Enspire	27/8/2025	240059-01-CC-C04.02
Context Staging Plan Showing Delineation Between Stage 3 and Stage 4.	Enspire	29/10/2025	Ref. 240059-00-REF-C01.31.
Hickson Road Upgrade Works – Stage 3 & 4, Geotechnical Factual Report and Preliminary Waste Classification Assessment	Tetra Tech Coffey	27/10/2025	754-SYDGE331685-AD

Based on information provided by Lendlease and Enspire, ERM understands that the proposed works include the items described in **Section 1** above.

As part of these works, excavation will be required in specific portions of Stage 4 to a maximum depth of approximately one (1) metre below ground level (m bgl) (for utility work and installation of tree pits), with typical excavation depths of approximately 0.25 m bgl to 0.75 m bgl across most areas. Stage 3 is expected to be subject to placement of fill material to enable pavement construction, with no excavation required.

Lendlease and Enspire have provided detailed drawings of the planned excavation extents and depths, as included within **Attachment A** (refer to Bulk Earthworks Cut and Fill Plans for Stage 3 and Stage 4). It is noted that detailed civil drawings for the proposed stormwater trunk line extending from Hickson Road westwards to Darling Harbour weren't available at the time of writing; however, Enspire has indicated that excavation depth is expected to be up to approximately 2.9 metres below ground level (corresponding to approximately -0.4 m Australian Height Datum).

Lendlease and Enspire have indicated that the bulk excavations are expected to generate approximately 948 m³ of excess material (predominantly fill materials) which will be classified for reuse within the site where possible or classified for off-site disposal at suitably licensed landfills in accordance with the requirements of the *Waste Classification Guidelines* (NSW EPA, 2014).

Information provided to ERM indicates that a Construction Traffic Environmental Management Plan (CTEMP) will be developed for the program prior to works commencing, including relevant mitigation measures to be implemented during the construction work and an Unexpected Finds Procedure for contamination.

3.2 CONTAMINATED LAND DOCUMENTATION

To inform the preparation of this letter, ERM has reviewed the following documentation provided by Lendlease and Enspire regarding contaminated land as set out in **Table 3-2**.

TABLE 3-2 CONTAMINATED LAND DOCUMENTATION SOURCES

Document Title	Author	Document Date	Document Reference
Hickson Road Remediation – Additional Investigation, Environmental Site Assessment Report	ERM	February 2018	0337165R14_Final
Barangaroo Hickson Road Declaration Area Remediation Summary Report – EPA Remediation Site 21122	ERM	20/12/2019	0337165L51_Rev3
Site Audit Report, Hickson Road VEMP Remediation, Barangaroo	Ramboll Australia	February 2020	318000118 (AS121909B) Audit No. RS091-3

4. PREVIOUS REMEDIATION ACTIVITIES

Areas within the Hickson Road upgrade and refurbishment works area have been historically contaminated through coal gas production activities which ceased operation in the 1920's. Contamination within Hickson Road was subject to a remediation program which took place between 2018 and 2019 and included validation of the land for future use as a roadway (Ramboll, 2020)¹.

As part of the remediation process, areas of soil and groundwater contamination were delineated, with excavation and disposal of contaminated material within areas that exceeded site-specific validation criteria ('the remediation footprint'). Validation criteria were defined with consideration to future use of the land as a roadway.

Remedial excavation was generally performed down to bedrock within Hickson Road (typically present at approximately 2-3 m bgl) and to approximately 7 m bgl within the planned stormwater trunk alignment adjacent to Barton Street based on the findings of previous investigations. Excavations were backfilled with either excavated natural material (ENM) or virgin excavated natural material (VENM). In areas where geotechnical constraints were present (e.g. footings and/or anchors for adjoining structures), contamination was immobilised in-situ via jet grouting. Remedial excavation was not performed in areas where contamination was delineated at concentrations below the relevant validation criteria.

ERM (2019) provided a summary of the remediation and validation works completed at the site identified as the Barangaroo Hickson Road Declaration Area to review whether remediation works under NSW EPA Management Order 20151402 had been successfully completed. As the Lead Validation Consultant, ERM was also responsible for undertaking site inspections to assess the suitability of remedial and validation works completed by the remediation contractor (Enviropacific Services Pty Ltd -EPS) and the subcontractor validation consultant (GHD) and for undertaking initial reviews of Progress Validation Reports prior to submission to the site auditor.

ERM concluded that:

- remediation and validation had been completed in accordance with the requirements of the Remedial Action Plan (AECOM, 2013), the Remedial Works Plan (EPS, 2018) and the Validation and Sampling Management Plan (ERM, 2018) within the Hickson Road portion of the site that is within the NSW EPA Declaration Area Boundary (and the limited off-site area at 36 Hickson Rd); and
- for the purposes of compliance with the NSW EPA Management Order, remediation for Declaration 21122 had been completed which would support the lifting of the Declaration at Hickson Road.

The extents of this remediation work are presented within **Attachment A** (refer to Figure 2 – Historical Investigation Locations and Remediation Extent).

¹ Further review of contamination information for Hickson Road is provided in *Preliminary Site Investigation, Hickson Road Upgrade and Refurbishment Works Stage 3 & 4 (ERM, 2025)* and should be reviewed in conjunction with this letter.

5. REVIEW OF POTENTIAL AIR EMISSIONS RISKS

Key air emission risks associated with the Hickson Road upgrade and refurbishment works program relate to:

- Odour generation associated with exposure and handling of residual soil and/or groundwater contamination; and
- Dust generation associated with construction processes, including pavement removal and construction, earthworks and associated material handling processes.

5.1 DOCUMENTATION REVIEW

Based on a review of the documentation, the following key observations are made:

- The proposed road construction works are consistent with those routinely undertaken as part of urban road and pavement construction;
- The proposed design primarily involves importation of clean fill to achieve the required surface grades;
- The Hickson Road upgrade and refurbishment works excavations are estimated to comprise a total volume of approximately 948 m³ and are proposed in areas both within and outside of the previously completed remediation footprint; and
- Proposed excavations (confined to the Stage 4 area) are at depths of 1.0 m bgl or less ('shallow excavations') and are not expected to intercept groundwater.

5.2 AIR EMISSION RISKS

This section contains a review of potential air emission risks associated with the Hickson Road upgrade and refurbishment works as based on the documentation review.

5.2.1 DUST GENERATION FROM CONSTRUCTION PROCESSES

The proposed road construction works are consistent with those routinely undertaken as part of urban road and pavement construction. Potential air quality impacts from these operations are well understood and routinely controlled during construction through conventional management practices. Accordingly, air emission risks related to dust generation are considered to be low.

5.2.2 ODOUR EMISSIONS FROM EXCAVATION OF SOILS

Excavations are proposed in areas that have either been remediated or were identified as not requiring remediation to meet the future land use requirements. The application of validation criteria does not preclude the presence of contamination outside of the remediation footprint; however the criteria have affected targeted remediation of areas with elevated levels of contamination. Accordingly, there is a reduced risk for odour generation relative to that which was encountered during excavation of Hickson Road for remediation purposes.

Outside of the remediation footprint, there is potential that contaminated material may be encountered as residual (low-level) contamination, and/or unexpected finds.

In the absence of visible soil contamination and/or groundwater ingress, it is anticipated that odour impacts associated with shallow excavations (if present) would be short-lived and manageable through routine odour control measures such as odour suppressants, minimization of stockpiling, and/or backfilling where required.

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6. CONCLUSIONS

- This letter of opinion has documented a review of potential air emission risks associated with the construction phase of the Hickson Road upgrade and refurbishment works. Identified emission risks include odour generation associated with residual soil and/or groundwater contamination and dust generation associated with construction processes.
- It is recommended that odour risks associated with contamination be reviewed within the construction design and planning phases.
- Should contamination be encountered, potential mitigation measures include:
- Staging of works to limit the extent and duration for which potential odour sources are present. Such measures may include work methods that permit progressive excavation and backfilling of excavations and limiting/avoiding stockpiling of excavated materials; and
- Provision for implementation of contingency measures in the event that contamination is encountered at levels that may produce adverse odour impacts. Such contingency measures may include enclosure of works, e.g. in the case of unexpected finds that exhibit high odour potential.

Residual risks that are not able to be addressed through the construction design should be managed within the CTEMP for the works. The CTEMP should address odour and dust management and include:

- A review of construction processes with identification of emission sources and relevant mitigation and monitoring measures;
- A summary of proposed mitigation and monitoring measures related to odour and dust control; and
- Proposed contingency measures for odour control.

In summary, based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is considered that:

- The extent and nature of potential impacts are low to moderate, and are not expected to have significant adverse effects on the locality, community and the environment; and
- Potential impacts can be appropriately mitigated or managed to ensure that there is minimal effect on the locality, community and the environment.

7. CLOSING

This letter has been prepared to provide an opinion on the potential for the proposed works to produce adverse air quality impacts, with consideration of relevant management requirements.

Please contact the undersigned should you wish to discuss any aspect of this letter.

Yours sincerely,

DRAFT

James Grieve
Principal

DRAFT

Ian Batterley
Partner

DRAFT

8. REFERENCES

- AECOM (2013). Remedial Action Plan, NSW EPA Declared Remediation Site 21122 and Block 4 (Stage 1b) Development Works, Barangaroo, Millers Point, NSW. AECOM Australia Pty Ltd, Job No.: 60247139, Revision K, 24 July 2013.
- Enspire Solutions (2025a). Hickson Road Upgrade – Stage 3, Civil Engineering Works, Bulk Earthworks Cut and Fill Plan Sheet 01.
- Enspire Solutions (2025b). Hickson Road Upgrade – Stage 3, Civil Engineering Works, Bulk Earthworks Cut and Fill Plan Sheet 02.
- Enspire Solutions (2025c). Hickson Road Upgrade – Stage 4, Civil Engineering Works, Bulk Earthworks Cut and Fill Plan Sheet 01.
- Enspire Solutions (2025d). Hickson Road Upgrade – Stage 4, Civil Engineering Works, Bulk Earthworks Cut and Fill Plan Sheet 02.
- Enspire Solutions (2025e). *Context Staging Plan Showing Delineation Between Stage 3 and Stage 4*. Ref. 240059-00-REF-C01.31.
- Enviropacific Services (2018). Hickson Road Ex-situ Remediation, Remedial Works Methodology Plan, Remediation Site No. 21122, Barangaroo, Ref: YM7005_Hickson Rd Ex Situ Remedial Works Plan RevD, 20 June 2018.
- ERM (2018). Hickson Road Remediation - Additional Investigation - Environmental Site Assessment Report (2018), Ref: 0337165R14_Final, 15 February 2018.
- ERM (2019). Barangaroo Hickson Road Declaration Area Remediation Summary Report – EPA Remediation Site 21122.
- Ramboll (2020). Site Audit Report, Hickson Road VEMP Remediation, Barangaroo.
- Tetra Tech Coffey (2023). Hickson Road Upgrade Works Stage 3 – Barangaroo, Geotechnical Desk Study.



ATTACHMENT A

FIGURES

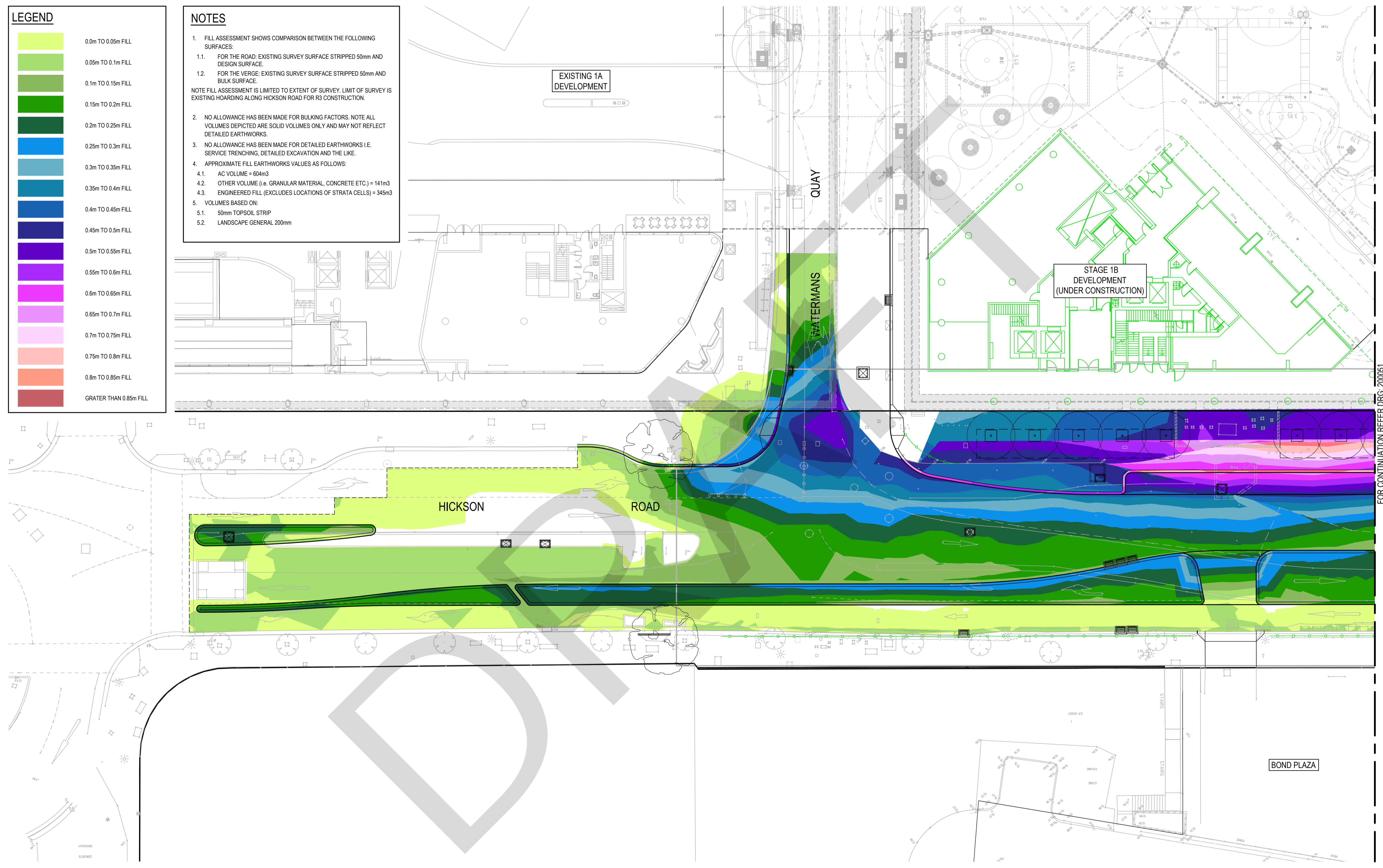
DRAFT

LEGEND



NOTES

- FILL ASSESSMENT SHOWS COMPARISON BETWEEN THE FOLLOWING SURFACES:
 - FOR THE ROAD: EXISTING SURVEY SURFACE STRIPPED 50mm AND DESIGN SURFACE.
 - FOR THE VERGE: EXISTING SURVEY SURFACE STRIPPED 50mm AND BULK SURFACE.
- NOTE FILL ASSESSMENT IS LIMITED TO EXTENT OF SURVEY. LIMIT OF SURVEY IS EXISTING HOARDING ALONG HICKSON ROAD FOR R3 CONSTRUCTION.
- NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
- NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS I.E. SERVICE TRENCHING, DETAILED EXCAVATION AND THE LIKE.
- APPROXIMATE FILL EARTHWORKS VALUES AS FOLLOWS:
 - AC VOLUME = 604m³
 - OTHER VOLUME (i.e. GRANULAR MATERIAL, CONCRETE ETC.) = 141m³
 - ENGINEERED FILL (EXCLUDES LOCATIONS OF STRATA CELLS) = 345m³
- VOLUMES BASED ON:
 - 50mm TOPSOIL STRIP
 - LANDSCAPE GENERAL 200mm



FOR CONTINUATION REFER DRG: 200061

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2	22/03/2024	ISSUED FOR PRELIMINARY COSTING	MDH	MTL	MKH	MTL
1	13/03/2024	ISSUED FOR INFORMATION	CB	MTL		MTL

Client

we are insw Infrastructure
New South Wales

Scale

SCALE 1:200 @A1

North

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Project
HICKSON ROAD UPGRADE - STAGE 3
CIVIL ENGINEERING WORKS

Title
BULK EARTHWORKS
CUT AND FILL PLAN
SHEET 01

Scale
1:200

Date
3/13/2024

Size
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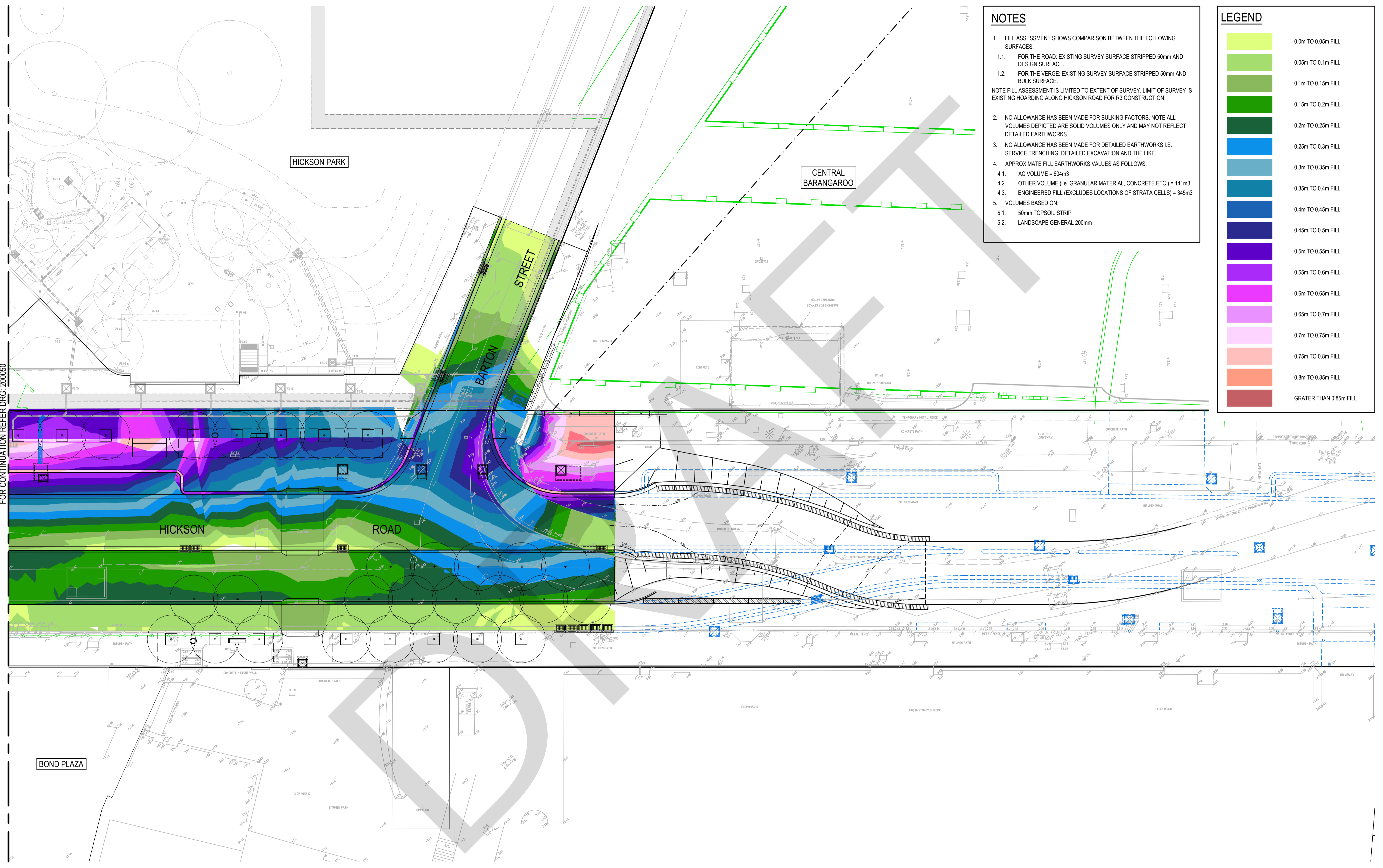
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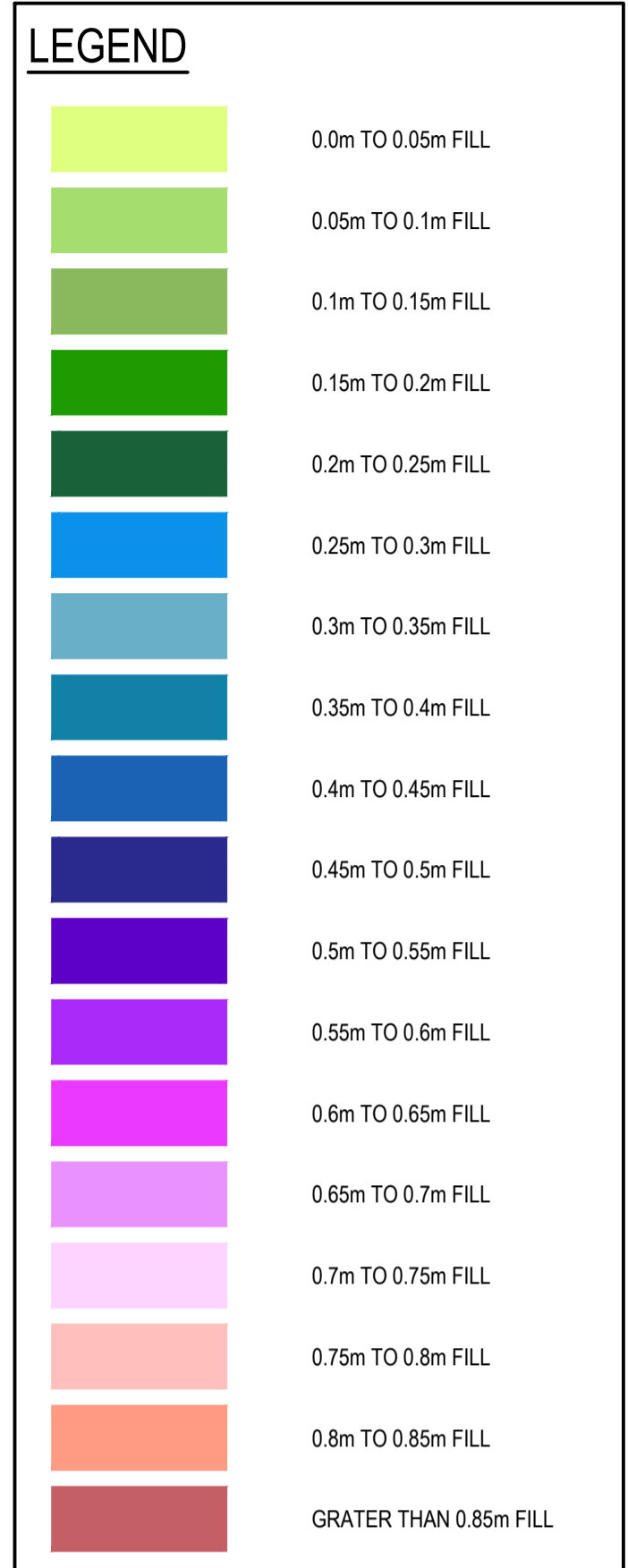
Revision
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FOR CONTINUATION REFER DRG: 200050



NOTES

- FILL ASSESSMENT SHOWS COMPARISON BETWEEN THE FOLLOWING SURFACES:
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- VOLUMES BASED ON:
 - 50mm TOPSOIL STRIP
 - LANDSCAPE GENERAL 200mm



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Client

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New South Wales

Scale

North

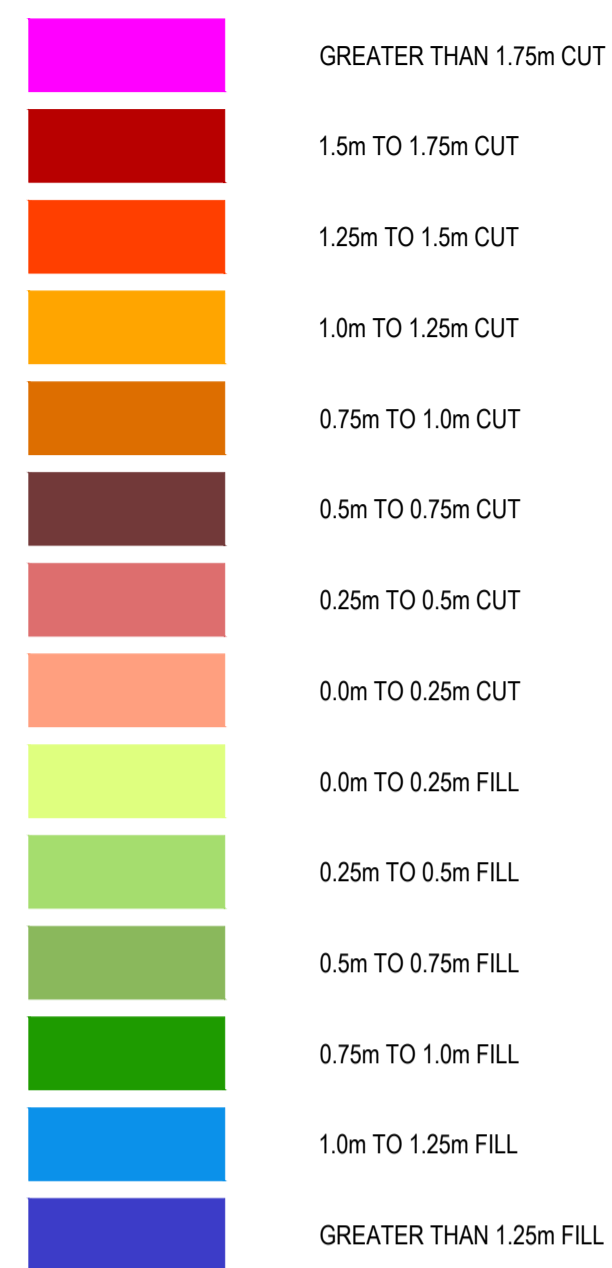
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Project
HICKSON ROAD UPGRADE - STAGE 3
CIVIL ENGINEERING WORKS

Title
BULK EARTHWORKS
CUT AND FILL PLAN
SHEET 02

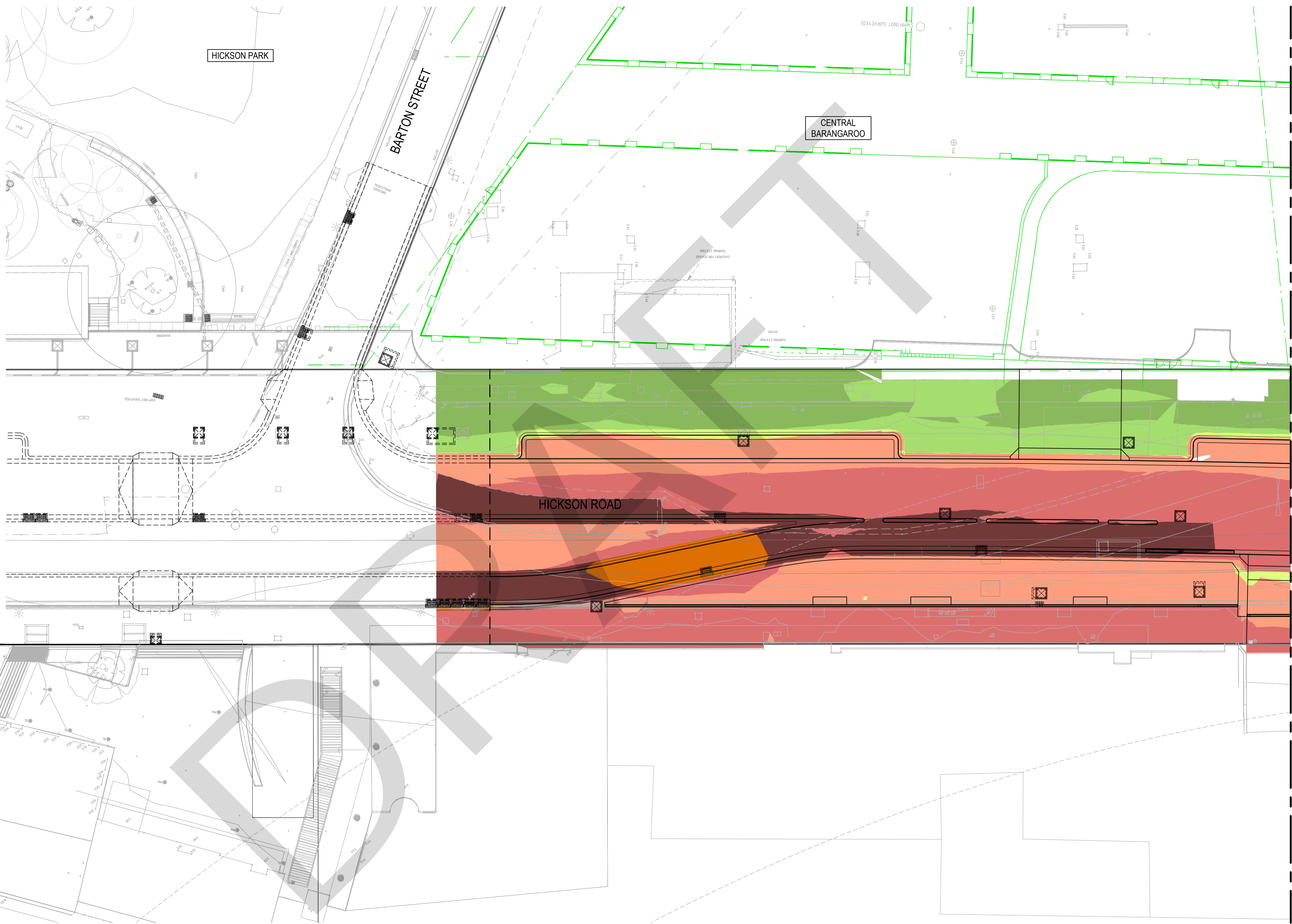
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Size A1	Revision 4
Datum MGA 2020	

LEGEND



NOTES:

- BULK EXCAVATION ASSESSMENT SHOWS COMPARISON BETWEEN EXISTING SURVEY SURFACE AND BULK EARTHWORKS SURFACE. NOTE BULK ASSESSMENT IS LIMITED TO EXTENT OF SURVEY. LIMIT OF SURVEY IS EXISTING HOARDING ALONG HICKSON ROAD FOR CONSTRUCTION.
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 - PAVEMENT BOXING
 - FOOTPATH BOXING
- APPROXIMATE BULK EARTHWORKS VALUES AS FOLLOWS:
 - CUT: 948m³
 - FILL: 603m³
 - BALANCE: 345m³ (EXPORT)
- VOLUMES BASED ON:
 - NO TOPSOIL STRIP
 - PAVEMENT THICKNESS 610mm
 - FOOTPATH PAVER THICKNESS 300mm
 - LANDSCAPE GENERAL 400mm



FOR CONTINUATION REFER DRG: C04.02

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Client

Scale

North

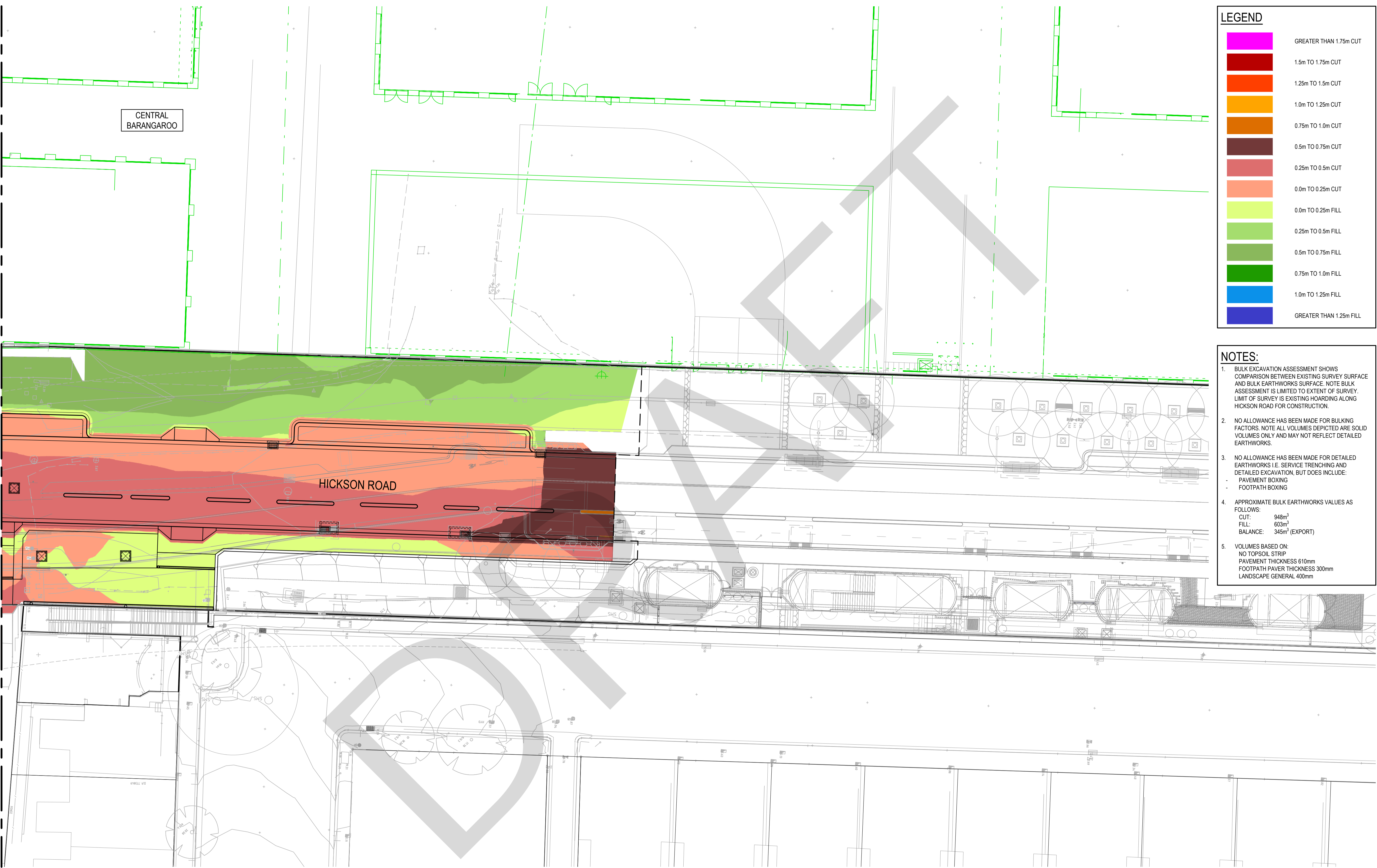
Enspire Solutions Pty Ltd
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Project
HICKSON ROAD UPGRADE
STAGE 4
CIVIL ENGINEERING WORKS

Title
BULK EARTHWORKS
CUT AND FILL PLAN
SHEET 01

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First Issue Date 20/12/2024	Project Number/Drawing Number 240059-01-CC-C04.01
Size A1	Revision 4
Datum MGA 2020	

FOR CONTINUATION REFER DRG: C04.01



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	1.5m TO 1.75m CUT
	1.25m TO 1.5m CUT
	1.0m TO 1.25m CUT
	0.75m TO 1.0m CUT
	0.5m TO 0.75m CUT
	0.25m TO 0.5m CUT
	0.0m TO 0.25m CUT
	0.0m TO 0.25m FILL
	0.25m TO 0.5m FILL
	0.5m TO 0.75m FILL
	0.75m TO 1.0m FILL
	1.0m TO 1.25m FILL
	GREATER THAN 1.25m FILL

- NOTES:**
- BULK EXCAVATION ASSESSMENT SHOWS COMPARISON BETWEEN EXISTING SURVEY SURFACE AND BULK EARTHWORKS SURFACE. NOTE BULK ASSESSMENT IS LIMITED TO EXTENT OF SURVEY. LIMIT OF SURVEY IS EXISTING HOARDING ALONG HICKSON ROAD FOR CONSTRUCTION.
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1	20/12/2024	30% ISSUED FOR COORDINATION	CB	LD	MKH	MTL

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