NORTHROP

CIVIL

Drainage, Utilities, Flooding, and Sediment & Erosion Control Report

for

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Appendices

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1 Background

1.1 The Development

St Patricks College is seeking to expand its learning facilities by providing a new four storey building with tiered seating overlooking the existing school field, basement carparking and four tennis courts. The proposed development is over a portion of the following lot:

- Lot 20 DP 1203221.

The approximate extent of the proposed development is illustrated below in Figure 1, herein referred to as "the site".

Figure 1 - Proposed Development Footprint

As shown in the Architectural drawings by BVN, the proposed single level basement carparking will be accessed via a ramp from Fraser Street. Two tennis courts are proposed in the same location as the two existing western tennis courts and another two courts are proposed on the roof of the proposed building.

The ground floor area of the proposed three storey building is approximately 750m^2, while the total development is approximately 3650m^2 of Lot 20 DP 1203221.

1.2 Existing Site

The existing site (lot 20 DP 1203221) is approximately 2.3Ha in total, with around 0.365Ha being utilised for the proposed development. This proposed development is over five existing asphalt tennis courts and tiered seating that overlooks the school field. The area is bounded by Fraser Street to the west, carparking, landscaping and walkways to the south, an existing three storey building (The Coghlan) to the east and a sports field to the north.

Stormwater infrastructure across the site is presented on the detailed survey drawings provided by RPS on 23.07.2019, attached in Appendix A. Existing stormwater drainage pits and pipes are located along the pedestrian walkway, south of the tennis court. These stormwater pipes on the upstream side of the site discharge to a 600mm trunk drainage pipe which runs underneath the tennis courts and connects to the downstream stormwater network underneath the sports field.

Two adjacent underground tanks have been identified between Dynes and The Coghlan. The first is a rainwater reuse tank and the second a detention tank. These tanks appear to have been designed to store and control the release of rainwater runoff from Hodda, Dynes and the Coghlan building specifically. The combined volume of this reuse and detention tank is 250kL as indicated on the existing civil design drawings for the Hodda building. Figure 2 shows the location of these tanks and buildings.

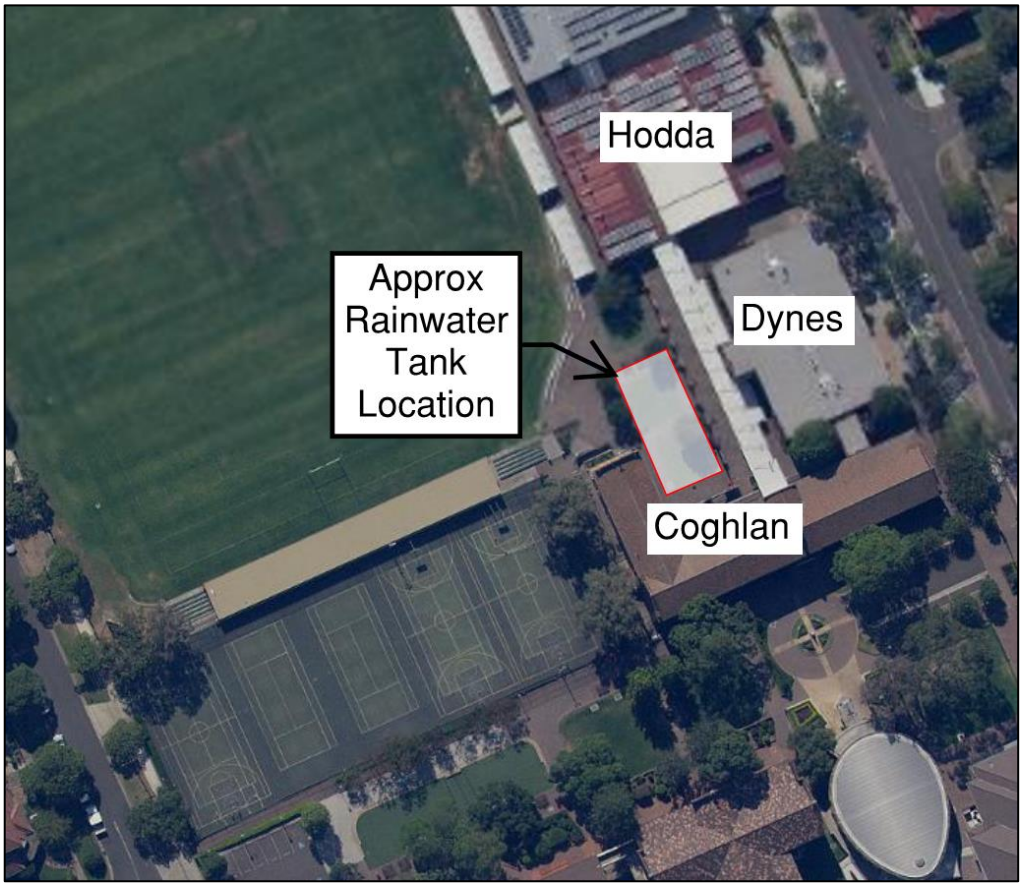

Figure 2 - Existing rainwater/ detention tank and roof catchments

2 Flooding Assessment

Northrop Consulting Engineers have been engaged to undertake a flooding assessment at the proposed St Patricks College project site to satisfy Clause 17 of the Secretary's Environmental Assessment Requirements (SEARs) for SSD 10400. This section outlines the requirements of the clauses, the assessment methodology, a description of the existing site and development proposal, and responses to the clauses.

The SEARs for SSD 10400 requires the following:

Identify flood risk on-site (detailing the most recent flood studies for the project area) and consideration of any relevant provisions of the NSW Floodplain Development Manual (DIPNR, 2005), including the potential effects of climate change, sea level rise and an increase in rainfall intensity. If there is a material flood risk, include design solutions for mitigation.

In order to address these requirements, a review of the guideline documents and flood studies affecting the development was undertaken. Documents reviewed include;

- Strathfield Council Planning Certificate, PC559/1819/T P071001 (25.01.2019).
- The NSW Floodplain Development Manual (2005).
- Powells Creek and Salesyards Creek (SCSC) Revised Flood Study (2016).
- Strathfield Council Interim Flood Prone Lands Policy (1999).

2.1 Existing Flood Behaviour

The Planning Certificate (listed above) for Lot 20 DP 1203221 indicates that the lot is located within the 1 in 100 year flood event and thus existing flood behaviour across the site has been obtained from the Powells Creek and Salesyards Creek (PCSC) Revised Flood Study (2016). This includes flood extents, flood velocities, hazard categorisation and hydraulic categorisation. As identified by this study, the subject site is affected by local catchment flooding only rather than ocean flooding or sea-level rise due to its distance to the ocean and elevation above sea level.

The 1% AEP flood extent was provided to Northrop by Council on 29.01.2020 and is presented below in Figure 3. This flood extent was extracted by Council from the PCSC Revised Flood Study (2016). The study shows flood waters travelling in a northerly direction across the site towards the school field before continuing downstream. Flood water depths across the site range from **0.0m to 0.3m** as identified in the PCSC Revised Flood Study. These low flood depths are expected considering the close proximity of the site to the top of the catchment.

Figure 3 shows that the flood elevation across the site varies by location, with the maximum 1% AEP flood level onsite being 26.5 mAHD on the south western boundary.

Figure 3 – 1% AEP Flood Extent and Elevation as Identified by Council via email correspondence, overlaid on proposed layout (29.01.2020)

The PCSC Revised Flood Study (2016) also presents flood velocities across the site, as attached in Appendix B for the 1% AEP flood event. Velocities are generally between 0 – 0.5 m/s across the site. This is considered to be relatively low and is to be expected as the site is only 50m downstream of the top of the catchment and grades are generally around 1% across this section of the site.

Hydraulic hazard categorisation describes the danger that flood waters might pose to the lives of people, vehicles or buildings affected by flooding. Hydraulic Hazard Categories have been provided in the PCSC Revised Flood Study (2016) and are presented in Appendix B. It can be seen that the hydraulic hazard is classified as low across the entire site. Therefore, the risk that floodwaters pose to people, vehicles or buildings is low.

Similar to hydraulic hazard categorisation, the PCSC Revised Flood Study presents the hydraulic categorisation across the site, as attached in Appendix B. Flood waters are defined as flood fringe across the entire site which is "*the remaining area of flood prone land after floodway and flood storage areas have been defined*". Flood fringe areas can usually be developed without reference to how the development will affect the flood behaviour either upstream or downstream of the site.

2.2 Potential Effects of Climate Change, Sea Level Rise and Increased Rainfall Intensity

The PCSC Revised Flood Study (2016) includes an analysis of climate change scenarios at various locations across the catchment upstream of Powells Creek. There were five different climate change scenarios modelled including; increasing the tailwater condition to 1.4 mAHD and 1.9 mAHD, and increasing the rainfall by 10%, 20% and 30%.

Table 37 of the flood study presents the flood level comparison at various locations for the above five scenarios. The closest measuring point in the study to the site is located 370m downstream of the site

on Arthur street. Table 1 has been extracted from Table 37 in the flood study and presents the flood level comparison for each of the five different climate change scenarios.

Table 1 – Climate Change Analysis – 1% AEP Level Comparison (m)

	Tailwater increase to 1.4 mAHD	Tailwater increase to 1.9 mAHD	Increase in rainfall by 10%	Increase in rainfall by 20%	Increase in rainfall by 30%
Arthur Street	0.00	0.00	0.02	0.05	0.08

Considering the site is located 50m downstream from the top of the catchment and Arthur Street is located 420m downstream from the top of the catchment, it would be expected that the climate change scenarios would have a much larger impact on flood waters at Arthur Street than the site. The largest flood level increase from all the climate change scenarios at Arthur street occurs when increasing rainfall by 30%, resulting in a 0.08m higher flood level. Therefore, this scenario is expected to result in an increase of less than 0.08m at the site.

The maximum 1% AEP flood level onsite is 26.5mAHD and the ground level finished floor level onsite is 27.1 m AHD, 0.6m higher than the flood level. A minor increase in flood level of up to 0.08m during the climate change scenario would still allow more than the minimum required freeboard of 500mm from the 1% AEP level to finished floor level. Therefore, it is reasoned that the design considers and allows for the minor effects of climate change, sea level rise and increasing rainfall intensities related to flooding.

2.3 Design Solutions for Flood Mitigation

The proposed development has been designed with flood mitigation in mind, ensuring the effects of flooding are minimised to a practical level.

In accordance with the Strathfield Council's interim Flood Prone Lands Policy (1999), all habitable floor levels have been designed with a minimum of 500mm freeboard to the 1% AEP design event. This shall ensure floodwater during all events up to and including the 1% AEP flood event cannot enter any habitable floors.

As identified in Figure 3, the proposed entry ramp from Fraser Street into the basement carparking area is located within the 1% AEP flood extent where flood depths are between 0.0m to 0.3m. To prevent floodwaters from entering the ramp and travel into the basement, the top of the ramp has been designed to rise to a localised level which sits 300mm above the adjacent pavement level, before ramping down across the road verge to tie in with existing levels on the road.

In addition to providing a lip at the top of the ramp to prevent floodwaters from entering the basement, a grated trench drain is proposed at the bottom of the ramp to collect stormwater. Any additional stormwater entering the basement will either be picked up by the pit and pipe network across the basement, or sheet flow underneath the open tiered seating and onto the school field which is approximately 1.5 m below the basement level.

As shown in Figure 3 above, the 1 in 100-year flood extent is expected to slightly encroach on the north western corner of the proposed building. A series of grated trench drains ha been designed to collect rainwater around the tennis courts and these are expected to reduce the flood depth in this area as flood waters are conveyed downstream.

3 Stormwater Management

Northrop Consulting Engineers have prepared a stormwater management strategy for the proposed development at St Patricks College. This stormwater management strategy has been developed in accordance with the Strathfield Council Development Control Plan (DCP) 2005 and intends to discuss stormwater issues related to the site at a level appropriate for a State Significant Development Application. This should be read in conjunction with drawings C03.01DA and C03.02DA, included in Appendix C.

3.1 Proposed Stormwater Management Strategy

The proposed stormwater management strategy for the development site can be summarised as follows:

- Runoff from the roof-top tennis courts will be captured via charged or gravity downpipes and directed to a proposed rainwater reuse tank in the basement. Reuse water will be treated using a bag filter and UV disinfection unit as detailed on the Hydraulic Engineer's drawings.
- Reuse water will be internally reticulated to all toilet cisterns within the new building and all outdoor taps for external irrigation and maintenance washdown.
- All surface runoff from the podium will be collected via a series of grated trench drains and pits before being conveyed downstream to the existing stormwater network which discharges across the school field via a 600mm diameter stormwater pipe.
- A series of pits and floor wastes will collect any surface water that reaches the basement and convey this water to the existing stormwater network.
- An existing 600mm stormwater pipe currently runs underneath the tennis courts at an elevation which would sit suspended within the proposed basement. This pipe conveys stormwater from the walkway above the tennis courts and will be removed and replaced with a new 600mm stormwater pipe that runs underneath the proposed basement.

3.2 Stormwater Quality Assessment

The existing site does not include any water quality treatment measures for the five existing tennis courts. As such, stormwater is directed into Council's stormwater network without treatment.

Runoff from the proposed roof-top tennis courts (approx. 750m2) is to be treated as mentioned above using a bag filter and UV disinfection system and collected in a reuse tank before being reticulated through the building to internal toilet cisterns and outdoor taps. The proposed development will result in less ground level hardstand area than the previous development and additionally, runoff from the roof-top tennis courts will be directed to a reuse tank, which effectively takes rainwater out of the stormwater system. The development is deemed to result in a "cleaner" catchment when compared to the existing scenario. It is reasoned that water quality treatment devices beyond those used for reuse water are not required for the proposed works.

Rainwater Tank

Runoff from the roof-top tennis courts will be captured and conveyed by a series of downpipes to a new 20kL below ground rainwater tank. An efficient tank size was determined by building a MUSIC model for the development. Internal and external re-use demands in the model were based on values provided by McCallum PFCA Hydraulic Consultants. Total daily internal reuse was determined to be 0.6kL/day for toilet flushing, while external reuse for irrigation and maintenance washdown was determined to be 1.8kL/day during dry weather. MUSIC requires an annual external reuse value for

input and as such, climate data was observed to determine the average number of dry days per year. The Bureau of Meteorology presents rainfall data for Sydney Observatory and states that an average of 99.7 days per year receive less than 1mm of Rainfall. This is 27.4% of the days in a year, and therefore, we conservatively assumed 1/3 of the days in a year are dry days, resulting in a total external annual reuse demand of 219kL/year for modelling.

It has also been assumed within the MUSIC model that 100% of the roof areas (tennis courts) will be connected to the tank.

The MUSIC model shows that a 20kL reuse tank is 90% efficient, holding enough rainwater to service the internal and external reuse demands 90% of the days in a year. This reuse efficiency is considered an acceptable design outcome.

3.3 Stormwater Quantity Assessment

Stormwater detention systems are designed to ensure post-developed flows do not exceed pre-developed flows. These flow rates are mostly based on the impervious area of a site, with an increased impervious area resulting in a higher flow rate. A minor increase in impervious area is observed in the proposed development, 3% (125m^2) compared to the existing site which is mostly asphalt tennis courts.

Runoff from the existing tennis courts does not pass through a detention basin before being discharged downstream. The entire roof area (approx 750m2) of the proposed building will be connected to a rainwater reuse tank that takes rainwater out of the stormwater system, therefore lowering the rate of stormwater runoff during rainfall events. The reuse tank alone is expected to make up for the increased impervious area of 125m2 and therefore it is reasoned that detention does not need to be provided for the development.

4 Utilities

4.1 Reuse Water Reticulation

The proposed development shall include a 20kL rainwater tank to capture rainwater runoff from the two roof-top tennis courts on the proposed building with a total area of approximately 750m^2. Captured water within the reuse tank will be used externally through taps at the washdown area and landscaping as well as internal toilet cisterns throughout the proposed building. A main's water top-up will be used to supply water to the tank to ensure it does not run dry.

5 Erosion, Sediment and Dust Control

Northrop Consulting Engineers have prepared a concept erosion and sediment control plan in accordance with the guidelines set out in Landcom's 'Managing Urban Stormwater: Soils and Construction' ("The Blue Book"). The plan, C02.01DA, is included in Appendix C, and is intended to provide sufficient information for the purposes of approval at the development application stage.

The Contractor shall be responsible for adequately managing site stormwater runoff with the aim of preventing erosion and deposition, specifically within water ways or stormwater drains. The general principles for management are to eliminate, isolate, minimise or control erosion, and therefore the potential for sediment deposition to have an effect on downstream environments.

All work is to be carried out in accordance with relevant ordinances and regulations; note in particular the requirements of the 'Blue Book'. The Contractor shall be responsible for adequately implementing the measures in these documents.

5.1 Dust Management

To ensure that dust generation is eliminated or reduced where possible and practical, all site operations shall be undertaken with consideration given to their potential to produce dust. A management strategy of *avoid* > *minimise* > *control* shall be implemented.

The Contractor shall instigate measures to minimise and control generation of dust from the site. These measures shall include, but not be limited to:

- Program works around periods of significant and adverse meteorological conditions.
- Install wind fences around stockpiles with significant amounts of fine particulates.
- Maintain vegetation across the site where possible, otherwise establish vegetation or seal disturbed site areas as soon as practical.
- Provide water trucks or sprinkling devices during construction as required to suppress dust, specifically for site vehicular traffic or dumping and filling operations.

6 Conclusion

A summary of findings of this report are as follows:

6.1 Flooding Assessment

From the flooding assessment undertaken, it has been concluded that the proposed development:

- Is compatible with the flood hazard onsite and floodplain risk management plans that apply to the site.
- Is not likely to cause significant adverse impacts on flood behaviour on adjacent properties.
- Incorporates design features to minimise risk to property and life from flooding.

6.2 Stormwater Management

Given the results of the above investigations, it is reasoned that the stormwater management strategy meets Strathfield Council's requirements:

- The proposed development is expected to result in an equal or better water quality outcome than the existing site.
- Onsite detention is not proposed as the development is not expected to increase flows beyond those of the existing site.

6.3 Utilities

- A 20kL rainwater reuse tank is proposed to allow rainwater to be reticulated throughout internal toilet cisterns in the proposed building and outdoor taps. A mains water top-up will be connected to the reuse tank.

6.4 Sediment, Erosion and Dust Controls

- A sediment and erosion control strategy has been prepared for the site to appropriately manage this risk in accordance with the requirements of Landcom's 'Managing Urban Stormwater: Soils and Construction' ("The Blue Book").
- A dust management strategy will be implemented during construction in line with the "avoid > minimise > control" methodology.

Appendix A – Site Survey

PUBLIC UTILITY LEGEND

E ELEC

- EJB CABLE JUNCTION BOX (PEJB)
- EMH CABLE MANHOLE (PEMH)
- EFP DISTRIBUTION FUSE POINT
- EGL GARDEN LIGHT (PLGN)
- POLE - LIGHT (PLPL)
- EP POLE - POWER (PPPL)
- POLE - POWER & LIGHT (PPLP)
- POWER SERVICE PILLAR - UNDERGROUND (PEUP)
- TRANSFORMER CABINET CENTRE (PETC)
- LIGHT WITH OUTREACH (LI)
- STAY ANCHOR POLE (PSAP)
- HOUSE CONNECTION (EY) (DIA UNK)
- EY 100 HOUSE CONNECTION (EY) (DIA)
- CONDUIT (ED) (DIA UNK)
- ED 100 CONDUIT (ED) (DIA)
- LINE-UNDERGROUND (EU) (DIA UNK)
- EU 100 LINE-UNDERGROUND (EU) (DIA)
- LINE-MINOR TRANSMISSION (UL) (DIA UNK)
- UL 150 LINE-MINOR TRANSMISSION (UL) (DIA)

E TCS

- TRAFFIC CONTROL SIGNAL (PSGL)
- TSC TRAFFIC SIGNAL CONTROLLER (PSCL)
- TSD TRAFFIC SIGNAL DETECTOR (PSDR)
- TRAFFIC SIGNAL JUNCTION BOX (PSJX)
- TRAFFIC LIGHT WITH OUTREACH (TO)
- TRAFFIC SIGNAL DETECTOR (SD)

E COMMS (COMMUNICATIONS

- TDP TELEPHONE DISTRIBUTION PILLAR (PTDP)
- AJP ABOVE GROUND JOINING POST (PTJP)
- OJB OPTICAL FIBRE JUNCTION BOX (POFJ)
- OFP OPTICAL FIBRE PIT (POFP)
- TSP STD 1.1 m BY 1.1 m MAIN PIT (PTMP)
- TB TELEPHONE BOX POINT (PTBX)
- TPL TELEPHONE POLE (PTPL)
- TELEPHONE SINGLE CONCRETE PIT (PTSP)
- TELEPHONE TRIPLE CONCRETE PIT (PT3P)
- TELEPHONE TWIN CONCRETE PIT (PTTP)
- OU OPTICAL FIBRE-UNDERGROUND (OU) (DIA UNK)
- OU 150 OPTICAL FIBRE-UNDERGROUND (OU) (DIA)
- T TELEPHONE LINE (TN) (DIA UNK)
- T 100 TELEPHONE LINE (TN) (DIA)
- TD TELEPHONE CONDUIT (TD) (DIA UNK)
- TD 16 TELEPHONE CONDUIT (TD) (DIA)
- TELEPHONE SUMP (TS)

E GAS

- GMH MANHOLE COVER (PGHL)
- METER (PGMR)
- GP PIPELINE MARKER (PGPM)
- HP PIPELINE MARKER - HIGH PRESSURE (PGHM)
- VALVE BOX (PGAS)
- VENT PIPE (PGVP)
- TEST POINT (PGTP)
- HA ETHANE PIPELINE (HA) (DIA UNK)
- HA 150 ETHANE PIPELINE (HA) (DIA)
- HOUSE CONNECTION (DG) (DIA UNK)
- DG 150 HOUSE CONNECTION (DG) (DIA)
- MAIN-HIGH PRESSURE PIPELINE (HG) (DIA UNK)
- HG 150 MAIN-HIGH PRESSURE PIPELINE (HG) (DIA)
- MAIN-LOW PRESSURE (LG) (DIA UNK)
- LG 100 MAIN-LOW PRESSURE (LG) (DIA)

E WATR

- AIR VALVE (PWAV)
- EARTH TERMINAL (PWET)
- FIRE HYDRANT (PWFB)
- WH HYDRANT (PWHY)
- METER (PWMR)
- STOP VALVE (PWSV)
- TAP (PWTP)
- WY HOUSE CONNECTION (WY) (DIA UNK)
- WY 150 HOUSE CONNECTION (WY) (DIA)
- WM MAIN (WM) (DIA UNK)
- W 150 MAIN (WM) (DIA)

E SWER

- MANHOLE COVER (PSMH)
- SVP VENT PIPE (PSVP)
- SLH LAMPHOLE (PSLH)
- ØS (A) MAIN (SM) (DIA UNK)
- Ø150 MAIN (SM) (DIA)
- SY HOUSE CONNECTION (SY)
- SY 16 HOUSE CONNECTION (SY) (DIA)

E DRAIN (STORMWATER)

- DRAINAGE JUNCTION MANHOLE (PDJM)
- GULLY PIT POINT (PGUL)
- IL INLET TO SUMP (PILT)
- IN INVERT OF PIPE (PINV)
- JB TOP OF CONCRETE JUNCTION BOX (PJBX)
- SF SUBSOIL DRAIN FLUSH POINT (PSFP)
- KERB INLET (KI)
- DJP IRRIGATION JUNCTION PIT
- DLH DRAINAGE LAMPHOLE
- DP DRAINAGE PIT (DP)
- DRAINAGE BOX (DX)
- DRAINAGE PIPE (UU) (DIA UNK)
- Ø150 DRAINAGE PIPE (UU) (DIA)
- DISH DRAIN (DD)

E CULT (CULTURAL)

- SIGN POST (PSIN)
- LARGE SIGN (SI)
- BOLLARD (AC)
- FENCE POST-GUIDE POST (POST)
- CB CORNER OF BUILDING
- GATE (AG)
- FENCE (FE)

E BUIL

- FLOOR LEVEL (PFLR)
- AC AIRCON UNIT

E MISC

- GAT GATIC COVER LID (PGAT)
- ?P UNIDENTIFIED POLE (PPOL)
- ? UNIDENTIFIED SERVICE (PUSR)
- UNIDENTIFIED SERVICE (UP)

E TOPO

- SPOT HEIGHT(PSHT)
- NATURAL SURFACE
- TREE

SUI QUALITY CLASSIFICATION

(A)	QUALITY LEVEL A	FOW	FULL OF WATER
(B)	QUALITY LEVEL B	FOD	FULL OF DIRT
(C)	QUALITY LEVEL C	UTO	UNABLE TO OPEN
(D)	QUALITY LEVEL D	NA	NOT ACCESSIBLE
		EOT	END OF TRACE
		UTT	UNABLE TO TRACE
		NPV	NO PIPES VISIBLE
		EOS	END OF SIGNAL

UTILITY LEGEND

ELECTRICITY (AUSGRID):
AC ASBESTOS CEMENT
GI GALVANISED IRON
PVC POLYVINYL CHLORIDE

GAS (JEMENA):
NB NOMINAL BORE (CAST IRON MAN)
PE POLYETHYLENE

RMS:
GI GALVANISED IRON
HD HEAVY DUTY
PVC POLYVINYL CHLORIDE

TELSTRA & OPTUS:
AC ASBESTOS CEMENT
CONC. CONCRETE
EW EARTHENWARE
GI GALVANISED IRON
PVC POLYVINYL CHLORIDE

WATER (SYDNEY WATER):
CICL CAST IRON CEMENT LINED
DICL DUCTILE IRON CEMENT LINED
GI GALVANISED IRON
PVC POLYVINYL CHLORIDE
VC VITRIFIED CLAY
SCLIBL STEEL CEMENT LINED INTERNAL BITUMEN LINED

NOTES

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THIS SURVEY IN ON MGA COORDINATES WITH GRID/GROUND DISTANCES. THE ORIGIN OF COORDINATES IS SSM118267 WITH MGA COORDINATES OF E321746.457 N6250237.308 (ACC A/1) LOCATED AT CORNER OF SHORTLAND AVE & MARION ST.

ONLY SIGNIFICANT TREES ON THE SUBJECT SITE WITH A TRUNK DIAMETER OF 100mm OR GREATER HAVE BEEN SURVEYED. SMALLER TREES AND SHRUBS EXIST ON SITE. NO TREE TAGS HAVE BEEN PLACED.

CONTOURS ARE AN INDICATION OF LANDFORM AND SHOULD NOT BE TAKEN IN PREFERENCE TO SPOT LEVELS SHOWN.

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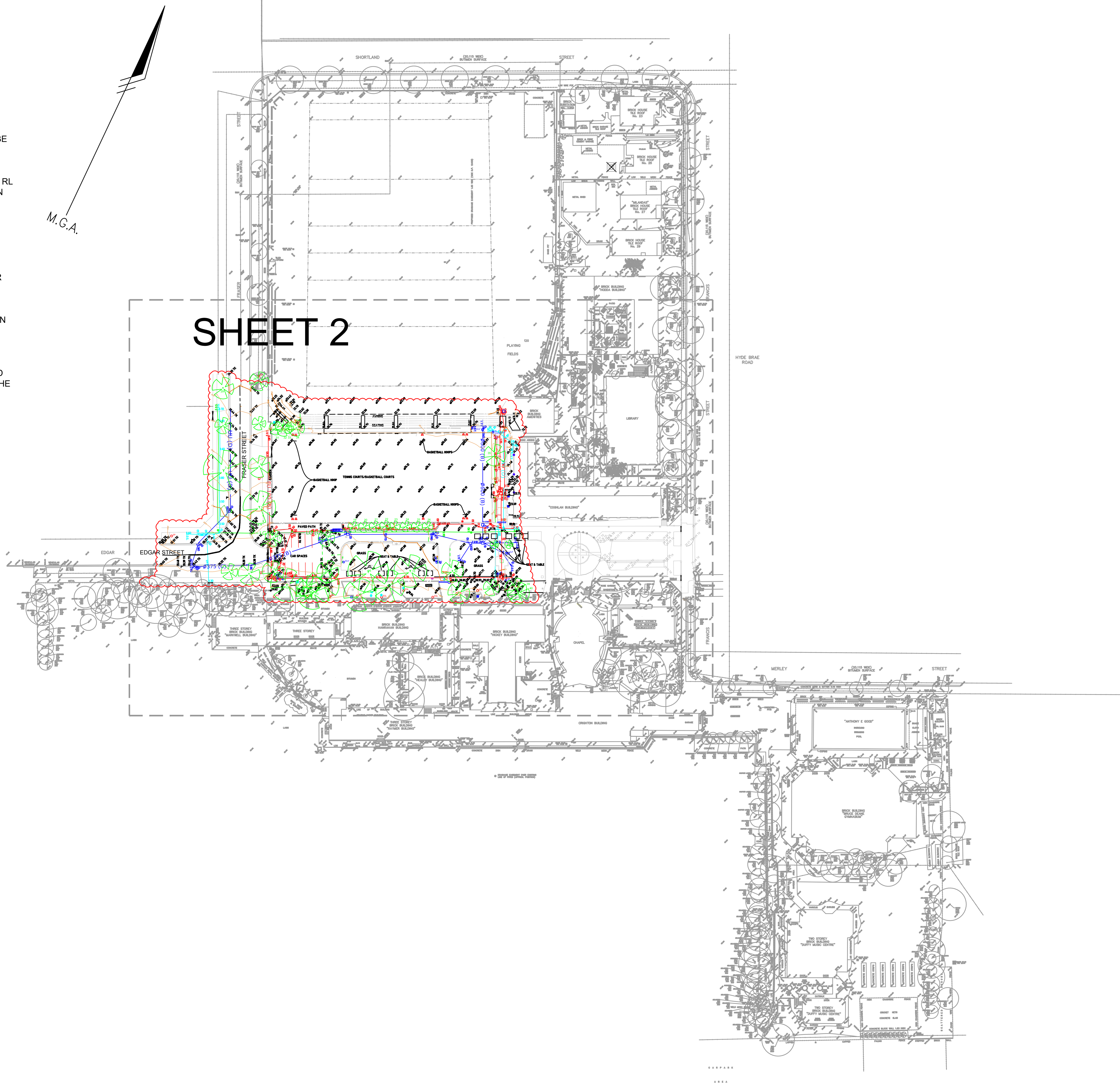
ON-SITE TREE SCHEDULE

TREE Number	CANOPY Spread (m)	Trunk (mm)	Height (m)
1	8	0.4	7
2	6	0.3	5
3	15	1.2	9
4	8	0.3	6
5	12	0.5	8
6	6	0.3	8
7	6	0.3	9
8	8	0.3	10
9	8	0.3	9
10	12	1.2	12
11	6	0.3	12
12	8	0.5	13
13	12	0.8	15
14	12	0.6	13
15	12	0.4	9
16	15	0.7	11
17	12	0.7	13
18	12	0.6	15
19	4	0.2	5
20	4	0.2	5
21	4	0.2	5
22	4	0.2	5
23	4	0.2	5
24	4	0.2	5
25	4	0.2	5
26	4	0.2	5
27	5	0.3	4
28	7	0.4	6
29	8	0.7	7
30	6	0.4	5
31	5	0.3	8
32	6	0.4	8
33	4	0.2	8
34	6	0.6	9
35	8	0.6	11
36	8	0.6	9
37	3	0.4	6
38	3	0.3	6
39	8	0.5	9
40	8	0.5	9
41	8	0.5	9
42	6	0.4	9



NOTES:

1. THIS PLAN SHOWS A REPRESENTATION OF A 3D UTILITY MODEL PR123358-DETL-001-A.dwg. THIS MODEL SHOULD BE VIEWED IN A CAD ENVIRONMENT TO INTERPRET THE 3D INFORMATION.
2. ALL UTILITIES (EXCEPT GAS) ARE CLASS QL-B UNLESS NOTED OTHERWISE.
3. ALL GAS UTILITIES ARE CLASS QL-C UNLESS NOTED OTHERWISE OR SHOWN AS DIGITISED.
4. RPS UTILITY LOCATION USE DIAL BEFORE YOU DIG (DBYD) AS ONE SOURCE OF INFORMATION ONLY WHEN LOCATING UTILITIES.
5. UTILITY INFORMATION AND CONFIGURATION SUPPLIED FROM ASSET OWNERS (DBYD).
6. SINGLE STRINGS MAY REPRESENT MULTIPLE CABLES, CONDUITS OR PIPES.
7. ELECTRICITY CABLES ARE NOT NECESSARILY ENCLOSED IN CONDUITS AND ARE NOT NECESSARILY COVERED WITH MARKERS, TAPE OR OTHER INDICATORS OF THEIR PRESENCE.
8. NOT ALL HOUSE CONNECTIONS HAVE BEEN LOCATED.
9. IT REMAINS THE RESPONSIBILITY OF THE COMPANY AND/OR THE INDIVIDUAL CONDUCTING PHYSICAL WORKS TO ENSURE AN UP-TO-DATE VERSION OF DIAL BEFORE YOU DIG PLANS IS CONSULTED AND AVAILABLE ON SITE. PHYSICAL WORKS MAY INCLUDE, BUT NOT BE LIMITED TO, EXCAVATING, BORING (HORIZONTAL AND VERTICAL), AND DRILLING.
11. ALL UTILITIES NEED TO BE POTHOLED TO VERIFY LOCATION AND DEPTH IS CORRECT.
12. WHERE POSSIBLE IN THE FIELD, DEPTHS TO INDIVIDUAL SERVICES WERE OBTAINED AND RECORDED. THE DEPTH IS SHOWN AS TEXTURAL NOTATION. HENCE, THE ATTRIBUTE "0.58D" INDICATES A DEPTH TO THE UTILITY OF 580mm.
13. THE NOTATION "EOT" SHOWN HEREON REFERS TO "END OF TRACE", THE POINT WHERE A PARTICULAR SERVICE LINE WAS NO LONGER ABLE TO BE RELIABLY LOCATED AT THE SURFACE.

NOTE ON AS 5488-2019 CLASSIFICATION OF SUBSURFACE UTILITY INVESTIGATION (SUI)

Quality Levels

This Standard provides a framework for the classification of subsurface utility location and attributed information in terms of specified quality levels. The objective of this Standard is to provide utility owners, operators and locators with a framework for the consistent classification of information concerning subsurface utilities. Project risks related to underground utilities can then be properly managed.

A quality level describes the amount and accuracy of information that is collected or held on a subsurface utility.

There are four quality levels: D, C, B and A

Quality Level D (QL-D) is the lowest of these four quality levels. The attribute information and metadata of a subsurface utility can be compiled from any, or a combination of, the following:

(a) Existing records;
(b) Cursory site inspection;
(c) Anecdotal evidence

Quality Level C (QL-C) is described as a surface feature correlation or an interpretation of the approximate location and attributes of a subsurface utility asset using a combination of existing records (and/or anecdotal evidence) and a site survey of visible evidence. The minimum requirement for Quality Level C is relative spatial position. Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired dial-before-you-dig plans to "draw" a string which shows the approximate position of services. Other methods used to obtain proof of the existence of an undefined entity that do not utilize physical measurement or tracing that satisfy Quality Level B or Quality Level A spatial tolerances (for example: ground penetrating radar; acoustic; photographic; other.)

Quality Level B (QL-B) provides relative subsurface feature location in three dimensions. The minimum requirement for Quality Level B is relative spatial position. Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment.

Quality Level A (QL-A) is the highest quality level and consists of the positive identification of the attribute and location of a subsurface utility at a point to an absolute spatial position in three dimensions. It is the only quality level that defines a subsurface utility as 'validated'. Where the whole line segment cannot be verified by line of sight, quality level A shall not be attributed to the line segment between validated points. The vertical information for this locating method is to the top or shallowest part of the located service.

DISCLAIMER:

THIS SURVEY MODEL INCLUDES INFORMATION DESCRIBING THE LOCATION OF SUBTERRANEAN FEATURES WHICH WERE PURPORTED TO EXIST AT THE TIME OF SURVEY.

THIS INFORMATION WAS COMPILED FROM A COMBINATION OF FIELD TECHNIQUES AND AVAILABLE DATA FROM COOPERATING UTILITY AUTHORITIES. WHILST ALL CARE HAS BEEN TAKEN IN THE PREPARATION OF THIS SURVEY MODEL, RPS CANNOT GUARANTEE THAT THE SURVEY MODEL IS WITHOUT FLAW OR OMISSIONS. RPS CANNOT TAKE RESPONSIBILITY OF ANY KIND WHATSOEVER FOR ANY LOSS, DAMAGE OR OTHER CONSEQUENCES WHICH MAY ARISE FROM ANY PERSON RELYING ON ANY THING STATED ON THIS PLAN.

IN PARTICULAR, IT IS RECOMMENDED THAT USERS SATISFY THEMSELVES AS TO THE LOCATION OF SUBTERRANEAN FEATURES SUCH AS UTILITIES WHICH MAY OR MAY NOT BE SHOWN ON THE PLAN.

REVISIONS

No.	DATE	REVISION DETAILS	DRAWN	CHK	APP
A	23.07.2019	INITIAL PLAN	JMJ	AF	TC

HORIZ. SCALE: 1:100 @ A1 — VERT. SCALE: N/A @ A1
COORDINATES: MGA — DATUM: AHD
ORIGIN: SSM 18267 — ORIGIN: SSM 18267
2 1 0 2 4 6
SCALE IN METRES AT ORIGINAL REDUCTION RATIO

NOTES

CLIENT: ST PATRICK'S COLLEGE

SURVEY: AF	DATE OF SURVEY:	09.07.2019
DRAWN: JMJ	DATE OF PLAN:	23.07.2019
CHECKED: AF	DATE LAST SAVED:	23.07.2019
APPROVED: TC	DATE APPROVED:	23.07.2019

TITLE

ADDITIONAL SURVEY WORKS ST PATRICK'S COLLEGE STRATHFIELD

DRAWING No PR123358-DETL-001-A.dwg

JOB No PR123358 — ISSUE A

www.dialbeforeyoudig.com.au DIAL 1100 BEFORE YOU DIG

SHEET 1 OF 2 SHEETS — SIZE A1

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PUBLIC UTILITY LEGEND

E ELEC
- CABLE JUNCTION BOX (PEJB)
- CABLE MANHOLE (PEMH)
- DISTRIBUTION FUSE POINT
- GARDEN LIGHT (PLGN)
- POLE - LIGHT (PLPL)
- POLE - POWER (PPPL)
- POLE - POWER & LIGHT (PPLP)
- POWER SERVICE PILLAR - UNDERGROUND (PEUP)
- TRANSFORMER CABINET CENTRE (PETC)
- LIGHT WITH OUTREACH (LI)
- STAY ANCHOR POLE (PSAP)
- HOUSE CONNECTION (EY) (DIA UNK)
- HOUSE CONNECTION (EY) (DIA)
- CONDUIT (ED) (DIA UNK)
- CONDUIT (ED) (DIA)
- LINE-UNDERGROUND (EU) (DIA UNK)
- LINE-UNDERGROUND (EU) (DIA)
- LINE-MINOR TRANSMISSION (UL) (DIA UNK)
- LINE-MINOR TRANSMISSION (UL) (DIA)

E TCS
- TRAFFIC CONTROL SIGNAL (PSGL)
- TRAFFIC SIGNAL CONTROLLER (PSCL)
- TRAFFIC SIGNAL DETECTOR (PSDR)
- TRAFFIC SIGNAL JUNCTION BOX (PSJX)
- TRAFFIC LIGHT WITH OUTREACH (TO)
- TRAFFIC SIGNAL DETECTOR (SD)

E COMMS (COMMUNICATIONS)
- TELEPHONE DISTRIBUTION PILLAR (PTDP)
- ABOVE GROUND JOINING POST (PTJP)
- OPTICAL FIBRE JUNCTION BOX (POFJ)
- OPTICAL FIBRE PIT (POFP)
- STD 1.1 m BY 1.1 m MAIN PIT (PTMP)
- TELEPHONE BOX POINT (PTBX)
- TELEPHONE POLE (PTPL)
- TELEPHONE SINGLE CONCRETE PIT (PTSP)
- TELEPHONE TRIPLE CONCRETE PIT (PT3P)
- TELEPHONE TWIN CONCRETE PIT (PTTP)
- OPTICAL FIBRE-UNDERGROUND (OU) (DIA UNK)
- OPTICAL FIBRE-UNDERGROUND (OU) (DIA)
- TELEPHONE LINE (TN) (DIA UNK)
- TELEPHONE LINE (TN) (DIA)
- TELEPHONE CONDUIT (TD) (DIA UNK)
- TELEPHONE CONDUIT (TD) (DIA)
- TELEPHONE SUMP (TS)

E GAS
- MANHOLE COVER (PGHL)
- METER (PGMR)
- PIPELINE MARKER (PGPM)
- PIPELINE MARKER - HIGH PRESSURE (PGHM)
- VALVE BOX (PGAS)
- VENT PIPE (PGVP)
- TEST POINT (PGTP)
- ETHANE PIPELINE (HA) (DIA UNK)
- ETHANE PIPELINE (HA) (DIA)
- HOUSE CONNECTION (DG) (DIA UNK)
- HOUSE CONNECTION (DG) (DIA)
- MAIN-HIGH PRESSURE PIPELINE (HG) (DIA UNK)
- MAIN-HIGH PRESSURE PIPELINE (HG) (DIA)
- MAIN-LOW PRESSURE (LG) (DIA UNK)
- MAIN-LOW PRESSURE (LG) (DIA)

E WATR
- AIR VALVE (PWAV)
- EARTH TERMINAL (PWET)
- FIRE HYDRANT (PWFB)
- HYDRANT (PWHY)
- METER (PWMR)
- STOP VALVE (PWSV)
- TAP (PWTP)
- HOUSE CONNECTION (WY) (DIA UNK)
- HOUSE CONNECTION (WY) (DIA)
- MAIN (WM) (DIA UNK)
- MAIN (WM) (DIA)

E SWER
- MANHOLE COVER (PSMH)
- VENT PIPE (PSVP)
- LAMPHOLE (PSLH)
- MAIN (SM) (DIA UNK)
- MAIN (SM) (DIA)
- HOUSE CONNECTION (SY)
- HOUSE CONNECTION (SY) (DIA)

E DRAIN (STORMWATER)
- DRAINAGE JUNCTION MANHOLE (PDJM)
- GULLY PIT POINT (PGUL)
- INLET TO SUMP (PILT)
- INVERT OF PIPE (PINV)
- TOP OF CONCRETE JUNCTION BOX (PJBX)
- SUBSOIL DRAIN FLUSH POINT (PSFP)
- KERB INLET (KI)
- IRRIGATION JUNCTION PIT
- DRAINAGE LAMPHOLE
- DRAINAGE PIT (DP)
- DRAINAGE BOX (DX)
- DRAINAGE PIPE (UU) (DIA UNK)
- DRAINAGE PIPE (UU) (DIA)
- DISH DRAIN (DD)

E CULT (CULTURAL)
- SIGN POST (PSIN)
- LARGE SIGN (SI)
- BOLLARD (AC)
- FENCE POST-GUIDE POST (POST)
- CORNER OF BUILDING
- GATE (AG)
- FENCE (FE)

E BUIL
- FLOOR LEVEL (PFLR)
- AIRCON UNIT

E MISC
- GATIC COVER LID (PGAT)
- UNIDENTIFIED POLE (PPOL)
- UNIDENTIFIED SERVICE (PUSR)
- UNIDENTIFIED SERVICE (UP)

E TOPO
- SPOT HEIGHT(PSHT)
- NATURAL SURFACE
- TREE

SUI QUALITY CLASSIFICATION

(A)	QUALITY LEVEL A	FOW	FULL OF WATER
(B)	QUALITY LEVEL B	FOD	FULL OF DIRT
(C)	QUALITY LEVEL C	UTO	UNABLE TO OPEN
(D)	QUALITY LEVEL D	NA	NOT ACCESSIBLE
		EOT	END OF TRACE
		UTT	UNABLE TO TRACE
		NPV	NO PIPES VISIBLE
		EOS	END OF SIGNAL

UTILITY LEGEND

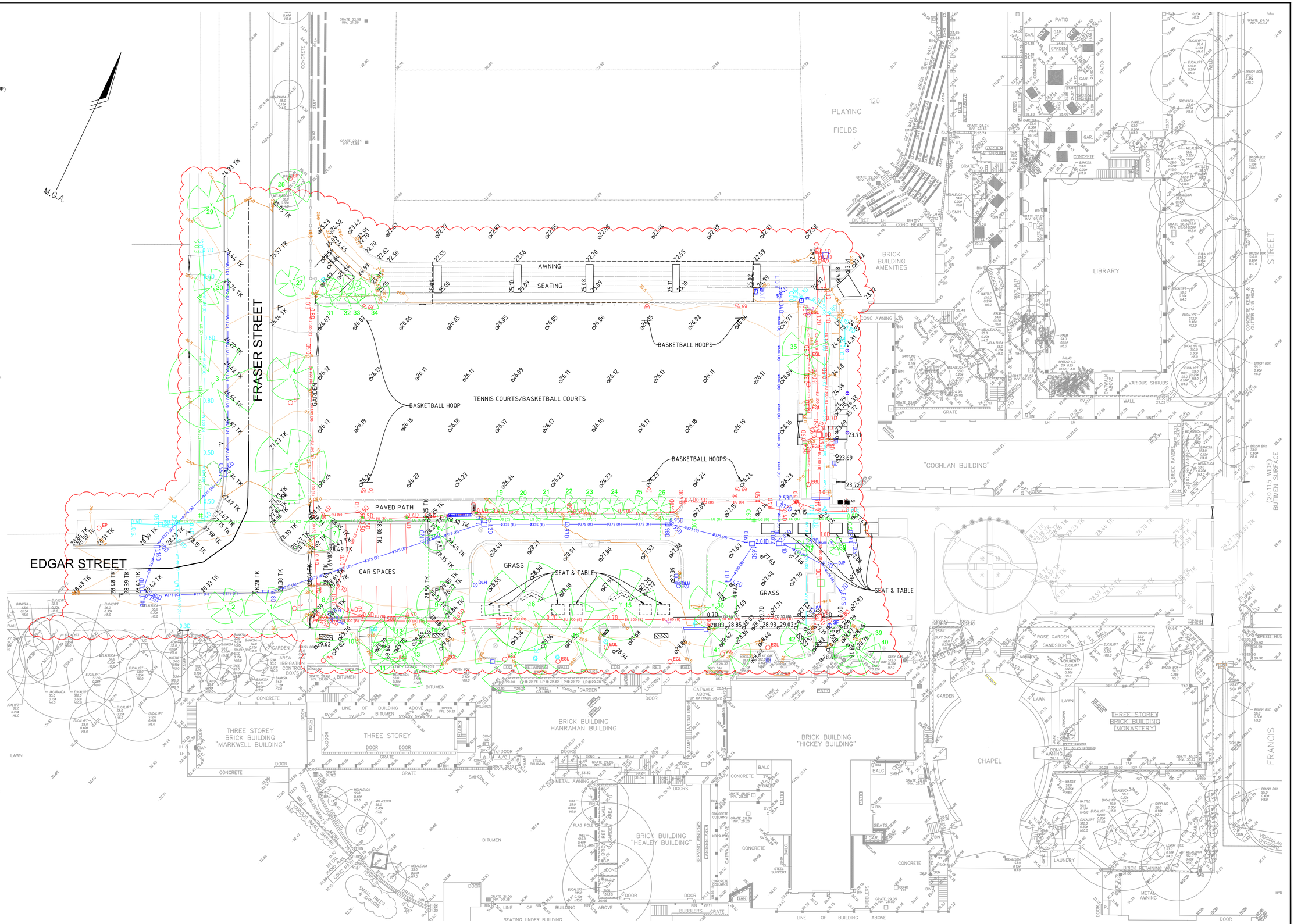
ELECTRICITY (AUSGRID):
- AC ASBESTOS CEMENT
- GI GALVANISED IRON
- PVC POLYVINYL CHLORIDE

GAS (JEMENA):
- NB NOMINAL BORE (CAST IRON MAN)
- PE POLYETHYLENE

RMS:
- GI GALVANISED IRON
- HD HEAVY DUTY
- PVC POLYVINYL CHLORIDE

TELSTRA & OPTUS:
- AC ASBESTOS CEMENT
- CONC. CONCRETE
- EW EARTHENWARE
- GI GALVANISED IRON
- PVC POLYVINYL CHLORIDE

WATER (SYDNEY WATER):
- CICL CAST IRON CEMENT LINED
- DICL DUCTILE IRON CEMENT LINED
- GI GALVANISED IRON
- PVC POLYVINYL CHLORIDE
- VC VITRIFIED CLAY
- SCLIBL STEEL CEMENT LINED INTERNAL BITUMEN LINED



REVISIONS

No.	DATE	REVISION DETAILS	DRAWN	CHK	APP
A	23.07.2019	INITIAL PLAN	JMJ	AF	TC

■ HORIZ. SCALE: 1:300 @ A1
■ VERT. SCALE: N/A @ A1
■ COORDINATES: MGA
■ DATUM: AHD
■ ORIGIN: SSM 18267
■ ORIGIN: SSM 18267

6 3 0 6 12 18
SCALE IN METRES AT ORIGINAL REDUCTION RATIO

■ NOTES

■ CLIENT: ST PATRICK'S COLLEGE

■ SURVEY:	AF	DATE OF SURVEY:	09.07.2019
■ DRAWN:	JMJ	DATE OF PLAN:	23.07.2019
■ CHECKED:	AF	DATE LAST SAVED:	23.07.2019
■ APPROVED:	TC	DATE APPROVED:	23.07.2019

■ TITLE
ADDITIONAL SURVEY WORKS ST PATRICK'S COLLEGE STRATHFIELD

■ DRAWING No PR123358-DETL-001-A.dwg

■ JOB No PR123358
■ ISSUE A
■ SHEET 2 OF 2 SHEETS
■ SIZE A1

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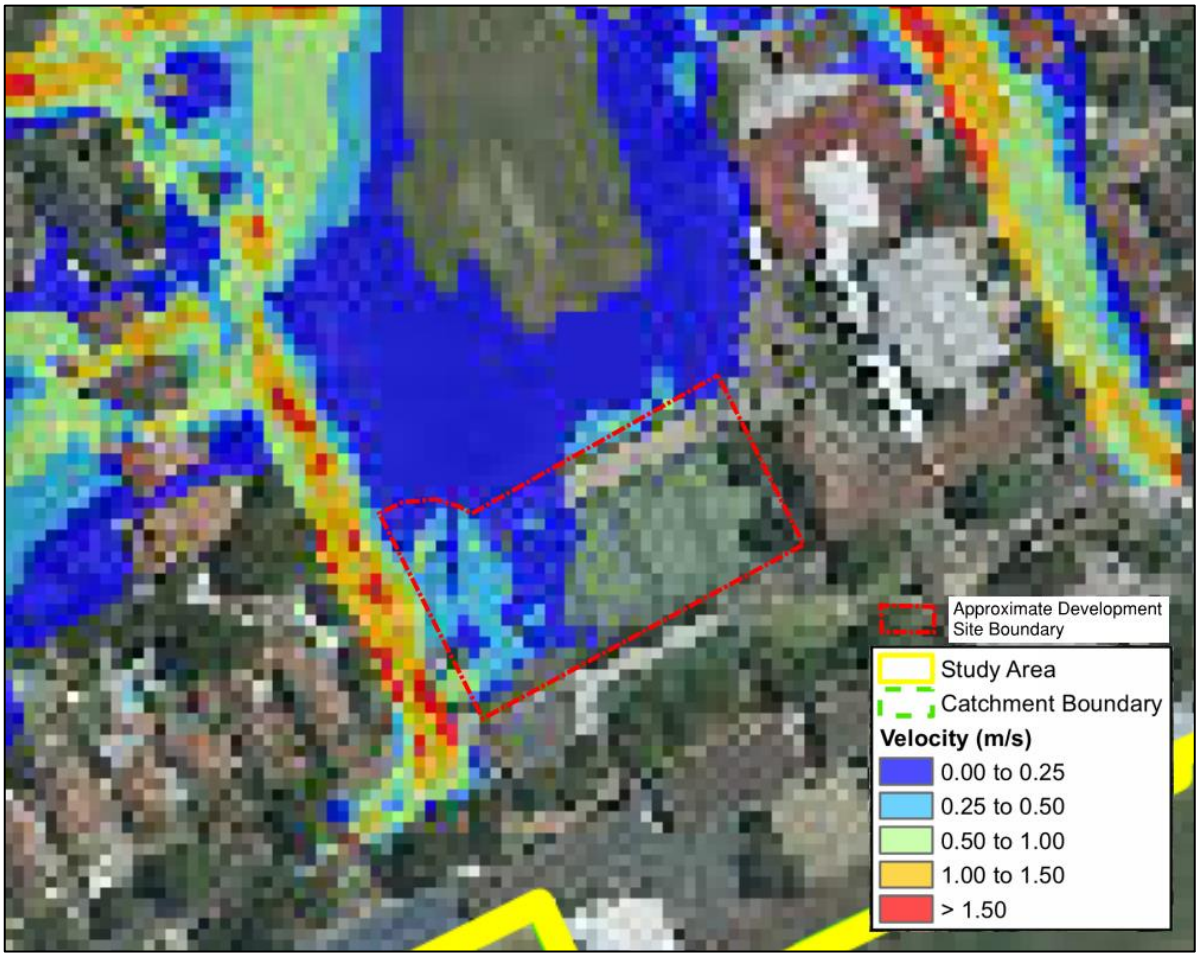
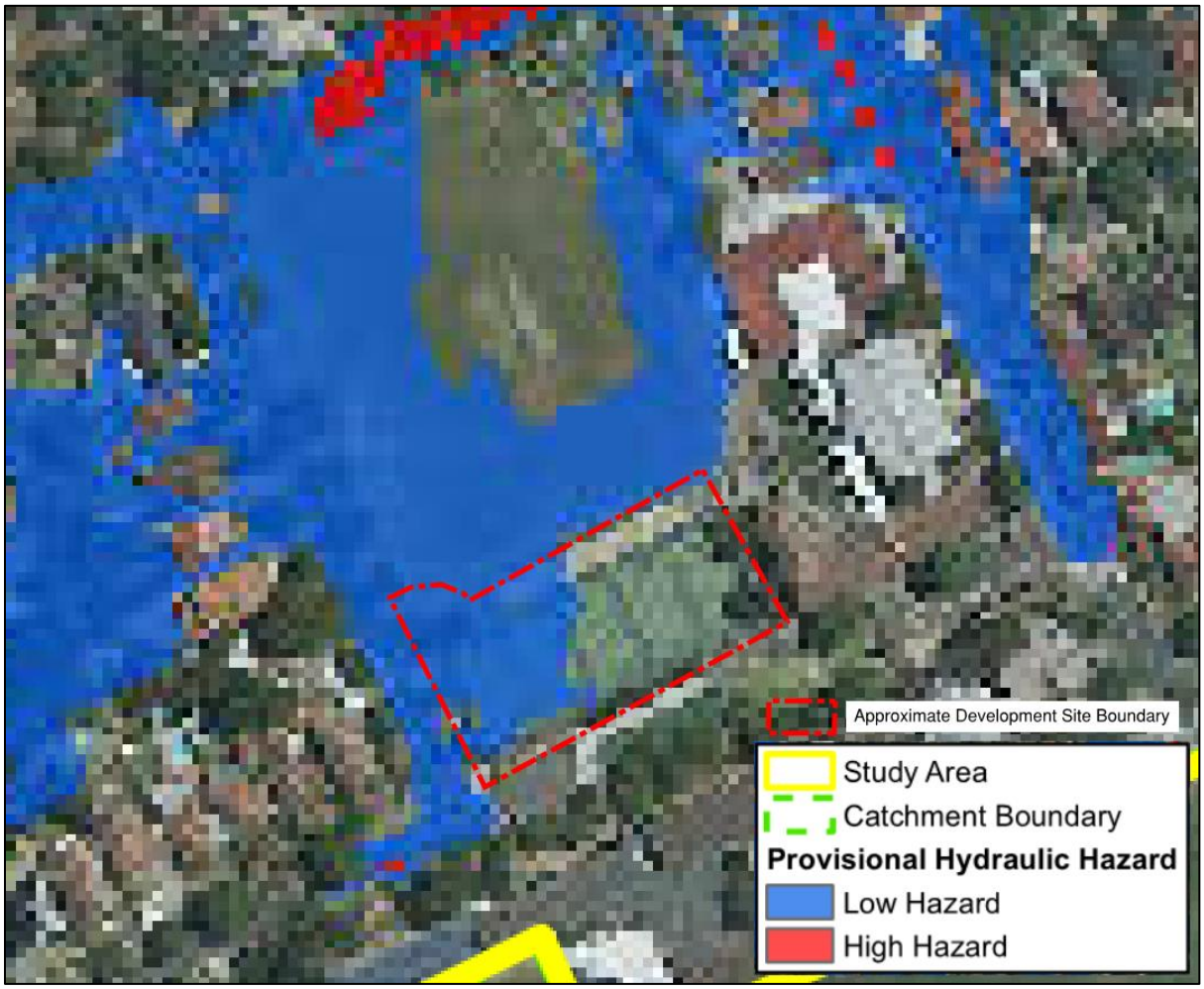
Appendix B – Flood Maps



1% AEP Flood Velocity (extracted from Figure 18Fii in the Powells Creek and Salesyards Creek Revised Flood Study (2016))



1% AEP Provisional Hydraulic Hazard (extracted from Figure 19bii in the Powells Creek and Salesyards Creek Revised Flood Study (2016))

1% AEP Provisional Hydraulic Categorisation (extracted from Figure 20bii in the Powells Creek and Salesyards Creek Revised Flood Study (2016))

Appendix C – Concept Design Drawings

ST PATRICKS COLLEGE

FRANCIS STREET, STRATHFIELD, NSW, 2135
CIVIL ENGINEERING PACKAGE

LOCALITY PLAN

IMAGE SOURCE : SIXMAPS

DRAWING SCHEDULE

DRG No.	DRAWING TITLE
C01.01	COVER SHEET & DRAWING SCHEDULE
C02.01	CONCEPT EROSION AND SEDIMENT CONTROL PLAN
C03.01	CONCEPT STORMWATER MANAGEMENT PLAN - BASEMENT LEVEL
C03.02	CONCEPT STORMWATER MANAGEMENT PLAN - GROUND LEVEL

DRAWN: J.KIND DESIGNED: M.SWAN JOB MANAGER: M.SWAN VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR COORDINATION	JK	MS	CP	17.01.20
2	ISSUED FOR COORDINATION	JK	MS	CP	06.03.20
3	ISSUED FOR COORDINATION	JK	MS	CP	09.04.20

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PROJECT
ST PATRICKS COLLEGE
FRANCIS STREET, STRATHFIELD
NSW 2135

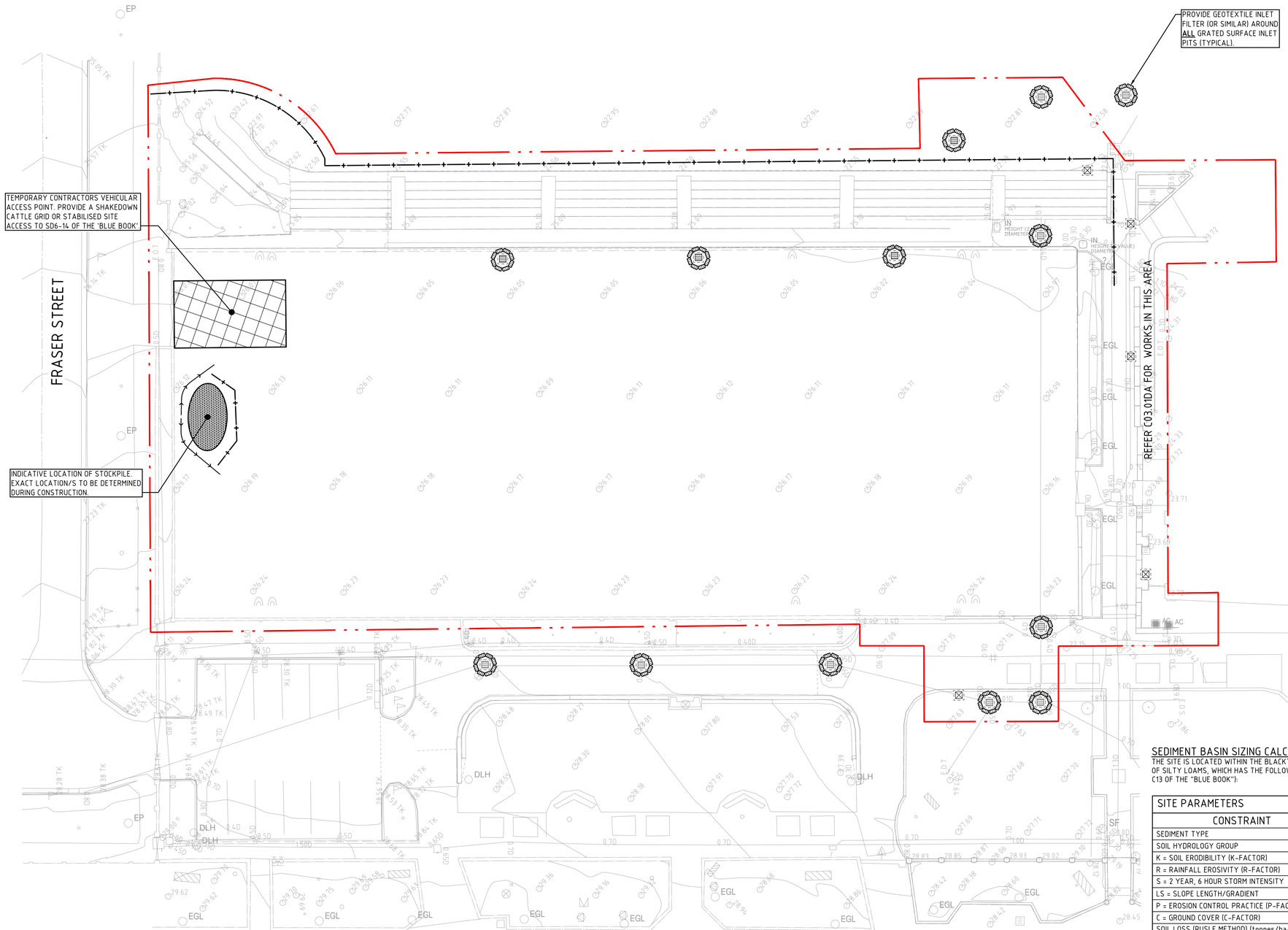
DRAWING TITLE
CIVIL ENGINEERING PACKAGE
COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN

JOB NUMBER **NL193277**

DRAWING NUMBER **C01.01DA**

REVISION **3**

DRAWING SHEET SIZE = A1



LEGEND

- DENOTES PROPOSED EXTENT OF DISTURBANCE AREA
- DENOTES SEDIMENT FENCE
- DENOTES SANDBAG SEDIMENT FILTER
- DENOTES DIVERSION MOUND
- DENOTES STABILISED SITE ACCESS
- DENOTES STOCKPILE
- DENOTES STORMWATER PIT - NEW
- DENOTES STORMWATER PIT - EXISTING

SEDIMENT BASIN SIZING CALCULATION

THE SITE IS LOCATED WITHIN THE BLACKTOWN SOIL LANDSCAPE AND PRIMARILY CONSISTS OF SILTY LOAMS, WHICH HAS THE FOLLOWING PROPERTIES (IN ACCORDANCE WITH TABLE C13 OF THE "BLUE BOOK"):

SITE PARAMETERS	
CONSTRAINT	VALUE
SEDIMENT TYPE	D or F
SOIL HYDROLOGY GROUP	C
K = SOIL ERODIBILITY (K-FACTOR)	0.038
R = RAINFALL EROSIVITY (R-FACTOR)	2860
S = 2 YEAR, 6 HOUR STORM INTENSITY	11.5 mm/hr STRATHFIELD)
LS = SLOPE LENGTH/GRADIENT	1.04 (45m SLOPE @ 6% GRADE)
P = EROSION CONTROL PRACTICE (P-FACTOR)	1.3 (TYPICAL)
C = GROUND COVER (C-FACTOR)	1.0 (TYPICAL FOR STRIPPED SITE)
SOIL LOSS (RUSLE METHOD) (tonnes/ha/yr)	147
EROSION HAZARD (TABLE 4.2 BLUE BOOK)	VERY LOW

THE AVERAGE ANNUAL SOIL LOSS FROM THE TOTAL AREA OF LAND DISTURBANCE IS LESS THAN 150 CUBIC METRES PER YEAR, THE BUILDING OF A SEDIMENT BASIN IS UNNECESSARY IN ACCORDANCE WITH THE BLUE BOOK.

EROSION AND SEDIMENTATION CONTROL NOTES:

1. ALL EROSION AND SEDIMENTATION CONTROL MEASURES MUST BE APPROPRIATE FOR THE SEDIMENT TYPE(S) OF THE SOILS ON-SITE, IN ACCORDANCE WITH THE 'BLUE BOOK' (MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION. LANDCOM, 2004), OR OTHER CURRENT RECOGNISED INDUSTRY STANDARDS FOR EROSION AND SEDIMENT CONTROL FOR AUSTRALIAN CONDITIONS. THIS INCLUDES SEDIMENT TRAPS AND LINING OF CHANNELS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION AND SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS AND SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ALL MAINTANCE, CLEANING AND BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
3. INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
4. ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
5. INSTALL SEDIMENT FENCING, OR OTHER SEDIMENT CONTROL DEVICES, AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT OR APPROPRIATE COUNCIL OFFICER.
6. ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAYS WORK.
7. THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB AND GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION.
8. ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ON-SITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
9. STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE SPREAD ON-SITE AS DIRECTED BY THE SUPERINTENDENT OR REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
10. CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
11. ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
12. PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
13. ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.

DRAWN: J.KIND
DESIGNED: M.SWAN
JOB MANAGER: M.SWAN
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR COORDINATION	JK	MS	CP	17.01.20
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BVN

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SCALE 1:200@ A1

0 2 4 6 8 10m

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PROJECT
ST PATRICKS COLLEGE
FRANCIS STREET, STRATHFIELD
NSW 2135

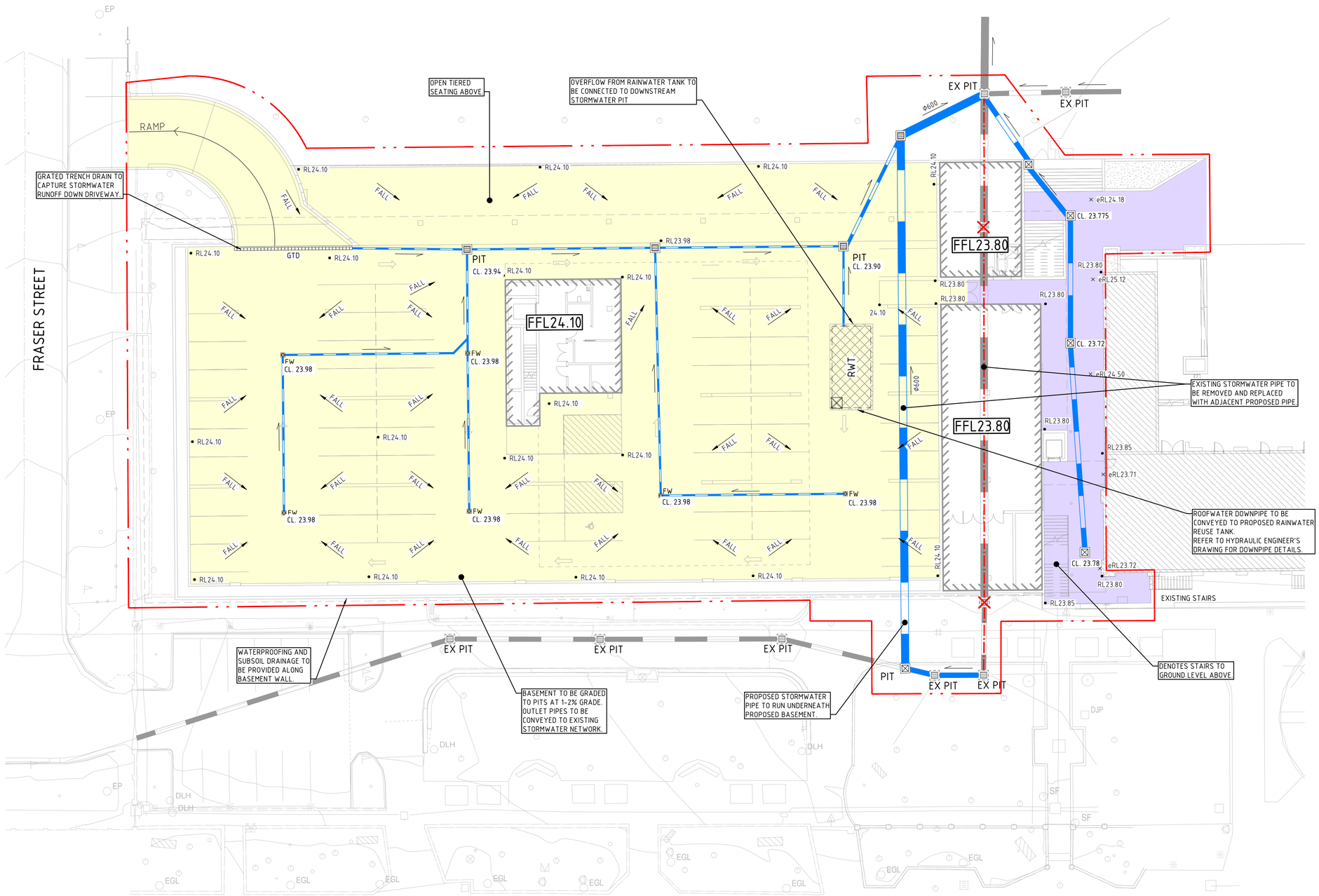
DRAWING TITLE
CIVIL ENGINEERING PACKAGE
CONCEPT EROSION AND SEDIMENT CONTROL PLAN

JOB NUMBER
NL193277

DRAWING NUMBER
C02.01DA

REVISION
3

DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED EXTENT OF DISTURBANCE AREA
- PROPOSED EXTENT OF BUILDING, REFER TO ARCHITECTURAL PLANS FOR DETAILS.
- PIT CL. 24.10 — PROPOSED STORMWATER PIT
- EX PIT — EXISTING STORMWATER PIT
- PIT — PROPOSED JUNCTION PIT
- FW — FLOOR WASTE
- PROPOSED STORMWATER PIPE
- EXISTING STORMWATER PIPE
- EXISTING STORMWATER PIPE TO BE REMOVED.
- GTD — GRATED TRENCH DRAIN
- PAVEMENT AS DEFINED BY STRUCTURAL CONSULTANT
- TO BE REGRADED TO PROPOSED DESIGN LEVELS FOR ACCESS TO BASEMENT LEVEL ROOMS
- RL24.10 — PROPOSED SPOT HEIGHT
- eRL28.00 — EXISTING SPOT HEIGHT
- RW1 — PROPOSED RETAINING WALL. DETAILS TO PROVIDED AT CC STAGE
- ROOFWATER DOWNPIPE LINE, TO BE CONNECTED TO EXISTING RAINWATER TANK
- FFL24.10 — PROPOSED FINISHED FLOOR LEVEL

NOTES

1. ALL PROPOSED STORMWATER INFRASTRUCTURE SHALL DISCHARGE TO AN EXISTING 600mm STORMWATER OUTLET PIPE LOCATED DOWNSTREAM OF THE RAINWATER TANK NEAR THE NORTH EASTERN CORNER OF THE PROPOSED WORKS.
2. EXISTING STORMWATER CONNECTIONS ARE ASSUMED BASED ON SURVEY INFORMATION AND VISUAL INSPECTION. IF EXISTING PIPEWORK IS FOUND TO DIFFER FROM ASSUMPTIONS, CONTRACTOR TO CONTACT NORTHROP IMMEDIATELY.

DRAWN: J.KIND
DESIGNED: M.SWAN
JOB MANAGER: M.SWAN
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR COORDINATION	JK	MS	CP	17.01.20
2	ISSUED FOR COORDINATION	JK	MS	CP	06.03.20
3	ISSUED FOR COORDINATION	JK	MS	CP	09.04.20

CLIENT

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ARCHITECT

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
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SCALE 1:200@A1

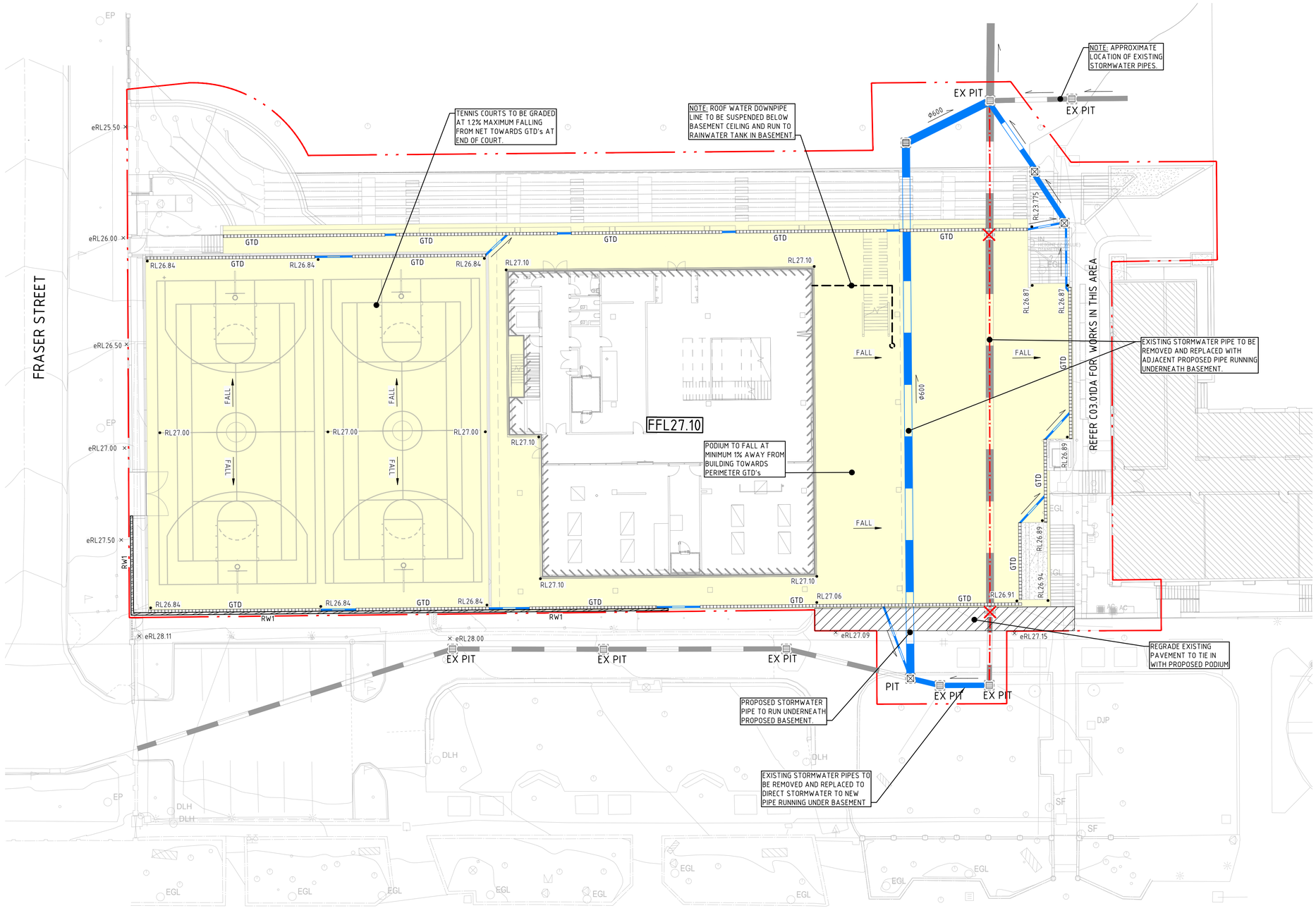
0 2 4 6 8 10m

NORTHROP
Newcastle
Level 1, 215 Pacific Hwy, Charlestown NSW 2290
Ph (02) 4943 1777 Email newcastle@northrop.com.au
ABN 81 094 433 100

PROJECT
ST PATRICKS COLLEGE
FRANCIS STREET, STRATHFIELD
NSW 2135

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
CONCEPT STORMWATER MANAGEMENT PLAN
BASEMENT LEVEL

JOB NUMBER **NL193277**
DRAWING NUMBER **C03.01DA**
REVISION **3**
DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED EXTENT OF DISTURBANCE AREA
- PROPOSED EXTENT OF BUILDING, REFER TO ARCHITECTURAL PLANS FOR DETAILS.
- PIT CL. 24.10 — PROPOSED STORMWATER PIT
- EX PIT — EXISTING STORMWATER PIT
- PIT — PROPOSED JUNCTION PIT
- FW — FLOOR WASTE
- PROPOSED STORMWATER PIPE
- EXISTING STORMWATER PIPE
- EXISTING STORMWATER PIPE TO BE REMOVED.
- GTD — GRATED TRENCH DRAIN
- PAVEMENT AS DEFINED BY STRUCTURAL CONSULTANT
- TO BE REGRADED TO PROPOSED DESIGN LEVELS FOR ACCESS TO BASEMENT LEVEL ROOMS
- RL24.10 — PROPOSED SPOT HEIGHT
- eRL28.00 — EXISTING SPOT HEIGHT
- RW1 — PROPOSED RETAINING WALL. DETAILS TO PROVIDED AT CC STAGE
- ROOFWATER DOWNPIPE LINE, TO BE CONNECTED TO EXISTING RAINWATER TANK
- FFL24.10 — PROPOSED FINISHED FLOOR LEVEL

NOTES

1. ALL PROPOSED STORMWATER INFRASTRUCTURE SHALL DISCHARGE TO AN EXISTING 600mm STORMWATER OUTLET PIPE LOCATED DOWNSTREAM OF THE RAINWATER TANK NEAR THE NORTH EASTERN CORNER OF THE PROPOSED WORKS.
2. EXISTING STORMWATER CONNECTIONS ARE ASSUMED BASED ON SURVEY INFORMATION AND VISUAL INSPECTION. IF EXISTING PIPEWORK IS FOUND TO DIFFER FROM ASSUMPTIONS, CONTRACTOR TO CONTACT NORTHROP IMMEDIATELY.

DRAWN: J.KIND
DESIGNED: M.SWAN
JOB MANAGER: M.SWAN
VERIFIER:

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ARCHITECT BVN

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GROUND LEVEL

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REVISION **3**
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