Land and environment consultants

19 September 2022

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Richard Bender
Development Management Consultant
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Subject: Addendum to the bushfire assessment for Carseldine Village

1 Introduction

Land and Environment Consultants Pty Ltd (**LEC**) prepared a bushfire assessment and management plan and bushfire attack level (**BAL**) contour plan for Carseldine Village at 532 Beams Road, Carseldine (**the site**), properly described as lot 322/SP172124.

Economic Development Queensland (EDQ) are proposing improvements to the approved reconfiguration of lot plan which include a stormwater drainage swale and restricted vehicle access track behind lots 2049, 2050 and V002 as shown in the draft catch drain plan at Appendix 1. These operational works will be delivered in two phases with Phase 1 being aligned with the rear boundaries of lots 2049 and 2050 and Phase 2 extending through lot 9005 (formerly lot V004) and along the rear boundary of lot V002.

The proposed improvements are required to deal with stormwater run-off from the adjacent bushland area and to provide access to the stormwater drainage swale for maintenance and bushfire management and emergency purposes. They also provide approximately 13 metres (**m**) of separation between the rear boundaries of lots 2049, 2050 and V002 and the adjacent bushland area which is advantageous for reducing the risk of bushfire hazards associated with the bushland area.

The restricted vehicle access track is for the sole use of Brisbane City Council (**Council**) maintenance vehicles. Urban fire appliances will not operate from the restricted vehicle access track. They will operate from either Plaza Place or Meander Street where there is a reticulated hydrant system.

The stormwater drainage swale and restricted vehicle access track will be transferred to Council for ownership and ongoing maintenance.

This addendum provides a response to the positive changes to bushfire hazard mitigation resulting from the stormwater drainage swale and restricted vehicle access track. It provides:

- emergency vehicle design requirements for the restricted vehicle access track;
- recommendations for the rehabilitation and maintenance of the stormwater drainage swale;
- the revised location of the ≤ 10 kilowatts/square metre (**kW/m^2**) and 29 kW/m^2 radiant heat flux contours in relation to lots 2049, 2050 and V002; and
- revised BAL contours over stages 1-4 and V of the Carseldine Village.

2 Design of restricted vehicle access track

The restricted vehicle access track must be designed in accordance with the minimum requirements for a fire maintenance trail in Table 8.2.5.3.C of the Brisbane City Plan 2014 *Bushfire overlay code* (**Bushfire overlay code**). The design requirements include:

- a minimum formed width of 4 m;
- minimum vertical clearance of 4 m to any overhanging obstructions including tree branches and 5 m to overhead powerlines;
- formed vehicle surface is located within a vegetation clearing with a minimum width of 6 m;
- a maximum gradient of 12.5% with adequate drainage to prevent soil erosion and minimise ongoing track maintenance;
- minimum 6 tonne rated surface; and
- access at each end.

Phase 1 of the restricted vehicle access track is aligned with the rear boundaries of lots 2049 and 2050. It will be 130 m long and will be a dead end track for a temporary period of 9-12 months until Phase 2 works are completed. As a result, the Phase 1 restricted vehicle access track includes a reversing bay/turnaround area which is 6 m wide by 8 m deep.

A passing bay is not required along the restricted vehicle access track because it is relatively short in length, ie 250 m long when Phase 1 and 2 works are completed, and the road reserves at its entry/exit points provide manoeuvring areas.

A 15 m section of the restricted vehicle access track will have a gradient of 12.5-15%, which is considered acceptable. Table 8.2.5.3.C of the Bushfire overlay code includes a note which says minor variations to design requirements are permissible over distances < 30 m and where site constraints cannot be reasonably avoided or removed. In addition, compliance with the erosion and sediment control plan in the catch drain plan at Appendix 1 will mitigate any potential risk of accelerated erosion caused by this steeper section of track.

3 Rehabilitation and maintenance of the stormwater drainage swale

Trees which are to be retained within the stormwater drainage swale must not compromise access along the emergency vehicle access track. Overhanging tree branches which are < 4 m in height above the vehicle surface must be removed.

Rehabilitation of the stormwater drainage swale must be designed to provide a low fuel hazard area with discontinuous bushfire fuels that will prevent isolated fires from developing to a size that could threaten the rear boundaries of lots 2049, 2050 and V002.

At least 70% of the stormwater drainage swale must be rehabilitated with turf. It is to be maintained as lawn by mowing it to a nominal height of 10 centimetres. The remaining area can be rehabilitated with groundcover or creeping plant species. If used, they must be located along the drainage invert and be selected from the list of groundcover and creeping plants in Appendix E of *Bushfire Resilient Guidance for Queensland Homes* (QRA 2020). They must not be planted against the rear boundaries of lots 2049, 2050 and V002 or around the base of trees.

Tree and shrub species and organic (or combustible) mulch must not be used in the rehabilitation of the stormwater drainage swale.

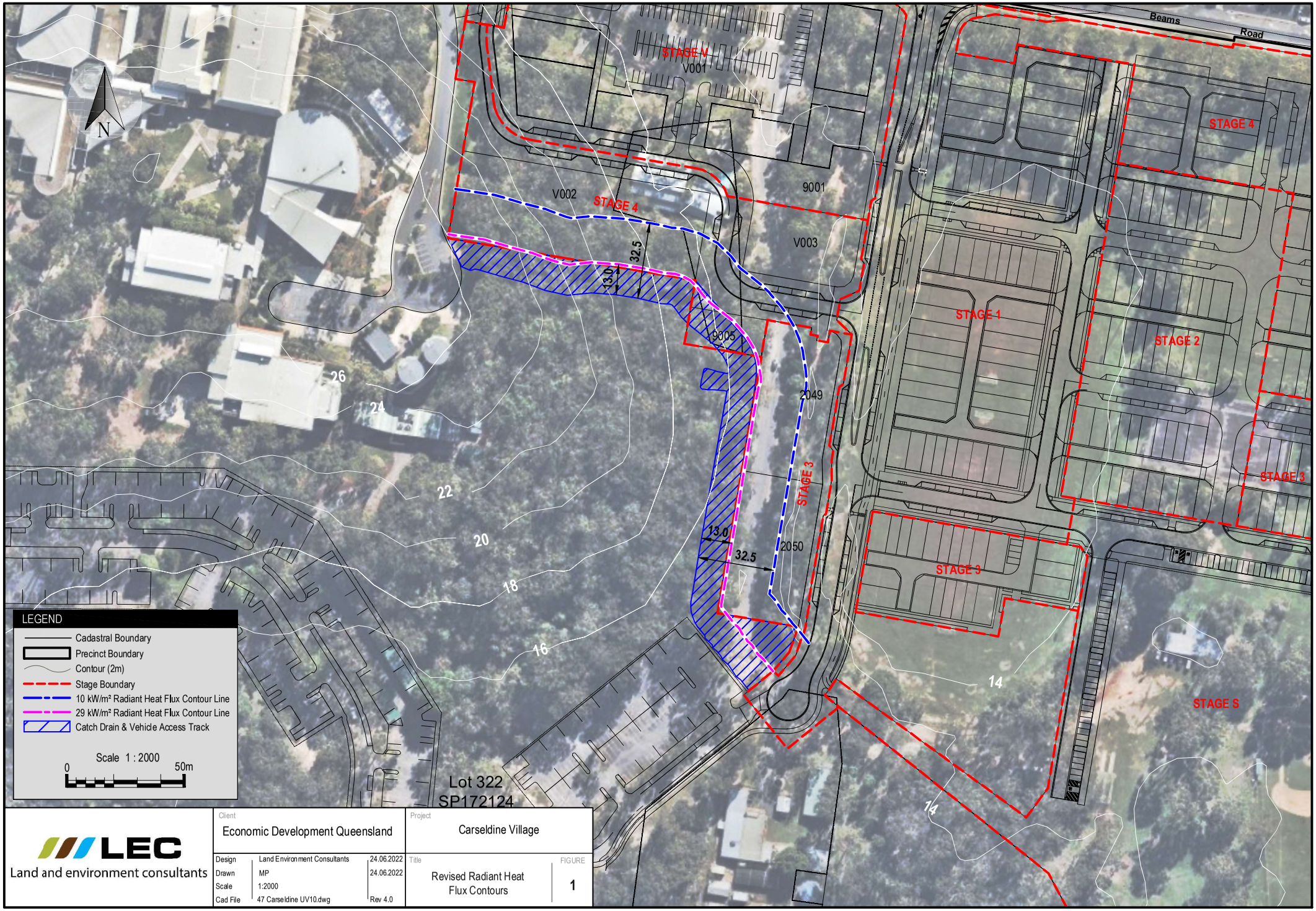
4 Separation of buildings from bushfire hazard areas

Previous bushfire reporting for the site established the requirement for new buildings to be separated from bushfire hazard areas by a distance which achieves a radiant heat flux level ≤ 29 kW/m^2 at the building envelope. The exception was for new buildings associated with vulnerable uses, community

infrastructure for essential services and hazardous chemical storage in bulk which required a separation distance which achieved a radiant heat flux level ≤ 10 kW/m^2 at the building envelope.

The stormwater drainage swale will be designed and maintained to provide a low fuel hazard area and separation for new buildings within lots 2049, 2050 and V002 from the adjacent bushfire hazard area. On this basis, the revised location of the 10 kW/m^2 and 29 kW/m^2 radiant heat flux contours in relation to lots 2049, 2050 and V002 is shown in Figure 1.

Figure 1 demonstrates that future site planning within lots 2049, 2050 and V002 is no longer constrained by the 29 kW/m^2 radiant heat flux contour (with the exception of a minor intrusion into the rear boundary of lot V002).



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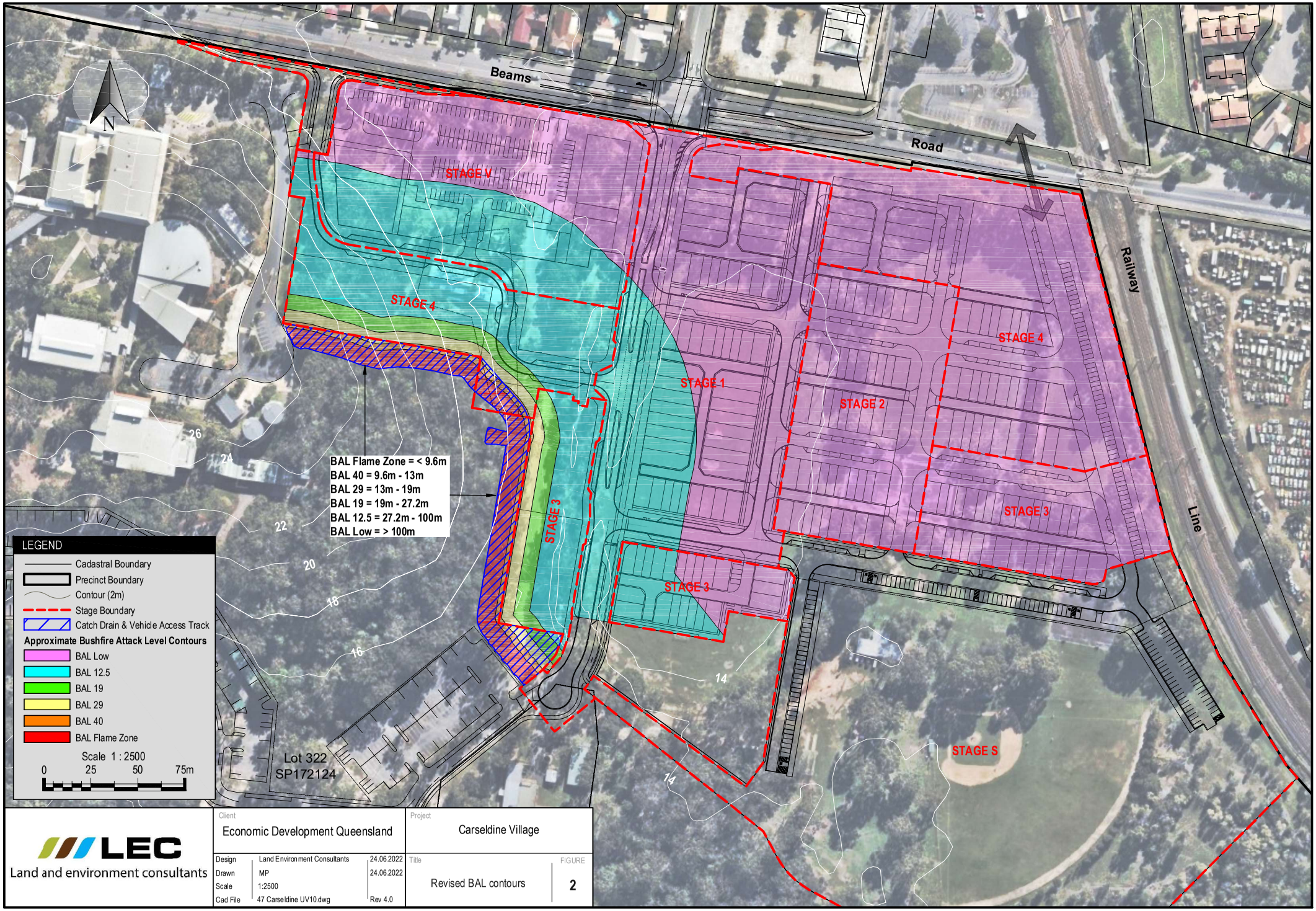
Land and environment consultants

Client	Economic Development Queensland	
Project	Carseldine Village	
Design	Land Environment Consultants	24.06.2022
Drawn	MP	24.06.2022
Scale	1:2000	
Cad File	47 Carseldine UV10.dwg	Rev 4.0
Title	Revised Radiant Heat Flux Contours	
FIGURE	1	

5 BAL contours

The revised alignment of BAL contours over stages 1-4 and V of Carseldine Village are shown in Figure 2.



LEC
Land and environment consultants

Client	Economic Development Queensland	
Project	Carseldine Village	
Design	Land Environment Consultants	24.06.2022
Drawn	MP	24.06.2022
Scale	1:2500	
Cad File	47 Carseldine UV10.dwg	Rev 4.0
Title	Revised BAL contours	FIGURE 2

6 Closing

This addendum provides a response to the positive changes to bushfire hazard mitigation resulting from the stormwater drainage swale.

We trust the information meets your requirements but please contact the undersigned if you have any questions or queries that you would like to discuss.

Yours sincerely,

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Disclaimer

Notwithstanding the precautions adopted in this report, it should always be remembered that bushfires burn under a range of conditions. An element of risk, no matter how small always remains and there can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.

It should be noted that upon lodgement of a development proposal, State Government, council and/or the fire authority may recommend additional requirements.

Although every care has been taken in the preparation of this report, Land and Environment Consultants Pty Ltd accept no responsibility resulting from the use of the information in this report.

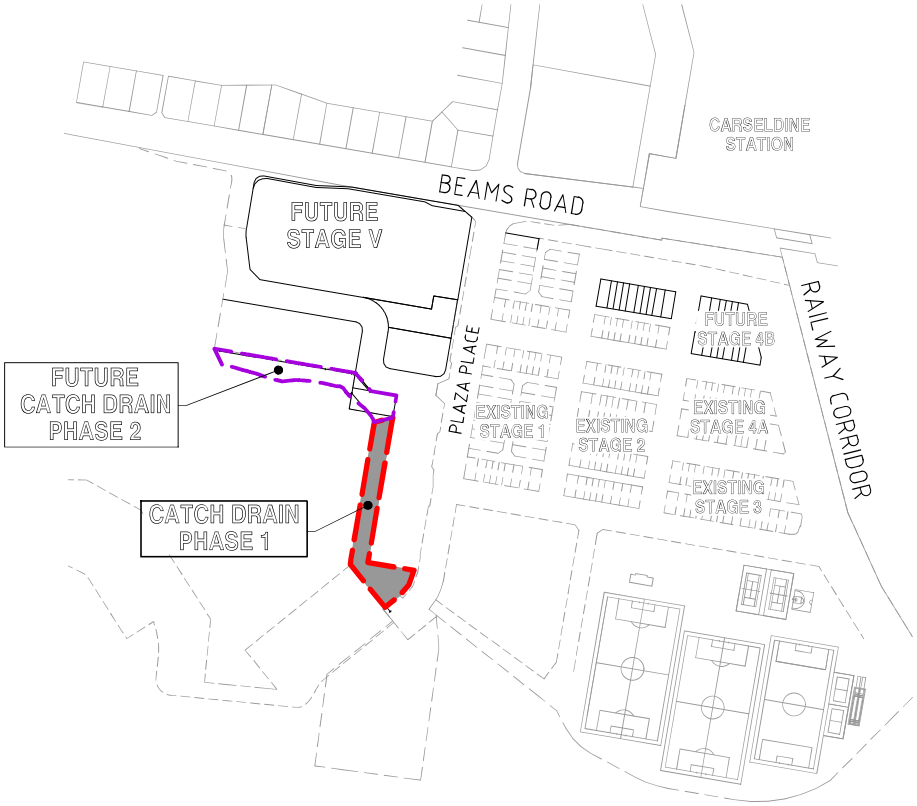
References

Queensland Reconstruction Authority (QRA) 2020, *Bushfire Resilient Building Guidance for Queensland Homes*, July 2020

Appendix 1 Draft catch drain plan

CARSELDINE VILLAGE

CATCH DRAIN



PLAN
SCALE 1:2000

DRAWING INDEX

DRAWING NO.	DRAWING TITLE
22-106-01	GENERAL - LOCALITY PLAN, DRAWING INDEX AND NOTES
22-106-02	GENERAL - SETOUT PLAN
22-106-03	GENERAL - LAYOUT PLAN
22-106-04	EARTHWORKS - CONTOUR PLAN SHEET 1
22-106-05	EARTHWORKS - CONTOUR PLAN SHEET 2
22-106-06	TEMPORARY - TURNAROUND DETAILS
22-106-07	CATCH DRAIN - CROSS SECTIONS PHASE 1 WORKS
22-106-08	CATCH DRAIN - CROSS SECTIONS FUTURE PHASE 2 WORKS
22-106-09	EROSION AND SEDIMENT - CONTOUR PLAN LAYOUT PLAN
22-106-10	EROSION AND SEDIMENT - CONTOUR PLAN NOTES
22-106-11	EROSION AND SEDIMENT - CONTOUR PLAN DETAILS
22-106-12	SAFETY IN DESIGN

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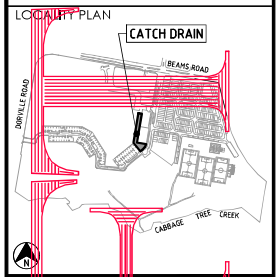
DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	CDR_001	JB

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE
CATCH DRAIN

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Drawing Title
GENERAL
LOCALITY PLAN,
DRAWING INDEX AND NOTES

Drawn	Designed	Checked	Date
RW	JB	MS	JUN '22

Scale	Sheet
AS SHOWN	01 of xx

	Drawing No	Revision
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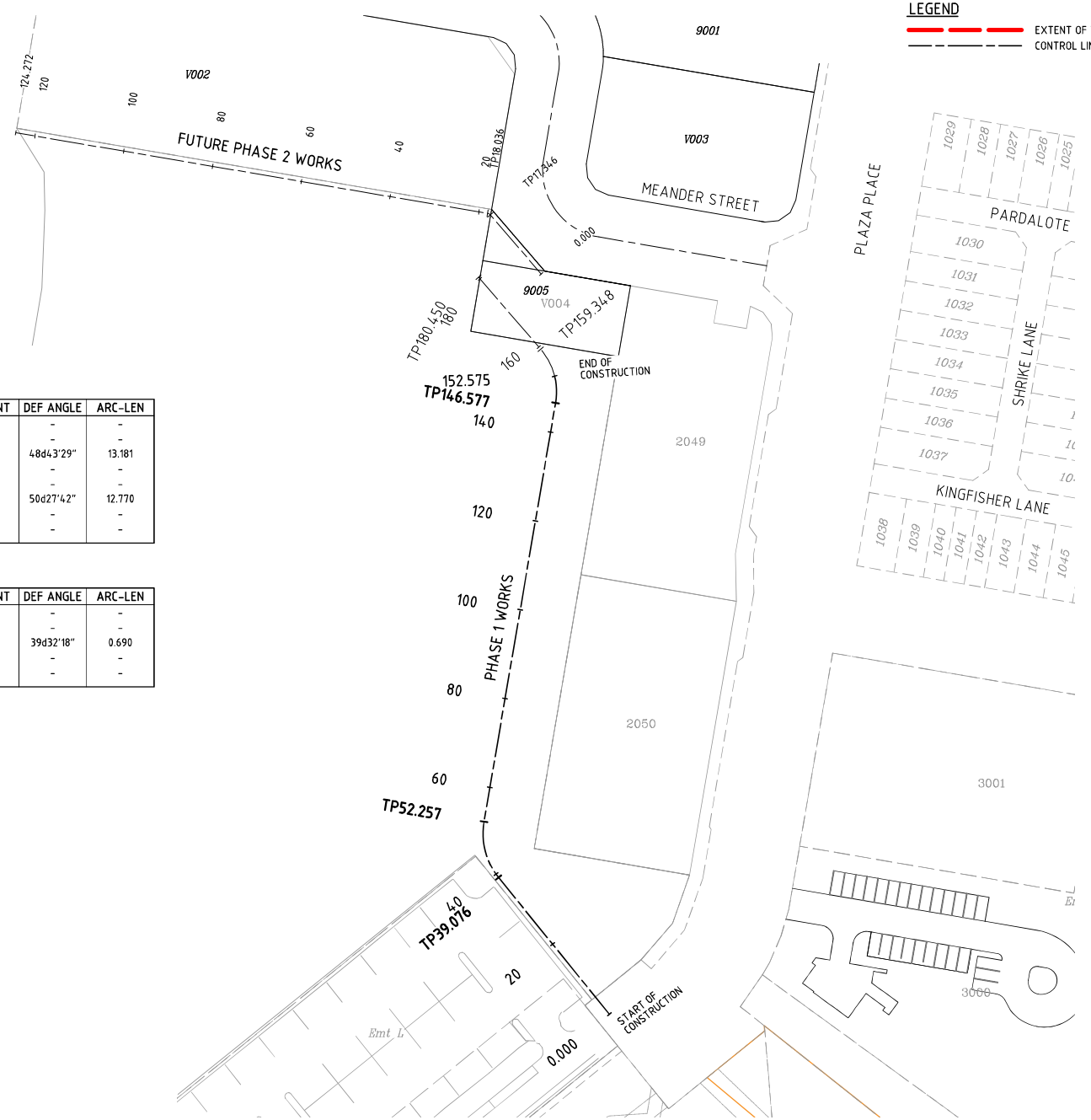

CATCH DRAIN CONTROL LINE DETAILS

PT	CHAINAGE	EASTING	NORTHING	BEARING	RADIUS	TANGENT	DEF ANGLE	ARC-LEN
IP1	0.000	502587.596	6974671.368	320d58'50"	-	-	-	-
TC	39.076	502562.994	6974701.727	320d58'50"	-	-	-	-
IP2	45.666	502558.575	6974707.181	-	15.500	7.019	48d43'29"	13.181
CT	52.257	502559.759	6974714.099	9d42'19"	-	-	-	-
TC	146.577	502575.659	6974807.069	9d42'19"	-	-	-	-
IP3	152.963	502576.811	6974813.804	-	14.500	6.833	50d27'42"	12.770
CT	159.348	502572.351	6974818.980	319d14'38"	-	-	-	-
IP4	180.451	502558.574	6974834.965	319d14'38"	-	-	-	-

FUTURE PHASE 2 WORKS CONTROL LINE DETAILS

PT	CHAINAGE	EASTING	NORTHING	BEARING	RADIUS	TANGENT	DEF ANGLE	ARC-LEN
IP1	0.000	502572.482	6974835.677	319d14'38"	-	-	-	-
TC	17.346	502561.157	6974848.817	319d14'38"	-	-	-	-
IP2	17.691	502560.923	6974849.089	-	1.000	0.359	39d32'18"	0.690
CT	18.036	502560.569	6974849.150	279d42'19"	-	-	-	-
IP3	124.272	502455.853	6974867.059	279d42'19"	-	-	-	-

SETOUT PLAN
SCALE 1:500

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DO NOT SCALE THIS DRAWING
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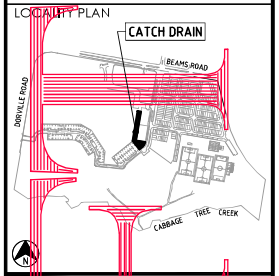
NORTH

LOCALITY PLAN


REVISIONS

No	Description	Date	By
A	FOR APPROVAL	CDR_002	JB

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

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Drawing Title
GENERAL
SETOUT PLAN

Drawn	Designed	Checked	Date
RW	JB	MS	JUN '22

Scale	Sheet
AS SHOWN	02 of xx

	Drawing No	Revision
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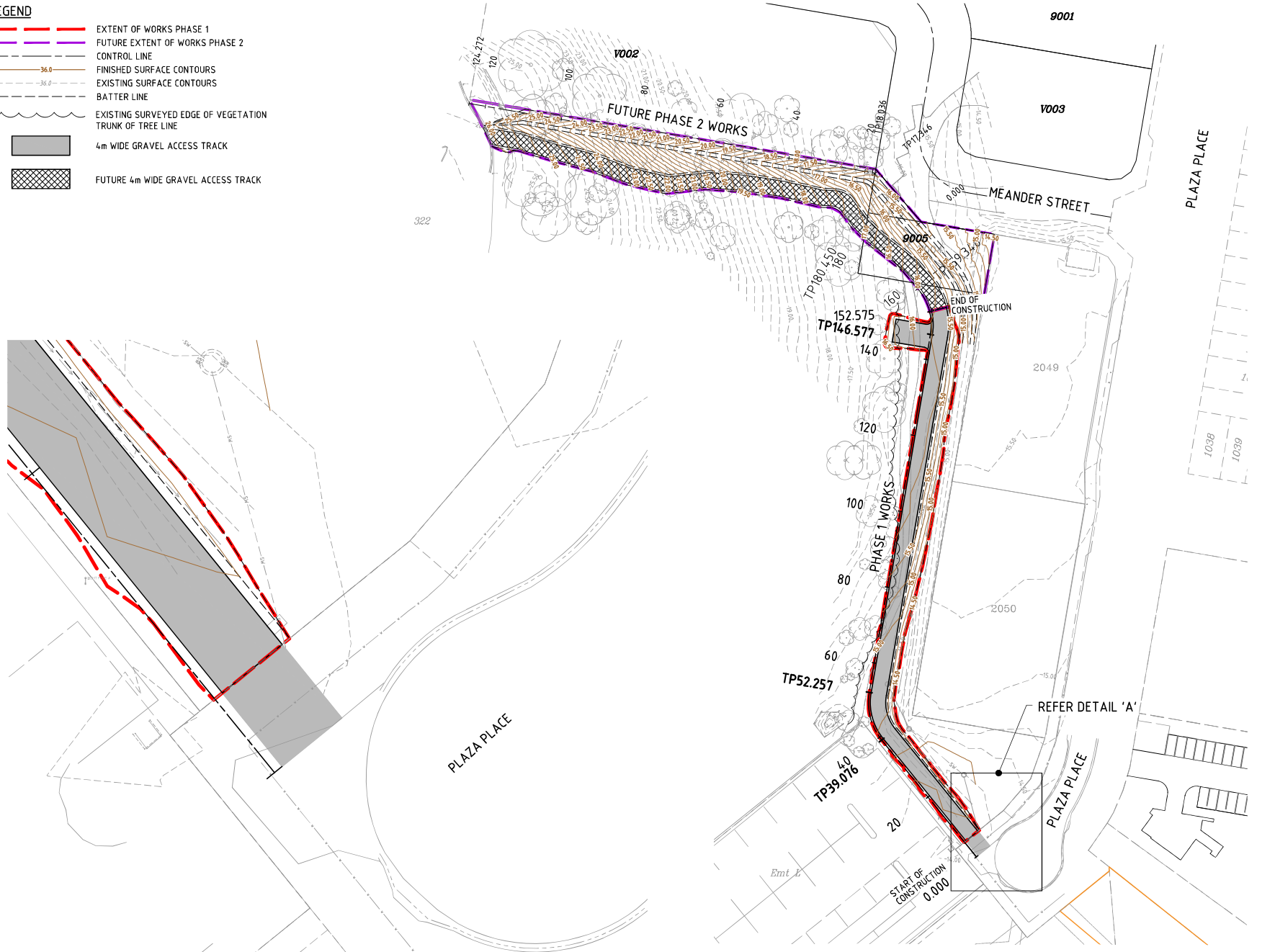
- EXTENT OF WORKS PHASE 1
- FUTURE EXTENT OF WORKS PHASE 2
- CONTROL LINE
- FINISHED SURFACE CONTOURS (36.0)
- EXISTING SURFACE CONTOURS (36.0)
- BATTER LINE
- EXISTING SURVEYED EDGE OF VEGETATION TRUNK OF TREE LINE
- 4m WIDE GRAVEL ACCESS TRACK
- FUTURE 4m WIDE GRAVEL ACCESS TRACK



LAYOUT PLAN
SCALE 1:500

DETAIL 'A'
SCALE 1:100

SCALE 1 : 100 (A1 UNREDUCED)

SCALE 1 : 500 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
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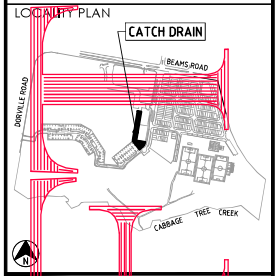
NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	CDR_V03	JB

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

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Drawing Title
GENERAL LAYOUT PLAN

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RW	JB	MS	JUN '22

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AS SHOWN	03 of xx

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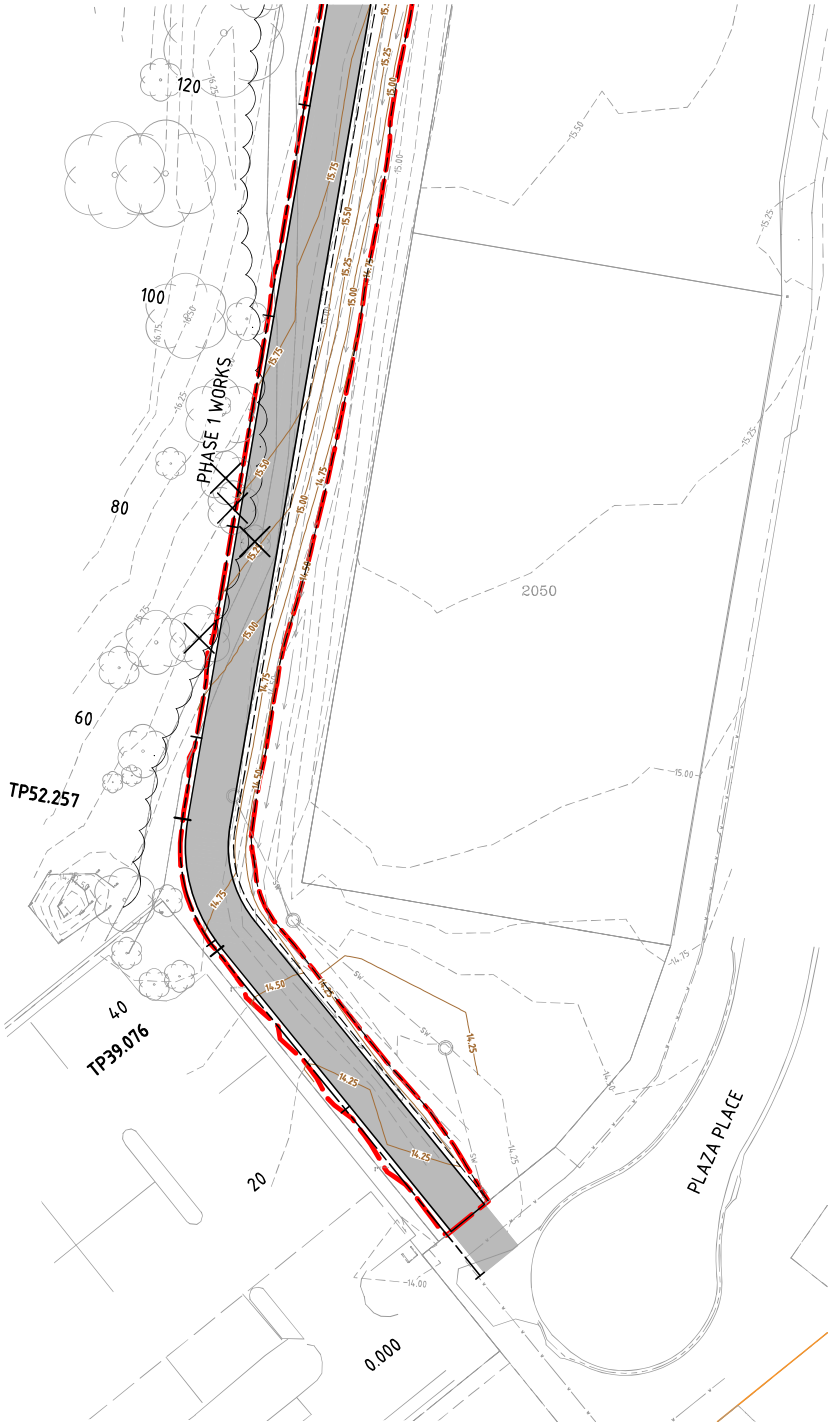

EARTHWORKS CONTOUR PLAN
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- FUTURE EXTENT OF WORKS PHASE 2
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- EXISTING SURFACE CONTOURS
- BATTER LINE
- EXISTING SURVEYED EDGE OF VEGETATION TRUNK OF TREE LINE
- 4m WIDE GRAVEL ACCESS TRACK
- FUTURE 4m WIDE GRAVEL ACCESS TRACK
- EXISTING TREE
- EXISTING TREE TO BE REMOVED TO BE CONFIRM BY OTHERS

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DO NOT SCALE THIS DRAWING
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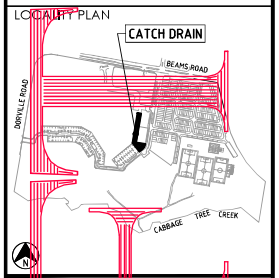
NORTH

LOCALITY PLAN



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A	FOR APPROVAL	CDR_2204	JB

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ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

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Drawing Title
EARTHWORKS CONTOUR PLAN SHEET 1

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RW	JB	MS	JUN '22

Scale	Sheet
AS SHOWN	04 of xx

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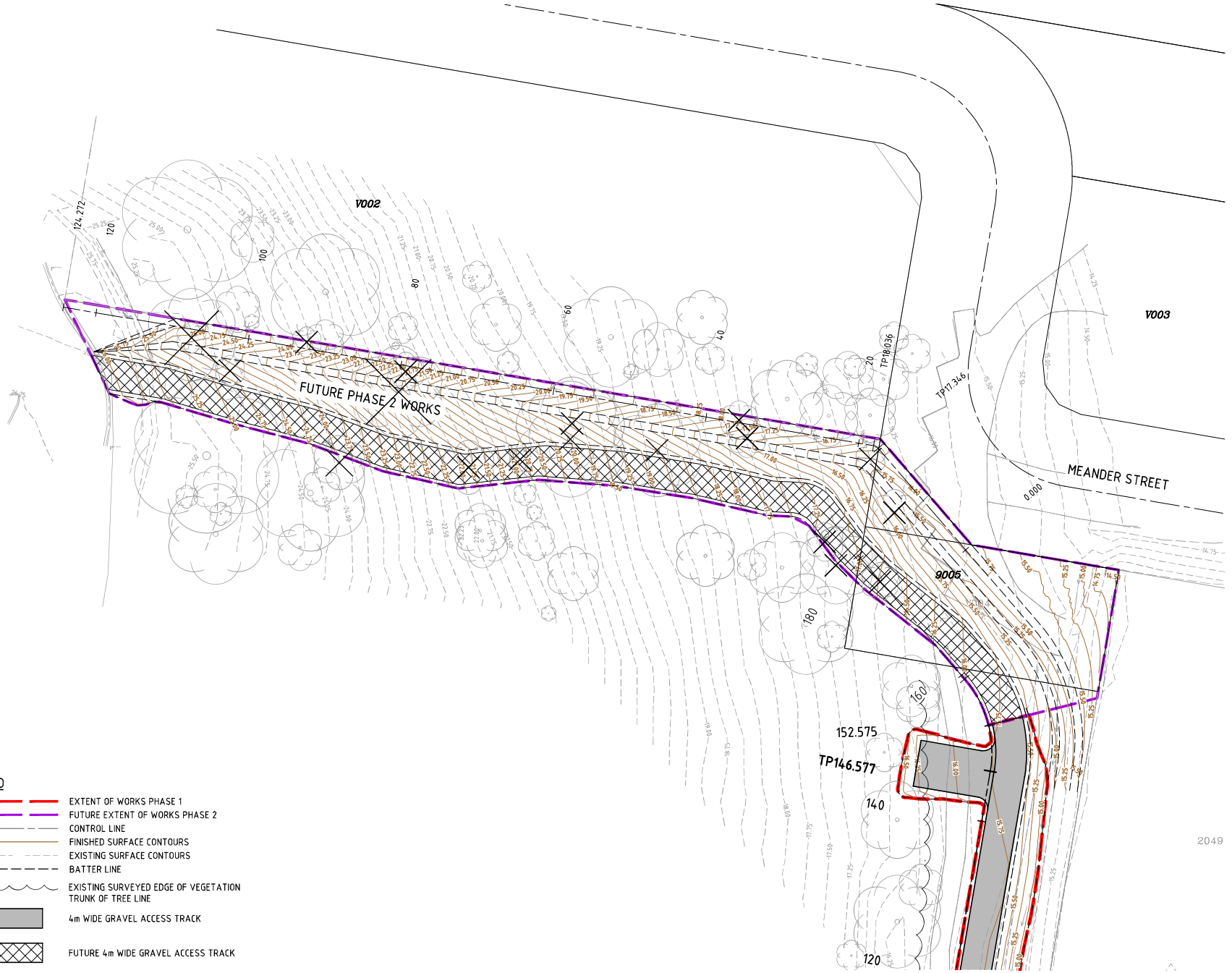

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- FUTURE EXTENT OF WORKS PHASE 2
- CONTROL LINE
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- BATTER LINE
- EXISTING SURVEYED EDGE OF VEGETATION TRUNK OF TREE LINE
- 4m WIDE GRAVEL ACCESS TRACK
- FUTURE 4m WIDE GRAVEL ACCESS TRACK
- EXISTING TREE
- EXISTING TREE TO BE REMOVED TO BE CONFIRM BY OTHERS

EARTHWORKS CONTOUR PLAN
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DO NOT SCALE THIS DRAWING
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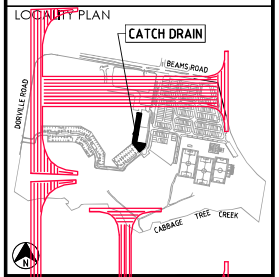
NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	CDR_005	JB

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
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Drawing Title
EARTHWORKS CONTOUR PLAN SHEET 2

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RW	JB	MS	JUN '22

Scale	Sheet
AS SHOWN	05 of xx

	Drawing No	Revision
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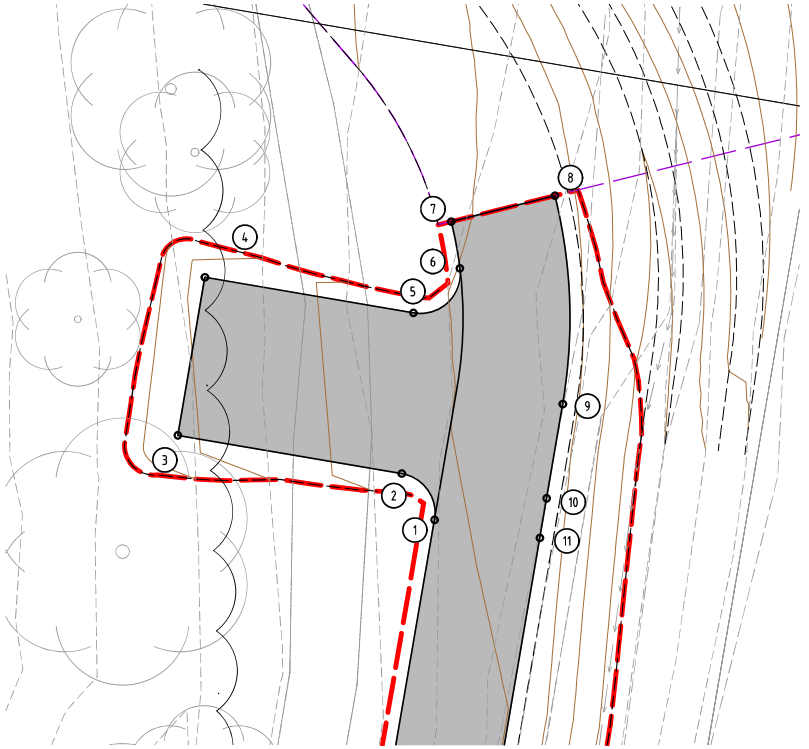
- EXISTING SURFACE CONTOURS
- BATTER LINE
- FUTURE BATTER LINE
- EXISTING SURVEYED EDGE OF VEGETATION TRUNK OF TREE LINE
- GRAVEL ACCESS TRACK

SERVICE VEHICLE (SRV)

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

TEMPORARY TURNAROUND TURN PATHS
SCALE 1:100



TEMPORARY TURNAROUND DETAIL
SCALE 1:100

SETOUT TABLE

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2	502574.071	6974803.711	15.863
3	502565.695	6974805.144	16.291
4	502566.706	6974811.058	16.214
5	502574.508	6974809.724	15.818
6	502576.249	6974811.390	15.745
7	502575.922	6974813.141	15.789
8	502579.803	6974814.108	15.590
9	502580.095	6974806.311	15.546
10	502579.492	6974802.784	15.588
11	502579.239	6974801.306	15.616

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DO NOT SCALE THIS DRAWING
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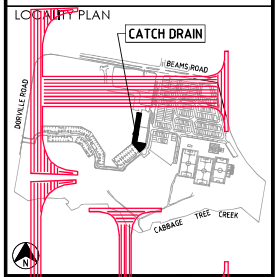
NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	CDR_106	JB

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE CATCH DRAIN

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Drawing Title
TEMPORARY TURNAROUND DETAILS

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RW	JB	MS	JUN '22

Scale	Sheet
AS SHOWN	06 of xx

	Drawing No	Revision
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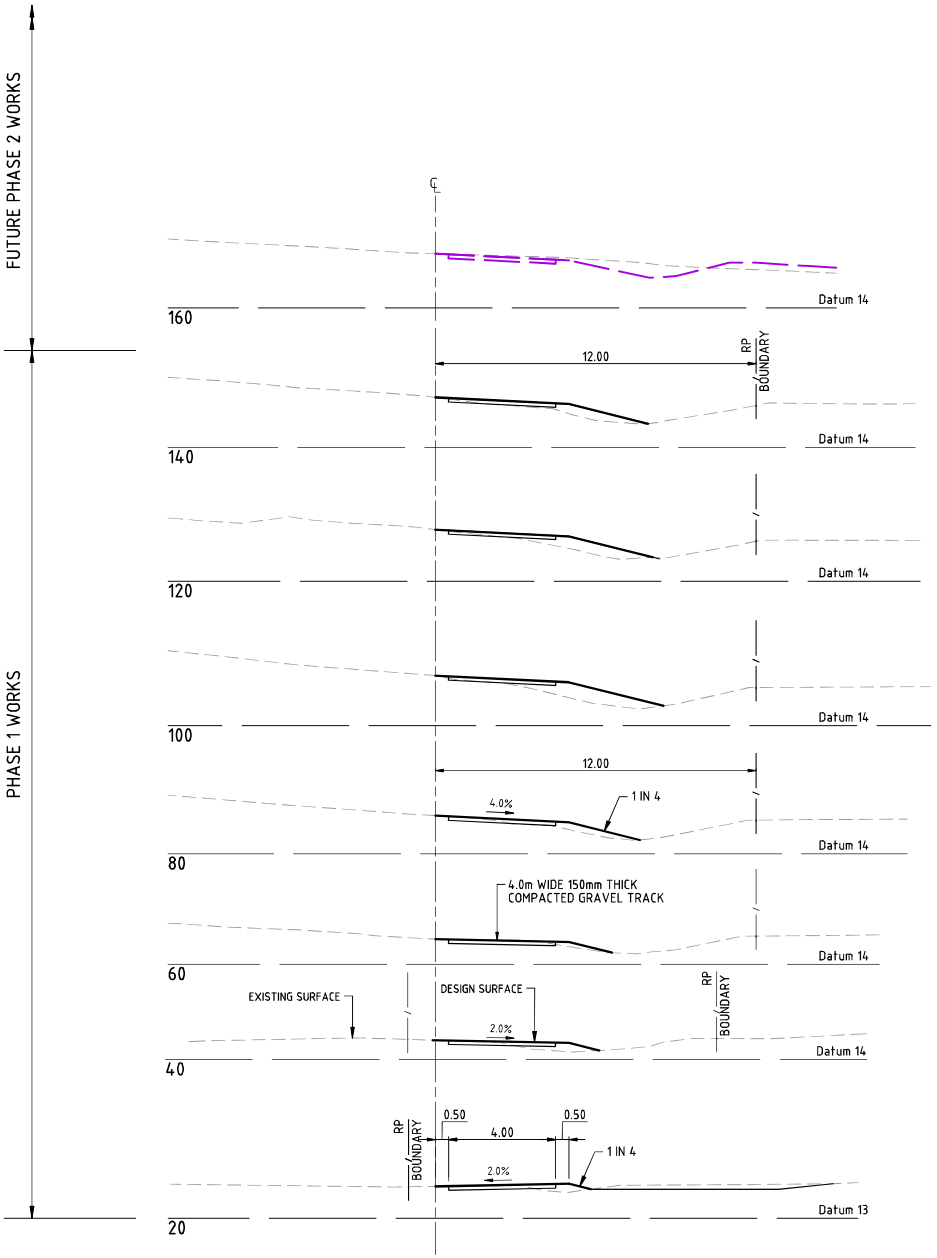

CROSS SECTIONS - CATCH DRAIN PHASE 1 WORKS

SCALE 1 : 100

SCALE 1 0.5 0 1 2 3 4 5 6 7 8 9 10m

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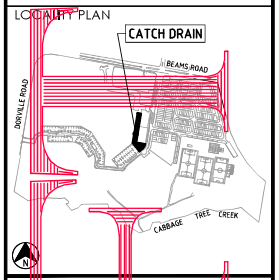
NORTH

LOCALITY PLAN



REVISIONS

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A	FOR APPROVAL	CDR_007	JB

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE
CATCH DRAIN

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Drawing Title
CATCH DRAIN
CROSS SECTIONS
PHASE 1 WORKS

Drawn	Designed	Checked	Date
RW	JB	MS	JUN '22

Scale	Sheet
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	Drawing No	Revision
A1	22-106-07	A

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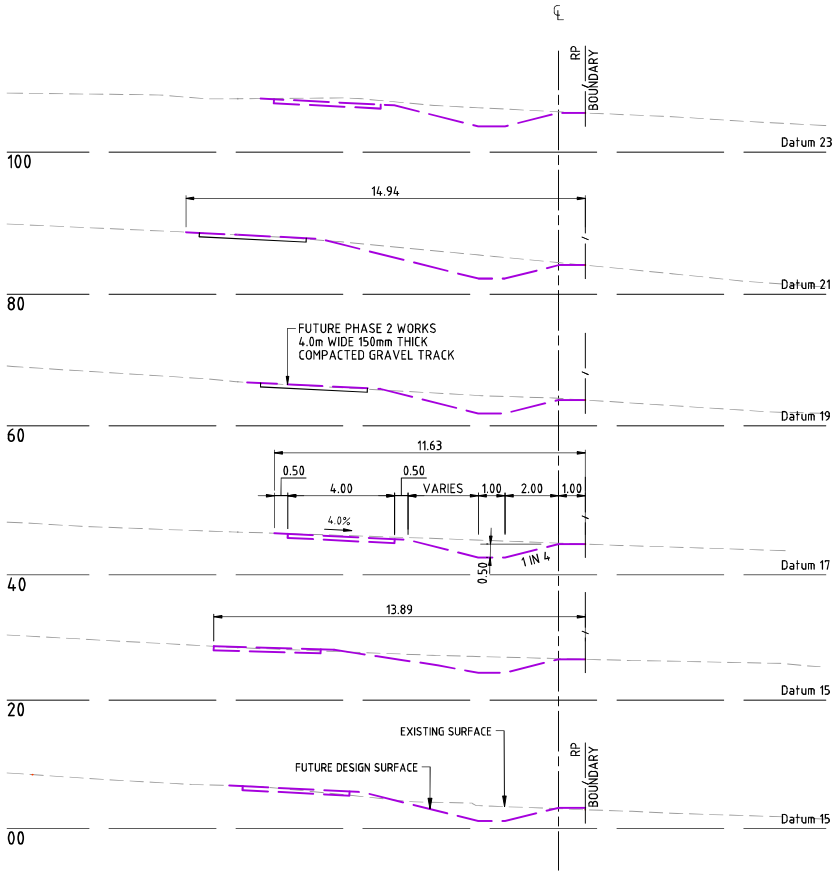

CROSS SECTIONS - CATCH DRAIN FUTURE PHASE 2 WORKS

SCALE 1 : 100

SCALE

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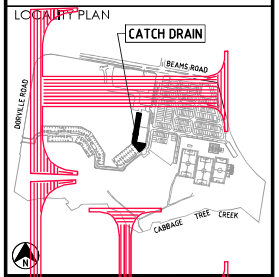
1 : 100 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

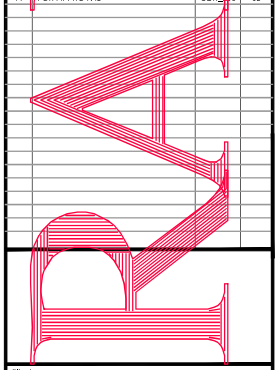
NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	CDR_108	JB



Client

ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project

CARSELDINE VILLAGE
CATCH DRAIN

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved

Drawing Title

CATCH DRAIN
CROSS SECTIONS
FUTURE PHASE 2 WORKS

Drawn	Designed	Checked	Date
RW	JB	MS	JUN '22

Scale	Sheet
AS SHOWN	08 of xx

	Drawing No	Revision
A1	22-106-08	A

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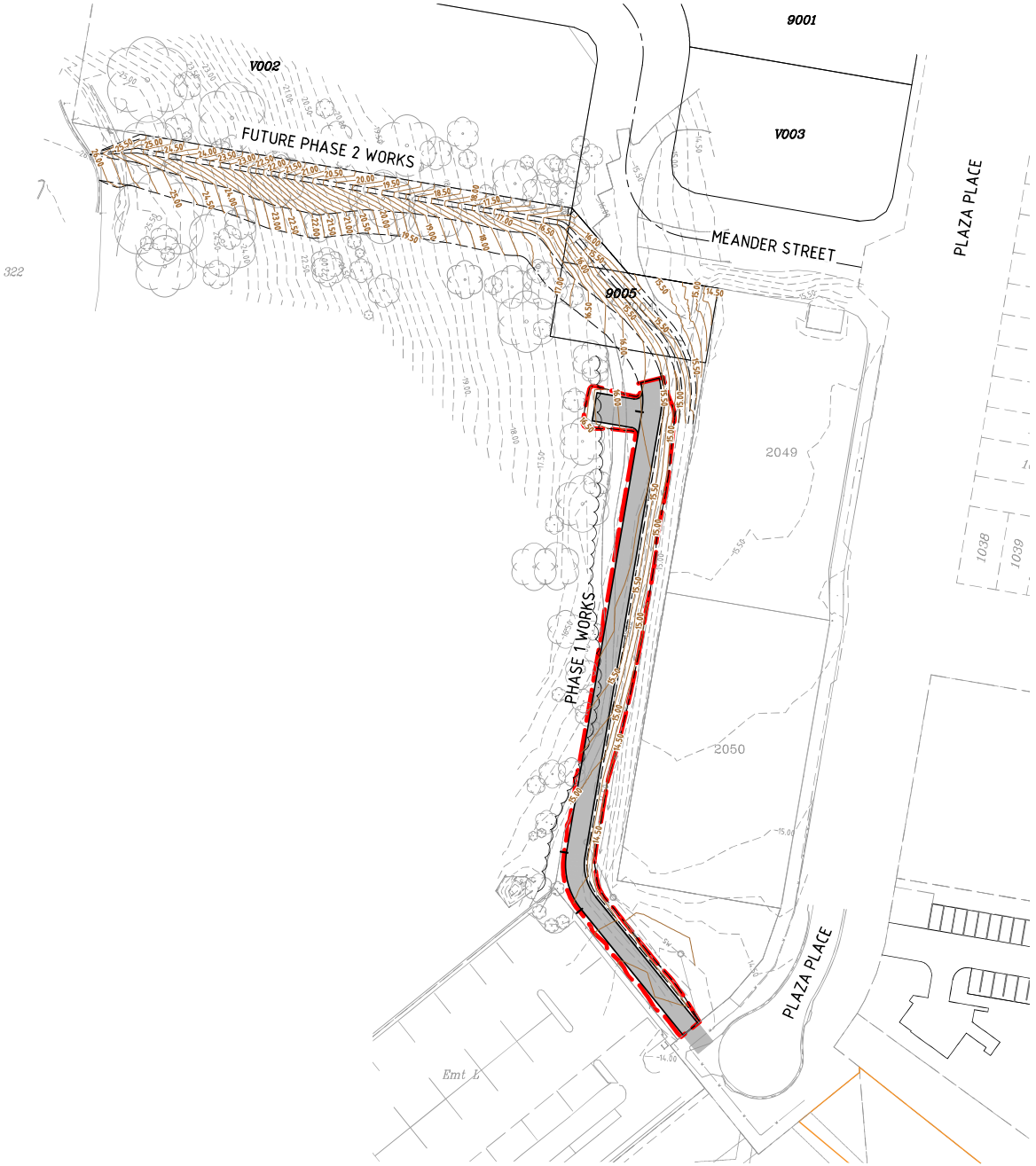

CATCH DRAIN SEDIMENT AND EROSION CONTROL LAYOUT PLAN
SCALE 1:500

LEGEND

SEDIMENT AND DIVERSION FENCE (TEMP)

AREA TO BE GRASS SEEDED AND MULCHED

SCALE
10 5 0 10 20 30 40 50m
1 : 500 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
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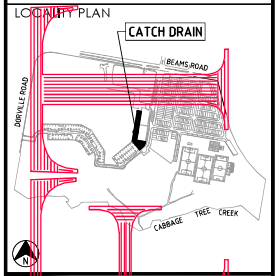
NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	CDR_2209	JB

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE CATCH DRAIN

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Approved

Drawing Title
EROSION AND SEDIMENT CONTOUR PLAN LAYOUT PLAN

Drawn	Designed	Checked	Date
RW	JB	MS	JUN '22

Scale	Sheet
AS SHOWN	09 of xx

	Drawing No	Revision
A1	22-106-09	A

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EROSION AND SEDIMENT CONTROL PROGRAM

1. THIS PROGRAM AND ASSOCIATED PLANS SHOULD BE READ IN CONJUNCTION WITH THE SITE MANAGEMENT SPECIFICATION INCORPORATED IN THE CONTRACT DOCUMENTS. THE PROVISIONS OF THE SPECIFICATION ARE TO BE STRICTLY ADHERED TO.
2. THE BASIC OBJECTIVES OF THE EROSION AND SEDIMENT CONTROL ARE:
   I. IDENTIFY CRITICAL AREAS AND PROVIDE APPROPRIATE ATTENTION TO THOSE AREAS.
   II. PLAN SITE LAYOUTS SO THAT ACCESS TO ALL REQUIRED DRAINAGE EROSION AND SEDIMENT CONTROL MEASURE IS MAINTAINED.
   III. LIMIT EXPOSURE TIME BY PROGRAMMING TO MINIMISE THE AREA OF LAND EXPOSED TO POTENTIALLY ADVERSE WEATHER CONDITIONS AT ANY ONE TIME. I.E. PROGRESSIVELY CLEAR AND REVEGETATE.
   IV. PROVIDE CONTROL MEASURES INCLUDING TEMPORARY AND PERMANENT DRAINAGE, EROSION AND SEDIMENT CONTROLS.
3. THE EROSION AND SEDIMENT CONTROL SHALL COMPLY WITH BEST PRACTICE FOR EROSION AND SEDIMENT CONTROL, THE POLLUTION CONTROL MANUAL FOR URBAN STORMWATER MANAGEMENT, THE QUEENSLAND URBAN DRAINAGE MANUAL, AND THE SOIL EROSION AND SEDIMENT CONTROL – ENGINEERING GUIDELINES FOR QUEENSLAND (CURRENT EDITIONS).
4. CONSTRUCTION SEQUENCE THE CONSTRUCTION SEQUENCE WILL GENERALLY BE:
   I. OBTAIN ALL NECESSARY PERMITS AND APPROVALS BEFORE SITE ESTABLISHMENTS.
   II. HOLD A PRE-CONSTRUCTION CONFERENCE.
   III. STABILISE ALL CONSTRUCTION ACCESS ROUTES AND ENTRY/EXIT POINTS.
   IV. ESTABLISH SEDIMENT CONTROL STRUCTURES AND TEMPORARY DRAINAGE CONTROL MEASURES AS NECESSARY.
   V. CARRY OUT BULK EARTHWORKS.
   VI. MAINTAIN AND REPAIR DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES.
   VII. REMOVE SEDIMENT CONTROL MEASURES WHEN THE SITE IS STABILISED. I.E. >70% GROUND COVER
   VIII. THE CONTRACTOR SHALL PREPARE A SUPPLEMENTARY EROSION AND SEDIMENT CONTROL PLAN TO SUIT HIS/HER CONSTRUCTION METHODOLOGY, AND SUBMIT THIS PLAN FOR APPROVAL TO THE SUPERINTENDENT. IT SHOULD BE NOTED THAT ANY SIGNIFICANT VARIATION TO THIS PLAN MAY REQUIRE RESUBMISSION TO COUNCIL FOR APPROVAL. THE CLIENT SHALL NOT BE RESPONSIBLE FOR ANY SUCH ASSOCIATED DELAY.
5. ALL ESC DEVICES ARE TO BE INSPECTED WEEKLY, PRIOR TO EXPECTED AND AFTER RAINFALL ANY DAMAGE IS TO BE REPAIRED AS REQUIRED TO MAINTAIN THEIR EFFICACY.
6. ALL TEMPORARY EROSION AND SEDIMENT CONTROL (ESC) MEASURE TO BE MAINTAINED AND FULLY OPERATIONAL DURING THE MAINTENANCE PERIOD AND ARE TO BE REMOVED AFTER THE SATISFACTORY COMPLETION OF AN OFF-MAINTENANCE INSPECTION BY COUNCIL AND PRIOR TO FORMAL ACCEPTANCE "OFF MAINTENANCE" BY COUNCIL.
7. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR IS TO PROVIDE A DETAILED PROGRAM TO THE SUPERINTENDENT SHOWING THE TIMING FOR ALL WORKS ASSOCIATED WITH THE PROJECT, NOMINATING, IN PARTICULAR, THE PROGRAM FOR INSTALLATION OF SOIL AND EROSION CONTROL SYSTEMS.
8. EARTHWORKS SHALL BE CARRIED OUT IN SUCH A MANNER THAT THE SITE IS MAINTAINED IN A WELL DRAINED CONDITION, AREAS OF LOOSE SOIL ARE MINIMISED AND CONCENTRATIONS OF STORMWATER ARE MINIMISED. BULK EARTHWORKS WILL BE CARRIED OUT OVER THE ENTIRE SITE IN ONE STAGE.
9. A SHAKE DOWN AS DETAILED ON THE PLAN COMPRISING FREE DRAINAGE GRAVEL SHALL BE LOCATED ADJACENT TO THE POINT OF ACCESS WHERE VEHICLES CAN BE WASHED DOWN PRIOR TO EXIT TO THE STREET SYSTEM IF REQUIRED. THE WASH DOWN AREA SHALL BE KEPT FREE OF MUD.
10. FOR DETAILS OF ENTRY/EXIT SEDIMENT PAD REFER TO BEST PRACTICE EROSION & SEDIMENT CONTROL BOOK 1, PAGE 2.48, FIGURE 2.6.
11. SUPPLEMENTARY EROSION AND SEDIMENT CONTROL DEVICES MAY BE REQUIRED AT THE DISCRETION OF THE SUPERINTENDENT.
12. SEDIMENTATION FENCES TO BE PLACED AS SHOWN. FOR DETAILS OF SEDIMENT FENCE REFER BEST PRACTICE EROSION & SEDIMENT CONTROL BOOK 1, PAGE 2.50, FIGURE 2.8.
13. WHERE SEDIMENT FENCES ARE SHOWN TO BE CONSTRUCTED IN AREAS OF SIGNIFICANT EARTHWORKS, ERECTION OF THE FENCE MAY BE DEFERRED UNTIL COMPLETION OF THE BULK EARTHWORKS, SUBJECT TO ABSENCE OF RAIN.

TREES

1. ENSURE COMPLIANCE WITH THE REQUIREMENTS OF AS4970 – TREES ON CONSTRUCTION SITES. THIS MAY REQUIRE CONSULTATION AND GUIDANCE FROM A CLASS V CERTIFIED ARBORIST AS TREES OUTSIDE THE IMMEDIATE WORK AREA MAY BE AFFECTED.

EROSION AND SEDIMENT CONTROL NOTES

1. NO DISTURBED AREA IS TO REMAIN DENUDED LONGER THAN 60 DAYS.
2. ALL EROSION AND SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING AND GRUBBING OR ANY OTHER EARTHWORKS OR TRENCHING.
3. ALL STORMWATER, SEWER LINE AND SERVICES TRENCHES NOT IN STREETS ARE TO BE MULCHED AND SEEDED WITHIN 15 DAYS AFTER BACKFILL, NO MORE THAN 150 METRES ARE TO BE OPEN AT ANY ONE TIME.
4. ALL TEMPORARY EARTH BANKS, DIVERSIONS AND SEDIMENT DAM EMBANKMENTS ARE TO BE MACHINE-COMPACTED, SEEDED AND MULCHED FOR TEMPORARY VEGETATIVE COVER WITHIN 10 DAYS AFTER GRADING. STRAW OR HAY MULCH IS REQUIRED.
5. ALL FILL EMBANKMENTS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END OF EACH DAYS OPERATION.
6. ALL CUT AND FILL BATTERS ARE TO BE SEEDED AND MULCHED WITHIN 10 DAYS OF COMPLETION OF GRADING.
7. ADDITIONAL SILT AND EROSION CONTROLS MAY BE REQUIRED AS ORDERED ON SITE BY THE SUPERVISING ENGINEER.
8. ALL CONTROLS ARE TO BE INSPECTED AFTER EACH STORM EVENT AND MAINTAINED AS REQUIRED. CONTROLS ARE TO BE MAINTAINED UNTIL THE DISTURBED AREAS ARE PERMANENTLY STABILIZED OR UNTIL NO LONGER REQUIRED.

PHASE 1 - CLEARING AND BULK EARTHWORKS

CONSTRUCT AND MAINTAIN SILT FENCES, STRAW BALE TRAPS, ALLOTMENT DRAINAGE BANKS, CATCH DRAINS AND HYDROMULCHING WHICH CONTROL SEDIMENT AND EROSION DURING CLEARING AND BULK EARTHWORKS.

PHASE 2 - TRENCH EXCAVATION

CONSTRUCT AND MAINTAIN SILT FENCES, STRAW BALE TRAPS, ALLOTMENT DRAINAGE BANKS AND CATCH DRAINS WHICH CONTROL SEDIMENTATION AND EROSION DURING TRENCHING WORK.

PHASE 3 - PAVEMENT CONSTRUCTION

CONSTRUCT AND MAINTAIN SILT FENCES, STRAW BALE TRAPS, ALLOTMENT DRAINAGE BANKS, GULLY INLET PROTECTION, AND PIPE INLET/OUTLET PROTECTION WHICH CONTROL SEDIMENTATION AND EROSION DURING PAVEMENT CONSTRUCTION. SAND BAGGING TO BE PLACED ACROSS PAVEMENT TO CONTROL RUNOFF IN PAVEMENT BOXING AS DIRECTED ON SITE.

PHASE 4 - MAINTENANCE PERIOD

CONSTRUCT AND MAINTAIN CONTROLS AND VEGETATIVE TREATMENTS WHICH CONTROL SEDIMENTATION AND EROSION PRIOR TO THE ESTABLISHMENT OF GRASS COVER.
PROVIDE 600mm WIDE GRASS FILTER STRIPS BEHIND KERB AND CHANNEL.

NOTE: TURF TREATMENT IN CERTAIN AREAS BY LANDSCAPER. REFER TO LANDSCAPE DRAWING.

NOTE

ALL VEHICLES EXITING FROM THE SITE ARE TO BE CLEANED AND TREATED TO PREVENT MATERIAL BEING TRACKED OR DEPOSITED ONTO PUBLIC ROADS.
IF MATERIAL IS ACCIDENTLY DEPOSITED ONTO PUBLIC ROADS IT SHALL BE REMOVED WITHOUT DELAY. IF THE SHAKEDOWN DEVICE PROVES TO BE INEFFECTIVE THE CONTRACTOR IS TO USE OTHERS MEANS TO PREVENT MATERIAL BEING DEPOSITED ONTO PUBLIC ROADS.

TOPSOIL

1. STRIP AND STOCKPILE AVAILABLE TOPSOIL (ASSUMED AVERAGE DEPTH 150mm) FROM ALL DISTURBED AREAS PRIOR TO BULK EARTHWORKS. GRADE EVENLY BETWEEN ALLOTMENT FINISHED SURFACE LEVELS AND ENSURE LOTS ARE FREE DRAINING.
2. MINIMUM SLOPE ACROSS ALLOTMENTS TO BE 1%.
3. ALL FOOTPATHS, BATTERS, AND EARTHWORKS AFFECTED ALLOTMENTS ARE TO BE TOPSOILED TO A MINIMUM DEPTH OF 150mm (LIGHTLY COMPACTED) AND TURFED WHERE SPECIFIED.

SEDIMENT FENCES

1. SEDIMENT FENCES TO BE PLACED AS SHOWN. SEDIMENT FENCED TO BE REPAIRED AND EXCESSIVE SEDIMENT DEPOSITS SHALL BE REMOVED ONCE CAPACITY FALLS BELOW 75%.
2. FOR DETAILS OF SEDIMENT FENCE REFER BEST PRACTICE EROSION & SEDIMENT CONTROL BOOK 1, PAGE 2.50, FIGURE 2.8.
3. SEDIMENT FENCES TO BE REPAIRED AS REQUIRED AND EXCESSIVE SEDIMENT DEPOSITS SHOULD BE REMOVED.
4. INSTALL KERB INLETS WITH GRAVEL RANGING FROM 50mm TO 75mm IN SIZE SHALL BE INSTALLED AT ALL COMPLETED INLETS. REFER IPWEAQ STANDARD DRAWING D-0041. THESE SHALL BE MAINTAINED IN A CLEAN CONDITION. IN THE EVENT OF HEAVY RAIN THEY SHALL BE REMOVED TO MINIMISE THE POTENTIAL FOR FLOODING.
5. CHECKS OF SILT CONTROL DEVICES ARE TO BE MADE WEEKLY, OR AFTER ANY SIGNIFICANT STORM EVENT TO ENSURE INTEGRITY AND PERFORMANCE.

TURFING

1. PROVIDE TURFING TO ENTIRE WIDTH OF ALL SWALES, FOOTPATHS AND 1 IN 4 CUT AND FILL BATTERS.
2. FOOTPATH BATTERS ARE TO BE STABILISED WITH TOPSOIL (AND TURFED) AS SOON AS PRACTICAL AFTER THE BATTERS HAVE BEEN COMPLETED.

DURING CONSTRUCTION SEQUENCE:

1. TOPSOIL STOCKPILES SHALL BE LESS THAN 1m DEEP AND UNCOMPACTED. A SEDIMENTATION FENCE SHALL BE CONSTRUCTED ON THE D/S SIDE, OR THE STOCKPILE STABILISED WITH VEGETATION, MULCH, OR A SOIL STABILISER.
2. SEDIMENTATION FENCES TO BE PLACED AS SHOWN.
3. REGULARLY INSPECT BANKS AND REPAIR ANY SLUMPS, WHEEL TRACK DAMAGE OR LOSS OF FREEBOARD.
4. REMOVE SEDIMENT TO AVOID PONDING FROM CATCH DRAINS.
5. REMOVE EXCESSIVE SEDIMENT FROM UPSTREAM OF CHECK DAM.
6. ROAD RESERVE TO BE USED AS HAUL ROAD.
7. A CATCH DRAIN OR DIVERSION BANK IS TO BE PROVIDED ON THE TOP SIDE OF ALL CUTS, WITH DISCHARGE EITHER TO UNDISTURBED GRASS LANDS OR TO THE CROSS ROAD DRAINAGE.
8. SUPPLEMENTARY EROSION AND SEDIMENT CONTROL DEVISED MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
9. WATER QUALITY SAMPLES MUST BE TAKEN AND ANALYSED PRIOR TO THE RELEASE OF ANY WATER FROM THE SEDIMENT POND. WATER QUALITY MUST SATISFY THE FOLLOWING CRITERIA: TSS<50MG/L PH BETWEEN 6.5 AND 8.5.
10. ALL WATER QUALITY DATA INCLUDING DATES OF RAINFALL, TESTING AND WATER RELEASE MUST BE MAINTAINED IN AN ON-SITE REGISTER. THIS REGISTER IS TO BE MAINTAINED FOR THE DURATION OF THE APPROVED WORKS AND BE AVAILABLE ON SITE FOR INSPECTION BY COUNCIL OFFICERS ON REQUEST.
11. EXPOSED AREAS ON LOTS ARE TO BE SEEDED AND MULCHED (E.G. HYDROMULCHED). MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 2.5T/HA. ALTERNATIVELY THEY SHALL BE DRILL-SEEDED AND IRRIGATED SO AS TO ENSURE >70% GROUND COVER WITHIN 14 DAYS FROM NOVEMBER TO APRIL, OR 30 DAYS FROM MAY TO OCTOBER.

FOLLOWING CONSTRUCTION:

1. SEDIMENTATION FENCES TO BE MAINTAINED UNTIL TURFING IS COMPLETED.
2. SEDIMENT BASINS TO BE CHECKED AFTER EVERY SIGNIFICANT STORM AND DESILTED ONCE THE SETTLEMENT LIMIT HAS BEEN REACHED.

STABILISATION:

1. THE AMOUNT OF AREA EXPOSED AT ANY ONE TIME TO BE MINIMISED BY STAGING THE WORKS WHEREVER POSSIBLE AND AIMING TO ACHIEVE FINISHED LEVEL IN EACH AREA AS QUICKLY AS POSSIBLE BEFORE OPENING NEW AREAS.
2. TOPSOIL TO BE STRIPPED AND STOCKPILED SEPARATELY TO SUB-SOILS.
3. STOCKPILES TO BE PROVIDED WITH SURFACE COVER USING A CHEMICAL SURFACE STABILISER SUCH AS VITAL CHEMICALS VITAL-BON MATT STONEWALL.
4. IF WORKS ARE DELAYED OR PUT ON HOLD THEN TEMPORARY EROSION CONTROL COVERING TO BE PROVIDED USING VITAL CHEMICALS VITAL-BON MATT P47-VR1 OR EQUIVALENT.
5. ONCE AREAS REACH FINISHED LEVEL:
   a. TOPSOIL TO BE SPREAD TO CAP/BURY THE DISPERSIVE SUBSOILS.
   b. TOPSOIL TO BE DRILL-SEEDED WITH A MIXTURE OF ANNUAL AND PERENIAL GRASS SPECIES (REFER TABLE) AND FERTILISER WITH CROP-KING 88 (0.3t/Ha).
   c. TEMPORARY SOIL COVER TO BE APPLIED CONSISTING OF VITAL CHEMICALS VITAL-BON MATT P47-VR1 OR EQUIVALENT.
   d. WATERING UNDERTAKEN AS NECESSARY UNTIL STABLE GRASS SURFACE COVER IS ESTABLISHED.

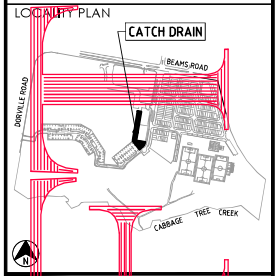
SEED MIXES

	SUMMER BLEND (APPLICATIONS NOVEMBER - DECEMBER)	MID SEASON BLEND (APPLICATIONS MARCH/APRIL & SEPTEMBER/OCTOBER)	WINTER BLEND (APPLICATIONS MAY AUGUST)
UNHULLED GREEN COUCH (CYNODON DACTYLON) OR BLUE COACH (DIGITARIA DIDACYLA)	25%	25%	25%
HULLED GREEN COUCH (CYNODON DACTYLON) OR BLUE COACH (DIGITARIA DIDACYLA)	25%	25%	25%
JAPANESE MILLET	30%	15%	N/A
RYE GRASS	N/A	15%	30%
CARPET GRASS (AXONOPUS AFFINIS)	20%	20%	20%

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
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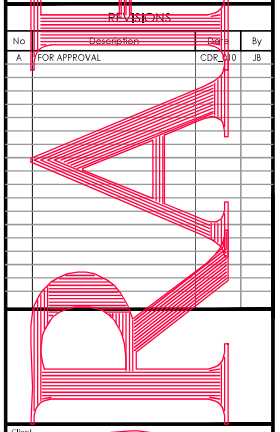

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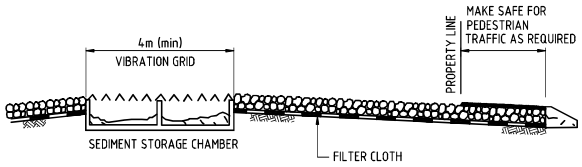
Approved

Drawing Title
EROSION AND SEDIMENT CONTROL PLAN NOTES

Drawn	Designed	Checked	Date
RW	JB	MS	JUN '22

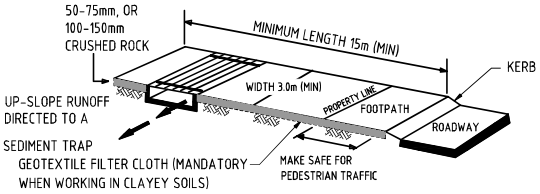
Scale	Sheet
AS SHOWN	10 of xx

	Drawing No	Revision
A1	22-106-10	A



TYPICAL PROFILE OF A VIBRATION GRID

SITE ACCESS POINT SHAKEDOWN FACILITY
N.T.S.



SITE ACCESS POINT ENTRY/EXIT PAD
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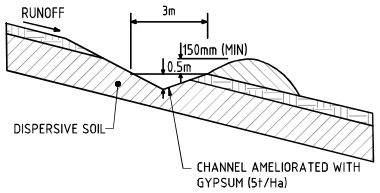
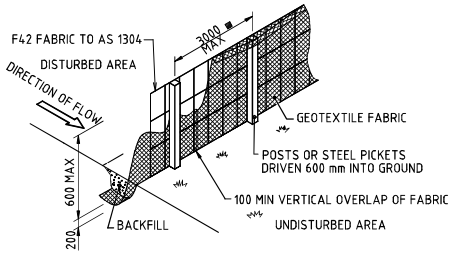


CATCH DRAIN

OPEN EARTH SLOPES						VEGETATED SLOPES		
SLOPE	HORIZ.	VERT.	SLOPE	HORIZ.	VERT.	SLOPE	HORIZ.	VERT.
1%	80m	0.9m	15%	19m	2.9m	<10%	NO MAXIMUM	
2%	60m	1.2m	20%	16m	3.2m	12%	100m	12m
4%	40m	1.6m	25%	14m	3.5m	15%	80m	12m
6%	32m	1.9m	30%	12m	3.5m	20%	55m	11m
8%	28m	2.2m	35%	10m	3.5m	25%	40m	10m
10%	25m	2.5m	40%	9m	3.5m	30%	30m	9m
12%	22m	2.6m	50%	6m	3.0m	>36%	CASE SPECIFIC	

TYPICAL CATCH DRAINS DIMENSIONS & SPACINGS



SEDIMENT FENCE
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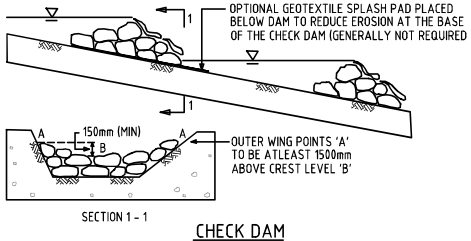

SECTION 1 - 1

CHECK DAM
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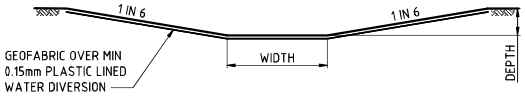
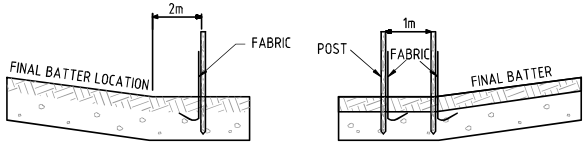


TYPICAL LINED CATCH DRAIN
SCALE 1 : 40

SIZING TO BE DETERMINED DURING CONSTRUCTION

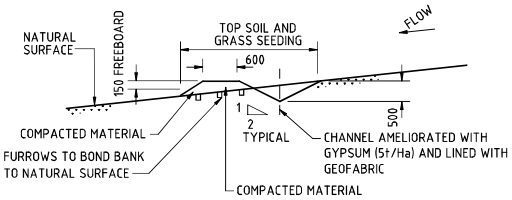


a) PLACEMENT OF SEDIMENT FENCE AT BASE OF FILL SLOPE

b) USE OF DOUBLE SEDIMENT FENCE AT THE BASE OF FILL SLOPE

SEDIMENT FENCE DETAILS
N.T.S.

LOCATION OF SEDIMENT FENCE AT BASE OF FILL SLOPE



CROSS SECTION

DIVERSION CHANNEL
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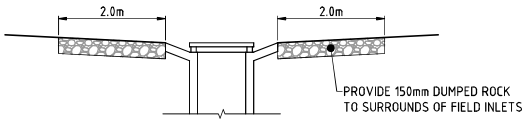

FIELD INLET PROTECTION
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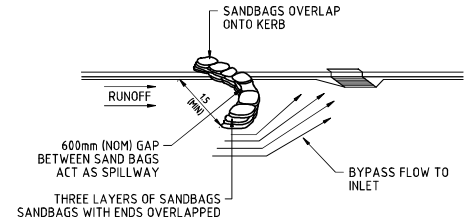

ON GRADE GULLY INLET
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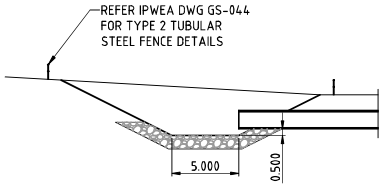
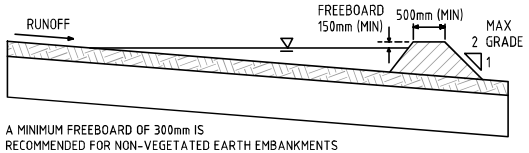


TEMPORARY HEADWALL DETAIL
SCALE N.T.S



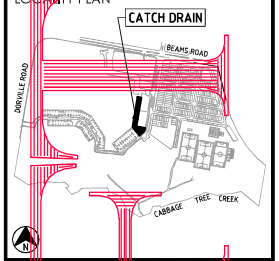
A MINIMUM FREEBOARD OF 300mm IS
RECOMMENDED FOR NON-VEGETATED EARTH EMBANKMENTS

DIVERSION DRAINAGE BANK
N.T.S.

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	CDR_V11	JB

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE
CATCH DRAIN

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved

Drawing Title
EROSION AND SEDIMENT CONTOUR PLAN DETAILS

Drawn	Designed	Checked	Date
RW	JB	MS	JUN '22

Scale	Sheet
AS SHOWN	11 of xx

A1	Drawing No	Revision
	22-106-11	A

Client: ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)
Project: CARSELDINE VILLAGE – CATCH DRAIN
Prepared By: Jason Burton Date: 10th June 2022
Reviewed By: Mark Shaw Date: 10th June 2022

Safety in Design Analysis

- Complete Safety in Design Analysis by populating the table where applicable with all of the relevant safety issues for the project. For example:

☐Positioning of new services adjacent to existing live services	☒Slope Stability
☒Construction adjacent to existing road carriageways	☐Retaining Walls
☐Pedestrians	☒Dust Control
☒Civil Construction Workers	☒Erosion and Sediment Control/Management
☒Maintenance Workers	☒Sediment Basin Construction
☒Work Place Health and Safety Constraints	☐Wetland/Dam Construction
☐Unusual material handling	☐Working under traffic
☐Falls from heights	
☒Underground Services (existing)	Project Specific Design Elements:
☐Electrical Service Installation	
☐Gas Service Installation	
☐Communication Installation	
☐Traffic Signal Installation	
☒Landscape Workers	
☐Line marking Workers	
☒Excavation – open cut trenching - Trench excavation depths	
☐Tunnel Boring	
☒Confined Spaces	
☒Lifting of loads	
☒Unloading of materials and storage	
☐Storage of hazardous materials	
☒Geotechnical investigation – works	
☒Bulk Earthworks	
☒List all relevant safety studies	

The following table summarises the safety in design issues considered.

Section of Works	Identify any Potential Incident or Hazard	Consequence	Likelihood	Risk Rating	Risk Control Measures	Consequence	Likelihood	Residual Risk Rating (after design applied)	Risk Manager
Earthworks Material Investigation	Geotechnical Investigation	C	3	S	SWMS required by Contractor	D	3	M	Contractor
Road/Earthworks Works	Pedestrians Injury	D	3	M	TMP to be provided by Contractor to exclude pedestrians from work site	E	3	L	Contractor
	Civil Construction Workers – Injury	A	4	H	TMP and SWMS required for all activities	C	2	S	Contractor
	Maintenance Workers	A	4	H	TMP and SWMS required for all activities	C	3	S	Contractor
	Underground Services (Existing)	A	3	H	DBYD information to be sort prior to design. Existing to be located by survey if applicableto design. All existing services to be located and depth confirmed prior to commencement. SWMS to be provided by Contractor	C	2	S	Designer/ Contractor
Working adjacent to existing Infrastructure	Conflict between construction equipment / personnel and live infrastructure in particular Power lines	B	4	S	All existing services highlighted in the documentation. Contractor to complete DBYD search beforecommencing works. SWMS to be provided by Contractor	C	4	M	Designer/ Contractor
Service trench/ pipe installation	Location of all trenches to provide clearance to all other services and all structures or battered embankments	A	4	H	Mains located with safe working clearance to existing pressure mains, structures and battered embankments	C	4	M	Designer
	Trench depth	A	4	M	Depth of trenches minimized for both safety and cost efficiency	C	4	M	Designer
Works within Confined Spaces	Construction of stormwater, sewer, water and wetland structures	A	4	M	Contractor to ensure works undertaken in amanner complying with safe work method statements	D	5	L	Contractor
Silt and Erosion Control	Public access to water retaining temporary sediment basins	A	5	S	Protection measures – that is fencing of all water retaining structures with side slopes greater than 1 in5 as described in International Erosion Control Association (Australasian) Table B9	C	4	M	Designer/ Contractor

RISK ASSESSMENT AND CONTROL

Risk Assessment

Select **one** category from each of the columns below that best represents the likely outcome if the potential hazard actually did occur. For each consequence consider the **most likely outcome** and **not** the 'absolute worst' case.

Consequence		Likelihood	
A	Death – major environmental damage	1	Certain
B	Permanent Disability – severe environmental damage	2	Probable
C	Lost Time Injury – moderate environmental damage	3	Possible
D	Medical Treatment Injury – minor environmental damage	4	Unlikely
E	First Aid Treatment	5	Very Unlikely

RISK RATING

H: High Risk **S: Significant Risk**

M: Moderate Risk **L: Low Risk**

Read the Risk Rating from the matrix below:

Risk Assessment Matrix	A	B	C	D	E
1	H	H	H	S	S
2	H	H	S	S	M
3	H	H	S	M	L
4	H	S	M	L	L
5	S	S	M	L	L

Certain - means an event or situation that is happening more or less all the time, including continuous situations
Permanent Disability – means a disability, such as loss of a limb or eyesight, loss of hearing, chronic skin disorder, chronic back disorder, emphysema, and the like

Probable – means an event or situation that occurs or is likely to occur about ten times or more per year
Possible – means an event or situation that occurs or is likely to occur about once per year
Unlikely – means an event or situation that occurs or is likely to occur less frequently than once every ten years

Issued 10th June 2022 Rev - A

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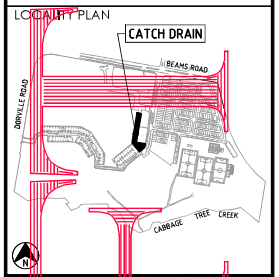
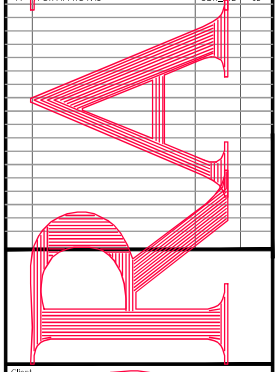
NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	CDR_22	JB



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Drawing Title
SAFETY IN DESIGN

Drawn	Designed	Checked	Date
RW	JB	MS	JUN '22
Scale: AS SHOWN			Sheet: 12 of xx
A1	Drawing No: 22-106-12		Revision: A