Woolacotts.
CONSULTING ENGINEERS

Parklea Correctional Centre Expansion Stormwater Management Report

20 July 2016 | 15-207

Contents

Document control

Rev No	Date	Revision details	Approved	Verified	Prepared
A	20/7/16	Approved Issue	CMW	SETB	JG

1. Introduction

Parklea Correctional Centre is located off Sentry Drive, Parklea. An expansion of the centre is proposed, to provide additional accommodation on site, with the proposed works including:

- 500 maximum security beds within the secure perimeter wall
- 150 minimum security beds outside the secure perimeter wall
- Minimum security visits building
- Minimum security support services building
- Program/ Industries building
- AVL/ Clinic building
- 2 movement control post buildings
- Playing fields and recreational areas
- Secure covered walkways
- Additional visitor carpark and associated roadworks.

This report has been prepared to document stormwater management issues associated with the proposed works. It will address existing conditions at the site, details of the proposed works, Blacktown City Council's requirements, the measures proposed for the site and the means of compliance with Council's requirements.

2. Existing Site

The site is located off Sentry Drive, Parklea. Refer to Figure 1 for the site location.

The existing correctional centre is comprised of buildings, parking areas and roads. Two dams are located on the western side of the site. Refer to Figure 2 for an aerial photograph of the site.

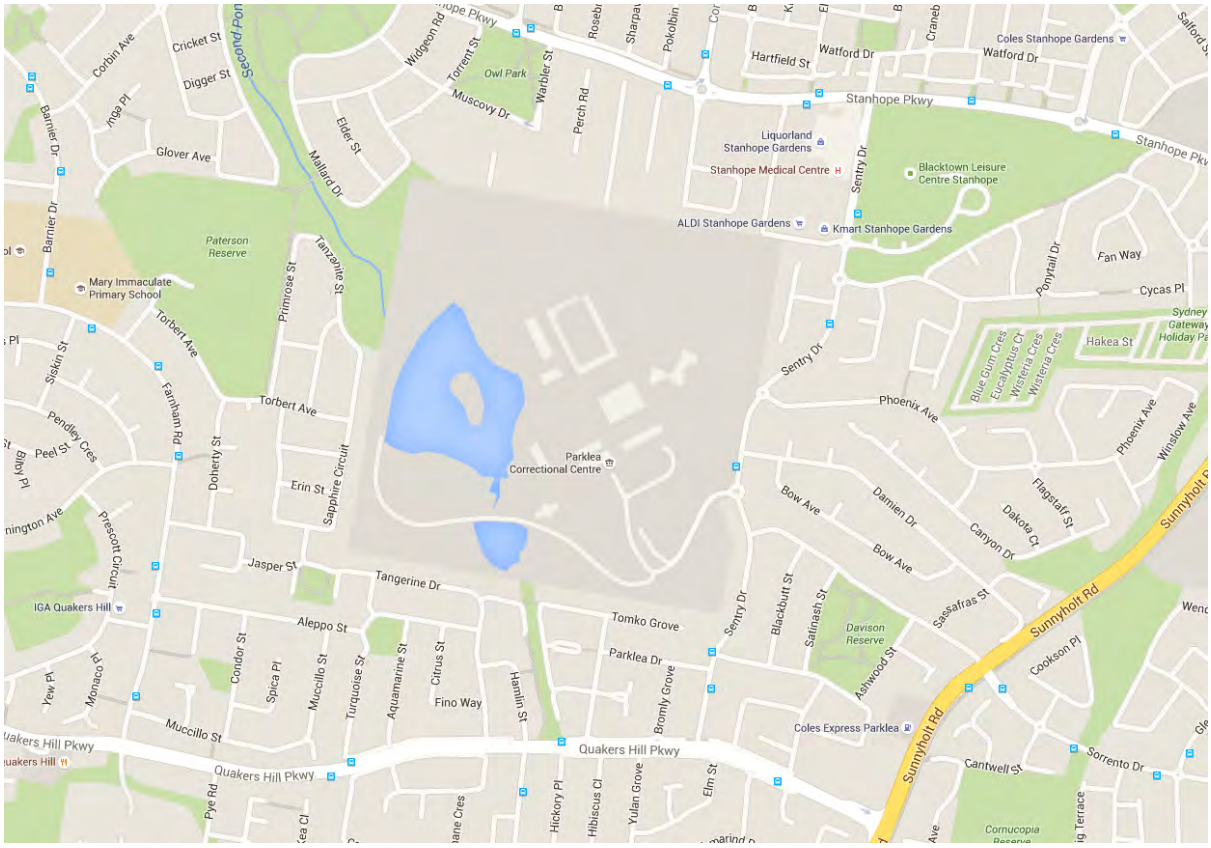


Figure 1 – Site Location

Figure 2 – Aerial photograph of the site (Photograph © Six Maps.)

3. Council requirements

Blacktown City Council provided input to the draft Secretary's Environmental Assessment Requirements for the proposed development. For stormwater drainage from the site, these requirements can be summarised as follows:

Stormwater quality

Stormwater quality improvement targets are to be achieved for the new prison development only. The targets are to be assess using MUSIC in accordance with Council's water sensitive urban design information sheets and developer handbook. For the proposed works, the required percentage reduction in post development average annual pollutant loads are:

- Gross pollutants 90%
- Total suspended solids 85%
- Total phosphorous 65%
- Total Nitrogen 45%
- Total hydrocarbons 90%

As MUSIC does not assess hydrocarbons, Council requires that a gross pollutant trap targeting hydrocarbons be provided for the new carpark and roadways, with the device designed to treat the 6 month average recurrence interval (ARI) flow.

Rainwater harvesting

Council requires that the development achieves a minimum of 80% of the non-potable water uses on-site for the new prison development being met using rainwater. Non-potable uses include toilet flushing and landscape watering. The usage rate is to be assessed using MUSIC.

In undertaking the assessment, the following usage is to be adopted:

- Communal toilet use 0.1 kL/day per toilet or urinal
- Single cell 0.025 kL/ day
- Double cell 0.05 kL/day
- Watering of landscaped areas 0.4 kL/year/m^2. (as PET-Rain)

In addition, for modelling purposes, a 20% reduction in tank size is to be used in MUSIC, to allow for losses in the tank.

Stormwater flows

An on-site detention system is required to mitigate post development flows from the new development, so that they do not exceed the peak pre-development flows for a range of storm events, ranging from the 1 in 2 year ARI to the 1 in 100 year ARI.

Council requires that the detention system design be supported using a computer model that complies with their *Engineering Requirements for Development*.

We note that Parklea is located in an area that is noted as exempt form OSD due to an area wide basin in the *Engineering Requirements for Development*.

4. Proposed Development

The proposed development consists of a number of new minimum and maximum security buildings. The new parking area is located off Sentry Drive. The new minimum security buildings are located to the south east of the existing complex, and the new maximum security facilities are located to the north east and north west, adjacent to the existing maximum security buildings.

The new buildings and associated works cover an area of 107,037 m^2, of which 61,758 m^2 is impervious. The parking areas have a total of area of 6,263 m^2.

5. Stormwater Management

A stormwater management system has been developed to accommodate the redevelopment work resulting in the increased impervious areas, as well as comply with Council's requirements.

The piped stormwater drainage system is designed to carry runoff from storms up to and including the 20 year ARI event, with pipes graded at a minimum fall of 1 in 100. A DRAINS model of the site has also been developed as part of the analysis.

For runoff from storms up to and including the 100 year ARI event, overland flow paths ensure a minimum freeboard to habitable levels. External surfaces are also graded at a minimum fall of 1 in 100 to the stormwater collection and drainage system. Refer to Appendix A – Drawings, for additional detail.

Stormwater detention

Council requires that an on-site detention system be provided for the proposed works only, and not the full site. The works proposed can be divided into two areas – the new parking area and the new buildings.

Stormwater from the site currently discharges to the existing detention basin at the south west of the site. The minimum security facility discharges to the south basin, and the maximum security discharges to the larger northern basin. Stormwater is temporarily stored at these locations and discharges into Second Ponds Creek.

As part of the proposed stormwater system analysis, the capacity of the existing basins were investigated. Computer modelling program XP_RAFTS was used to determine the peak outlet flow rates of multiple storm events of the pre-developed site. Refer to Appendix B – Calculations, for additional detail.

Catchment areas of the north and south basins, in conjunction with the existing dimensions of the basins were investigated in order to determine a baseline result. Following determination of the pre-developed peak flow rate within the model, a post-developed model was created to investigate the effects of the increase in impervious area, as well as identify the compatibility of the existing basins.

The increase in impervious area of the site resulted in an increase of peak flow rate from the basins. In order to satisfy the Secretary's Environmental Assessment Requirements, an increase of detention volume was necessary. The northern basin was discovered to be capable of storing additional volume with minor modification. A final model was developed to investigate the impacts of raising the existing spillway by 50mm. Refer to Appendix A – Drawings, for additional Detail. This modification resulted in an overall increase of available detention volume, and having a direct reduction on the discharged peak flowrates to below the pre-developed levels of the total site.

The spillway modification of the northern basin has satisfied that no detention in the upstream area will be required.

Water quality

Water quality improvement measures are proposed for the development, and consist of:

- Enviropods
- Grassed swales
- Rainwater reuse tanks
- Existing detention basins
- Gross Pollutant Trap

Refer to Appendix A – Drawings, for additional Detail.

As required by Council, the measures were modelled using MUSIC. To ensure that Council's modelling requirements are met, the model was set up using the standard Blacktown Council model, available through MUSIC-Link, with standard nodes available through MUSIC-Link used. Refer to Appendix B – Calculations, for additional detail.

A combination of the above listed control devices have been implemented to improve the overall water quality as a result of the proposed works. The following is a summary of the post-developed values satisfying Council's reduction in annual average pollutant loads.

- Gross pollutants 100%
- Total suspended solids 95.8%
- Total phosphorous 93.2%
- Total Nitrogen 89%
- Total hydrocarbons Vort Sentry GPT (targeting hydrocarbons)

Refer to Figure 3 below for a summary of the MUSIC treatment train.

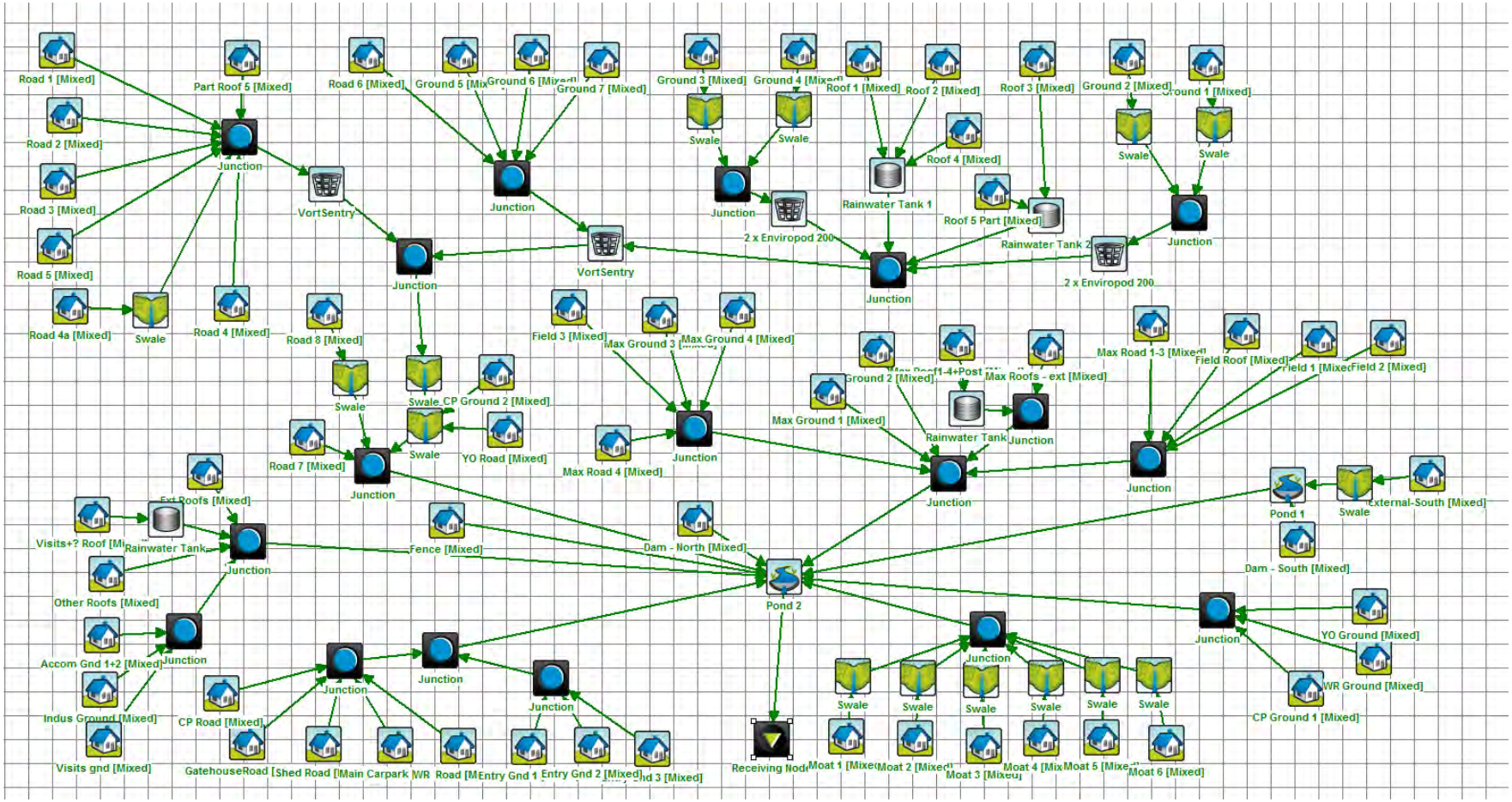


Figure 3 – MUSIC Treatment Train

Treatment Train Effectiveness - Receiving Node

	Sources	Residual Load	% Reduction
Flow (ML/yr)	441	55.1	87.5
Total Suspended Solids (kg/yr)	66100	2800	95.8
Total Phosphorus (kg/yr)	124	8.45	93.2
Total Nitrogen (kg/yr)	922	102	89
Gross Pollutants (kg/yr)	10300	0	100

Erosion and sediment control

Erosion and sediment control measures area required for the site. It is proposed to provide measures in accordance with the "Blue Book" – *Managing Urban Stormwater – Soils and Construction 4th Edition*. The measures will include:

- Silt fences on the low side of the site
- Diversion swales upstream of the works
- Silt traps at existing pits near works

Refer to Appendix A – Drawings, for additional details.

6. Flooding

From Council's Flood Map, the site is not in a flood affected area. Therefore no additional modifications are required. Refer to Figure 4 below for additional information.

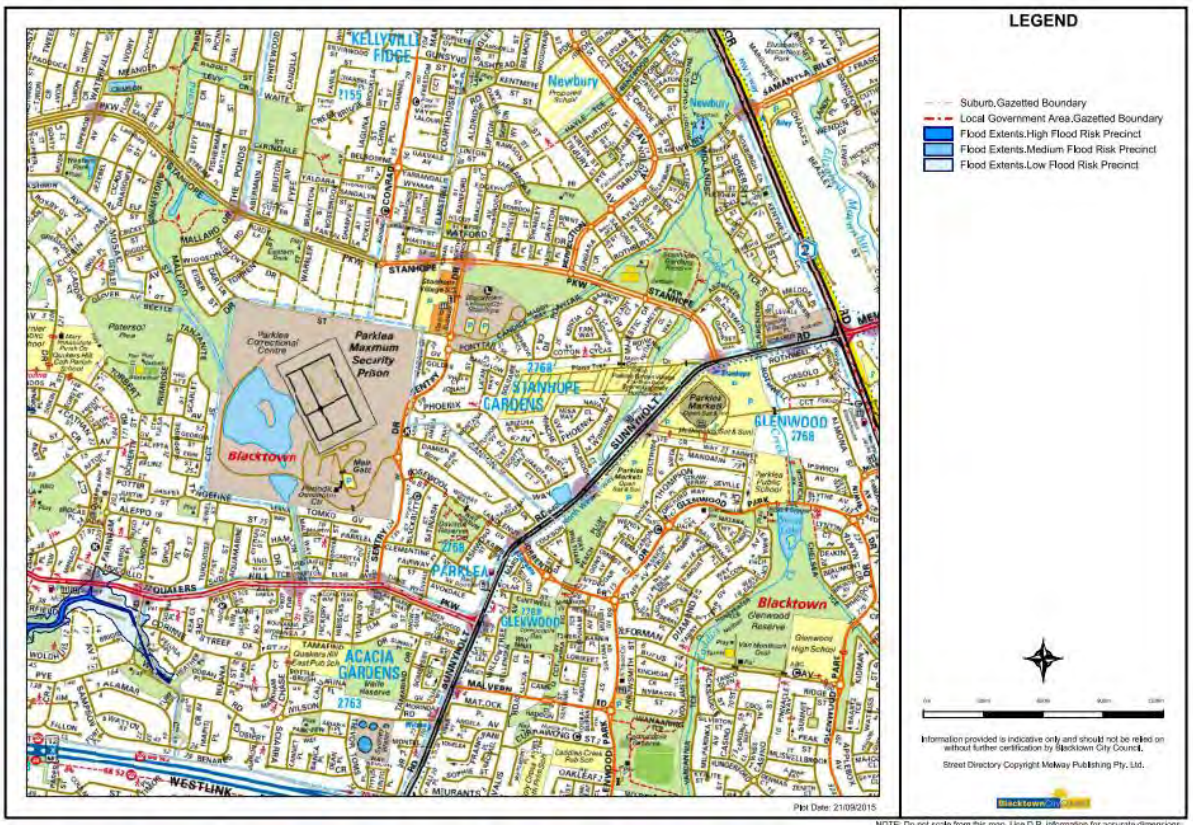
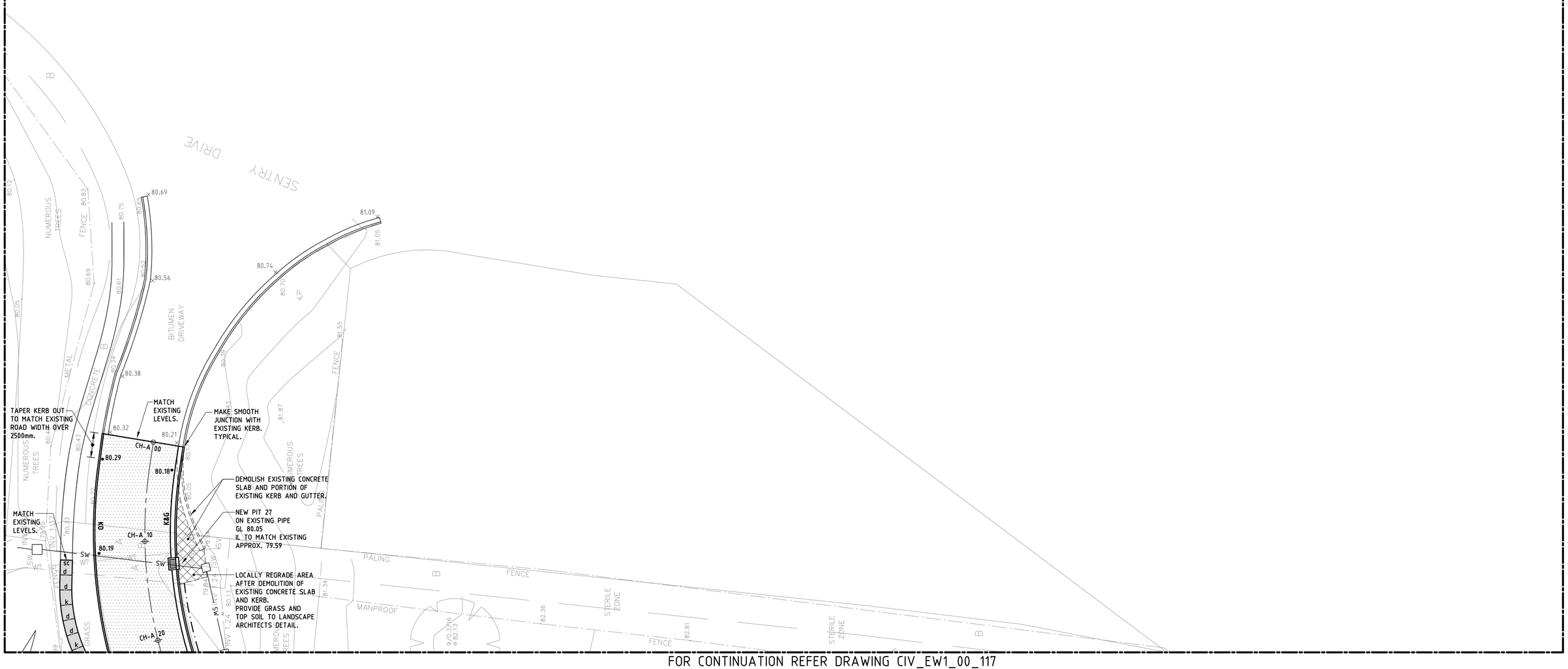


Figure 4 - Extract from Council's Flood Map

Appendix A
Drawings

RESTRICTED CONSTRUCTION ISSUE



FOR CONTINUATION REFER DRAWING CIV_EW1_00_117

AMENDMENTS

No.	Date	Description	Ver.	Appr.
01	29.02.16	EARLY WORKS PHASE 1 - ISSUED FOR TENDER		
02	13.05.16	ISSUED FOR CONSTRUCTION	CMW	SETB

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 11

NORTH

SCALE 1:200@A1
DATE FEBRUARY 2016

DRAWING NUMBER				REVISION
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	EW1	00_111	02

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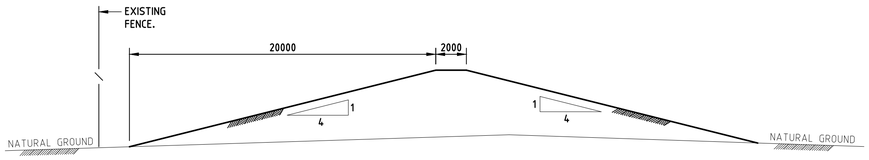

SECTION 1/-

TYPICAL SECTION THROUGH PROPOSED MOUND

SCALE - 1:200

FOR CONTINUATION REFER DRAWING CIV_EW1_00_113

AMENDMENTS

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EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 12

NORTH

SCALE 1:200@A1
DATE FEBRUARY 2016

DRAWING NUMBER				
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RESTRICTED CONSTRUCTION ISSUE

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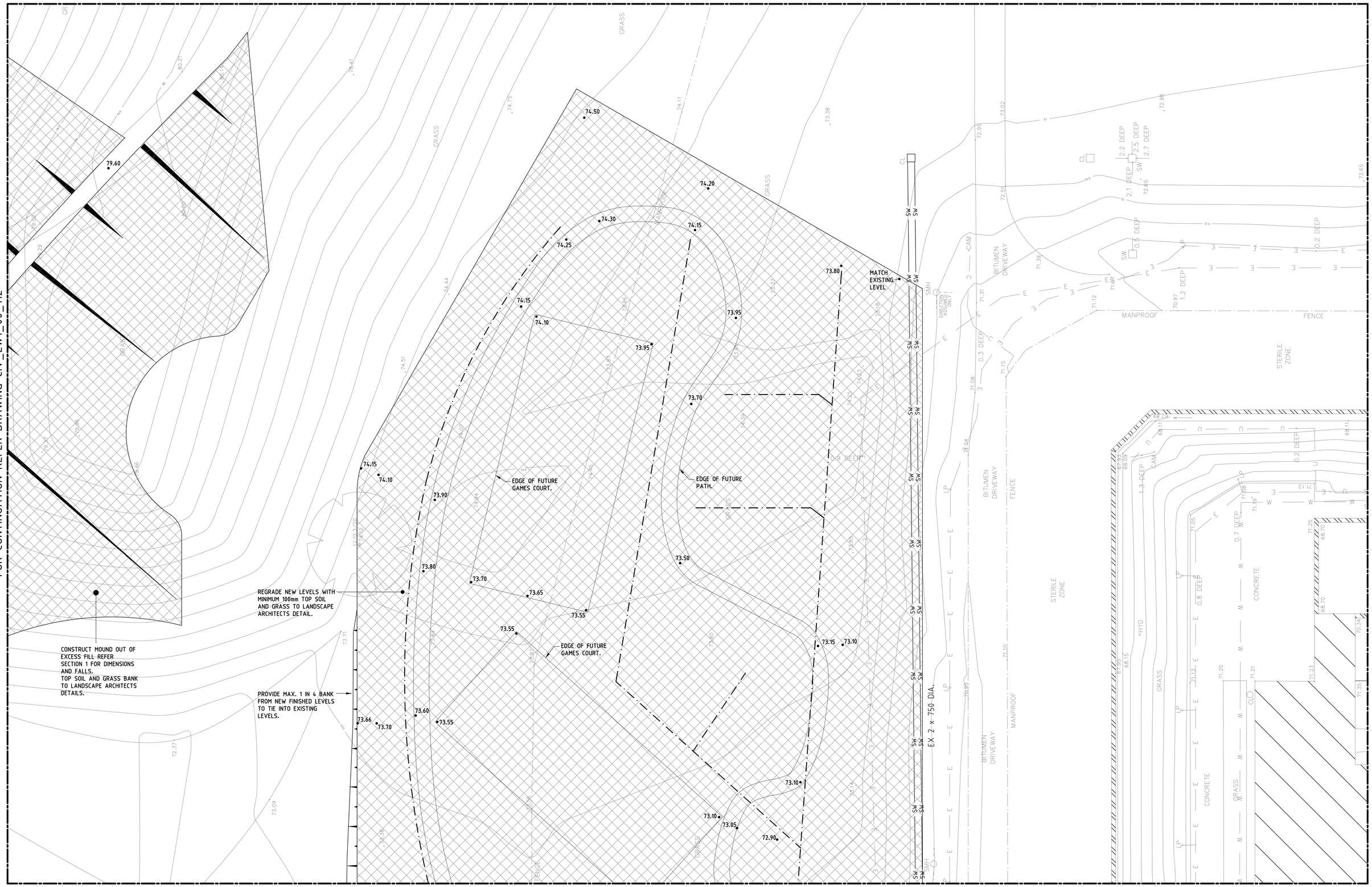

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EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 13

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SCALE 1:200@A1

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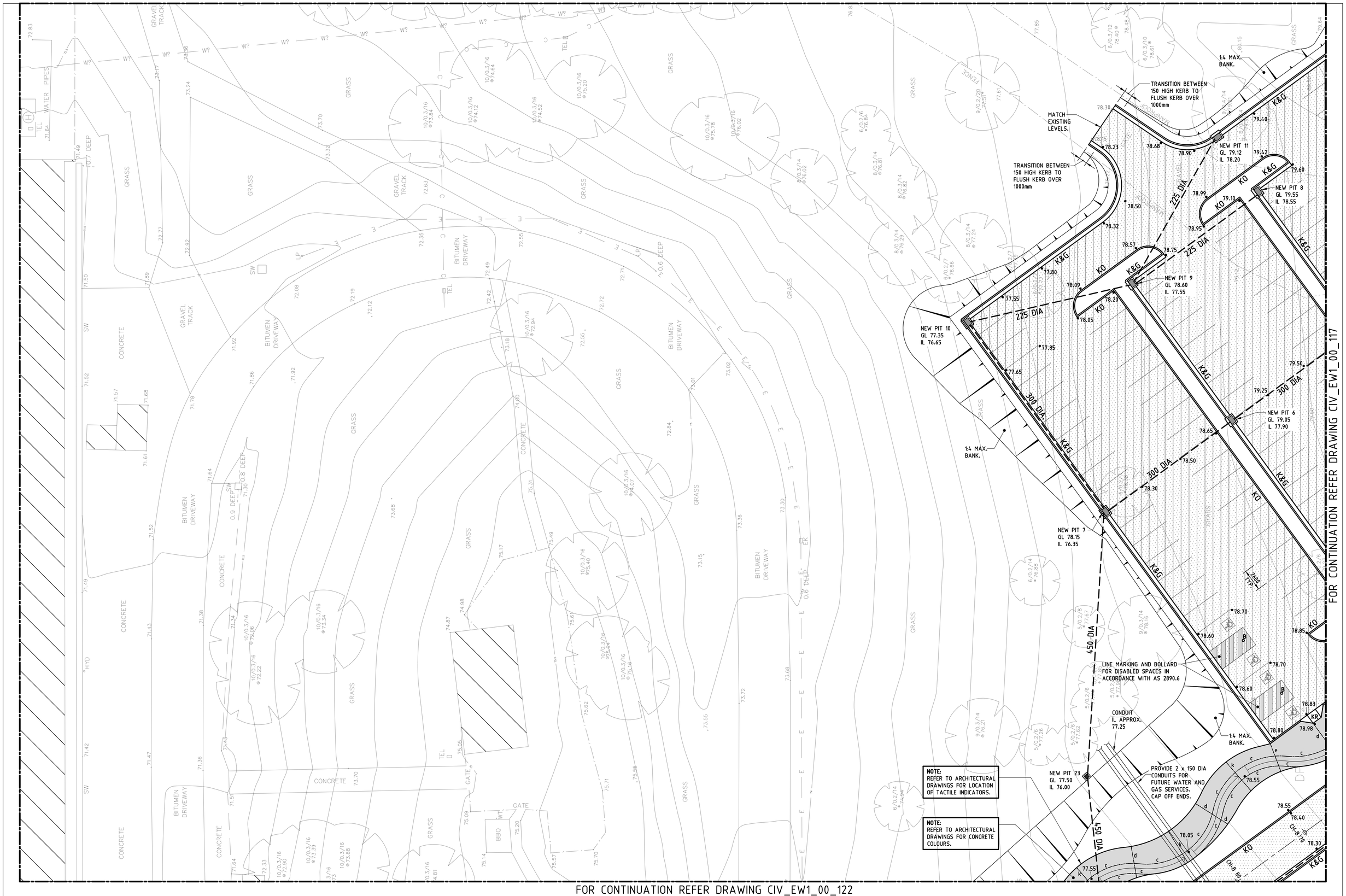

FOR CONTINUATION REFER DRAWING CIV_EW1_00_117

FOR CONTINUATION REFER DRAWING CIV_EW1_00_122

AMENDMENTS

No.	Date	Description	Ver.	Appr.
01	29.02.16	EARLY WORKS PHASE 1 - ISSUED FOR TENDER		
02	13.05.16	ISSUED FOR CONSTRUCTION	CMW	SETB

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EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 16

NORTH

SCALE 1:200@A1
DATE FEBRUARY 2016

DRAWING NUMBER: PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
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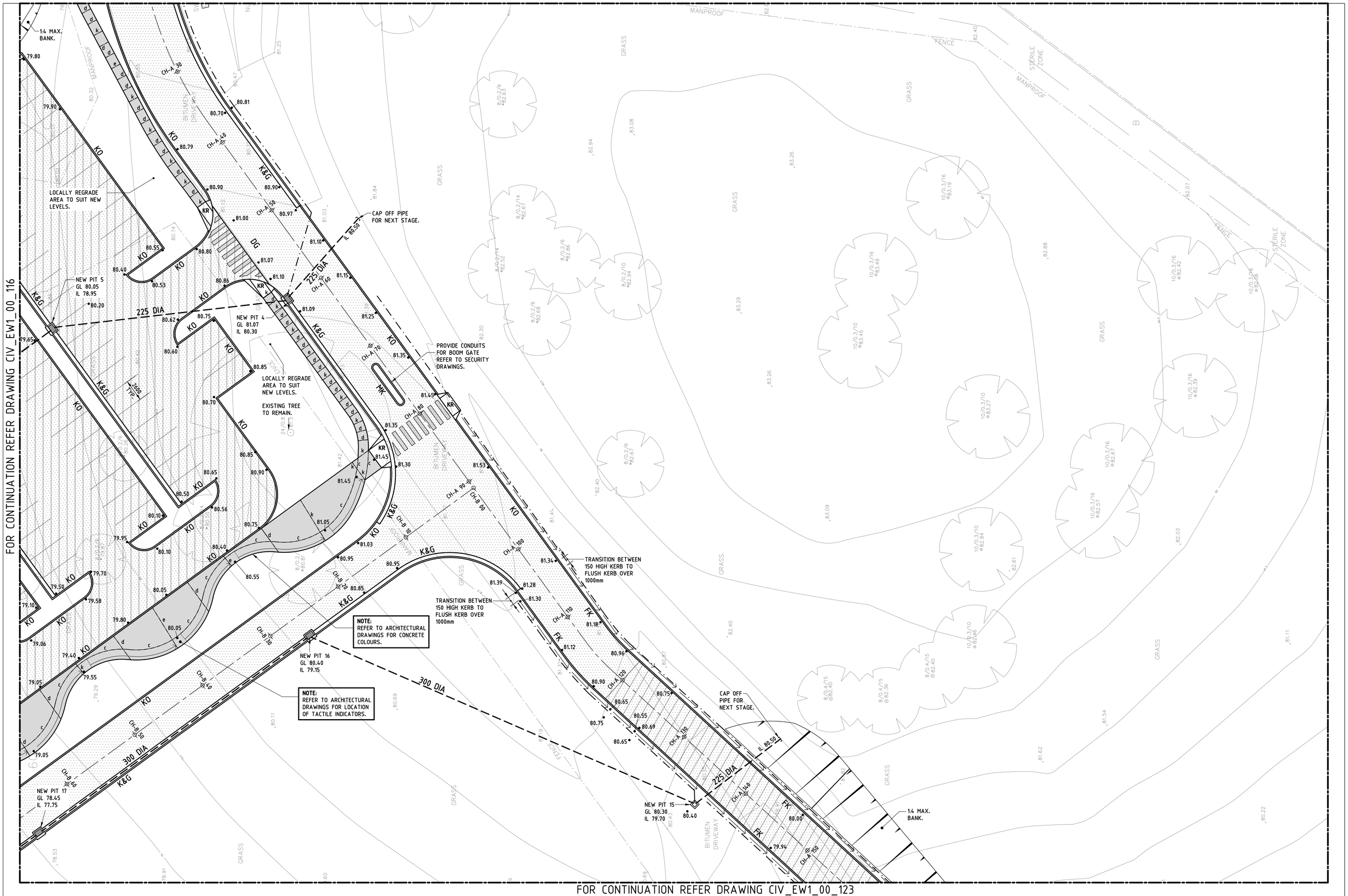

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AMENDMENTS				
No.	Date	Description	Ver.	Appr.
01	29.02.16	EARLY WORKS PHASE 1 - ISSUED FOR TENDER		
02	05.05.16	CARPARK MODIFIED TO RETAIN TREE	CMW	
03	13.05.16	ISSUED FOR CONSTRUCTION	CMW	SETB

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EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 17

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PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	EW1	00_117	03

DRAWING NUMBER

FOR CONTINUATION REFER DRAWING CIV_EW1_00_113

RESTRICTED CONSTRUCTION ISSUE

REGRADE NEW LEVELS WITH MINIMUM 100mm TOP SOIL AND GRASS TO LANDSCAPE ARCHITECTS DETAIL.

PROVIDE MAX. 1 IN 4 BANK FROM NEW FINISHED LEVELS TO TIE INTO EXISTING LEVELS.

EDGE OF FUTURE PATH.

FUTURE FENCE.

EDGE OF FUTURE SPORTS FIELD.

MATCH EXISTING LEVEL.

150 FALL

EX 2 x 750 DIA.

FOR CONTINUATION REFER DRAWING CIV_EW1_00_126

AMENDMENTS

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 19

NORTH

SCALE 1:200@A1
DATE FEBRUARY 2016

DRAWING NUMBER				REVISION
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	EW1	00_119	02

RESTRICTED CONSTRUCTION ISSUE

FOR CONTINUATION REFER DRAWING CIV_EW_00_123

FOR CONTINUATION REFER DRAWING CIV_EW_00_129

CONDUITS INSTALLED DURING EARLY WORKS PHASE 1 FOR GAS AND WATER SERVICES.

PROVIDE CONCRETE KERBS AT 1:14 RAMP REFER SECTION 1.

MAKE SMOOTH KERB JUNCTION WITH TOP OF FENCE FOOTING.

LOCALLY REGRADE AREA TO SUIT NEW LEVELS IF REQUIRED.

STRUCTURAL SLAB REFER TO STRUCTURAL DRAWINGS FOR DETAIL.

AWNING OVER STRUCTURAL SLAB.

GRADE EVENLY.

DEMOLISH EXISTING STORMWATER PIT AND PIPE.

VISITS (04)
RL 75.90

MAKE SMOOTH JUNCTION WITH KERB AND GUTTER AND ROAD PAVEMENT CONSTRUCTED IN EARLY WORKS PHASE 1.

NEW BANK TO MERGE SMOOTHLY INTO BANK CONSTRUCTED IN EARLY WORKS PHASE 1.

NEW SUBSTATION SLAB REFER DETAIL ON DRG. CIV_EW_00_005.

CONNECT NEW STORMWATER PIPE TO PIT 20 CONSTRUCTED IN EARLY WORKS PHASE 1.

ENSURE EXISTING ELECTRICAL SUPPLY IS LOCATED PRIOR TO CONSTRUCTION.

DEMOLISH EXISTING STORMWATER PIT AND PIPES.

A/C PLINTH SLAB REFER DETAIL ON DRG. CIV_EW_00_005.

RAINWATER TANK 2. REFER DRG. CIV_EW_00_123

225Ø TO TANK IL 74.80

225 DIA. OVERFLOW PIPE FROM FILTER PIT.

225 DIA. OVERFLOW PIPE FROM RAINWATER TANK.

GPT EQUAL TO STORMWATER 360 VORTCAPTURE VC60
Q TREATMENT = 85L/s
Q PIPE = 300L/s.

CAP OFF EXISTING IN COMING STORMWATER PIPE.

DEMOLISH EXISTING STORMWATER PIT. CAP OFF EXISTING OUTLET PIPE. CONNECT ANY INCOMING PIPES TO NEW PIT 66.

NEW PIT 12 GL 76.95 IL 75.70

NEW PIT 59 GL 76.50 IL 75.70

NEW PIT 71 GL 75.65 IL 74.90

NEW PIT 60 GL 75.65 IL 74.80

NEW PIT 61 GL 75.60 IL 74.70

NEW PIT 56 CL 76.50 IL 75.90

NEW PIT 62 GL 75.60 IL 74.50

NEW FILTER PIT 57 CL 75.70 IL 74.60

NEW PIT 18 GL 75.55 IL 74.30

NEW PIT 19 GL 74.95 IL 74.00

NEW PIT 20 GL 75.45 IL 73.80

NEW PIT 28 GL 75.45 IL 74.50

NEW PIT 21 GL 74.40 IL 73.20

NEW PIT 63 GL 75.60 IL 74.10

NEW PIT 64 GL 75.49 IL 74.00

NEW PIT 65 GL 75.50 IL 73.90

NEW PIT 66 GL 74.50 IL 73.50

1 CIV_EW_00_005

1:5 MAX. BANK.

1:5 MAX. BANK.

AMENDMENTS				
No.	Date	Description	Ver.	Appr.
–	15.04.16	ISSUE FOR TENDER	CMW	SETB
01	13.07.16	ISSUE FOR CONSTRUCTION	CMW	SETB

Woolacotts. CONSULTING ENGINEERS
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Ground Floor, The Solitaire, 12a Brown Street, Chatswood, NSW, 2067

Job No.	Approved	Verified	Prepared
15-207	S.E.T.B 13.07.16	C.M.W 13.07.16	T.D.C. 15.04.16

NSW GOVERNMENT Justice

NSW GOVERNMENT Public Works
SYDNEY REGION
Level 5, 2 BURBANK PLACE, BAULKHAM HILLS NSW 2153
A division of the Department of Finance and Services.

STRUCTURAL, CIVIL + HYDRAULIC WOOLACOTTS CONSULTING ENGINEERS T: 8241 990 F: 8241 9999	LANDSCAPE LORNA HARRISON PTY LTD T: 9555 1147 F: 9555 1146
ELECTRICAL JHA CONSULTING T: 9437 1000	FIRE EXOVA WARRINGTONFIRE AUS T: 02 8270 7604
MECHANICAL + ESD ERBAS & ASSOCIATES T: 9437 1022	BCA + DDA du CHATEAU CHUN T: 03 9081 1688
COMMS, SECURITY, DATA + IT IPP CONSULTING T: 8272 7200 F: 8272 7272	ACOUSTIC DAY DESIGN T: 02 9046 3874

PERUMAL PEDAVOLI ARCHITECTS
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Nominated Architect:
Vince Pedavoli NSW reg No. 5045

PERUMAL PEDAVOLI ARCHITECTS

PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 2 - CIVIL WORKS PLAN - SHEET 22

NORTH

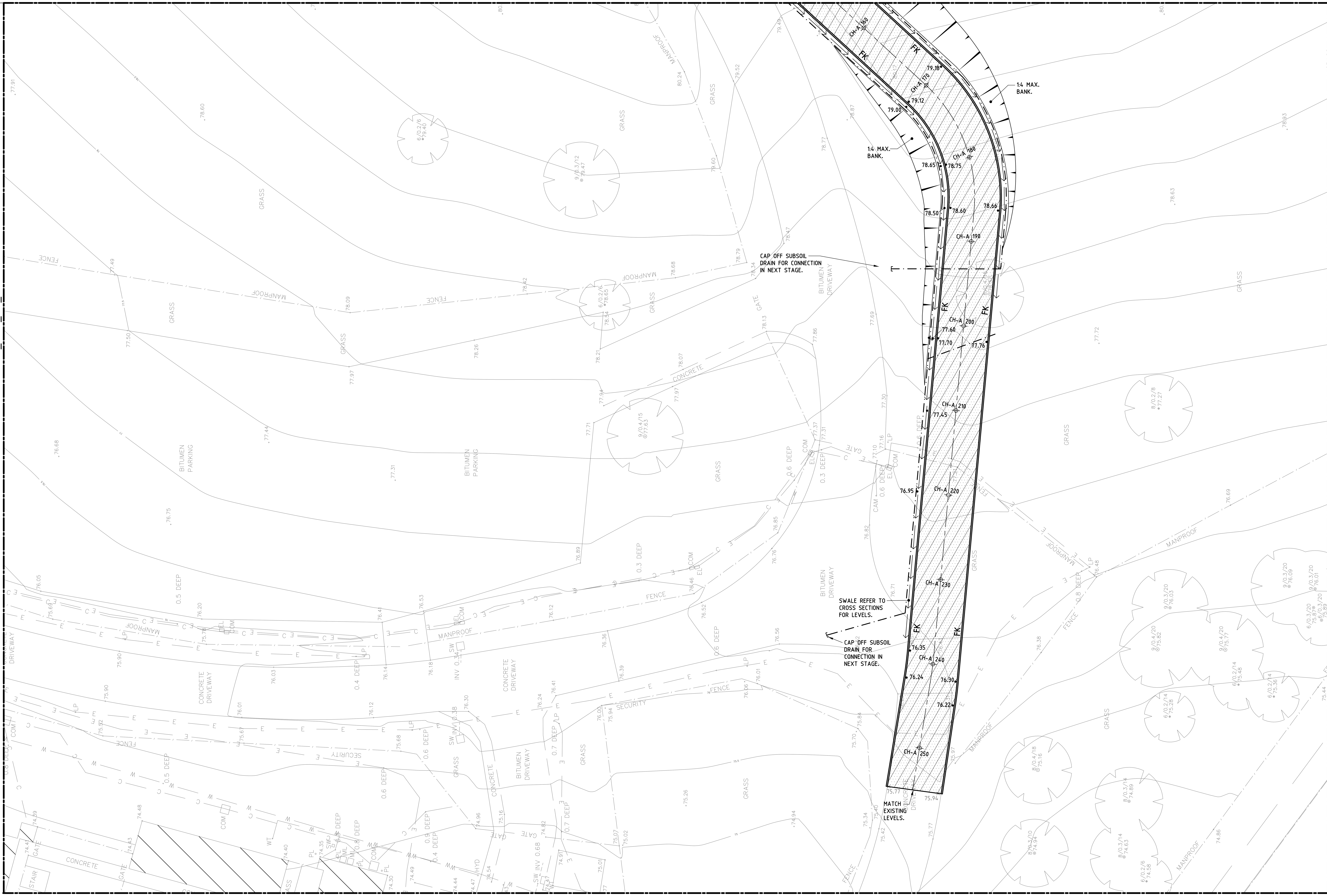
SCALE	1:200@A1
DATE	APRIL 2016
DRAWING NUMBER	
REVISION	

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	EW	00_122	01

FOR CONTINUATION REFER DRAWING CIV_EW1_00_117

FOR CONTINUATION REFER DRAWING CIV_EW1_00_122

RESTRICTED CONSTRUCTION ISSUE



AMENDMENTS				
No.	Date	Description	Ver.	Appr.
01	29.02.16	EARLY WORKS PHASE 1 - ISSUED FOR TENDER		
02	13.05.16	ISSUED FOR CONSTRUCTION	CMW	SETB

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 23

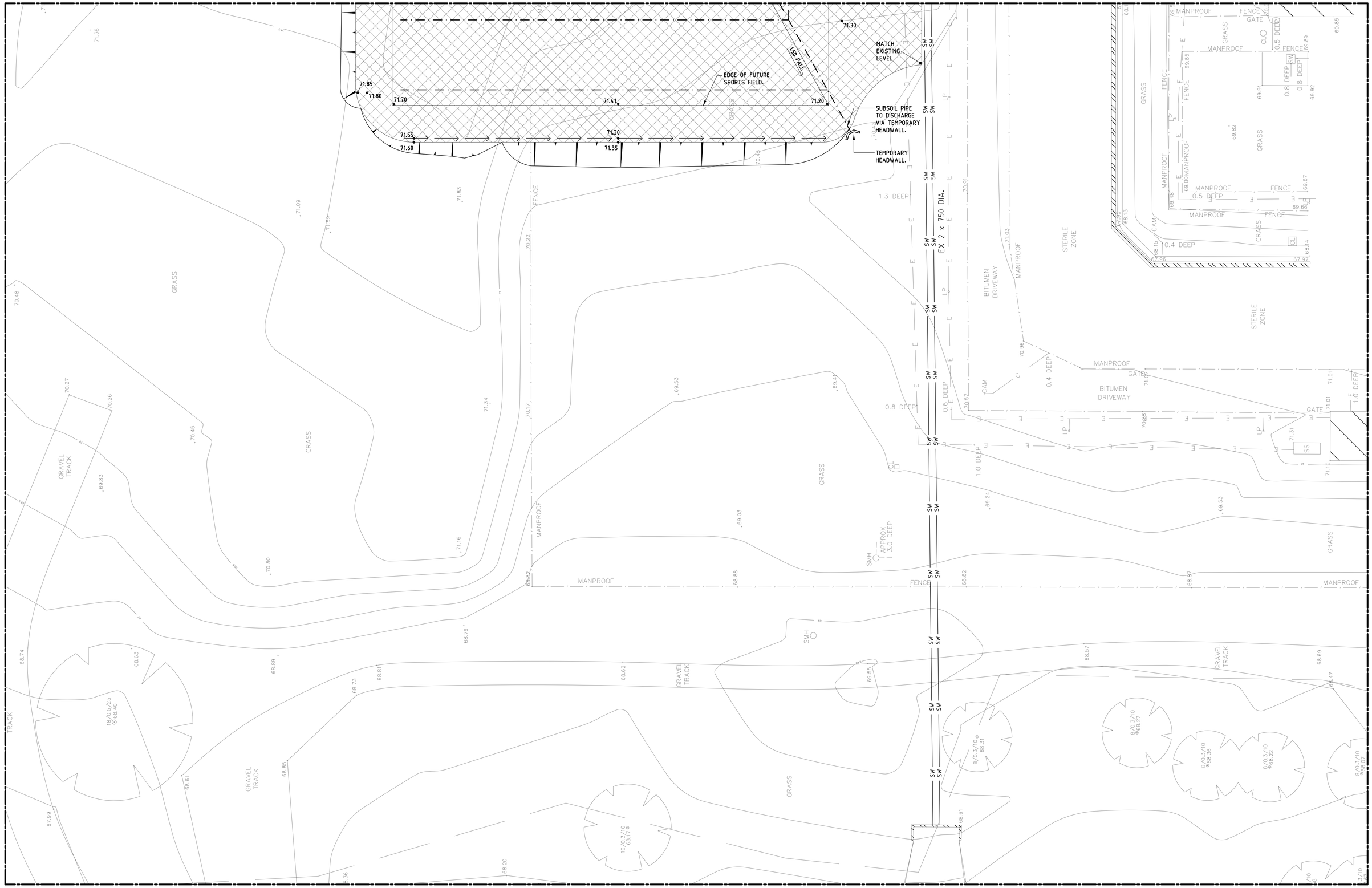
NORTH

SCALE 1:200@A1
DATE FEBRUARY 2016

DRAWING NUMBER				REVISION
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	EW1	00_123	02

FOR CONTINUATION REFER DRAWING CIV_EW1_00_119

RESTRICTED CONSTRUCTION ISSUE



AMENDMENTS

No.	Date	Description	Ver.	Appr.
01	03.03.16	EARLY WORKS PHASE 1 - ISSUED FOR TENDER		
02	13.05.16	ISSUED FOR CONSTRUCTION	CMW	SETB

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

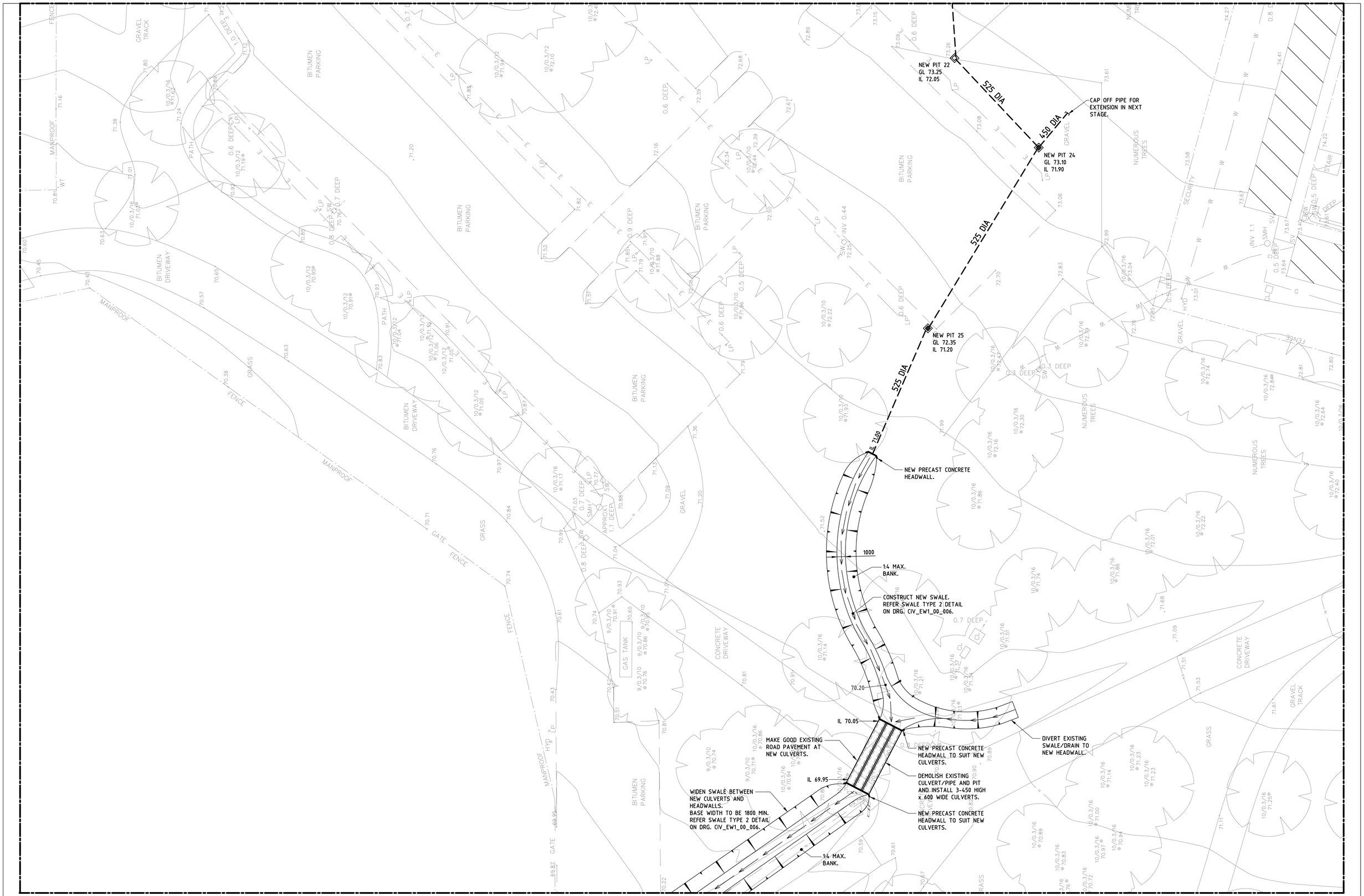
EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 26

NORTH

SCALE 1:200@A1
DATE FEBRUARY 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	EW1	00_126	02

FOR CONTINUATION REFER DRAWING CIV_EW1_00_122



FOR CONTINUATION REFER DRAWING CIV_EW1_00_135

RESTRICTED CONSTRUCTION ISSUE

AMENDMENTS

No.	Date	Description	Ver.	Appr.
01	29.02.16	EARLY WORKS PHASE 1 - ISSUED FOR TENDER		
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PARKLEA CORRECTIONAL CENTRE EXPANSION

66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 29

NORTH

SCALE 1:200@A1
DATE FEBRUARY 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	EW1	00_129	02

RESTRICTED CONSTRUCTION ISSUE

FOR CONTINUATION REFER DRAWING CIV_EW1_00_135

AMENDMENTS

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 34

NORTH

SCALE 1:200@A1
DATE FEBRUARY 2016
DRAWING NUMBER REVISION

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	EW1	00_134	02

FOR CONTINUATION REFER DRAWING CIV_EW1_00_129

FOR CONTINUATION REFER DRAWING CIV_EW1_00_134

RESTRICTED CONSTRUCTION ISSUE

EXISTING PIT.

NEW PIT 26 ON EXISTING PIPE
CL 69.80
IL TO MATCH EXISTING.
APPROX. 69.00

NEW 225 DIA.
STORMWATER PIPE.

NEW PRECAST
CONCRETE HEADWALL.

RETAIN EXISTING
HEADWALL.

WIDEN SWALE BETWEEN
NEW CULVERTS AND
HEADWALLS.
BASE WIDTH TO BE 1800 MIN.
REFER SWALE TYPE 2 DETAIL
ON DRG. CIV_EW1_00_006.

MAKE GOOD EXISTING
ROAD PAVEMENT AT
NEW CULVERTS.

WIDEN BASE OF EXISTING
SWALE TO 1500 WIDE.
REFER SWALE TYPE 2
DETAIL ON DRG. CIV_EW1_00_006.

WIDEN TOP BANK OF
EXISTING SWALE.
MAX. BANK SLOPE = 1 IN 5

IL 69.37

IL 68.95

IL 68.80

IL 68.70

1:4 MAX.
BANK.

WIDEN SWALE BETWEEN
NEW CULVERTS AND
HEADWALLS.
BASE WIDTH TO BE 1800 MIN.
REFER SWALE TYPE 2 DETAIL
ON DRG. CIV_EW1_00_006.

NEW PRECAST CONCRETE
HEADWALL TO SUIT NEW
CULVERTS.

MAKE GOOD EXISTING
ROAD PAVEMENT AT
NEW CULVERTS.

DEMOLISH EXISTING
CULVERT/PIPE AND PIT
AND INSTALL 3-450 HIGH
x 600 WIDE CULVERTS.

NEW PRECAST CONCRETE
HEADWALL TO SUIT NEW
CULVERTS.

1:4 MAX.
BANK.

NEW PRECAST CONCRETE
HEADWALL TO SUIT NEW
CULVERTS.

DEMOLISH EXISTING CULVERT AND PIT
INSTALL 3-450 HIGH x 600 WIDE
CULVERTS AND 1-450 HIGH x 450 WIDE
CULVERT.

NEW PRECAST CONCRETE
HEADWALL TO SUIT NEW
CULVERTS.

WIDEN SWALE OVER 5m
TO MATCH WIDTH OF
CULVERTS.

FENCE
CONCRETE
BITUMEN DRIVEWAY
CONCRETE DRIVEWAY
GRAVEL TRACK
GRASS
NUMEROUS TREES
OVERGROWN INACCESSIBLE
MANPROBE
0.4 DEEP WT
0.3 DEEP WT
10/0.3/16 @ 70.63
10/0.3/16 @ 70.61
10/0.3/16 @ 70.60
10/0.3/16 @ 70.48
10/0.3/16 @ 70.49
10/0.3/16 @ 70.31
10/0.3/16 @ 70.44
10/0.3/16 @ 70.56
10/0.3/16 @ 70.53
10/0.3/16 @ 70.51
10/0.3/16 @ 70.50
10/0.3/16 @ 70.39
10/0.3/16 @ 70.44
10/0.3/16 @ 70.83
10/0.3/16 @ 70.06
10/0.3/16 @ 69.74
10/0.3/16 @ 69.81
10/0.3/16 @ 69.72
10/0.3/16 @ 69.64
10/0.3/16 @ 69.82
10/0.3/16 @ 69.86
10/0.3/16 @ 69.85
10/0.3/16 @ 69.87
10/0.3/16 @ 69.95
10/0.3/16 @ 69.75
10/0.3/16 @ 69.76
10/0.3/16 @ 70.03
10/0.3/16 @ 70.25
10/0.3/16 @ 70.24
10/0.3/16 @ 70.13
10/0.3/16 @ 70.37
10/0.3/16 @ 70.34
10/0.3/16 @ 70.45
10/0.3/16 @ 70.18
10/0.3/16 @ 70.11
10/0.3/16 @ 69.99

AMENDMENTS				
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MECHANICAL + ESD ERBAS & ASSOCIATES T: 9437 1022	BCA + DDA du CHATEAU CHUN T: 03 9081 1688
COMMS, SECURITY, DATA + IT IPP CONSULTING T: 8272 7200 F: 8272 7272	ACOUSTIC DAY DESIGN T: 02 9046 3874

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

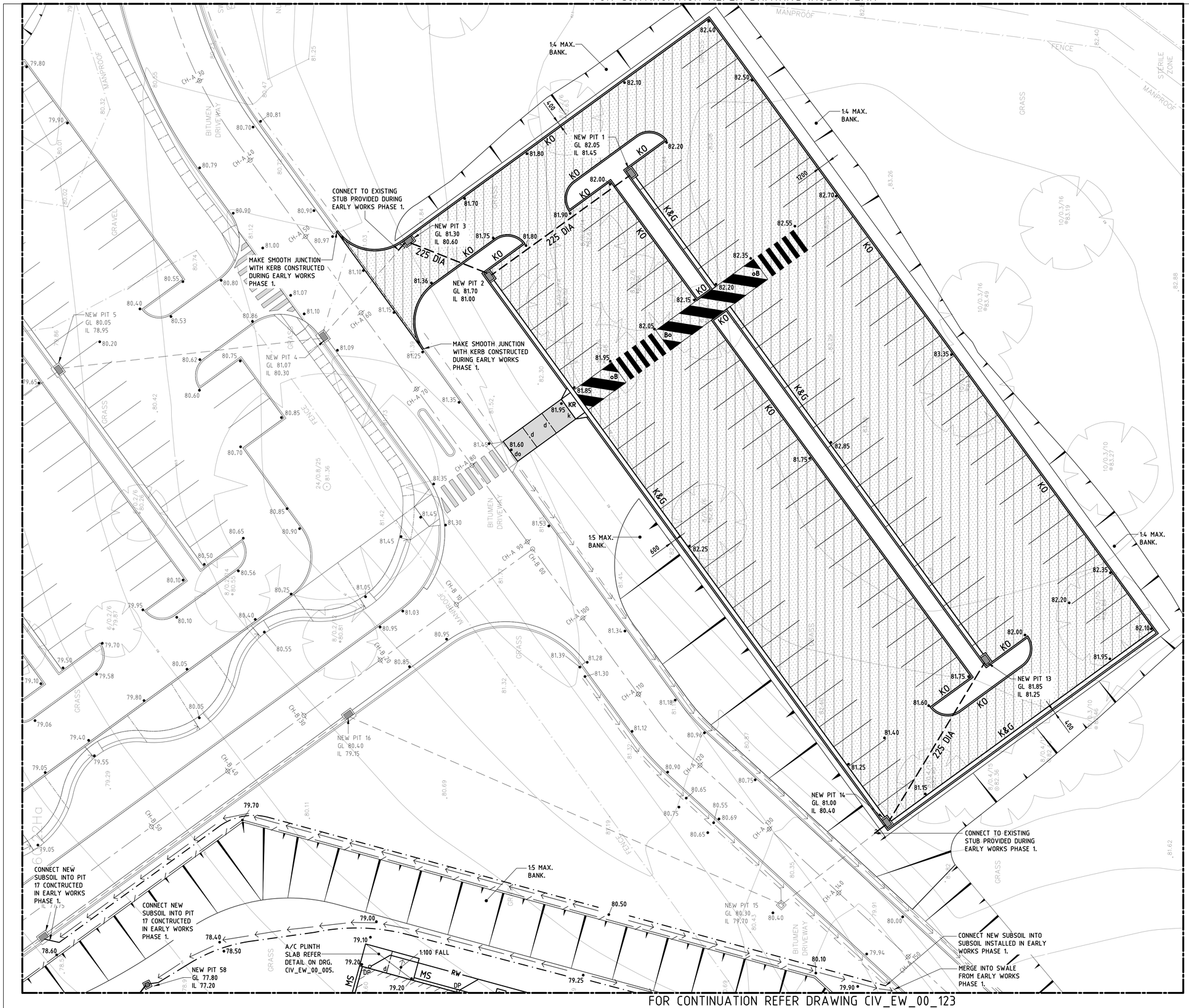
EARLY WORKS PHASE 1 - CIVIL PLAN - SHEET 35

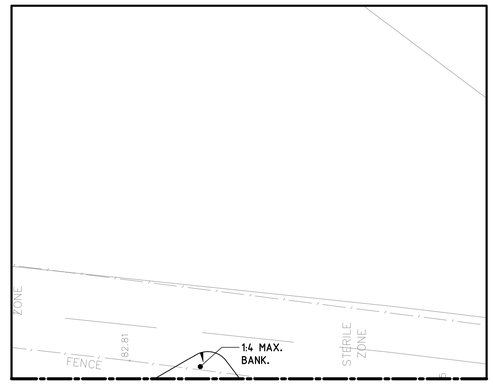
NORTH

SCALE 1:200@A1
DATE FEBRUARY 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	EW1	00_135	02

FOR CONTINUATION REFER DRAWING INSET PLAN





FOR CONTINUATION REFER DRAWING MAIN PLAN

FOR CONTINUATION REFER DRAWING CIV_EW_00_123

RESTRICTED CONSTRUCTION ISSUE

AMENDMENTS

No.	Date	Description	Ver.	Appr.
-	15.04.16	ISSUE FOR TENDER	CMW	SETB
01	13.07.16	ISSUE FOR CONSTRUCTION	CMW	SETB

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 2 - CIVIL WORKS PLAN - SHEET 17

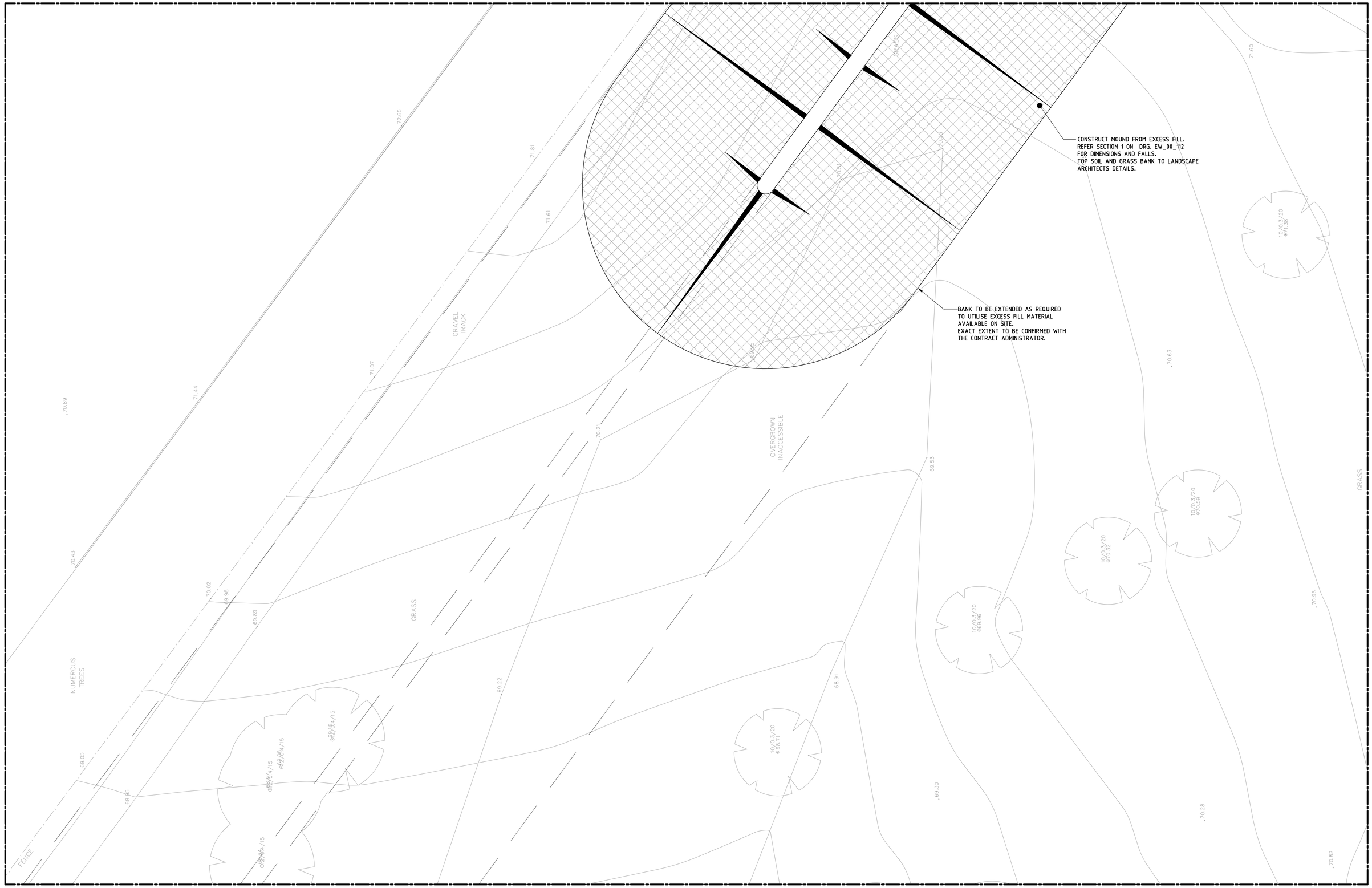
NORTH

SCALE 1:200@A1
DATE APRIL 2016
DRAWING NUMBER REVISION

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	EW	00_117	01

FOR CONTINUATION REFER DRAWING CIV_EW_00_112

RESTRICTED CONSTRUCTION ISSUE



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PARKLEA CORRECTIONAL CENTRE EXPANSION

66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 2 - CIVIL WORKS PLAN - SHEET 18

NORTH

SCALE 1:200@A1

DATE APRIL 2016

DRAWING NUMBER | REVISION

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	EW	00_118	01

RESTRICTED CONSTRUCTION ISSUE

FOR CONTINUATION REFER DRAWING CIV_EW_00_123

FOR CONTINUATION REFER DRAWING CIV_EW_00_129

CONDUITS INSTALLED DURING EARLY WORKS PHASE 1 FOR GAS AND WATER SERVICES.

PROVIDE CONCRETE KERBS AT 1:14 RAMP REFER SECTION 1.

MAKE SMOOTH KERB JUNCTION WITH TOP OF FENCE FOOTING.

LOCALLY REGRADE AREA TO SUIT NEW LEVELS IF REQUIRED.

STRUCTURAL SLAB REFER TO STRUCTURAL DRAWINGS FOR DETAIL.

AWNING OVER STRUCTURAL SLAB.

GRADE EVENLY.

DEMOLISH EXISTING STORMWATER PIT AND PIPE.

VISITS (04)
RL 75.90

MAKE SMOOTH JUNCTION WITH KERB AND GUTTER AND ROAD PAVEMENT CONSTRUCTED IN EARLY WORKS PHASE 1.

NEW BANK TO MERGE SMOOTHLY INTO BANK CONSTRUCTED IN EARLY WORKS PHASE 1.

NEW SUBSTATION SLAB REFER DETAIL ON DRG. CIV_EW_00_005.

CONNECT NEW STORMWATER PIPE TO PIT 20 CONSTRUCTED IN EARLY WORKS PHASE 1.

ENSURE EXISTING ELECTRICAL SUPPLY IS LOCATED PRIOR TO CONSTRUCTION.

DEMOLISH EXISTING STORMWATER PIT AND PIPES.

A/C PLINTH SLAB REFER DETAIL ON DRG. CIV_EW_00_005.

RAINWATER TANK 2. REFER DRG. CIV_EW_00_123

225Ø TO TANK IL 74.80

225 DIA. OVERFLOW PIPE FROM FILTER PIT.

225 DIA. OVERFLOW PIPE FROM RAINWATER TANK.

GPT EQUAL TO STORMWATER 360 VORTCAPTURE VC60
Q TREATMENT = 85L/s
Q PIPE = 300L/s.

CAP OFF EXISTING IN COMING STORMWATER PIPE.

DEMOLISH EXISTING STORMWATER PIT. CAP OFF EXISTING OUTLET PIPE. CONNECT ANY INCOMING PIPES TO NEW PIT 66.

NEW PIT 12 GL 76.95 IL 75.70

NEW PIT 59 GL 76.50 IL 75.70

NEW PIT 71 GL 75.65 IL 74.90

NEW PIT 60 GL 75.65 IL 74.80

NEW PIT 61 GL 75.60 IL 74.70

NEW PIT 56 CL 76.50 IL 75.90

NEW PIT 62 GL 75.60 IL 74.50

NEW FILTER PIT 57 CL 75.70 IL 74.60

NEW PIT 18 GL 75.55 IL 74.30

NEW PIT 19 GL 74.95 IL 74.00

NEW PIT 20 GL 75.45 IL 73.80

NEW PIT 28 GL 75.45 IL 74.50

NEW PIT 21 GL 74.40 IL 73.20

NEW PIT 63 GL 75.60 IL 74.10

NEW PIT 64 GL 75.49 IL 74.00

NEW PIT 65 GL 75.50 IL 73.90

NEW PIT 66 GL 74.50 IL 73.50

1 CIV_EW_00_005

1:5 MAX. BANK.

1:5 MAX. BANK.

AMENDMENTS				
No.	Date	Description	Ver.	Appr.
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01	13.07.16	ISSUE FOR CONSTRUCTION	CMW	SETB

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Job No.	Approved	Verified	Prepared
15-207	S.E.T.B 13.07.16	C.M.W 13.07.16	T.D.C. 15.04.16

NSW GOVERNMENT Justice

NSW GOVERNMENT Public Works
SYDNEY REGION
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COMMS, SECURITY, DATA + IT IPP CONSULTING T: 8272 7200 F: 8272 7272	ACOUSTIC DAY DESIGN T: 02 9046 3874

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Nominated Architect:
Vince Pedavoli NSW reg No. 5045

PERUMAL PEDAVOLI ARCHITECTS

PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 2 - CIVIL WORKS PLAN - SHEET 22

NORTH

SCALE	1:200@A1
DATE	APRIL 2016
DRAWING NUMBER	
REVISION	

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	EW	00_122	01

FOR CONTINUATION REFER DRAWING CIV_EW_00_117

FOR CONTINUATION REFER DRAWING CIV_EW_00_122

RESTRICTED CONSTRUCTION ISSUE

50 BED (2B)
RL 79.50

50 BED (2A)
RL 78.00

50 BED (2C)
RL 78.00

SUPPORT SERVICES (05)
RL 77.00

FALL MAX. 2.5% FOR MIN. 600 WIDE ADJACENT ALL WALKWAYS (TYPICAL).

STRUCTURAL SLAB REFER TO STRUCTURAL DRAWINGS FOR DETAIL.

A/C PLINTH SLAB REFER DETAIL ON DRG. CIV_EW_00_005.

1:100 FALL

1:5 MAX. BANK.

PROVIDE BLOCK WALL AT A/C PLINTH. REFER A/C PLINTH VARIATION ON DRG. CIV_EW_00_005.

NEW STAIR REFER TO TYP. DETAIL ON DRG. CIV_EW_00_005.

PROVIDE CONCRETE KERB AND DOWNTURN AT 1:20 RAMP. REFER SECTION 2.

EXTEND SUBSOIL PIPE INSTALLED DURING EARLY WORKS PHASE 1 TO NEW PIT.

RAINWATER TANK 2. HUMES RAINVAULT. MIN. EFFECTIVE CAPACITY = 25kL

RAINWATER TANK 1. HUMES RAINVAULT. MIN. EFFECTIVE CAPACITY = 30kL

PROTECT EXISTING COMMS CABLES DURING CONSTRUCTION

DEMOLISH EXISTING KERB INLET PIT AND CAP OFF OUTLET PIPE.

CAP OFF EXISTING OUTLET FROM PIT.

DEMOLISH EXISTING PITS AND PIPES.

GRADE EVENLY.

NEW PIT 29 GL 74.60 IL 73.90
NEW PIT 34 GL 77.65 IL 77.05
NEW PIT 35 GL 76.75 IL 76.20
NEW PIT 36 GL 76.30 IL 75.70
NEW PIT 37 GL 77.80 IL 77.25
NEW PIT 38 GL 77.94 IL 77.15
NEW PIT 39 GL 77.85 IL 76.95
NEW PIT 40 GL 77.65 IL 77.10
NEW PIT 41 GL 77.55 IL 76.30
NEW PIT 42 GL 76.80 IL 76.30
NEW PIT 43 GL 76.85 IL 76.00
NEW PIT 44 GL 76.80 IL 75.90
NEW PIT 45 CL 76.50 IL 75.20
NEW PIT 46 GL 75.60 IL 75.05
NEW PIT 47 GL 75.40 IL 74.70
NEW PIT 48 GL 75.40 IL 74.65
NEW PIT 49 GL 77.80 IL 77.25
NEW PIT 50 GL 77.90 IL 77.10
NEW PIT 51 GL 77.45 IL 76.30
NEW PIT 52 GL 76.90 IL 76.40
NEW PIT 53 GL 76.85 IL 76.30
NEW PIT 54 GL 76.70 IL 76.00
NEW PIT 55 GL 75.30 IL 74.35
NEW PIT 67 GL 76.90 IL 76.35
NEW PIT 68 GL 76.90 IL 76.20
NEW PIT 69 GL 76.90 IL 75.65
NEW FILTER PIT 33 CL 76.80 IL 75.75
NEW PIT 32 CL 77.80 IL 77.20
NEW PIT 31 CL 79.10 IL 78.20

BW1 BW2 BW3

2 CIV_EW_00_005

FOR CONTINUATION REFER DRAWING CIV_EW_00_130

AMENDMENTS

No.	Date	Description	Ver.	Appr.
-	15.04.16	ISSUE FOR TENDER	CMW	SETB
01	13.07.16	ISSUE FOR CONSTRUCTION	CMW	SETB

Woolacotts. CONSULTING ENGINEERS
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PERUMAL PEDAVOLI ARCHITECTS

PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

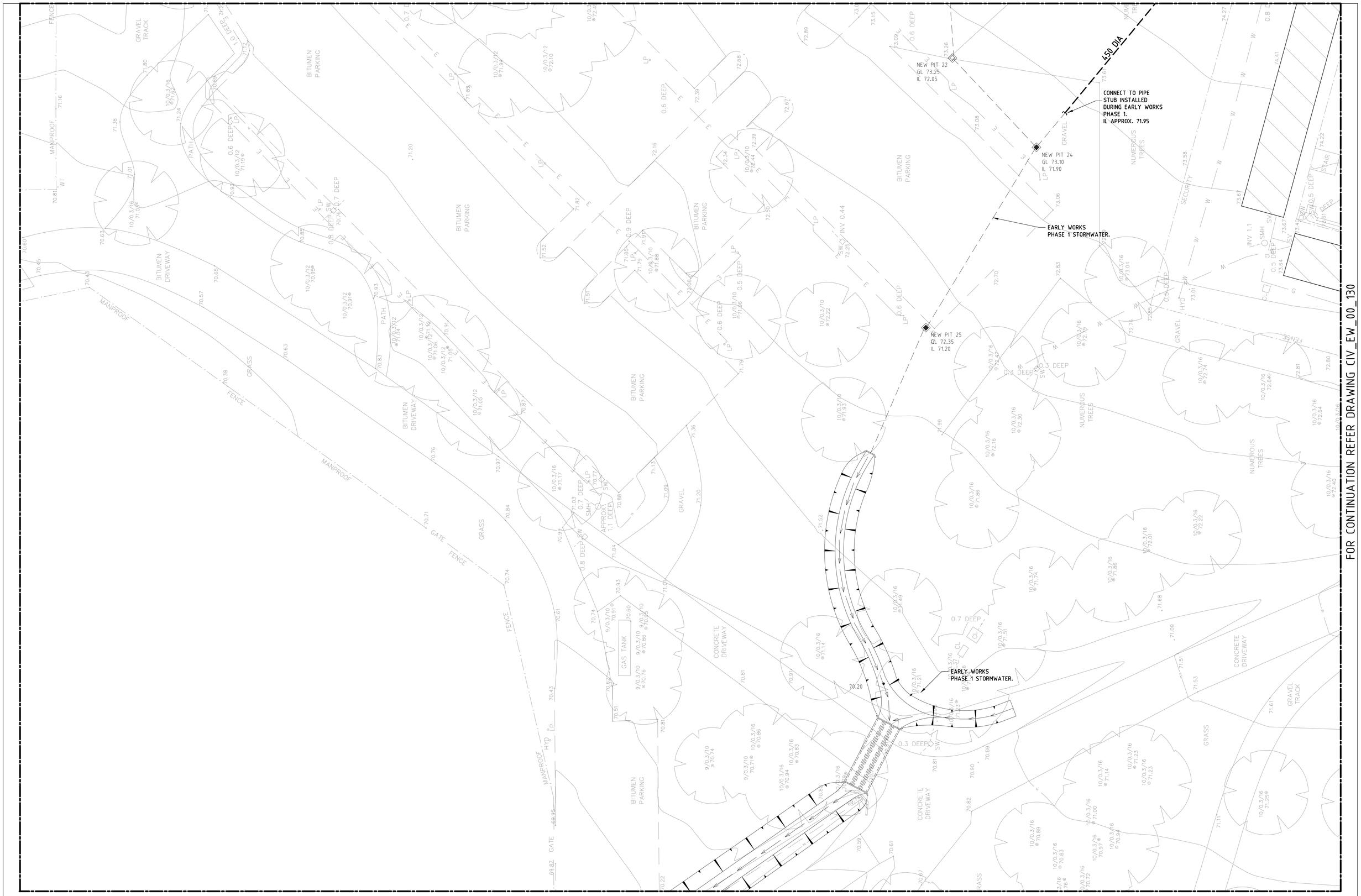
EARLY WORKS PHASE 2 - CIVIL WORKS PLAN - SHEET 23

SCALE 1:200@A1
DATE APRIL 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	EW	00_123	01

DRAWING NUMBER

FOR CONTINUATION REFER DRAWING CIV_EW_00_122



FOR CONTINUATION REFER DRAWING CIV_EW_00_130

RESTRICTED CONSTRUCTION ISSUE

AMENDMENTS

No.	Date	Description	Ver.	Appr.
-	15.04.16	ISSUE FOR TENDER	CMW	SETB
01	13.07.16	ISSUE FOR CONSTRUCTION	CMW	SETB

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PARKLEA CORRECTIONAL CENTRE EXPANSION

66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 2 - CIVIL WORKS PLAN - SHEET 29

NORTH

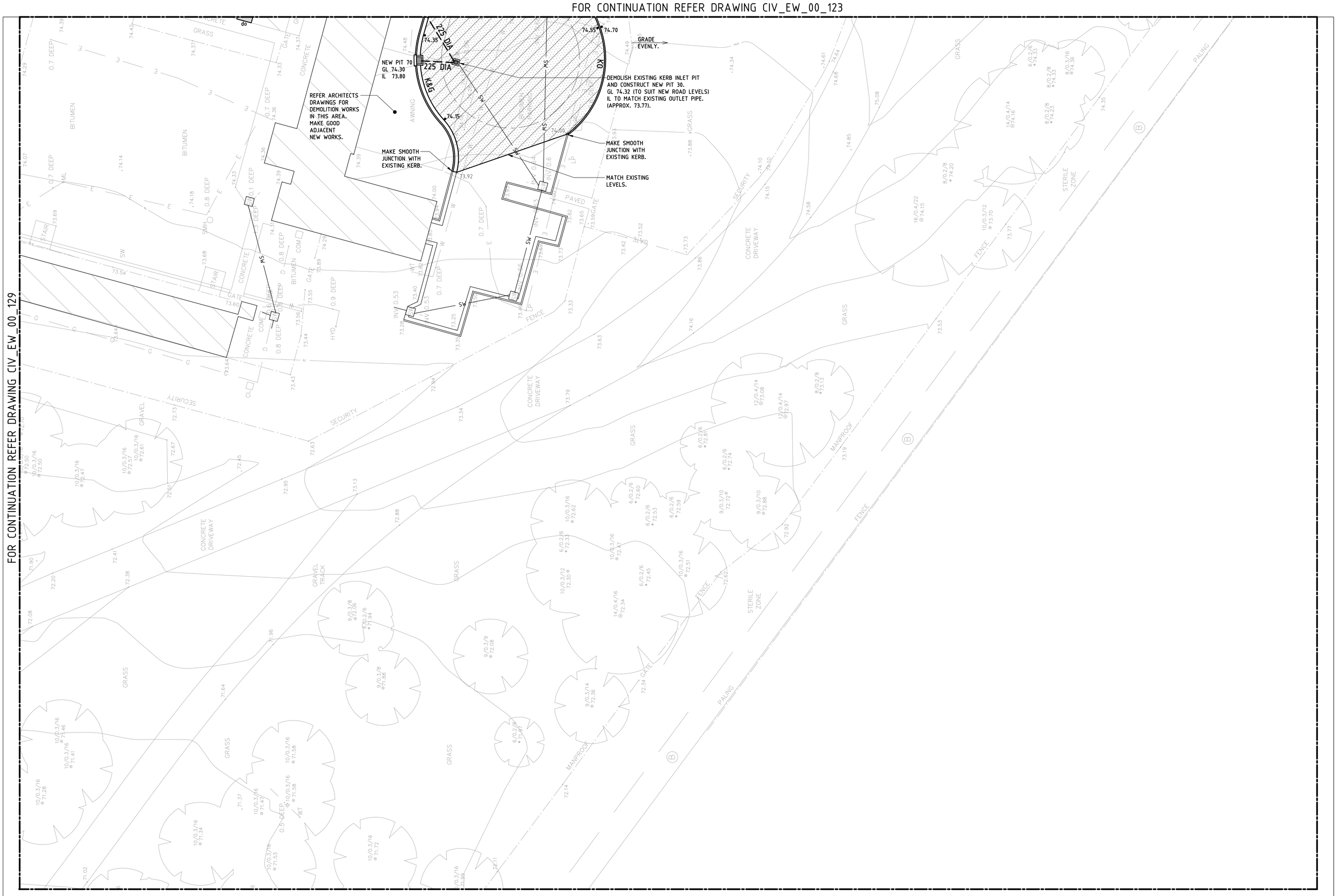
SCALE 1:200@A1
DATE APRIL 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	EW	00_129	01

FOR CONTINUATION REFER DRAWING CIV_EW_00_123

FOR CONTINUATION REFER DRAWING CIV_EW_00_129

RESTRICTED CONSTRUCTION ISSUE



AMENDMENTS

No.	Date	Description	Ver.	Appr.
-	15.04.16	ISSUE FOR TENDER	CMW	SETB
01	13.07.16	ISSUE FOR CONSTRUCTION	CMW	SETB

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

EARLY WORKS PHASE 2 - CIVIL WORKS PLAN - SHEET 30

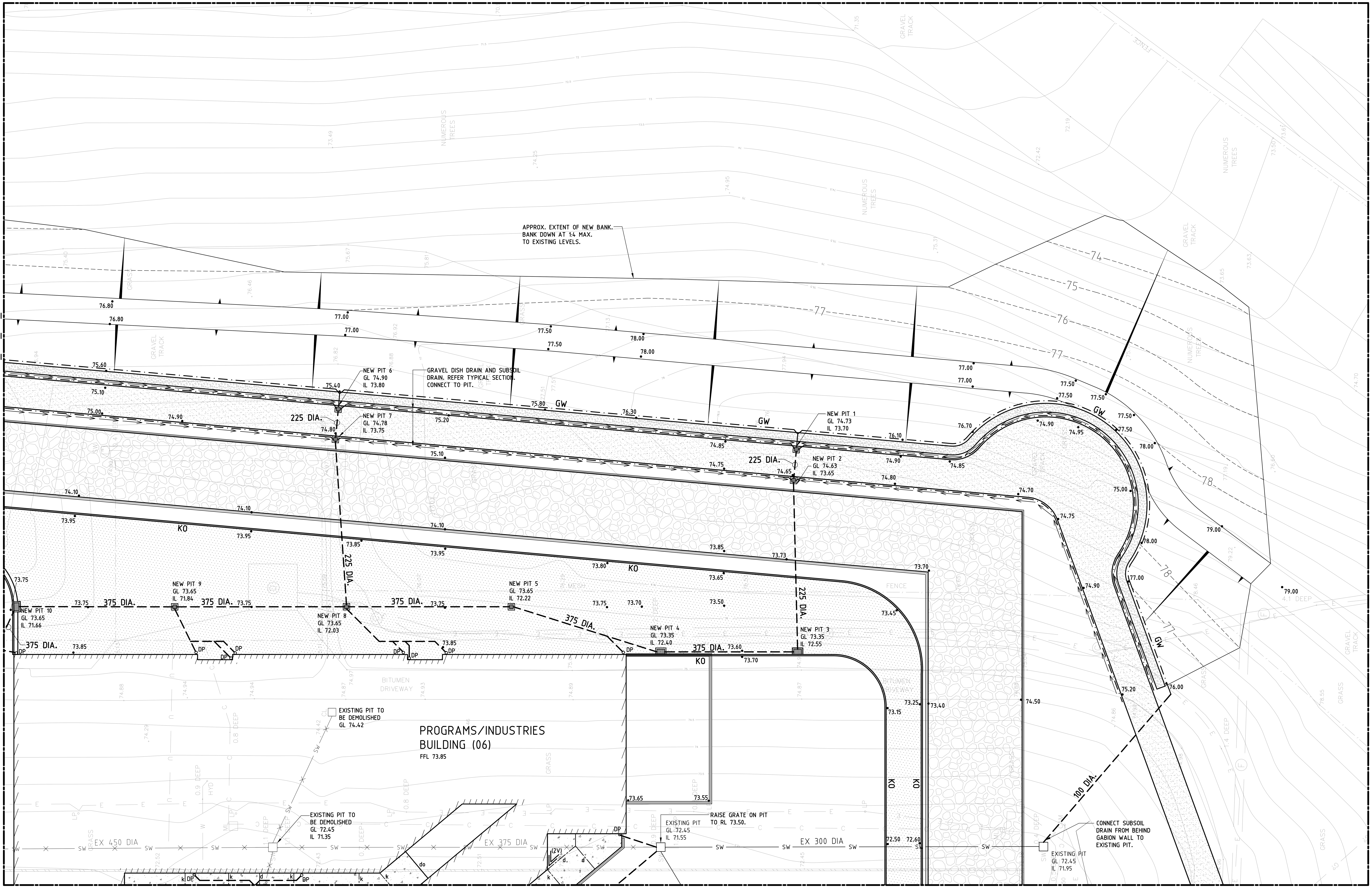
NORTH

SCALE 1:200@A1
DATE APRIL 2016
DRAWING NUMBER REVISION

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	EW	00_130	01

RESTRICTED 100% DOCUMENTATION ISSUE

FOR CONTINUATION REFER DRAWING CIV_CD_00_104



FOR CONTINUATION REFER DRAWING CIV_CD_00_109

AMENDMENTS

No.	Date	Description	Ver.	Appr.
P1	27.05.16	75% PROGRESS ISSUE		
P2	09.06.16	UPDATED 75% PROGRESS ISSUE		
P3	24.06.16	95% DOCUMENTATION ISSUE		
P4	15.07.16	100% DOCUMENTATION ISSUE		

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Job No.	Approved	Verified	Prepared
15-207			T.D.C. 15.07.16

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY CIVIL PLAN - SHEET 5

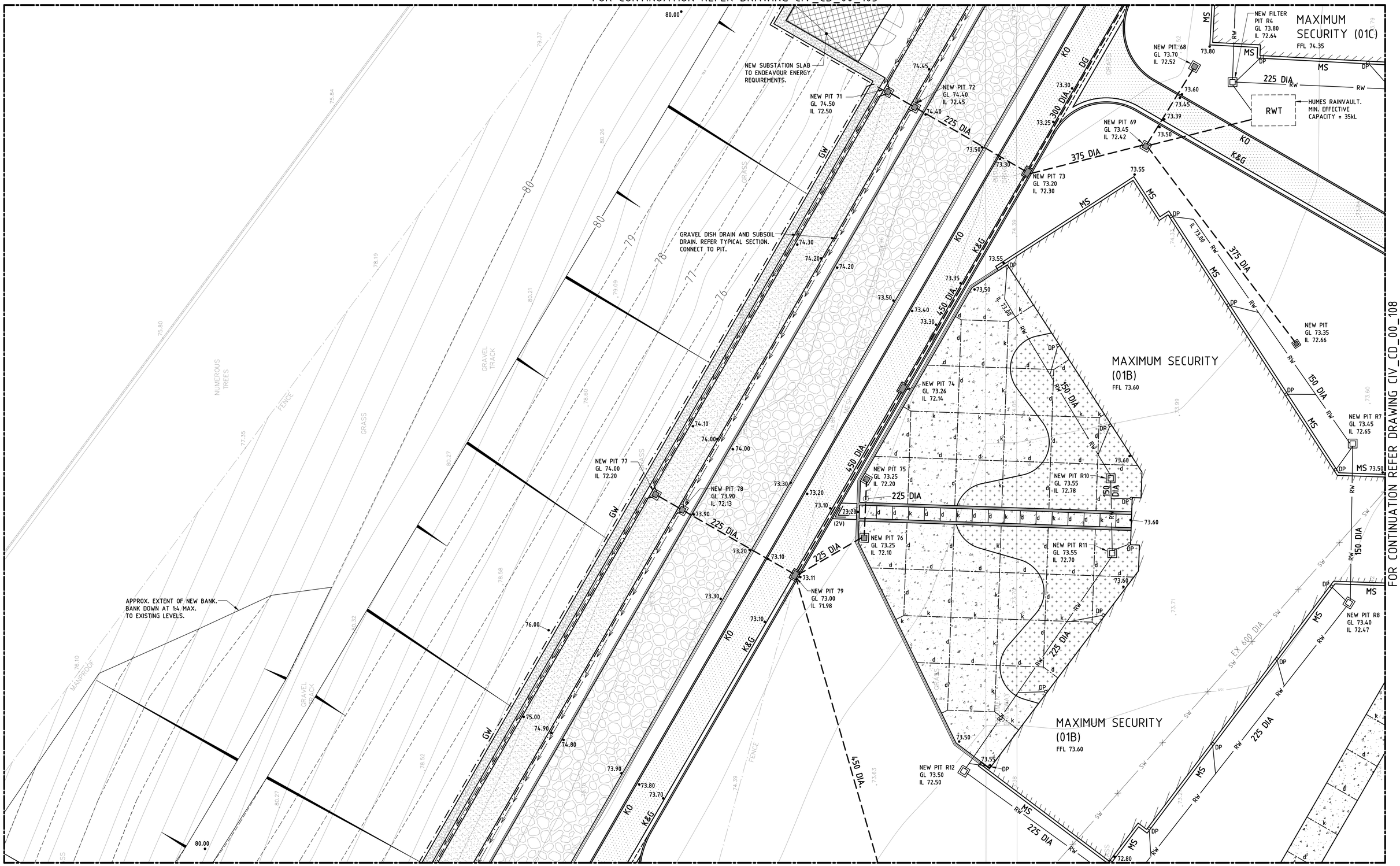
NORTH

SCALE 1:200@A1
DATE JULY 2016

DRAWING NUMBER				REVISION
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	CD	00_105	P4

RESTRICTED 100% DOCUMENTATION ISSUE

FOR CONTINUATION REFER DRAWING CIV_CD_00_103



FOR CONTINUATION REFER DRAWING CIV_CD_00_113

FOR CONTINUATION REFER DRAWING CIV_CD_00_108

AMENDMENTS

No.	Date	Description	Ver.	Appr.
P1	27.05.16	75% PROGRESS ISSUE		
P2	09.06.16	UPDATED 75% PROGRESS ISSUE		
P3	24.06.16	95% DOCUMENTATION ISSUE		
P4	15.07.16	100% DOCUMENTATION ISSUE		

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15-207			T.D.C. 15.07.16

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 7

NORTH

SCALE 1:200@A1
DATE JULY 2016

DRAWING NUMBER				
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	CD	00_107	P4

FOR CONTINUATION REFER DRAWING CIV_CD_00_104

FOR CONTINUATION REFER DRAWING CIV_CD_00_107

FOR CONTINUATION REFER DRAWING CIV_CD_00_109

RESTRICTED 100% DOCUMENTATION ISSUE

MAXIMUM SECURITY (01C) FFL 74.35

MAXIMUM SECURITY (01D) FFL 74.25

MAXIMUM SECURITY (01A) FFL 73.50

EXISTING BUILDING FFL

CONTROL POST (12) FFL 72.50

AVL/CLINIC (07) FFL 72.50

NEW PIT R5 GL 74.30 IL 73.18

NEW PIT R6 GL 74.15 IL 73.00

NEW PIT R13 GL 74.00 IL 72.85

NEW PIT R14 GL 74.05 IL 72.70

NEW PIT R15 GL 72.45 IL 71.55

NEW PIT R16 GL 74.25 IL 73.35

NEW PIT R17 GL 74.25 IL 73.25

NEW PIT R18 GL 73.70 IL 72.95

NEW PIT R19 GL 72.40 IL 71.45

NEW PIT R20 GL 72.32 IL 71.42

NEW PIT R21 GL 72.25 IL 71.35

NEW PIT 52 GL 73.60 IL 72.30

NEW PIT 53 GL 73.55 IL 71.78

NEW PIT 54 GL 73.55 IL 71.82

NEW PIT 55 GL 72.40 IL 70.40

NEW PIT 56 GL 72.30 IL 70.40

NEW PIT 57 GL 72.25 IL 70.30

NEW PIT 58 GL 72.10 IL 70.04

NEW PIT 37 GL 73.50 IL 72.15

NEW PIT 38 GL 73.30 IL 71.75

NEW PIT 39 GL 72.75 IL 71.66

NEW PIT 40 GL 72.05 IL 70.55

NEW PIT 41 GL 72.10 IL 70.50

NEW PIT 15 GL 73.05 IL 71.17

NEW PIT 19 GL 72.60 IL 70.95

NEW PIT 21 GL 72.40 IL 70.88

NEW PIT 28 GL 72.20 IL 70.78

NEW PIT 29 GL 72.25 IL 70.75

NEW PIT 30 GL 72.10 IL 71.46

EXISTING PIT TO BE DEMOLISHED GL 72.20 IL 71.60

EXISTING PIT TO BE DEMOLISHED GL 72.40 IL 71.60

EXISTING PIT TO BE DEMOLISHED GL 72.30 IL 71.62

EXISTING PIT TO BE DEMOLISHED GL 72.00 IL 71.31

EXISTING PIT TO BE DEMOLISHED GL 72.40 IL 71.30

EXISTING PIT TO BE DEMOLISHED GL 72.00 IL 71.28

EXISTING PIT TO BE DEMOLISHED GL 72.00 IL 71.47

EXISTING PIT TO BE DEMOLISHED GL 72.25 IL 71.55

EXISTING PIT TO BE DEMOLISHED GL 72.34 IL 71.14

EXISTING PIT TO BE DEMOLISHED GL 72.30 IL 71.73

EXISTING PIT GL 72.00 IL 71.28

NEW FILTER PIT R19 GL 72.40 IL 71.45

FILTER PIT

HUMES RAINVAULT. MIN. EFFECTIVE CAPACITY = 35kL

RWT

DP 1026712 51 60.22Ha

FOR CONTINUATION REFER DRAWING CIV_CD_00_114

AMENDMENTS				
No.	Date	Description	Ver.	Appr.
P1	27.05.16	75% PROGRESS ISSUE		
P2	09.06.16	UPDATED 75% PROGRESS ISSUE		
P3	24.06.16	95% DOCUMENTATION ISSUE		
P4	15.07.16	100% DOCUMENTATION ISSUE		

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66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY CIVIL PLAN - SHEET 8

NORTH

SCALE 1:200@A1

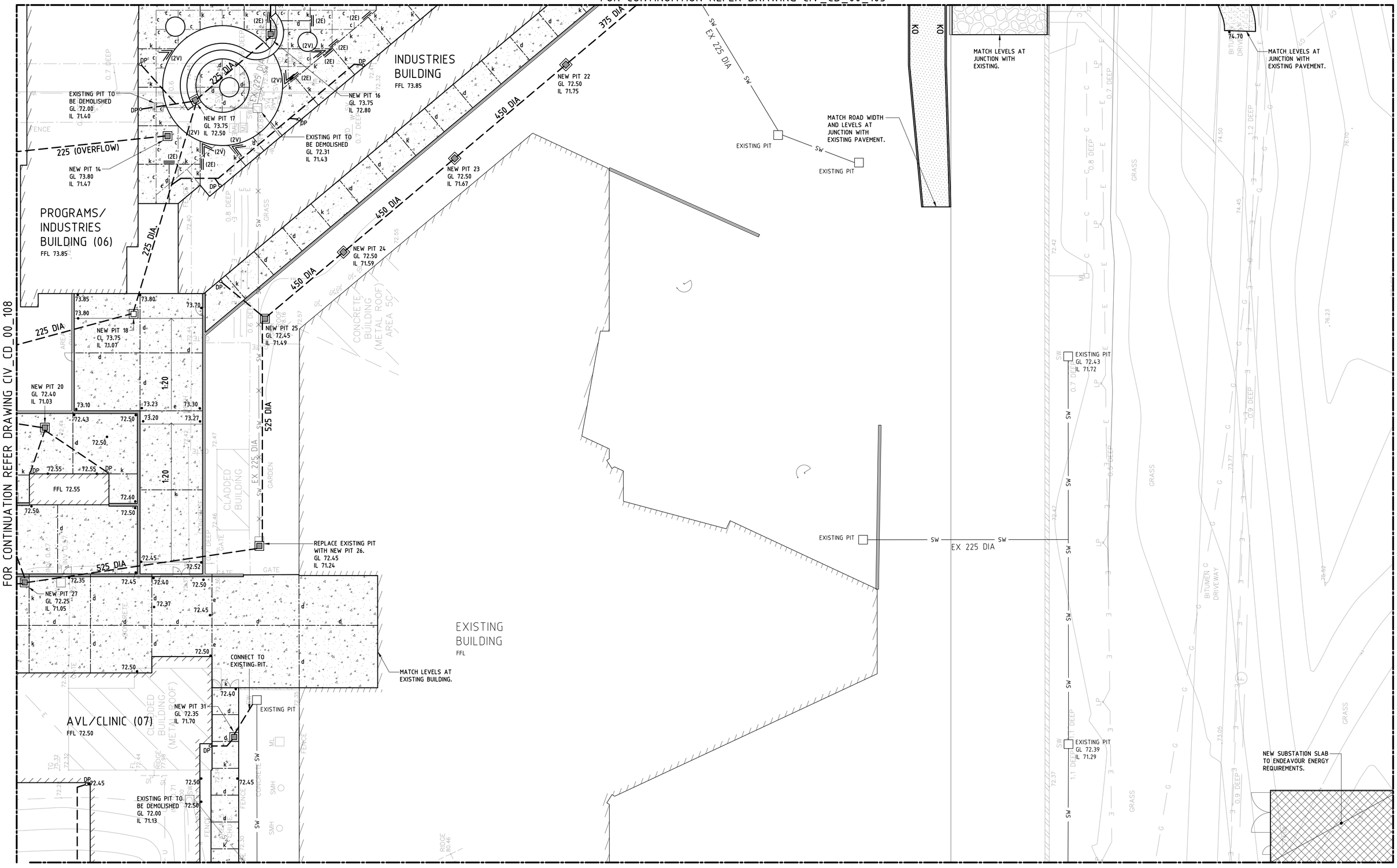
DATE JULY 2016

DRAWING NUMBER				REVISION
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	CD	00_108	P4

RESTRICTED 100% DOCUMENTATION ISSUE

FOR CONTINUATION REFER DRAWING CIV_CD_00_108

FOR CONTINUATION REFER DRAWING CIV_CD_00_105



FOR CONTINUATION REFER DRAWING CIV_CD_00_115

AMENDMENTS				
No.	Date	Description	Ver.	Appr.
P1	27.05.16	75% PROGRESS ISSUE		
P2	09.06.16	UPDATED 75% PROGRESS ISSUE		
P3	24.06.16	95% DOCUMENTATION ISSUE		
P4	15.07.16	100% DOCUMENTATION ISSUE		

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MAIN WORKS - MAXIMUM SECURITY CIVIL PLAN - SHEET 9

NORTH

SCALE 1:200@A1

DATE JULY 2016

DRAWING NUMBER

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	CD	00_109	P4

FOR CONTINUATION REFER DRAWING CIV_CD_00_107

FOR CONTINUATION REFER DRAWING CIV_CD_00_114

HUMES RAINVAULT.
MIN. EFFECTIVE
CAPACITY = 35kL

RWT

RW

NEW FILTER
PIT R9
GL 72.75
IL 72.00

NEW PIT 65
GL 72.51
IL 69.18

450 DIA.

225 DIA

NEW PIT R24
GL 72.60
IL 71.35

EXISTING PIT TO
BE DEMOLISHED
GL 72.52

EXISTING PIT
GL 73.10
IL 69.00

EX 675 DIA

EX 15
225 DIA

EXISTING PIT TO
BE DEMOLISHED
GL 72.53
IL 70.43

EX 2-750

EXISTING PIT TO
BE DEMOLISHED
GL 71.00
IL 70.50

1
CIV_CD_
00_014

NEW PIT 80
GL 71.88
IL 71.00

300 DIA

NEW PIT 81 ON
EXISTING PIPE
GL 71.95
IL 68.90 (APPROX).

900 DIA.

NEW PIT 64
GL 71.15
IL 69.07

NEW PIT 63
GL 70.80
IL 69.20

KO

K&G

DG

GW

GRAVEL DISH DRAIN AND SUBSOIL
DRAIN. REFER TYPICAL SECTION.
CONNECT TO PIT.

EXTERNAL PERIMETER ROAD

STERILE ZONE

INTERNAL PERIMETER ROAD

NEW PIT 82
GL 73.95
IL 72.95

NEW PIT 83
GL 73.55
IL 72.43

NEW PIT 96
GL 72.90
IL 72.10

NEW PIT 100
GL 72.95
IL 71.90

NEW PIT 101
GL 72.70
IL 71.70

FFL 73.00

MS

APPROX. EXTENT OF NEW BANK.
BANK DOWN AT 1:4 MAX.
TO EXISTING LEVELS.

NEW BRIDGE
OVER MOAT
REFER STRUCTURAL
DRAWINGS.

APPROX. EXTENT OF NEW BANK.
BANK DOWN AT 1:4 MAX.
TO EXISTING LEVELS.

PROVIDE KERB
AND HANDRAIL
AT RAMP REFER
SECTION 3.

3
CIV_CD_
00_015

NEW RAMP
REFER SECTION 3.

FOR CONTINUATION REFER DRAWING CIV_CD_00_119

AMENDMENTS

No.	Date	Description	Ver.	Appr.
P1	27.05.16	75% PROGRESS ISSUE		
P2	09.06.16	UPDATED 75% PROGRESS ISSUE		
P3	24.06.16	95% DOCUMENTATION ISSUE		
P4	15.07.16	100% DOCUMENTATION ISSUE		

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Job No.	Approved	Verified	Prepared
15-207			T.D.C. 15.07.16

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MECHANICAL + ESD ERBAS & ASSOCIATES T: 9437 1022	BCA + DDA du CHATEAU CHUN T: 03 9581 1688
COMMS, SECURITY, DATA + IT IPP CONSULTING T: 8272 7200 F: 8272 7272	ACOUSTIC DAY DESIGN T: 02 9046 3874

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PERUMAL PEDAVOLI ARCHITECTS

PARKLEA CORRECTIONAL CENTRE EXPANSION

66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY CIVIL PLAN - SHEET 13

NORTH

SCALE 1:200@A1

DATE JULY 2016

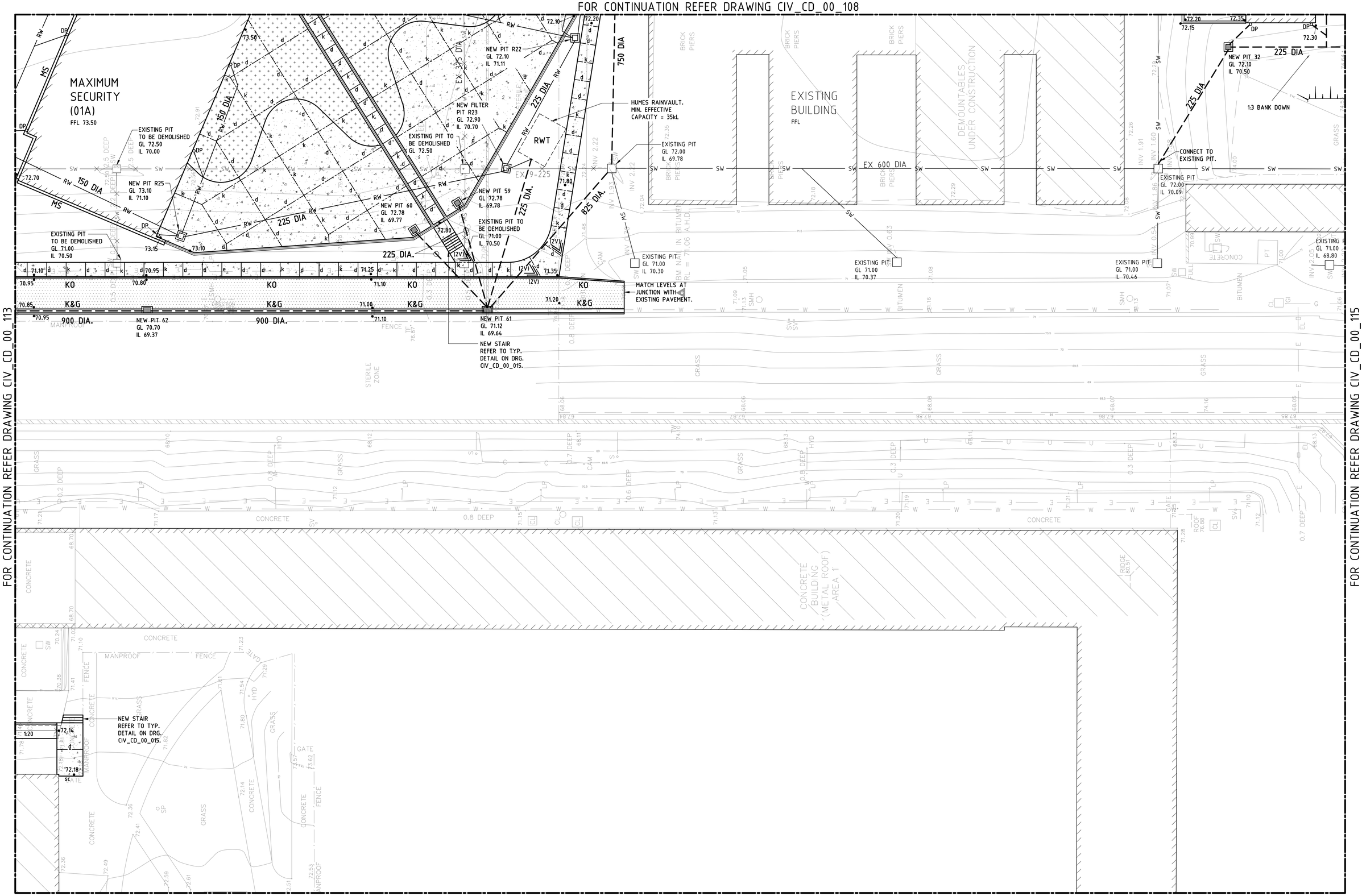
DRAWING NUMBER				REVISION
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	CD	00_113	P4

FOR CONTINUATION REFER DRAWING CIV_CD_00_108

FOR CONTINUATION REFER DRAWING CIV_CD_00_113

FOR CONTINUATION REFER DRAWING CIV_CD_00_115

RESTRICTED 100% DOCUMENTATION ISSUE



AMENDMENTS				
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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 14

MGA 56

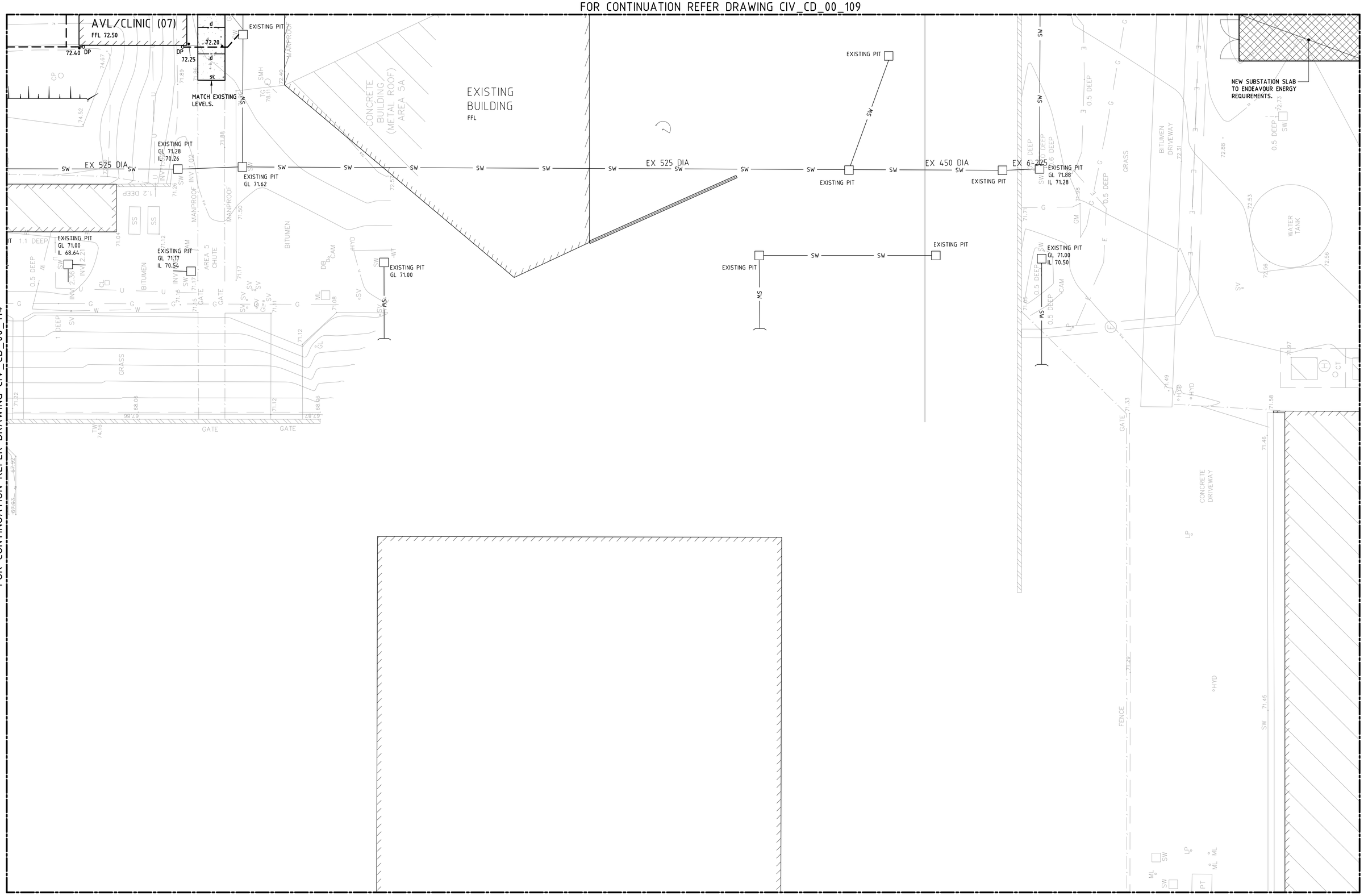
SCALE	1:200@A1
DATE	JULY 2016

DRAWING NUMBER				REVISION
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	CD	00_114	P4

RESTRICTED 100% DOCUMENTATION ISSUE

FOR CONTINUATION REFER DRAWING CIV_CD_00_114

FOR CONTINUATION REFER DRAWING CIV_CD_00_109



AMENDMENTS				
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66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 15

MGA 56

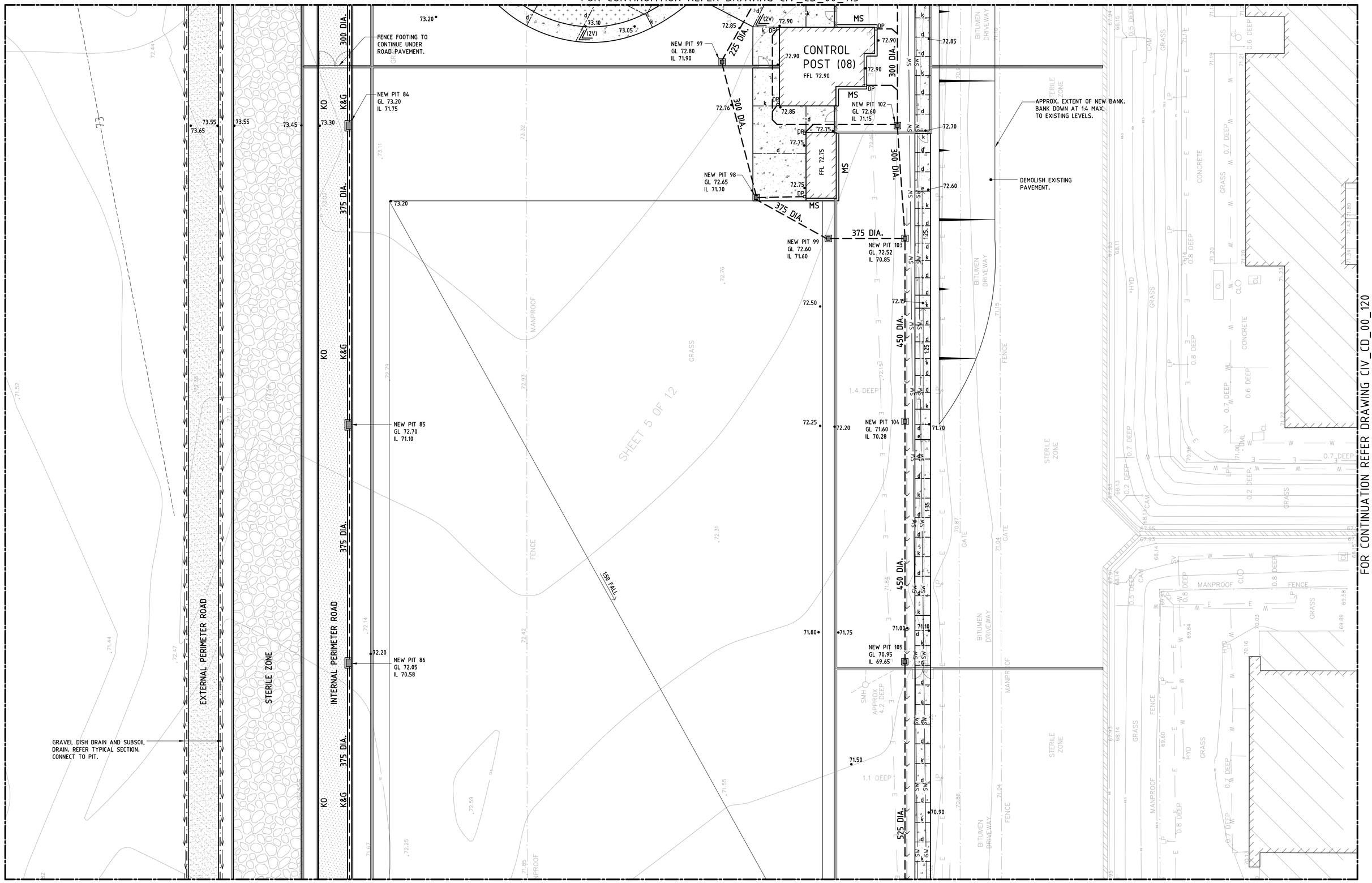
SCALE 1:200@A1

DATE JULY 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	CD	00_115	P4

RESTRICTED 100% DOCUMENTATION ISSUE

FOR CONTINUATION REFER DRAWING CIV_CD_00_113



FOR CONTINUATION REFER DRAWING CIV_CD_00_126

FOR CONTINUATION REFER DRAWING CIV_CD_00_120

AMENDMENTS

No.	Date	Description	Ver.	Appr.
P1	27.05.16	75% PROGRESS ISSUE		
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MECHANICAL + ESD ERBAS & ASSOCIATES T: 9437 1022	BCA + DDA du CHATEAU CHUN T: 03 9081 1686
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66 SENTRY DRIVE, PARKLEA NSW

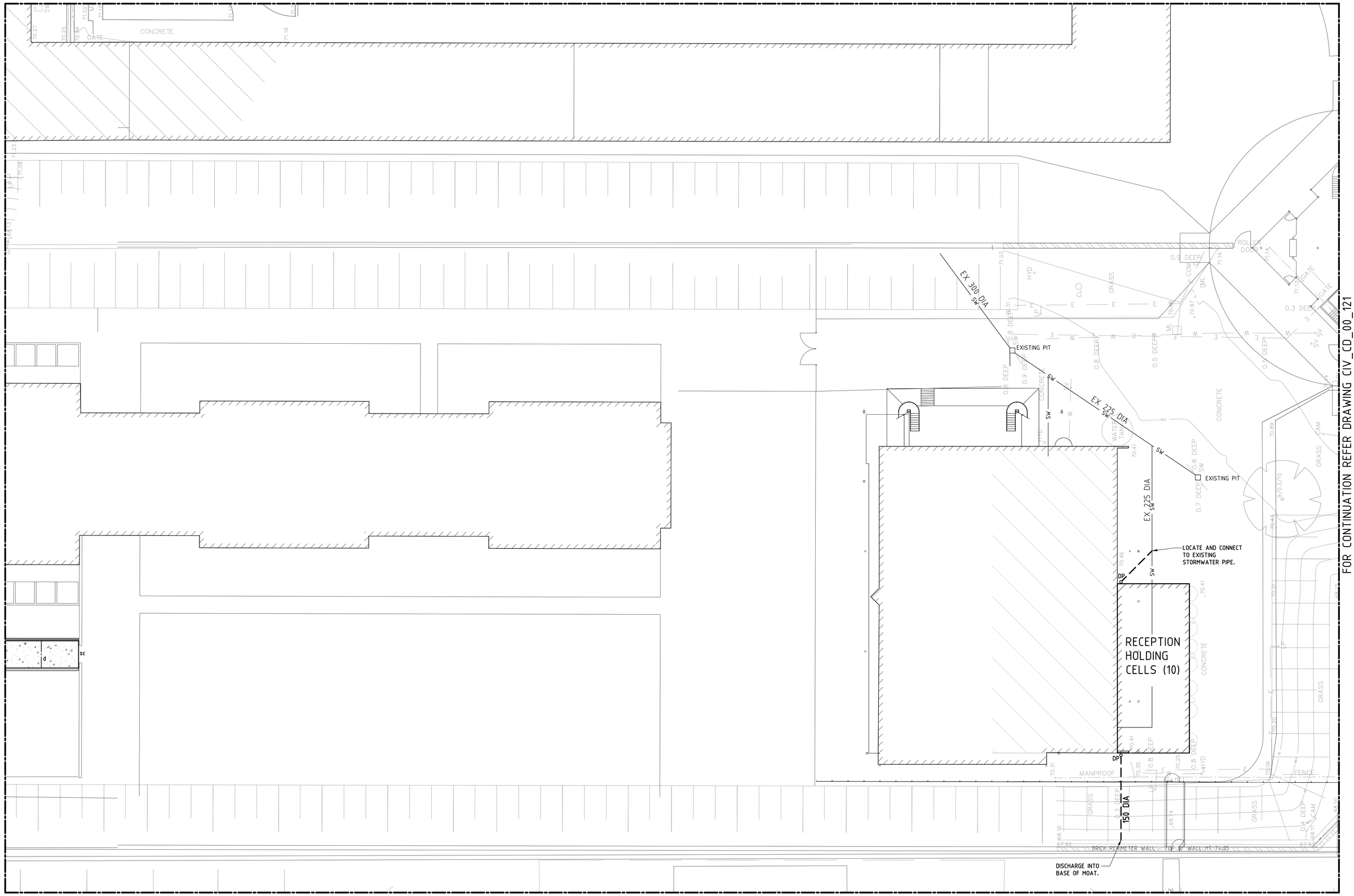
MAIN WORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 19

NORTH

SCALE 1:200@A1
DATE JULY 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	CD	00_119	P4

RESTRICTED 100% DOCUMENTATION ISSUE



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66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 20

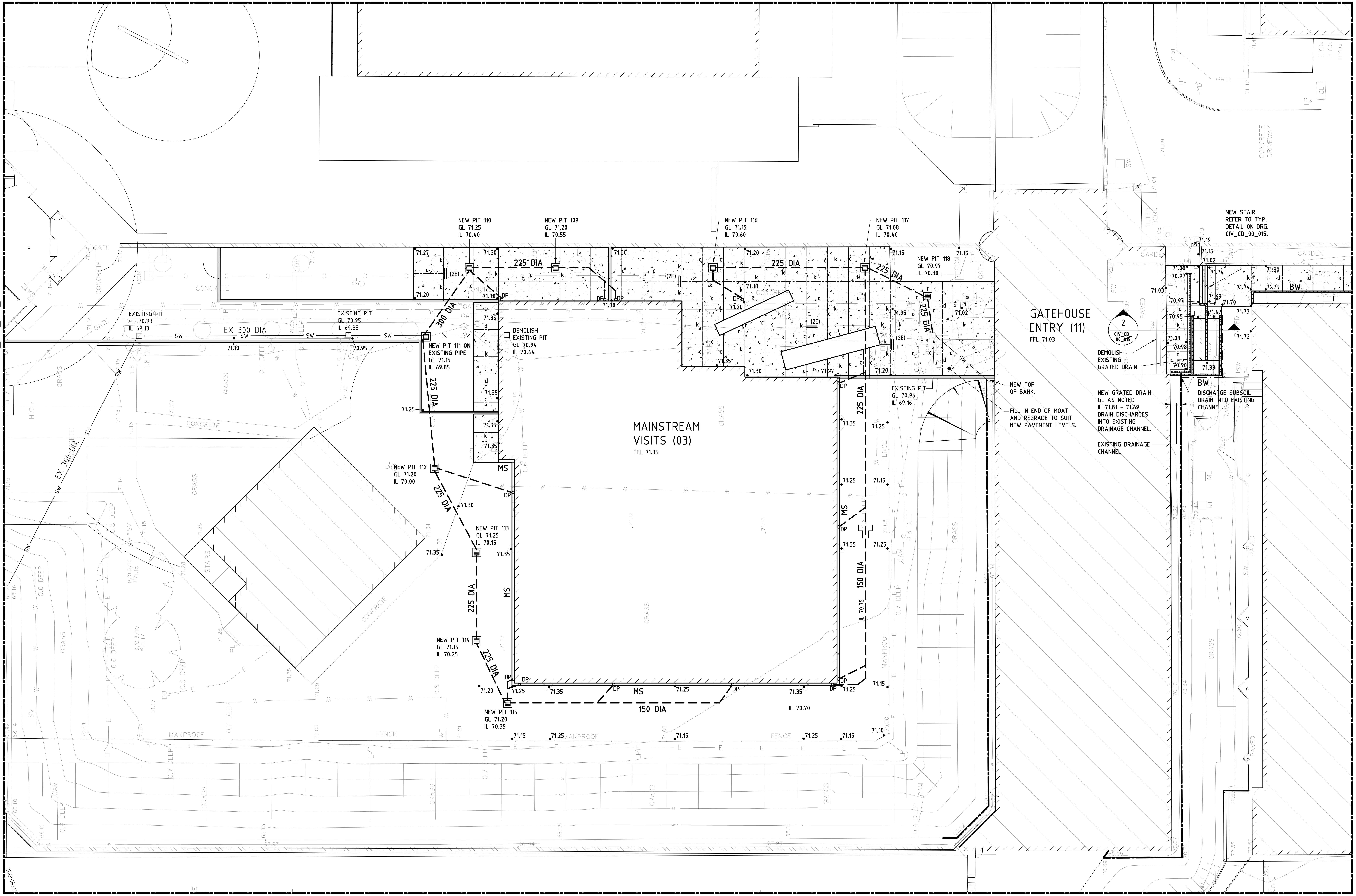
NORTH

SCALE	1:200@A1
DATE	JULY 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	CD	00_120	P4

RESTRICTED 100% DOCUMENTATION ISSUE

FOR CONTINUATION REFER DRAWING CIV_CD_00_120



FOR CONTINUATION REFER DRAWING CIV_CD_00_122

AMENDMENTS

No.	Date	Description	Ver.	Appr.
P1	27.05.16	75% PROGRESS ISSUE		
P2	09.06.16	UPDATED 75% PROGRESS ISSUE		
P3	24.06.16	95% DOCUMENTATION ISSUE		
P4	15.07.16	100% DOCUMENTATION ISSUE		

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Job No.	Approved	Verified	Prepared
15-207			T.D.C. 15.07.16

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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY CIVIL PLAN - SHEET 21

NORTH

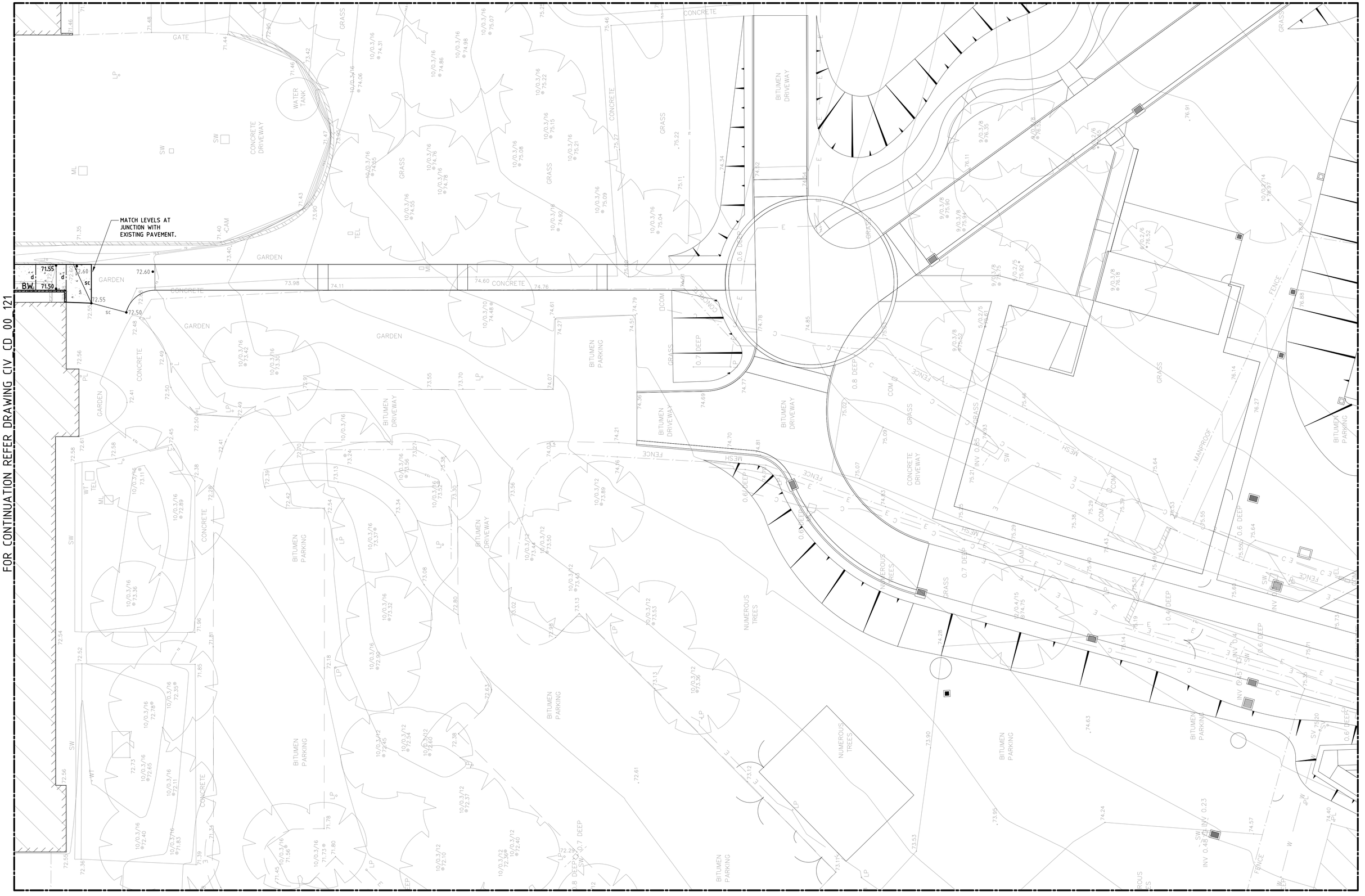
SCALE 1:200@A1
DATE JULY 2016

DRAWING NUMBER

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	CD	00_121	P4

RESTRICTED 100% DOCUMENTATION ISSUE

FOR CONTINUATION REFER DRAWING CIV_CD_00_121



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PARKLEA CORRECTIONAL CENTRE EXPANSION

66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 22

NORTH

SCALE	1:200@A1
DATE	JULY 2016

DRAWING NUMBER: PROJECT 3162 | DISCIPLINE CIV | PHASE CD | SERIES NUMBER 00_122 | REVISION P4

FOR CONTINUATION REFER DRAWING CIV_CD_00_119

FOR CONTINUATION REFER DRAWING CIV_CD_00_125

RESTRICTED 100% DOCUMENTATION ISSUE

GRAVEL DISH DRAIN AND SUBSOIL DRAIN. REFER TYPICAL SECTION. CONNECT TO PIT.

INTERNAL PERIMETER ROAD

STERILE ZONE

EXTERNAL PERIMETER ROAD

NEW PIT 87 GL 71.70 IL 69.95

NEW PIT 88 GL 71.35 IL 69.69

NEW PIT 89 GL 71.10 IL 69.19

NEW PIT 90 GL 70.95 IL 68.80

NEW PIT 91 GL 71.15 IL 68.55

NEW PIT 92 GL 71.05 IL 68.47

NEW PIT 93 GL 70.95 IL 68.39

NEW PIT 94 GL 70.95 IL 68.26

NEW PIT 95 GL 70.40 IL 68.20

NEW PIT 106 GL 70.70 IL 69.05

NEW PIT 107 GL 70.70 IL 67.98

NEW PIT 108 GL 70.60 IL 67.91

3 - 225 DIA.

29 - 225 DIA.

300 DIA.

375 DIA.

450 DIA.

525 DIA.

150 FALL

NEW BRIDGE OVER MOAT REFER STRUCTURAL DRAWINGS.

MATCH LEVELS AT JUNCTION WITH EXISTING PAVEMENT.

MATCH LEVELS AT JUNCTION WITH EXISTING PAVEMENT.

GPT EQUAL TO STORMWATER 360 VORTCAPTURE VC60

NEW PRECAST CONCRETE HEADWALL IL 67.60

IL 67.60

FOR CONTINUATION REFER DRAWING CIV_CD_00_127

FOR CONTINUATION REFER DRAWING CIV_CD_00_132

AMENDMENTS

No.	Date	Description	Ver.	Appr.
P1	27.05.16	75% PROGRESS ISSUE		
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PARKLEA CORRECTIONAL CENTRE EXPANSION

66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 26

NORTH

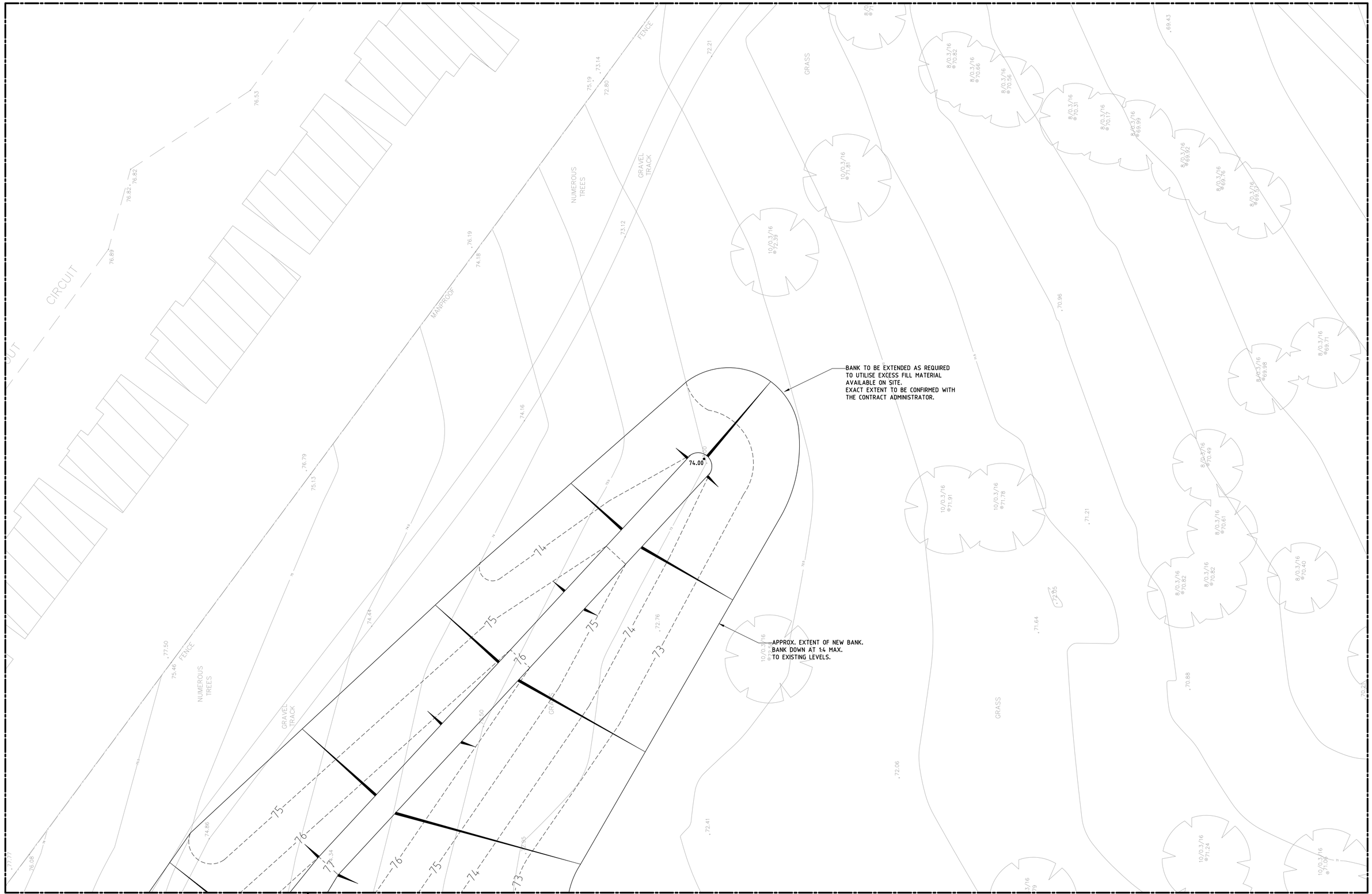
SCALE 1:200@A1

DATE JULY 2016

DRAWING NUMBER | REVISION

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	CD	00_126	P4

RESTRICTED 100% DOCUMENTATION ISSUE



FOR CONTINUATION REFER DRAWING CIV_CD_00_103

FOR CONTINUATION REFER DRAWING CIV_CD_00_104

AMENDMENTS

No.	Date	Description	Ver.	Appr.
P1	09.06.16	UPDATED 75% PROGRESS ISSUE		
P2	24.06.16	95% DOCUMENTATION ISSUE		
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PARKLEA CORRECTIONAL CENTRE EXPANSION

66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY CIVIL PLAN - SHEET 1

NORTH

SCALE 1:200@A1
DATE JULY 2016

DRAWING NUMBER				REVISION
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	CD	00_101	P3

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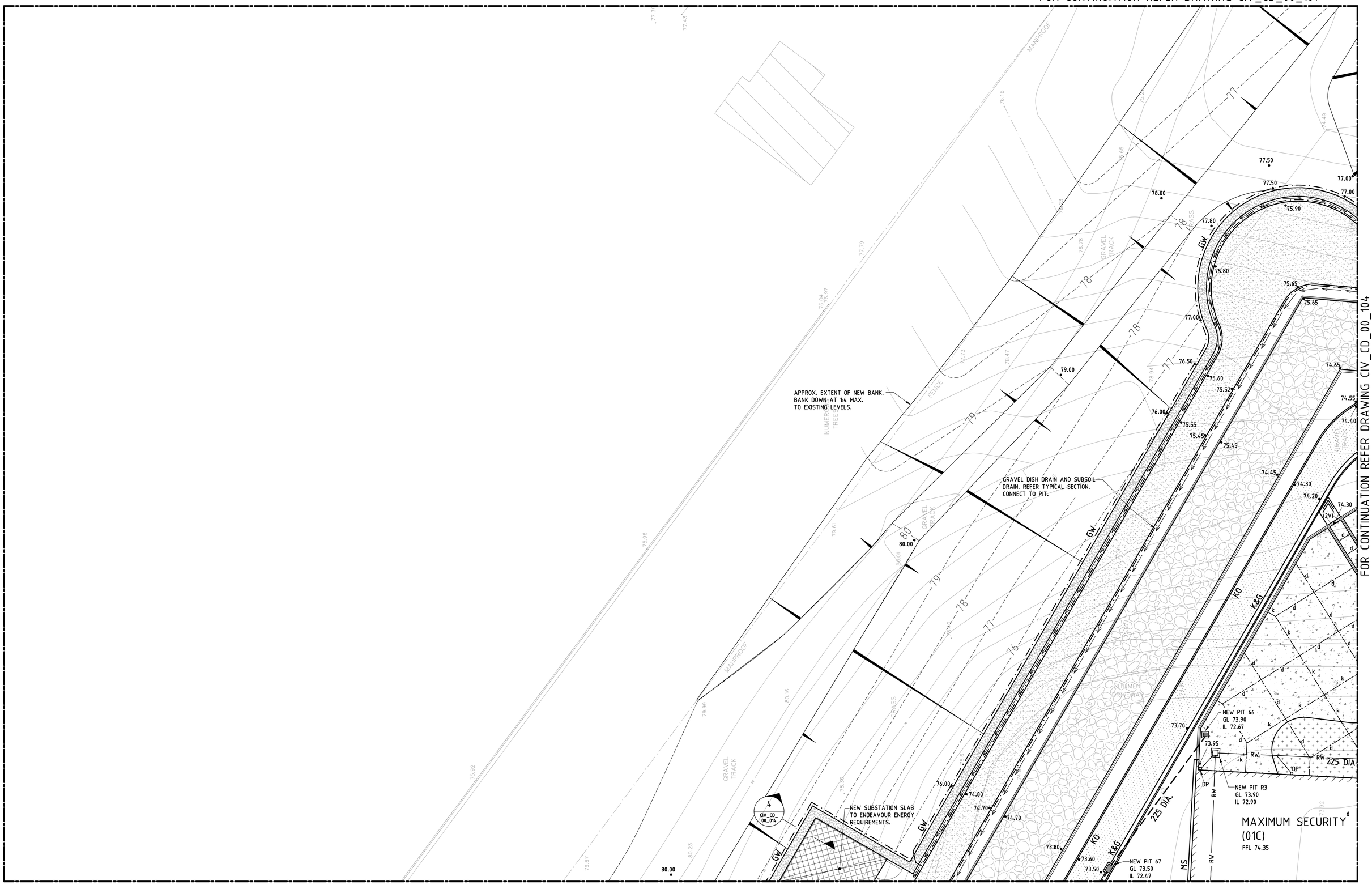
FOR CONTINUATION REFER DRAWING CIV_CD_00_101



FOR CONTINUATION REFER DRAWING CIV_CD_00_104

FOR CONTINUATION REFER DRAWING CIV_CD_00_107

AMENDMENTS

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PERUMAL PEDAVOLI ARCHITECTS

PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

MAIN WORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 3

MGA 56

SCALE	1:200@A1
DATE	JULY 2016

DRAWING NUMBER				REVISION
PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	
3162	CIV	CD	00_103	P4

FOR CONTINUATION REFER DRAWING CIV_CD_00_101

FOR CONTINUATION REFER DRAWING CIV_CD_00_103

FOR CONTINUATION REFER DRAWING CIV_CD_00_105

FOR CONTINUATION REFER DRAWING CIV_CD_00_108

RESTRICTED 100% DOCUMENTATION ISSUE

APPROX. EXTENT OF NEW BANK.
BANK DOWN AT 1:4 MAX.
TO EXISTING LEVELS.

GRAVEL DISH DRAIN AND SUBSOIL DRAIN. REFER TYPICAL SECTION. CONNECT TO PIT.

NEW PIT 42
GL 75.40
IL 74.42

NEW PIT 43
GL 75.25
IL 74.37

NEW PIT 44
GL 74.20
IL 73.20

NEW PIT 45
GL 73.90
IL 73.00

NEW PIT 46
GL 74.30
IL 72.97

NEW PIT 47
GL 73.75
IL 72.90

NEW PIT 48
GL 73.70
IL 72.74

NEW PIT 49
GL 73.65
IL 72.65

NEW PIT 50
GL 73.55
IL 72.60

NEW PIT 33
GL 75.35
IL 73.18

NEW PIT 34
GL 75.25
IL 73.13

NEW PIT 35
GL 74.10
IL 72.90

NEW PIT 36
GL 74.05
IL 72.50

NEW PIT 51
GL 73.75
IL 72.50

NEW PIT R1
GL 74.35
IL 73.25

NEW PIT R2
GL 74.35
IL 73.14

NEW PIT 11
GL 74.00
IL 73.00

NEW PIT 12
GL 73.70
IL 71.60

NEW PIT 13
GL 73.45
IL 71.40

EXISTING PIT TO BE DEMOLISHED
GL 72.40
IL 70.90

EXISTING PIT TO BE DEMOLISHED
GL 72.40
IL 71.00

EXISTING PIT TO BE DEMOLISHED
GL 72.45
IL 71.25

MAXIMUM SECURITY
(01C)
FFL 74.35

MAXIMUM SECURITY
(01D)
FFL 74.25

BITUMEN DRIVEWAY

EX 525 DIA

225 DIA.
300 DIA.
375 DIA.
450 DIA.
150 DIA.

AMENDMENTS

No.	Date	Description	Ver.	Appr.
P1	27.05.16	75% PROGRESS ISSUE		
P2	09.06.16	UPDATED 75% PROGRESS ISSUE		
P3	24.06.16	95% DOCUMENTATION ISSUE		
P4	15.07.16	100% DOCUMENTATION ISSUE		

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Job No.	Approved	Verified	Prepared
15-207			T.D.C. 15.07.16

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NSW GOVERNMENT Public Works
SYDNEY REGION
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MECHANICAL + ESD ERBAS & ASSOCIATES T: 9437 1022	BCA + DDA du CHATEAU CHUN T: 03 9581 1688
COMMS, SECURITY, DATA + IT IPP CONSULTING T: 8272 7200 F: 8272 7272	ACOUSTIC DAY DESIGN T: 02 9046 3874

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PERUMAL PEDAVOLI ARCHITECTS

PARKLEA CORRECTIONAL CENTRE EXPANSION

66 SENTRY DRIVE, PARKLEA NSW

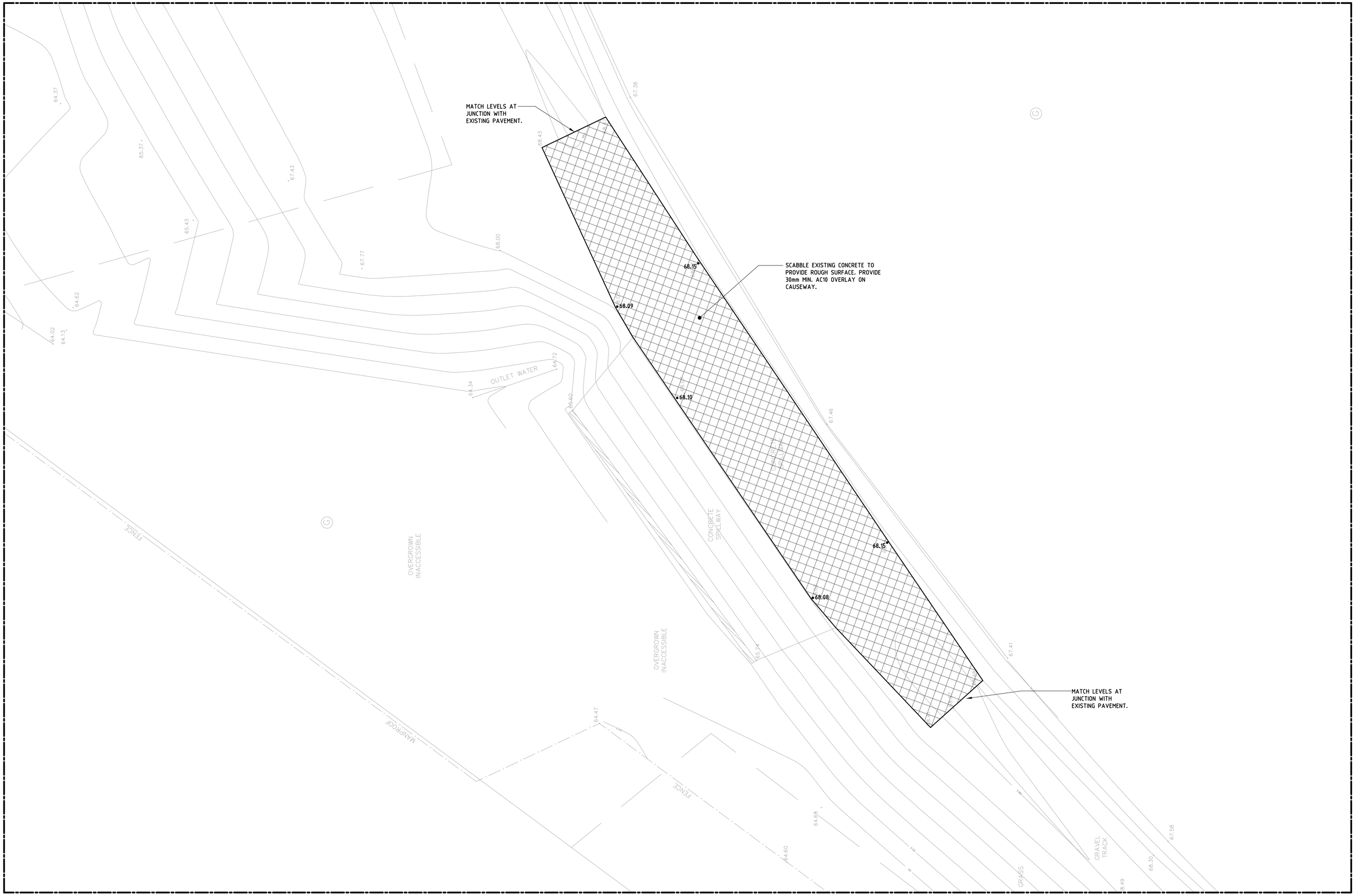
MAIN WORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 4

NORTH

SCALE	1:200@A1
DATE	JULY 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	DRAWING NUMBER	REVISION
3162	CIV	CD	00_104		P4

RESTRICTED 100% DOCUMENTATION ISSUE



AMENDMENTS				
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PARKLEA CORRECTIONAL CENTRE EXPANSION
66 SENTRY DRIVE, PARKLEA NSW

MAINWORKS - MAXIMUM SECURITY
CIVIL PLAN - SHEET 36

NORTH

SCALE	1:200@A1
DATE	JULY 2016

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
3162	CIV	CD	00_136	P4

Appendix B
Calculations

Job PARKLEA Date 20/7/16

* DESIGN INFORMATION SUMMARY

OSD CAPACITY DESIGN

PROJECT = Parklea expansion

REFERENCES = - AS3500.3 (2015) - Stormwater Drainage
- Australian Rainfall & Runoff (1987)
- XP_RAFTS — XPSolutions Manual.
- Blacktown Council Requirements.

IFD = BOM website

Location: Lat = -33.725 South
Long = 150.925 East.

OSD = - Post-developed outflow to pre-developed levels and to be provided for new works only.
- Modification of Northern Dam (Some raise of spillway LVL).

Job PARKLEA Date 10/2/16

* XP RAFTS – Modification

* Existing

FILE = PreDeveloped2.xp (4/11/15)

* Post Developed

FILE = PostDeveloped3.xp (12/11/15)
↑ To be modified.

Spillway: South dam = 69.333
North dam = 68.05 (50mm raised Spillway)
↑ Existing = 68.00

Catchment Areas (post developed)

New works only (impervious) = ...796 + 207 + (79 x 4) + 444 + 444 + 417 + 419...
+ 1819 + 517 + (1894 x 4) + 2314 + 1739 +
2086 + 1163 + 756 + 2559 + 3107 + 2664 +...
+ (580 x 3) + (444 x 2) + 299 + 687 + 115 + 1217

= 34 289 m²

- 2664 (South carpark)
= 31625 m²
(map North Dam)

Soln: - Raise dam spillway by 50mm, will then reduce flows to less than existing

- Allows for no detention in upstream area, and for current impervious areas.

Job Parklea Date 10/2/16

→ Post developed site

- Modification of existing model

South Dam
Catchment 2 (Internal)

A_T = 72676 m²
$A_{impervious}$ = 8748 + 2664 (Capron South)
= 11412 m²
$A_{pervious}$ = 61264 m²
Slope = 2.5 %

South Dam
Catchment 1 (External)

A_T = 369110 m²
$A_{pervious}$ = 115416 m²
$A_{Impervious}$ = 253694 m²
Slope = 2.5 %

North Dam
Catchment 3 (Internal)

A_T = 428860 m²
$A_{pervious}$ = 233308
$A_{Impervious}$ = 163927 + 31625 (pre developed)
= 195552 m²
Slope = 1.6 %

North Dam
Catchment 4 (Ext)

A_T = 0 (New fence will be constructed and act as a barrier to overland flow)

Job Parklea Date 10/2/16

* OSD SOUTH - DAM.

Outlet invert = 67.5 (TWL)
Outlet pipe = 50mm = NA

Storage: LVL (m)	Stor. (m^3)
67.50	0
69.333	14349
70.00	19570

Spillway level = 69.333
Spillway width = 20m

* OSD NORTH - DAM.

Outlet invert = 67.50
Outlet pipe = 600mm

Storage: LVL (m)	Stor (m^3)
67.50	0
68.00	29406
68.50	58812

Spillway level = 68.05 (raised 50mm)
Spillway width = 60m

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Job Parklea Date 10/2/16

* Post-developed Results

	20yr ARI Level in Dam SOUTH	20yr ARI Level in Dam NORTH	20yr ARI Q out (N) (m^3/s)	100yr ARI Level in Dam SOUTH	100yr ARI Level in Dam NORTH	100yr ARI Q out (N) (m^3/s)
10	68.40	67.58	0.26	68.76	67.62	0.34
20	68.93	67.64	0.37	69.38	67.71	0.46
30	69.31	67.68	0.42	69.53	67.82	0.57
45	69.46	67.77	0.52	69.64	67.95	0.68
1hr	69.53	67.85	0.59	69.67	68.05	0.76
1.5hr	69.56	67.96	0.69	69.66	68.14	3.37
2hr	69.58	68.05	0.74	69.68	68.17	4.80
3hr	69.59	68.11	2.39	69.64	68.18	5.86
6hr	69.60	68.13	3.28	69.69	68.20	6.60
12hr	69.63	68.17	5.27	69.67	68.25	10.09
24hr	69.56	68.18	5.56	69.60	68.23	8.67
48hr	69.53	68.19	5.86	69.57	68.21	7.48
MAX	69.63	68.19	5.86	69.69	68.25	10.09
EXIST.	69.65	68.14	5.94	69.71	68.21	10.42

Designed JK Job no. 15-207 Sheet no.

Job Parklea Date 10/2/16

* Pre - Developed Results

	20yr ARI Level in Dam		Qout (N) (m^3/s)	100yr ARI Level in Dam		Qout (N) (m^3/s)
	SOUTH	NORTH		SOUTH	NORTH	
10	68.39	67.58	0.25	68.76	67.62	0.34
20	68.92	67.64	0.37	69.38	67.71	0.46
30	69.30	67.68	0.42	69.54	67.83	0.57
45	69.46	67.77	0.52	69.65	67.96	0.68
1hr	69.54	67.85	0.59	69.69	68.04	1.51
1.5hr	69.58	67.96	0.69	69.68	68.11	4.26
2hr	69.60	68.04	1.37	69.70	68.13	5.56
3hr	69.60	68.08	2.97	69.67	68.15	6.30
6hr	69.61	68.10	3.66	69.71	68.16	7.28
12hr	69.65	68.13	5.28	69.69	68.21	10.42
24hr	69.58	68.14	5.94	69.62	68.19	8.78
48hr	69.55	68.14	5.93	69.58	68.17	7.57
MAX	69.65	68.14	5.94	69.71	68.21	10.42

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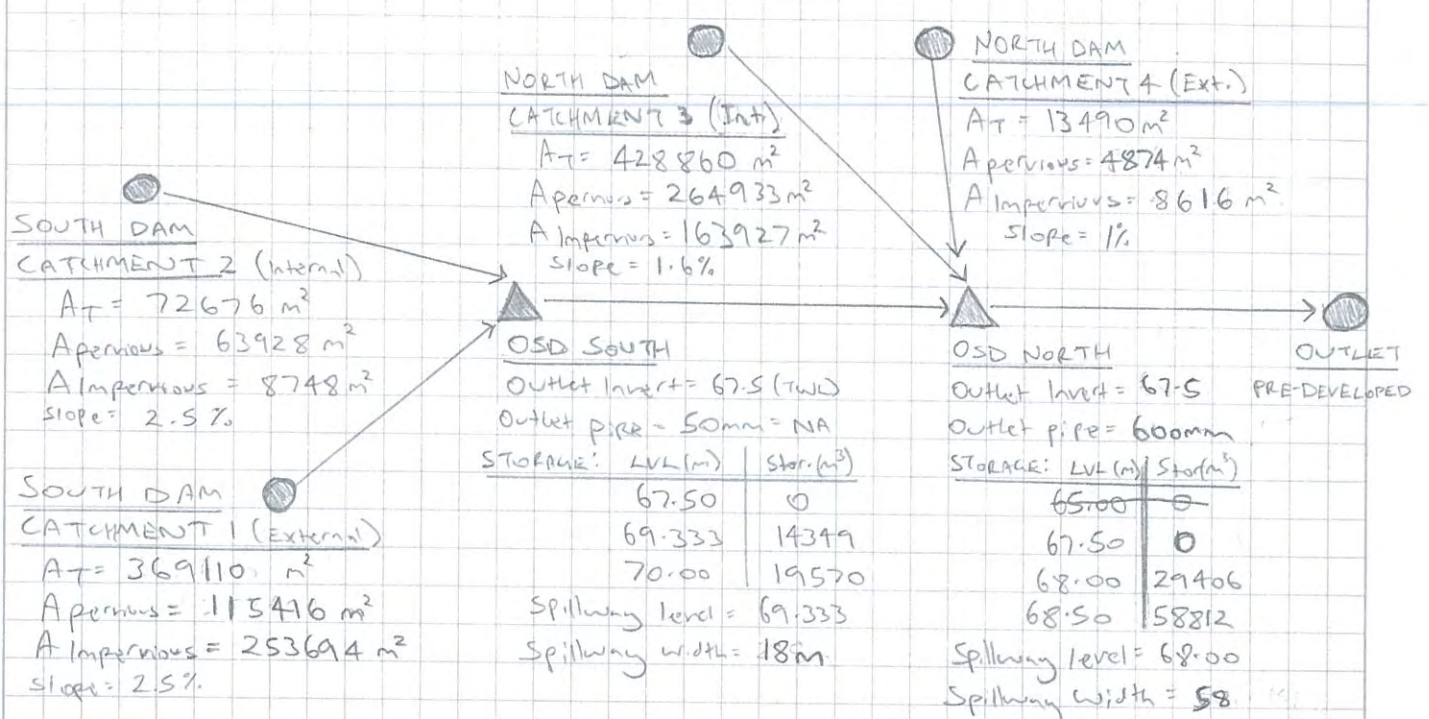
Job Parklea Date 28/10/15

* XP - RAFTS

Existing Site (pre-developed)



OSD SOUTH

Outlet Invert = 67.5 (TWL)

Outlet pipe = 50mm = NA

STORAGE: LVL (m)	Stor. (m³)
67.50	0
69.333	14349
70.00	19570

Spillway level = 69.333

Spillway width = 18m

OSD NORTH

Outlet Invert = 67.5

Outlet pipe = 600mm

STORAGE: LVL (m)	Stor(m³)
~~65.00~~	~~0~~
67.50	0
68.00	29406
68.50	58812

Spillway level = 68.00

Spillway width = 58

Initial TWL = 67.5

Discharge = Staged discharge

$$Q = 0.8 \frac{\pi d^2}{4} \sqrt{2gh}$$

* MODEL DATA:

Configuration - Initial/Continuing Losses

Pervious = 10 mm/hr Initial
2.5 mm/hr continuous

Imperious = 2 mm/hr Initial
0 mm/hr continuous

Mannings:
n = 0.025 (Pervious)
n = 0.015 (Imperious)

IFD Coefficients: BOM (Parklea)

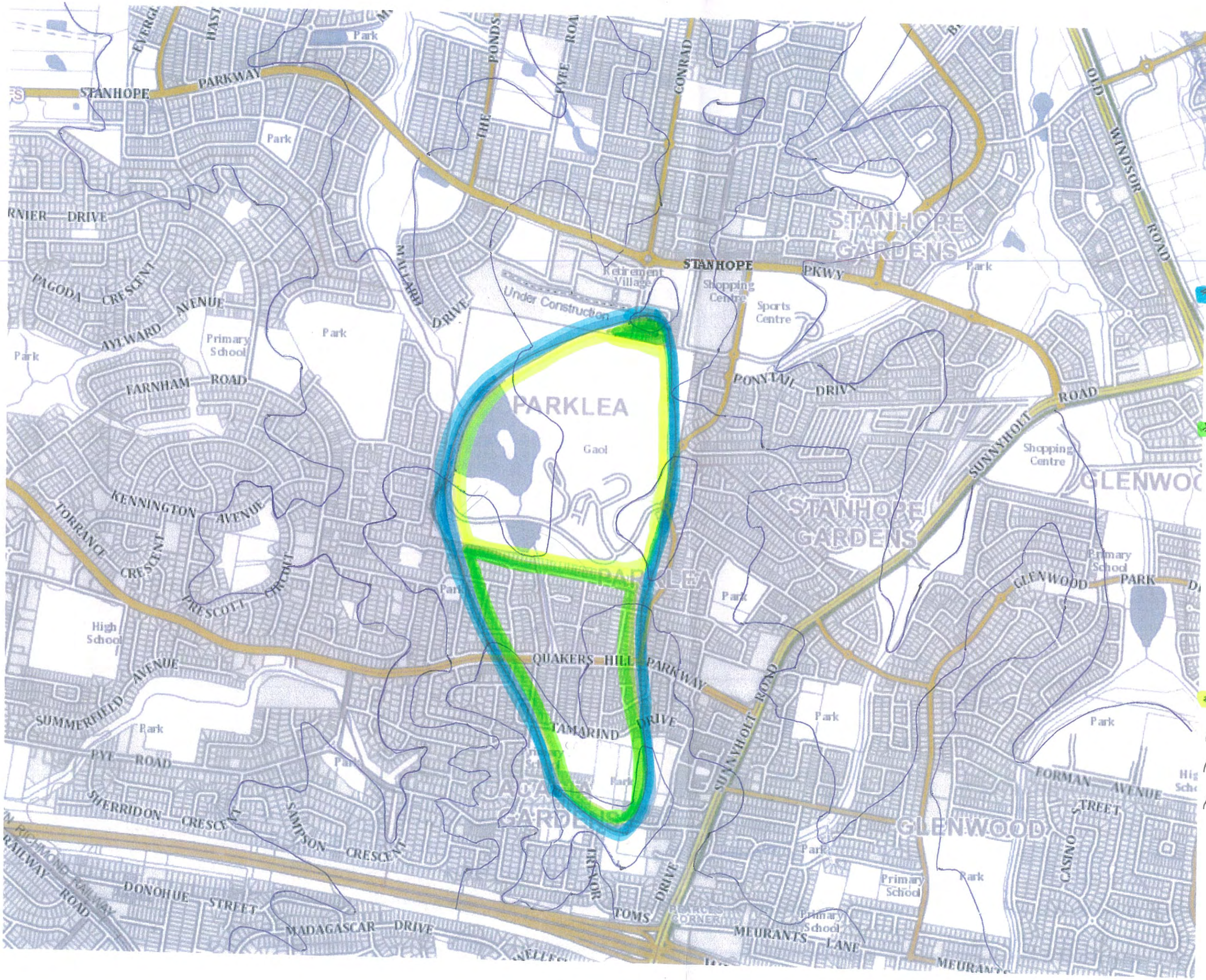
Lat = -33.725 South
Long = 150.925 East

f_2 = 4.3
f_{50} = 15.82

Skew = 0.01

2yr 1hr = 31.1 mm/hr	50yr 1hr = 59.9 mm/hr
2yr 12hr = 6.95 mm/hr	50yr 12hr = 13.8 mm/hr
2yr 72hr = 2.02 mm/hr	50yr 72hr = 4.65 mm/hr

Designed SG Job no. 15-207 Sheet no.



* EXISTING

= TOTAL CATCHMENT

= EXTERNAL SITE CATCHMENT

= INTERNAL SITE CATCHMENT

Total Catchment:

$A_T = 884136\,m^2$

$A_{pervious} = 458819\,m^2$

$A_{impervious} = 425317\,m^2$

External site catchment:

$A_T = 382600\,m^2$

$A_{pervious} = 120290\,m^2$

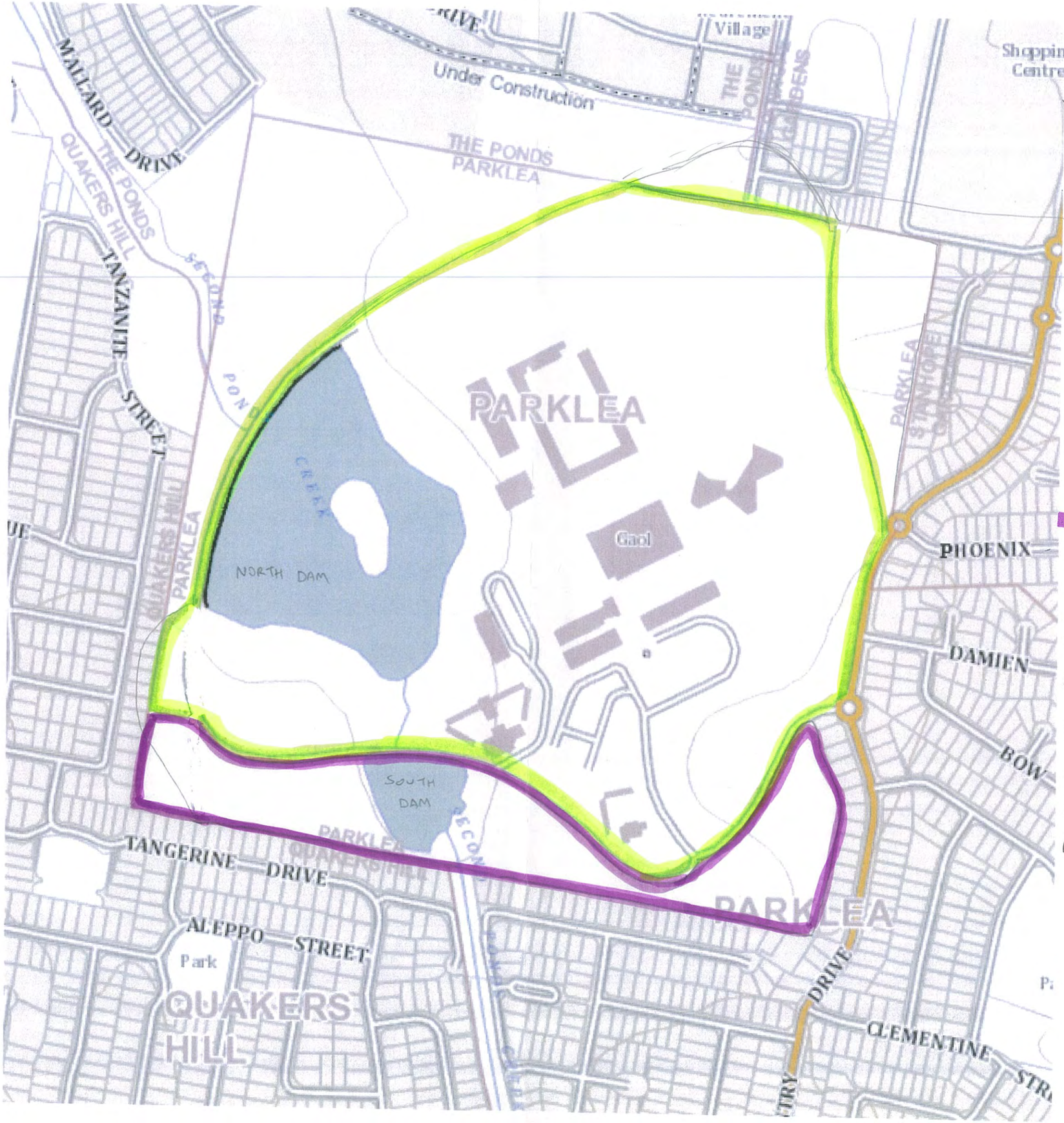
$A_{Imperious} = 262310\,m^2$

Internal site catchment

$A_T = 501536\,m^2$

$A_{pervious} = 338529\,m^2$

$A_{Imperious} = 163007\,m^2$



N

* EXISTING

* NORTH DAM CATCHMENT

(External of site:)

A_T = 13490 m²

$A_{pervious}$ = 4874 m²

$A_{Impervious}$ = 8616 m²

(Internal of site:)

A_T = 428 860 m²

$A_{pervious}$ = 264 933 m²

$A_{Impervious}$ = 163 927 m²

* SOUTH DAM CATCHMENT

(External of site:)

A_T = 369 110 m²

$A_{pervious}$ = 115416 m²

$A_{Impervious}$ = 253 694 m²

(Internal of site:)

A_T = 72 676 m²

$A_{pervious}$ = 63928 m²

$A_{Impervious}$ = 8748 m²