

Integrated Water Management Plan

Prepared for Butler & Co Architects / 06th November 2018

171518 CBAA

**Structural
Civil
Traffic
Facade
Consulting
Engineers**

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1.0 Introduction

Taylor Thomson Whitting Pty. Ltd. (TTW) was commissioned to provide civil engineering advice and design to support a State Significant Development Application (SSDA) submitted to the Department of Planning and Environment (DP&E) for Kent Rd Public School Redevelopment.

1.1 Scope of the report

This report summarises the proposed water management strategy for the development of Kent Rd Public School. The main objectives of the Integrated Water Management Plan are to reduce potable water demand through installation of water efficient fittings and fixtures, provide rainwater harvesting and reuse system and introduce Water Sensitive Urban Design (WSUD) to improve stormwater quality.

1.2 The Site

Kent Rd Public School is located to the southwest of Kent Road and northeast of Herring Rd in Marsfield, refer Figure 1.0 for site location.



Figure 1: Site Location (source: Nearmap)

1.3 The Development

The proposed redevelopment of Kent Road Public School includes:

- Site preparation
- Construction of three(3) new two(2)-storey buildings to allow for increased student population from 750 to 1,000, containing:
 - 34 Homebase spaces
 - Canteen
 - Administration facilities
 - Staff facilities
 - Special program/counselling rooms
- Construction of a new entry canopy
- Reconfiguration of a car drop off/pick up arrangements on Kent Road
- Landscaping and fencing; and
- Tree removal
-

Figure 2 shows the extent of the proposed SSD works.

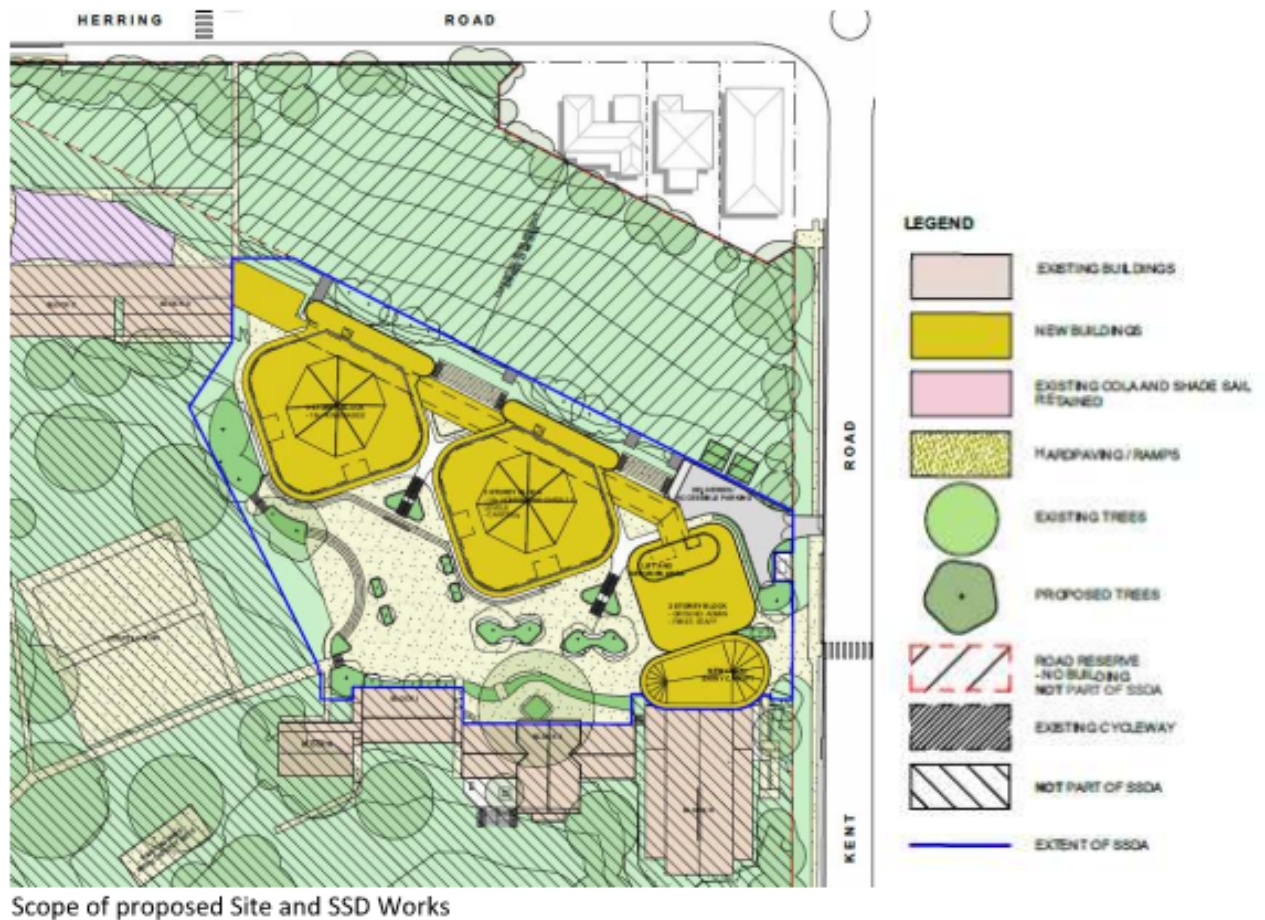


Figure 2: Extent of the Development (date: 18/07/2018)

2.0 Potable Water Consumption

Reducing potable water demand can be achieved by providing rainwater harvesting and reuse system and the installation of water efficient fittings and appliances. The following features have been introduced to reduce potable water consumption:

- Rainwater tank: The roof water from 1 Main Homebase and the Administration block is proposed to be captured into a rainwater tank via gutters and downpipes. The collected roof water will be a source of non-potable water for irrigation, toilet flush etc, which will help to reduce the potable water use demand.
- Water efficient landscaping: choose native species suitable to the climate and with low irrigation demands; choose well-structured topsoils to increase water storage in soil; where potable water is used for irrigation, it is recommended to use Drip or subsurface irrigation to avoid over watering.
- Water efficient fittings and appliances: Supply water efficient products with higher water rating based on AS/NZ6400 Water efficient products – Rating and Labelling, products including: tap fittings, showers heads, toilets.
-

3.0 Rainwater Harvesting and Reuse

Rainwater harvesting is designed to provide an alternative source for non-potable water uses for the school. Rainwater harvesting conserves potable water and reduces the daily water demand. Rainwater reuse can reduce the volume of stormwater leaving the site which is beneficial for water quantity control, hence less pressure for local drainage system.

Rainwater will be collected via gutters and downpipes from 1 Main Homebase and the Administration block and sent to rainwater tank. The captured rainwater can be used for toilet flushing and irrigation systems without additional treatment.

For more significant storm events, overflow from rainwater tank will be collected by the On-Site (OSD) Detention tank under the Play Area. A site rainwater harvesting system is shown in Figure 3 below.

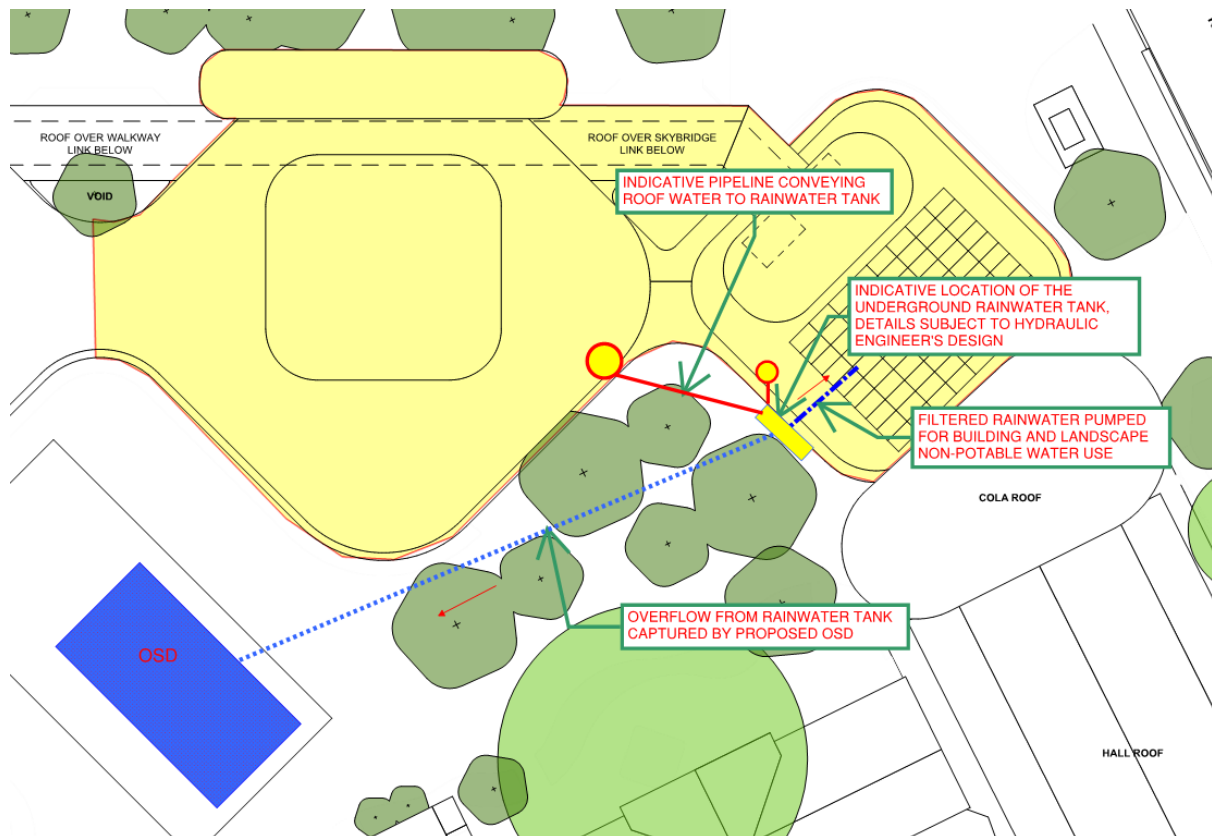


Figure 3: Site rainwater harvesting system (background: Roof Plan by Butler & Co Architects)

Rainwater from highlighted roof catchment shown in Figure 3 is captured and collected by the rainwater tank. A preliminary water balance study was carried out using MUSIC for the development.

Assuming all roof water will be captured and collected by the rainwater tank, and the rainwater is for irrigation and toilets use only. As a result, for the roof area of 1900 m², a 8kL tank is required on site to maximise rainwater reuse.

Irrigation and toilet water use are anticipated to utilise approximately 80% of the total non-potable water collected from roof.

4.0 Water Sensitive Urban Design (WSUD)

The WSUD strategy has been developed based on current best practice, taking guidance from the City of Ryde Water Sensitive Urban Design Guidelines (2015), Water Sensitive Urban Design Technical Guidelines for Western Sydney (UPRCT 2004).

The following schemes have been implemented for the integrated water management plan:

- Reduce potable water demand through rainwater harvesting and reuse.
- Matching the natural water runoff regime as closely as possible by providing OSD for stormwater runoff control, providing GPT and vegetation swales in multiple locations for stormwater quality control.

To comply with council's WSUD Guidelines, the following WSUD features have been added to the integrated water management plan:

- Pollutant filter baskets and gross pollutant traps such as Stormwater360 Enviropods are strategically positioned to remove gross pollutants, suspended solids and phosphorus/nitrogen nutrients. This will provide primary treatment of runoff from hardstand areas including the covered courtyard and outdoor plan areas. The GPTs are normally sized to treat 3-month to 1-year ARI flows.
- Vegetated swales are provided in landscape area to convey surface runoff from outdoor play areas and the upstream catchment. The use of vegetated swales instead of pipes to carry water will provide additional treatment before reaching receiving water. This water quality control measure can slow and filter flow from hardstand areas and removes gross pollutants, large sediment particles and nutrients. The vegetated swales proposed on site are located at the edge of the new Play Area and upstream boundary. Refer to Architectural Plan for more landscape details.

Notwithstanding the pollution reduction targets, the principles of the proposed WSUD approach are in accordance with the recommendations of the City of Ryde Council Guidelines.

5.0 Conclusion

The concept of Integrated Water Management Plan has been incorporated in the proposed redevelopment for Kent Road Public School. This report covers the main initiatives including: provide efficient fittings and fixtures to reduce potable water demand, provide rainwater tank for rainwater harvesting and reuse, and introducing multiple WSUD measures to the system to improve the stormwater quality.

The mentioned water management strategies are expected to be further developed and detailed by suitable consultants at a later stage.

Refer to Appendix A for our response to SEARs

Prepared by
TAYLOR THOMSON WHITTING
(NSW) PTY LTD

Nemesio Biason
Associate

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Appendix A – Response to SEARs

13th September 2018

171518

Ross Gardner
2/460 Pacific Hwy
St Leonards NSW 2007

Attention: Ross Gardner

Kent Rd Public School Redevelopment – SEARs Response

Dear Ross,

In response to the State Significant Development Application for the redevelopment of Kent Rd Public School. Please find **Appendix A** attached to this letter with a table outlining our response on the SEARs (Secretary's Environmental Assessment Requirements) dated 4th July 2018.

This letter also provides our review on the CCTV investigation for the existing stormwater infrastructure based on the CCTV investigation undertaken by Durkin Construction dated 23rd August 2018. Refer to **Appendix A** for our review and comments.

Overall, the current design proposal is deemed adequate for the desired purpose of the SEARs.

Should you require anything further please contact the undersigned on 0294397288.

Yours faithfully
TAYLOR THOMSON WHITTING (NSW) PTY LTD



Nemesio Biason
Associate

APPENDIX A

SEARs	TTW's Comments
18. Drainage	
<ul style="list-style-type: none"> Detailed measures to minimise operational water quality impacts on surface waters and groundwater. 	Refer to Appendix B drawing C402 documenting the proposed water quality control measures which is designed to minimise the potential adverse impacts by the proposed development on surface waters and groundwater.
<ul style="list-style-type: none"> Provide stormwater plans detailing the proposed methods of drainage without impacting on the downstream properties. 	<p>Refer to Appendix B drawing C402 for proposed stormwater disposal system including the on-site detention (OSD) tank.</p> <ul style="list-style-type: none"> The proposed drainage system is to cater for minor storm event and has been analysed hydraulically in DRAINS to ensure stormwater flow rates are controlled during minor storm. The OSD system is provided to control stormwater runoff peak flowrates to ensure downstream properties are not adversely affected. <p>The proposed stormwater disposal system complies with City of Ryde Council's DCP 2014 Part 8.2 Stormwater Management Technical Manual.</p>
19. Sediment, Erosion and Dust Controls	
<ul style="list-style-type: none"> Detail measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles. 	Refer to Appendix B drawing C401 for sediment and erosion control plan. The control measures were designed following the guidance of the "blue book" – Managing Urban Stormwater Volume 1, 4 th Edition, March 2004, which sets out the measures proposed to minimise and manage the generation and off-site transmission of sediment, dust and fine particles.

City of Ryde Requirements	TTW's Comments
17. Drainage	
Stormwater Management Plan and report shall:	
<ul style="list-style-type: none"> Investigate the condition and capacity of the stormwater network that transverses the site by means of hydrologic and hydraulic 	A CCTV investigation has been carried out by Durkin Construction on the 23 rd August 2018. Refer to Appendix C for investigated drainage assets. The CCTV investigation

<p>modelling and recommend modifications/solutions to meet current engineering standards in a detailed report. Any modifications that may be required to improve the stormwater system must be designed in accordance with Council's Stormwater and Floodplain Management DCP 2014 Part 8, Stormwater and Floodplain Management Technical Manual, NSW Floodplain Management Manual, Australian Guidelines.</p>	<p>reveals the physical condition and capacity of the stormwater network that transverses the site.</p> <p>The conditions of the existing stormwater drainage assets have been reviewed as follows:</p> <ul style="list-style-type: none"> - There are 2 main drainage lines traversing the site. Both pipe lines are in good condition as per the CCTV investigation. - The potential route of the drainage line from existing pit SW9 to public drainage pit within Kent Rd will require further investigation. - Pit SW9 has rusted lid and is suspected to be broken. <p>The hydraulic capacity of the existing drainage system has been reviewed as follow:</p> <ul style="list-style-type: none"> - The existing drainage lines have been modelled and analysed in DRAINS modelling software, the result indicates the drainage lines have sufficient hydraulic capacity to cater for peak flow during minor storm event. <p>Based on the above, we recommend the following:</p> <ul style="list-style-type: none"> - Remove the broken pit SW9 and construct new pit to suit proposed stormwater pipe invert levels. - Further investigate is recommended for the drainage line from pit SW9 and its connectivity to the public drainage system on Kent Rd. <p>The review on the CCTV investigation and the modifications were made in accordance with Council's Stormwater and Floodplain Management DCP 2014 Part 8, Stormwater and Floodplain Management Technical Manual, NSW Floodplain Management Manual, Australian Guidelines.</p>
<ul style="list-style-type: none"> ○ Identify appropriate water quality management measures focusing on the management of the impacts from the proposed works using Water Sensitive Urban Design principles. The applicant should explore the option of construction a communal water quality feature in order to treat stormwater runoff from road surfaces instead of roadside small scale water quality treatment train, which has the responsibility to become a maintenance burden upon completion of the project 	<p>Refer to Appendix B drawing C402 for water quality management measures. The proposed water quality management plan includes providing Enviropods, Gross pollutant Trap (GPT) and vegetated swale along the play area. A rainwater tank is also provided to increase water reuse rate. These measures comply with the intent of Council's water quality control requirements.</p>
<ul style="list-style-type: none"> ○ Detail erosion, sediment and stormwater management controls during construction and management and mitigation measures for the prevention of potential water quality impacts during construction. 	<p>Refer to Appendix B drawing C401 for sediment and erosion control plan. The control measures were designed following the guidance of the "blue book" – Managing Urban Stormwater Volume 1, 4th Edition, March 2004, which sets out the measures proposed to minimise and manage the generation and off-site transmission of sediment, dust and fine particles during construction.</p>

- Avoid the construction of any permanent structures over the existing drainage lines.

Refer to **Appendix B** drawing C402. Any existing stormwater drainage lines located within the footprint of permanent structures will be neither made redundant or diverted to ensure no stormwater drainage line exists within the permanent structures.

Appendix B – Civil Engineering Drawings

KENT ROAD PUBLIC SCHOOL

GENERAL NOTES

- Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Engineer
- Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
- Make smooth connection with all existing works.
- Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
- All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority, the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.
- All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.
- For all temporary batters refer to geotechnical recommendations.

REFERENCE DRAWINGS

- These drawings have been based from, and to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer.

Consultant	Dwg Title	Dwg No	Rev	Date
GARDNER WETHERILL	GROUND FLOOR PLAN	17058-DD-1200	B	12.09.18
Mepstead & Associates	PLAN OF DETAIL & LEVELS	5650-det	A	11.12.2017

SURVEY AND SERVICES INFORMATION

SURVEY

Origin of levels : RL 71.096
Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM
Coordinate system : MGA
Survey prepared by :
Setout Points : PM50022

Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

UNDERGROUND SERVICES - WARNING

The locations of underground services shown on Taylor Thomson Whittings drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.

The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.

Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.

The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to; State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.

Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

SITeworks NOTES

- All basecourse material to comply with RMS specification No 3051 and compacted to minimum 98% modified standard dry density in accordance with AS 1289 5.2.1.
- All trench backfill material shall be compacted to the same density as the adjacent material.
- All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 96% standard maximum dry density in accordance with AS 1289 5.1.1

KERBING NOTES

Includes all kerbs, gutters, dish drains, crossings and edges.

- All kerbs, gutters, dish drains and crossings to be constructed on minimum 75mm granular basecourse compacted to minimum 98% modified maximum dry density in accordance with AS 1289 5.2.1.
- Expansion joints (EJ) to be formed from 10mm compressible cork filler board for the full depth of the section and cut to profile. Expansion joints to be located at drainage pits, on tangent points of curves and elsewhere at 12m centres except for integral kerbs where the expansion joints are to match the joint locations in slabs.
- Weakened plane joints to be min 3mm wide and located at 3m centres except for integral kerbs where weakened plane joints are to match the joint locations in slabs.
- Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished.
- In the replacement of kerbs –
Existing road pavement is to be sawcut 900mm from lip of gutter. Upon completion of new kerbs, new basecourse and surface is to be laid 900mm wide to match existing materials and thicknesses.
Existing allotment drainage pipes are to be built into the new kerb with a 100mm dia hole.
Existing kerbs are to be completely removed where new kerbs are shown.

TENDER NOTES

- These drawings are preliminary drawings issued for D&C tender as an indication of the extent of works only. They are not a complete construction set of drawings.
- To determine the full extent of work, these drawings shall be read in conjunction with the architectural drawings and other contract documents.
Allow for all items shown on architectural and other drawings as not all items are shown on the structural/civil works drawings.
- Should any ambiguity, error, omissions, discrepancy, inconsistency or other fault exist or seem to exist in the documents, immediately notify in writing to the Superintendent.
- Rates shown on the drawings are for the final structure/civil works in place and do not allow for any wastage, rolling margins, over supply or fabrication requirements. etc.

RETAINING WALLS

- Drainage shall be provided as shown on the drainage drawings.
- Backfilling shall be carried out after grout or concrete has reached a minimum strength of 0.85 f'c. Backfilling shall be approved granular material compacted in layers not exceeding 200mm to 95% Standard compaction unless noted otherwise.
- Provide waterproofing to back of walls as specified or noted.
- Where retaining walls rely on connecting structural elements for stability, do not backfill against the wall unless it is adequately propped or the elements have been constructed and have sufficient strength to withstand the loads.
- For all temporary batters obtain geotechnical engineers recommendations.

SAFETY IN DESIGN

Contractor to refer to Appendix B of the Civil Specification for the Civil Risk and Solutions Register.

EXISTING SERVICES

Contractor to be aware existing services are located within the site. Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.

EXISTING STRUCTURES

Contractor to be aware existing structures may exist within the site. To prevent damage to existing structure(s) and/or personnel, site works to be carried out as far as practicably possible from existing structure(s).

EXISTING TREES

Contractor to be aware existing trees exist within the site which need to be protected. To prevent damage to trees and/or personnel, site works to be carried out as far as practicably possible from existing trees. Advice needs to be sought from Arborist and/or Landscape Architect on measures required to protect trees.

GROUNDWATER

Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.

EXCAVATIONS

Deep excavations due to stormwater drainage works is required. Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and batters adequately supported to approval of Geotechnical Engineer.

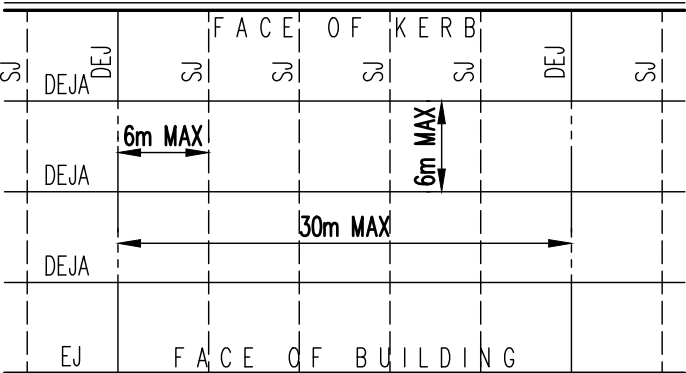
GROUND CONDITIONS

Contractor to be aware of the site geotechnical conditions. Refer to geotechnical report by (insert report details) for details.

JOINTING NOTES

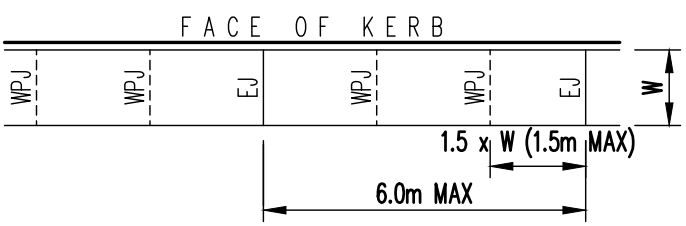
Vehicular Pavement Jointing

- All vehicular pavements to be jointed as shown on drawings.
- Keyed construction joints should generally be located at a maximum of 6m centres.
- Sawn joints should generally be located at a maximum of 6m centres or 1.5 x the spacing of keyed joints, where key joint spacing is less than 4m, with dowelled expansion joints at maximum of 30m centres.
- Provide 10mm wide full depth expansion joints between buildings and all concrete or unit pavers.
- The timing of the saw cut is to be confirmed by the contractor on site. Site conditions will determine how many hours after the concrete pour before the saw cuts are commenced. Refer to the specification for weather conditions and temperatures required.
- Vehicular pavement jointing as follows.



Pedestrian Footpath Jointing

- Expansion joints are to be located where possible at tangent points of curves and elsewhere at max 6.0m centres.
- Weakened plane joints are to be located at a max 1.5 x width of the pavement.
- Where possible joints should be located to match kerbing and / or adjacent pavement joints.
- All pedestrian footpath jointings as follows (uno).



CONCRETE FINISHING NOTES

- All exposed concrete pavements are to be broomed finished.
- All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.
- Concrete pavements with grades greater than 10 % shall be heavily broomed finished.
- Carborandum to be added to all stair treads and ramped crossings U.N.O.

HAZARDOUS MATERIALS

Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practices as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to geotechnical/environmental report by (insert report details) for details.

CONFINED SPACES

Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces.

MANUAL HANDLING

Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.

WATER POLLUTION

Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.

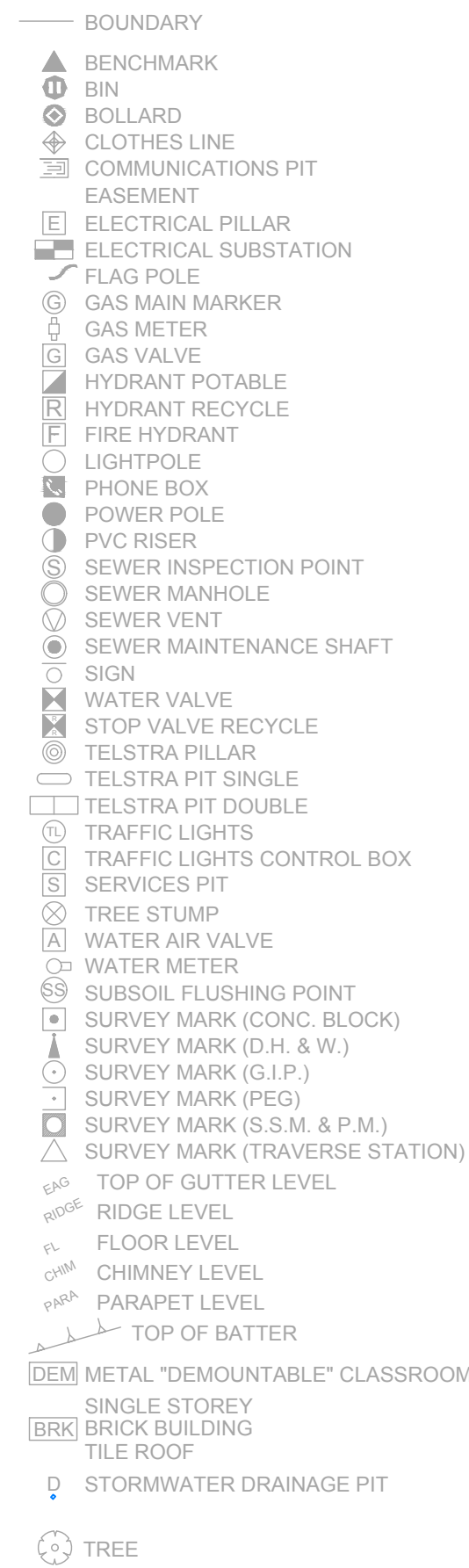
SITE ACCESS/EGRESS

Contractor to be aware site works occur in close proximity to footpaths and roadways. Contractor to erect appropriate barriers and signage to protect site personnel and public.

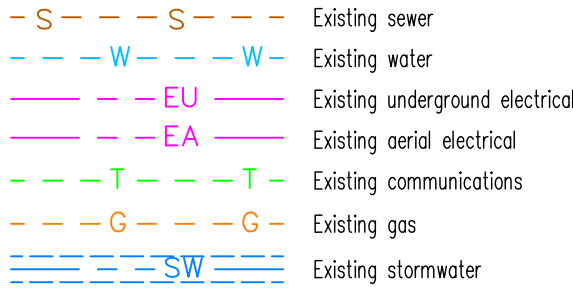
VEHICLE MOVEMENT

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshal to supervise vehicle movements where necessary.

SURVEY LEGEND



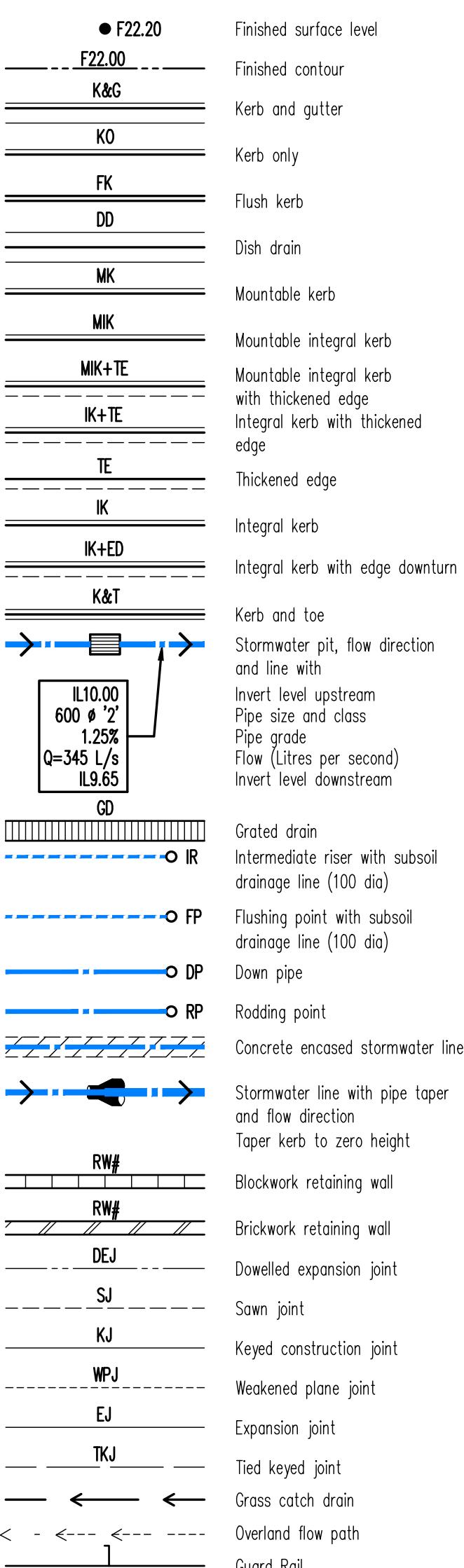
EXISTING SERVICES LEGEND



STORMWATER DRAINAGE NOTES

- Stormwater Design Criteria :
(A) Average exceedance probability –
1% AEP for roof drainage to first external pit
5% AEP for paved and landscaped areas
(B) Rainfall intensities –
Time of concentration: 5 minutes
1% AEP = mm/hr
5% AEP = mm/hr
(C) Rainfall losses –
Impervious areas: IL = 1.5 mm , CL = 0 mm/hr
Pervious areas: IL = mm , CL = mm/hr
- Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O.
- Pipes up to 300 dia may be sewer grade uPVC with solvent welded joints, subject to approval by the engineer
- Equivalent strength VCP or FRP pipes may be used subject to approval.
- Precast pits may be used external to the building subject to approval by Engineer
- Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia.
- Where subsoil drains pass under floor slabs and vehicular pavements, unsloated uPVC sewer grade pipe is to be used.
- Grates and covers shall conform with AS 3996-2006, and AS 1428.1 for access requirements.
- Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
- Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without approval.
- All stormwater pipes to be 150 dia at 1.0% min fall U.N.O.
- Subsoil drains to be slotted flexible uPVC U.N.O.
- Adopt invert levels for pipe installation (grades shown are only nominal).

SITeworks LEGEND



PIT SCHEDULE

Note: Grate size does not necessarily reflect pit size, refer pit type details, shown on detail sheets – **C406**
Final internal pit dimensions are to comply with AS3500

Type	Description	Cover (Clear Opening)	Number
A	Surface inlet pit	900 x 900 Class C galvanised mild steel grate hinged to frame	02,09,10,18, 19,20,21,22
	Junction Pit	900 x 900 Class C cast iron cover with concrete in-fill	11-13
B	Surface inlet pit with Enviro-pod	900 x 900 Class C galvanised mild steel grate hinged to frame	03-08, 14-17
C	OSD access lid	900 x 900 Class C galvanised mild steel grate hinged to frame	23-26
D	Existing pit	Existing pit to remain	01,27-30
E	GPT	Roda's cds unit PL0302	31

CONCRETE NOTES

EXPOSURE CLASSIFICATION : External : B2

CONCRETE

Place concrete of the following characteristic compressive strength f'c as defined in AS 1379.

Location	AS 1379 f'c MPa at 28 days	Specified Slump	Nominal Agg. Size
Kerbs	S20	80	20
Retaining wall footing	S40	80	20

- Use Type 'GP' cement, unless otherwise specified.
- All concrete shall be subject to project assessment and testing to AS 1379.
- Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
- For all falls in slab, drip grooves, reglets, chamfers etc. refer to Architects drawings and specifications.
- Unless shown on the drawings, the location of all construction joints shall be submitted to Engineer for review.
- No holes or chases shall be made in the slab without the approval of the Engineer.
- Conduits and pipes are to be fixed to the underside of the top reinforcement layer.
- Slurry used to lubricate concrete pump lines is not to be used in any structural members.
- All slabs cast on ground require sand blinding with a Concrete Underlay

FORMWORK

- The design, certification, construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. Proposed method of installation and removal of formwork is to be submitted to the superintendent for comment prior to work being carried out.



LOCALITY PLAN

NOT TO SCALE – IMAGE COURTESY OF NSW SPATIAL INFORMATION EXCHANGE

DRAWING SCHEDULE

No	Drawing Title
C400 C401	COVER SHEET EROSION & SEDIMENT CONTROL PLAN AND DETAILS
C402 C403 C405 C406 C407	SITeworks PLAN PAVEMENT PLAN SHEET 1 PAVEMENT PLAN SHEET 2 DETAIL SHEET 1 DETAIL SHEET 2

NOTE :

The Contractor shall undertake the works in line with the following documentation:

- Preliminary Environmental Site Assessment by EIS 26 May 2017 (Ref: E30361KHpt)
- The Educational Facilities Standards & Guidelines (EFGS)
- Geotechnical Investigation by Assetgeo 23 April 2018 (Ref: 4862-R1)

Comments and recommendations outlined in the above documents are to be adhered to at all times.

Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
P4	ISSUE FOR D&C TENDER	NB	RG	12.09.18										
P3	ISSUE FOR D&C TENDER REVIEW	NB	RG	12.09.18										
P2	ISSUE FOR REVIEW	NB	RG	07.09.18										
P1	ISSUE FOR SDR	NB	RG	26.07.18										

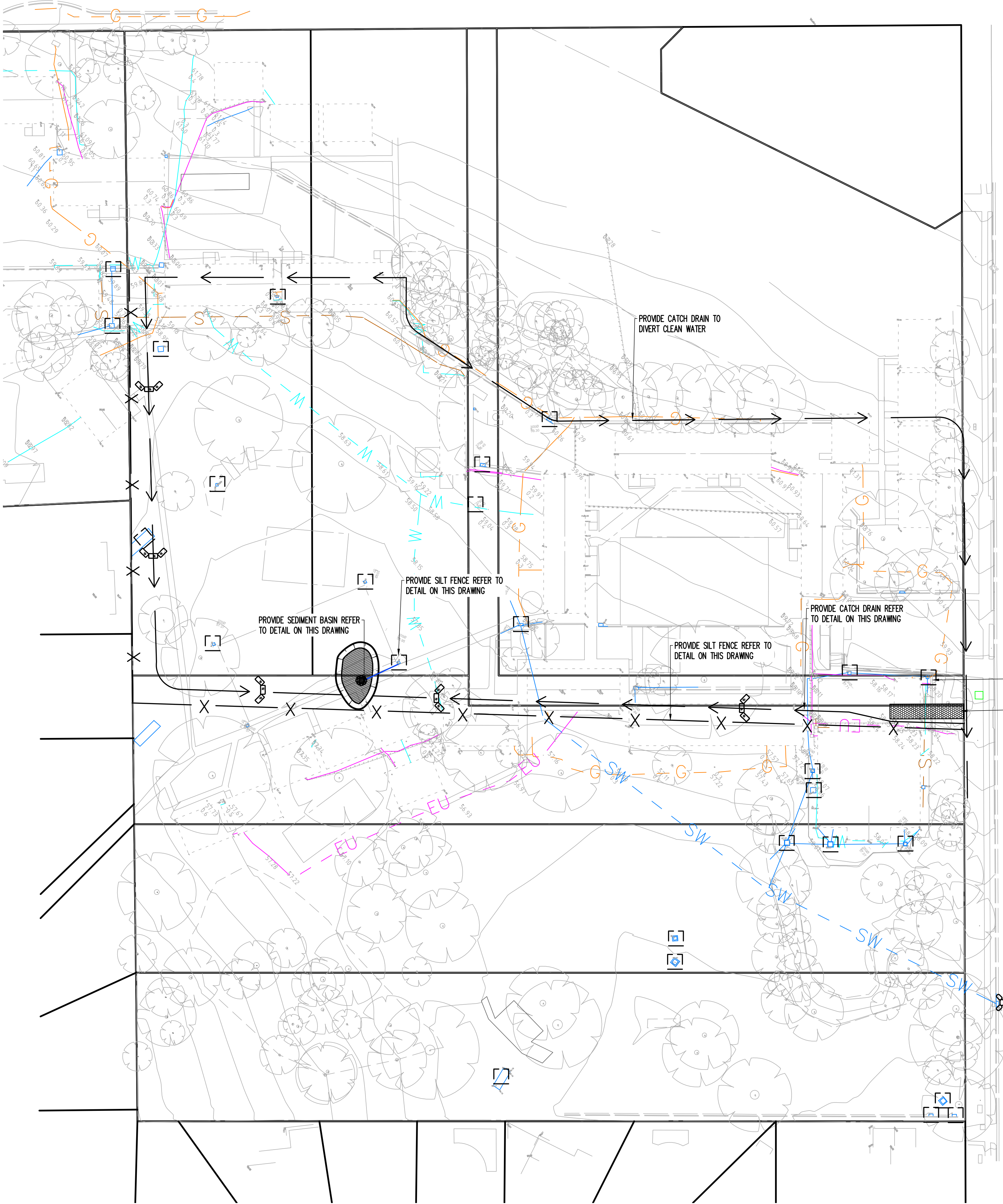
Architect

Civil Engineer
612 9439 7288 48 Chandos Street St Leonards NSW 2065

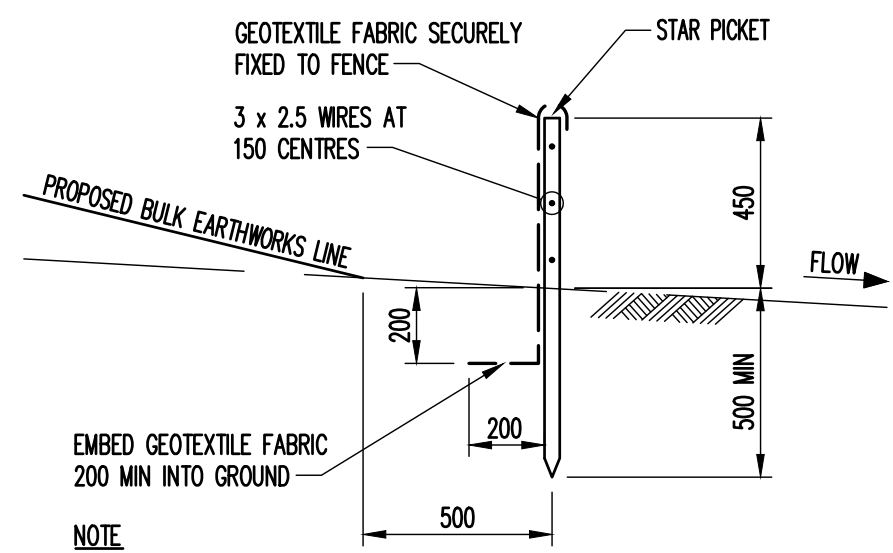
Project
KENT ROAD PUBLIC SCHOOL

Sheet Subject	Scale : A1	Drawn	Authorised
NOTES & LEGENDS SHEET		RG	
Job No	Drawing No	Revision	
171518	C400	P4	
Plot File Created:	Sep 12, 2018 - 4:56pm		

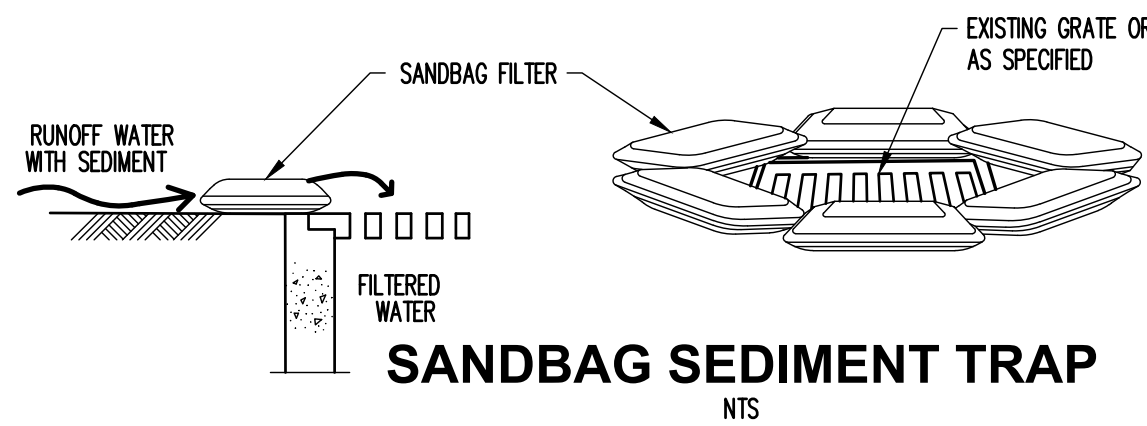
HERRING ROAD



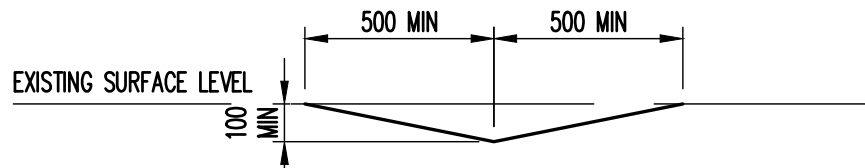
KENT ROAD



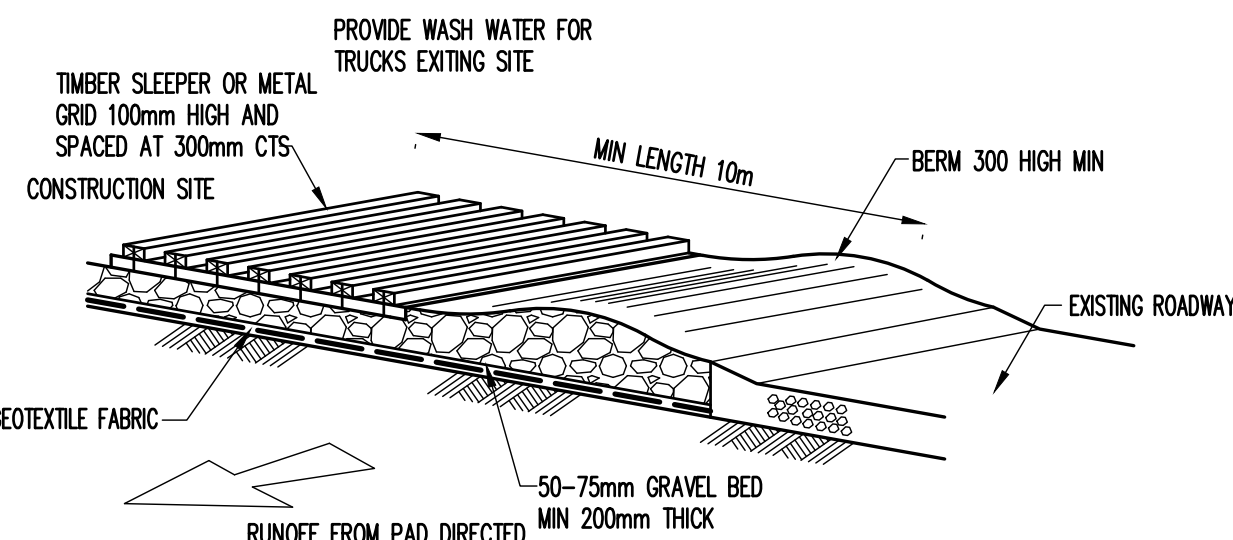
SILTATION FENCE DETAIL
SCALE 1: 20



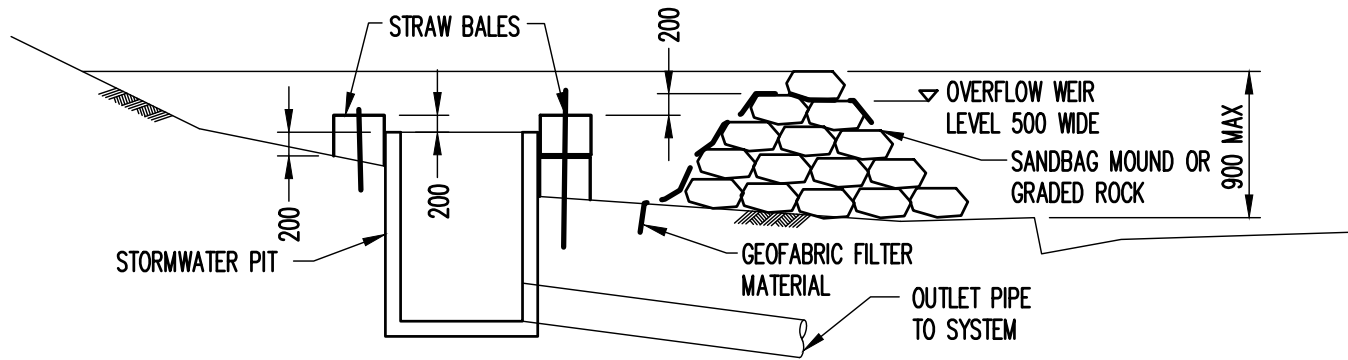
SANDBAG SEDIMENT TRAP
NTS



TYPICAL SECTION THROUGH CATCH DRAIN
SCALE 1: 20



TEMPORARY CONSTRUCTION VEHICLE EXIT
NTS



SEDIMENTATION TRAP
NTS

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EROSION AND SEDIMENT CONTROL NOTES

- All work shall be generally carried out in accordance with:
(A) Local authority requirements,
(B) EPA - Pollution control manual for urban stormwater,
(C) LANDCOM NSW - Managing Urban Stormwater: Soils and Construction ("Blue Book").
- Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities. The erosion and sediment control plan shall be implemented and adapted to meet the varying situations as work on site progresses.
- Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
- When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
- Minimise the area of site being disturbed at any one time.
- Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
- All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
- Control water from upstream of the site such that it does not enter the disturbed site.
- All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
- All vehicles leaving the site shall be cleaned and inspected before leaving.
- Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
- Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

- Prior to commencement of excavation the following soil management devices must be installed.
- Construct silt fences below the site and across all potential runoff sites.
- Construct temporary construction entry/exit and divert runoff to suitable control systems.
- Construct measures to divert upstream flows into existing stormwater system.
- Construct sedimentation traps/basin including outlet control and overflow.
- Construct turf lined swales.
- Construct geotextile filter pit surround around all proposed pits as they are constructed.

WATER QUALITY TESTING REQUIREMENTS

Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following:

- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000).
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system. This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.

EROSION AND SEDIMENT CONTROL LEGEND

- Siltation fence
- Sandbag sediment trap
- Catch drain
- Filter pit surround
- Hay bale

Filename: C401.dwg USER: rocky - Plot File Created: Sep 12, 2018 - 4:56pm

Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
P4	ISSUE FOR D&C TENDER	NB	RG	12.09.18										
P3	ISSUE FOR D&C TENDER REVIEW	NB	RG	11.09.18										
P2	ISSUE FOR REVIEW	NB	RG	07.09.18										
P1	ISSUE FOR SDR	NB	RG	26.07.18										



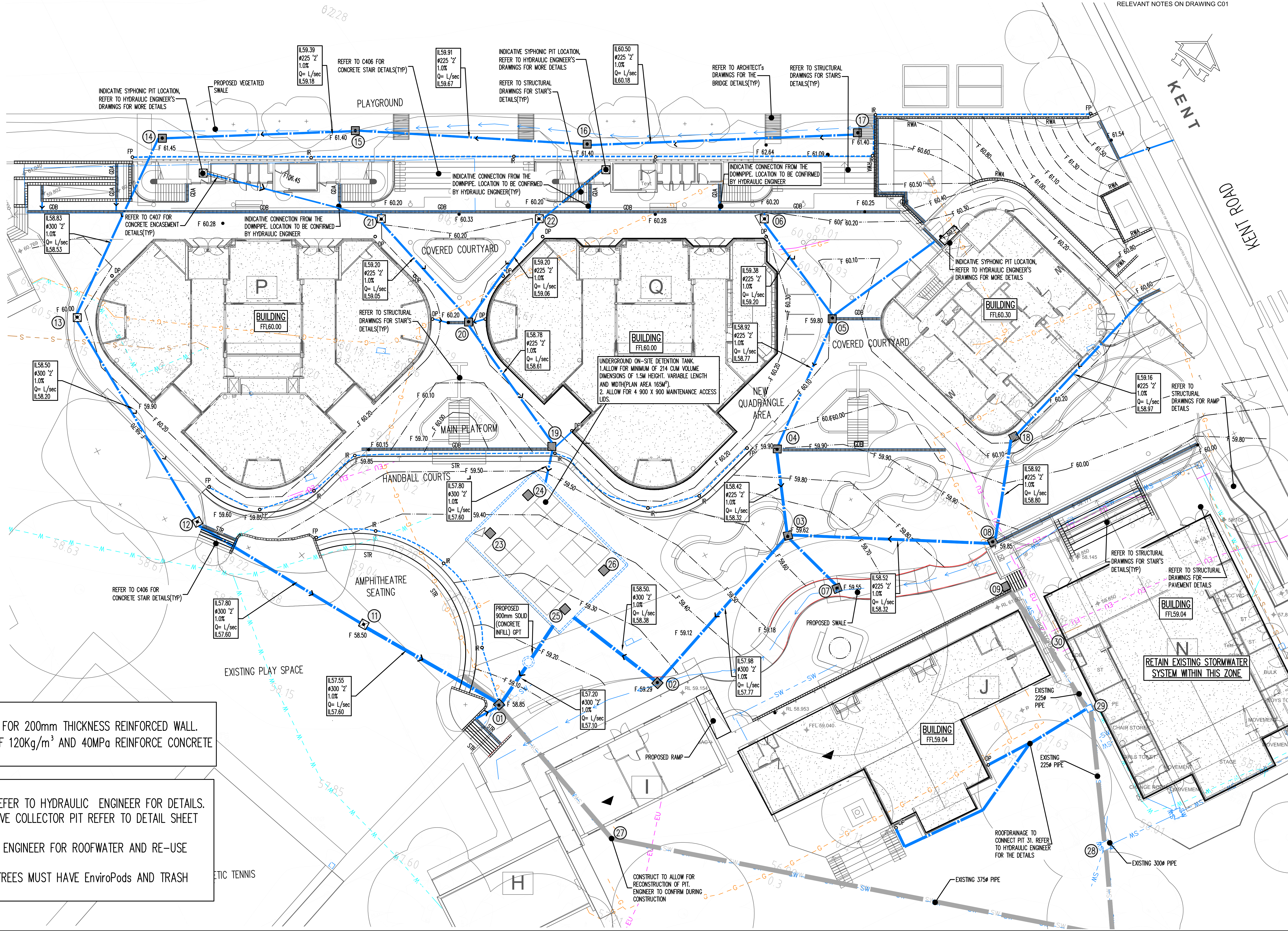
Project
KENT ROAD PUBLIC SCHOOL

Sheet Subject
EROSION & SEDIMENT
CONTROL PLAN AND DETAILS

Scale	Drawn	Authorised
A1 1:500 U.N.O	RG	
Job No	Drawing No	Revision
171518	C401	P4
Plot File Created: Sep 12, 2018 - 4:56pm		

HERRING ROAD

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OSD TANK NOTE:
CONTRACTOR TO ALLOW FOR 200mm THICKNESS REINFORCED WALL.
REINFORCEMENT RATE OF 120Kg/m³ AND 40MPa REINFORCE CONCRETE
STRENGTH min

NOTE:
1.FOR ALL DOWNPIPES REFER TO HYDRAULIC ENGINEER FOR DETAILS.
2.ALL DOWNPIPES TO HAVE COLLECTOR PIT REFER TO DETAIL SHEET C407 FOR DETAILS.
3.REFER TO HYDRAULICS ENGINEER FOR ROOFWATER AND RE-USE DRAINAGE SYSTEM.
3.ALL PITS UNDER THE TREES MUST HAVE EnviroPods AND TRASH SCREEN FILTER.

Pathetic: C402.dwg - USER: ewe - Plot File Output: Sep 13, 2018 - 11:12am

Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
P4	ISSUE FOR D&C TENDER	NB	RG	13.09.18															
P3	ISSUE FOR D&C TENDER REVIEW	NB	RG	11.09.18															
P2	ISSUE FOR REVIEW	NB	RG	07.09.18															
P1	ISSUE FOR SDR	NB	RG	26.07.18															



Civil Engineer

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Project
KENT ROAD PUBLIC SCHOOL

Sheet Subject
SITEWORKS PLAN

Scale : A1
1:200

Drawn
RG

Authorised

Job No
171518

Drawing No
C402

Revision
P4

Plot File Created: Sep 13, 2018 - 11:12am