

26 November 2021

Department of Planning, Industry & Environment (DPIE)
Locked Bag 5022
Parramatta, NSW 2124

Our Reference: 21_82_CPPL_EDCP_DD

Attention: Mr Chris Ritchie

Subject: 1111-1141 ELIZABETH DRIVE SUBDIVISION, CECIL PARK (SSD 8859) ACCESS CONCEPT DESIGN

Dear Chris,

MU Group Consulting Pty Ltd (MU Group) have been engaged to prepare a concept design of the proposed Left-In Left-Out (LILO) access at the future Wallgrove Road to support the proposed State Significant Development (SSD 8859) at 1111-1141 Elizabeth Park, Cecil Park.

The latest concept design prepared by MU Group, attached as Appendix A, has considered the following information:

- TfNSW latest review comments (dated 22 November 2021) on the preliminary design submitted by MU Group to TfNSW (Appendix B);
- TfNSW correspondences (dated 22 February 2019 and 12 November 2020) in relation to review comments on previous access designs (Appendix C);
- Varga Traffic Planning correspondence (dated 5 May 2021) in relation to responses to TfNSW review comments (Appendix D);
- Road Safety Audit report (dated April 2021) (Appendix E); and
- TfNSW draft 50% Detailed Design of the proposed Wallgrove Road alignment (Appendix F).

We understand that Transport for NSW (TfNSW) are still in the process of finalising the detailed design of the proposed Wallgrove Road. Acceptance of the latest SSD 8859 Access Street design is requested on the basis that all major comments received to date have been addressed and incorporated in the latest concept design in Appendix A.

We appreciate that the detailed design development for the SSD 8859 Access Street would need to incorporate TfNSW's final detailed design of Wallgrove Road. We recommend that this be dealt with via proposed conditions of consent including the requirement to design and deliver the works under a Works Authorisation Deed (WAD) with TfNSW. This will allow formal consent to be provided and enable the Development to progress to the detailed design development stage. We will work collaboratively with TfNSW in developing the detailed design.

The table on the following pages consolidates MU Group (Designer) responses to TfNSW design comments. Note that responses to TfNSW review comments have previously been provided by Varga Traffic Planning (Appendix D). For completeness and assurance on the latest concept design, comments have been reviewed and updated responses provided by MU Group.

Review Comments	MU Group Response
TfNSW latest review comments (dated 22 November 2021) on the preliminary design submitted by MU Group to TfNSW. Refer to Appendix B.	
<p>a. It is requested that a deceleration lane should be provided at the frontage of the subject site for access arrangement. The deceleration should be located wholly within the property and dedicated as public road.</p>	<p>A deceleration lane contained wholly within the site has been provided in the latest design included in Appendix A.</p>
<p>b. The proposed left in/left out and deceleration lane including the length of the deceleration lane should be in compliance with AUSTROADS and for the design speed listed above.</p>	<p>The deceleration lane has a length of 61m, which complies with Austroads.</p> <p>Note that <i>Austroads, Part 4a, Section 5.2 Deceleration Lanes</i>, requires a deceleration lane length of 60m based on design speed of 70km/h and exit speed of 30km/h.</p>
<p>c. Plans including the swept path analysis should be modified to reflect the above requirement.</p>	<p>Swept Paths analysis for 26m B-Doubles and 35m B-Triples are included in Appendix A</p>
<p>d. TfNSW queried on 25 November 2021 over the phone on the presence of OSD for the site.</p>	<p>The development site has an Onsite Detention in accordance with Fairfield City Council requirements.</p>
TfNSW correspondence (dated 12 November 2020). Refer to Appendix C.	
<p>a. The proposed access to the site on the new realigned Wallgrove Road is located around a bend and TfNSW raises safety concerns with the sight distance at the proposed access road. A sight distance assessment should be provided to demonstrate the required sight distance is achieved.</p>	<p>Sight distance check has been undertaken included in Appendix A.</p> <p>The sight distance check confirms that the required sight distance of 151m (<i>Table 3.2 of Austroads Guide to Road Design Part 4A</i>) for a design speed of 70m/h is achieved.</p>
<p>b. The traffic report p.11 shows a proposed left turn slip lane from the realigned Wallgrove Road onto the access road (access to the subject site), which also continues after the access road to form two lanes on the realigned Wallgrove Road continuing to the intersection with Elizabeth Drive. This will potentially cause significant safety and operational issues as traffic turning in and out onto and from the access road would assume these vehicles on the kerb side lane are turning left onto the access road, however, these vehicles may choose to continue to travel straight on Wallgrove Road. Further, visibility and sightlines for traffic exiting from the access road would also be restricted by traffic travelling along the kerb side lane before the proposed access road.</p>	<p>The updated design provides a deceleration lane separate from the through lanes on Wallgrove Road. A sight distance check confirms that the updated design achieves the required sight distance for the design speed.</p>
<p>c. The proposed access to the site is uncontrolled and the potential for conflict is high due to it being at a point where drivers are merging and diverging.</p>	<p>A priority control (Give Way) is provided for exiting vehicles. Signage and line marking measures would be developed as part of the detailed design to reduce any residual risk.</p>

<p>d. TfNSW require the proposed access to the site on the realigned Wallgrove Road to be located to the farthest point of northern boundary of the site, away from the proposed intersection at Cecil Road.</p>	<p>The proposed access to the site has been located to the farthest point on the northern boundary of the site to satisfy the design parameters. Relocating the access further to the north is constrained by property boundary and Austroads requirement to the deceleration lane length.</p>
<p>e. A road safety audit is also required for the proposed access arrangement to the site given the above concerns.</p>	<p>A Road Safety Audit has been undertaken and attached as Appendix D. Responses to the RSA findings are described below.</p>
<p>f. A swept path analysis for the largest vehicle accessing the site should be provided.</p>	<p>Swept Paths analysis for 26m B-Doubles and 35m B-Triples are included in Appendix A.</p>
<p>g. Please provide more information on proposed footpaths / pedestrian access to the site along Elizabeth Drive and new Wallgrove Road. Pedestrian fencing will need to be provided to ensure pedestrians would be crossing at the designated crossing facilities.</p>	<p>Updated design in Appendix A includes additional information on proposed paths including proposed pedestrian fencing. This item can be detailed further in the detailed design stage.</p>

Road Safety Audit Report (dated April 2021). Refer to Appendix E

Note: The RSA was conducted on the design drawing *AE Design Partnership Preliminary Strategic Design 1111-1141 Elizabeth Drive, Cecil Park Option 1, dated 22/03/2021*.

The concept design in Appendix A has addressed the RSA findings as described below. Subsequent RSA's will be conducted in subsequent design phases in accordance with TfNSW Guidelines for Road Safety Audit Practices.

<p>a. Safe intersection sight distance for left turning vehicles out of the access road is not achieved to southbound vehicles in Wallgrove Road. Drivers may become impatient and pull out into the southbound travel lane on Wallgrove Road with insufficient gaps in the traffic causing rear-end and intersection type crashes. This issue could be exacerbated by the vertical alignment on Wallgrove Road (not assessed under this safety audit) as well as the presence of vehicles turning left into the development. It is noted that other options have proposed an intersection further north on Wallgrove Road. This does not improve the safety risk described above due to the presence of the horizontal curve in Wallgrove Road and the terminating leg of the T-intersection being on the inside of the curve</p>	<p>Sight distance check has been undertaken included in Appendix A.</p> <p>The sight distance check confirms that the required sight distance of 151m (<i>Table 3.2 of Austroads Guide to Road Design Part 4A</i>) for a design speed of 70m/h is achieved.</p>
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<p>b. The width and kerb return radii at the access road exit appears to be excessive. This will result in vehicles stopping at the give way line at an undesirable angle to oncoming traffic, increasing the likelihood of crashes highlighted in Risk 1. Drivers may also attempt to turn two abreast given the significant width at the intersection or illegally make a right turn out of the proposed access road resulting in right-through and rear-end crashes.</p>	<p>This has been addressed in the latest design whereby the angle of the edge line adjacent to the median splitter island has been amended and chevron line marking provided. The design complies with the High Angle Entry left turn requirements in accordance with <i>Austroads Part 4a, Figure 8.7</i>. This has improved the angle to oncoming traffic thus reducing this risk.</p>
<p>c. Turning left out of the development access road and right into Cecil Road requires attaining a suitable gap in the southbound traffic on Wallgrove Road and then changing across one lane to enter the right turn bay. The distance available to carry out this sequence of manoeuvres is insufficient, and drivers may have to force their way through. This disruption to the traffic flow may be worsened if the right turn bay has several vehicles already waiting in it. Rear-end and lane change crashes could occur as a result of this geometry.</p>	<p>Signage and line marking measures would be developed as part of the detailed design to reduce any residual risk. This would be integrated with TfNSW Wallgrove Road design.</p>

If you have any questions or would like to discuss further, please do not hesitate to call George Elhage on 0426 145 265 or Joekarl Diaz on 0412 114 328.

Yours Sincerely

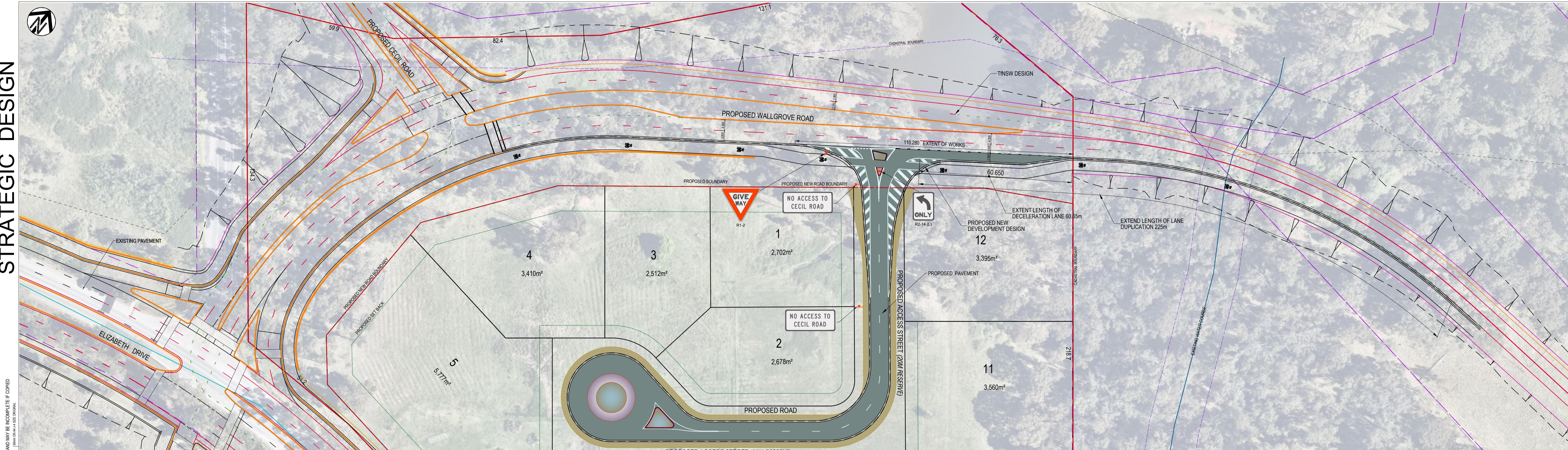


Joekarl Diaz
Principal, Project Manager

Appendix A – Latest Access Concept Design

STRATEGIC DESIGN

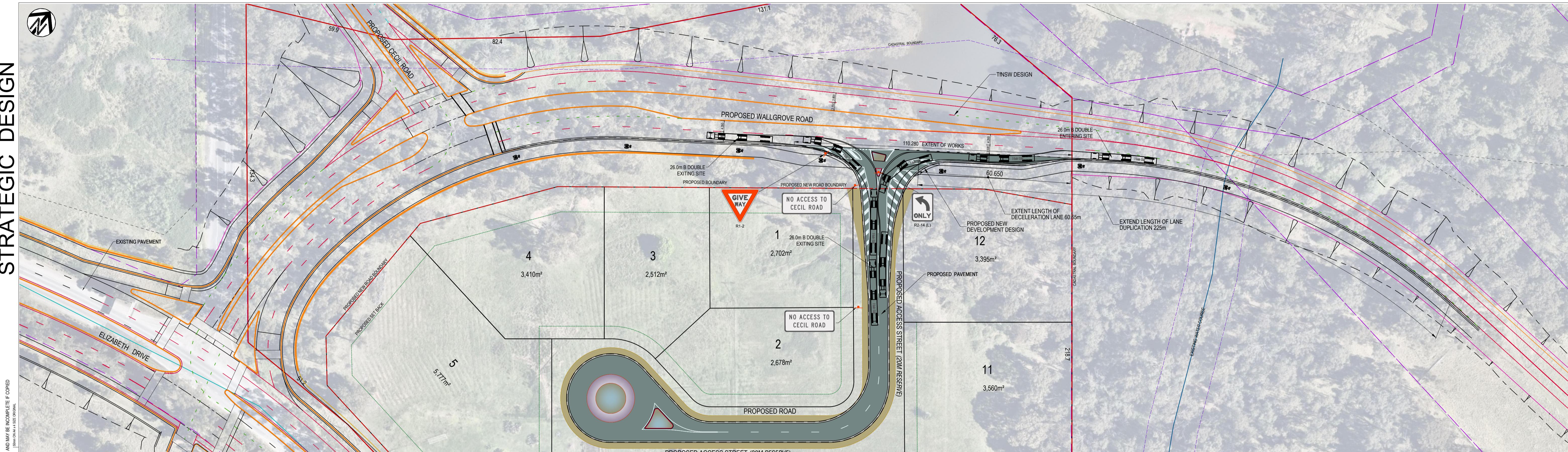
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PRELIMINARY DRAWING - FOR DISCUSSION PURPOSES ONLY

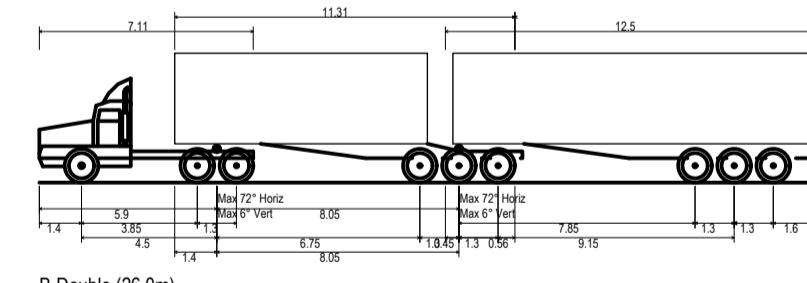
DRAWING FILE LOCATION / NAME \$FILE\$				DRAWINGS / DESIGN PREPARED BY		PLOT DATE / TIME \$DATE\$ \$TIME\$		CLIENT CECIL PARK PTY LTD (ELECTRIC PTY LTD) SUITE 1802, 184 FORBES STREET, DARLINGHURST NSW 2029	FAIRFIELD CITY COUNCIL AREA 1111-1141 ELIZABETH DRIVE CECIL PARK, NSW 2178 LEFT-IN LEFT-OUT ULTIMATE TfNSW DESIGN DEVELOPMENT ACCESS GENERAL ARRANGEMENT PLAN
REV	AMENDMENT / REVISION DESCRIPTION	Initials	DATE	SCALES ON A4 x 4 SIZE DRAWING		TITLE	NAME		DATE
01	PRELIMINARY DRAWING FOR DISCUSSION	S.B.	1/11/2021			DRAWN			
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						DESIGN MNGR			
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						MU GROUP REGISTRATION No. 2021_39_SD_0001_SK_0001			SHEET 01
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STRATEGIC DESIGN



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BY OTHER AUTHORISED DRAWING

PRELIMINARY DRAWING - FOR DISCUSSION PURPOSES ONLY



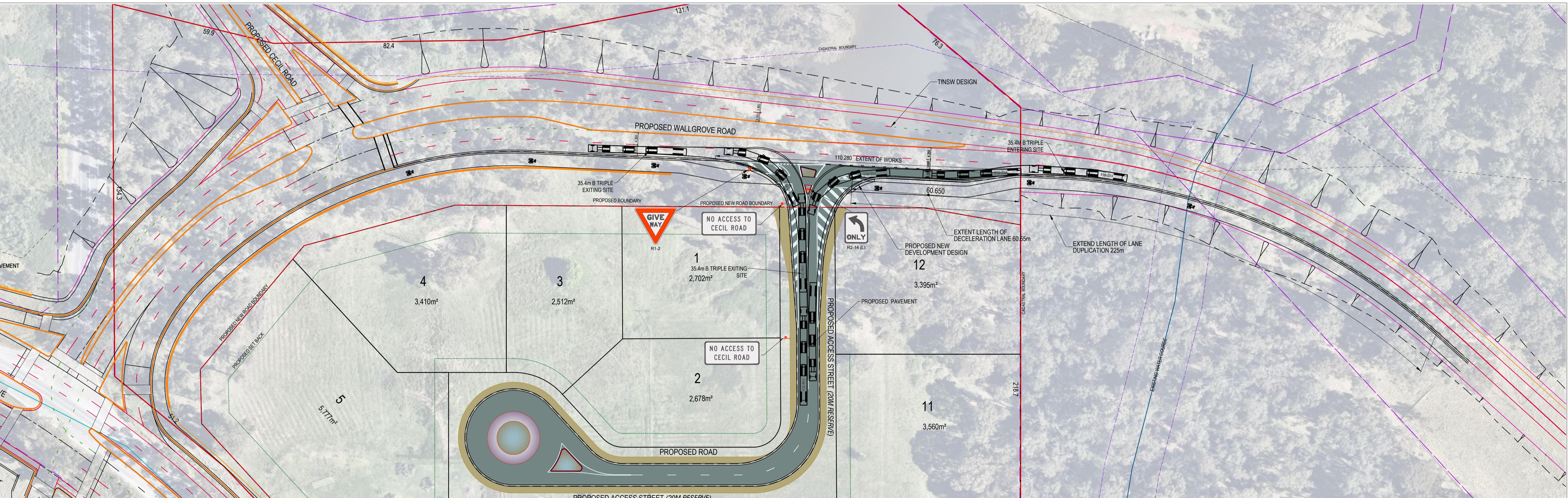
B-Double (26.0m)
Overall Length: 26.000m
Overall Width: 2.50m
Overall Body Height: 4.300m
Min Body Ground Clearance: 0.540m
Tread Width: 2.50m
Lock to lock time: 6.00s
Kerb to Kerb Turning Radius: 15.000m

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			COORDINATE SYSTEM MGA 2020 ZONE 56					
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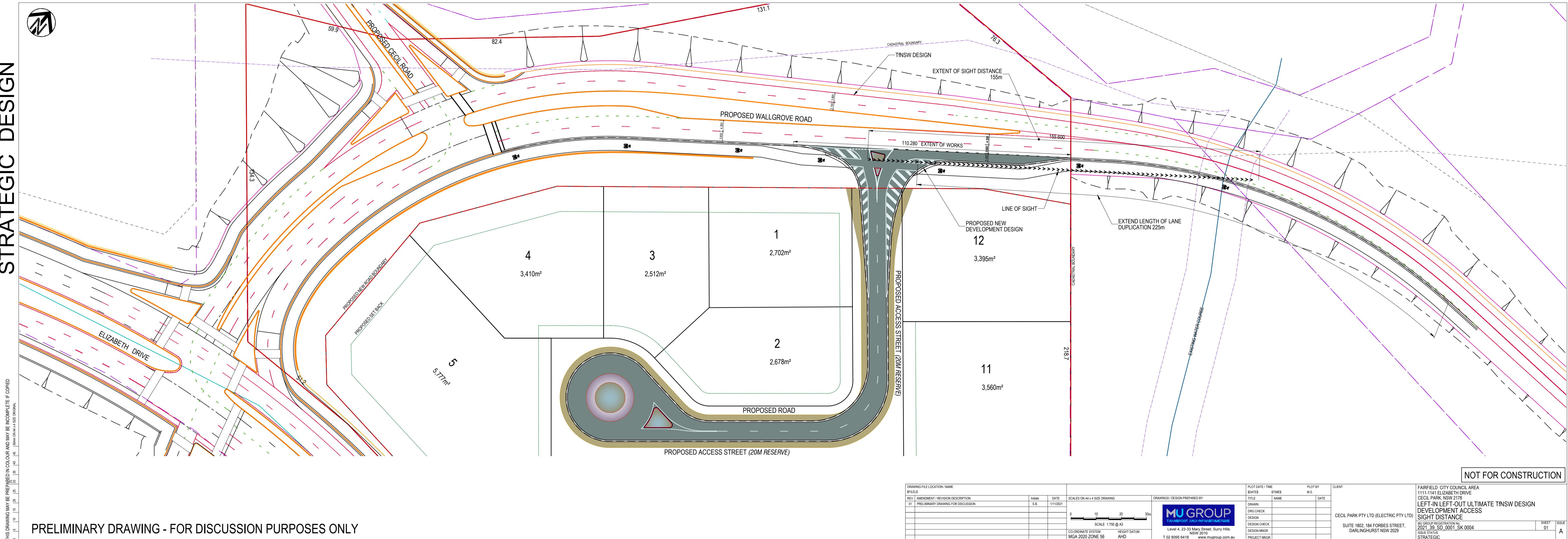
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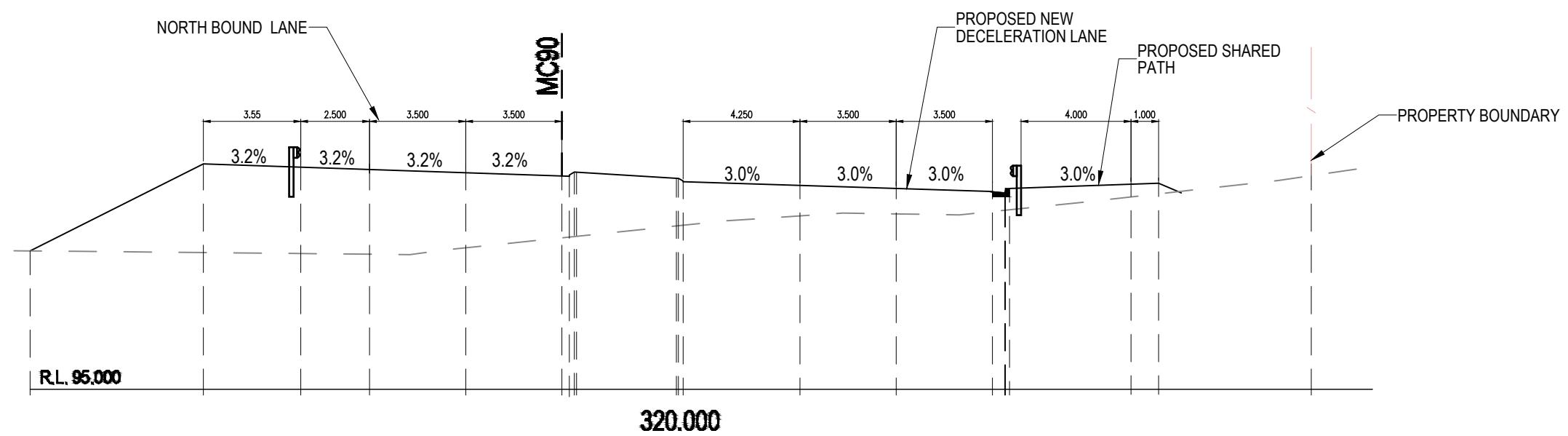
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FOR CONSTRUCTION

STRATEGIC DESIGN





REV.	DESCRIPTION	APPROVED	DATE
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SCALES ON A3 DRAWING:

MGA 2020 ZONE 56

COORDINATE SYSTEM:

AHD

HEIGHT DATUM:

TITLE	NAME	DATE
DRAWN BY	S. Bahrow	
DRG CHECK	T. Lance	
DESIGN BY	S. Bahrow	
DESIGN CHECK	T. Lance	
DESIGN MGR	S. Ludenia	
PROJECT MGR	J. Kalantzis	

DRAWING/DESIGN PREPARED BY:
MU GROUP
TRANSPORT AND INFRASTRUCTURE
LEVEL 4, 23-33 MARY STREET, SURRY HILLS
NSW 2010
T (02) 80958418
www.mugroup.com.au



CLIENT:
CECIL PARK PTY LTD (ELECTRIC PTY LTD)
SUITE 1802, 184 FORBES STREET,
DARLINGHURST NSW 2029

FAIRFIELD CITY COUNCIL AREA
1111-1141 ELIZABETH DRIVE CECIL PARK NSW 2178
LEFT IN LEFT OUT TfNSW
DEVELOPMENT ACCESS
TYPICAL CROSS SECTION
PROJECT NUMBER: 2021_39_SD_SK 0005
PART 1
ISSUE STATUS: STRATEGIC
SHEET No. .
ISSUE A

Appendix B – TfNSW latest review comments on the preliminary design submitted by MU Group

MU Group Consulting

A: Level 4, 23-33 Mary Street, Surry Hills NSW 2010 **PO Box:** PO Box 64, Strawberry Hills NSW 2012
Ph: +61 2 9016 7272 **ABN:** 76 606 859 483 **W:** www.mugroup.com.au

George Elhage

Subject: FW: SYD17/01529/10 - Elizabeth Drive - TfNSW Response
Attachments: 2021_39_SK_0001-01-Preliminary Drawing-SSD 8859.pdf

From: Simon Turner <Simon.Turner2@transport.nsw.gov.au>
Sent: Monday, 22 November 2021 2:07 PM
To: Chris Palmer <chris@vtp.net.au>
Cc: Zhaleh Najari alamouti <Zhaleh.ALAMOUTI@transport.nsw.gov.au>; Joekarl Diaz <joekarl.diaz@mugroup.com.au>
Subject: SYD17/01529/10 - Elizabeth Drive - TfNSW Response

Good morning,

I refer to your email 28 October 2021 providing the attached plans for TfNSW comment and your subsequent email dated 3 November 2021 seeking input on design parameters.

I understand that you spoke with Zhaleh Alamouti 19 November 2021 where the following design parameters were confirmed as the current detailed design for the realigned Wallgrove as part of the M12 East EDC project:

- a. Design 70Km/h
- b. Poste Speed 60km/h
- c. Design Vehicle is B-Double 26m
- d. Checking Vehicle is PBS (30m)

The attached plan has been reviewed and it is requested that a deceleration lane should be provided at the frontage of the subject site for access arrangement. The deceleration should be located wholly within the property and dedicated as public road.

The proposed left in/left out and deceleration lane including the length of the deceleration lane should be in compliance with AUSTROADS and for the design speed listed above.

Plans including the swept path analysis should be modified to reflect the above requirement.

TfNSW requests the abovementioned information/amendments for further assessment. Upon receipt of the amended plans, TfNSW will undertake an assessment and provide response accordingly.

Please ensure that any response is sent to development.sydney@transport.nsw.gov.au for registration and action.

Please contact me if you would like to discuss.

Regards,

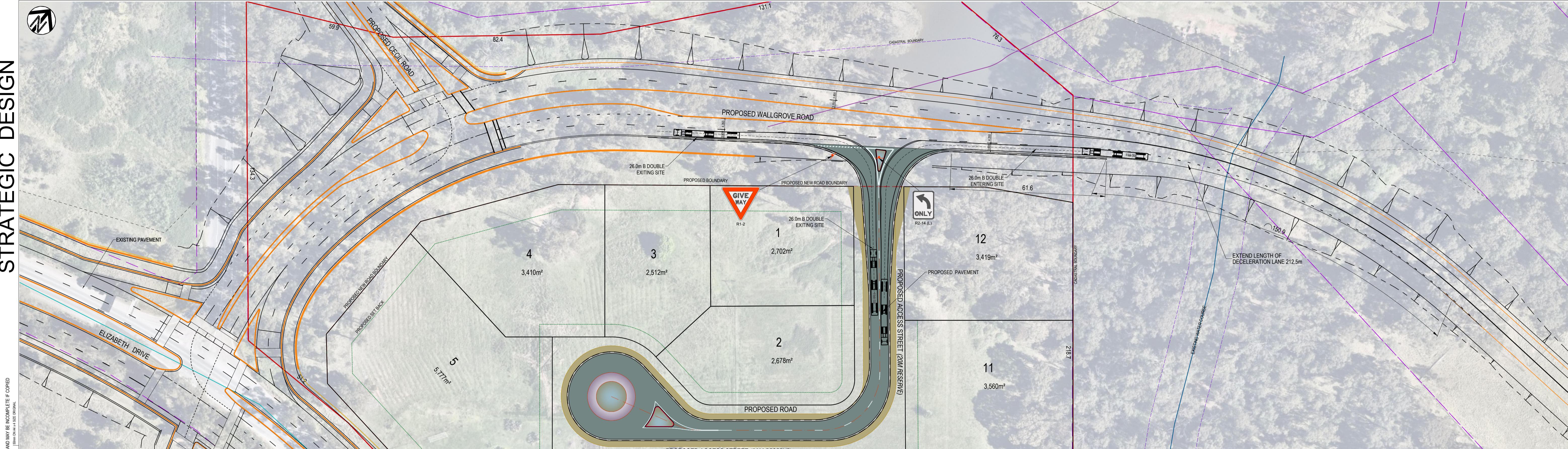
Simon Turner
Land Use Planner
Planning and Programs
Greater Sydney
Transport for NSW
T 02 8265 6363

27 Argyle Street Parramatta NSW 2150

STRATEGIC DESIGN

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Appendix C – TfNSW correspondences on previous access designs

MU Group Consulting

A: Level 4, 23-33 Mary Street, Surry Hills NSW 2010 **PO Box:** PO Box 64, Strawberry Hills NSW 2012
Ph: +61 2 9016 7272 **ABN:** 76 606 859 483 **W:** www.mugroup.com.au



22 February 2019

Our Reference: SYD17/01529/03 (A25872763)
Department's Ref: SSD 8859

Director – Key Sites and Industry Assessments
Department of Planning & Environment
GPO Box 39
Sydney, NSW 2001

Attention: Chloe Dunlop

Dear Sir/Madam,

**NOTICE OF EXHIBITION OF EIS FOR ELIZABETH DRIVE SUB-DIVISION, CECIL PARK
1111-1141 ELIZABETH DRIVE, CECIL PARK**

Reference is made to Department's correspondence dated 22 January 2019, regarding the abovementioned application which was referred to Roads and Maritime Services (Roads and Maritime) for review and comment.

Since the proposed development involved construction of a deceleration lane along Elizabeth Drive which is a Classified State Road this Application triggers Roads and Maritime concurrence in accordance with Section 138 of the *Roads Act 1993*.

Roads and Maritime has reviewed the submitted information and noted that the proposal involve subdivision of 14 lots which include demolition of existing structures, clearing of vegetation, stormwater works, civil works and road works. It is envisaged that complimentary commercial uses would include service station, fast food outlets, hotel/motel accommodation, industrial warehouses, medical centre, office space etc. subject to future development applications.

Roads and Maritime has reviewed the submitted information and does not grant concurrence under Section 138 of the *Roads Act 1993* for the proposed road works on Elizabeth Drive and provides the following comments for Department's consideration:

1. The subject development proposed construction of a service road to access three lots. Roads and Maritime does not support proposed service road based on road safety and network efficiency. It is advised to construct a deceleration lane instead of a service road to provide access to any future service station only.
2. The proposal included access to the fast food outlets via Elizabeth Drive. Roads and Maritime does not support any direct access to the fast food outlets from Elizabeth Drive since an alternate access is available through Local Road network (via Cecil Road). Therefore, except the service station all other access (including fast food outlets) should be provided via Local Road network. In this regard Roads and Maritime suggests physical separation to be provided within the site to comply with this requirement.

Roads and Maritime Services

3. To access the service station from Elizabeth Drive a deceleration shall be provided. The proposed deceleration lane along Elizabeth Drive shall be designed to meet Roads and Maritime requirements, and endorsed by a suitably qualified practitioner. The design requirements shall be in accordance with AUSTROADS and other Australian Codes of Practice.
4. Access to the service station should be restricted with left in and left out access only via a deceleration lane. In this regard, it is requested to investigate and propose mechanism to restrict any right turn movements from the deceleration lane onto Elizabeth Drive
5. The deceleration may be constructed within the existing road reserve however land should be dedicated within the property boundary for any future relocation/construction of the deceleration lane. The land identified for deceleration lane should be identified as a separate lot in the subdivision plan and dedicated to Council as road.
6. Roads and Maritime does not support proposed roundabout in Elizabeth Drive at Cecil Road intersection. It should be noted that Roads and Maritime currently preparing a strategic road design for Elizabeth Drive within the vicinity where Cecil Road may be restricted with left in left out (LILO) movements only. However, as an interim measure it is advice to investigate the impact due to the subject development and propose mitigation measures at the subject intersection.
7. Proposed development would have an impact on the operation and Level of Service (LoS) at the intersection of Cecil Road & Access Road. Therefore, it is requested to analyse this intersection, determine the impact and suggest treatments to mitigate the impact.
8. It is requested to submit soft copy of the SIDRA network modelling to Roads and Maritime for review.
9. All road works and associated cost with the development must be borne by the applicant.
10. Roads and Maritime has previously vested a strip of land as road along the frontage of the subject property, as shown by grey colour on the attached Aerial – “X”. Therefore, all buildings and structures together with any improvements integral to the future use of the site are to be wholly within the freehold property (unlimited in height or depth) along the Elizabeth Drive boundary.

The proponent should be also be advised that the subject property is within a broad investigation area for the long term widening of Elizabeth Drive. The investigations have not yet advanced to the stage where options have been defined and accordingly it is not possible at this date to identify if any part of the subject property would be required to accommodate this proposal. However, there is a potential that the frontage of the site may be impacted. Further information on the project can be obtained from contacting Kate Lunney, Project Development Manager, on 1800 865 503 or at elizabethdrive@rms.nsw.gov.au.

Any inquiries in relation to this development application can be directed to Ahsanul Amin, on 8849 2762 or e-mail at development.sydney@rms.nsw.gov.au.

Yours sincerely,



Pahee Rathan
A/Senior Land Use Assessment Coordinator
Sydney Division – North West Precinct



12 November 2020

TfNSW Reference: SYD17/01529/04

Council Reference: SSD 8859

Department of Planning, Industry & Environment
GPO Box 39
Sydney, NSW 2001

Attention: Ania Dorocinska

Dear Sir/Madam

**EXHIBITION OF AMENDED REPORT ON EIS FOR ELIZABETH DRIVE SUBDIVISION
- 1111-1141 ELIZABETH DRIVE, CECIL PARK**

Reference is made to the Department's correspondence dated 22 October 2020, requesting comments from Transport for NSW (TfNSW) on the amended report for the Environmental Impact Statement on the abovementioned application.

TfNSW has reviewed the submitted documents and provides the following comments for consideration:

1. TfNSW has safety and operation concerns with the proposed location of the access in relation to the proposed new traffic signals and would not support it for the following reasons:
 - a. The proposed access to the site on the new realigned Wallgrove Road is located around a bend and TfNSW raises safety concerns with the sight distance at the proposed access road. A sight distance assessment should be provided to demonstrate the required sight distance is achieved.
 - b. The traffic report p.11, shows a proposed left turn slip lane from the realigned Wallgrove Road onto the access road (access to the subject site), which also continues after the access road to form two lanes on the realigned Wallgrove Road continuing to the intersection with Elizabeth Drive. This will potentially cause significant safety and operational issues as traffic turning in and out onto and from the access road would assume these vehicles on the kerb side lane are turning left onto the access road, however, these vehicles may choose to continue to travel straight on Wallgrove Road. Further, visibility and sightlines for traffic exiting from the access road would also be restricted by traffic travelling along the kerb side lane before the proposed access road.
 - c. The proposed access to the site is uncontrolled and the potential for conflict is high due to it being at a point where drivers are merging and diverging.

2. TfNSW require the proposed access to the site on the realigned Wallgrove Road to be located to the farthest point of northern boundary of the site, away from the proposed intersection at Cecil Road.
3. A road safety audit is also required for the proposed access arrangement to the site given the above concerns.
4. Traffic modelling using SIDRA modelling to understand the impact of the new development on the future TCS on the realigned Wallgrove Road and Elizabeth Drive should be provided for further assessment before TfNSW can provide further comments. The modelling should be done as a network for the following intersections for the year the signals/M12 will be completed scenario and 2036 scenario:
 - a. Realigned Wallgrove Road / new site access road
 - b. Realigned Wallgrove Road / Cecil Road
 - c. Realigned Wallgrove Road / Elizabeth Drive
5. A swept path analysis for the largest vehicle accessing the site should be provided.
6. Please provide more information on proposed footpaths / pedestrian access to the site along Elizabeth Drive and new Wallgrove Road. Pedestrian fencing will need to be provided to ensure pedestrians would be crossing at the designated crossing facilities.

The applicant is requested to submit the above requested information for further review before detailed comments can be provided. Once this information is received, TfNSW will review and respond accordingly.

Additionally, TfNSW has previously vested a strip of land as road along the Elizabeth Road frontage of the subject property, as shown by the grey colour on the attached Aerial – “X”.

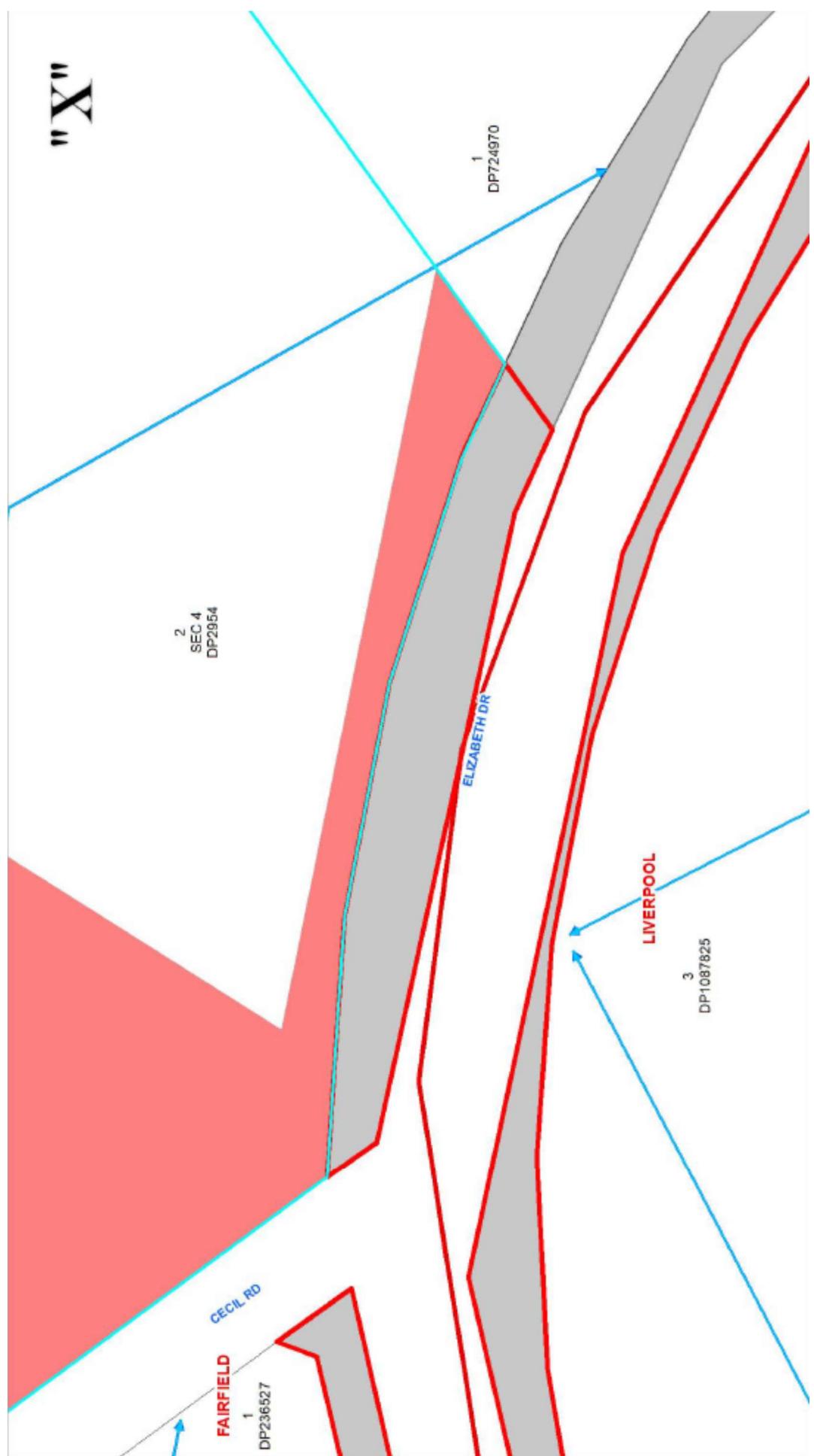
Further, the applicant is aware the subject property is within the preferred corridor for the proposed M12 Motorway Project. It is noted the applicant has been liaising with the project team and should continue to do so in relation to any impacts.

If you have any further questions, Sandra Grimes, Land Use Planner, would be pleased to take your call on (02) 9563 8651 or please email development.sydney@rms.nsw.gov.au. I hope this has been of assistance.

Yours sincerely



Pahee Rathan
Senior Land Use Assessment Coordinator





Appendix D – VARGA Traffic Planning correspondence

MU Group Consulting

A: Level 4, 23-33 Mary Street, Surry Hills NSW 2010 **PO Box:** PO Box 64, Strawberry Hills NSW 2012
Ph: +61 2 9016 7272 **ABN:** 76 606 859 483 **W:** www.mugroup.com.au



5 May 2021
Ref 20355

Department of Planning, Industry & Environment
Locked Bag 5022
PARRAMATTA NSW 2124

Attn: Mr Chris Ritchie
Chris.Ritchie@planning.nsw.gov.au

Dear Chris,

SSD 8859
PROPOSED SUBDIVISION
1111-1141 ELIZABETH DRIVE, CECIL PARK
SITE ACCESS MATTERS

We refer to Transport for NSW's (TfNSW) letter to the Department of Planning, Industry & Environment (DPIE) dated 12 November 2020, as well as DPIE's letter to AE Design Partnership dated 23 November 2020, requesting additional information (RFI) in respect of the abovementioned development proposal.

DA History

By way of the DA's history, the original plan of subdivision lodged in September 2018 comprised a:

- New local access road from the existing location of Cecil Road (located as far back from Elizabeth Drive as requested by TfNSW (then RMS)); and a
- Deceleration lane from Elizabeth Drive (as requested by TfNSW).

In May 2019, landowners were approached by TfNSW formally opening negotiations for the compulsory acquisition of 26,617m² of the site to facilitate the re-alignment of Wallgrove Road as part of the M12 Motorway project. This required an amendment to the plan of subdivision that relocated the proposed access road to a new intersection with the new Wallgrove Road alignment.

A submission was received from Roads and Maritime Services (RMS) during the public exhibition period of the original Environmental Impact Statement (EIS) between 24 January 2019 and 25 February 2019, requesting a deceleration lane be provided along Elizabeth Drive instead of a service road to provide access to any future service station only at Items 1, 3, 4 and 5 of their submission dated 22 February 2019. A full copy of the RMS letter is attached whilst the relevant Items are reproduced below and on the following page.

1. The subject development proposed construction of a service road to access three lots. Roads and Maritime does not support proposed service road based on road safety and network efficiency. It is advised to construct a deceleration lane instead of a service road to provide access to any future service station only.

3. To access the service station from Elizabeth Drive a deceleration shall be provided. The proposed deceleration lane along Elizabeth Drive shall be designed to meet Roads and Maritime requirements, and endorsed by a suitably qualified practitioner. The design requirements shall be in accordance with AUSTROADS and other Australian Codes of Practice.
4. Access to the service station should be restricted with left in and left out access only via a deceleration lane. In this regard, it is requested to investigate and propose mechanism to restrict any right turn movements from the deceleration lane onto Elizabeth Drive
5. The deceleration may be constructed within the existing road reserve however land should be dedicated within the property boundary for any future relocation/construction of the deceleration lane. The land identified for deceleration lane should be identified as a separate lot in the subdivision plan and dedicated to Council as road.

On 7 August 2020, a meeting was held via video conference with Senior Land Use Assessment Coordinator from TfNSW and Project Manager for the M12 Team to discuss the implications of the proposed road upgrades associated with Wallgrove Road and Elizabeth Drive in relation to proposed development on the site. It was at this meeting, where TfNSW confirmed that a deceleration lane or any vehicle access points along Elizabeth Drive will not be supported.

Following continual correspondence with TfNSW in relation to the new Wallgrove Road easement and proposed road connections into the site, an Amended EIS Package and Response to Submissions Package was formally lodged with the Department on 22 September 2020 to reflect the amended site boundary as a result of the proposed acquisition.

On 7 December 2020, a meeting was held via video conference with DPIE and TfNSW to confirm the location of the access road into the site from the new Wallgrove Road easement. It was agreed at the conclusion of this meeting that TfNSW will provide additional information in relation to the new Wallgrove Road easement in order to complete further traffic studies.

On 9 January 2021, a meeting was held with Senior Land Use Assessment Coordinator from TfNSW and Project Manager for the M12 Team to discuss the proposed location of the intersection. It was at this meeting where signalised access into the site from the new Wallgrove Road alignment was supported.

On 22 March 2021, a meeting was held via video conference with DPIE and TfNSW in relation to outstanding information required from TfNSW to the Applicant's team, which are required to undertake the traffic assessment required under the RFI dated 12 November 2020. Such information remains outstanding to date.

Response

The following advice is therefore provided in respect of the matters raised in the two abovementioned RFI letters (12 November 2020 & 23 November 2020).

A number of options have been proposed and rejected by TfNSW including:

1. Left-in left-out of Elizabeth Drive
2. Service road along Elizabeth Drive and new local access road from existing Cecil Road
3. Signalised intersection from new Cecil Road alignment directly into site
4. New signalised intersection from new Wallgrove Road alignment to new local access road into the site

The only remaining possibility for site access is off the realigned Wallgrove Road, somewhere to the north of the new Cecil Road signals.

Please see attached the amended structure plan which includes the proposed road layout in the vicinity of the site, including the proposed site access point off the realigned Wallgrove Road. It is pertinent to note that the structure plan utilises the base plan provided by TfNSW in April 2020, which has been modified further to include the proposed new “half seagull” site access intersection, that is, a channelised right turn holding bay, with priority controlled left-in/left-out.

The offset distance between the new Elizabeth Drive & Wallgrove Road traffic signals and the new Wallgrove Road & Cecil Road traffic signals is *as per* TfNSW’s base plan, a distance of approximately 110m.

Item 1

1. TfNSW has safety and operation concerns with the proposed location of the access in relation to the proposed new traffic signals and would not support it for the following reasons:
 - a. The proposed access to the site on the new realigned Wallgrove Road is located around a bend and TfNSW raises safety concerns with the sight distance at the proposed access road. A sight distance assessment should be provided to demonstrate the required sight distance is achieved.

TfNSW have advised that the future signposted speed limit will be 60km/h along this section of the realigned Wallgrove Road, whilst the design speed limit should be 70km/h. Accordingly, based on Table 3.2 of Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*, the SISD for a 70km/h road with a *reaction time* of 2.0 seconds is 151m, as set out below.

I understand the road design of the future Wallgrove Road realignment is still a work-in-progress, nevertheless a sight distance assessment is provided later in this report, indicating that the 151m safe intersection sight distance (SISD) requirement is and can be achieved.

It should be noted that the previous intersection design proposed and included within the Traffic Report submitted with the application (dated 14 August 2020) has been revised, with the design now including a dedicated left-turn slip lane as part of the “half seagull” design.

Guide to Road Design Part 4A: Unsignalised and Signalised Intersections

Table 3.2: Safe intersection sight distance (SISD) and corresponding minimum crest vertical curve size for sealed roads ($S < L$)

Design speed (km/h)	Based on safe intersection sight distance for cars ⁽¹⁾ $h_1 = 1.1$; $h_2 = 1.25$, $d = 0.36$ ⁽²⁾ ; Observation time = 3 sec					
	$R_T = 1.5 \text{ sec}^{(3)}$		$R_T = 2.0 \text{ sec}$		$R_T = 2.5 \text{ sec}$	
	SISD (m)	K	SISD (m)	K	SISD (m)	K
40	67	4.9	73	6	—	—
50	90	8.6	97	10	—	—
60	114	14	123	16	—	—
70	141	22	151	25	—	—
80	170	31	181	35	—	—
90	201	43	214	49	226	55
100	234	59	248	66	262	74
110	—	—	285	87	300	97
120	—	—	324	112	341	124
130	—	—	365	143	383	157

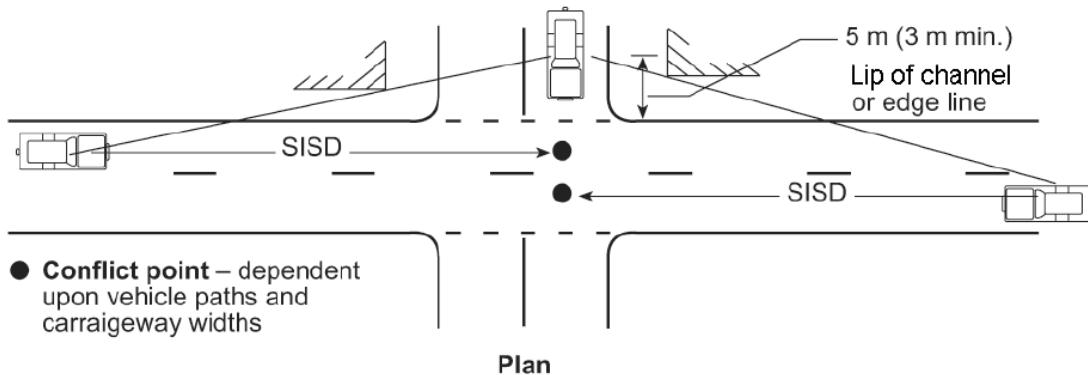
b. The traffic report p.11, shows a proposed left turn slip lane from the realigned Wallgrove Road onto the access road (access to the subject site), which also continues after the access road to form two lanes on the realigned Wallgrove Road continuing to the intersection with Elizabeth Drive. This will potentially cause significant safety and operational issues as traffic turning in and out onto and from the access road would assume these vehicles on the kerb side lane are turning left onto the access road, however, these vehicles may choose to continue to travel straight on Wallgrove Road. Further, visibility and sightlines for traffic exiting from the access road would also be restricted by traffic travelling along the kerb side lane before the proposed access road.

The critical turning movement for driver visibility is the left turn out of the proposed new subdivision road onto the new realigned Wallgrove Road.

Reference to Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*, Section 3.2.2 sets out the design requirements for SISD, which is the minimum sight distance which should be provided on the major road at any intersection. Diagrammatically, SISD is illustrated in the Austroads extract below.

Guide to Road Design Part 4A: Unsignalised and Signalised Intersections

Figure 3.2: Safe intersection sight distance (SISD)



c. The proposed access to the site is uncontrolled and the potential for conflict is high due to it being at a point where drivers are merging and diverging.

See Response to a) and b) above.

Item 2

2. TfNSW require the proposed access to the site on the realigned Wallgrove Road to be located to the farthest point of northern boundary of the site, away from the proposed intersection at Cecil Road.

As noted in the foregoing, vehicular access to the site is proposed to be provided in the form of a “half seagull” intersection located off the realigned Wallgrove Road, set back approximately 80m south-west of the north-eastern site boundary and approximately 110m north-east of the future Wallgrove Road & Cecil Road signals.

Generally speaking, intersections should be located as far back from traffic signals as possible, however in this instance, the curvature of the realigned Wallgrove Road to the north of the site presents some potential sight distance issues.

Relocating the proposed new access further to the north may result in a corresponding reduction in sight distance. It is therefore a balancing act between providing a suitable offset to the new Cecil Road signals and providing sufficient sight distance.

TfNSW have advised that the future signposted speed limit will be 60km/h along this section of the realigned Wallgrove Road, whilst the design speed limit should be 70km/h. Accordingly, the SISD for a 70km/h road with a *reaction time* of 2.0 seconds is 151m, as set out in the table below.

Again, I understand the road design of the future Wallgrove Road realignment is still a work-in-progress, nevertheless a sight distance assessment is provided on the following page, indicating that the 151m SISD requirement is and can be achieved.

Guide to Road Design Part 4A: Unsignalised and Signalised Intersections

Table 3.2: Safe intersection sight distance (SISD) and corresponding minimum crest vertical curve size for sealed roads ($S < L$)

Design speed (km/h)	Based on safe intersection sight distance for cars ⁽¹⁾ $h_1 = 1.1$; $h_2 = 1.25$, $d = 0.36$ ⁽²⁾ ; Observation time = 3 sec					
	$R_T = 1.5$ sec ⁽³⁾		$R_T = 2.0$ sec		$R_T = 2.5$ sec	
	SISD (m)	K	SISD (m)	K	SISD (m)	K
40	67	4.9	73	6	—	—
50	90	8.6	97	10	—	—
60	114	14	123	16	—	—
70	141	22	151	25	—	—
80	170	31	181	35	—	—
90	201	43	214	49	226	55
100	234	59	248	66	262	74
110	—	—	285	87	300	97
120	—	—	324	112	341	124
130	—	—	365	143	383	157

Item 3

3. A road safety audit is also required for the proposed access arrangement to the site given the above concerns.

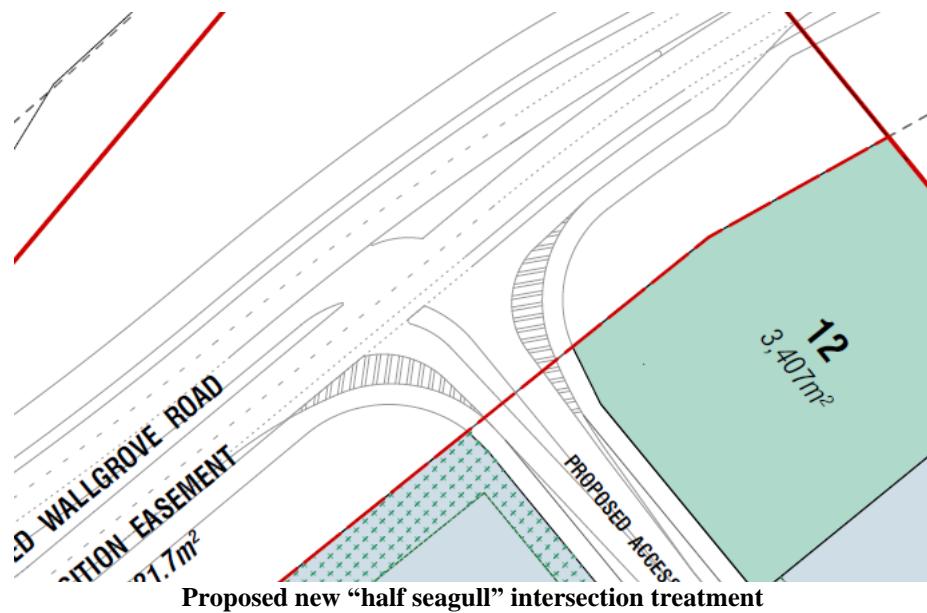
Please see attached Road Safety Audit (RSA) prepared by *MU Group*. In summary, the RSA determined that there were three potential safety concerns that required discussion and mitigation measures. Those three concerns were as follows:

- sight distance for vehicles turning left out of the subdivision road back onto Wallgrove Road, particularly in the instance where a vehicle is also turning left into the subdivision road whilst utilising the left-turn slip lane,
- the width and kerb return radii at the proposed new subdivision intersection and the angle at which smaller vehicles may be placed as they turn left out of the subdivision road back onto Wallgrove Road, and
- the offset distance between the proposed new subdivision intersection and the start of the right turn bay at the new Wallgrove Road & Cecil Road traffic signals

With respect to *MU Group*'s sight distance concern, the RSA notes that a SISD of 150m is achieved when the left-turn slip lane is clear, however is reduced to 84m when a left turning vehicle is *within* the slip lane.

As noted in the foregoing, the road design of the future Wallgrove Road realignment is still a work-in-progress, however it is evident that the 151m SISD requirement can be achieved. In terms of the reduced SISD when a left turning vehicle is *within* the slip lane, this "moment in time" will be short-lived. Based on the traffic generation potential of the subdivision, there will not be a constant procession of left turning vehicles into the subdivision. Once the left turning vehicle has entered the subdivision, the available visibility will return to 151m. Furthermore, a left turning entering vehicle does not automatically grant a left turning exiting vehicle right-of-way to pull out into the main road traffic flow. The left turning exiting driver must display caution at all times and wait until they are completely satisfied there is a sufficient gap in traffic flow before exiting, as per the NSW Road Rules. This arrangement is typical and commonplace in today's urban environment and considered acceptable.

With respect to *MU Group*'s concern regarding the angle of exiting vehicles, this is simply rectified by the inclusion of linemarking, as illustrated in the screenshot image of the concept plan below. The extent of linemarking illustrated in the concept plan is based on the swept turn path requirements of an 8.8m long MRV truck, noting that the intersection has been designed to accommodate B-Triples. Larger trucks will therefore traverse over the linemarking which is also commonplace and acceptable in today's urban environment.



With respect to *MU Group*'s concern regarding the offset distance between the proposed new subdivision intersection and the start of the right turn bay at the new Wallgrove Road & Cecil Road traffic signals, the left turning exiting driver must display caution at all times and wait until they are completely satisfied there is a sufficient gap in *both* traffic lanes before exiting.

A driver, knowing they are to make their way across two traffic lanes into the new Cecil Road right turn bay, would likely wait until *both* lanes are clear under free-flowing traffic conditions before exiting straight into the middle lane, rather than exiting into the kerbside lane and then merging into the median lane.

If, however, the traffic is stopped/queued or slow-moving, the driver would likely exit into kerbside lane initially, before merging into the median lane and then into the right turn bay at Cecil Road, noting that vehicle speeds are low.

Again, there is a balancing act between providing a suitable intersection offset distance and providing sufficient sight distance. The proposed intersection offset is considered acceptable in this instance.

Item 4

4. Traffic modelling using SIDRA modelling to understand the impact of the new development on the future TCS on the realigned Wallgrove Road and Elizabeth Drive should be provided for further assessment before TfNSW can provide further comments. The modelling should be done as a network for the following intersections for the year the signals/M12 will be completed scenario and 2036 scenario:
 - a. Realigned Wallgrove Road / new site access road
 - b. Realigned Wallgrove Road / Cecil Road
 - c. Realigned Wallgrove Road / Elizabeth Drive

As requested by TfNSW, we have set up the SIDRA Network model of the following intersections using the base plan provided by TfNSW:

- realigned Wallgrove Road & proposed new subdivision access
- realigned Wallgrove Road & Cecil Road
- realigned Wallgrove Road & Elizabeth Drive

Furthermore, 2018 traffic volumes were also provided by TfNSW which were undertaken as part of the preliminary M12 investigation works. Those volumes were factored up using a 3% p.a. growth rate to determine the equivalent 2021 volumes.

The complexity is however, that the existing Wallgrove Road and Cecil Road carriageways are to be completely realigned, therefore significant assumptions need to be made with respect to redirecting existing traffic flow for the purposes of setting up the SIDRA model. For example:

- the existing M7 northbound on-ramp is currently accessed off the existing Wallgrove Road, some 550m north of Elizabeth Drive
- the existing Wallgrove Road & Elizabeth Drive intersection will become the new M7 northbound on-ramp
- Cecil Road currently intersects directly with Elizabeth Drive
- the future layout will see Cecil Road intersect with the new Wallgrove Road alignment
- the future layout will also see the new Wallgrove Road alignment intersect directly with Elizabeth Drive where Cecil Road currently intersects. This new intersection will also include the new M12 southbound on-ramp as the “fourth leg”.

Accordingly, there are a significant number of assumptions that need to be made with respect to the redirection of the existing traffic volumes onto the future road network layout. In my opinion, the assumptions made by myself may be inconsistent with TfNSW’s assumptions.

It is for this reason that countless requests have been made to TfNSW to obtain their redirected traffic volumes so we can undertake a reliable “base case” assessment of the future network. The associated traffic from the proposed subdivision proposal would then be added to the “base case” to determine the traffic impacts. To date, this data has not been provided.

Recent advice from TfNSW however, indicates that they have engaged an external consultant to undertake SIDRA modelling of the future road network in the vicinity of the site, *including* the traffic impacts of the subdivision proposal. I understand that the modelling has commenced, however to date, this data has not been provided.

In the meantime, by way of reference, Section 4 of the RMS *Guide to Traffic Generating Developments (2002) – Interpretation of Traffic Impacts* provides a guide as to the assessment of intersections and roadways. In particular, Table 4.2 from the RMS *Guide* provides thresholds and explanations for the various *Levels of Service*.

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Table 4.4 also sets out the peak hour flows for one and two lanes of unidirectional travel and their corresponding *Level of Service*. It is desirable that intersections and roads operate at *Level of Service* “C” or better.

Table 4.4
Urban road peak hour flows per direction

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

In this regard, the M12 Motorway is a major piece of infrastructure within the greater Sydney road network, providing critical access to/from the new Western Sydney Airport which is currently under construction. It would be reasonable for the general public to assume that the proposed new road network, including the realigned Wallgrove Road and signalised intersections in the vicinity of the site, would have a design life of some 20 years before any upgrades would be required.

Reference to the Traffic & Parking Assessment Report submitted with the amended Application indicates that the indicative future uses on the site include a service station, fast food restaurants, recreation facilities (indoor, outdoor & major), tourist & visitor accommodation and an eco-tourist facility.

Based on the indicative cumulative floor area of 9,490m², the subdivision and its indicative future uses have the potential to generate in the order of 568 peak hour vehicle trips (IN and OUT, combined), which is based on a *very conservative* traffic generation rate of *6 peak hour trips per 100m²*.

It is also pertinent to note that there is likely to be a proportion of *multi-purpose trips* to the site whereby visitors to the service station, employees, customers and guests of the recreation facilities and tourist accommodation, may also be customers of the fast food outlet, and vice-versa.

Furthermore, *passing trade* occurs when a person might visit the proposed service station and/or fast food restaurants on the site on their way home from work. That person is already travelling on the nearby road network, thereby not incurring an additional vehicle trip.

By way of comparison, if the general “commercial premises” traffic generation rate of *2 peak hour trips per 100m²* was applied to the indicative cumulative floor area of 9,490m², the subdivision and its indicative future uses would have the potential to generate in the order of just 190 peak hour vehicle trips (IN and OUT, combined).

In practice therefore, the traffic generation potential of the subdivision is likely to be significantly *less* than the 568 peak trips suggested above.

It is therefore considered that the expected design life of the new road network layout will have the capacity to accommodate background growth as well as the associated traffic impact of the proposed subdivision.

Item 5

5. A swept path analysis for the largest vehicle accessing the site should be provided.

Please see attached the swept turn path of the longest vehicles that are anticipated to access the proposed subdivision, as follows:

- Design vehicle: 19m articulated semi-trailer
- Checking vehicle: 35m B-Triple

In addition to the two abovementioned vehicles, swept turn paths were also undertaken of an 8.8m long MRV “service vehicle” in order to determine the appropriate extend of linemarking required to delineate smaller vehicles into and out of the subdivision.

The kerb radii at the proposed new subdivision intersection are based on the swept turn path requirements of the B-Triple. Furthermore, the proposed new internal subdivision road and cul-de-sac-turning head has also been designed to accommodate the turn path requirements of the B-Triple. Importantly, the B-Triple is able to enter and exit the site in a forward direction at all times.

Item 6

6. Please provide more information on proposed footpaths / pedestrian access to the site along Elizabeth Drive and new Wallgrove Road. Pedestrian fencing will need to be provided to ensure pedestrians would be crossing at the designated crossing facilities.

I understand the proposal includes the provision of a 2.5m wide shared path along the Elizabeth Drive and new Wallgrove Road site frontages, thereby providing an attractive means of access for active and alternate transport users such as cyclists and those travelling by public transport. It is also envisaged that suitable pedestrian fencing will also ultimately be provided however it is considered that is a matter that can be conditioned accordingly.

Conclusion

In light of the foregoing, we conclude that the proposed road layout, which includes the proposed new “half seagull” site access intersection with priority controlled left-in/left-out, is an appropriate design solution that provides sufficient sight distances along the new Wallgrove Road alignment.

We also expect that, with respect to the information provided in this letter, the intersection of Wallgrove Road and Cecil Road is expected to have the capacity to perform at *Level of Service* “C” or better for many years to come.

Please do not hesitate to contact me on telephone 9904 3224 should you have any enquiries.

Yours sincerely



Chris Palmer
Executive Engineer B.Eng (Civil)
Varga Traffic Planning Pty Ltd

Appendix E – Road Safety Audit Report

MU Group Consulting

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Ph: +61 2 9016 7272 **ABN:** 76 606 859 483 **W:** www.mugroup.com.au

Road Safety Audit Report

Proposed Development at 1111-
1141 Elizabeth Drive, Cecil Park
(SSD-8859)

Pre-Construction – Strategic Design

Issue 1: April 2021

Reference: 21_8_CPPL_RSA REP_01

A: Level 4, 23-33 Mary Street, Surry Hills NSW 2010

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ABN: 76 606 859 483

W: www.mugroup.com.au

This report has been prepared by MU Group Consulting for Cecil Park Pty Ltd (Electric Pty Ltd) and may only be used and relied on by Cecil Park Pty Ltd (Electric Pty Ltd) for the purpose agreed as set out in the Consultancy Agreement.

The services undertaken by MU Group Consulting 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. MU Group Consulting 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.

MU Group Consulting has prepared this report on the basis of information provided by Cecil Park Pty Ltd (Electric Pty Ltd) and others who provided information to MU Group (including Government authorities), which MU Group has not independently verified or checked beyond the agreed scope of work. MU Group Consulting 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.

Report Control Form

Revision History

Revision	Date	Prepared by	Reviewed by	Approval for issue by
1	16/04/2021	S.Ludenia	P.Greenland	<i>Draft</i>
2	23/04/2021	S.Ludenia	P.Greenland	P.Greenland
3				

Contents

Report Control Form	2
Contents	3
1 Client Details	4
Table 1: Client Details	4
2 Audit Statement	5
Table 2: Audit Team Members	5
3 Audit Details	6
3.1 Description of Project	6
3.2 Scope of Audit	6
3.3 Considerations	6
3.4 Audit Process	6
3.5 Audit Program	7
Table 3: Audit Program	7
3.6 Commencement Meeting	7
3.7 Information Supplied	8
Table 4: Information Supplied	8
3.8 Site Inspections	8
3.9 Completion Meeting	8
4 Risk Assessment	9
Table 5: Risk Matrix	9
Table 6: Level of Prioritisation Based on Risk Rating	10
5 Road Safety Risks	11
6 Completing the Road Safety Audit	15
7 Confidentiality and Copyright	16
Appendix A – Corrective Action Response Form	17

1 Client Details

Table 1: Client Details

Client	Cecil Park Pty Ltd (Electric Pty Ltd)
Client address	166 Lane Cove Road Lane Cove West 2066 NSW
Project Manager / Sponsor	Ben Elias
Phone	0419 980 980
Client Representative	Varga Traffic Planning Pty Ltd
Address	Suite 6, 20 Young Street, Neutral Bay NSW 2098
Project Manager / Sponsor	Chris Palmer
Email	chris@vtp.net.au
Phone	02 9904 3224

2 Audit Statement

We, the undersigned, declare that we have reviewed the material and data listed in this report and identified the risks to road safety listed in Section 5. Reasons are given to explain why an identified item is considered a risk to road safety including crash type. The auditors listed are independent to the project.

Design or construction deficiencies that do not cause a safety problem are not listed.

It should be noted that while every effort has been made to identify potential risks to road safety, no guarantee can be made that every problem or deficiency has been identified.

It is recommended that identified risks to road safety be investigated and corrective actions implemented by the Project Manager.

Table 2: Audit Team Members

Role	Name	Auditor Level	ID Number	Signature	Date
Lead Road Safety Auditor	Peter Greenland	3	RSA-02-0272		16/04/2021
Road Safety Audit Team Member	Steven Ludenia	2	RSA-02-0803		16/04/2021

3 Audit Details

3.1 Description of Project

Cecil Park Pty Ltd (Electric Pty Ltd) is proposing a development at 1111-1141 Elizabeth Drive, Cecil Park consisting of 12 lots varying from 2500 to 6100 square metres in size. The site is bound by Elizabeth Drive to the south and the proposed new alignment of Wallgrove Road to the west. Access to the development is proposed at an unsignalised T-intersection with the proposed Wallgrove Road alignment allowing left-in, left-out and right-in movements. The right turn out of the development access road will be banned with the proposed geometry supporting this.

The proposal is considered a State Significant Development (SSD) and is covered under application SSD-8859.

3.2 Scope of Audit

The Road Safety Audit (RSA) is specifically for the intersection at the proposed development access road and the proposed Wallgrove Road alignment. The RSA aims to identify potential risks to road safety in the existing environment taking into account the proposed strategic design. This report has sought to identify and assess potential safety hazards that may impact on road user safety or lead to future incidents.

3.3 Considerations

Due to the greenfields nature of the proposal and Wallgrove Road alignment, a site inspection was not undertaken for this audit. The proposed posted speed limit on Wallgrove Road is 60km/h with a design speed of 70km/h in accordance with Austroads Guide to Road Design.

In order to identify safety risks at an early design stage, this audit was undertaken on the strategic design layout only for the proposed intersection. No vertical geometry has been taken into consideration for the purpose of this audit.

Given the strategic nature of the design proposal, pedestrian facilities were not yet defined on the design plan. Risks associated with pedestrians and cyclists at the access road intersection have not been identified but will require consideration in development of the design.

3.4 Audit Process

This road safety audit was carried out in accordance with Transport for NSW 'Guidelines for Road Safety Audit Practices' in conjunction with the Austroads Guide to Road Safety Part 6: Managing Road Safety Audits, Part 6A: Implementing Road Safety Audits.

Road Safety Audits are aimed at proactively identifying road safety issues and are a fundamental component of the Safe System approach. The findings of this audit have been prepared in consideration of Safe System requirements, particularly in relation to vulnerable road users such as pedestrians.

The Austroads publication Integrating Safe System with Movement and Place for Vulnerable Road Users provides guidance on the correlation of travel speeds, vehicle stopping distances and the impact forces to the human biomechanical limits indicates that fatal injury risk to pedestrians:

- Reduces by 75-80% when a driver chooses to travel at 30 km/h instead of 40 km/h
- Reduces by 90-95% when a driver chooses to travel at 30 km/h instead of 50 km/h
- Reduces by 75-80% when a driver chooses to travel at 40 km/h instead of 50 km/h

3.5 Audit Program

Table 3: Audit Program

Activity	Date
Commencement meeting	25/03/2021
Day site inspection	N/A
Night site inspection	N/A
Draft report issued	16/04/2021
Completion meeting	19/04/2021
Final report issued	23/04/2021

3.6 Commencement Meeting

A brief commencement meeting was held on Thursday 25th March 2021 via phone. Attendees were Chris Palmer and Steven Ludenia to discuss the background of the project and provide the auditors an understanding of the proposed design.

3.7 Information Supplied

Table 4: Information Supplied

Documentation	Date	Document Title
Design drawings	22/03/2021	AE Design Partnership Preliminary Strategic Design 1111-1141 Elizabeth Drive, Cecil Park Option 1
Design report		N/A
Previous Road Safety Audit		N/A

3.8 Site Inspections

At the time of this audit being undertaken the Wallgrove Road realignment had not yet commenced construction. Due to the greenfields nature of these proposals the site was not inspected when preparing this road safety audit.

3.9 Completion Meeting

A completion meeting was held on Monday 19th April 2021. The audit team presented the findings and discussed potential corrective actions with the design team that may assist in eliminating and reducing the risks identified. Attendees were Ben Elias, Chris Palmer, Peter Greenland and Steven Ludenia.

4 Risk Assessment

Table 5: Risk Matrix

Severity	Minor or property damage A person who suffers no injury or only requires minor first aid treatment.	Moderate A person who attends an emergency department on the same day or on the day after a crash but was not killed or subsequently admitted to hospital.	Serious A person who is admitted to hospital on the same day or the day after a crash and did not die within 30 days of the crash.	Fatal A person who dies within 30 days from injuries received in a road traffic crash.
Probability				
Weekly Is expected to occur in most circumstances.	Medium	High	Extreme	Extreme
Monthly Will probably occur.	Medium	Medium	High	Extreme
6 Monthly Might occur at some time.	Low	Medium	High	Extreme
Yearly Might occur but doubtful.	Negligible	Low	Medium	High
Every 5 years or less May occur but only in exceptional circumstances.	Negligible	Negligible	Medium	High

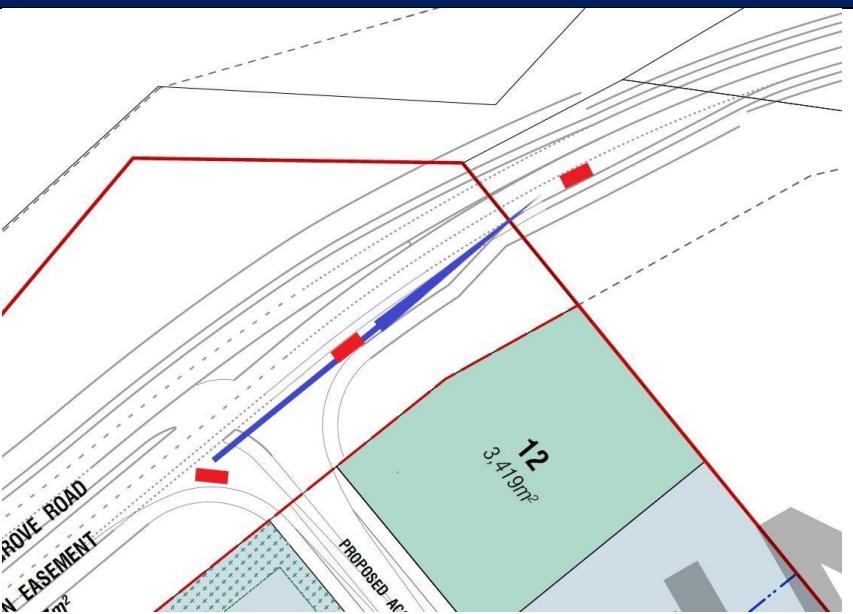
Table 6: Level of Prioritisation Based on Risk Rating

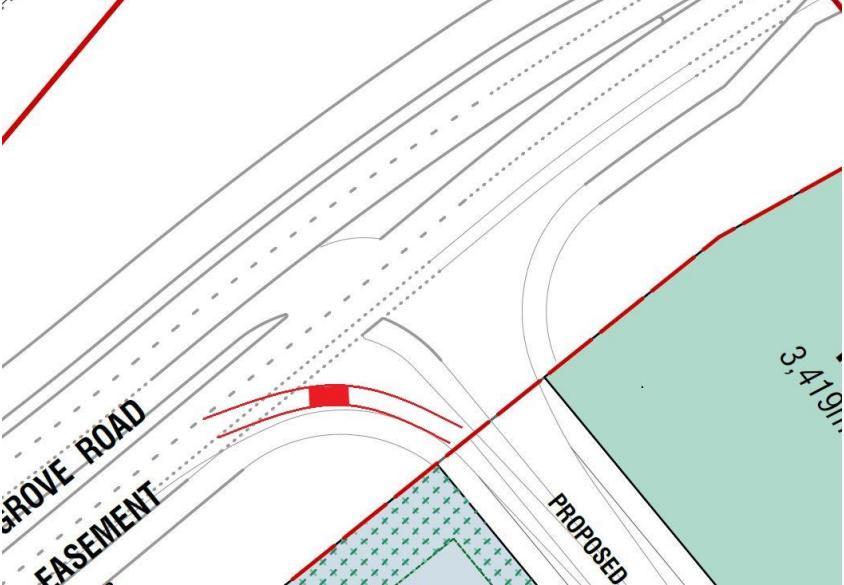
Risk Rating	Level of prioritisation
Extreme	Should be corrected immediately
High	Should be corrected in the very near future, even if costs are high. Temporary mitigation measures should be considered until final correction action taken.
Medium	Should be corrected in the very near future, even if costs are moderate. A delay until the routine maintenance should be justified. Temporary mitigation measures should be considered until final correction action taken.
Low	Should be corrected at a suitable time, if cost is low.
Negligible	Should be corrected at a suitable time, if cost is low.

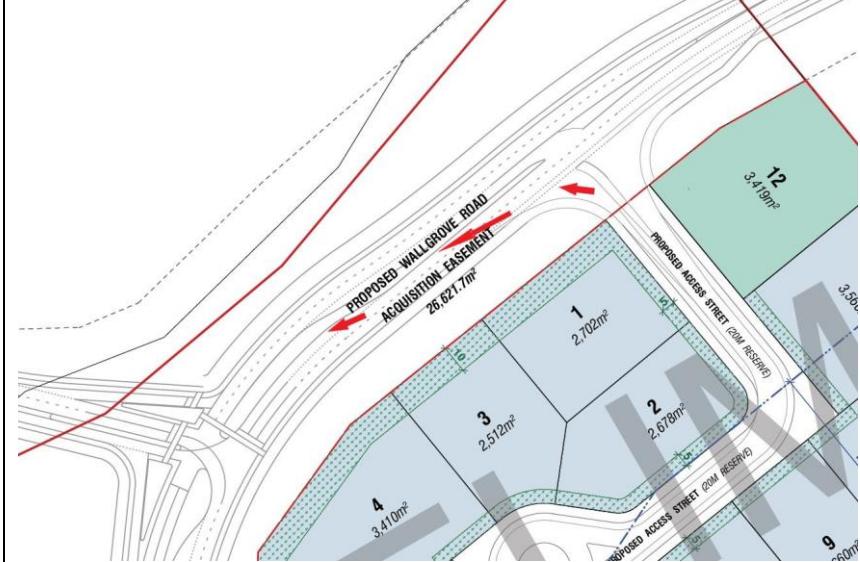
5 Road Safety Risks

The Road Safety Audit findings are documented in this section where the table below provides details of the risks to road safety identified by the audit team in relation to the supplied auditable material in conjunction with the site inspection, if applicable.

The identified risks are assigned road safety categories to assist in the management of corrective actions by the Project Manager (also known as Project Sponsor). Each risk is assessed with a rating as Extreme, High, Medium, Low or Negligible, derived as a function of Probability and Severity, as outlined in the tables of Section 5.

Ref No.	Photos / Site Description / Safety Issue	Description of risk to road safety (Reason why this is a safety issue)	Road Safety Audit Category	Probability	Severity	Risk Rating
1	 <p>Design plan showing left turning vehicle from proposed site access.</p> <p>Austroads requirement (Guide to Road Design Part 4A, Table 3.2) for SISD at 70km/h: 151m</p> <p>SISD Achieved in current design with left turning vehicle: 84m</p> <p>SISD Achieved in current design with left turning vehicle: 150m</p>	<p>Safe intersection sight distance for left turning vehicles out of the access road is not achieved to southbound vehicles in Wallgrove Road. Drivers may become impatient and pull out into the southbound travel lane on Wallgrove Road with insufficient gaps in the traffic causing rear-end and intersection type crashes. This issue could be exacerbated by the vertical alignment on Wallgrove Road (not assessed under this safety audit) as well as the presence of vehicles turning left into the development.</p> <p>It is noted that other options have proposed an intersection further north on Wallgrove Road. This does not improve the safety risk described above due to the presence of the horizontal curve in Wallgrove Road and the terminating leg of the T-intersection being on the inside of the curve.</p>	Intersections	Yearly	Serious	Medium

Ref No.	Photos / Site Description / Safety Issue	Description of risk to road safety (Reason why this is a safety issue)	Road Safety Audit Category	Probability	Severity	Risk Rating
2	 <p data-bbox="287 975 1109 1054"><i>Design plan showing left turning vehicle following kerb line and stopping at the give way line.</i></p>	<p data-bbox="1154 374 1641 879">The width and kerb return radii at the access road exit appears to be excessive. This will result in vehicles stopping at the give way line at an undesirable angle to oncoming traffic, increasing the likelihood of crashes highlighted in Risk 1. Drivers may also attempt to turn two abreast given the significant width at the intersection or illegally make a right turn out of the proposed access road resulting in right-through and rear-end crashes.</p>	Intersections	Yearly	Serious	Medium

Ref No.	Photos / Site Description / Safety Issue	Description of risk to road safety (Reason why this is a safety issue)	Road Safety Audit Category	Probability	Severity	Risk Rating
3	 <p><i>Design plan showing vehicle path from the site access to the right turn bay for Cecil Road.</i></p>	<p>Turning left out of the development access road and right into Cecil Road requires attaining a suitable gap in the southbound traffic on Wallgrove Road and then changing across one lane to enter the right turn bay. The distance available to carry out this sequence of manoeuvres is insufficient, and drivers may have to force their way through. This disruption to the traffic flow may be worsened if the right turn bay has several vehicles already waiting in it. Rear-end and lane change crashes could occur as a result of this geometry.</p>	Intersections	6 Monthly	Moderate	Low

6 Completing the Road Safety Audit

The project manager / sponsor is recommended to take the following steps to complete the road safety audit process:

- Attend the completion meeting
- Review the report
- Accept the Road Safety Audit report
- Produce a corrective action program (Template attached as Appendix A)
- Implement corrective actions
- Close the corrective action program.

Further details are available in the Guidelines for Road Safety Audit Practices¹.

¹ NSW Centre for Road Safety, Roads and Traffic Authority of New South Wales (2011), *Guidelines for Road Safety Audit Practices*, Sydney.

7 Confidentiality and Copyright

The information in this Road Safety Audit report is confidential and copyrighted. This document does not form part of a contract.

Appendix A – Corrective Action Response Form

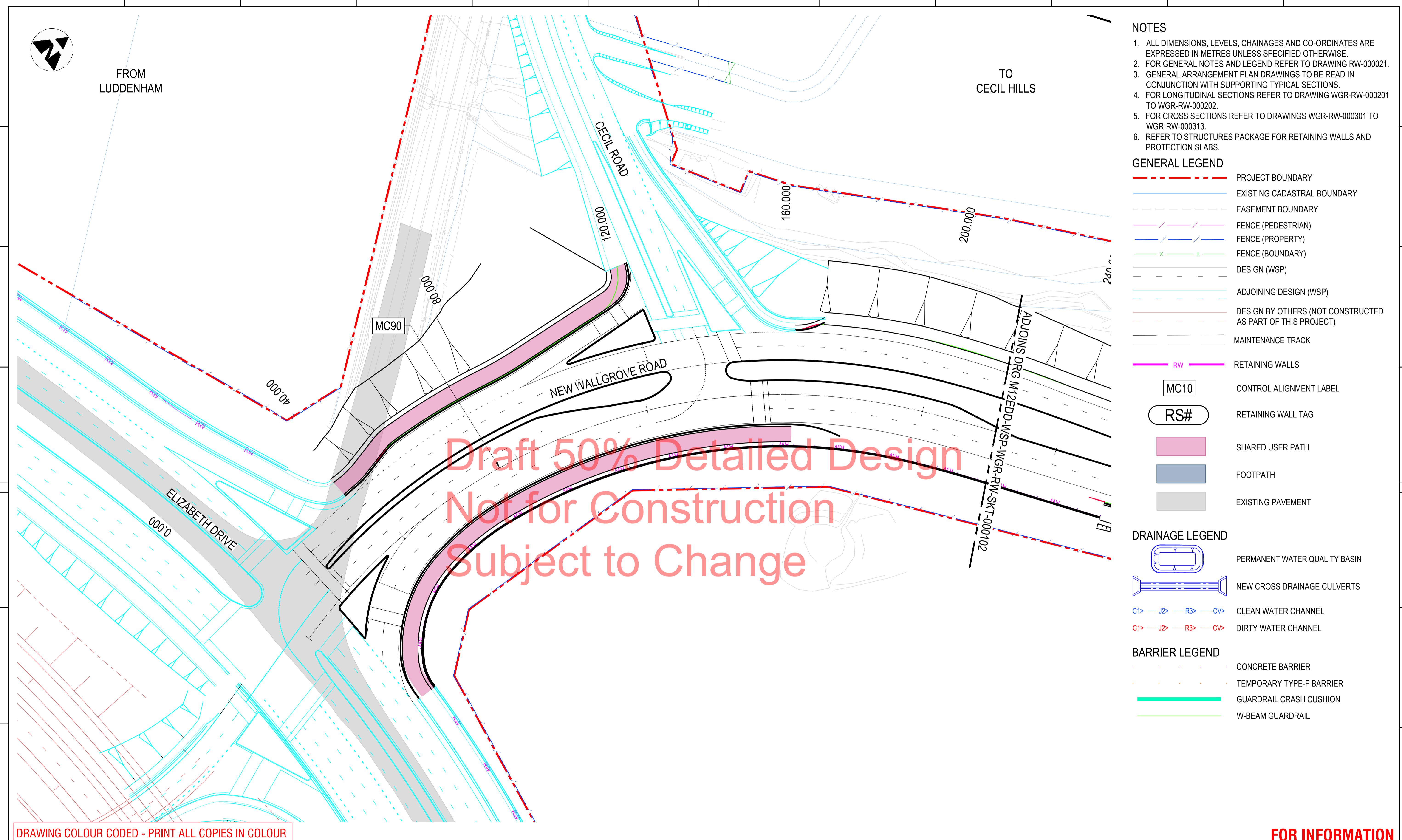
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Audit Ref No	21_8 REP_01	Audit stage	Strategic Design

Ref No.	Corrective Action Response (CAR)	Priority for action (To be completed by Project Manager)	Residual risk (if any)
1		Choose priority.	
2		Choose priority.	
3		Choose priority.	
Project Manager / Sponsor Name		Signature	
Concurring Client Name		Signature	

Appendix F - TfNSW draft 50% Detailed Design of the proposed Wallgrove Road alignment

MU Group Consulting

A: Level 4, 23-33 Mary Street, Surry Hills NSW 2010 **PO Box:** PO Box 64, Strawberry Hills NSW 2012
Ph: +61 2 9016 7272 **ABN:** 76 606 859 483 **W:** www.mugroup.com.au



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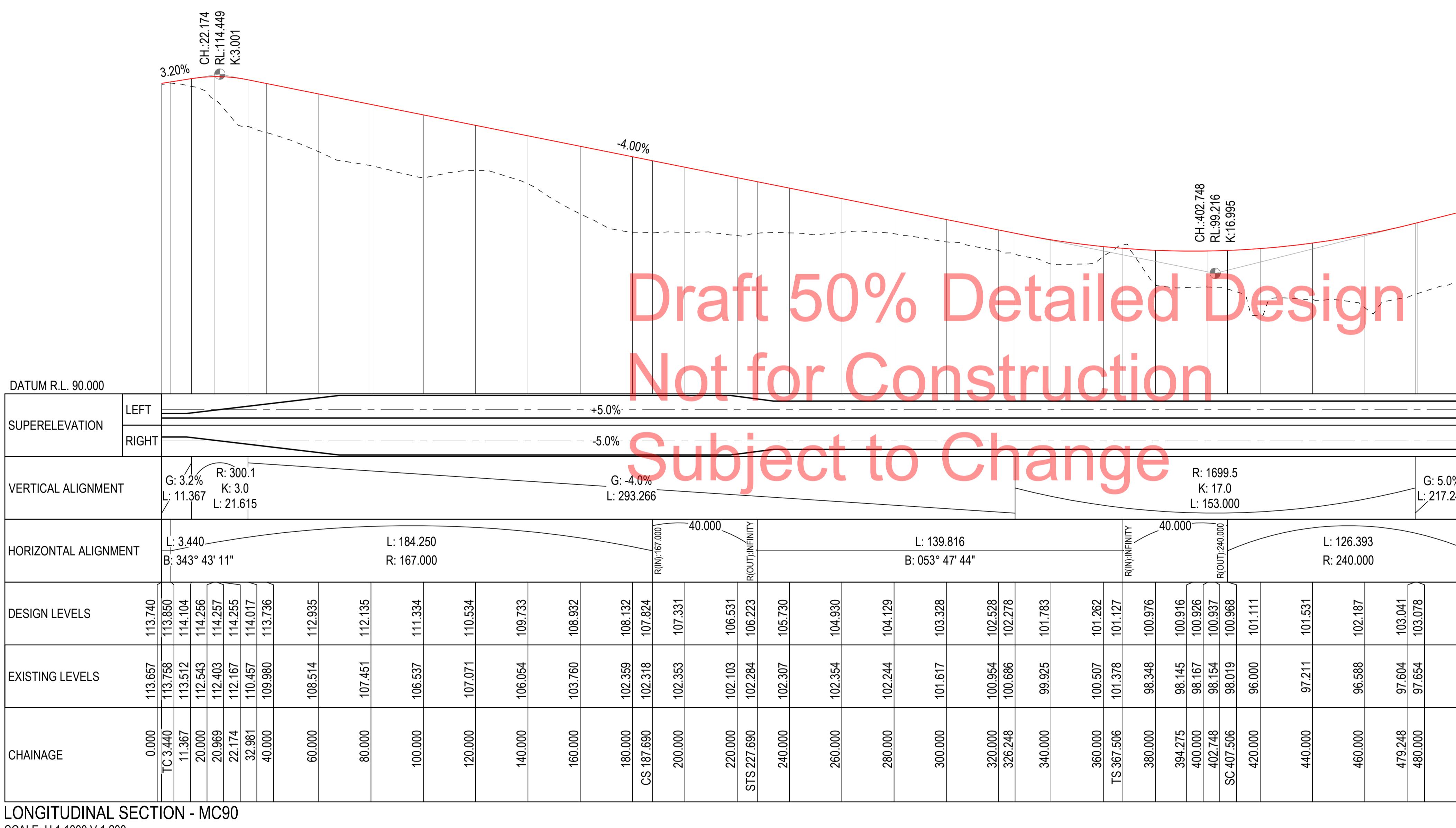
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LEGEND

— DESIGN SURFACE
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DESIGN DRAWN SUDESH DAYAL 30.09.2021
DESIGNED JUS BUSTAMANTE 30.09.2021
DRG CHECK RYAN THROWER 30.09.2021
DESIGN CHECK SANJOY CHATTERJEE 30.09.2021
APPROVED MICHAEL SABA 30.09.2021
PROJECT MGR MIKE ROGERS 30.09.2021

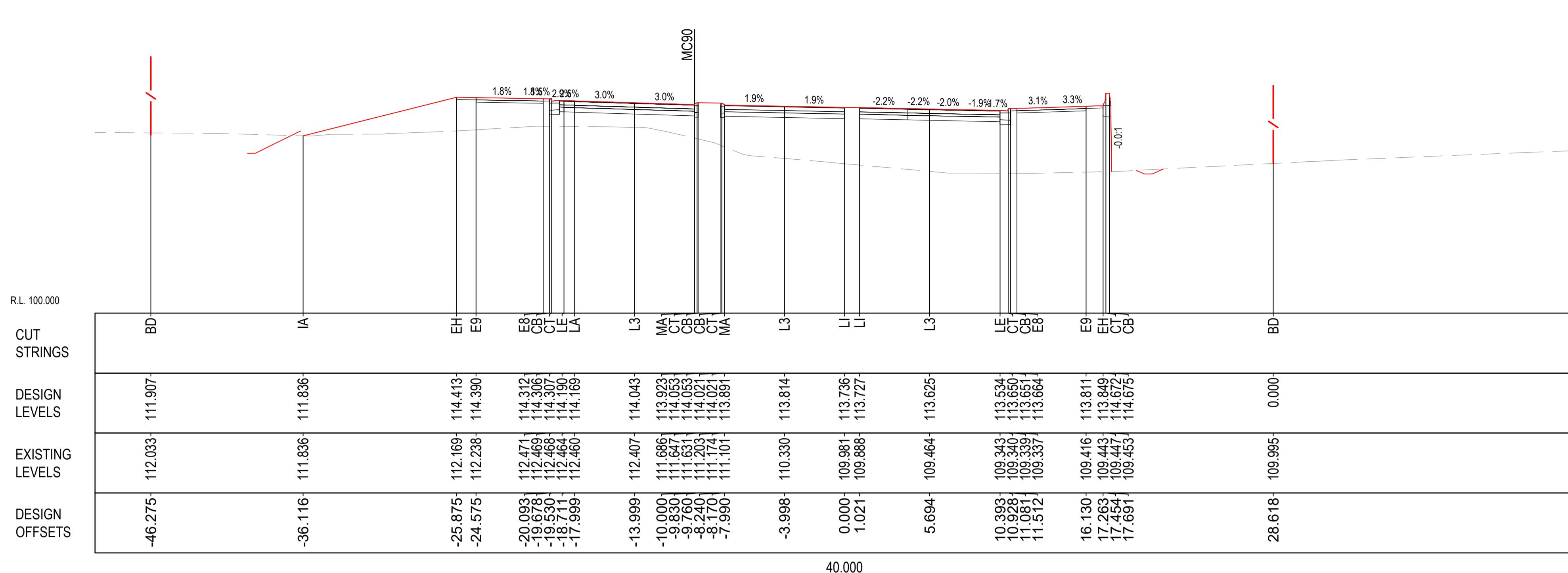
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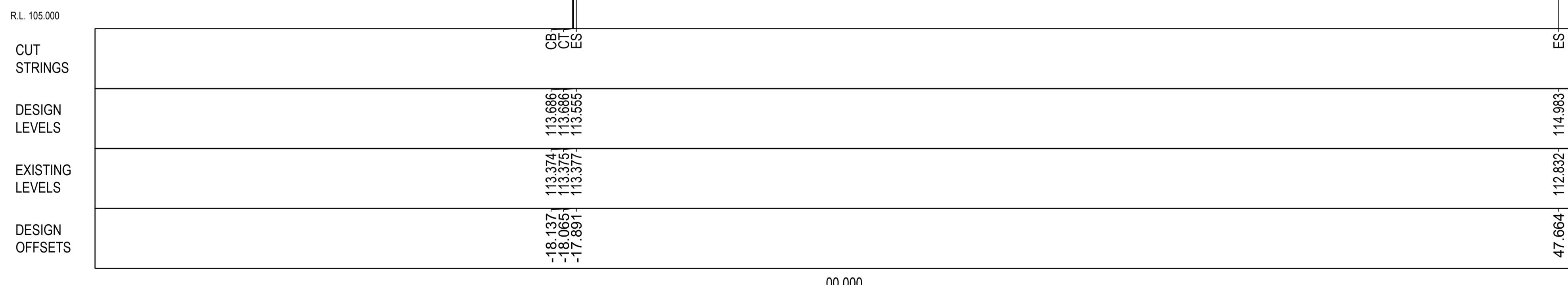
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WALLGROVE ROAD
ROAD AND CIVIL WORKS
LONGITUDINAL SECTIONS - MC90

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 - - - PROJECT BOUNDARY



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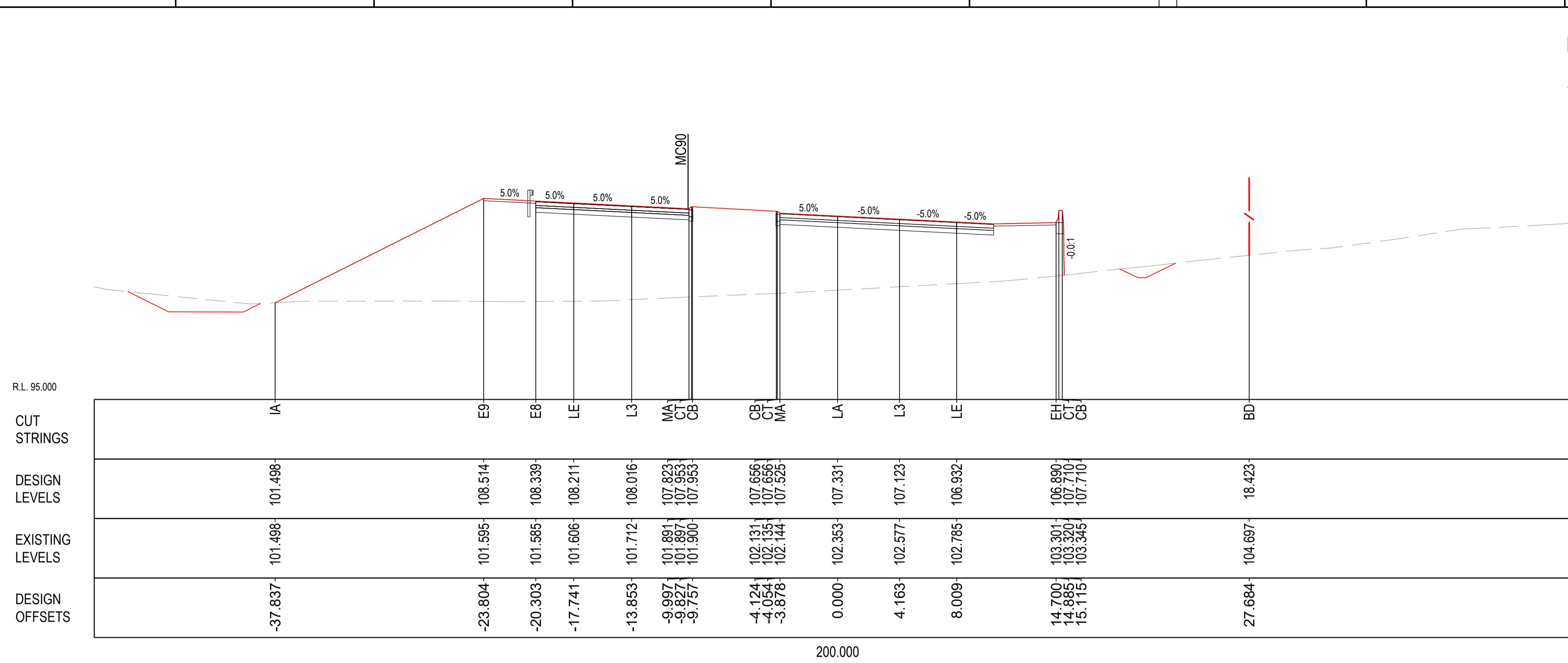
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 APPROVED MICHAEL SABA 30.09.2021
 PROJECT MGR MIKE ROGERS 30.09.2021
 CIVIL

M12 MOTORWAY

EAST - ELIZABETH DRIVE CONNECTION
 WALLGROVE ROAD
 ROAD AND CIVIL WORKS
 CROSS SECTIONS - MC90

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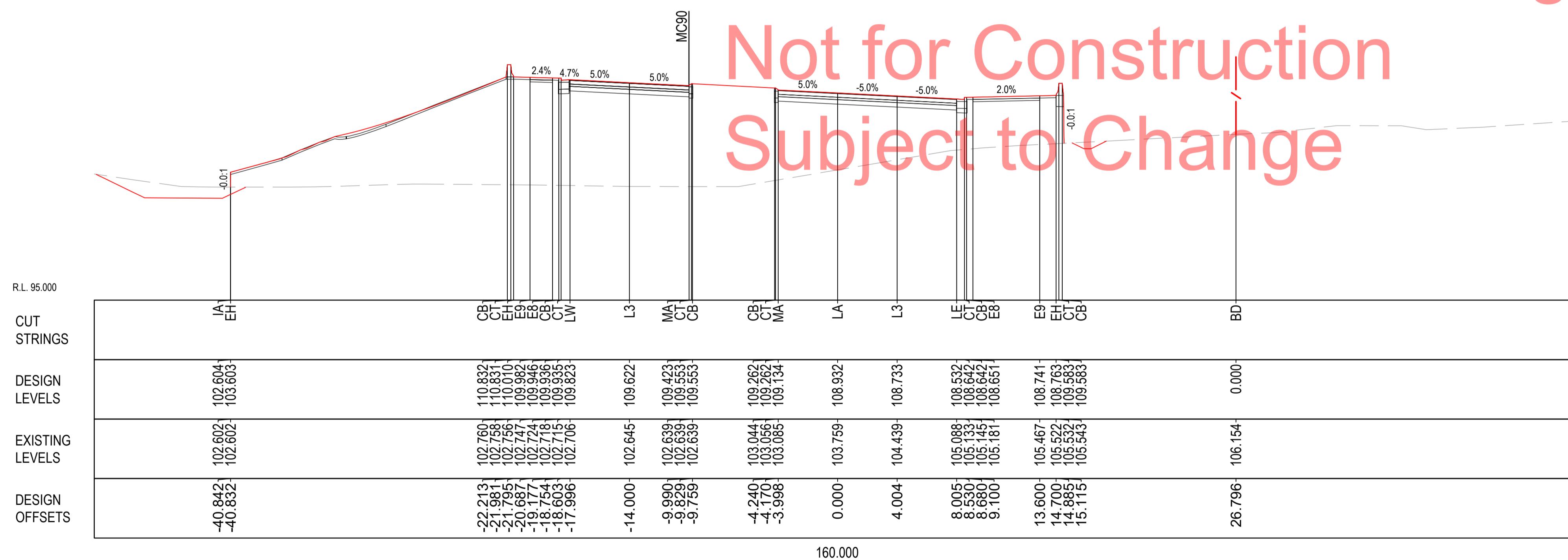


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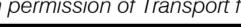


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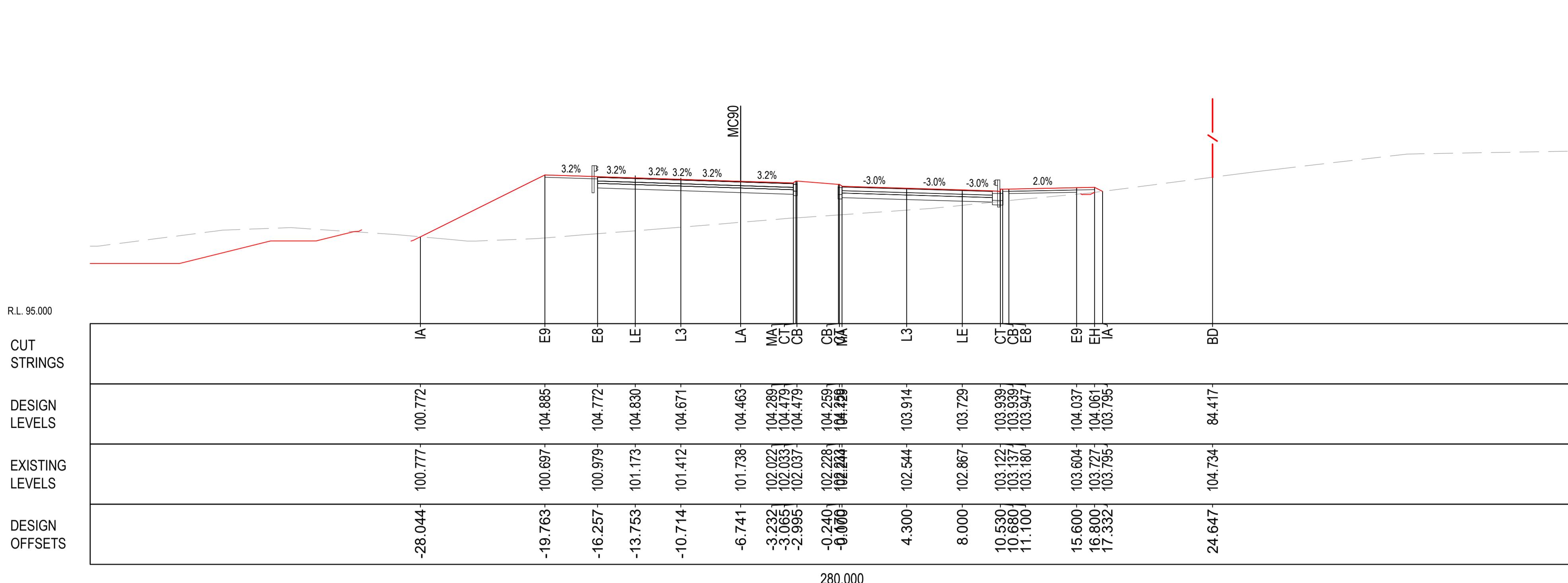
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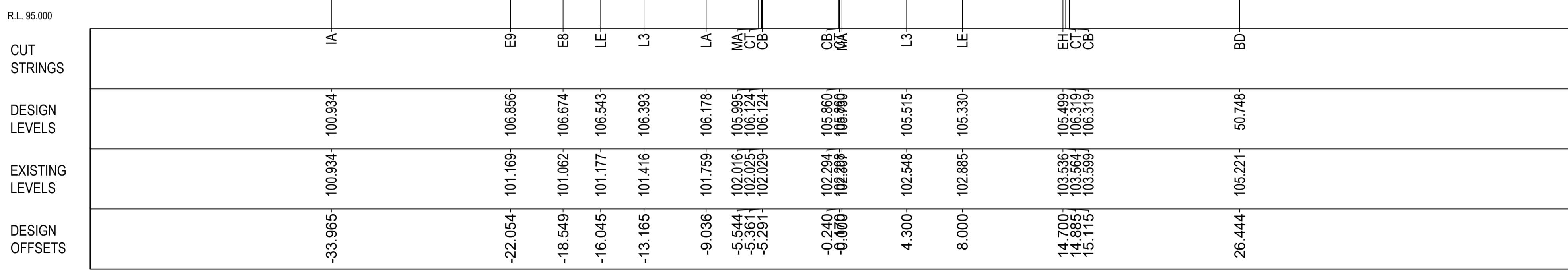
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			 DRAWN <u>SUDHADAYAL</u> 30.09.2021 DESIGNED <u>JUBU SANTAME</u> 30.09.2021 DRG CHECK <u>RAY THORWER</u> 30.09.2021 DESIGN CHECK <u>SANJOY CHATTERJEE</u> 30.09.2021 APPROVED <u>MICHAEL SABA</u> 30.09.2021 PROJECT MANAGER <u>MIKE ROGERS</u> 30.09.2021			
A ISSUED FOR 50% DETAILED DESIGN REV <u>DESCRIPTION</u> WESTERN SYDNEY PROJECT OFFICE			J.B <u>30.09.21</u> S.E <u>30.09.21</u> S.C <u>30.09.21</u>	DESIGNER <u>INITIAL/DATE</u>	VERIFIED <u>INITIAL/DATE</u>	APPROVED <u>INITIAL/DATE</u>
COORDINATE SYSTEM: MGA ZONE 56 GDA 2020 CIVIL			GDA2020	HEIGHT DATUM: AHD 71		
			1 : 200	0 4 8m	EAST - ELIZABETH DRIVE CONNECTION WALLGROVE ROAD ROAD AND CIVIL WORKS CROSS SECTIONS - MC90	
			FILE NO. STATUS: D00	PR	SHEET: 03 OF 13	
			DRG NO. M12ED-WSP-WGR-RW-M2D-000303	REV A	EDITION: 1	

LEGEND

— DESIGN SURFACE
 - - - EXISTING SURFACE
 — PROJECT BOUNDARY



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REV DESCRIPTION DESIGNER VERIFIED APPROVED

INITIAL/DATE INITIAL/DATE INITIAL/DATE

COORDINATE SYSTEM: MGA ZONE 56 GDA 2020 GDA2020 HEIGHT DATUM: AHD 71

X-TNSV1
M12EDD-WSP-WGR-RW-000304

SCALE: 1:200

0 4 8m

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PREPARED FOR:
 SYDNEY PROJECT DELIVERY
 WESTERN SYDNEY PROJECT OFFICE

Level 27, 680 George Street, Sydney
 GPO Box 5394, NSW 2001, Australia
 Tel: +61 2 9272 5100 Fax: +61 2 9272 5101
 wsp.com

CIVIL

DRAWN SUDESH DAYAL 30.09.2021

DESIGNED JUS BUSTAMANTE 30.09.2021

DRG CHECK RYAN THROWER 30.09.2021

DESIGN CHECK SANJOY CHATTERJEE 30.09.2021

APPROVED MICHAEL SABA 30.09.2021

PROJECT MGR MIKE ROGERS 30.09.2021

M12 MOTORWAY

EAST - ELIZABETH DRIVE CONNECTION
 WALLGROVE ROAD
 ROAD AND CIVIL WORKS
 CROSS SECTIONS - MC90

FILE NO.: PART SHEET: 04 OF 13 A1

STATUS: D050 C

DRG No: M12EDD-WSP-WGR-RW-DRG-000304 REV A VER - EDMS No: TBC AMD No:

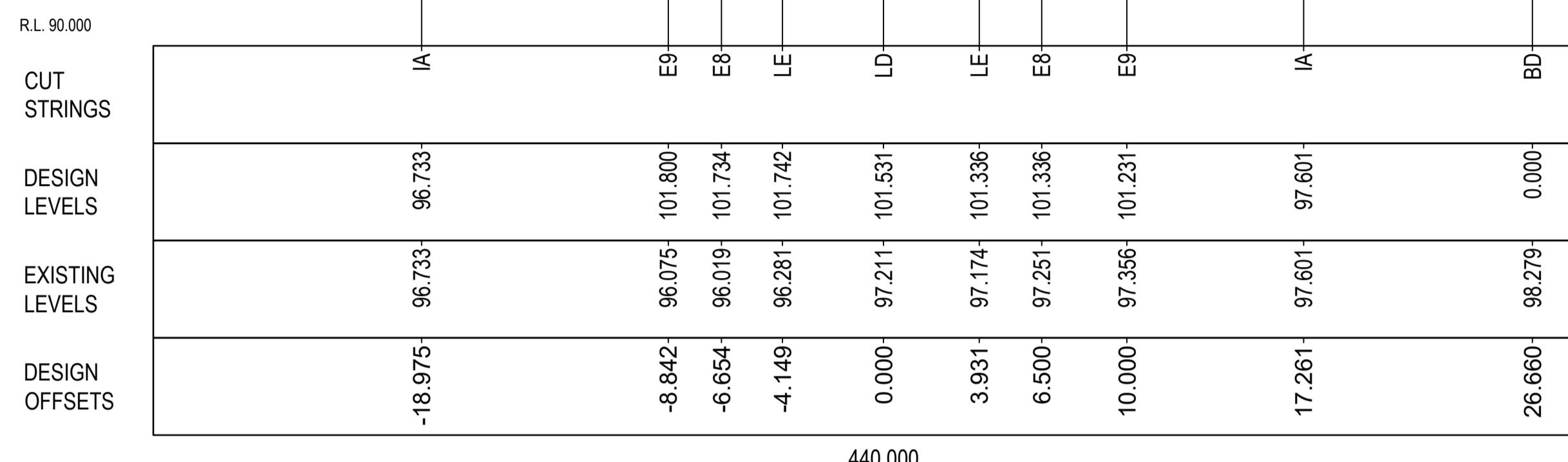
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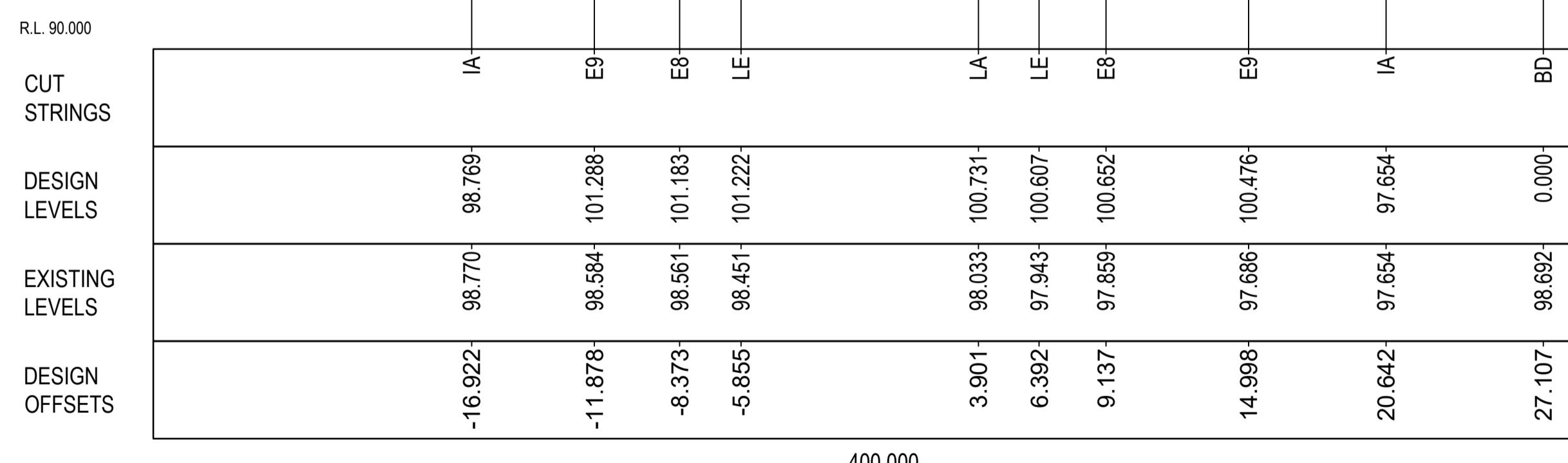
Printed by AURIT50350

LEGEND

— DESIGN SURFACE
 - - - EXISTING SURFACE
 — PROJECT BOUNDARY



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REFERENCES:
 X-TNSV1
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REV	DESCRIPTION	DESIGNER	VERIFIED	APPROVED			
		INITIAL/DATE	INITIAL/DATE	INITIAL/DATE			

COORDINATE SYSTEM: MGA ZONE 56 GDA 2020 HEIGHT DATUM: AHD 71

SCALE: 1:200

0 4 8m
 1:200

CLIENT:

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 SYDNEY PROJECT DELIVERY
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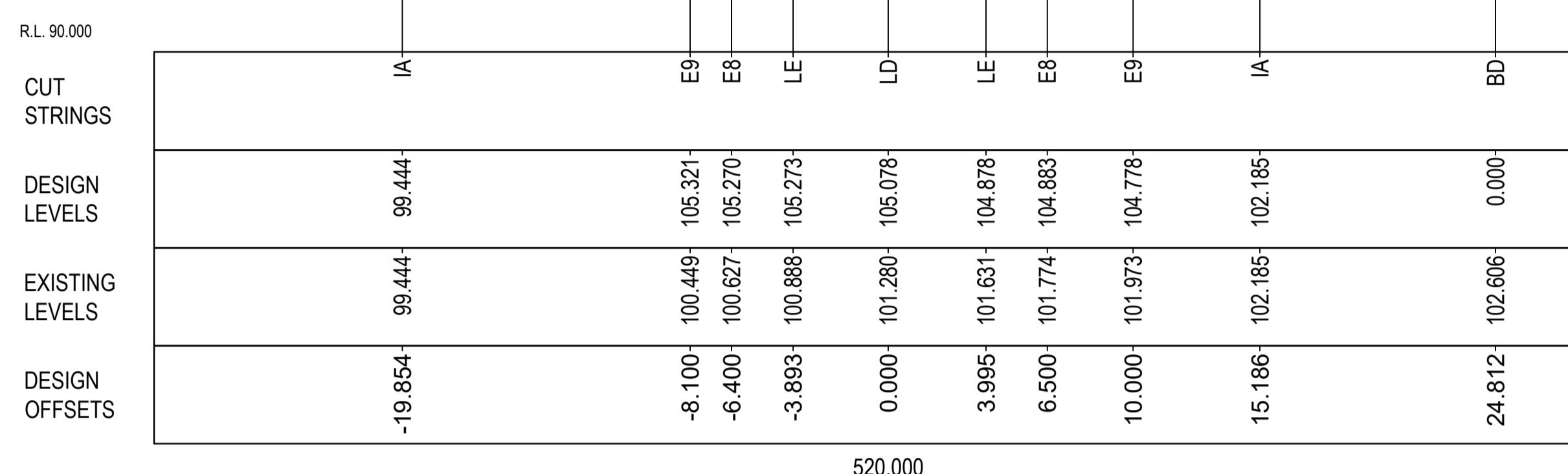
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DRAWN — SUDESH DAYAL — 30.09.2021
 DESIGNED — JUS BUSTAMANTE — 30.09.2021
 DRG CHECK — RYAN THROWER — 30.09.2021
 DESIGN CHECK — SANJOY CHATTERJEE — 30.09.2021
 APPROVED — MICHAEL SABA — 30.09.2021
 PROJECT MGR — MIKE ROGERS — 30.09.2021

M12 MOTORWAY

EAST - ELIZABETH DRIVE CONNECTION
 WALLGROVE ROAD
 ROAD AND CIVIL WORKS
 CROSS SECTIONS - MC90

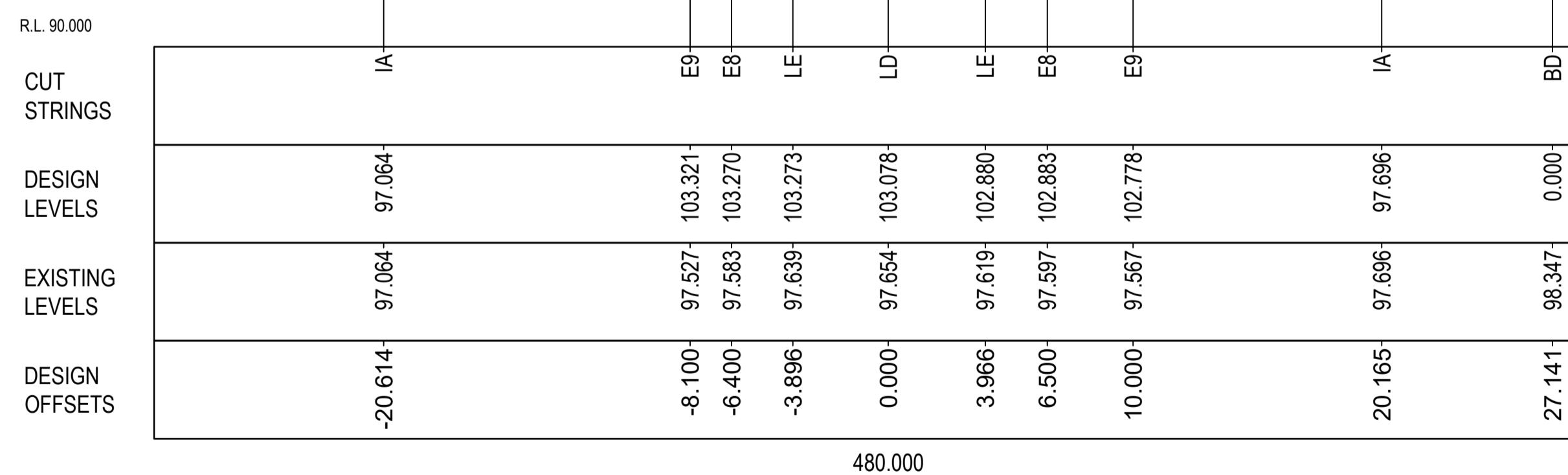
FILE No.: PART SHEET: 06 OF 13 A1
 STATUS: D050 (C)
 DRG No. M12EDD-WSP-WGR-RW-DRG-000306 REV A VER TBC AMD No.
 DRG No. M12EDD-WSP-WGR-RW-DRG-000306 REV A VER TBC AMD No.



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Not for Construction

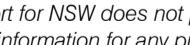
Subject to Change



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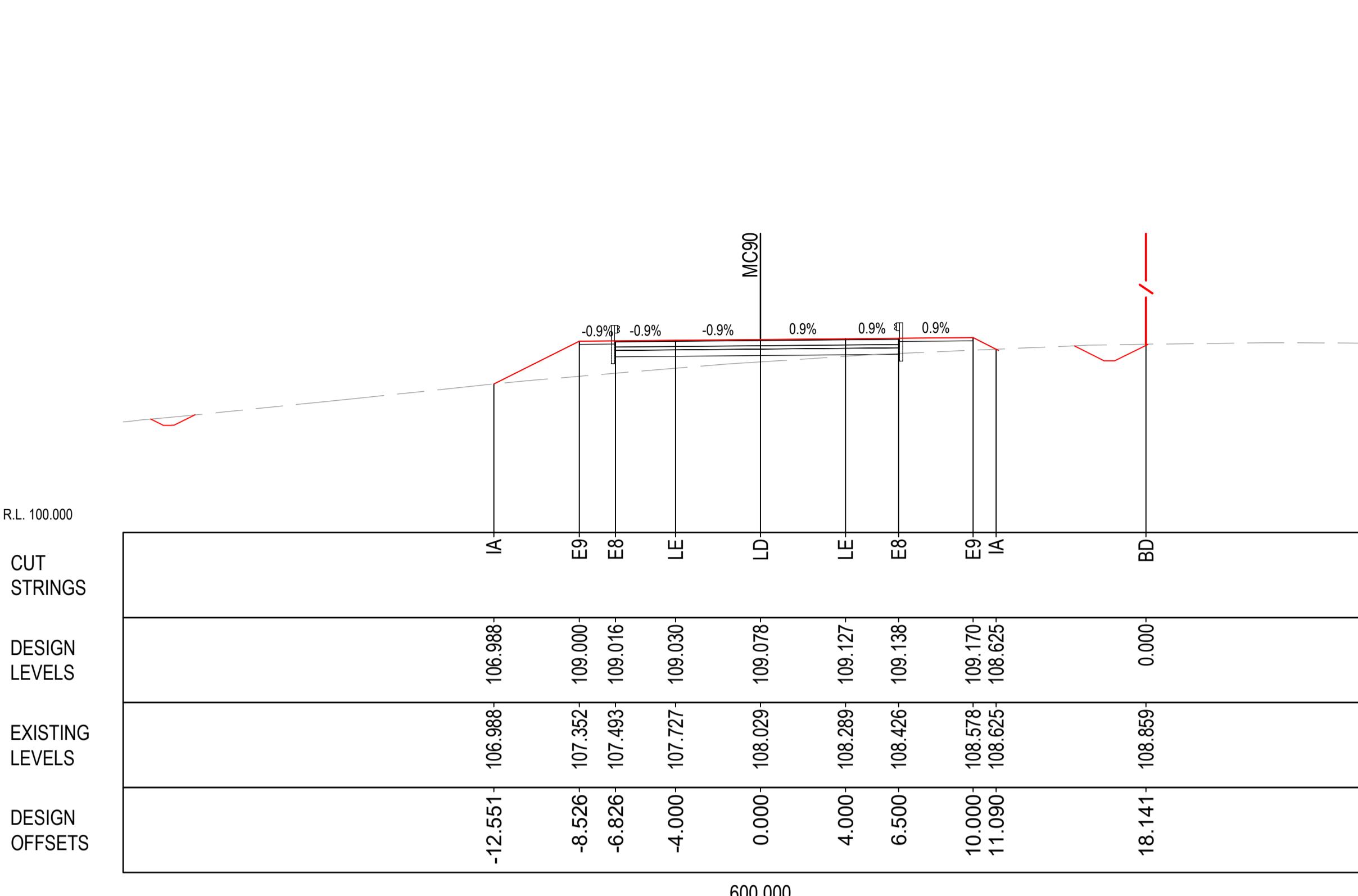
The image shows the logo for Transport for NSW. It consists of a red stylized flower or leaf icon on the left, with the text "NSW GOVERNMENT" in blue below it. To the right of a vertical line, the text "Transport for NSW" is written in a large, bold, blue sans-serif font.

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<p>Level 27, 680 George Street, Sydney GPO Box 5394, NSW 2001, Australia Tel: +61 2 9272 5100 Fax: +61 2 9272 5101 wsp.com CIVIL</p>		
DRAWN	SUDESH DAYAL	30.09.2021
DESIGNED	JUS BUSTAMANTE	30.09.2021
DRG CHECK	RYAN THROWER	30.09.2021
DESIGN CHECK	SANJOY CHATTERJEE	30.09.2021
APPROVED	MICHAEL SABA	30.09.2021
PROJECT MNGR	MIKE ROGERS	30.09.2021

M12 MOTORWAY

AST - ELIZABETH DRIVE CONNECTION WALLGROVE ROAD ROAD AND CIVIL WORKS

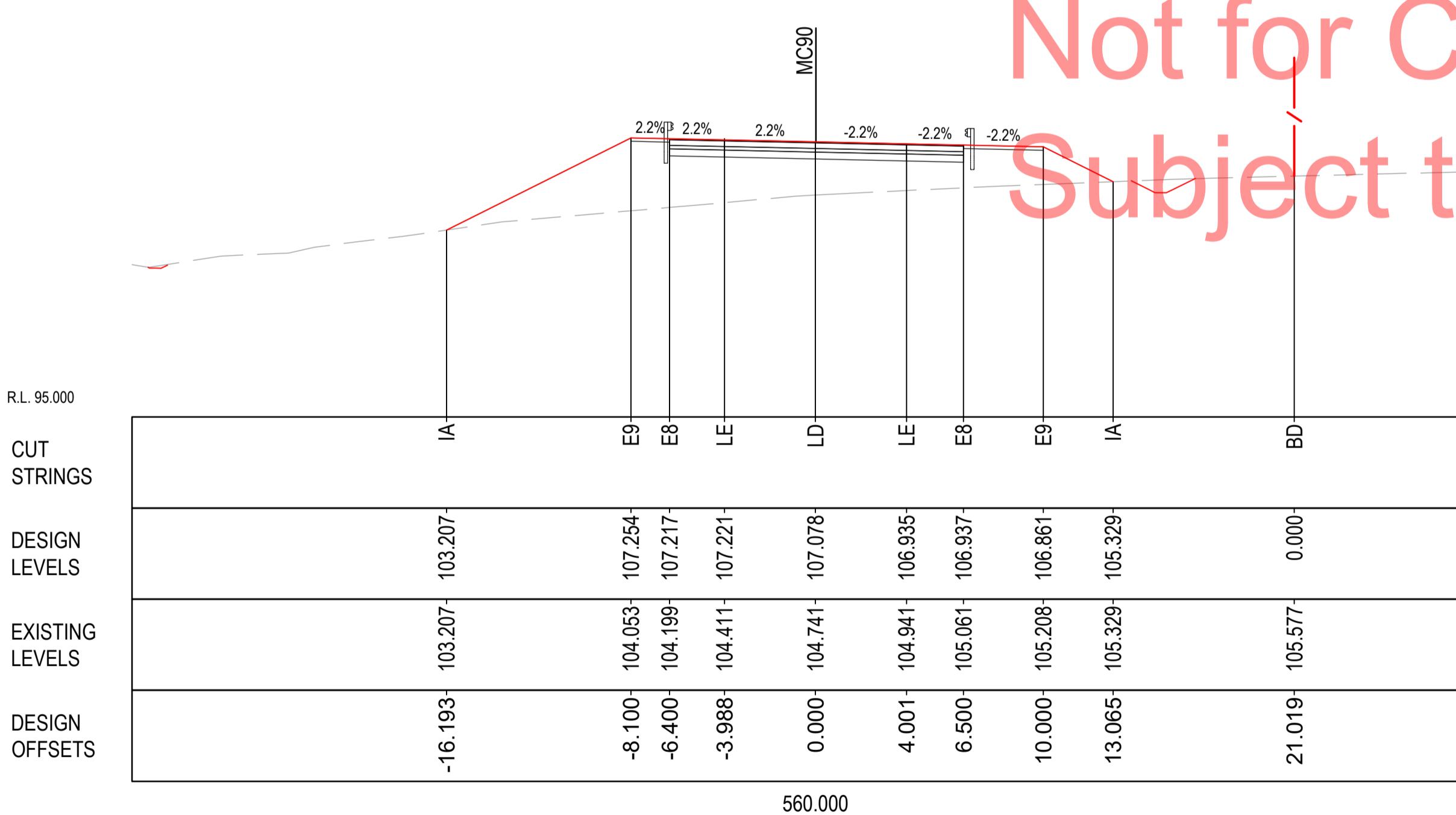
CADD AND CIVIL WORKS		CROSS SECTIONS - MC90			
FILE No.		PART		SHEET: 07 OF 13	
STATUS: DD50					
REF No.		REV	VER	EDMS No.	AMD No.
M12EDD-WSP-WGR-RW-DRG-000307		A	-	TBC	



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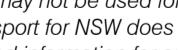
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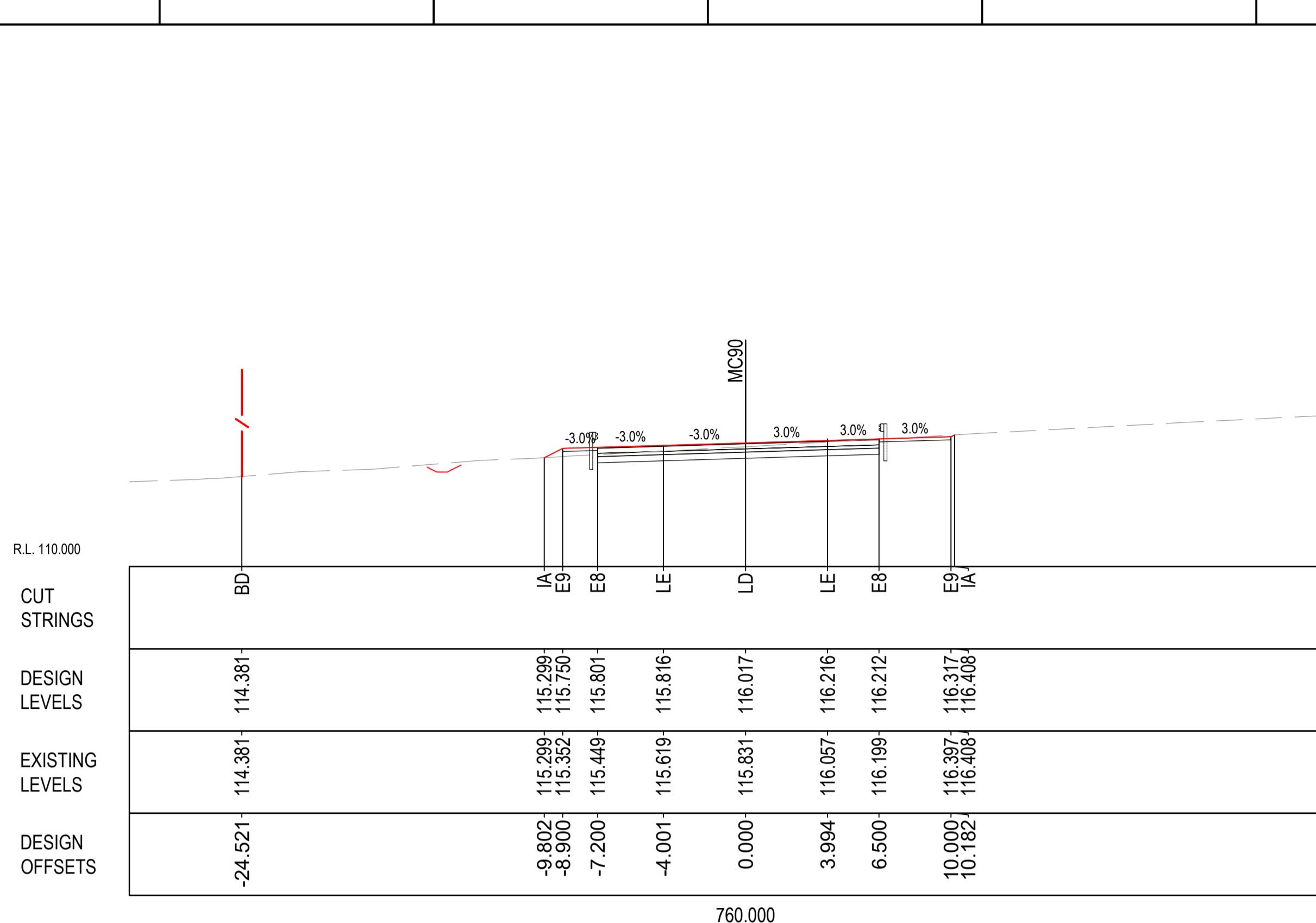
8m

 Level 27, 680 George Street, Sydney GPO Box 5394, NSW 2001, Australia Tel: +61 2 9272 5100 Fax: +61 2 9272 5101 wsp.com CIVIL	<p>This drawing and the related information have been prepared by, or at the request of, Transport for NSW for a specific purpose and may not be used for any purpose other than the purpose intended by Transport for NSW.</p> <p>Transport for NSW does not provide any warranties and accepts no liability arising out of the use of this drawing or any of the related information for any purpose other than the intended purpose. This drawing is protected by copyright and no part of this drawing may be reproduced in any form without the express written permission of Transport for NSW.</p>		
	DRAWN	SUDESH DAYAL	30.09.2023
DESIGNED	JUS BUSTAMANTE	30.09.2023	
DRG CHECK	RYAN THROWER	30.09.2023	
DESIGN CHECK	SANJOY CHATTERJEE	30.09.2023	
APPROVED	MICHAEL SABA	30.09.2023	
PROJECT MNGR	MIKE ROGERS	30.09.2023	

M12 MOTORWAY

EAST - ELIZABETH DRIVE CONNECTION WALLGROVE ROAD ROAD AND CIVIL WORKS

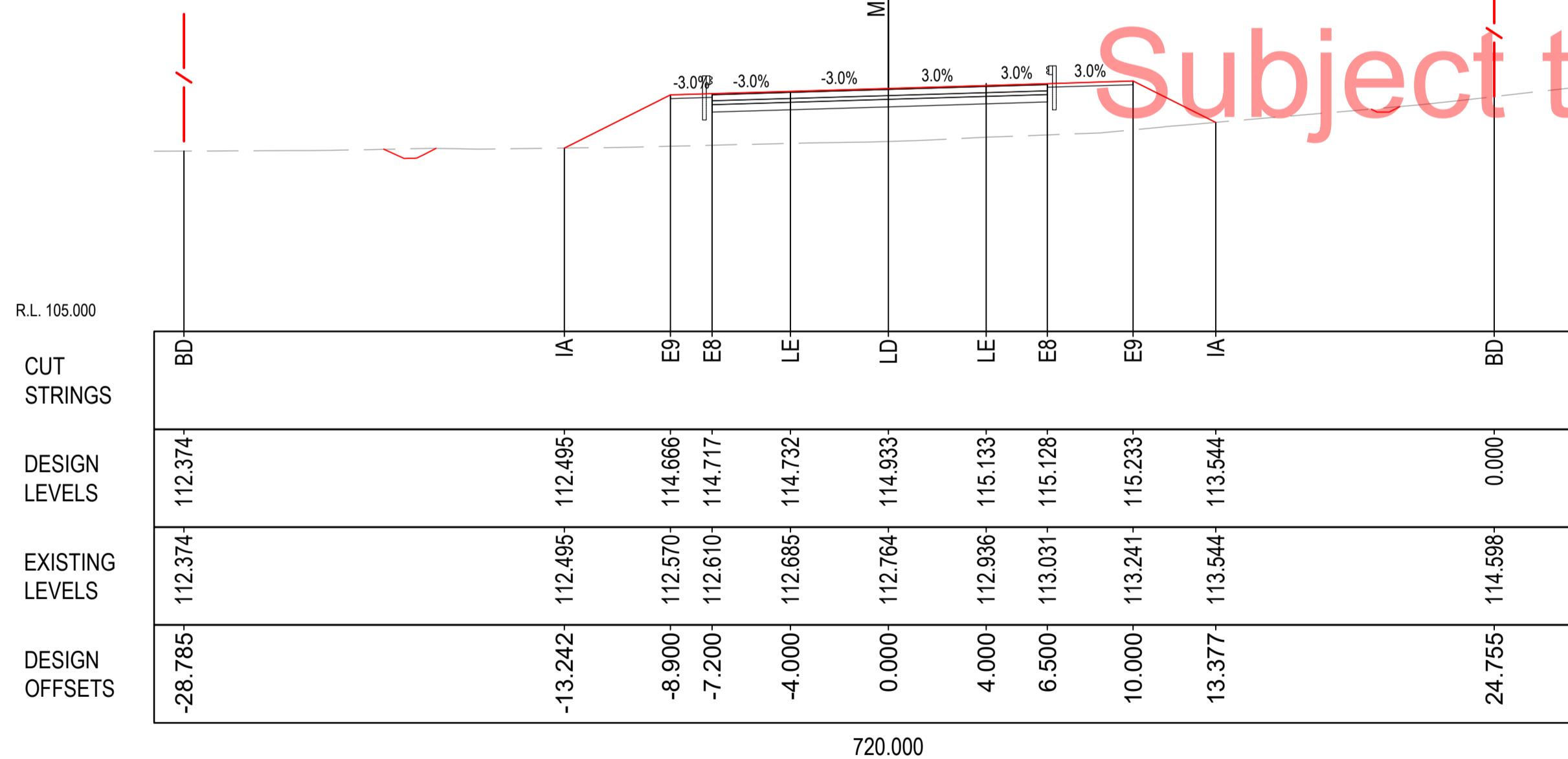
As a result, the *labeled* and *unlabeled* data are used to train a *support vector machine* (SVM) to predict the *class* of the *unlabeled* data. The SVM is a linear classifier that finds the best decision boundary between two classes. The decision boundary is defined by the equation:



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<p>X-TNSW-A1 M12EDD-WSP-WGR-RW-M2D-000301.</p>							
A ISSUED FOR 50% DETAILED DESIGN				J.B 30.09.21	S.E 30.09.21	S.C 30.09.21	
REV	DESCRIPTION			DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE	
COORDINATE SYSTEM: MGA ZONE 56 GDA 2020				GDA2020			
				HEIGHT DATUM: AHD 71			
							

The image shows two logos side-by-side. On the left is the NSW Government logo, featuring a red stylized flower or leaf shape above the text 'NSW GOVERNMENT'. On the right is the Transport for NSW logo, with the text 'Transport for NSW' in a bold, blue, sans-serif font.

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DESIGNED	JUS BUSTAMANTE	30.09.2021
DRG CHECK	RYAN THROWER	30.09.2021
DESIGN CHECK	SANJOY CHATTERJEE	30.09.2021
101 APPROVED	MICHAEL SABA	30.09.2021
PROJECT MNGR	MIKE ROGERS	30.09.2021

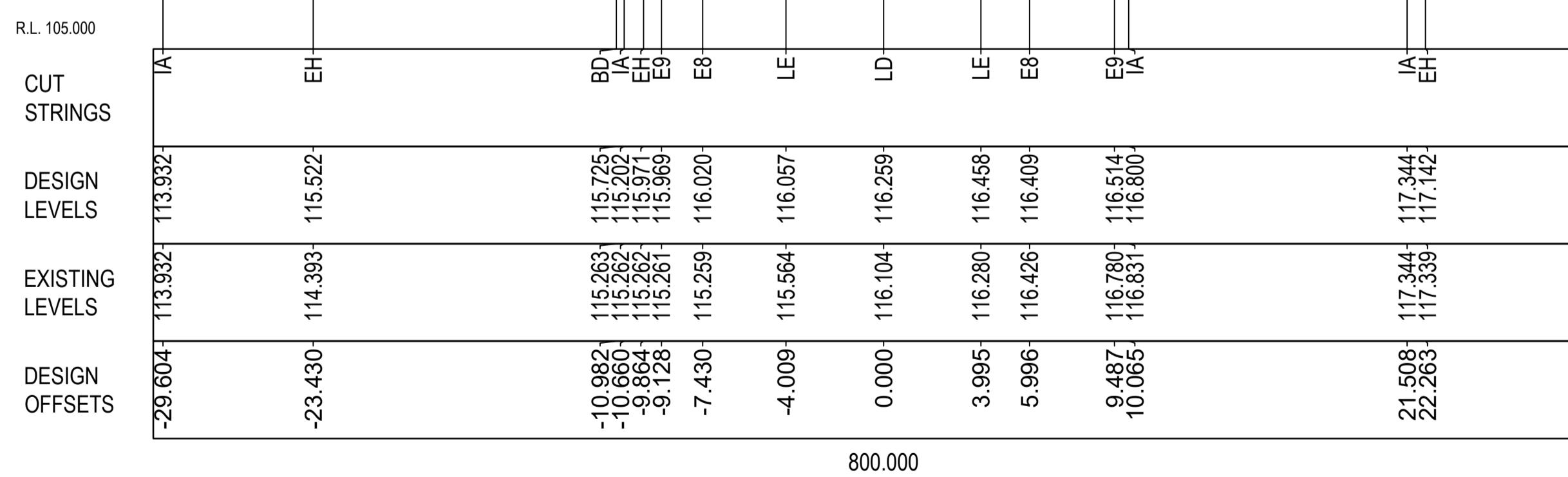
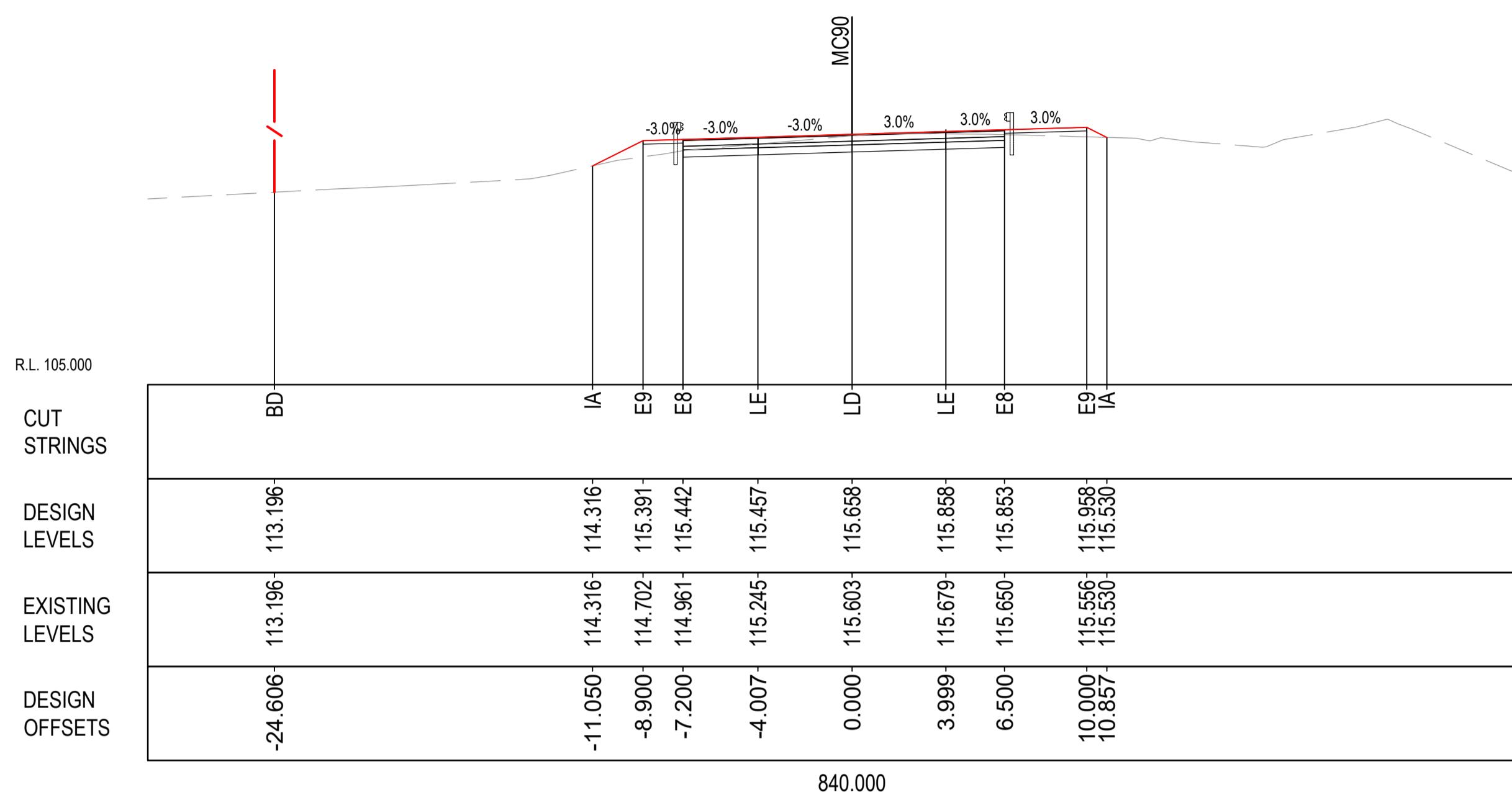
MOTORWAY

ELIZABETH DRIVE CONNECTION ROVE ROAD CIVIL WORKS CTIONS - MC90

LEGEND

— DESIGN SURFACE
- - - EXISTING SURFACE
— PROJECT BOUNDARY

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REFERENCES:
X:TN5W1A1
M12EDD-WSP-WGR-RW-DRG-000311
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DRAWN	SUDESH DAYAL	30.09.2021
DESIGNED	JUS BUSTAMANTE	30.09.2021
DRG CHECK	RYAN THROWER	30.09.2021
DESIGN CHECK	SANJOY CHATTERJEE	30.09.2021
APPROVED	MICHAEL SABA	30.09.2021
PROJECT MGR	MIKE ROGERS	30.09.2021

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GPO Box 5394, NSW 2001, Australia
Tel: +61 2 9272 5100 Fax: +61 2 9272 5101
wsp.com

CIVIL

M12 MOTORWAY

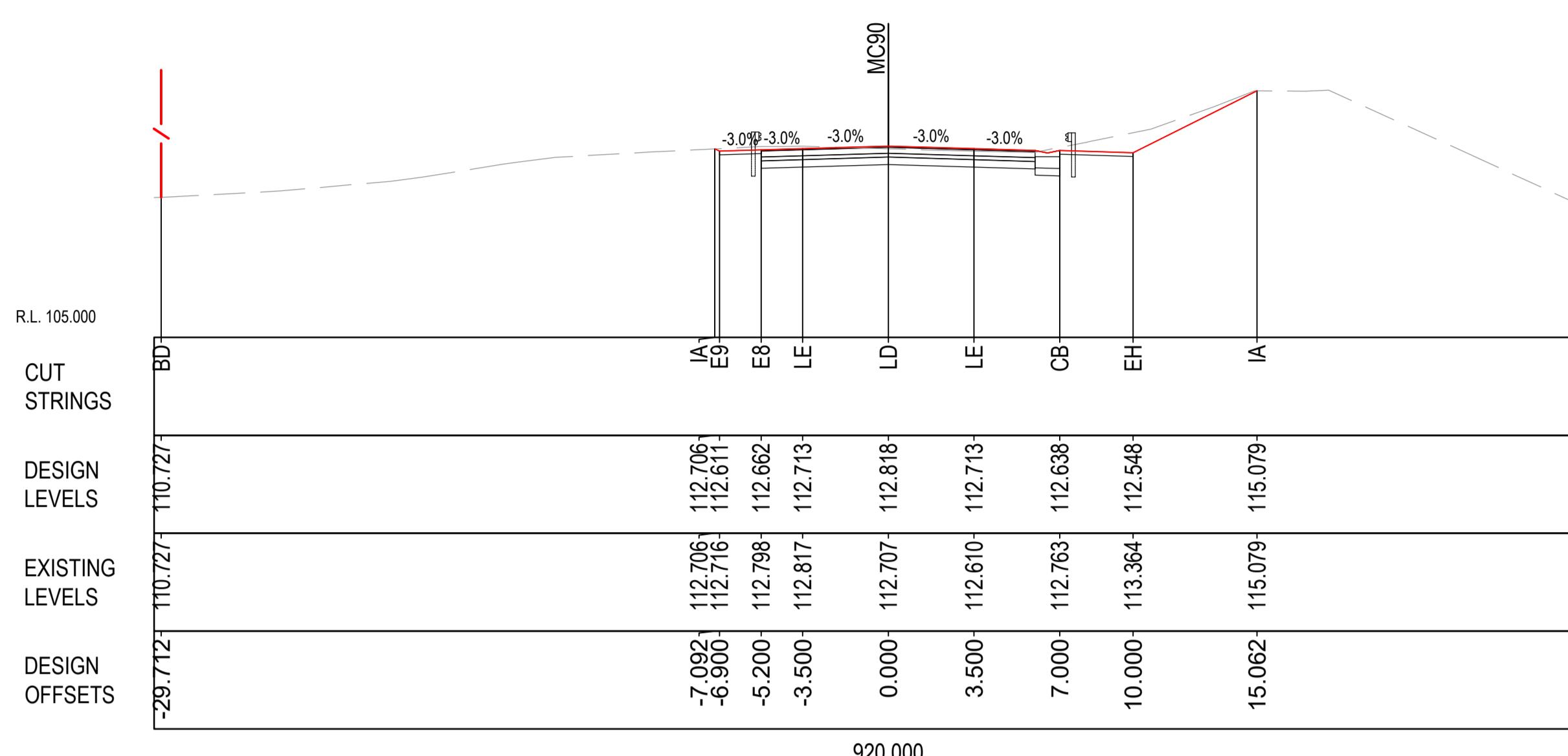
EAST - ELIZABETH DRIVE CONNECTION
WALLGROVE ROAD
ROAD AND CIVIL WORKS
CROSS SECTIONS - MC90

FILE No.: PART SHEET: 11 OF 13 A1
STATUS: D050
DRG No.: M12EDD-WSP-WGR-RW-DRG-000311 REV A VER TBC AMD No.

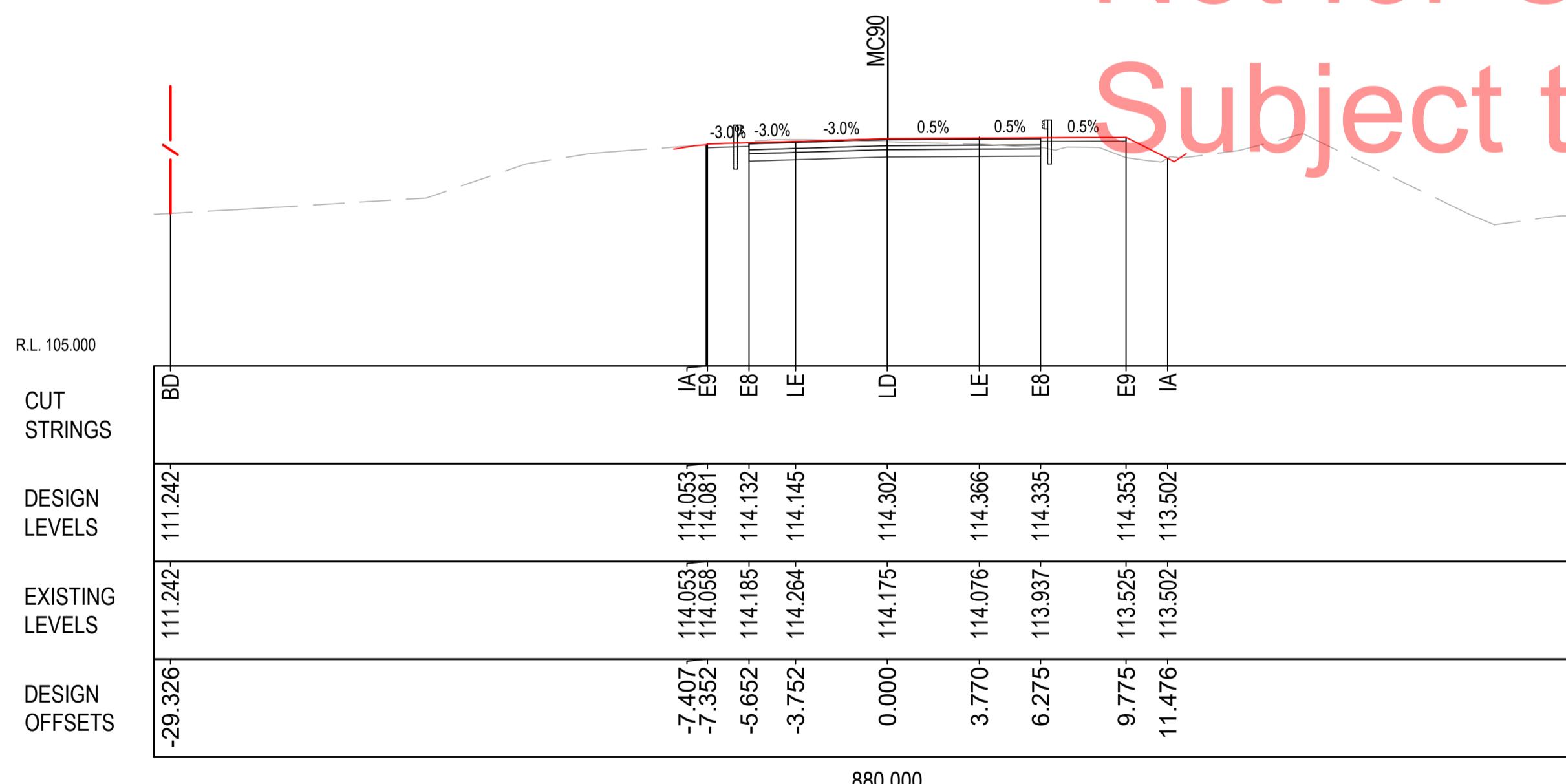
LEGEND

— DESIGN SURFACE
 - - - EXISTING SURFACE
 — PROJECT BOUNDARY

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 REV DESCRIPTION DESIGNER VERIFIED APPROVED
 INITIAL/DATE INITIAL/DATE INITIAL/DATE
 COORDINATE SYSTEM: MGA ZONE 56 GDA 2020 GDA2020 HEIGHT DATUM: AHD 71

SCALE: 1:200

0 4 8m
1:200

CLIENT:

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DRAWN SUDESH DAYAL 30.09.2021
 DESIGNED JUS BUSTAMANTE 30.09.2021
 DRG CHECK RYAN THROWER 30.09.2021
 DESIGN CHECK SANJOY CHATTERJEE 30.09.2021
 APPROVED MICHAEL SABA 30.09.2021
 PROJECT MGR MIKE ROGERS 30.09.2021

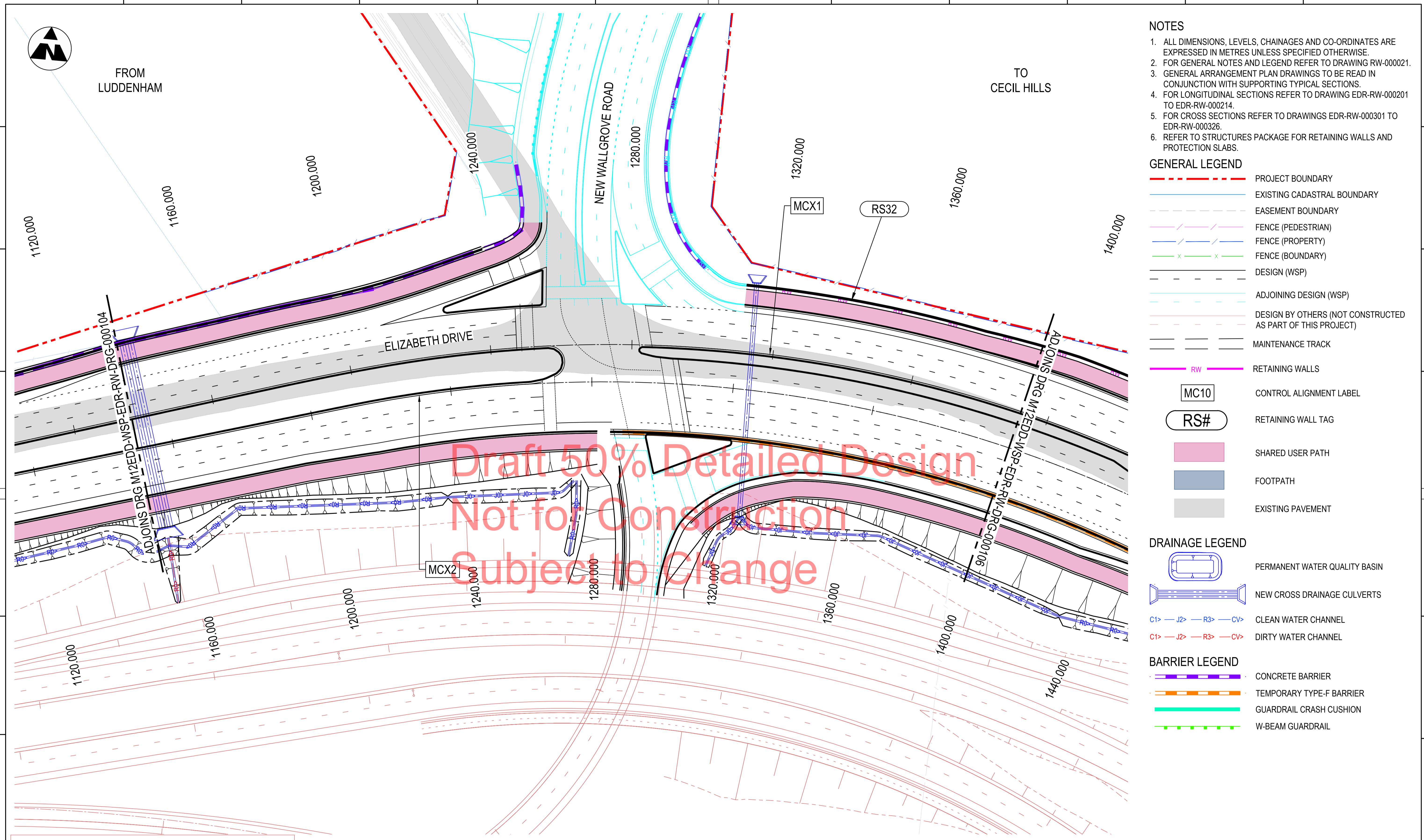
FILE No. PART SHEET: 12 OF 13 A1
 STATUS: D050 C
 DRG No. M12EDD-WSP-WGR-RW-DRG-000312 REV A VER TBC EDMS No. AMD No.

M12 MOTORWAY

EAST - ELIZABETH DRIVE CONNECTION
 WALLGROVE ROAD
 ROAD AND CIVIL WORKS
 CROSS SECTIONS - MC90

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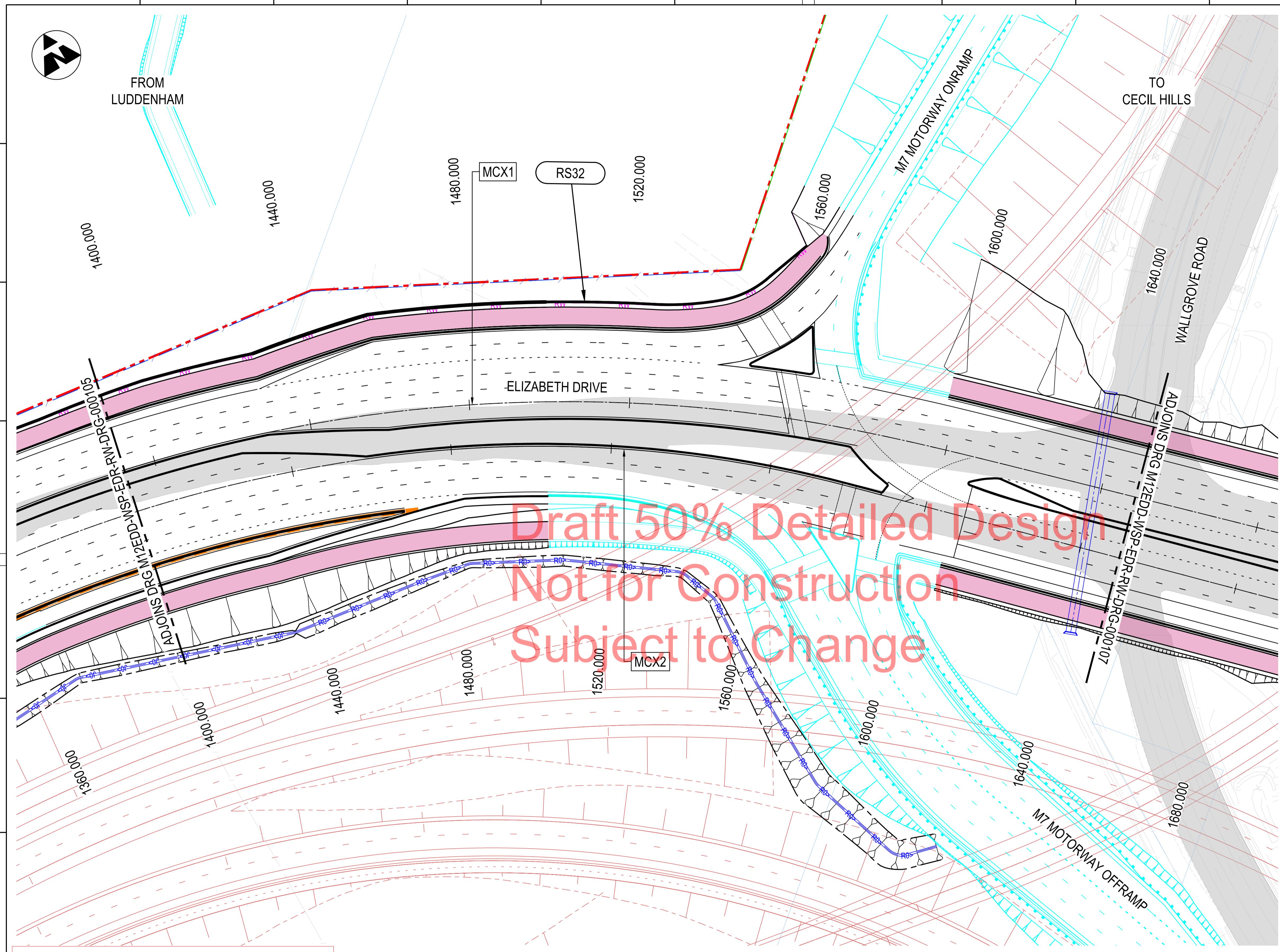
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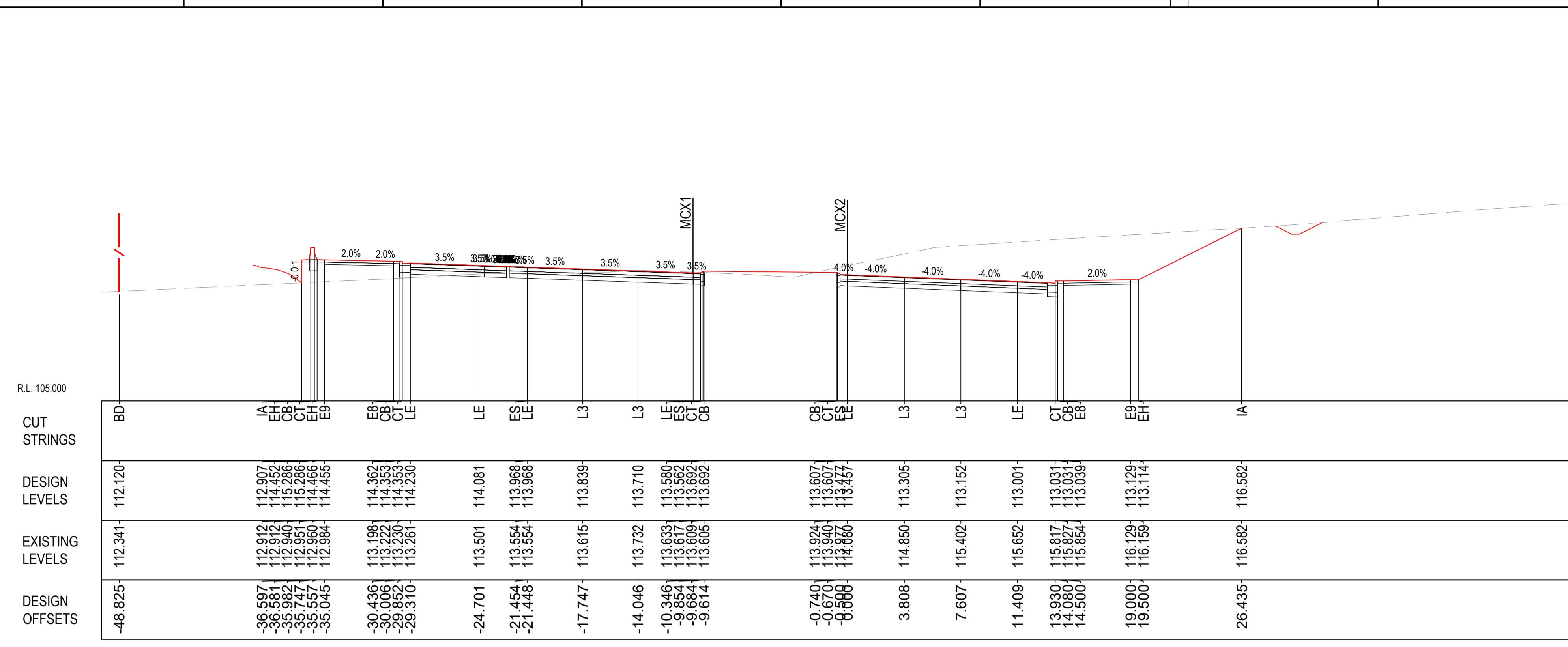
FOR STAGE APPROVAL

REFERENCES:	THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED.			SCALE: 1:500	CLIENT:			
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			DRAWN	SUDHADAYAL	30.09.2021			
			DESIGNED	JUBU SANTAME	30.09.2021			
			REVIEWED	RAY THORWER	30.09.2021			
			DESIGN CHECK	SANDY CHATTERJEE	30.09.2021			
			APPROVED	MICHAEL SABA	30.09.2021			
			PROJECT MANAGER	MICHAEL ROGERS	30.09.2021			
<p>A ISSUED FOR 50% DETAILED DESIGN REV DESCRIPTION</p>			J.B	30.09.21	S.E	30.09.21	S.C	30.09.21
			DESIGNER	INITIAL/DATE	VERIFIED	INITIAL/DATE	APPROVED	INITIAL/DATE
<p>LEVEL 27, 680 George Street, Sydney NSW 2000, Australia Tel: +61 2 9272 5100 Fax: +61 2 9272 5101</p>			APPROVED					
			PROJECT NUMBER	M12ED-D-WSP-ML3-FN-M2D-000105	REV	A	EDITION	1
			DATE	30.09.2021	TYPE	ITBC	AMENDMENT	0
<p>COORDINATE SYSTEM: MGA ZONE 56 GDA 2020 CIVIL</p>			GDA2020	HEIGHT DATUM: AHD 71				



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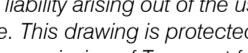
Not for Construction

Subject to Change



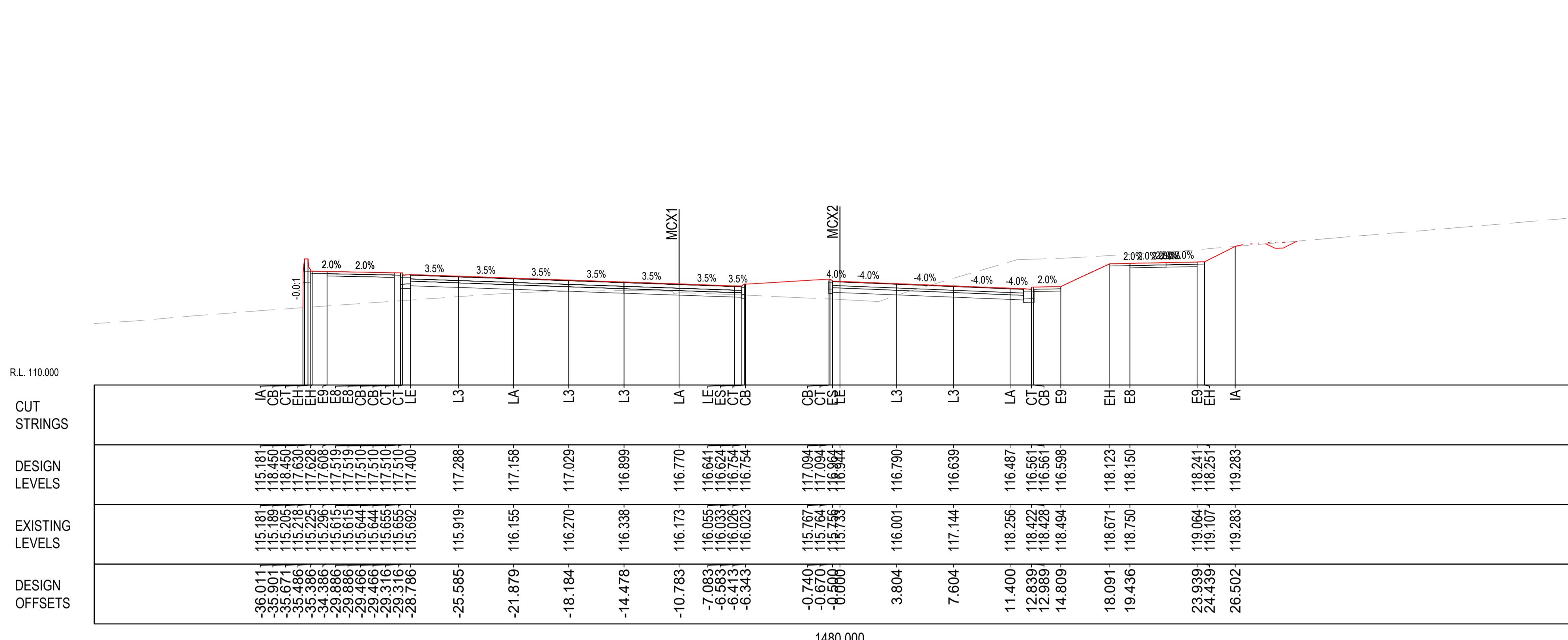
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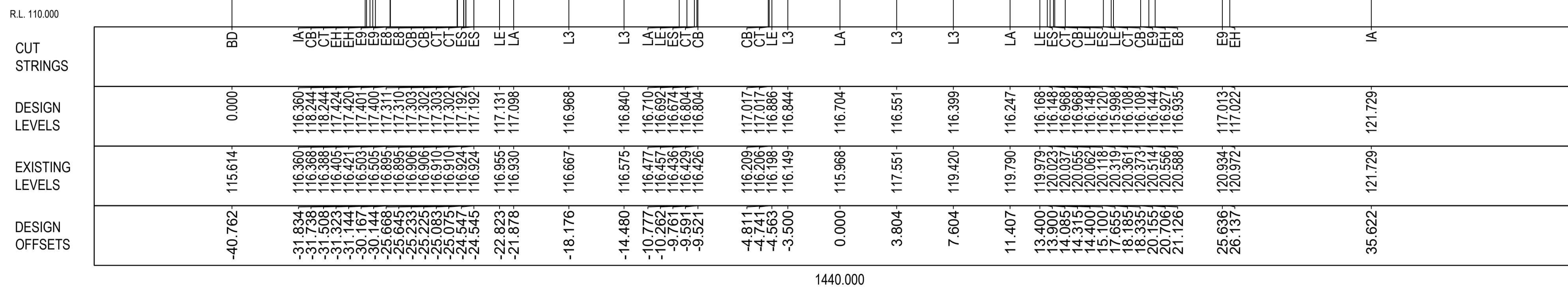
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X-TNSV-A1 W12EDD-WSP-EDR-RW-M2D-000306				 <p>0 4 8m 1 : 200</p>	M 12 MOTORWAY EAST - ELIZABETH DRIVE CONNECTION ELIZABETH DRIVE ROAD AND CIVIL WORKS CROSS SECTIONS - MX2 PREPARED FOR: SYDNEY PROJECT DELIVERY WESTERN SYDNEY PROJECT OFFICE  <p>COORDINATE SYSTEM: MGA ZONE 56 GDA 2020</p>
	A ISSUED FOR 50% DETAILED DESIGN REV DESCRIPTION J.B 30.09.21 S.E 30.09.21 S.C 30.09.21 DESIGNER INITIAL/DATE VERIFIED INITIAL/DATE APPROVED INITIAL/DATE DESIGN CHECK SANJOY CHATTERJEE 30.09.21 APPROVED MICHAEL SABA 30.09.21 FILE No. PART SHEET 14 OF 26 A1 STATUS: D050 DRG N. 0 M12EDD-WSP-EDR-RW-M2D-00034 REV A VER E M S N TBC				

LEGEND

— DESIGN SURFACE
- - - EXISTING SURFACE
— PROJECT BOUNDARY



Draft 50% Detailed Design
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PROJECT MGR: MIKE ROGERS 30.09.2021

M12 MOTORWAY

EAST - ELIZABETH DRIVE CONNECTION
ELIZABETH DRIVE
ROAD AND CIVIL WORKS
CROSS SECTIONS - MCX2

FILE No.: PART: SHEET: 17 OF 26 A1
STATUS: DD50
DRAFT No.: M12EDD-WSP-EDR-RW-DRG-000317 REV: A VER: TBC AMD No.

