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LORETO KIRRIBILLI

STORMWATER MANAGEMENT PLAN PRIVATE DEVELOPMENT 85 CARABELLA STREET, KIRRIBILLI, NSW



August 2017

Revision 2

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1 INTRODUCTION

1.1 General

This Stormwater Management report has been prepared to supplement the proposed Statement Significant Development Application (SSD) to Department of Planning for the development of Lot 200 (DP1166282), located at 85 Carabella Street, Kirribilli. The development will consist of demolition of old buildings, development of various multi storey buildings including site excavations, existing building extensions, development of three vertical connector pods and new external walkways and gardens.

The new buildings will be built over various stages and include:

Western Precinct

Stage 1

- Demolition of B-Block.
- Site excavation to the existing Gymnasium level.
- Proposed Development of a Seven storey building (2 storeys above ground - Carabella Street) including external roof terrace. Includes a vertical connector providing accessible access to the Marian Centre, Junior School, Gymnasium and the Centenary Hall.
- Partial demolition of external stairs, landings, walkways and planters between the gymnasium, Centenary Hall and the Junior School.
- New external covered landscaped walkways providing an accessible path of travel to the new development site.
- Extension to the Junior School play terrace.
- Demolition of the northern facade of the Gymnasium.
- New facade to the gymnasium. Extended GF wing to the sports courts and outdoor terrace. Extended Upper level gallery to accommodate staff.

Northern Precinct

Stage 1

- Partial demolition of external stairs, landings, walkways and planters in between Science and Centenary Hall
- A new five-storey (including basement) vertical connector pod consisting of a lift, stair and lockers.
- New external walkways providing an accessible path of travel between the driveway, Science, Centenary hall, carpark and Elamang Avenue.

Eastern Precinct

Stage 1

- Partial demolition of external stairs, landings, walkways and planters in between Science and Performing Arts.
- Proposed interim connector pod consisting of accessible ramps, providing an accessible path of travel between Science and Performing Arts.
- Mary Ward - Internal refurbishment to accommodate new flexible learning model.



Concept Master Plan

- Proposed development envelope for a six story building. (Height consistent with the existing building) southern precinct

Stage 1

- Partial demolition of the eastern Chapel wing.
- Demolition of external stairs and landings in the courtyard.
- Proposed development of a 4 storey vertical connector pod involving the restoration of the east Chapel wing to its original profile on Carabella Street. The connector pod will consist of a lift, learning studios and an external learning terrace. Providing an accessible path of travel between the driveway, Chapel, St Joseph's Block and the courtyard.

Concept Master Plan

- Proposed development envelope for a six story building, which will sit two storeys above ground on Carabella Street. (Height will remain consistent with the existing building).

This Stormwater management plan was requested by North Sydney Council as part of the proposed DA.

The following matters have been addressed in this report:

- Stormwater Management
- Water quality
- Water Sensitive Urban Design (SWUD)
- Water quantity
- Sediment & Erosion Control

The purpose of this report is to provide an overview of the stormwater issues that relate to the site and how these issues have been addressed.

1.2 The Site and its Context

The proposed development comprises of new buildings, addition of vertical connector pods and external walkways. The site measures 18'300m² (approx.1.83 ha) and is located in between Carabella Street and Elamang Avenue. The site is currently fully developed with a number of buildings, open space sport courts and walkways. The whole site currently drains through the existing stormwater system towards which leads towards the western and eastern corner. The whole site is quite steep and is terraced on various levels from south to north. The highest point is on the south-western side (RL 35.69) and the lowest point is in the north-eastern corner (RL 9.14).

As the site currently have falls toward the north at Eleamang Avenue from the site at Carabella Street, it is unlikely that the site is affected by the flood.

The flood study shows that the part of the site is flood affected. Flooding is localised and not linked mainstream flooding.

This is in areas particularly where there are pits behind the existing building (such as behind the Junior School Building in the western precinct). It is understood that these pits and pipes (less than 450 mm diameter) are considered as blockages for flood modelling. For this reason it is possible that this is causing to have some flooding in some areas of the site.



However these pipes are connected to the downstream level which is significantly lower than the upstream level. There is also overflow path from the south to the north on the western boundary. As such the site is not affected by mainstream flooding.

In the detailed design stage, we'll ensure that there is sufficient space for the overland flow paths to avoid flooding within the site.



Figure 1: Location of proposed Site at 85 Carabella Street, Kirribilli

2 STORMWATER MANAGEMENT

2.1 Introduction

2.1.1 Background

Stormwater controls will be implemented that ensure that the proposed development does not adversely impact on the existing stormwater flows and water quality downstream of the site and in the creek.

2.1.2 Key Issues

The key issues and the proposed mitigation measures to be implemented as part of the proposed development are:

- **Stormwater Quantity** - The impervious surfaces (such as roads, roofs, driveways, etc) associated with the development remain roughly the same, therefore it will not result in an increase in peak stormwater flows from the site during storm events. On-site Stormwater Detention (OSD) is not proposed for the development as the area the pervious to impervious ratio remain the same. Furthermore the site is located very close to the harbour. The



distance from the site outlet to the harbour measures approx. 50m. The site stormwater system has been designed to safely convey the flows through the site and within the capacity of the downstream system. The design and operation of the proposed stormwater system is described in Section 2.2 below.

- **Water Quality** - Urban developments have the potential to increase gross pollutants, sediments, hydrocarbons and nutrient concentrations in stormwater runoff.

2.1.3 Catchment Description

The catchment area consists of the site area (approximately 1.82 ha). Currently there are fences on the eastern and western boundaries, so no stormwater should enter the site from these surrounding properties.

Pre-developed catchment:

Catchment of western side: 0.48 ha (27.5% pervious, 72.5% impervious)

Catchment of eastern side: 1.34 ha (18.6% pervious, 81.4% impervious)

Total catchment: 1.82 ha (21.1% pervious, 78.9% impervious)

The current site is urban in character and is terraced. If the site were not terraced the natural fall of the site would be at a slope of 33% (1:3). All overland flow is currently travelling towards the western and eastern corners.

The stormwater drainage system and the respective flows have been modelled in DRAINS to ensure realistic and accurate design.

Post-developed catchment:

Catchment of western side: 0.48 ha (19.7% pervious, 80.3% impervious)

Catchment of eastern side: 1.34 ha (17.7% pervious, 82.3% impervious)

Total catchment: 1.82 ha (18.2% pervious, 81.8% impervious)

2.1.4 Existing Drainage System

The existing site drains towards the western and eastern side of Elamang Street. The stormwater on the western side is collected in a big DN300 pipe that is connected to the side of the Gymnasium building. This pipe drops into the ground (Surface RL 11.20) and from there is connected into the council stormwater system in Elamang Street. The biggest part of the catchment is piped towards the north eastern side, where it is collected in the parking garage in a big DN450 pipe which is connected to a pit in the carpark. From there the water is connected to a GPT which is part of the council Stormwater system leading into the harbour.

The maximum capacity of the receiving DN 300 pipe in on the western side is approximately 0.1m³/s.

The maximum capacity of the receiving DN 450 pipe in on the eastern side is approximately 0.4m³/s.

There are two rainwater tanks next to the junior School that catch part of the roof water.



2.1.5 Proposed Drainage System

The proposed new buildings and remodelled outside areas will all be connected to the existing drainage system of the site. The new site pipe network will be designed to cater for the 20 year ARI storm as a minimum. The system will also be designed in such a way that the 100ARI will be conveyed via piped and overland flow paths. In the event of a total system blockage/failure, site grading is such that overland flow will be directed towards the northern boundary.

All flows were modelled in the DRAINS. All stormwater will be collected in surface inlet pits and discharged directly into the same existing stormwater connections from the site.

Pre-Developed Flows:

Event	Eastern Side Pre-Developed Flow	Western Side Pre-Developed Flow	Total Pre-Developed Flow
	[m ³ /s]	[m ³ /s]	[m ³ /s]
ARI 5	0.195	0.554	0.749
ARI 20	0.268	0.752	1.020
ARI 100	0.321	0.898	1.219

Figure 2: Pre-Developed Site flows based on the pervious/impervious percentages

Upon development of the site, the catchment will remain roughly the same with the pervious to impervious ratio. Refer to plans C250 and C251 for the catchments and the pervious/ impervious percentages.

Post-Developed Flows:

Event	Eastern Side Post-Developed Flow	Western Side Post-Developed Flow	Total Post-Developed Flow
	[m ³ /s]	[m ³ /s]	[m ³ /s]
ARI 5	0.198	0.556	0.754
ARI 20	0.269	0.754	1.023
ARI 100	0.321	0.901	1.122

Figure 3: Post-Developed Site flows based on the pervious/impervious percentages

The flows will only increase very slightly by 0.003-0.005 m³/s. Due to the very small increase of flow and the very close proximity of the development to the harbour, an OSD is not justified. For the Pre-developed flows not to exceed the Post-developed flows it is proposed to use rainwater tanks in the appropriate locations and strategic placement of orifice plates in some pits. This will ensure that the only small increase of flow can be compensated for and be reduced to the pre developed flows.

2.2 Stormwater Quality

2.2.1 Water Quality Requirements

As previously stated, urban developments have the potential to increase gross pollutants, sediments, hydrocarbons and nutrient concentrations in stormwater runoff. To limit the impact on the downstream system, at source water quality treatment measures will be provided. It is proposed that Enviropod pit baskets are to be added to all new pits. Sedimentation and Erosion Control measures during the construction phase of the project will be implemented (Sedimentation basin, Catch drains, hay bales and geotextile filter inlets around pits) to retain the sediments on site during the course of construction.



3 CONCLUSIONS

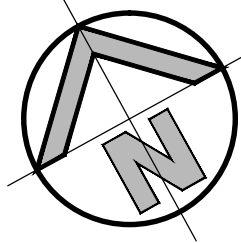
Whilst it is inevitable that the development will have an impact of the existing landform and stormwater runoff characteristics during the earthworks, the land-use and ratio between pervious/impervious will ultimately only increase very slightly. The flows generated by the site increase by a very small amount, which can be catered for by providing rainwater tanks and/ or limiting the flows from site with orifices in some pits. By providing a safe and efficient design, and implementing appropriate measures during construction and operation of the development, it can be ensured that there will be minimal impact on the existing environment as a result of the proposed development. The water quality measures at the source will help to limit the impact on the existing downstream system.

4 REFERENCES

- THE INSTITUTION OF ENGINEERS AUSTRALIA – "Australian Rainfall and Runoff", 1987, 3rd Edition
- INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QLD Division, Department of Energy and Water Supply – Queensland Urban Drainage Manual, Third Edition 2013-Provisional
- North Sydney Council 2013, "North Sydney Development Control Plan 2013"
- North Sydney Council 2005, 'Performance Guide for Engineering Design & Construction'



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ELAMANG AVENUE

NORTHERN
CONNECTOR 1

NORTHERN
CONNECTOR 2

TENNIS COURT
EXTENTION

JUNIOR SCHOOL

B-BLOCK

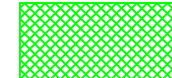

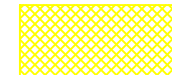


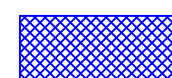

JUNIOR SCHOOL

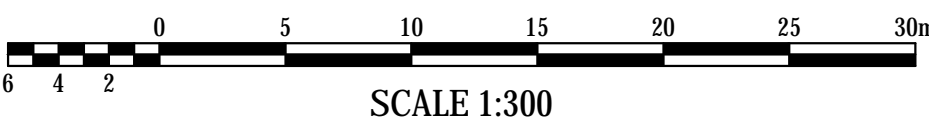
SOUTHERN
CONNECTOR

CARABELLA STREET

LEGEND

--- EXISTING BOUNDARY

	AREA (m2)	APPROX. VOLUME (m3)
 JUNIOR SCHOOL DEMOLITION	1500	17200
 B-BLOCK DEMOLITION	290	2300
 TENNIS COURT EXTENTION DEMOLITION	130	920
 NORTHERN CONNECTOR 1 DEMOLITION	132	200
 NORTHERN CONNECTOR 2 DEMOLITION	95	100
 SOUTHERN CONNECTOR DEMOLITION	101	1200
 EASTERN BUILDING DEMOLITION	1035	9000



SCALE 1:300

DEMOLITION PLAN
SCALE:1:300

FOR DA ONLY

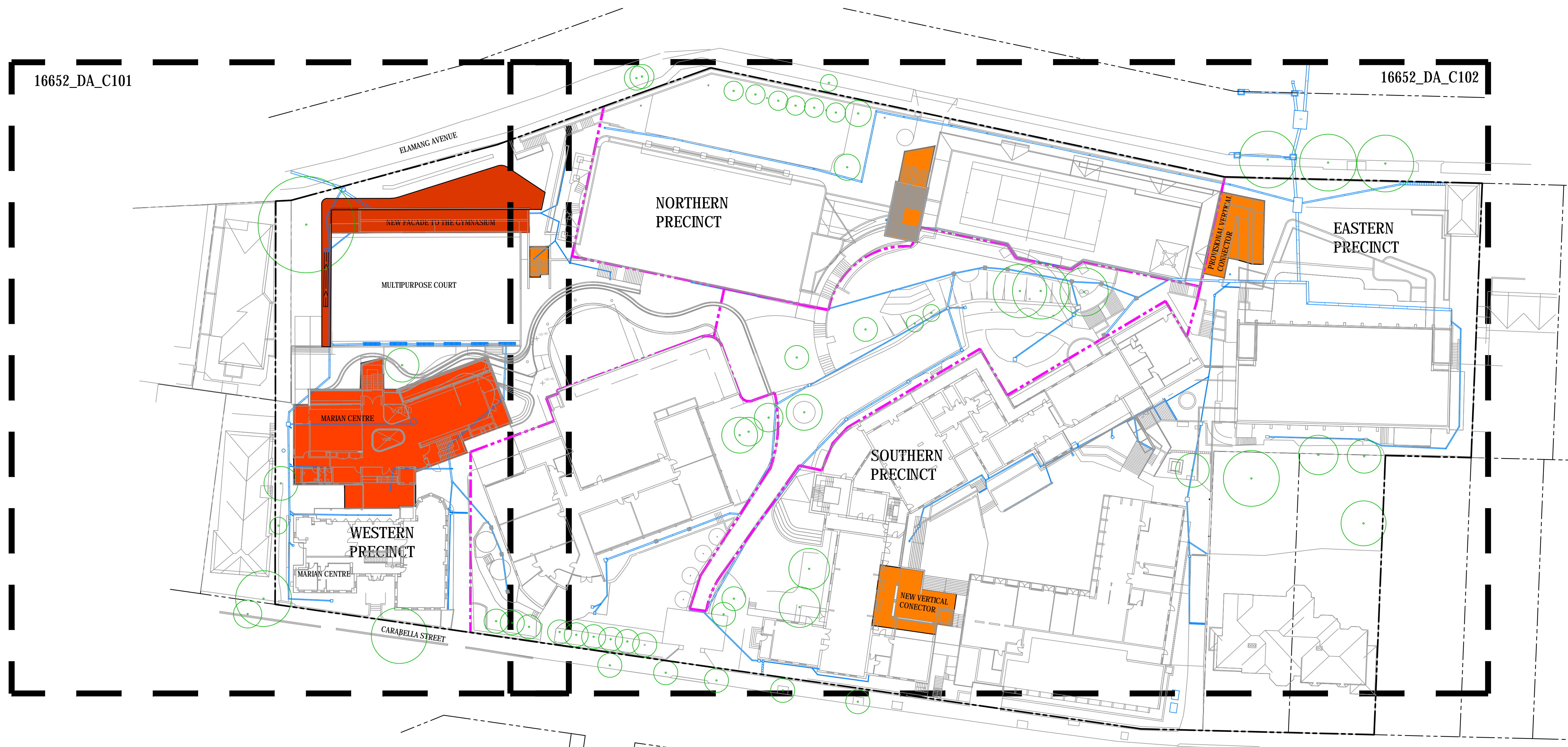
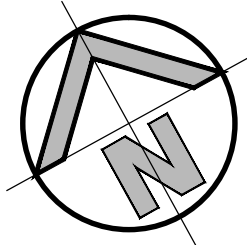
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02	ISSUED FOR DA	DT	SS	2017/07/17					
01	PRELIMINARY	DT	SS	2016/10/21					

Client	LORETO KIRIBILLI
Architect	fjmt
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Project	MASTER PLAN, 85 CARABELLA STREET, KIRIRIBILLI, NSW
Title	DEMOLITION PLAN

Drawn M.CERNA	Designed S.SPIRIG	Date DEC 2016
Checked S.SPIRIG	Approved A.FRANCIS	Scale 1:300 @ A1
Drawing number 16652_DA_C050	Revision 02	

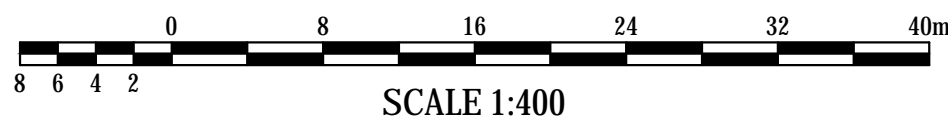


LEGEND

- EXISTING BOUNDARY
- EXISTING PITS
- PROPOSED GRATED DRAIN
- EXISTING STORMWATER PIPE
- DP DOWN PIPE
- PRECINCTS

GENERAL ARRANGEMENT PLAN

SCALE:1:400



SCALE 1:400

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SURVEY INFORMATION

SURVEYED BY:
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& CO PTY LTD
DATUM AHD

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
03	ISSUED FOR DA	DT	SS	2017/07/17					
02	PRELIMINARY	MC	SS	2016/12/21					
01	PRELIMINARY	MC	SS	2016/11/23					

Client
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Architect

fjmt

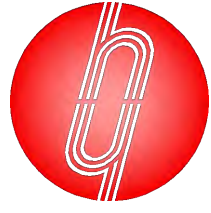
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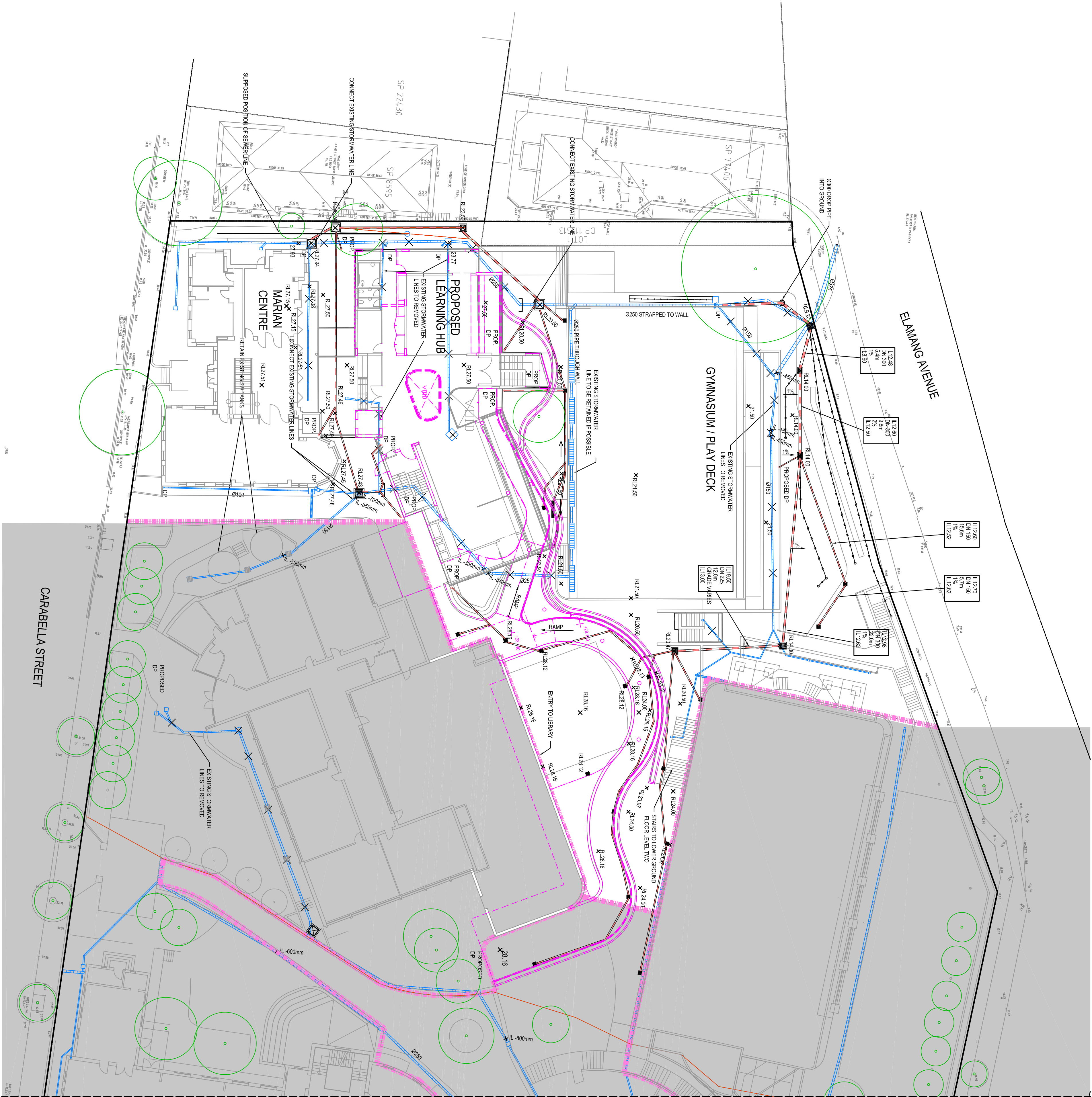
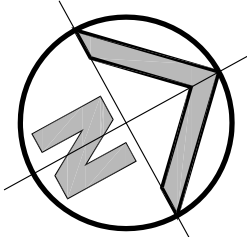


Project
**MASTER PLAN, 85 CARABELLA STREET,
KIRIBILLI, NSW**

Title
GENERAL ARRANGEMENT PLAN

Drawn
M.CERNA
Designed
S.SPIRIG
Checked
S.SPIRIG
Approved
A.FRANCIS
Date
NOV 2016
Scale
1:400 @ A1

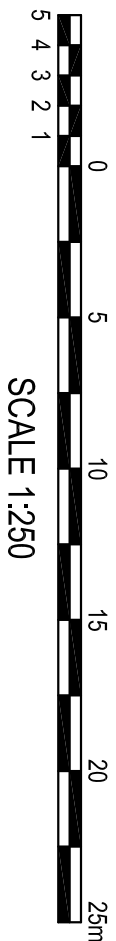
Drawing number
16652_DA_C100
Revision
03



FOR CONTINUATION REFER TO DWG. 16652_CC_C102

LEGEND

	EXISTING BOUNDARY
	EXISTING PITS
	PROPOSED GRATED DRAIN
	EXISTING STORMWATER PIPE TO BE REMOVED
	EXISTING STORMWATER PIPE
	PROPOSED STORMWATER PIPE
	DOWN PIPE
	PROPOSED JUNCTION PITS
	PRECINCTS
	EXISTING BOUNDARY

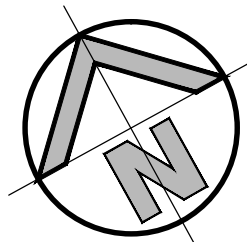


STORMWATER CONCEPT PLAN - STAGE A FINAL, WESTERN PRECINCT

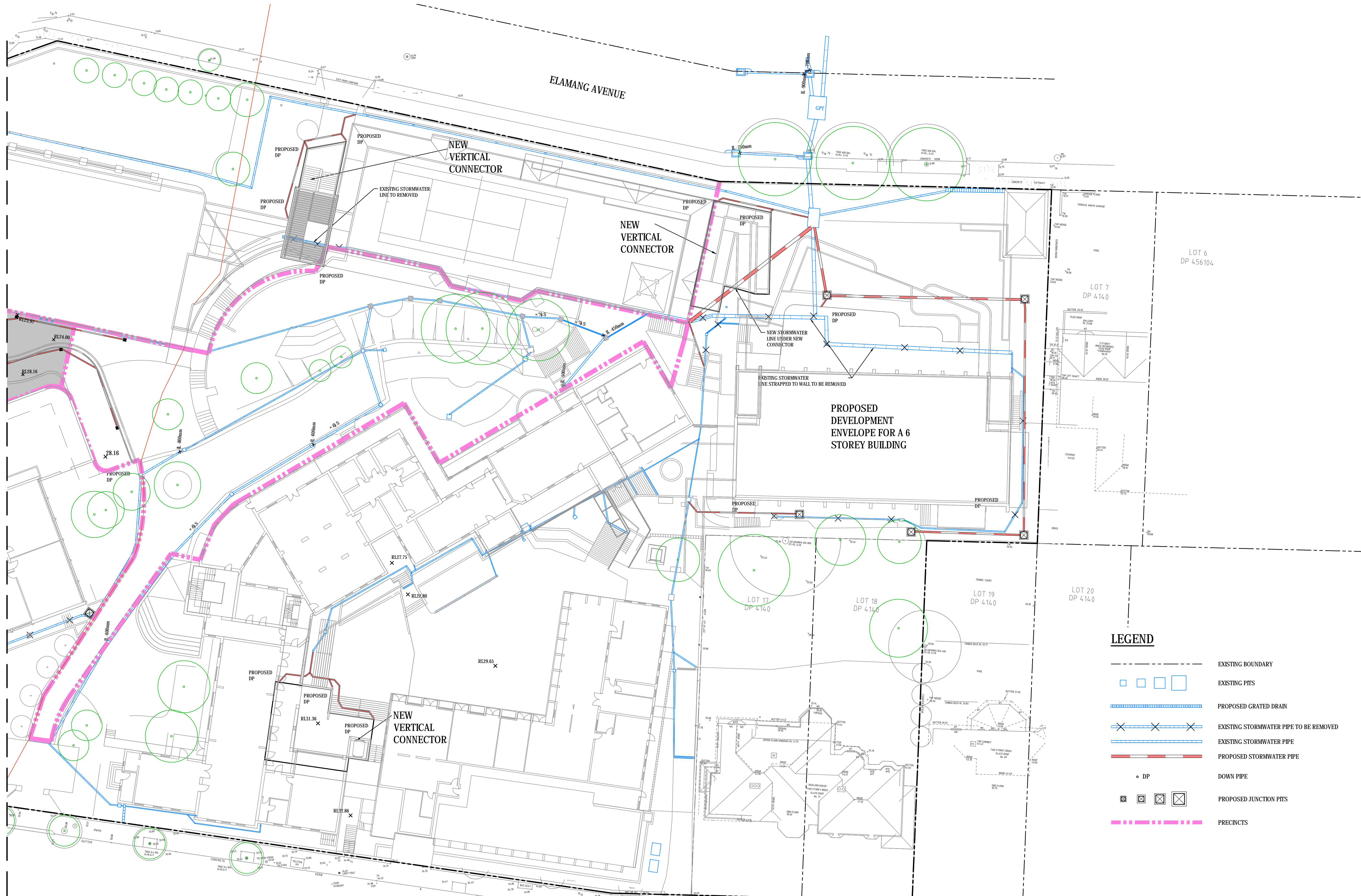
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SURVEY INFORMATION		Client	
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REVISION		THE STORMWATER CONCEPT PLAN STAGE B FINAL, WESTERN PRECINCT	
REVISION		Drawn M.CENYA	
REVISION		Designed S.SPRIG	
REVISION		Date NOV 2016	
REVISION		Scale 1:250 @ A1	
REVISION		Revision 16652_DA_C101 03	

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FOR CONTINUATION REFER TO DWG. 16552_CC_C101



LEGEND

- EXISTING BOUNDARY
- EXISTING PITS
- PROPOSED GRATED DRAIN
- EXISTING STORMWATER PIPE TO BE REMOVED
- EXISTING STORMWATER PIPE
- PROPOSED STORMWATER PIPE
- DOWN PIPE
- PROPOSED JUNCTION PITS
- PRECINCTS

0 5 10 15 20 25m
SCALE 1:250

STORMWATER CONCEPT PLAN - STAGE B FINAL

1:250

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SURVEY INFORMATION
SURVEYED BY:
HAMMOND SMEALLIE
& CO PTY LTD
DATUM AHD

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
03	ISSUED FOR DA	MC	SS	2017/07/17					
02	PRELIMINARY	MC	SS	2016/12/21					
01	PRELIMINARY	MC	SS	2016/11/25					

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Project
**MASTER PLAN, CARABELLA STREET,
KIRIBILLI, NSW**
Title
**STORMWATER CONCEPT PLAN
STAGE B FINAL**

Drawn M.CERNA	Designed S.SPIRIG	Date NOV 2016
Checked S.SPIRIG	Approved A.FRANCIS	Scale 1:250 @ A1
Drawing number 16652_DA_C102		Revision 03

FACTORS RESPONSIBILITY TO SELECT PIT CHAMBER SIZE WITH REGARDS TO PIPE SIZE, DEPTH TO INVERT AND SKEW ANGLE. REFER SKETCHES BELOW.

② PIT SIZE & DEPTH REQUIREMENTS

H = 0-900mm - AxB = 600x600mm
H = 900-1200mm - AxB = 900x600mm
H = >1200mm - AxB = 900x900mm

100 DIA RIGID PVC

300x300x150
CONCRETE SURROUND

600 MIN. UNO

1/2" Ø GGBS

HEAVY DUTY uPVC TO BE CONNECTED
TO THE SUB SOIL DRAINAGE LINE

FLUSHING POINT (FP)

SCALE 1:10

NOTE: SLOTTED RIGID PVC PIPE AND
FITTINGS MAY BE USED

SCALE 1:10

NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED

Technical drawing of a 600mm diameter stormwater drain assembly. The drawing shows a cross-section of the drain with the following components and labels:

- 300 x 300 x 150 CONCRETE SURROUND**: The concrete base surrounding the drain.
- 300 x 300 x 150 CONCRETE CURB**: The concrete curb on top of the drain.
- LIGHT DUTY IN LANDSCAPED AND PEDESTRIAN AREAS HEAVY DUTY IN VEHICULAR PAVEMENTS. AIR TIGHT CAST IRON OR BRASS SCREW OR BOLT DOWN CAP**: The fastener used to secure the cap.
- 300 x 300 x 150 CONCRETE SURROUND**: The concrete base surrounding the drain.
- HEAVY DUTY uPVC TO BE CONNECTED TO THE SUB SOIL DRAINAGE LINE**: The main drain pipe.
- 1000 SUBSOIL DRAINAGE LINE REFER SUBSOIL BEDDING DETAILS**: The subsoil drainage line.
- 600 MIN DIA**: The minimum diameter of the drain.
- 1000 SUBSOIL DRAINAGE LINE**: The subsoil drainage line.
- FLOW 1% MIN**: The minimum slope of the drain.

SCALE 1:10

NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED

SED UNDER ROADWAY)
LE 1:20

[illegible]

(H1 & H2 SUPPORT)

SCALE 1:20

2000mm 0 200 400 600 800 1000mm
200 100
SCALE 1:10

Client

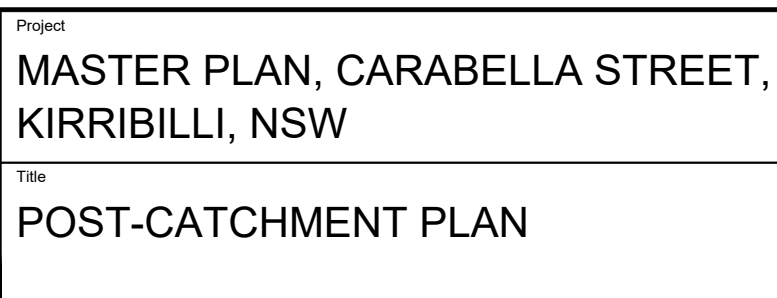
LORETO KIRIBILLI

Architect

fjmt

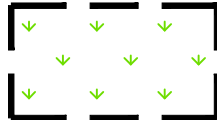
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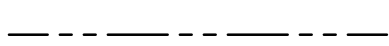
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Checked S.SPIRIG	Approved A.FRANCIS	Scale 1:400 @ A1
Drawing number 16652_DA_C200		Revision 03



 @5B8G75DBR 5F95.% \$a 1'&1
 PERVIOUS


 <5F8G4B88 5F95.% \$a 1'&1
 IMPERVIOUS



 FCC: 5F95. 204 \$a 1 (" "h
 IMPERVIOUS


 EXISTING BOUNDARY

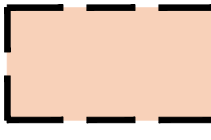

 CATCHMENT BOUNDARY



 @588C75DB; 5F95 & -Sa 1'™1
 PERVIOUS




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 IMPERVIOUS



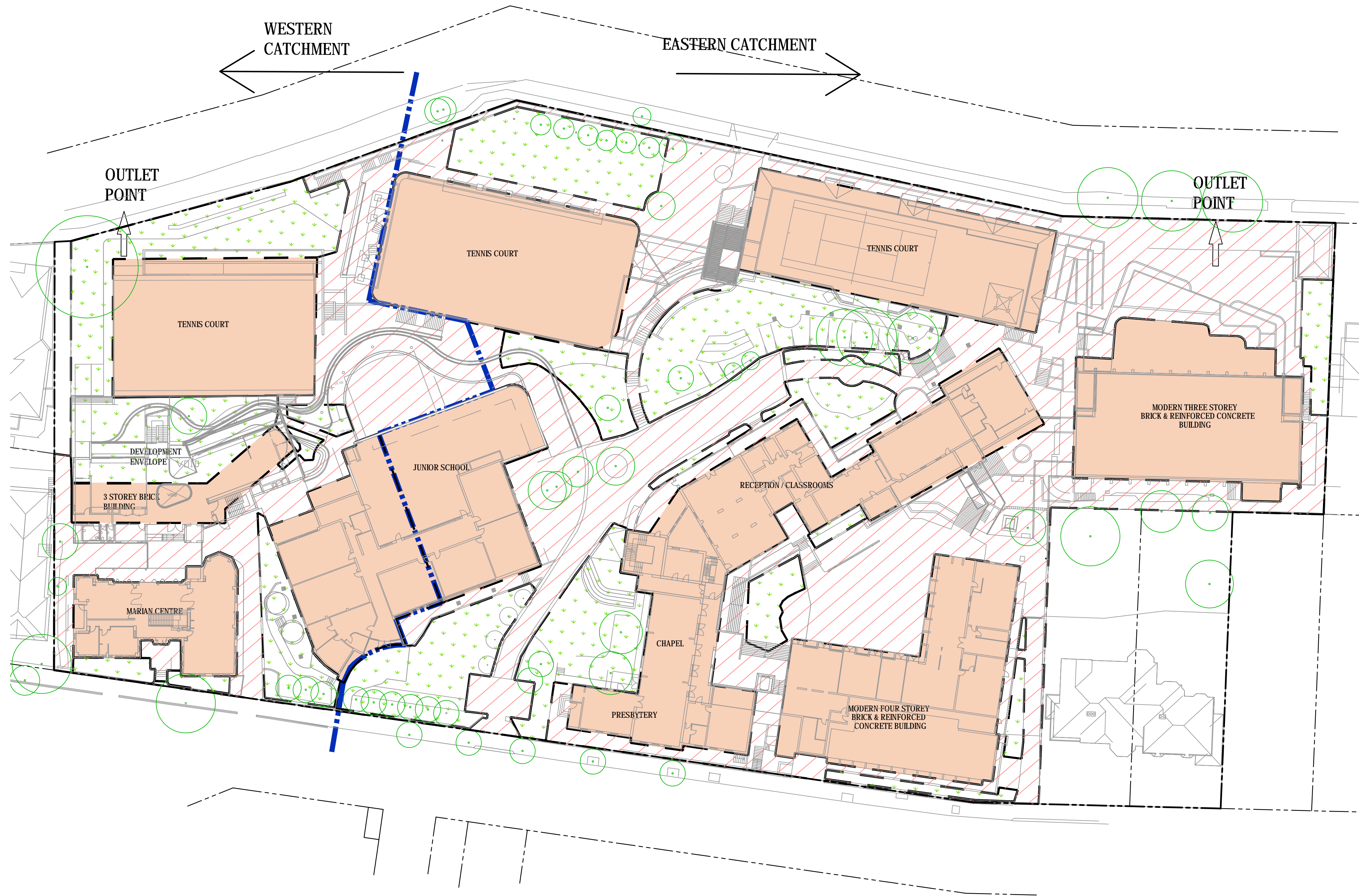
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----- EXISTING BOUNDARY

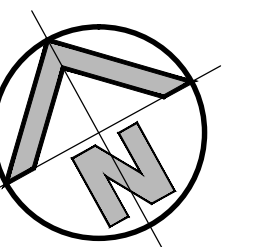
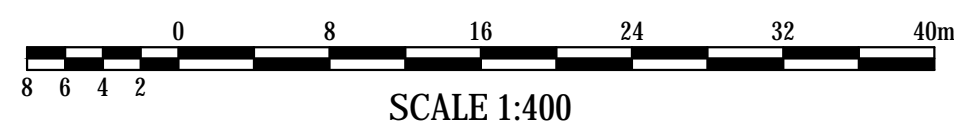

 CATCHMENT BOUNDARY

HCH5@D9FJ-Cl G', (Sa 1'82%)
(LANDSCAPING AREAS)



HCH5@AD9FJ-Cl G' (Sa 1', "-1
(ROOF & HARDSTAND AREAS)



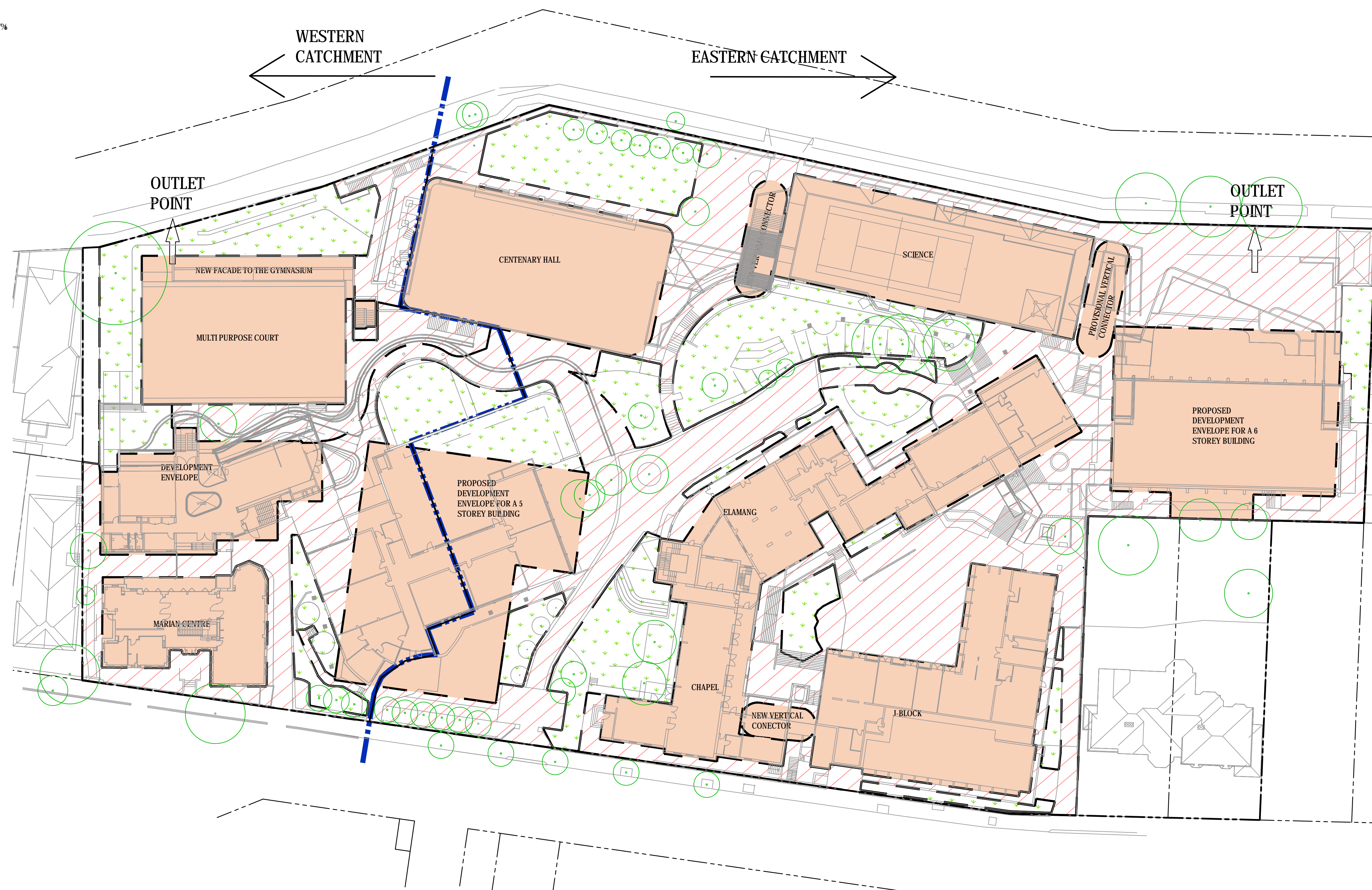
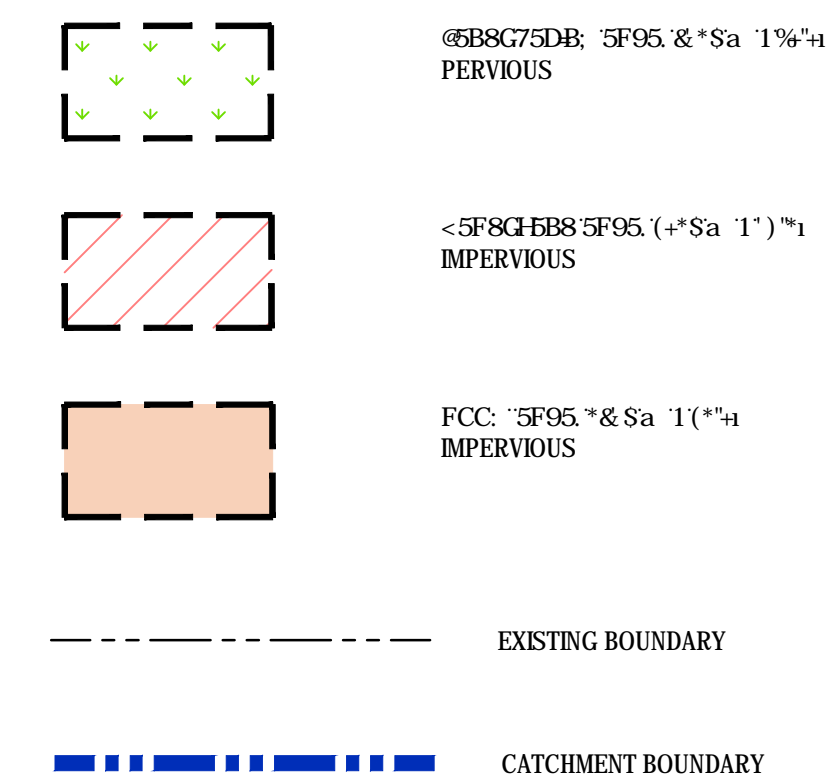
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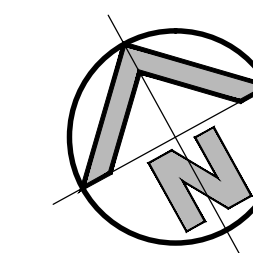
FOR DA ONLY

												Client LORETO KIRRIBILLI				Level 5, 79 Victoria Avenue Chatswood NSW 2067				Telephone +61 2 9417 8400 Facsimile +61 2 9417 8337								Project MASTER PLAN, 85 CARABELLA STREET, KIRRIBILLI, NSW				Drawn M.CERNA		Designed S.SPIRIG		Date NOV 2016															
												Architect fjmt								Email email@fhiconsult.com.au Web www.henryandhymas.com.au				Title STORMWATER PRE-CATCHMENT PLAN				Checked S.SPIRIG		Approved A.FRANCIS		Scale 1:400 @ A1		Revision																	
03				ISSUED FOR DA				MC				SS				2017/07/17																																			
02				PRELIMINARY				MC				SS				2016/12/21																																			
01				PRELIMINARY				MC				SS				2016/11/25																																			
REVISION				AMENDMENT				DRAWN				DESIGNED				DATE				REVISION				AMENDMENT				DRAWN				DESIGNED				DATE								16652_DA_C250				03			

95GH9FB'75H7<A9BH5F95.%') \$a



HCH5@AD9FJ-Cl G %, *Sa T, %
(ROOF + HARDSTAND AREA)



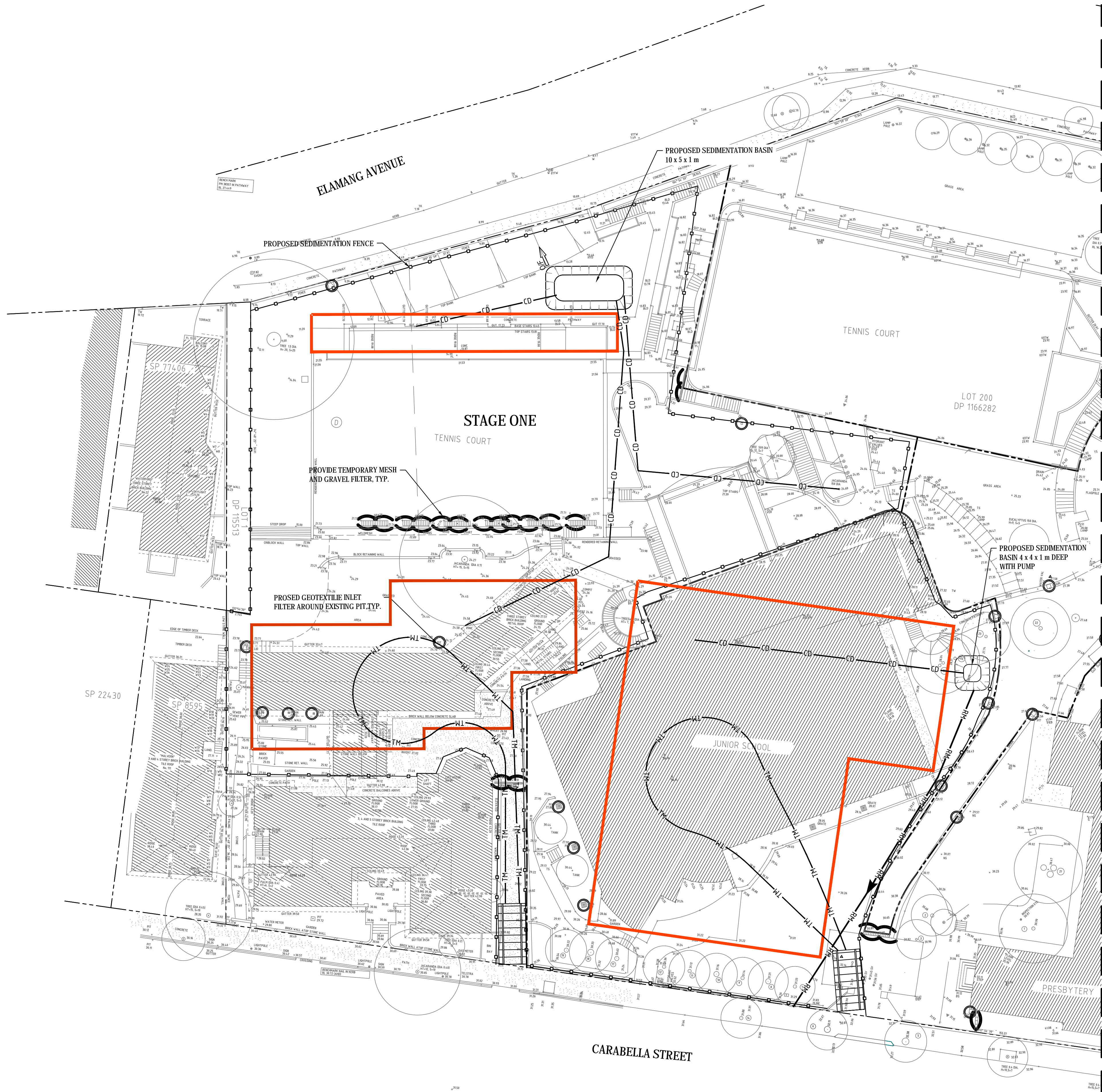
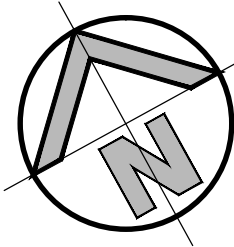
SCALE:1:400

Client	LORETO KIRIRIBILLI
Architect	fjmt
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Drawn M.CERNA	Designed S.SPIRIG	Date NOVEMBER 2016
Checked S.SPIRIG	Approved A.FRANCIS	Scale 1:400 @ A1
Drawing number 16653 DA C251		Revision 02

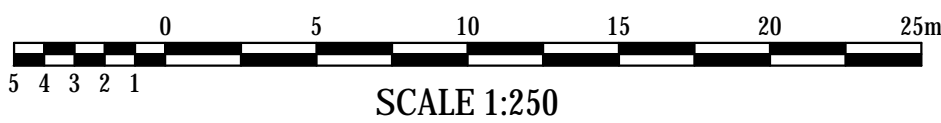


LEGEND

- TM TM TRAFFIC MANOEUVRING
- CD CD TRAFFIC MANOEUVRING
- RM RM RISING MAIN
- PROPOSED SEDIMENTATION FENCE
- PROPOSED VEHICLE SHAKER GRID
- PROPOSED STOCKPILE LOCATION
- PROPOSED MESH & GRAVEL INLET FILTER
- PROPOSED GEOTEXTILE INLET FILTER

SEDIMENT & EROSION CONTROL NOTES

- ALL SEDIMENT CONTROL DEVICES ARE TO BE CONSTRUCTED, PLACED AND MAINTAINED IN ACCORDANCE WITH RESPECTIVE COUNCIL SPECIFICATIONS AND LANDCOM'S 'SOIL AND CONSTRUCTION' MANUAL.
- ALL PERIMETER & SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO, OR AS THE FIRST STEP IN EARTH WORKS AND/OR CLEARING.
- THE SEDIMENT & EROSION CONTROL PLAN MAY REQUIRE FUTURE ADJUSTMENT TO REFLECT CONSTRUCTION STAGING. IT IS ALSO THE CONTRACTORS RESPONSIBILITY TO PREPARE THEIR OWN SEDIMENT AND EROSION CONTROL PLAN WHICH SUITS THE DESIGNED CONSTRUCTION STAGING.
- FILTRATION BUFFER ZONES ARE TO BE FENCED OFF AND ACCESS PROHIBITED TO ALL PLANT AND MACHINERY.
- ALL TEMPORARY EARTH BERMS, DIVERSIONS & SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED & MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
- ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS FOR STRUCTURAL DAMAGE OR CLOGGING. TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE LOCATION.
- ALL TOPSOIL IS TO BE STOCKPILED ON SITE FOR REUSE (AWAY FROM TREES AND DRAINAGE LINES). MEASURES SHALL BE APPLIED TO PREVENT EROSION OF THE STOCKPILES.
- ALL EARTHWORK AREAS SHALL BE ROLLED EACH EVENING TO SEAL THE EARTHWORKS.
- ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END. ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND STRAW MULCHED WITHIN 14 DAYS OF COMPLETION OF FORMATION U.N.O. BY LANDSCAPE ARCHITECTS.
- UPON COMPLETION OF ALL EARTHWORKS OR AS DIRECTED BY COUNCIL, SOIL CONSERVATION TREATMENTS SHALL BE APPLIED SO AS TO RENDER AREAS THAT HAVE BEEN DISTURBED, EROSION PROOF WITHIN 14 DAYS.
- EROSION AND SILT PROTECTION MEASURES ARE TO BE MAINTAINED AT ALL TIMES.



SEDIMENT EROSION CONTROL PLAN

SCALE 1:250

FOR DA ONLY

SURVEY INFORMATION

SURVEYED BY:
HAMMOND SMEALLIE
& CO PTY LTD
DATE: AHD

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
03	ISSUED FOR DA	MC	SS	2017/07/17					
02	PRELIMINARY	MC	SS	2016/12/21					
01	PRELIMINARY	MC	SS	2016/12/15					

Client
LORETO KIRIBILLI

Architect
fjmt

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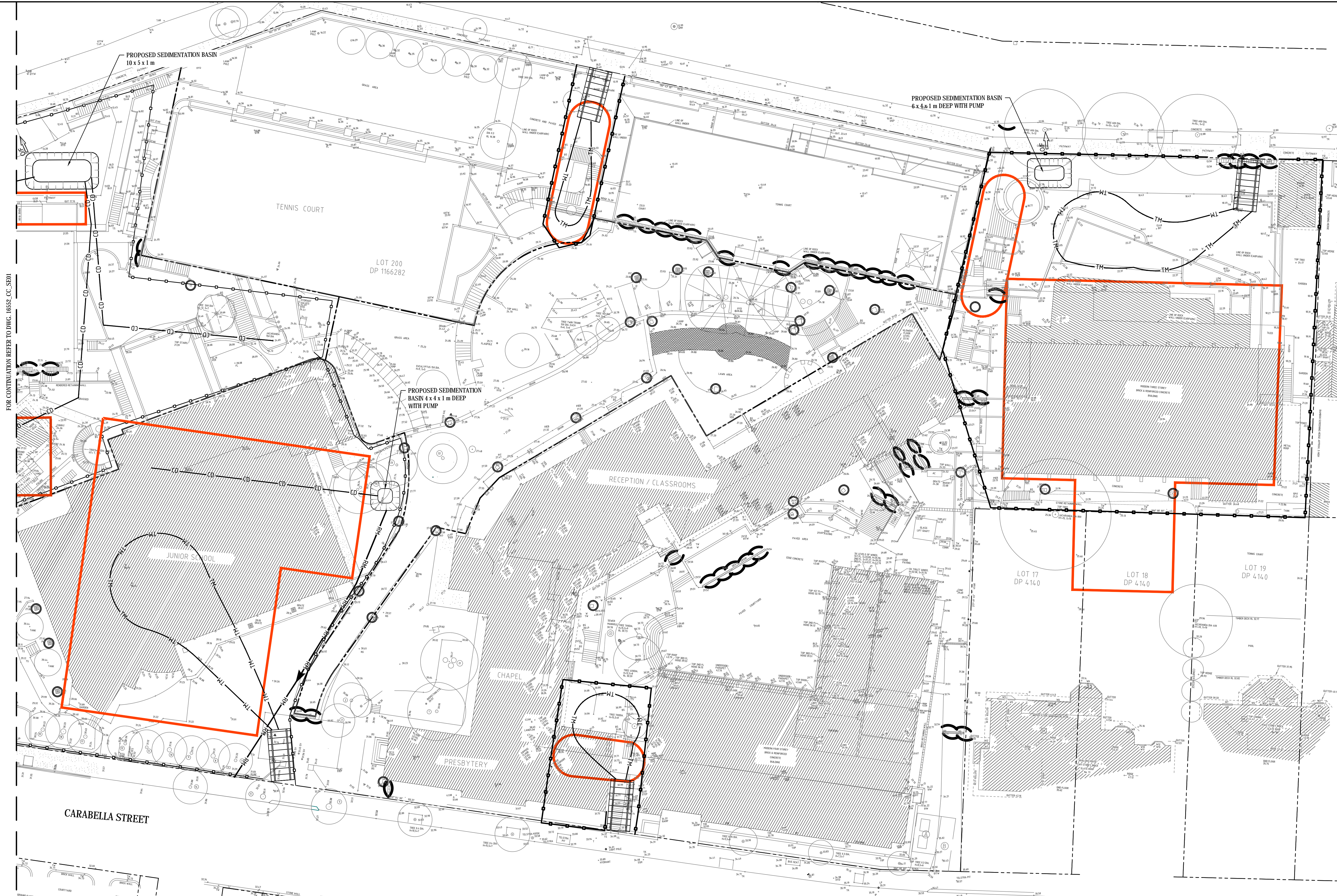
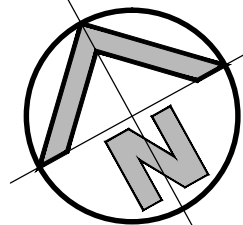
Project
MASTER PLAN, CARABELLA STREET,
KIRIBILLI, NSW

Title
SEDIMENT EROSION CONTROL PLAN
SHEET 1 OF 3

Drawn M.CERNA	Designed S.SPIRIG	Date NOV 2016
Checked S.SPIRIG	Approved A.FRANCIS	Scale 1:250 @ A1

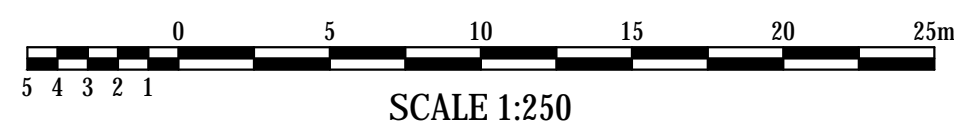
Drawing number
16652_DA_SE01

Revision
03



FOR CONTINUATION REFER TO DWG. 16532_CC_SE01

SEDIMENT EROSION CONTROL PLAN
SCALE 1:250



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SURVEYED BY:
HAMMOND SMEALLIE
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DATUM: AHD

REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	REVISION	AMENDMENT	DRAWN	DESIGNED	DATE
03	ISSUED FOR DA	MC	SS	2017/07/17					
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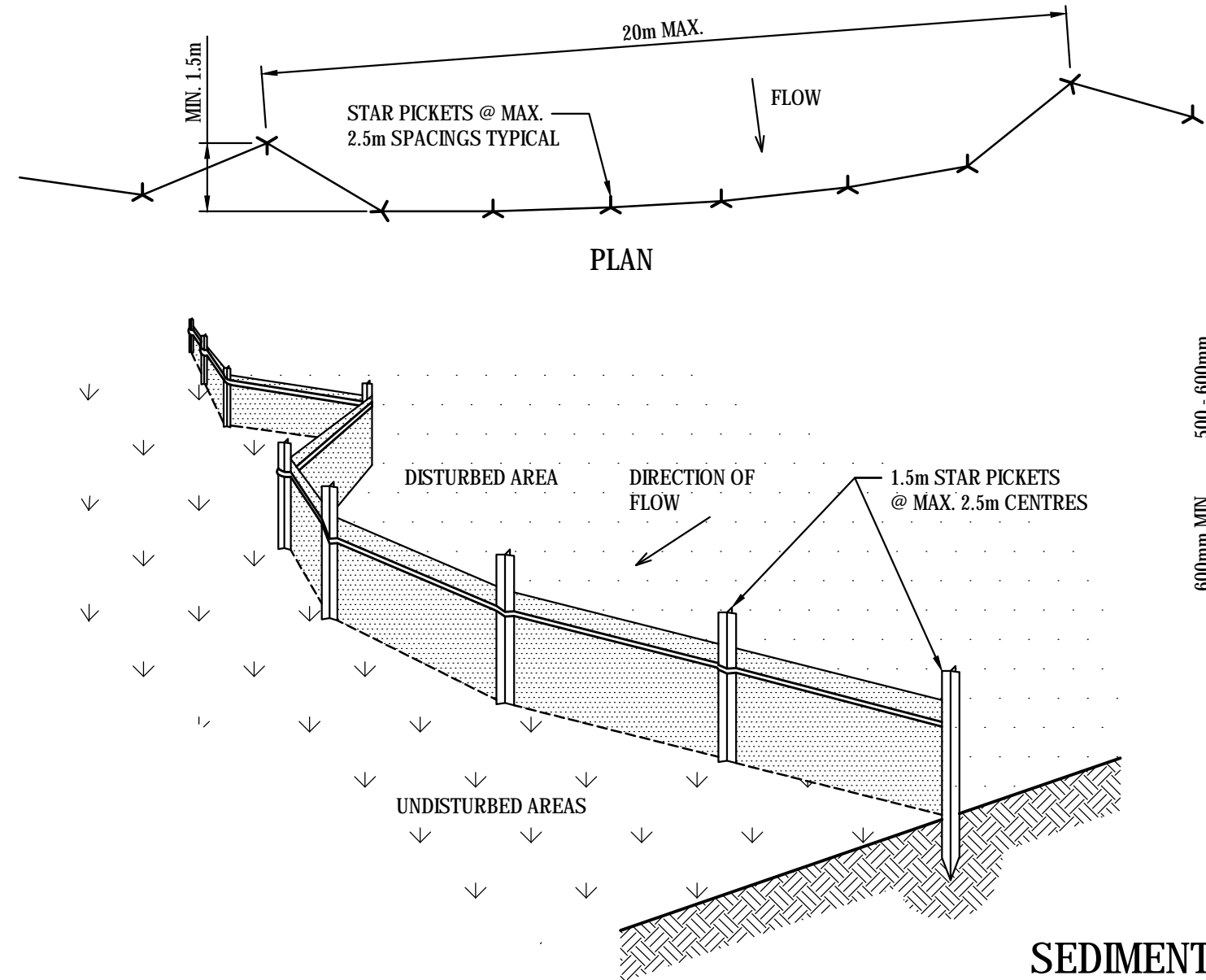
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Architect
fjmt
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Project
**MASTER PLAN, CARABELLA STREET,
KIRIBILLI, NSW**
Title
**SEDIMENT EROSION CONTROL PLAN
SHEET 2 OF 3**

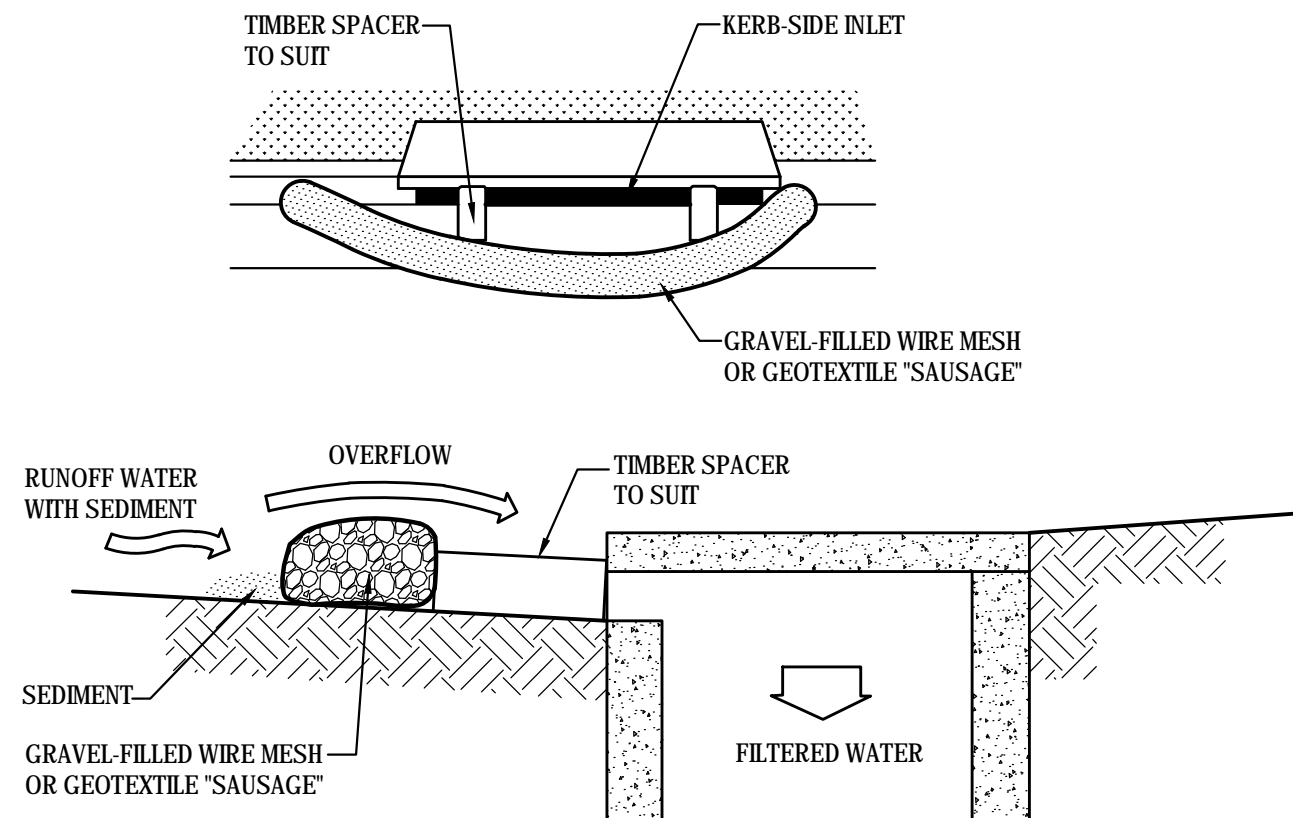
Drawn M.CERNA	Designed S.SPIRIG	Date NOV 2016
Checked S.SPIRIG	Approved A.FRANCIS	Scale 1:250 @ A1
Drawing number 16652_DA_SE02		Revision 03



SEDIMENT FENCE
SCALE N.T.S.

SEDIMENT FENCE CONSTRUCTION NOTES:

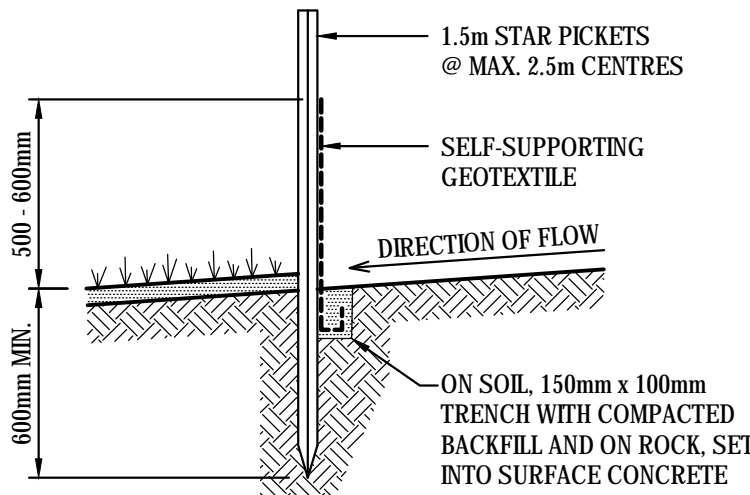
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND @ 2.5m INTERVALS (MAX.) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP. 6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.



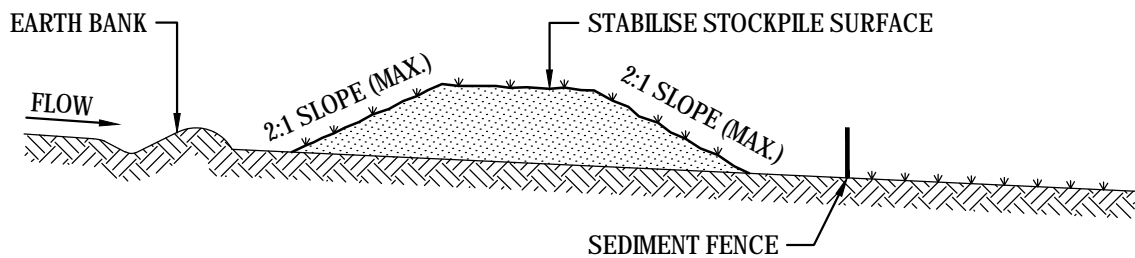
MESH & GRAVEL INLET FILTER CONSTRUCTION NOTES:

1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
3. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
4. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
5. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY CAN FIRMLY ABUT EACH OTHER AND SEDIMENT / LADEN WATERS CANNOT PASS BETWEEN.

MESH & GRAVEL INLET FILTER
SCALE N.T.S.



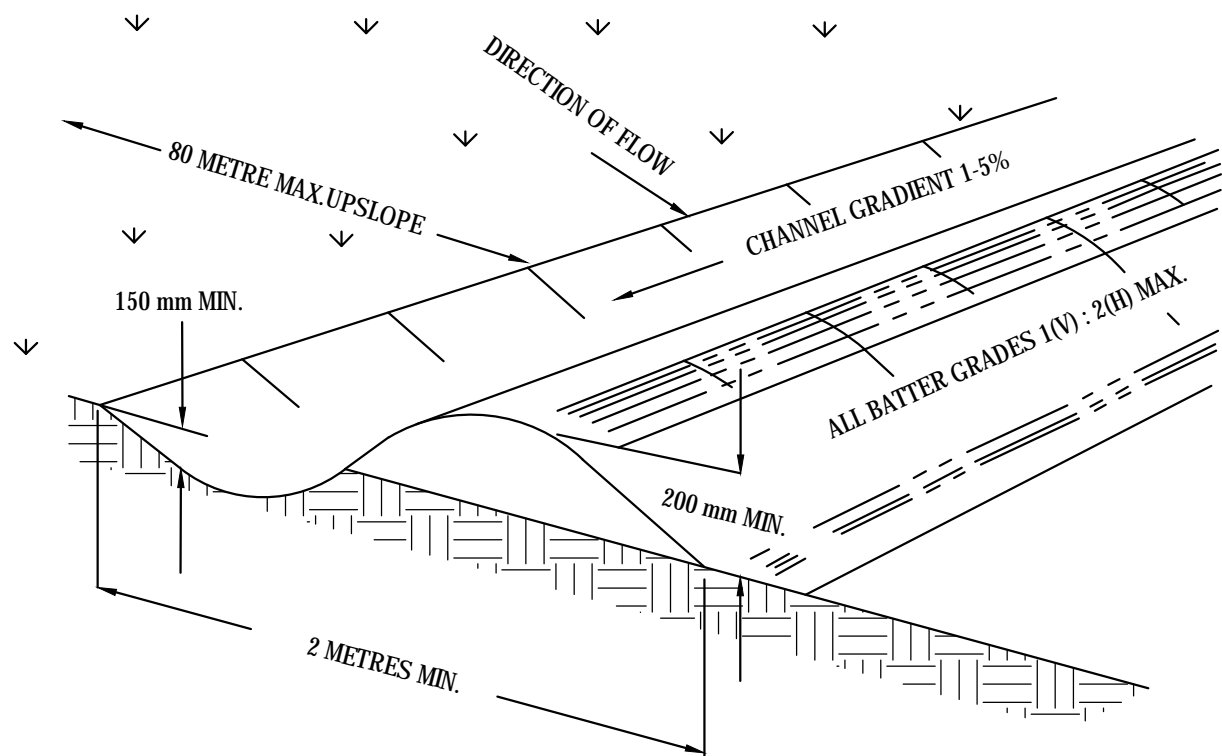
SECTION DETAIL



STOCKPILE CONSTRUCTION NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE PLACED FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.C.P. OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.

STOCKPILES
SCALE N.T.S.

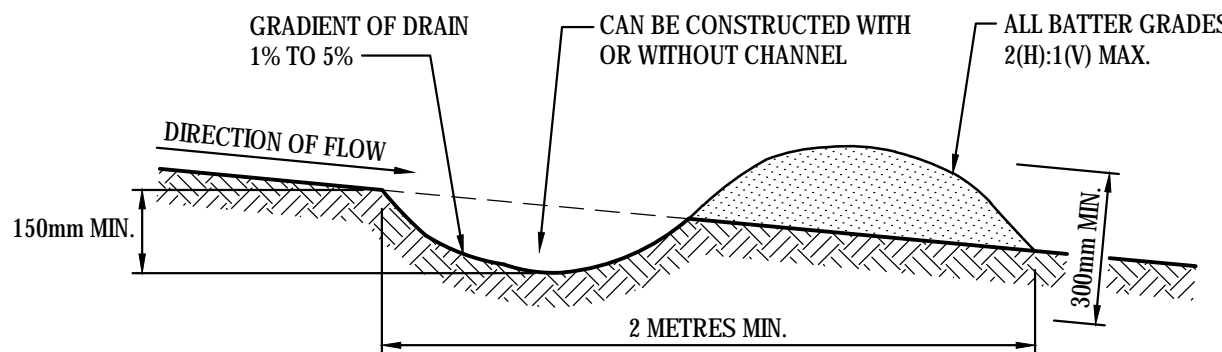


NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAC. UPSLOPE LENGTH IS 80 METERS.

CATCH DRAIN CONSTRUCTION NOTES:

1. CONSTRUCT ALONG GRADIENT AS SPECIFIED.
2. MAXIMUM SPACING BETWEEN BANKS SHALL BE 80 METRES.
3. DRAINS TO BE OF PARABOLIC OR TRAPEZOIDAL CROSS SECTION NOT V-SHAPED.
4. EARTH BANKS TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE.
5. CONSTRUCTION IS OF A TEMPORARY NATURE AND SHALL BE COMPACTED AT THE END A DAYS WORK OR IMMEDIATELY PRIOR RAIN.
6. ALL OUTLETS FROM DISTURBED LANDS ARE TO FEED INTO SEDIMENT BASIN OR SIMILAR.
7. DISCHARGE RUNOFF COLLECTED FROM UNDISTURBED LANDS ONTO EITHER A STABILISED OR AN UNDISTURBED DISPOSAL AISTE WITHIN THE SAME SUBCATCHMENT AREA FROM WHICH THE WATER ORIGINATED.
8. COMPACT WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE THAN FIVE DAYS.
9. EARTH BANKS TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW.

CATCH DRAINS SD 5-8
SCALE N.T.S.

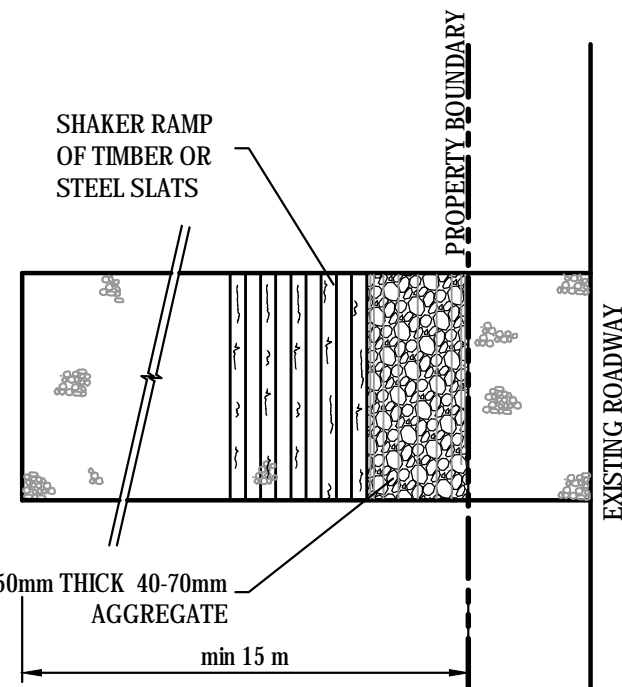


NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.

EARTH BANK CONSTRUCTION NOTES:

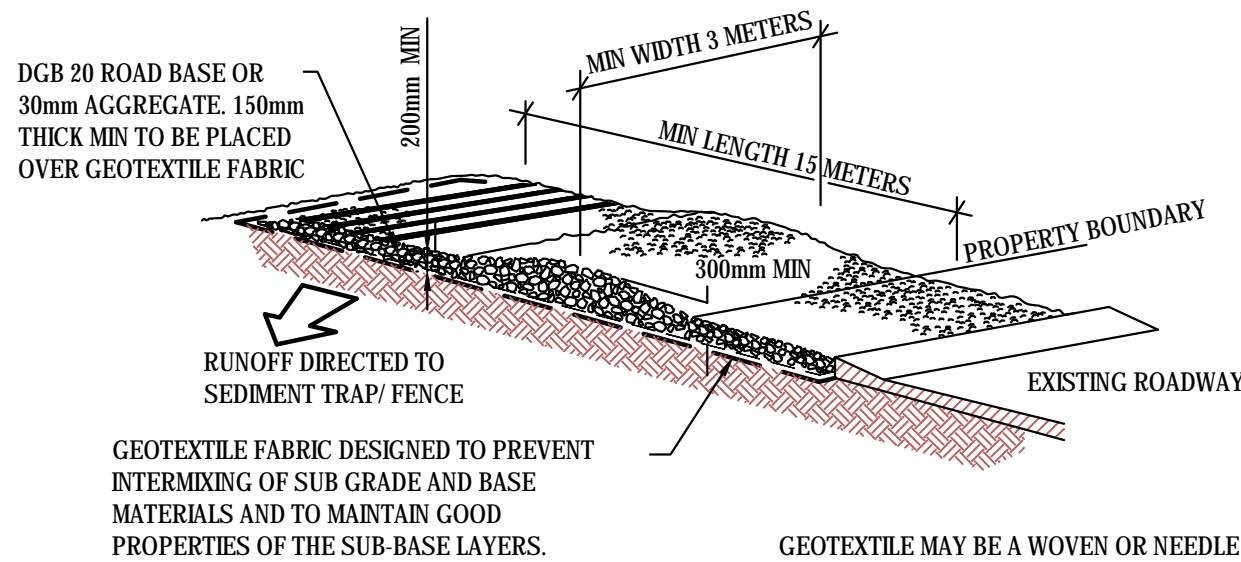
1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS-SECTIONS, NOT "V" SHAPED.
5. ENSURE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

EARTH BANK (LOW FLOW)
N.T.S.



STABILISED SITE ACCESS WITH SHAKER RAMP
N.T.S.

CONSTRUCTION SITE



GEOTEXTILE MAY BE A WOVEN OR NEEDLE PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500 N

STABILISED SITE ACCESS WITH SHAKER RAMP
N.T.S.

NOTES:

1. THIS DEVICE IS TO BE LOCATED AT ALL EXITS FROM CONSTRUCTION SITE.
2. THIS DEVICE IS TO BE REGULARLY CLEANED OF DEPOSITED MATERIAL SO AS TO MAINTAIN A 50mm DEEP SPACE BETWEEN PLANKS.
3. ANY UNSEALED ROAD BETWEEN THIS DEVICE AND NEAREST ROADWAY IS TO BE TOPPED WITH 100mm THICK 40-70mm SIZE AGGREGATE.
4. ALTERNATIVELY, THREE(3) PRECAST CONCRETE CATTLE GRIDS (AS MANUFACTURED BY *HUMES CONCRETE MAY BE USED. 1, 2 & 3 ABOVE ALSO APPLY.

CONSTRUCTION SEQUENCE

WORKS SHALL BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:

1. INSTALL SEDIMENT FENCING AND CUT DRAINS TO MEET THE REQUIREMENTS OF THE SEDIMENT AND EROSION CONTROL PLAN. WASTE COLLECTION BINS SHALL BE INSTALLED ADJACENT TO SITE OFFICE.
2. CONSTRUCT STABILISED SITE ACCESS IN ACCORDANCE WITH HORNSBY SHIRE COUNCIL'S REQUIREMENTS.
3. REDIRECT CLEAN WATER AROUND THE CONSTRUCTION SITE.
4. INSTALL SEDIMENT CONTROL PROTECTION MEASURES AT ALL NATURAL AND MAN-MADE DRAINAGE STRUCTURES. MAINTAIN UNTIL ALL THE DISTURBED AREAS ARE STABILISED.
5. CLEAR AND STRIP THE WORK AREAS. MINIMISE THE DAMAGE TO THE GRASS AND LOW GROUND COVER OF NON-DISTURBED AREAS.
6. ANY DISTURBED AREAS, OTHER THAN BUILDING PAD AREAS, SHALL IMMEDIATELY BE COVERED WITH SITE TOPSOIL WITHIN 7 DAYS OF CLEARING. BUILDING PAD AREAS SHALL BE COVERED WITH BITUMEN EMULSION AS SPECIFIED.
7. APPLY PERMANENT STABILISATION TO SITE (LANDSCAPING).

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DATUM: AHD

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Architect	fjmt
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Project	MASTER PLAN, CARABELLA STREET, KIRRIBILLI, NSW
Title	SEDIMENT EROSION TYPICAL SECTIONS AND DETAILS, SHEET 3 OF 3

Drawn M.CERNA	Designed S.SPIRIG	Date NOV 2016
Checked S.SPIRIG	Approved A.FRANCIS	Scale 1:250 @ A1
Drawing number 16652_DA_SE03		Revision 03