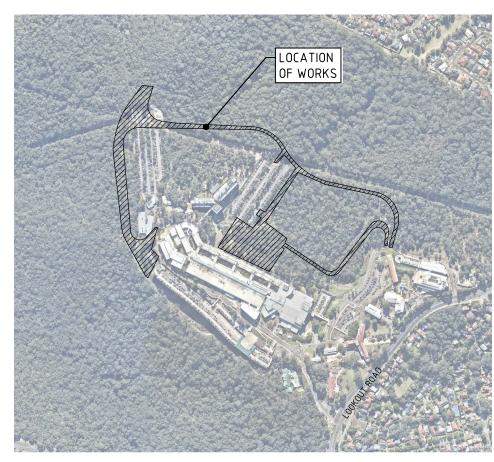
JOHN HUNTER HOSPITAL AND INNOVATION PRECINCT

LOOKOUT ROAD, NEW LAMBTON HEIGHTS **CIVIL SSDA PACKAGE**





LOCALITY PLAN

DRAWING SCHEDULE

DRG No.	DRAWING TITLE
C001-DA	COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE

C100-DA SOIL AND WATER MANAGEMENT PLAN C101-DA SOIL AND WATER MANAGEMENT DETAILS SOIL AND WATER MANAGEMENT NOTES C102-DA

C200-DA BULK EARTHWORKS PLAN

CIVIL WORKS ARRANGEMENT PLAN C300-DA

ROAD SETOUT PLAN C401-DA ROAD TYPICAL SECTIONS

ROAD LONG SECTIONS - SHEET 1 ROAD LONG SECTIONS - SHEET 2 C502-DA C503-DA ROAD LONG SECTIONS - SHEET 3

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	ŀ
1	ISSUED FOR DRAFT REVIEW	LS		CS	30.09.20	l
2	ISSUED FOR REVIEW	LS		CS	09.11.20	l
3	ISSUED FOR SCHEMATIC DESIGN	LS		CS	29.01.21	l
4	ISSUED FOR DRAFT SSDA	LS		CS	25.02.21	l
5	ISSUED FOR DRAFT SSDA	LS		cs	09.03.21	H



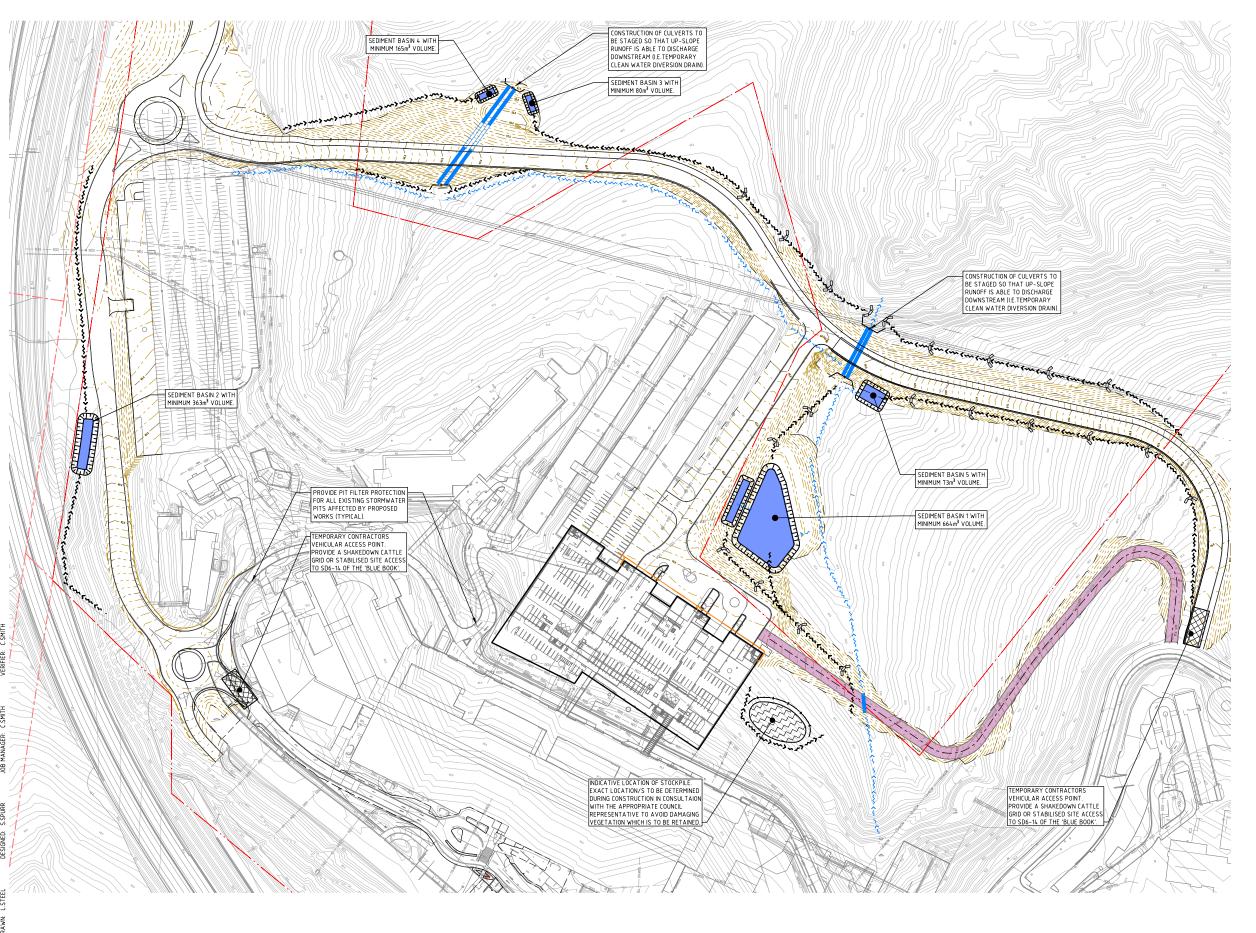
JOHN HUNTER HOSPITAL AND INNOVATION PRECINCT LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W

CIVIL ENGINEERING PACKAGE **COVER SHEET, LOCALITY PLAN**

NL191366

C001-DA

6 ISSUED FOR SSDA



LEGEND DENOTES BOUNDARY LINE DENOTES EXISTING CONTOURS AT 1m INTERVALS. DENOTES EXISTING CONTOURS AT 0.5m INTERVALS. DENOTES SEDIMENT FENCE, REFER TO DETAIL ON DRAWING C101-DA. DENOTES SANDBAG SEDIMENT FILTER AND SEDIMENT SUMP. REFER TO DETAIL ON DRAWING C101-DA. DENOTES DIVERSION DRAIN (CLEAN) DENOTES DIVERSION DRAIN (DIRTY) DENOTES STOCKPILE, REFER TO DETAIL ON DRAWING C101-DA. DENOTES SEDIMENT BASIN, REFER TO DETAIL ON DRAWING C101-DA. DENOTES EXTENT OF PROPOSED CONSTRUCTION ACCESS TRACK. DENOTES STABILISED SITE ACCESS REFER TO DETAIL ON DRAWING C101-D

REFER TO SHEET C102-DA FOR EROSION AND SEDIMENT CONTROL NOTES

DENOTES TEMPORARY WATERWAY CROSSING. REFER TO DETAIL ON DRAWING C101-DA

CIVIL ENGINEERING PACKAGE

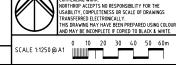
SOIL AND WATER

NL191366

C100-DA DRAWING SHEET SIZE = A*

1 ISSUED FOR REVIEW CS 09.11.20 2 ISSUED FOR SCHEMATIC DESIGN CS 29.01.21 3 ISSUED FOR DRAFT SSDA CS 25.02.21 4 ISSUED FOR DRAFT SSDA CS 09.03.21 5 ISSUED FOR SSDA CS 31.03.21 DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

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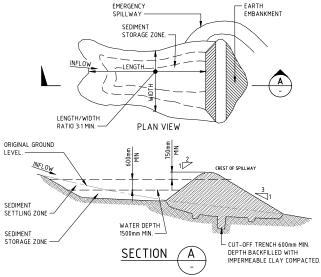
JOHN HUNTER HOSPITAL AND INNOVATION PRECINCT LOOKOUT ROAD, NEW **LAMBTON HEIGHTS N.S.W**

MANAGEMENT PLAN

CONSTRUCTION NOTES

- PROHIBIT ALL TRAFFIC UNTIL THE ACCESS WAY IS CONSTRUCTED.
- STRIP ANY TOPSOIL AND PLACE A NEEDLE-PUNCHED TEXTILE OVER THE BASE OF THE CROSSING.
- PLACE CLEAN, RIGID, NON POLLUTING AGGREGATE OR GRAVEL IN THE 100mm TO 150mm SIZE CLASS OVER THE FABRIC TO A MINIMUM DEPTH OF 200mm.
- 4. PROVIDE A 3m WIDE CARRIAGEWAY WITH SUFFICIENT LENGTH OF CULVERT PIPE TO ALLOW LESS THAN A 3(H): 1 (V) SLOPE ON SIDE BATTERS.
- 5. INSTALL A LOWER SECTION TO ACT AS AN EMERGENCY SPILLWAY IN GREATER THAN DESIGN STORM
- 6. ENSURE THAT CULVERT OUTLETS EXTEND BEYOND THE TOE OF FILL EMBANKMENTS.

TEMPORARY WATERWAY CROSSING (SD 5-1)



5 ISSUED FOR SSDA

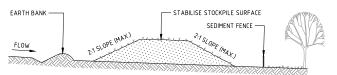
- CONSTRUCTION NOTES

 1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
- CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AND 1200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
- 3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
- SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
- PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
- 6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE
- CONSTRUCT THE EMERGENCY SPILLWAY.
- 8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP

(APPLIES TO TYPE D' AND TYPE F' SOILS ONLY)

EARTH BASIN - WET (SD 6-4)

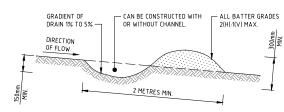
CS 31.03.21



CONSTRUCTION NOTES

- PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
- CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
 WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT
- WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
- 5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

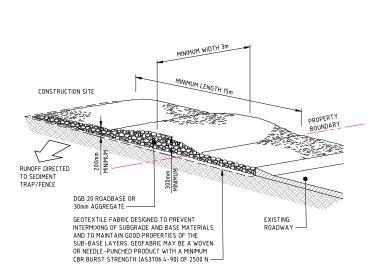
STOCKPILES (SD 4-1)



- CONSTRUCTION NOTES

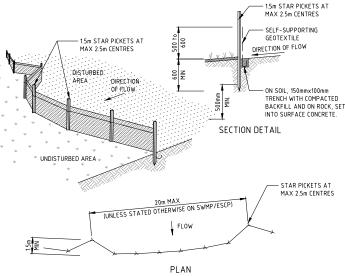
 1. BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.
- 2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE WORK AROUND THEM.
- ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER
- BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.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

NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRE: EARTH BANK - LOW FLOW (SD 5-5)



- $\frac{\text{CONSTRUCTION NOTES}}{\text{1.}} \quad \text{Strip the Topsoil, level the site and compact the subgrade}$
- COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE
- CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
- ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
- WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS

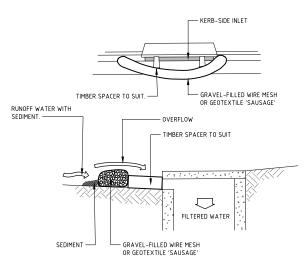
STABILISED SITE ACCESS (SD 6-14)



- CONSTRUCTION NOTES

 1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, EURS INCLES SUPERIN FERKES AS SCHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION.
 THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION.
 TO SOLITIZE SPER 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
- DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
- THE TRENGT ENGOGERATE AND A THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TERCH. 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
- 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.

SEDIMENT FENCE (SD 6-8)



NOTE: THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP

- CONSTRUCTION NOTES

 1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
- 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.
- FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE
- PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
- FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
- SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN

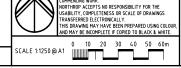
MESH AND GRAVEL INLET FILTER (SD 6-11)

ISSUED FOR REVIEW CS 09.11.20 CS 29.01.2 ISSUED FOR DRAFT SSDA CS 25.02.21 4 ISSUED FOR DRAFT SSDA CS 09.03.21











AND INNOVATION PRECINCT LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W

JOHN HUNTER HOSPITAL

CIVIL ENGINEERING PACKAGE

SOIL AND WATER **MANAGEMENT DETAILS** NL191366

C101-DA

DRAWING SHEET SIZE =

- PRIOR TO ANY ACTIVITIES ONSITE, THE RESPONSIBLE PERSON(S) IS TO BE NOMINATED. THE RESPONSIBLE PERSON(S) WILL BE RESPONSIBLE FOR THE EROSION AND SEDIMENT CONTROL (ESC) MEASURES ONSITE.
- 3. THE APPROVED SWMP MUST BE AVAILABLE ON-SITE FOR INSPECTION BY COUNCIL OFFICERS WHILE WORK ACTIVITIES ARE OCCURRING.
- 4. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE APPROPRIATE FOR THE SEDIMENT TYPE(S) OF THE SOILS ONSITE, IN ACCORDANCE WITH THE BLUE BOOK (MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION, LANDCOM, 2004), OR OTHER CURRENT RECOGNISED INDUSTRY STANDARD FOR EROSION AND SEDIMENT CONTROL FOR AUSTRALIAN CONDITIONS. THIS INCLUDES SEDIMENT TRAPS, TREATMENT OF CAPTURED WATER, AND LINING OF CHANNELS.
- NO LAND-DISTURBING ACTIVITIES ON THE SITE SHALL OCCUR UNTIL ALL PERIMETER ESC MEASURES, SEDIMENT BASINS. AND ASSOCIATED TEMPORARY DRAINAGE CONTROLS, HAVE BEEN CONSTRUCTED AND ARE FULLY OPERATIONAL. IN ACCORDANCE WITH CURRENT BEST PRACTICE ESC. THIS IS UNLESS SUCH CLEARING IS REQUIRED FOR THE PURPOSE OF INSTALLING SUCH MEASURES, IN WHICH CASE ONLY THE MINIMUM CLEARING REQUIRED TO INSTALL SUCH MEASURES SHALL OCCUR.
- ADDITIONAL ESC MEASURES MUST BE IMPLEMENTED, AND A REVISED SWMP IS TO BE SUBMITTED FOR APPROVAL TO THE CERTIFIER (WITHIN FIVE (5) BUSINESSDAYS OF ANY SUCH AMENDMENTS) IN THE EVENT
- (i) THERE IS A HIGH PROBABILITY THAT SERIOUS OR MATERIAL ENVIRONMENTAL HARM MAY OCCUR AS A RESULT OF SEDIMENT LEAVING THE SITE; OR
- (ii) THE IMPLEMENTED WORKS FAIL TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES SPECIFIED IN THESE CONDITIONS; OR
- (iii) SITE CONDITIONS SIGNIFICANTLY CHANGE; OR
- (iv) SITE INSPECTIONS INDICATE THAT THE IMPLEMENTED WORKS ARE FAILING TO ACHIEVE THE "OBJECTIVE" OF
- (v) A COPY OF ANY AMENDED SWMP MUST BE FORWARDED TO AN APPROPRIATE COUNCIL OFFICER, WITHIN FIVE (5) BUSINESSDAYS OF ANY SUCH AMENDMENTS.
- 7. ALL REASONABLE AND PRACTICABLE MEASURES MUST BE TAKEN TO ENSURE STORMWATER RUNOFF FROM ACCESS ROADS AND STABILISED ENTRY/EXIT SYSTEMS, DRAINS TO AN APPROPRIATE SEDIMENT CONTROL
- 8. THE APPLICANT MUST ENSURE AN ADEQUATE SUPPLY OF ESC. AND APPROPRIATE POLLUTION CLEAN-UP MATERIALS ARE AVAILABLE ON-SITE AT ALL TIMES. THIS INCLUDES CHEMICALS/AGENTS TO TREAT TURBID WATER IN BASINS
- SEDIMENT DEPOSITED OFF SITE AS A RESULT OF ON-SITE ACTIVITIES MUST BE COLLECTED AND THE AREA CLEANED/REHABILITATED AS SOON AS REASONABLE AND PRACTICABLE.
- 10. NEWLY SEALED HARD-STAND AREAS (E.G. ROADS, DRIVEWAYS AND CAR PARKS) MUST BE SWEPT THOROUGHLY AS SOON AS PRACTICABLE AFTER SEALING/SURFACING TO MINIMISE THE RISK OF COMPONENTS OF THE SURFACING COMPOUND ENTERING STORMWATER DRAINS.
- 11. STOCKPILES OF ERODIBLE MATERIAL MUST BE PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC OR ORGANIC) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 10 DAYS.
- 12. STOCKPILES, TEMPORARY OR PERMANENT, SHALL NOT BE LOCATED IN AREAS IDENTIFIED AS NO-GO ZONES (INCLUDING, BUT NOT LIMITED TO, RESTRICTED ACCESS AREAS, BUFFER ZONES, OR AREAS OF NON-DISTURBANCE) ON THE ESCP/SWMP;
- 13. PRIORITY MUST BE GIVEN TO THE PREVENTION, OR AT LEAST THE MINIMISATION, OF SOIL EROSION, RATHER THAN THE TRAPPING OF DISPLACED SEDIMENT.
- 14. MEASURES USED TO CONTROL WIND EROSION MUST BE APPROPRIATE FOR THE LOCATION AND PREVENT SOIL EROSION AT ALL TIMES, INCLUDING WORKING HOURS, OUT OF HOURS, WEEKENDS, PUBLIC HOLIDAYS, AND DURING ANY OTHER SHUTDOWN PERIODS.
- 15. THE APPLICATION OF LIQUID OR CHEMICAL-BASED DUST SUPPRESSION MEASURES MUST ENSURE THAT SEDIMENT-LADEN RUNOFF RESULTING FROM SUCH MEASURES (E.G. RUNOFF OF EXCESS WATER) DOES NOT CREATE A TRAFFIC OR ENVIRONMENTAL HAZARD.
- 16. PRIOR TO THE CONTROLLED DISCHARGE (E.G. DE-WATERING ACTIVITIES FROM EXCAVATIONS AND SEDIMENT BASINS) OF ANY WATER FROM THE SITE DURING CONSTRUCTION, THE FOLLOWING WATER QUALITY OBJECTIVES MUST BE ACHIEVED:
- a) TOTAL SUSPENDED SOLIDS (TSS) TO A MAXIMUM 50MG/L;
- b) TURBIDITY (NTUS) TO A MAXIMUM OF 60 NTU MEASURED BY A TURBIDITY METER:
- c) WATER PH BETWEEN 6.5 AND 8.5 UNLESS OTHERWISE REQUIRED BY THE COUNCIL; AND
- d) EC LEVELS NO GREATER THAN BACKGROUND LEVELS.
- 17. PRIOR TO ANY FORECAST WEATHER EVENT LIKELY TO RESULT IN SEDIMENT LADEN RUNOFF ON THE SITE, ANY EXISTING DETENTION BASINS/TRAPS SHALL BE DEWATERED TO PROVIDE SUFFICIENT CAPACITY TO CAPTURE SEDIMENT LADEN WATER FROM THE SITE PRIOR TO THE WEATHER EVENT.
- 18. ANY SEDIMENT-LADEN WATER CAPTURED ONSITE MUST BE TREATED TO ENSURE IT WILL ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES SPECIFIED IN THESE CONDITIONS, PRIOR TO ITS RELEASE FROM SITE. A SAMPLE OF THE RELEASED TREATED WATER MUST BE KEPT ONSITE IN A CLEAR CONTAINER WITH THE SAMPLE DATE

- 19. NO ALUMINIUM BASED PRODUCTS MAY BE USED TREAT TURBID WATER (FLOCCULATING/COAGULANTS) ONSITE WITHOUT THE PRIOR WRITTEN PERMISSION FROM AN APPROPRIATE COUNCIL OFFICER. THE APPLICANT MUST HAVE A DEMONSTRATED ABILITY TO USE SUCH PRODUCTS CORRECTLY AND WITHOUT ENVIRONMENTAL HARM PRIOR TO ANY APPROVAL
- 20. THE CHEMICAL/AGENT (FLOCCULATING/COAGULANTS) USED IN TYPE D AND TYPE F BASINS TO TREAT TURBID WATER CAPTURED IN THE BASIN MUST BE APPLIED IN CONCENTRATIONS SUFFICIENT TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES, SPECIFIED IN THESE CONDITIONS, WITHIN THE X-DAY RAINFALL DEPTH USED TO CALCULATE THE CAPACITY OF THE BASIN, AFTER A RAINFALL EVENT.
- 21. ALL MANUFACTURERS INSTRUCTIONS MUST BE FOLLOWED FOR THE USE OF ANY CHEMICALS/AGENTS USED ONSITE, EXCEPT WHERE APPROVED BY THE RESPONSIBLE PERSON OR AN APPROPRIATE COUNCIL OFFICER.
- 22. ANY BASIN MUST BE DEWATERED AS SOON AS PRACTICAL, ONCE WATER CAPTURED IN THE BASIN ACHIEVES COUNCIL'S WATER QUALITY OBJECTIVES, SPECIFIED IN THESE CONDITIONS.
- 23. THE APPLICANT MUST ENSURE THAT ON EACH OCCASION A TYPE F OR TYPE D BASIN WAS NOT DE-WATERED PRIOR TO BEING SURCHARGED BY A FOLLOWING RAINFALL EVENT, A REPORT IS PRESENTED TO AN APPROPRIATE COUNCIL OFFICER WITHIN 5 DAYS IDENTIFYING THE CIRCUMSTANCES AND PROPOSED AMENDMENTS, IF ANY, TO THE BASIN'S OPERATING PROCEDURES.
- 24. WHERE MORE THAN ONE STAGE IS TO BE DEVELOPED AT ONE TIME, OR BEFORE THE PRECEDING STAGE IS COMPLETE, THE SEDIMENT BASIN(S) FOR THESE STAGES MUST HAVE SUFFICIENT CAPACITY TO CATER FOR ALL AREA DIRECTED TO THE BASIN(S).
- 25. ALL SEDIMENT BASINS MUST REMAIN FULLY OPERATIONAL AT ALL TIMES UNTIL THE BASIN'S DESIGN CATCHMENT ACHIEVES 70% GROUND COVERAGE, OR SURFACE STABILISATION ACCEPTABLE TO COUNCIL.
- 26. SETTLED SEDIMENT MUST BE REMOVED AS SOON AS REASONABLE AND PRACTICABLE FROM ANY SEDIMENT BASIN IN ACCORDANCE WITH THE BLUE BOOK
- 27. ALL SEDIMENT CONTROL DEVICES (OTHER THAN SEDIMENT BASINS) MUST BE DE-SILTED AND MADE FULLY OPERATIONAL AS SOON AS REASONABLE AND PRACTICABLE AFTER RUNOFF-PRODUCING RAINFALL, OR IF THE SEDIMENT RETENTION CAPACITY OF THE DEVICE FALLS BELOW 75% OF THE DESIGN RETENTION CAPACITY.
- 28. PROCEDURES FOR INITIATING A SITE SHUTDOWN, WHETHER PROGRAMMED OR UN-PROGRAMMED, MUST INCORPORATE REVEGETATION OF ALL SOIL DISTURBANCES UNLESS OTHERWISE APPROVED BY COUNCIL. THE STABILISATION WORKS MUST NOT RELY UPON THE LONGEVITY OF NON-VEGETATED EROSION CONTROL BLANKETS, OR TEMPORARY SOIL BINDERS.
- 29. ALL ESC MEASURES MUST BE INSPECTED:
- a) AT LEAST DAILY (WHEN WORK IS OCCURRING ON-SITE); AND
- b) AT LEAST WEEKLY (WHEN WORK IS NOT OCCURRING ON-SITE); AND
- c) WITHIN 24HRS OF EXPECTED RAINFALL; AND
- d) WITHIN 18HRS OF A RAINFALL EVENT THAT CAUSES RUNOFF ON THE SITE).
- 30. WRITTEN RECORDS MUST BE KEPT ONSITE OF ESC MONITORING AND MAINTENANCE ACTIVITIES CONDUCTED DURING THE CONSTRUCTION AND MAINTENANCE PERIODS, AND BE AVAILABLE TO COUNCIL OFFICERS ON
- 31. ALL SITE MONITORING DATA INCLUDING RAINFALL RECORDS, DATES OF WATER QUALITY TESTING, TESTING RESULTS AND RECORDS OF CONTROLLED WATER RELEASES FROM THE SITE, MUST BE KEPT IN AN ON-SITE REGISTER. THE REGISTER IS TO BE MAINTAINED UP TO DATE FOR THE DURATION OF THE APPROVED WORKS AND BE AVAILABLE ON-SITE FOR INSPECTION BY COUNCIL OFFICERS ON REQUEST
- 32. WATER QUALITY SAMPLES FROM SEDIMENT BASIN(S) MUST BE TAKEN AT A DEPTH NO LESS THAN 200MM BELOW THE WATER SURFACE WITHIN THE BASIN.
- 33. ALL ENVIRONMENTAL INCIDENTS MUST BE RECORDED IN A FIELD LOG THAT MUST REMAIN ACCESSIBLE TO ALL RELEVANT REGULATORY AUTHORITIES ON REQUEST.
- 34. ALL MATERIALS REMOVED FROM ESC DEVICES DURING MAINTENANCE, OR DECOMMISSIONING, WHETHER SOLID OR LIQUID, MUST BE DISPOSED OF IN A MANNER THAT DOES NOT CAUSE ANY ONGOING EROSION OR POLLUTION
- 35. 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'.
- 36. ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
- 37. 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.
- 38. ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ONSITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
- 39. ANY SURPLUS MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA
- 40. 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).
- 41. ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN
- ACCORDANCE WITH THE 'BLUE BOOK'.
- 42. PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST. 43. 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, ALTERNATIVELY SPECIFIED EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE RETAINED.

SEDIMENT BASIN CALCULATION

THE SITE IS LOCATED WITHIN THE NEWCASTLESOIL LANDSCAPE, WHICH HAS THE FOLLOWING PROPERTIES (IN ACCORDANCE WITH TABLE C13 OF THE "BLUE BOOK"):

- SEDIMENT TYPE F
- SOIL HYDROLOGY GROUP A
- K-FACTOR OF 0.016 (WORST CASE)

THE SIZING OF THE SEDIMENT STORAGE VOLUME OF THE SITES PROPOSED SEDIMENTATION BASINS WERE CALCULATED BY APPLYING THE REVISED UNIVERSAL SOIL LOSS EQUATION (RUSLE) METHOD:

- SOIL LOSS = R K LS P C
- WHERE; R = RAINFALL EROSIVITY FACTOR = 2590
 - 2 YEAR, 6 HOUR STORM INTENSITY = 10.9 mm/hr
 - LS = SLOPE LENGTH/GRADIENT FACTOR = 0.7
 - K = SOIL ERODIBILITY FACTOR = 0.016
 - P = EROSION CONTROL PRACTICE (P-FACTOR) = 1.3 (TYPICAL)
 - C = GROUND COVER (C-FACTOR) = 1.0 (TYPICAL FOR STRIPPED SITE)

THE REMAINING VARIABLES ARE PRESENTED WITHIN THE TEMPORARY SEDIMENT BASIN CAPACITY TABLE. THE SETTLING ZONE VOLUME OF THE BASIN WAS CALCULATED FOR A 2 MONTHS SOIL LOSS AS CALCULATED BY THE RUSLE METHOD:

> SETTLING ZONE VOLUME = 10 CV RX-DAY, Y-%ILE x CATCHMENT AREA WHERE RX-DAY, Y-%TILE = 30.5 mm/hr

TOTAL BASIN VOLUME						
SITE	C _V	TOTAL CATCHMENT AREA (ha)	SETTLING ZONE VOLUME (m³)	SEDIMENT STORAGE VOLUME (m³)	TOTAL BASIN VOLUME (m³)	
SEDIMENT BASIN 1	0.5	3.29	502	162	664	
SEDIMENT BASIN 2	0.5	2.3	350	13	363	
SEDIMENT BASIN 3	0.5	0.49	74	6	80	
SEDIMENT BASIN 4	0.5	0.84	128	37	165	
SEDIMENT BASIN 5	0.5	.047	72	1	73	

GROUND COVER FACTORS

THE LONG TERM GROUND COVER FACTORS FOR THE CONSTRUCTION WORKS IS NOT TO EXCEED THE FOLLOWING LIMITS:

EXCEL THE FOLLOWING ENTRY.						
LAND	MAXIMUM C-FACTOR	REMARKS				
WATERWAYS AND OTHER AREAS OF CONCENTRATED FLOWS, POST CONSTRUCTION	0.05	APPLIES AFTER TEN WORKING DAYS OF COMPLETION OF FORMATION AND BEFORE CONCENTRATED FLOWS ARE APPLIED. FOOT AND VECHICULAR TRAFFIC IS PROHIBITED IN THIS AREA AND 70% GROUND COVER IS REQUIRED.				
STOCKPILES, POST CONSTRUCTION	0.10	APPLIES AFTER TEN WORKING DAYS FROM COMPLETION OF FORMATION. 60% GROUND COVER IS REQUIRED.				
ALL LANDS, INCLUDUNG WATERWAYS AND STOCKPILES, DURING CONSTRUCTION	0.15	APPLIES AFTER 20 DAYS OF INACTIVITY, EVEN THOUGH WORKS MAY BE INCOMPLETE. 50% GROUND COVER IS REQUIRED.				

REVEGETATION

TEMPORARY SEED MIX

SOWING SEASON	SEED MIX
AUTUMN/WINTER	OATS @40kg/Ha + JAPANESE MILLET @10kg/Ha
SPRING/SUMMER	OATS @10kg/Ha + JAPANESE MILLET @40kg/Ha

THESE PLANT SPECIES ARE FOR TEMPORARY REVEGETATION ONLY. THEY WILL ONLY PROVIDE PROTECTION FROM EROSION FOR SIX MONTHS. WHERE THE LOTS ARE TO BE LEFT UNDEVELOPED FOR A LONGER PERIOD, THE CONTRACTOR SHALL SEEK ADVICE FROM THE SITE SUPERINTENDENT AS TO MORE APPROPRIATE REVEGETATION METHODS.

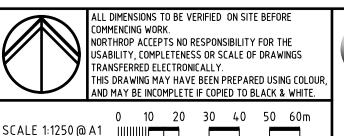
REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR REVIEW	LS		CS	09.11.20
2	ISSUED FOR SCHEMATIC DESIGN	LS		CS	29.01.21
3	ISSUED FOR DRAFT SSDA	LS		CS	25.02.21
4	ISSUED FOR DRAFT SSDA	LS		CS	09.03.21
5	ISSUED FOR SSDA	LS		CS	31.03.21



UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED



NORTHROP CONSULTING ENGINEERS PTY LTD





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JOHN HUNTER HOSPITAL AND INNOVATION PRECINCT LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W

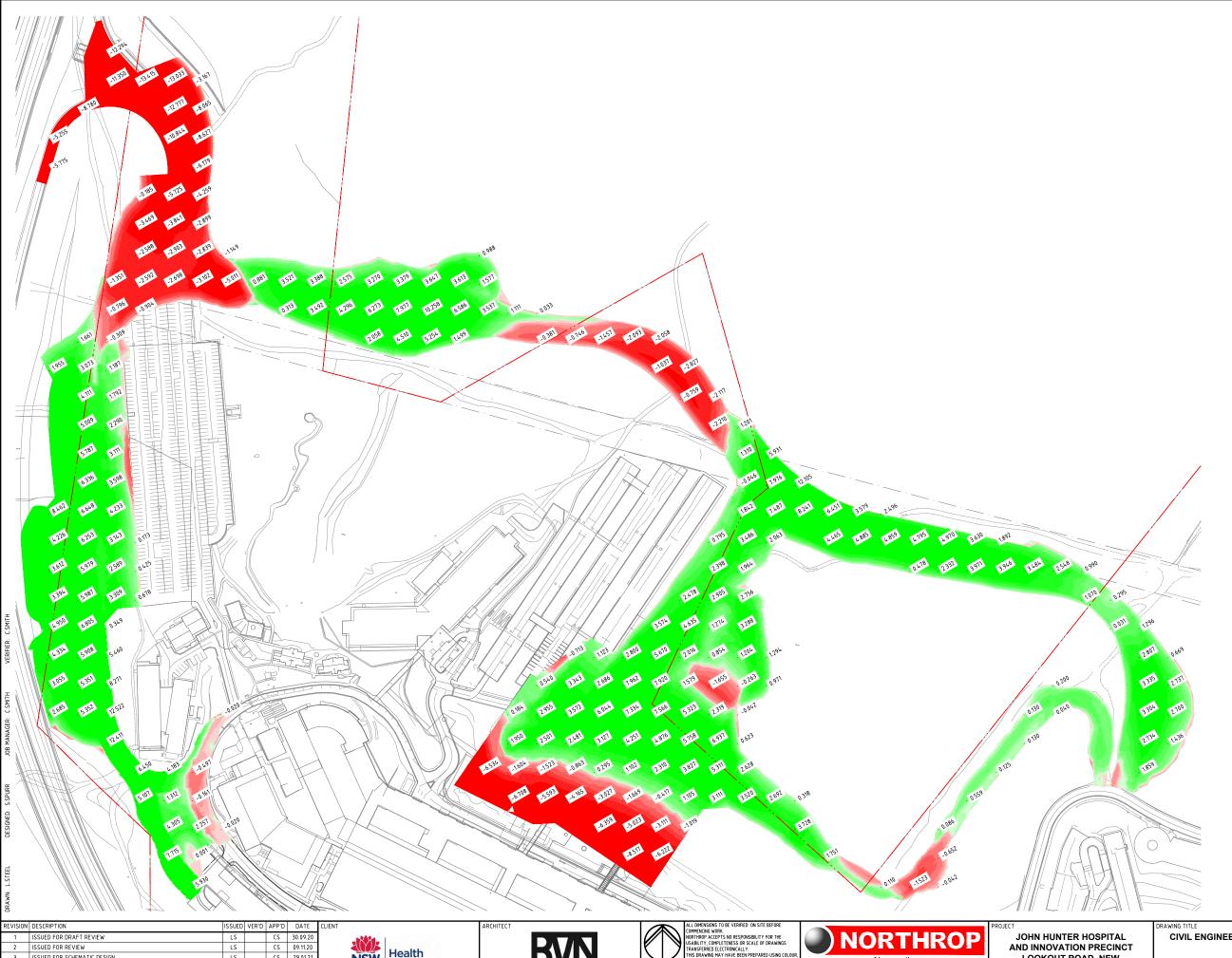
CIVIL ENGINEERING PACKAGE

SOIL AND WATER MANAGEMENT NOTES

NL191366 RAWING NUMBER

DRAWING SHEET SIZE = A1

[5 DAY, 80th PERCENTILE RAINFALL EVENT, NEWCASTLE]





SITE EARTHWORKS NOTES

PRIOR TO COMMENCEMENT OF EARTHWORKS ENSURE THAT ALL SEDIMENT AND EROSION CONTROL MEASURES ARE INSTALLED AS PER SOIL AND WATER MANAGEMENT GUIDELINES.

THE APPROXIMATE SITE EARTHWORKS VOLUMES ARE BASED ON FINISHED SURFACE TO NATURAL SURFACE.

• CUT: 60,990m
• FILL: 207,065m
• NET: 146,075m² (DEFICIT)

NOTE:
THE ABOVE VOLUMES ARE BASED ON SUPPLIED SURVEY DATA AND
ASSUMED PAVEMENT AND BULK EARTHWORKS DEPTHS, AS SUCH
ARE APPROXIMATE ONLY, THE CONTRACTOR SHALL SATISFY
THEMSELVES AS TO THEIR ACCURACY.

THE ABOVE VOLUMES <u>DO NOT</u> INCLUDE A STRIPPING ALLOWANCE, SERVICE TRENCHING OR DETAILED EXCAVATION.

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR DRAFT REVIEW	LS		CS	30.09.20
2	ISSUED FOR REVIEW	LS		CS	09.11.20
3	ISSUED FOR SCHEMATIC DESIGN	LS		CS	29.01.21
4	ISSUED FOR DRAFT SSDA	LS		CS	25.02.21
5	ISSUED FOR DRAFT SSDA	LS		CS	09.03.21
4	ICCUED FOR CCDA	1.0		cc	21 02 21



Infrastructure







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LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W CIVIL ENGINEERING PACKAGE

BULK EARTHWORKS PLAN

NL191366

C200-DA DRAWING SHEET SIZE = A