

BULK EARTHWORKS - BALANCE OF SITE



253 TELEGRAPH ROAD, FITZGIBBON FOR URBAN LAND DEVELOPMENT AUTHORITY

GENERAL NOTES

1. ALL DIMENSIONS GIVEN ON THESE DRAWINGS ARE IN METRES UNLESS NOTED OTHERWISE.
2. ALL NEW WORK AND MATERIALS SHALL COMPLY WITH THE PROJECT DRAWING SPECIFICATION AND CURRENT RELEVANT COUNCIL STANDARDS AND SPECIFICATIONS.
3. ALL WORK SHALL BE JOINED NEATLY TO EXISTING CONSTRUCTION.
4. THE CONTRACTOR IS TO LOCATE, IDENTIFY AND ESTABLISH THE CONNECTIVITY OF ALL EXISTING SERVICES WITHIN THE LIMITS OF PROPOSED WORKS AND CONFIRM THIS INFORMATION WITH THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL MEASURING DEVICES, SAFETY EQUIPMENT AND MACHINERY REQUIRED TO CARRY OUT INSPECTIONS/MEETINGS AS SPECIFIED OR REQUESTED BY THE ENGINEER.
6. PROOF ROLLING NOMINATED SHALL BE CARRIED OUT USING A SINGLE AXLE HIGHWAY TRUCK WITH A REAR AXLE LOAD NOT LESS THAN 10 TONNES AND TYRES INFLATED TO 550kPa OR APPROVED EQUIVALENT. EQUIPMENT LABOUR AND LOADING REQUIRED FOR PROOF ROLLING IS TO BE PROVIDED BY THE CONTRACTOR.
7. THESE NOTES SHALL APPLY TO ALL PORTIONS OF WORK.
8. THE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS. ANY POINT OF CONFLICT WILL BE RESOLVED BY THE SUPERINTENDENT.
9. THE ACCURACY AND COMPLETENESS OF EXISTING SERVICE INFORMATION SHOWN ON THE DRAWINGS IS NOT GUARANTEED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL SERVICES PRIOR TO CONSTRUCTION AND ADVISE THE SUPERINTENDENT OF ANY DIFFERENCES FROM THE DRAWINGS.

NOISE

1. ALL PLANT AND EQUIPMENT SHALL BE CONTROLLED TO MINIMISE NOISE EMISSION IN ACCORDANCE WITH AS2436 (GUIDE TO NOISE CONTROL ON CONSTRUCTION, MAINTENANCE AND DEMOLITION). THE SITE WORKING HOURS SHOULD BE IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS. WHERE NOT SPECIFIED THE HOURS SHALL BE:

MONDAY - SATURDAY 7:00am to 6:00pm
SUNDAY OR PUBLIC HOLIDAY NO WORK PERMITTED

INDEMNITY - EXISTING SERVICES

NOT WITHSTANDING THAT EXISTING SERVICES MAY OR MAY NOT BE SHOWN ON THESE DRAWINGS, NO RESPONSIBILITY IS TAKEN BY THE ENGINEER OR THE PRINCIPAL FOR THIS INFORMATION WHICH HAS BEEN SUPPLIED BY OTHERS. THE DETAILS ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL ASCERTAIN THE POSITION OF ALL UNDERGROUND SERVICES PRIOR TO EXCAVATION AND SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGES CAUSED AS A RESULT OF THE WORKS

PRE-CONSTRUCTION & APPROVALS

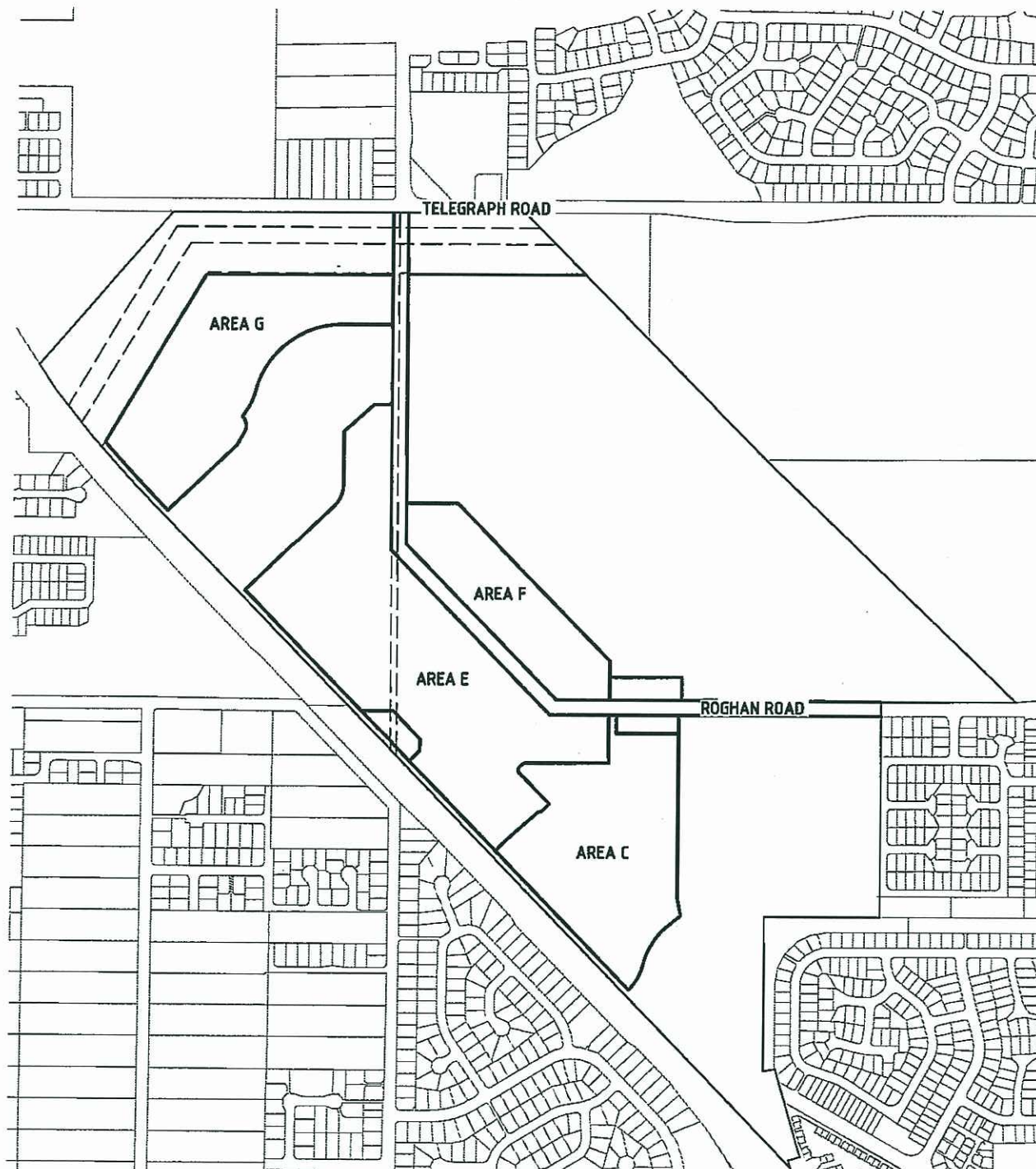
1. ALL EXISTING SERVICES AND LEVELS SHOWN ON THE DRAWINGS HAVE BEEN PREPARED BY THE SURVEYOR FROM SURVEY OR LOCAL AUTHORITY RECORDS. THE CONTRACTOR IS TO VERIFY THE ACCURACY OF THE SURVEY AND REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION WORKS.
2. NO LOCATING/ POTHOLING OF EXISTING SERVICES HAS BEEN CARRIED OUT. THE CONTRACTOR IS TO DETERMINE THE LOCATION AND DEPTH OF ALL EXISTING SERVICES WHICH AFFECT THE WORKS AND REPORT ANY POTENTIAL CLASHES TO THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION WORKS.
3. THE CONTRACTOR IS RESPONSIBLE FOR ARRANGING WITH THE APPROPRIATE AUTHORITY FOR LOCATING EXISTING SERVICES AND FOR ANY MODIFICATIONS TO EXISTING SERVICES REQUIRED AS A RESULT OF THE WORKS.
4. THE CONTRACTOR IS RESPONSIBLE TO PROTECT ALL EXISTING SERVICES FROM DAMAGE.
5. ANY WORKS DAMAGED AS A RESULT OF CONSTRUCTION ARE TO BE REINSTATED TO RELEVANT AUTHORITY'S REQUIREMENTS AT THE CONTRACTORS COST.
6. FINISHED SURFACE LEVELS ARE TO BE GRADED UNIFORMLY BETWEEN LEVELS INDICATED ON THE DRAWINGS.

WORKPLACE HEALTH AND SAFETY

1. THE CONTRACTOR SHALL BE THE PRINCIPAL CONTRACTOR AS DESIGNATED BY THE WORKPLACE HEALTH AND SAFETY ACT (1995).
2. THE CONTRACTOR SHALL PREPARE AND IMPLEMENT A WORKPLACE HEALTH AND SAFETY PLAN AS REQUIRED BY THE WORKPLACE HEALTH AND SAFETY ACT (1995).

SETOUT NOTES

1. CO-ORDINATE SETOUT PROVIDED ON THESE DRAWINGS IS BASED ON AN ARBITRARY CO-ORDINATE BASE. REFERENCE MARKS AND CORRESPONDING CO-ORDINATES ARE PROVIDED ON THIS DRAWING.
2. THE LEVEL DATUM FOR WORKS IS A.H.D (AUSTRALIAN HEIGHT DATUM). A SITE BENCHMARK HAS BEEN PROVIDED BY WOLTER GROUP HOLDINGS AND LEVEL BENCHMARK IS NOTED ON ATTACHED LAYOUT.



KEY MAP

0 100 200 300m
SCALE 1:5000 (A1)

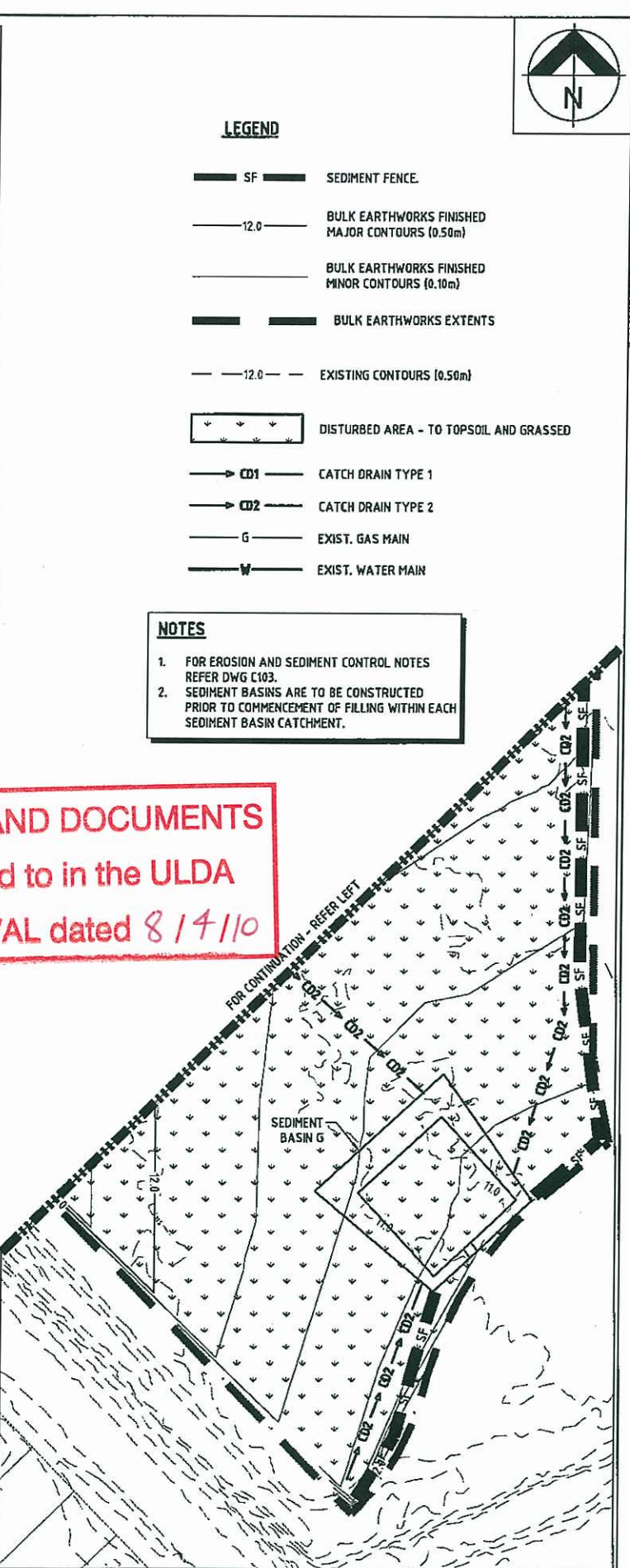
PROJECT DRAWING SCHEDULE

SHEET NUMBER	SHEET TITLE	REVISION
C001	COVER SHEET LOCALITY PLAN & DRAWING SCHEDULE.	P3
C100	EROSION AND SEDIMENT CONTROL LAYOUT - SHEET 1 OF 3	P3
C101	EROSION AND SEDIMENT CONTROL LAYOUT - SHEET 2 OF 3	P3
C102	EROSION AND SEDIMENT CONTROL LAYOUT - SHEET 3 OF 3	P3
C103	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS	P2
C104	TEMPORARY SEDIMENT BASIN DETAILS	P2
C200	BULK EARTHWORKS LAYOUT PLAN - SHEET 1 OF 3	P2
C201	BULK EARTHWORKS LAYOUT PLAN - SHEET 2 OF 3	P2
C202	BULK EARTHWORKS LAYOUT PLAN - SHEET 3 OF 3	P2
C203	BULK EARTHWORKS NOTES AND DETAILS	P2
C204	ROGHAN RD DETENTION BASIN BUND DETAILS SHEET 1 OF 2	P1
C205	ROGHAN RD DETENTION BASIN BUND DETAILS SHEET 2 OF 2	P2
C206	CARSELDINE DETENTION BASIN BUND DETAILS SHEET 1 OF 2	P1
C207	CARSELDINE DETENTION BASIN BUND DETAILS SHEET 2 OF 2	P1
C300	ROGHAN ROAD EXTENSION HAUL ROAD LAYOUT - SHEET 1 OF 2	P1
C301	ROGHAN ROAD EXTENSION HAUL ROAD LAYOUT - SHEET 2 OF 2	P1
000013	TRAFFIC MANAGEMENT PLAN SHEET 1 OF 2	A
000013-1	TRAFFIC MANAGEMENT PLAN SHEET 2 OF 2	A

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8/4/10



APPROVED <i>K. Howells</i> KEITH HOWELLS	DATE RPEQ 7225	REVISION P3
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LEGEND

- SF SEDIMENT FENCE
- 12.0 BULK EARTHWORKS FINISHED MAJOR CONTOURS (0.50m)
- BULK EARTHWORKS FINISHED MINOR CONTOURS (0.10m)
- BULK EARTHWORKS EXTENTS
- 12.0 EXISTING CONTOURS (0.50m)
- DISTURBED AREA - TO TOPSOIL AND GRASSED
- CD1 CATCH DRAIN TYPE 1
- CD2 CATCH DRAIN TYPE 2
- G EXIST. GAS MAIN
- W EXIST. WATER MAIN

NOTES

1. FOR EROSION AND SEDIMENT CONTROL NOTES REFER DWG C103.
2. SEDIMENT BASINS ARE TO BE CONSTRUCTED PRIOR TO COMMENCEMENT OF FILLING WITHIN EACH SEDIMENT BASIN CATCHMENT.

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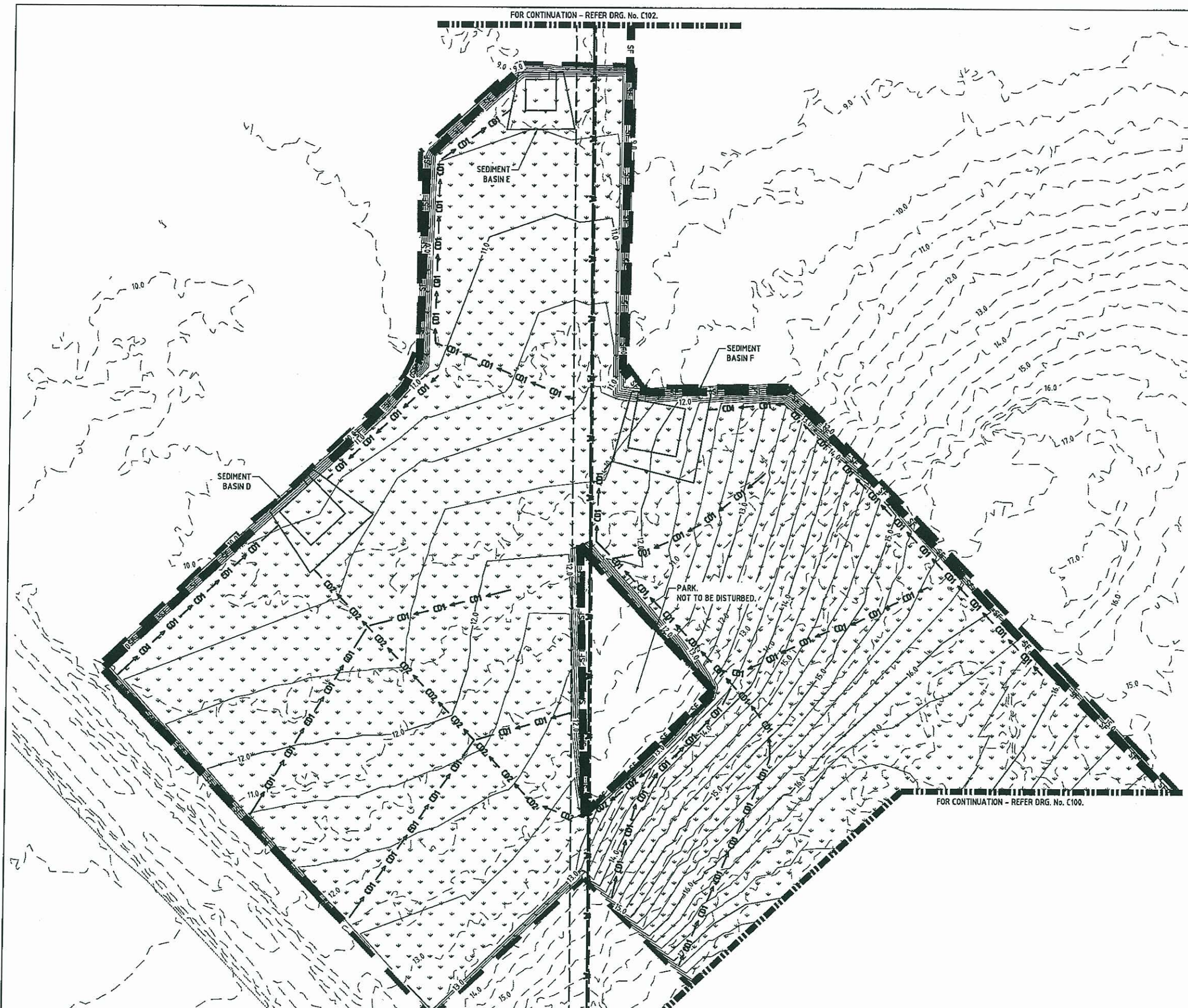
ASSOCIATED CONSULTANTS -		CLIENT URBAN LAND DEVELOPMENT AUTHORITY		DESIGNED AL		APPROVED KEITH HOWELLS STEPHEN HUGHES		DATE FEBRUARY 2010	
PROJECT BULK EARTHWORKS - BALANCE OF SITE		LOCATION 253 TELEGRAPH ROAD, FITZGIBBON		DRAWN AL		SCALE 0 20 40 60m SCALE 1:1000 (A1)		CHECKED DATE	
SHEET TITLE EROSION AND SEDIMENT CONTROL LAYOUT - SHEET 1 OF 3		SHEET NUMBER C100		SHEET REV P3		ARCHITECTS ARCHITECTS		CIVIL & STRUCTURAL ENGINEERS CIVIL & STRUCTURAL ENGINEERS	

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ARCHITECTS



LEGEND

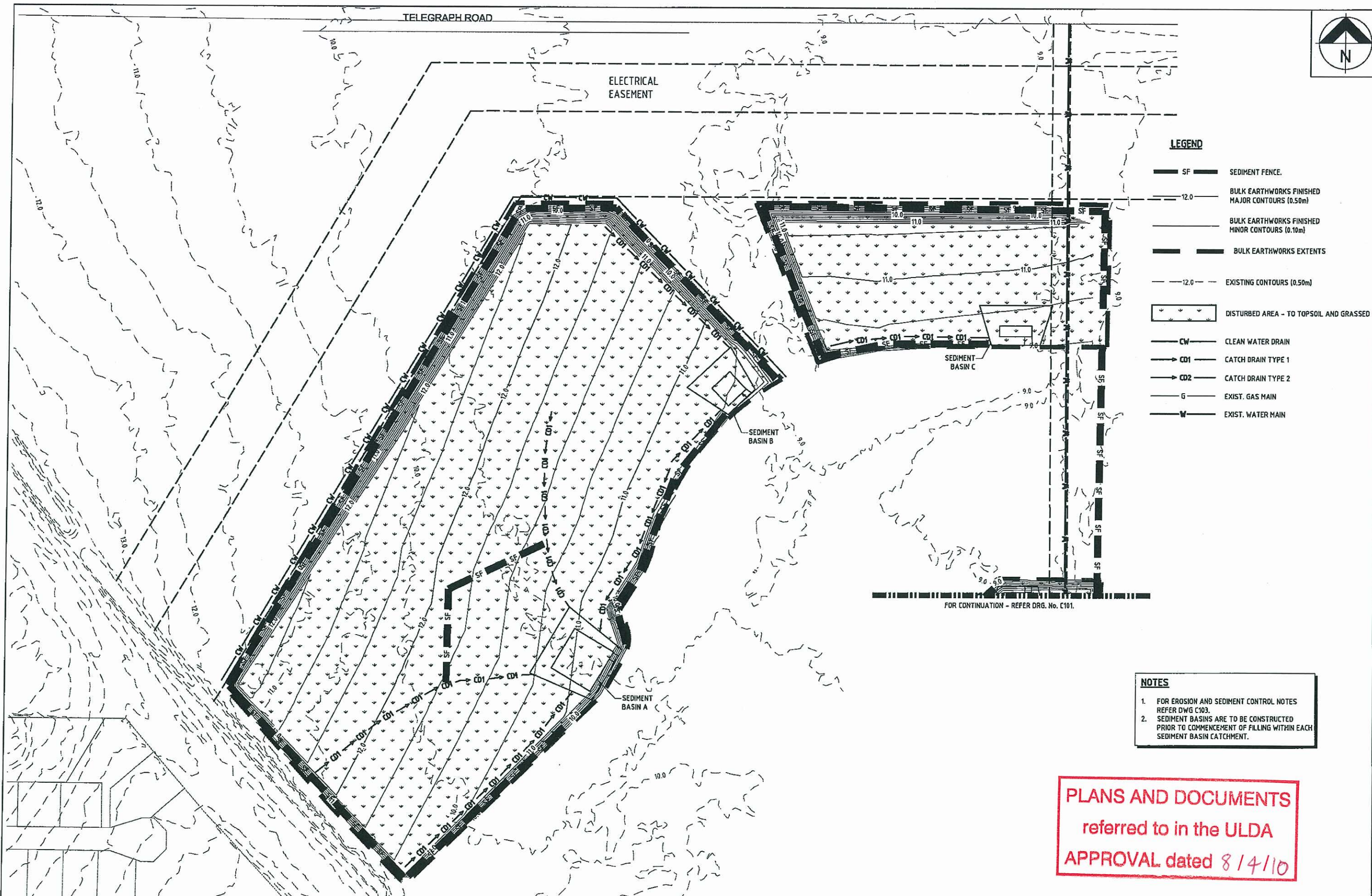
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ASSOCIATED CONSULTANTS -		CLIENT URBAN LAND DEVELOPMENT AUTHORITY		DESIGNED AL		APPROVED KEITH HOWELLS STEPHEN HUGHES		DATE FEBRUARY 2010		SCALE 0 20 40 60m SCALE 1:1000 (A1)		BRISBANE AUSTRALIA 555 CORONATION DRIVE TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5879 EMAIL - mail@etsgroup.net.au		SUNSHINE COAST 20 INNOVATION PARKWAY BIRTAHA QLD 4575 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL - mail.sc@etsgroup.net.au		PAPER NEW GUINEA 5TH FLOOR CUTHBERTSON HOUSE PO BOX 906 TELEPHONE (875) 321 1333 FACSIMILE (875) 321 7653 EMAIL - etspng@datec.net.pg		JOB CODE: ULDEFG											
PROJECT BULK EARTHWORKS - BALANCE OF SITE		LOCATION 253 TELEGRAPH ROAD, FITZGIBBON		DRAWN AL		CHECKED DATE		SHEET 2 OF 3		ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS		 www.etsgroup.net.au		SHEET NUMBER: C101		REV: P3													
REVISIONS <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>REV</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>31/03/10</td> <td>P3</td> <td>ADDED BULK EARTHWORKS EXTENTS TO LEGEND</td> </tr> <tr> <td>17/03/10</td> <td>P2</td> <td>UPDATED P&H</td> </tr> <tr> <td>02/03/10</td> <td>P1</td> <td>PRELIMINARY ISSUE</td> </tr> </tbody> </table>		DATE	REV	DESCRIPTION	31/03/10	P3	ADDED BULK EARTHWORKS EXTENTS TO LEGEND	17/03/10	P2	UPDATED P&H	02/03/10	P1	PRELIMINARY ISSUE	SHEET TITLE EROSION AND SEDIMENT CONTROL LAYOUT - SHEET 2 OF 3		DATE FEBRUARY 2010		SCALE SCALE 1:1000 (A1)		ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS		FORM E027 10 AUG 2008		ETS GROUP		SHEET NUMBER: C101		REV: P3	
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ASSOCIATED CONSULTANTS 31/03/10 P3 ADDED BULK EARTHWORKS EXTENTS TO LEGEND 22/04/10 P3 UPDATED PLAN 02/05/10 P1 PRELIMINARY ISSUE		CLIENT URBAN LAND DEVELOPMENT AUTHORITY PROJECT BULK EARTHWORKS - BALANCE OF SITE LOCATION 253 TELEGRAPH ROAD, FITZGIBBON SHEET TITLE EROSION AND SEDIMENT CONTROL LAYOUT - SHEET 3 OF 3		DESIGNED AL DRAWN AL CHECKED DATE DATE FEBRUARY 2010		APPROVED KEITH HOWELLS STEPHEN HUGHES RPEQ 7296 RPEQ 7700 SCALE 0 20 40 60m SCALE 1:1000 (A1)		BRISBANE AUSTRALIA 555 CORONATION DRIVE TOOWONG QLD 4065 PH: (07) 3371 7000 FAX: (07) 3371 5578 EMAIL - mail@etsgroup.net.au SUNSHINE COAST 20 INNOVATION PARKWAY BIRRIYIA QLD 4575 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL - mail.sc@etsgroup.net.au PAPUA NEW GUINEA 5TH FLOOR CUTHBERTSON HOUSE PO BOX 908 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7653 EMAIL - etsprg@etsgroup.net.pg ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS www.etsgroup.net.au		JOB CODE: ULDEFG SHEET NUMBER: C102 REV: P3 FORM E027 10 AUG 2008	
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EROSION & SEDIMENT CONTROL PROGRAM

- LOCATION & LEVELS OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- REFER DRG. NO. C200 FOR EARTHWORKS NOTES
- ALL TRENCHES, FOOTPATH EXCAVATIONS & STOCKPILES TO BE PROTECTED BY TEMPORARY SEDIMENT FENCES UNTIL 80% GRASS COVERAGE IS ACHIEVED TO DISTURBED AREAS.
- EVERY PRECAUTION IS TO BE TAKEN TO PREVENT THE TRANSPORT OF SILT INTO THE NEWLY LAID STORMWATER PIPES THAT ARE CONNECTED TO THE DOWNSTREAM PIPE SYSTEMS, AND ANY EXISTING OPEN CHANNELS.
- THIS PROGRAM SHALL BE READ IN CONJUNCTION WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- THE EROSION AND SEDIMENT CONTROL WORKS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL AUTHORITIES EROSION AND SEDIMENT CONTROL STANDARDS AND THE "SOIL EROSION AND SEDIMENT CONTROL - ENGINEERING GUIDELINES FOR QUEENSLAND (CURRENT EDITIONS)".
- THE CONTRACTOR SHALL TAKE ALL REASONABLE AND PRACTICABLE MEASURES TO:
 - ALLOW STORMWATER TO PASS THROUGH THE SITE IN A CONTROLLED MANNER AND AT NON EROSION FLOW VELOCITIES;
 - MINIMISE SOIL EROSION FROM WATER AND WIND;
 - MINIMISE ADVERSE EFFECTS OF SEDIMENT RUN-OFF;
 - MINIMISE OR PREVENT ENVIRONMENTAL HARM ASSOCIATED WITH DISCHARGES FROM THE SITE (E.G. THE EFFECTS OF SEDIMENTATION ON THE ENVIRONMENTAL VALUES OF RECEIVING WATERS); AND
 - ENSURE THAT THE VALUE AND USE OF RESIDENTIAL PROPERTIES ADJACENT TO THE DEVELOPMENT (SUCH AS DRAINAGE AND ROADS) ARE NOT DIMINISHED AS A RESULT OF THE MIGRATION OF SEDIMENT FROM THE DEVELOPMENT.
- THE CONTRACTOR SHALL APPOINT AN APPROPRIATELY EXPERIENCED PERSON TO BE MADE RESPONSIBLE FOR IMPLEMENTATION OF THE ESC.
- ALL ESC MEASURES SHALL BE INSPECTED:
 - AT LEAST DAILY (WHEN WORK IS OCCURRING ON SITE).
 - AT LEAST WEEKLY (WHEN WORK IS NOT OCCURRING ON SITE).
 - WITHIN 24 HOURS OF EXPECTED RAINFALL.
 - WITHIN 18 HOURS OF RAINFALL OCCURRING.
- MAINTENANCE OF ESC MEASURES SHALL OCCUR IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

ESC MEASURES	MAINTENANCE TRIGGER	TIME FRAME FOR UNDERTAKING MAINTENANCE
SEDIMENT BASINS	WHEN SETTLED SEDIMENT VOLUME EXCEEDS THE VOLUME OF THE SEDIMENT SETTLEMENT ZONE	WITHIN 7 DAYS OF INSPECTION
OTHER ESC MEASURES	WHEN SETTLED SEDIMENT VOLUME EXCEEDS 25% OF THE CAPACITY OF THE ESC MEASURE	BY THE END OF THE DAY

- INSTALL DIVERSION CATCH DRAINS UPSTREAM OF, AND SILT FENCE DOWNSTREAM OF, STOCKPILES.
- STOCKPILES ARE TO BE LOCATED AWAY FROM EROSION HAZARD AREAS SUCH AS DRAINAGE LINES AND STEEP SLOPES.
- STOCKPILES ARE TO BE PROTECTED FROM EROSION BY THE WIND.
- ADEQUATE SUPPLIES OF EMERGENCY MAINTENANCE MATERIALS, INCLUDING (BUT NOT LIMITED TO) STRAW BALES, TIE WIRE, STAKES, FILTER CLOTH, WIRE MESH AND CLEAN GRAVEL SHOULD BE AVAILABLE ON-SITE.
- WATER QUALITY SAMPLES MUST BE TAKEN AND ANALYSED PRIOR TO THE RELEASE OF ANY WATER FROM A SEDIMENT BASIN. WATER QUALITY MUST SATISFY THE FOLLOWING CRITERIA:
 - TSS - 50 mg/L
 - PH BETWEEN 6.5 & 8.5
- ALL WATER QUALITY MONITORING RECORDS INCLUDING DATES OF RAINFALL, TESTING, APPLICATION DATES AND RATES OF FLOCCULANTS, WATER RELEASE FROM SEDIMENT BASIN, VOLUMES OF SEDIMENT REMOVED FROM BASIN AND ESC MAINTENANCE ACTIVITIES ARE TO BE RECORDED IN AN ON-SITE REGISTER. THE REGISTER IS TO BE MAINTAINED FOR THE DURATION OF THE WORKS AND IS TO BE MADE AVAILABLE TO THE SUPERINTENDENT.
- DISTURBED AREAS ARE TO BE SEEDS WITHIN 3 DAYS OF COMPLETION OF WORKS. TURFING OF SWALES AND CHANNELS IS REQUIRED WITHIN 3 DAYS OF COMPLETION OF TRIMMING. GRASS SEEDING IS REQUIRED TO ACHIEVE 70% COVER WITHIN 30 DAYS OF THE COMPLETION OF EARTHWORKS.
- SUPPLEMENTARY ESC MEASURES BY DIRECTED BY THE SUPERINTENDENT.
- SEDIMENT BASINS ARE TO BE CONSTRUCTED PRIOR TO COMMENCEMENT OF FILLING WITHIN EACH SEDIMENT BASIN CATCHMENT.
- SEDIMENT BASINS ARE TO REMAIN IN PLACE AND BE MAINTAINED UNTIL ALL UPSTREAM CONTRIBUTING CATCHMENT AREAS HAVE ACHIEVED A MINIMUM 80% VEGETATED OR HARDSTAND COVERAGE IN EACH TEN SQUARE METERS OF CATCHMENT AREA.

EROSION & SEDIMENT CONTROL - CONSTRUCTION SEQUENCE

THE CONSTRUCTION SEQUENCE WILL GENERALLY BE:

- OBTAIN ALL NECESSARY PERMITS AND APPROVALS BEFORE SITE ESTABLISHMENT.
- HOLD A "PRE-START" MEETING WITH THE SUPERINTENDENT PRIOR COMMENCEMENT OF WORKS.
- THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE SUPERINTENDENT.
- STABILISE AND DELINEATE CONSTRUCTION ACCESS ROUTES AND ENTRY / EXIT POINTS.
- INSTALL OTHER VEGETATION PROTECTION MEASURES.
- ESTABLISH TEMPORARY DRAINAGE MEASURES INCLUDING DIVERSION DRAINS, BUNDS AND ENERGY DISSIPATORS TO DIVERT CLEAN WATER AROUND DISTURBED AREAS.
- UNDERTAKE MINIMUM CLEARING REQUIRED TO ALLOW ESTABLISHMENT OF ESC MEASURES.
- CLEAR THE SITE ONLY IN THE AREA OF THE FIRST STAGE OF WORK AND STOCKPILE TOPSOIL.
- GRADE THE SITE AND CONSTRUCT DEVELOPMENT WORKS.
- SITE CLEARING, ESC ESTABLISHMENT AND CONSTRUCTION ACTIVITIES ARE TO BE STAGED TO MINIMISE THE AREA OF DISTURBANCE.
- PROGRESSIVELY APPLY TEMPORARY ESC MEASURES TO EXPOSED AREAS OR IF CONSTRUCTION DELAYS ARE EXPECTED.
- APPLY PERMANENT ESC MEASURES, REVEGETATION AND OTHER ASSOCIATED LANDSCAPE WORKS. DISTURBED AREAS SHOULD BE STABILISED AS SOON AS POSSIBLE.
- UNDERTAKE ON GOING MAINTENANCE, REPAIR AND MODIFICATIONS TO ESC AND TEMPORARY DRAINAGE MEASURES AS REQUIRED DURING THE PERIOD OF SITE WORKS AND DISTURBANCE.
- ALL TEMPORARY ESC MEASURES ARE TO BE MAINTAINED THROUGHOUT THE ENTIRE STAGES OF WORKS.

VEGETATION MANAGEMENT

- VEGETATION PROTECTION ORDERS ON THE SITE SHALL BE OBSERVED AT ALL TIMES.
- ALL REASONABLE AND PRACTICABLE EFFORTS MUST BE TAKEN TO MINIMISE THE REMOVAL OR DISTURBANCE OF TREES, SHRUBS AND PARTICULARLY GROUND COVER ON THE SITE PRIOR TO, AND DURING LAND-DISTURBING DEVELOPMENT.
- WHERE SOME CLEARING IS INEVITABLE, IT SHOULD BE DELAYED AS LONG AS PRACTICABLE AND STAGED WHERE POSSIBLE TO MINIMISE THE EROSION POTENTIAL.
- NO CLEARING SHALL BE UNDERTAKEN UNLESS PRECEDED OR ACCOMPANIED BY INSTALLATION OF ADEQUATE RUN-OFF AND SEDIMENT CONTROL MEASURES.
- CONSIDERATION SHOULD BE GIVEN TO THE FENCING-OFF, OR OTHERWISE CLEAR MARKING OF VEGETATION THAT IS NOT TO BE DISTURBED AT ANY GIVEN STAGE OF THE PROPOSED WORKS (INCLUDING ALONG ACCESS/ENTRY TRACKS).
- WHERE REHABILITATION OF VEGETATION IS REQUIRED, SIMILAR INDIGENOUS SPECIES SHALL BE USED WHERE POSSIBLE.
- NO TREES ARE TO BE REMOVED WITHOUT THE EXPRESS PERMISSION OF THE SUPERINTENDENT.

DISCHARGE WATER QUALITY AND FLOCCULATION

RECOMMENDED DISCHARGE STANDARD FOR DEWATERING OPERATIONS

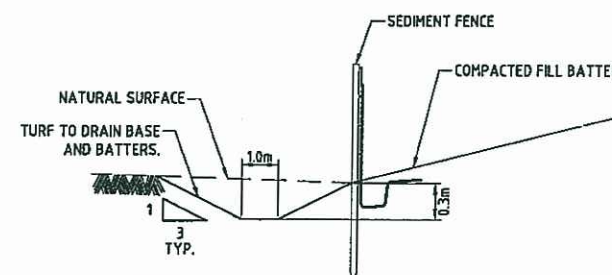
SITE CONDITIONS: POST-STORM DE-WATERING OF SEDIMENT BASINS

DISCHARGE WATER QUALITY STANDARD: 90 PERCENTILE TOTAL SUSPENDED SOLIDS (TSS) CONCENTRATION NOT EXCEEDING 50MG/L

- TYPICALLY TREATED/SETTLED WATER IN THE BASINS MUST BE DECANTED AS SOON AS A SUITABLE WATER QUALITY IS ACHIEVED. AS SUCH, AS SOON AS CONDITIONS ALLOW THE BASIN MUST BE MAINTAINED IN EITHER A DRY-BED CONDITION OR WITH A WATER LEVEL NO GREATER THAN THE TOP OF THE SEDIMENT STORAGE ZONE.
- ON OCCASION WHEN THE BASINS CANNOT BE DEWATERED PRIOR TO BEING SURCHARGED BY A FOLLOWING RAINFALL EVENT, THE OPERATOR MUST RECORD SUCH AN EVENT AND REPORT IT TO THE APPROPRIATE REGULATORY AUTHORITY. WHERE APPROPRIATE, ALTERNATIVE OPERATING PROCEDURES MAY NEED TO BE ADOPTED IN CONSULTATION WITH THE REGULATORY AUTHORITY IN ORDER TO ACHIEVE OPTIMUM ENVIRONMENTAL PROTECTION.
- APPROPRIATE FLOCCULATION OF THE SEDIMENT BASINS MAY BE REQUIRED IF COLLECTED WATER NEEDS TO BE RELEASED MORE FREQUENTLY THAN A TYPICAL 5 DAY SETTLING CYCLE WHERE THE WATER DOES NOT MET THE REQUIRED 50MG/L WATER QUALITY STANDARD FOR TSS.
- THE FLOCCULATING AGENT GYPSUM SHOULD BE APPLIED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. THE FLOCCULATING AGENT AND BASIN PERFORMANCE MUST THEN BE MONITORED FOR AT LEAST 2 STORM EVENTS TO DETERMINE IF ADJUSTMENT TO THE APPLICATION RATE AND METHOD OR BASIN OPERATION IS REQUIRED. IN ALL CASES, IF A FLOCCULANT IS USED, CHEMICAL ANALYSIS OF THE BASIN EFFLUENT MUST BE UNDERTAKEN TO ENSURE THE NO HARMFUL RESIDUAL LEVELS OF FLOCCULANT REMAIN WITHIN THE EFFLUENT.
- GYPSUM MUST BE SPREAD EVENLY OVER THE ENTIRE BASIN SURFACE. TYPICAL APPLICATION RATES OF 32KG/100M³ OF BASIN WATER SHOULD BE ADOPTED. IN CIRCUMSTANCES WHERE HIGH INTENSITY STORMS ARE LIKELY DOSAGE RATES SHOULD BE INCREASED TO 70KG/100M³ OF BASIN WATER.
- THE PH OF THE FLOCCULATED WATER MUST BE IN THE RANGE 6.5 TO 8.5 PH UNITS PRIOR TO DISCHARGE. IF THIS IS NOT ACHIEVED, PH ADJUSTMENT MAY BE NECESSARY BY DOSING WITH LIME TO RAISE PH LEVELS OR CITRIC ACID TO LOWER PH LEVELS.
- THE FINAL APPLICATION RATE MUST BE SUFFICIENTLY HIGH TO PERMIT SEDIMENT FLOCCULATION AND POND DISCHARGE WITHIN TWO TO FOUR DAYS FROM THE CONCLUSION OF EACH STORM EVENT, WHILST MAINTAINING OTHER REQUIRED WATER QUALITY CRITERIA SUCH AS PH.

SEDIMENT BASIN MAINTENANCE

- SEDIMENT BASINS SHOULD BE INSPECTED DURING THE FOLLOWING PERIODS:
 - DURING CONSTRUCTION TO DETERMINE WHETHER MACHINERY OR CONSTRUCTION ACTIVITIES HAVE DAMAGED ANY COMPONENTS OF THE SEDIMENT BASIN. IF DAMAGE HAS OCCURRED, FIX IT;
 - AFTER EACH RUNOFF EVENT. INSPECT THE EROSION DAMAGE AT FLOW ENTRY AND EXIT POINTS;
 - AT LEAST WEEKLY DURING THE WET SEASON AND THEN FORTNIGHTLY AFTER THAT;
 - PRIOR TO, AND IMMEDIATELY AFTER, PERIODS OF "STOP WORK" OR SITE SHUT DOWN.
- CLEAN OUT ACCUMULATED SEDIMENT WHEN IT REACHES THE MARKER BOARD/POST, AND RESTORE THE ORIGINAL STORAGE VOLUME. PLACE SEDIMENT IN A DISPOSAL AREA OR IF APPROPRIATE MIX WITH DRY SOIL ON SITE.
- DO NOT DISPOSE OF SEDIMENT IN A MANNER THAT WILL CREATE AN EROSION OR POLLUTION HAZARD.
- CHECK ALL VISIBLE PIPE CONNECTIONS FOR LEAKS, AND REPAIR AS NECESSARY.
- CHECK FILL MATERIAL IN THE DAM FOR EXCESSIVE SETTLEMENT, SLUMPING OF THE SLOPES OR PIPING BETWEEN THE CONDUIT AND THE EMBANKMENT, MAKE ALL NECESSARY REPAIRS.
- REMOVE ALL TRASH AND OTHER DEBRIS FROM THE BASIN.
- SUBMERGE INFLOW PIPES MUST BE INSPECTED AND DE-SILTED (AS REQUIRED) AFTER EACH

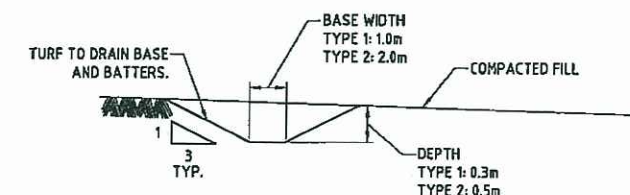


NOTES

- TURF TO BE MAINTAINED BETWEEN 50-150mm HIGH.
- PLACE PERMEABLE CHECK DAMS ACROSS DRAIN AT 50m MAXIMUM INTERVALS AND AT OUTLET OF DRAIN, OR AS REQUIRED TO CONTROL SEDIMENT MOVEMENT ALONG DRAIN.

CLEAN WATER DRAIN

N.T.S.

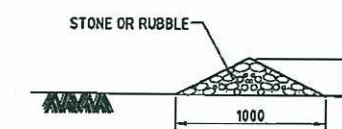


NOTES

- TURF TO BE MAINTAINED BETWEEN 50-150mm HIGH.
- PLACE PERMEABLE CHECK DAMS ACROSS DRAIN AT 50m MAXIMUM INTERVALS AND AT OUTLET OF DRAIN, OR AS REQUIRED TO CONTROL SEDIMENT MOVEMENT ALONG DRAIN.

CATCH DRAIN

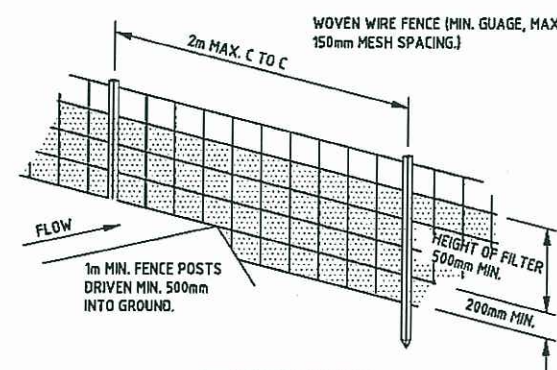
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PERMEABLE CHECK DAM

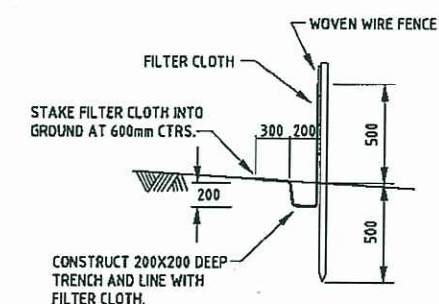
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PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8/11/10



PERSPECTIVE VIEW

N.T.S.

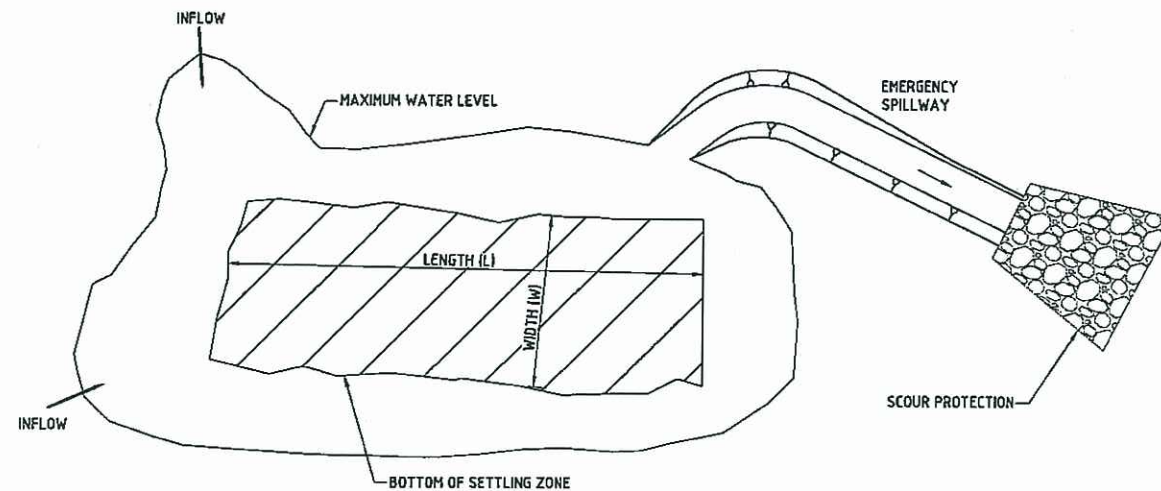


SEDIMENT FENCE DETAIL - TYP. SECTION

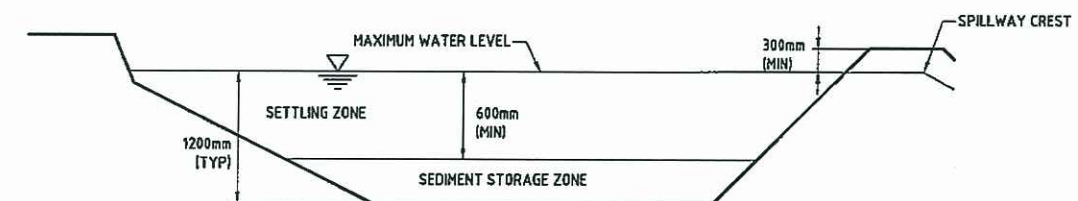
N.T.S.

ASSOCIATED CONSULTANTS 22/03/10 P1 P2 02/03/10 P1 P2 DATE REV DESCRIPTION		CLIENT URBAN LAND DEVELOPMENT AUTHORITY PROJECT BULK EARTHWORKS - BALANCE OF SITE LOCATION 253 TELEGRAPH ROAD, FITZGIBBON SHEET TITLE EROSION AND SEDIMENT CONTROL NOTES AND DETAILS		DESIGNED AL DRAWN AL CHECKED DATE DATE FEBRUARY 2010		APPROVED H. Howells KEITH HOWELLS STEPHEN HUGHES SCALE RPEQ 7295 RPEQ 7700		BRISBANE AUSTRALIA 555 CORONATION DRIVE, TOOWONG QLD 4066 PH: (07) 3371 7000 FAX: (07) 3371 5679 EMAIL: mail@etsgroup.net.au		SUNSHINE COAST 20 INNOVATION PARKWAY, BURTONIA QLD 4575 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL: mail.sc@etsgroup.net.au		PAPUA NEW GUINEA PORT MORESBY 6TH FLOOR CUTHBERTSON HOUSE, PO BOX 908 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7653 EMAIL: etupng@etsgroup.net.pg		ARCHITECTS - CIVIL & STRUCTURAL ENGINEERS ETS GROUP www.etsgroup.net.au		JOB CODE: ULDEFG SHEET NUMBER: C103 REV: P2 FORM E227 10 AUG 2006	
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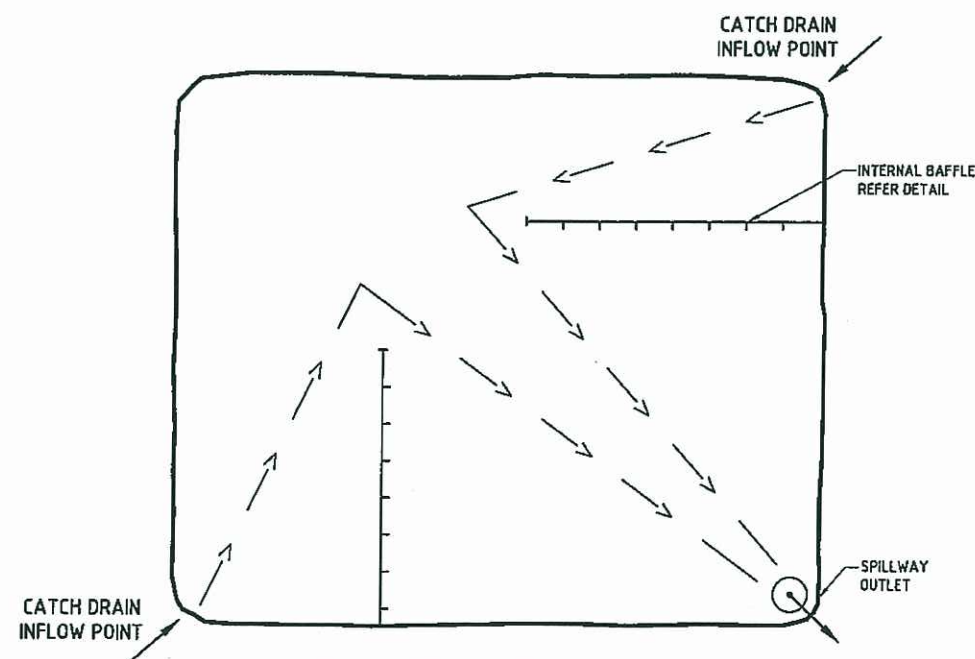
MINIMUM TEMPORARY SEDIMENT BASIN REQUIREMENTS (0.6m SETTLING DEPTH)										
BASIN NO.	Cv	Re-entrant side	TOTAL CATCHMENT AREA (ha)	SETTLING ZONE VOLUME (M ³)	SEDIMENT STORAGE VOLUME (M ³)	TOTAL BASIN VOLUME (M ³)	BASE L x W (m)	EMBANKMENT LEVEL	BASE LEVEL	WEIR LEVEL
A	0.43	33.9	5.41	789	42	831	26.3 X 26.3	9.80	8.30	9.50
B	0.43	33.9	1.50	219	13	232	13.9 X 13.9	9.30	7.80	9.00
C	0.43	33.9	0.90	131	8	139	18.7 X 6.2	9.30	7.80	9.00
D	0.43	33.9	4.17	608	68	676	23.7 X 23.7	10.30	8.80	10.00
E	0.43	33.9	1.95	284	13	297	15.8 X 15.8	9.30	7.80	9.00
F	0.43	33.9	4.18	609	138	747	24.9 X 24.9	10.30	8.80	10.00
G	0.43	33.9	10.08	1469	195	1664	37.2 X 37.2	11.30	9.80	11.00
H	0.43	33.9	6.30	918	113	1031	29.3 X 29.3	10.800	9.30	10.50



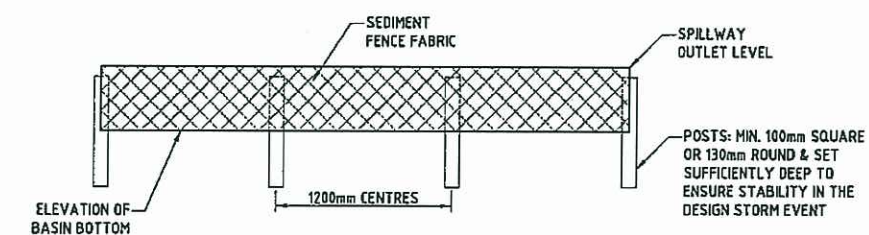
TYPE D SEDIMENT BASIN PLAN
NTS



TYPE D SEDIMENT BASIN SECTION
NTS



TYPICAL INTERNAL BAFFLE ARRANGEMENT
NTS



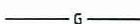
INTERNAL BAFFLE DETAIL
NTS

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8/4/10

ASSOCIATED CONSULTANTS -		CLIENT URBAN LAND DEVELOPMENT AUTHORITY		DESIGNED AL		APPROVED AL		DATE FEBRUARY 2010		BRISBANE AUSTRALIA 555 CORONATION DRIVE TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5978 EMAIL: mail@etgroup.net.au		SUNSHINE COAST 20 INNOVATION PARKWAY BIRTHNIA QLD 4575 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL: mail.sc@etgroup.net.au		JOB CODE: ULDEFG	
PROJECT BULK EARTHWORKS - BALANCE OF SITE		LOCATION 253 TELEGRAPH ROAD, FITZGIBBON		DRAWN AL		CHECKED DATE		SCALE DATE		PAPUA NEW GUINEA PORT MORESBY 5TH FLOOR CUTHBERTSON HOUSE PO BOX 905 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7653 EMAIL: etpnig@etgroup.net.pg		SHEET NUMBER: C104		REV: P2	
SHEET TITLE TEMPORARY SEDIMENT BASIN DETAILS		REVISIONS 22/05/10 P2 UPDATED BASIN DETAILS 02/02/10 P1 PRELIMINARY ISSUE		DATE FEBRUARY 2010		ARCHITECTS CIVIL & STRUCTURAL ENGINEERS		ETS GROUP www.etgroup.net.au		FORM E027 10 AUG 2009		Copyright		10 AUG 2009	



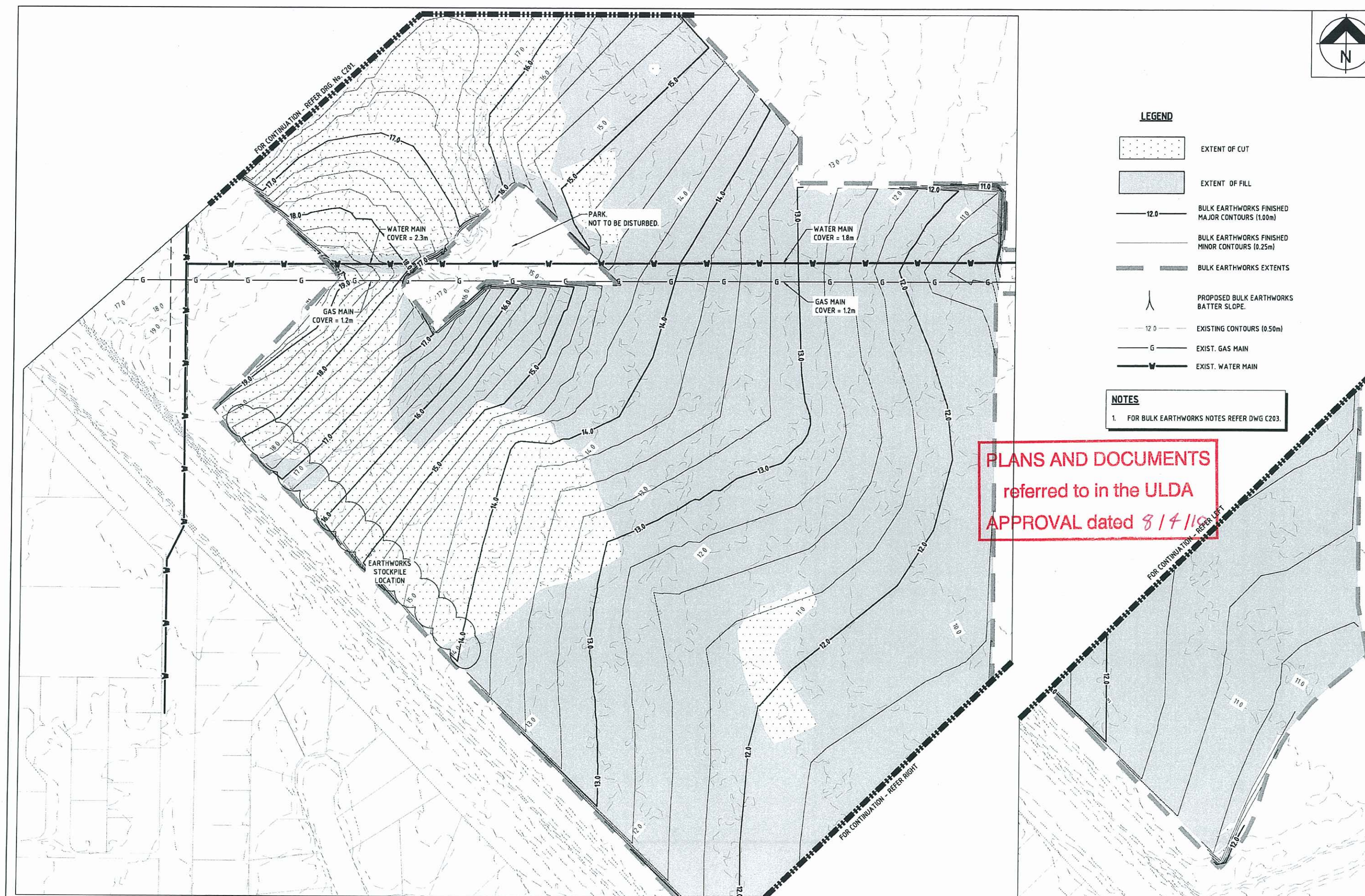
LEGEND

-  EXTENT OF CUT
-  EXTENT OF FILL
-  BULK EARTHWORKS FINISHED MAJOR CONTOURS (1.00m)
-  BULK EARTHWORKS FINISHED MINOR CONTOURS (0.25m)
-  BULK EARTHWORKS EXTENTS
-  PROPOSED BULK EARTHWORKS BATTER SLOPE.
-  EXISTING CONTOURS (0.50m)
-  EXIST. GAS MAIN
-  EXIST. WATER MAIN

NOTES

1. FOR BULK EARTHWORKS NOTES REFER DWG C203.

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8/4/10



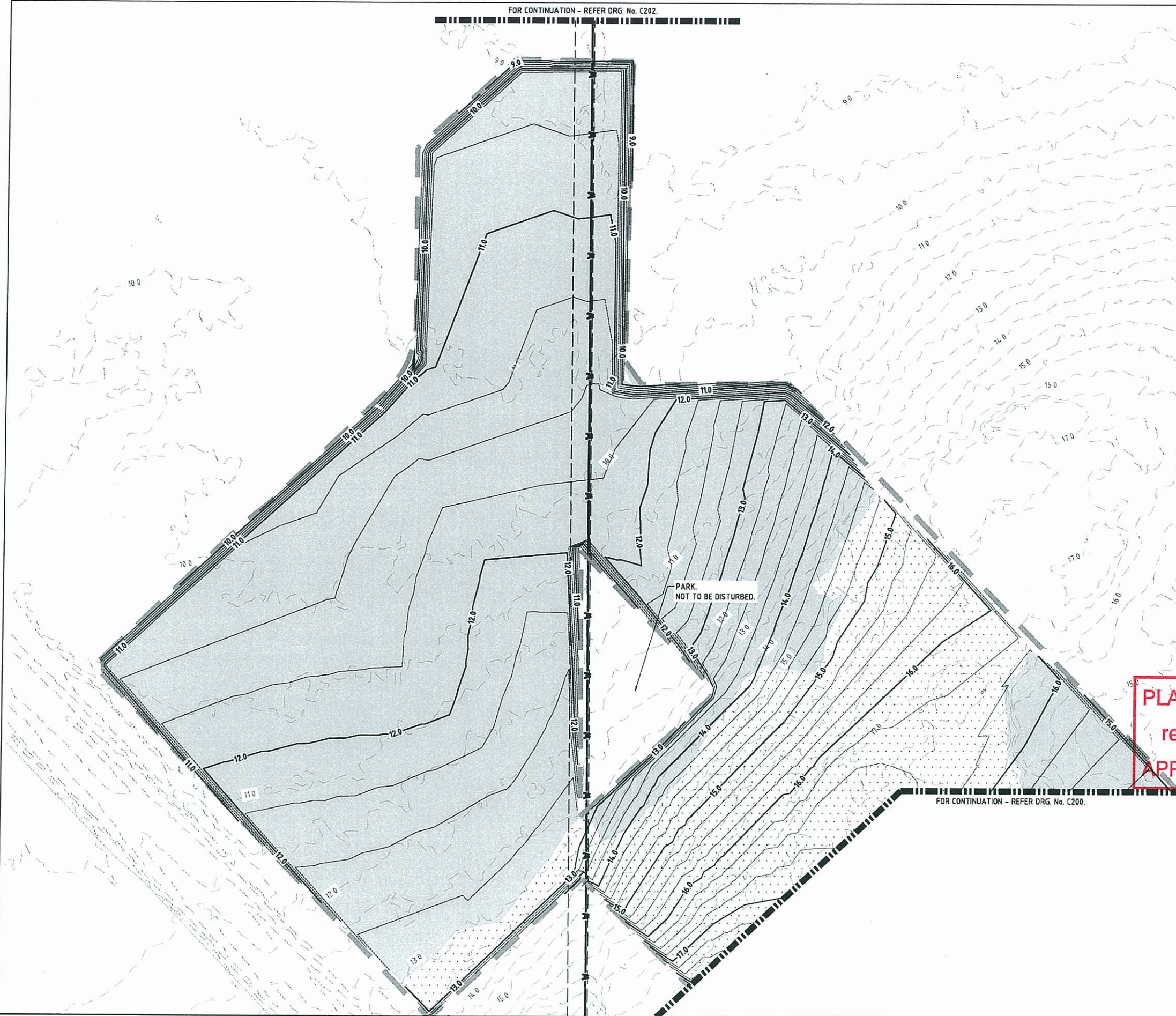
ASSOCIATED CONSULTANTS		CLIENT URBAN LAND DEVELOPMENT AUTHORITY		DESIGNED AL		APPROVED <i>[Signature]</i> DATE RPEQ 7295		BRISBANE 555 CORONATION DRIVE, TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5679 EMAIL: mail@etsgroup.net.au		SUNSHINE COAST 20 INNOVATION PARKWAY BIRTHNYA QLD 4575 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL: mail.sc@etsgroup.net.au		JOB CODE: ULDEFG	
PROJECT BULK EARTHWORKS - BALANCE OF SITE		LOCATION 253 TELEGRAPH ROAD, FITZGIBBON		DRAWN AL		CHECKED DATE		PAPUA NEW GUINEA 5TH FLOOR CUTHBERTSON HOUSE PO BOX 908 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7653 EMAIL: etspng@datac.net.pg		ARCHITECTS CIVIL & STRUCTURAL ENGINEERS		SHEET NUMBER: C200	
SHEET TITLE BULK EARTHWORKS LAYOUT PLAN - SHEET 1 OF 3		DATE FEBRUARY 2010		SCALE 1:1000 (A1)		SCALE 0 20 40 60m		ARCHITECTS CIVIL & STRUCTURAL ENGINEERS		FORM E927 10 AUG 2009		REV: P2	

FOR CONTINUATION - REFER DRG. No. C202.



LEGEND

-  EXTENT OF CUT
-  EXTENT OF FILL
-  BULK EARTHWORKS FINISHED MAJOR CONTOURS (1.00m)
-  BULK EARTHWORKS FINISHED MINOR CONTOURS (0.25m)
-  BULK EARTHWORKS EXTENTS
-  PROPOSED BULK EARTHWORKS BATTER SLOPE.
-  EXISTING CONTOURS (0.50m)
-  EXIST. GAS MAIN
-  EXIST. WATER MAIN



PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8/4/10

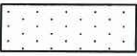
NOTES

1. FOR BULK EARTHWORKS NOTES REFER DWG C203.

ASSOCIATED CONSULTANTS 22/03/10 02/03/10 DATE REV DESCRIPTION CHANGED OPEN SPACE TO PARK PRELIMINARY ISSUE APPROVED KPH KPH		CLIENT URBAN LAND DEVELOPMENT AUTHORITY PROJECT BULK EARTHWORKS - BALANCE OF SITE LOCATION 253 TELEGRAPH ROAD, FITZGIBBON SHEET TITLE BULK EARTHWORKS LAYOUT PLAN - SHEET 2 OF 3	DESIGNED AL DRAWN AL CHECKED DATE DATE FEBRUARY 2010	APPROVED  KEITH HOWELLS STEPHEN HUGHES RPEQ 7295 RPEQ 7700 SCALE 0 20 40 60m SCALE 1:1000 (A1)	BRISBANE AUSTRALIA 555 CORONATION DRIVE TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5678 EMAIL: mail@etsgroup.net.au SUNSHINE COAST 20 INNOVATION PARKWAY BIRINYA QLD 4575 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL: mail.sc@etsgroup.net.au PAPA NEW GUINEA 5TH FLOOR CUTHBERTSON HOUSE PO BOX 908 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7553 EMAIL: etspng@datec.net.pg ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS	JOB CODE: ULDEFG SHEET NUMBER: C201 REV: P2 FORM E027 10 AUG 2009
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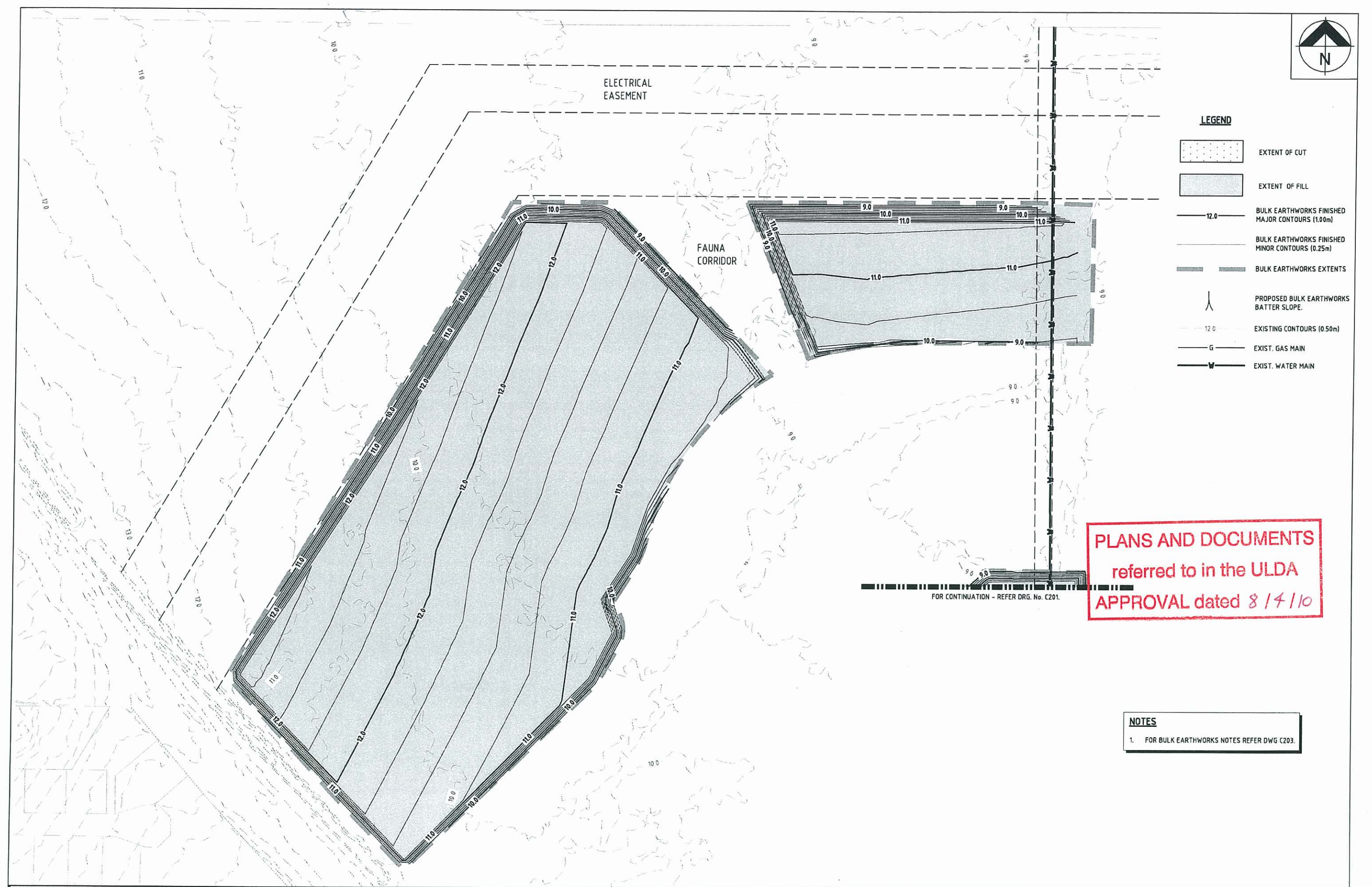
LEGEND

-  EXTENT OF CUT
-  EXTENT OF FILL
-  BULK EARTHWORKS FINISHED MAJOR CONTOURS (1.00m)
-  BULK EARTHWORKS FINISHED MINOR CONTOURS (0.25m)
-  BULK EARTHWORKS EXTENTS
-  PROPOSED BULK EARTHWORKS BATTER SLOPE
-  EXISTING CONTOURS (0.50m)
-  EXIST. GAS MAIN
-  EXIST. WATER MAIN

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8 / 4 / 10

NOTES

1. FOR BULK EARTHWORKS NOTES REFER DWG C201.



ASSOCIATED CONSULTANTS 22/03/10 02/03/10 DATE P2 P1 REV CHANGED OPEN SPACE TO PARK PRELIMINARY ISSUE DESCRIPTION KPH KPH APPROVED REVISIONS		CLIENT URBAN LAND DEVELOPMENT AUTHORITY PROJECT BULK EARTHWORKS - BALANCE OF SITE LOCATION 253 TELEGRAPH ROAD, FITZGIBBON SHEET TITLE BULK EARTHWORKS LAYOUT PLAN - SHEET 3 OF 3		DESIGNED AL DRAWN AL CHECKED _____ DATE _____ DATE FEBRUARY 2010		APPROVED  KEITH HOWELLS STEPHEN HUGHES RPEQ 7295 RPEQ 7700 SCALE 0 20 40 60m SCALE 1:1000 (A1)		BRISBANE 555 CORONATION DRIVE TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5679 EMAIL: mail@etsgroup.net.au AUSTRALIA 20 INNOVATION PARKWAY BIRINYA QLD 4575 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL: mail.sc@etsgroup.net.au PAPUA NEW GUINEA 5TH FLOOR CUTHBERTSON HOUSE PO BOX 908 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7553 EMAIL: etspng@etatec.net.pg ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS		 ETS GROUP www.etsgroup.net.au JOB CODE: ULDEFG SHEET NUMBER: C202 REV: P2 FORM E627 10 AUG 2009	
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NOTES

1. LOCATION & LEVELS OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
2. EARTHWORKS DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE EROSION AND SEDIMENT CONTROL LAYOUT PLANS C100, C101 & C102 AND THE EROSION AND SEDIMENT CONTROL NOTES AND DETAILS ON DRG. No. C103.
3. ALL EARTHWORKS TO BE CARRIED OUT UNDER 'LEVEL ONE' GEOTECHNICAL CONTROL IN ACCORDANCE WITH LOCAL AUTHORITIES AND AS3798.
4. EXCESS CUT TO BE STOCKPILED IN THE LOCATION SHOWN OR AS DIRECTED ON SITE.
5. ALL BATTERS ARE 1 IN 4 UNLESS SHOWN OTHERWISE.

TESTING

1. THE SUPERINTENDENT MAY ORDER ADDITIONAL TESTS. REFER TO THE LOCAL AUTHORITIES SPECIFICATION FOR STANDARDS OF COMPACTION AND MATERIAL STANDARDS.

EARTHWORKS TESTING

1. COMPACTION TESTS

LOCATION	AREA PER TEST
FINISHED LEVEL OR ROAD SUBGRADE (IN CUT OR FILL)	REFER TO THE LOCAL AUTHORITY SPECIFICATION
LOWEST TWO LEVELS OF EMBANKMENT (PER LAYER)	
OTHER LAYERS OF EMBANKMENT (PER LAYER)	
PREPARED NATURAL GROUND UNDER EMBANKMENT	

2. QUALITY TESTS

QUALITY TESTS OF IMPORTED MATERIAL ARE REQUIRED AS SET OUT BY LOCAL AUTHORITY.

3. SUBGRADE TESTS

THE NUMBER AND LOCATION OF PAVEMENT SUBGRADE TESTS SHALL BE AS DETERMINED BY THE SUPERINTENDENT WHO SHALL RECOMMEND CBR VALUES TO BE USED IN ROAD PAVEMENT DESIGN. THE NUMBER AND TYPES OF CBR TESTS SHALL BE DETERMINED BY THE SOILS TESTING CONSULTANT TO BEST REPRESENT THE CONDITION OF THE SUBGRADE EXPECTED IN SERVICE.

DUST

1. NO VISIBLE DUST EMISSIONS MUST OCCUR AT THE BOUNDARIES OF THE SITE DURING EARTHWORKS AND CONSTRUCTION ACTIVITIES ON THE SITE.
2. THE CONTRACTOR TO PROVIDE A WATER TRUCK AS REQUIRED TO ELIMINATE THE DUST PROBLEM CAUSED BY SITE TRAFFIC.

CONDUITS

1. THE CONTRACTOR IS TO CONFIRM THE LOCATION OF SERVICE CONDUITS WITH THE SUPERINTENDENT PRIOR TO LAYING.

FILL MANAGEMENT

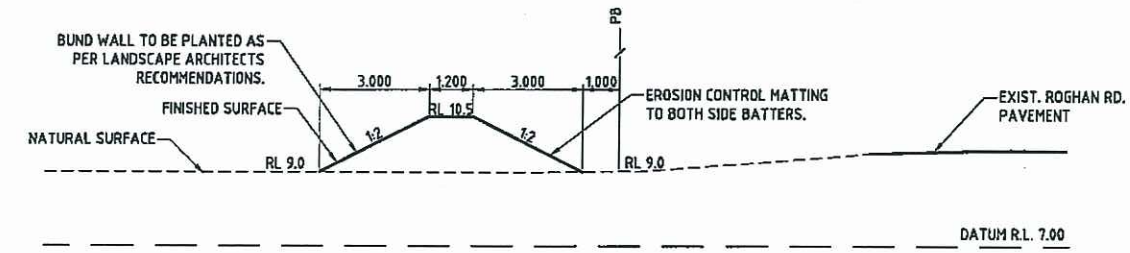
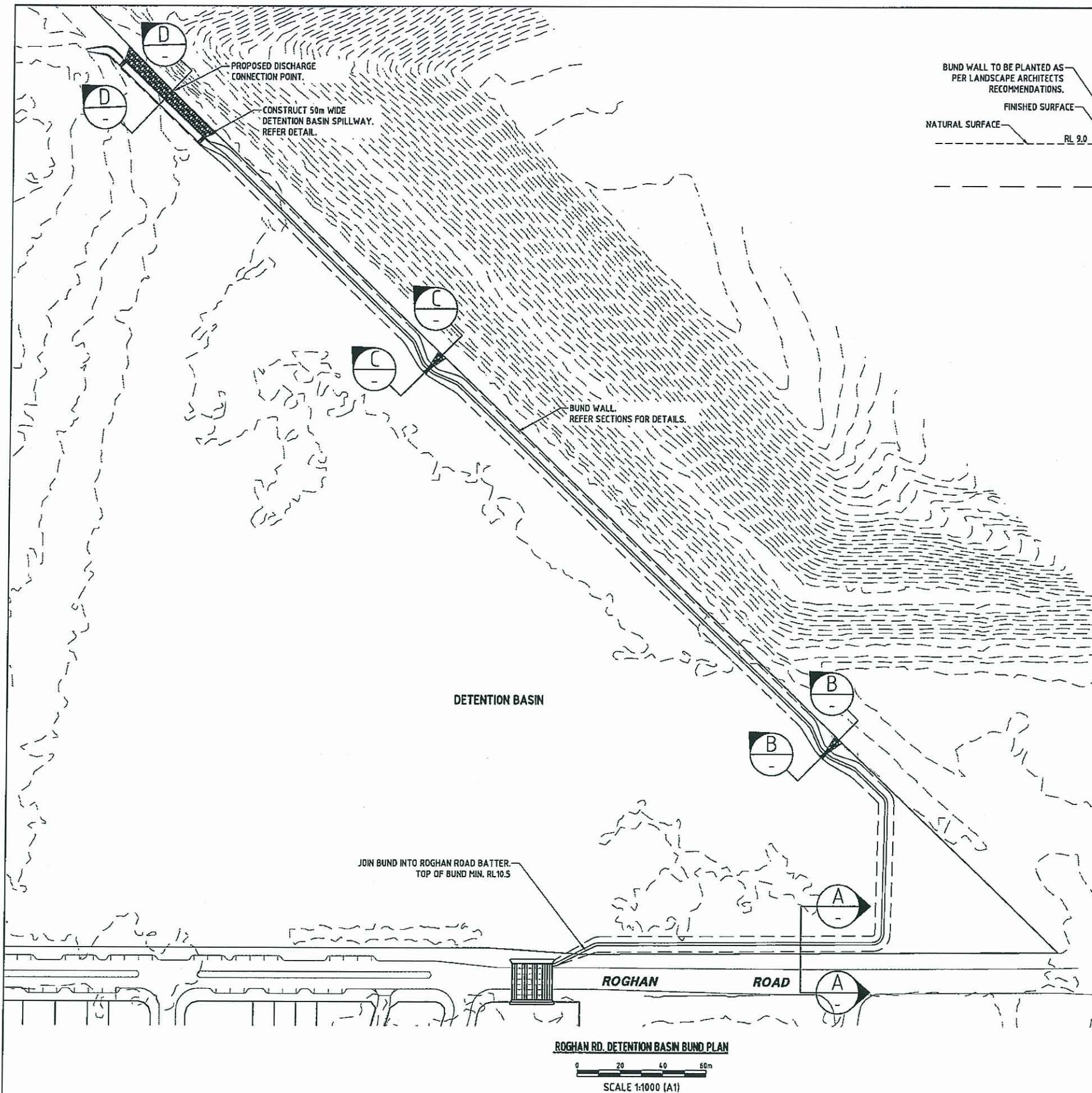
1. FILL MANAGEMENT NOTES RELATE TO BULK EARTHWORKS DRAWINGS C200, C201 & C202.
2. ALL FILL MATERIAL WILL BE PLACED IN ACCORDANCE WITH THE APPROVED SPECIFICATION.
3. THE FILL MATERIAL WILL COMPRISE ONLY OF NATURAL EARTH AND ROCK AND SHALL BE FREE OF ALL CONTAMINATES, NOXIOUS, HAZARDOUS, DELETERIOUS AND ORGANIC MATERIAL.
4. ALL SITE PREPARATION WORK SHOULD GENERALLY BE CARRIED OUT IN ACCORDANCE WITH AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS'.
5. THE SITE SHOULD BE STRIPPED OF ANY TOPSOIL FROM CUT AND FILL AREAS, ROAD ALIGNMENTS AND CARPARKING AREAS, AND STOCKPILED FOR LATER USE.
6. PRIOR TO THE PLACEMENT OF ANY STRUCTURAL FILL THE SITE SHOULD BE PROOF ROLLED USING A MINIMUM 10 TONNE (STATIC WEIGHT) PADFOOT ROLLER. ANY LOOSE OR SOFT AREAS SHOULD BE REMOVED AND RECOMPACTED OR REPLACED USING A COMPACTED SELECT FILL.
7. DEPRESSIONS FORMED BY THE REMOVAL OR VEGETATION, EXISTING STRUCTURES, UNDERGROUND SERVICES ETC, SHOULD HAVE ALL DISTURBED SOIL CLEANED OUT AND BE BACKFILLED WITH COMPACTED SELECT FILL MATERIAL.
8. ANY STRUCTURAL CLAY FILL SHOULD BE PLACED IN LOOSE LAYERS NOT GREATER THAN 200mm THICK AT A MOISTURE

CONTENT IN THE RANGE -2% TO +3% OF THE STANDARD OPTIMUM MOISTURE CONTENT, AND BE COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 98% UNDER STANDARD COMPACTION AS PER (AS1289 5.1.1/5.2.1). CLAY FILL SHOULD BE COMPACTED USING A MINIMUM 10 TONNE VIBRATING PADFOOT ROLLER. MEASURES SHOULD BE ADOPTED TO ENSURE THAT CLAY FILL MATERIAL IS NOT ALLOWED TO DRY OUT PRIOR TO THE PLACEMENT OF SUCCEEDING LAYERS OF FILL AND FINAL COVERING WITH BUILDING SLABS AND ROAD PAVEMENTS.

9. ANY STRUCTURAL, FREE DRAINING SAND FILL SHOULD BE PLACED IN LOOSE LAYERS NOT GREATER THAN 200mm THICK, FLOODED, IF NECESSARY, AND COMPACTED TO A MINIMUM DENSITY INDEX OF 70% AS PER AS1289 5.5.1 USING A STATIC SMOOTH ROLLER DRUM NOT LESS THAN 10 TONNE IN STATIC WEIGHT.
10. THE PLACEMENT OF ALL STRUCTURAL FILL TO BE INSPECTED, TESTED AND CERTIFIED BY A GEOTECHNICAL ENGINEER TO A LEVEL 1 REQUIREMENT DURING THE EARTHWORKS OPERATIONS TO ENSURE THAT ALL FILL IS PLACED IN A 'CONTROLLED MANNER', IN ACCORDANCE WITH AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS'.
11. THE PLACEMENT OF FILL TO BE EXECUTED SUCH THAT TO BE FREE DRAINING AT ALL TIMES AND NOT TO BE A NUISANCE OR PONDING TO ADJOINING PROPERTY OR ROADS.
12. NO DEMOLITION MATERIAL TO BE USED AS FILL MATERIAL.
13. WHERE UNSUITABLE MATERIAL IN AREAS OF FILL IS ENCOUNTERED, THIS WILL BE TREATED AS SET OUT IN THE EARTHWORK SPECIFICATION.
14. ALL VEHICLES EXITING FROM THE SITE TO BE CLEAN TO PREVENT MATERIAL BEING TRACKED OR DEPOSITED ON THE ADJOINING PUBLIC ROADS, REFER ENVIRONMENTAL MANAGEMENT NOTES ON DRG. No. C103.
15. ACCESS TRACKS THROUGH THE SITE WILL BE LIMITED TO THOSE DETERMINED BY THE SUPERINTENDENT AND THE CONTRACTOR PRIOR TO ANY WORK COMMENCING.

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8/1/10

ASSOCIATED CONSULTANTS		CLIENT URBAN LAND DEVELOPMENT AUTHORITY		DESIGNED AL		APPROVED DATE		BRISBANE AUSTRALIA		SUNSHINE COAST		JOB CODE: ULDEFG	
PROJECT BULK EARTHWORKS - BALANCE OF SITE		LOCATION 253 TELEGRAPH ROAD, FITZGIBBON		DRAWN AL		CHECKED DATE		555 CORONATION DRIVE TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5670 EMAIL: mail@etsgroup.net.au		20 INNOVATION PARKWAY BIRNIEVA QLD 4575 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL: mail@etsgroup.net.au		SHEET NUMBER: C203	
SHEET TITLE BULK EARTHWORKS NOTES AND DETAILS		DATE FEBRUARY 2010		SCALE		PAPUA NEW GUINEA PORT MORESBY 5TH FLOOR CUTHBERTSON HOUSE PO BOX 608 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7653 EMAIL: etspng@etsgroup.net.au		ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS		www.etsgroup.net.au		REV: P2	
31/03/10 P2 AMENDED NOTES PRELIMINARY DUE		DATE REV DESCRIPTION		DATE		DATE		ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS		ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS		FORM E227 10 AUG 2009	



SECTION A-A
SCALE 1:100 (A1)

NOTES

1. BUND WALL TO BE CONSTRUCTED FROM CLAY FILL AND COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 95%.

TESTING

1. THE SUPERINTENDENT MAY ORDER ADDITIONAL TESTS. REFER TO THE LOCAL AUTHORITIES SPECIFICATION FOR STANDARDS OF COMPACTION AND MATERIAL STANDARDS.

EARTHWORKS TESTING

1. COMPACTION TESTS

LOCATION	AREA PER TEST
FINISHED LEVEL OR ROAD SUBGRADE (IN CUT OR FILL)	REFER TO THE LOCAL AUTHORITY SPECIFICATION
LOWEST TWO LEVELS OF EMBANKMENT (PER LAYER)	
OTHER LAYERS OF EMBANKMENT (PER LAYER)	
PREPARED NATURAL GROUND UNDER EMBANKMENT	

2. QUALITY TESTS
QUALITY TESTS OF IMPORTED MATERIAL ARE REQUIRED AS SET OUT BY LOCAL AUTHORITY.

DUST

1. NO VISIBLE DUST EMISSIONS MUST OCCUR AT THE BOUNDARIES OF THE SITE DURING EARTHWORKS AND CONSTRUCTION ACTIVITIES ON THE SITE.
2. THE CONTRACTOR TO PROVIDE A WATER TRUCK AS REQUIRED TO ELIMINATE THE DUST PROBLEM CAUSED BY SITE TRAFFIC.

CONDUITS

1. THE CONTRACTOR IS TO CONFIRM THE LOCATION OF SERVICE CONDUITS WITH THE SUPERINTENDENT PRIOR TO LAYING.

FILL MANAGEMENT

1. EARTHWORKS LIMITS OF CUTTING AND FILLING AS SHOWN ON THE DRAWING TO BE VERIFIED ON SITE. THE ACTUAL LIMITS TO BE DETERMINED ON SITE BY THE SUPERINTENDENT DURING CONSTRUCTION.
2. ALL FILL MATERIAL WILL BE PLACED IN ACCORDANCE WITH THE APPROVED SPECIFICATION.
3. THE FILL MATERIAL WILL COMPRISE ONLY OF NATURAL EARTH AND ROCK AND SHALL BE FREE OF ALL CONTAMINATES, NOXIOUS, HAZARDOUS, DELETERIOUS AND ORGANIC MATERIAL.
4. ALL SITE PREPARATION WORK SHOULD GENERALLY BE CARRIED OUT IN ACCORDANCE WITH AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS'.
5. THE SITE SHOULD BE STRIPPED OF ANY TOPSOIL FROM CUT AND FILL AREAS, ROAD ALIGNMENTS AND CARPARKING AREAS, AND STOCKPILED FOR LATER USE.
6. PRIOR TO THE PLACEMENT OF ANY STRUCTURAL FILL THE SITE SHOULD BE PROOF ROLLED USING A MINIMUM 10 TONNE (STATIC WEIGHT) PADFOOT ROLLER. ANY LOOSE OR SOFT AREAS SHOULD BE REMOVED AND RECOMPACTED OR REPLACED USING A COMPACTED SELECT FILL.
7. DEPRESSIONS FORMED BY THE REMOVAL OR VEGETATION, EXISTING STRUCTURES, UNDERGROUND SERVICES ETC, SHOULD HAVE ALL DISTURBED SOIL CLEANED OUT AND BE BACKFILLED WITH COMPACTED SELECT FILL MATERIAL.

PLANS AND DOCUMENTS
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APPROVAL dated 8/4/10

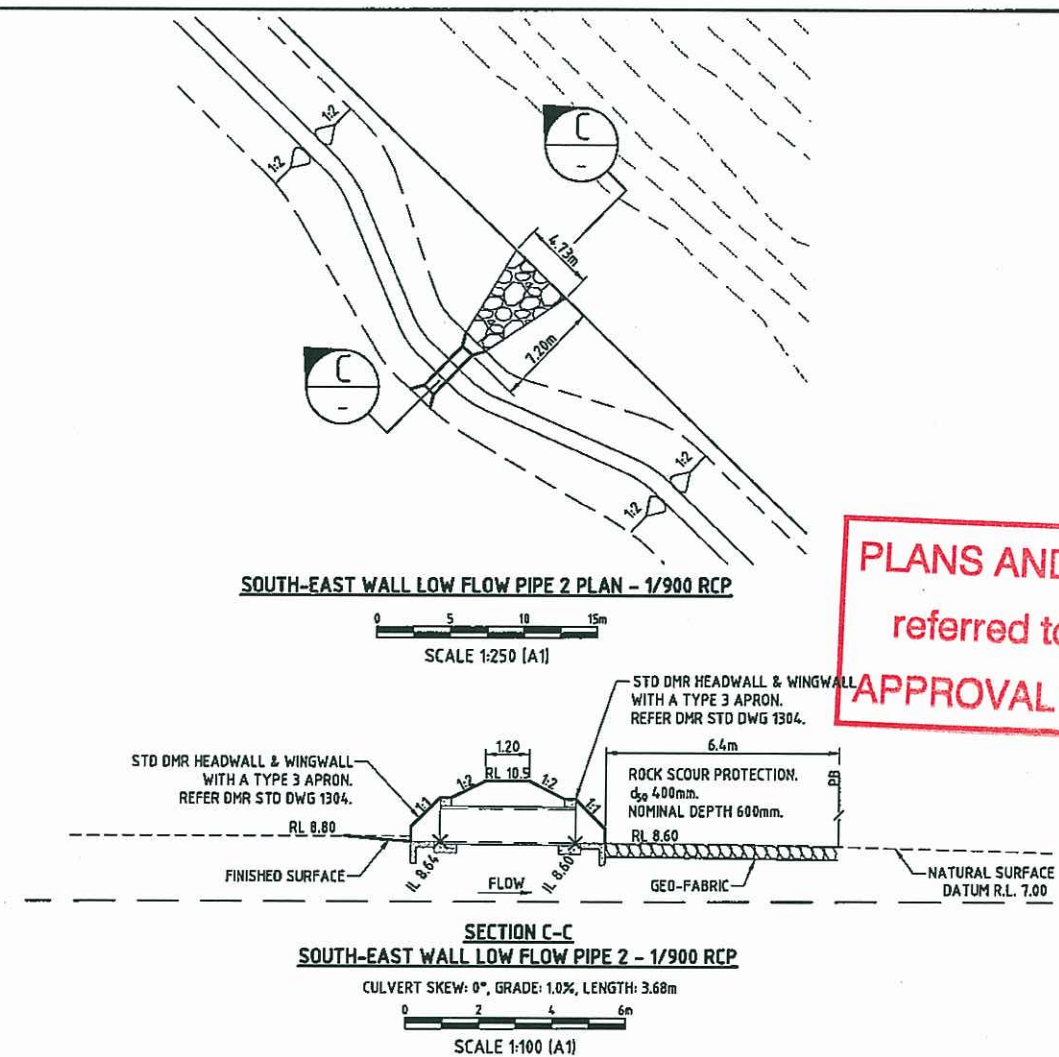
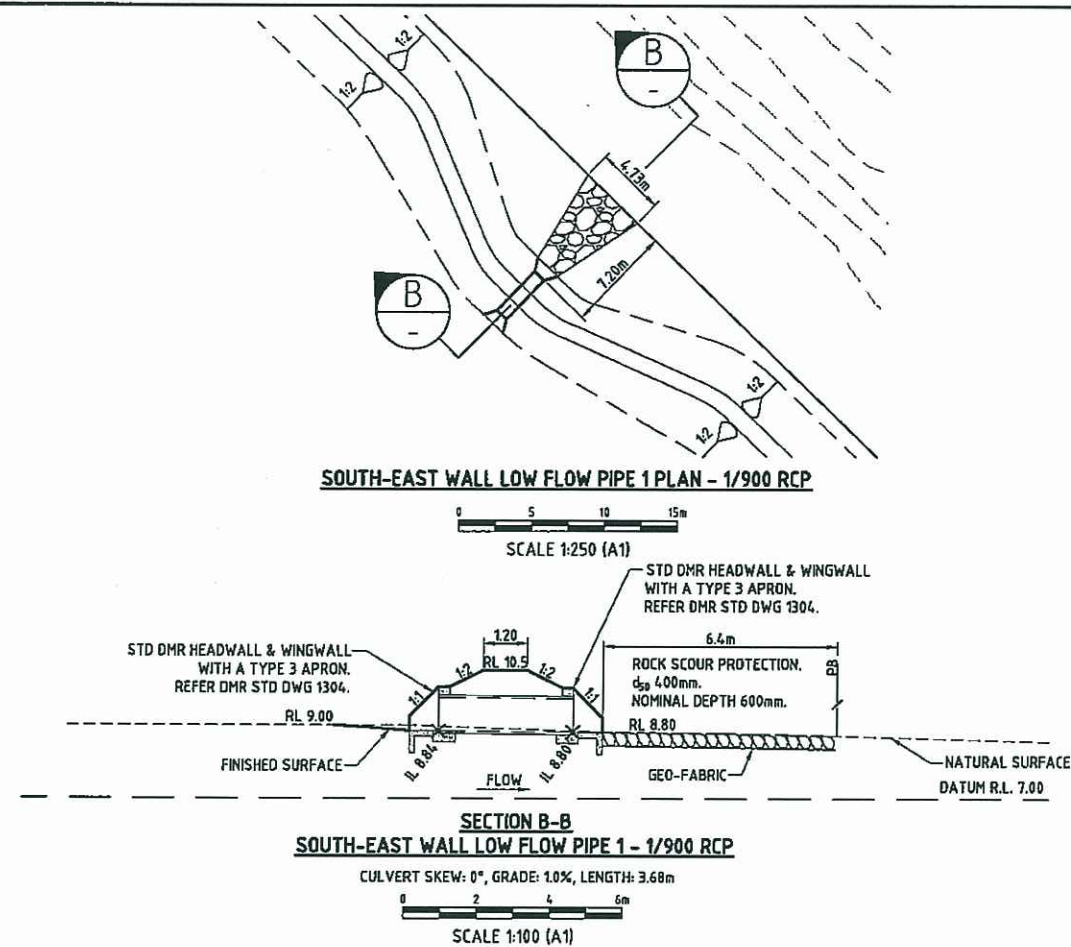
8. ANY STRUCTURAL CLAY FILL SHOULD BE PLACED IN LOOSE LAYERS NOT GREATER THAN 200mm THICK AT A MOISTURE CONTENT IN THE RANGE -2% TO +3% OF THE STANDARD OPTIMUM MOISTURE CONTENT, AND BE COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 98% UNDER STANDARD COMPACTION AS PER (AS1289 5.1.1/5.2.1). CLAY FILL SHOULD BE COMPACTED USING A MINIMUM 10 TONNE VIBRATING PADFOOT ROLLER. MEASURES SHOULD BE ADOPTED TO ENSURE THAT CLAY FILL MATERIAL IS NOT ALLOWED TO DRY OUT PRIOR TO THE PLACEMENT OF SUCCEEDING LAYERS OF FILL AND FINAL COVERING WITH BUILDING SLABS AND ROAD PAVEMENTS.
9. ANY STRUCTURAL, FREE DRAINING SAND FILL SHOULD BE PLACED IN LOOSE LAYERS NOT GREATER THAN 200mm THICK, FLOODED, IF NECESSARY, AND COMPACTED TO A MINIMUM DENSITY INDEX OF 70% AS PER AS1289 5.5.1 USING A STATIC SMOOTH ROLLER DRUM NOT LESS THAN 10 TONNE IN STATIC WEIGHT.
10. THE PLACEMENT OF ALL STRUCTURAL FILL TO BE INSPECTED, TESTED AND CERTIFIED BY A GEOTECHNICAL ENGINEER TO A LEVEL 1 REQUIREMENT DURING THE EARTHWORKS OPERATIONS TO ENSURE THAT ALL FILL IS PLACED IN A 'CONTROLLED MANNER', IN ACCORDANCE WITH AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS'.
11. THE PLACEMENT OF FILL TO BE EXECUTED SUCH THAT TO BE FREE DRAINING AT ALL TIMES AND NOT TO BE A NUISANCE OR PONDING TO ADJOINING PROPERTY OR ROADS.
12. NO DEMOLITION MATERIAL TO BE USED AS FILL MATERIAL.
13. WHERE UNSUITABLE MATERIAL IN AREAS OF FILL IS ENCOUNTERED, THIS WILL BE TREATED AS SET OUT IN THE EARTHWORK SPECIFICATION.
14. ALL VEHICLES EXITING FROM THE SITE TO BE CLEAN TO PREVENT MATERIAL BEING TRACKED OR DEPOSITED ON THE ADJOINING PUBLIC ROADS.
15. ACCESS TRACKS THROUGH THE SITE WILL BE LIMITED TO THOSE DETERMINED BY THE SUPERINTENDENT AND THE CONTRACTOR PRIOR TO ANY WORK COMMENCING.

ROGHAN RD. DETENTION BASIN BUND PLAN
SCALE 1:1000 (A1)

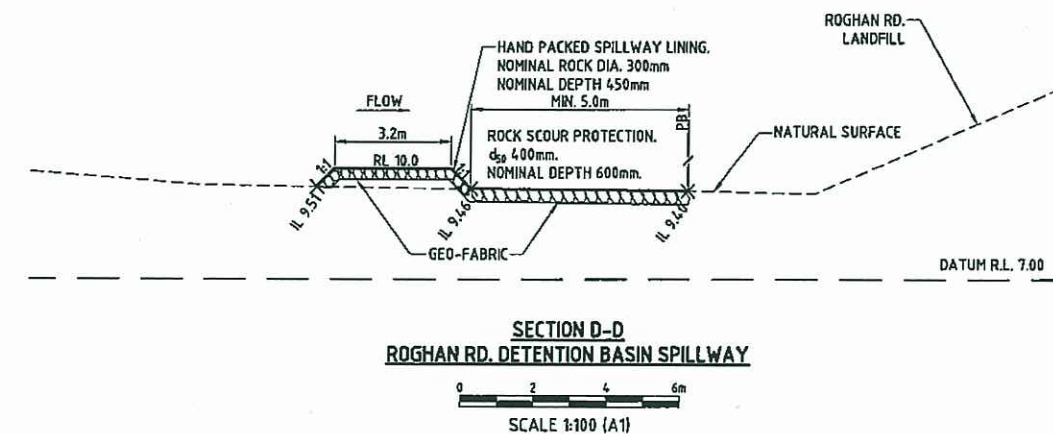
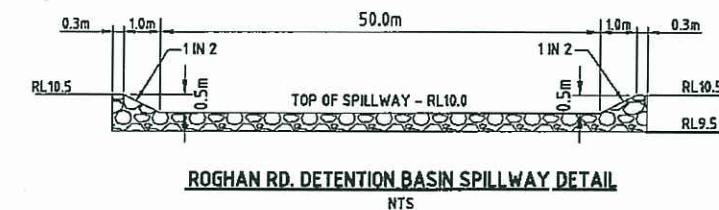
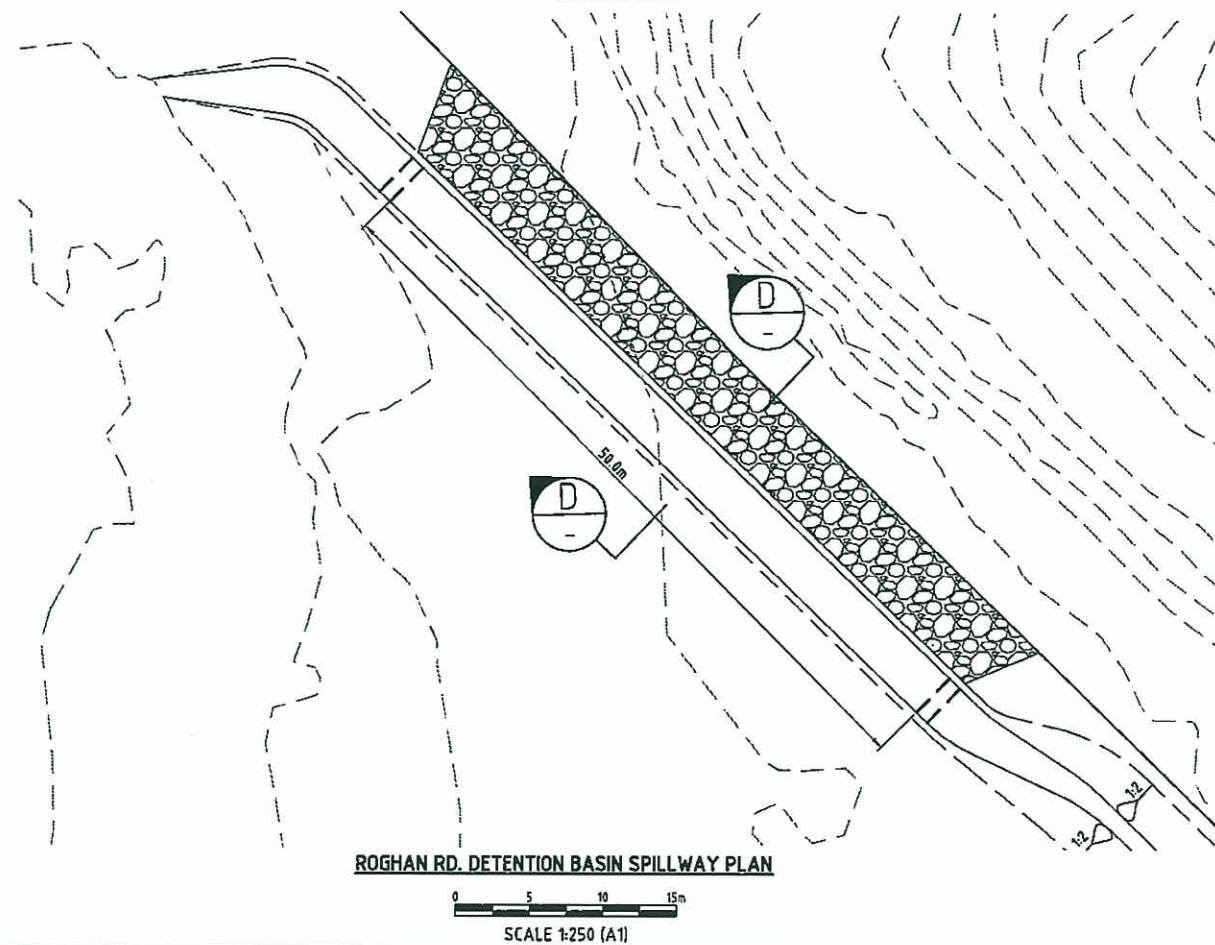
ASSOCIATED CONSULTANTS 22/03/10 P1 PRELIMINARY ISSUE DATE REV DESCRIPTION APPROVED		CLIENT URBAN LAND DEVELOPMENT AUTHORITY PROJECT BULK EARTHWORKS - BALANCE OF SITE LOCATION 253 TELEGRAPH ROAD, FITZGIBBON SHEET TITLE ROGHAN RD DETENTION BASIN BUND DETAILS SHEET 1 OF 2		DESIGNED AL DRAWN AL CHECKED DATE DATE FEBRUARY 2010		APPROVED [Signature] KEITH HOWELL STEPHEN HUGHES RPEQ 7265 RP-EG 7700 SCALE AS SHOWN		BRISBANE AUSTRALIA 555 CORONATION DRIVE TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5578 EMAIL - mail@etsgroup.net.au SUNSHINE COAST 20 INNOVATION PARKWAY BRIMLEY QLD 4515 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL - mail.sc@etsgroup.net.au PAPA NEW GUINEA PORT MORESBY 5TH FLOOR CUTHBERTSON HOUSE PO BOX 908 TELEPHONE (875) 321 1333 FACSIMILE (875) 321 7653 EMAIL - etsprg@datac.net.pg		JOB CODE: ULDEFG SHEET NUMBER: C204 REV: P1 FORM E027 10 AUG 2008	
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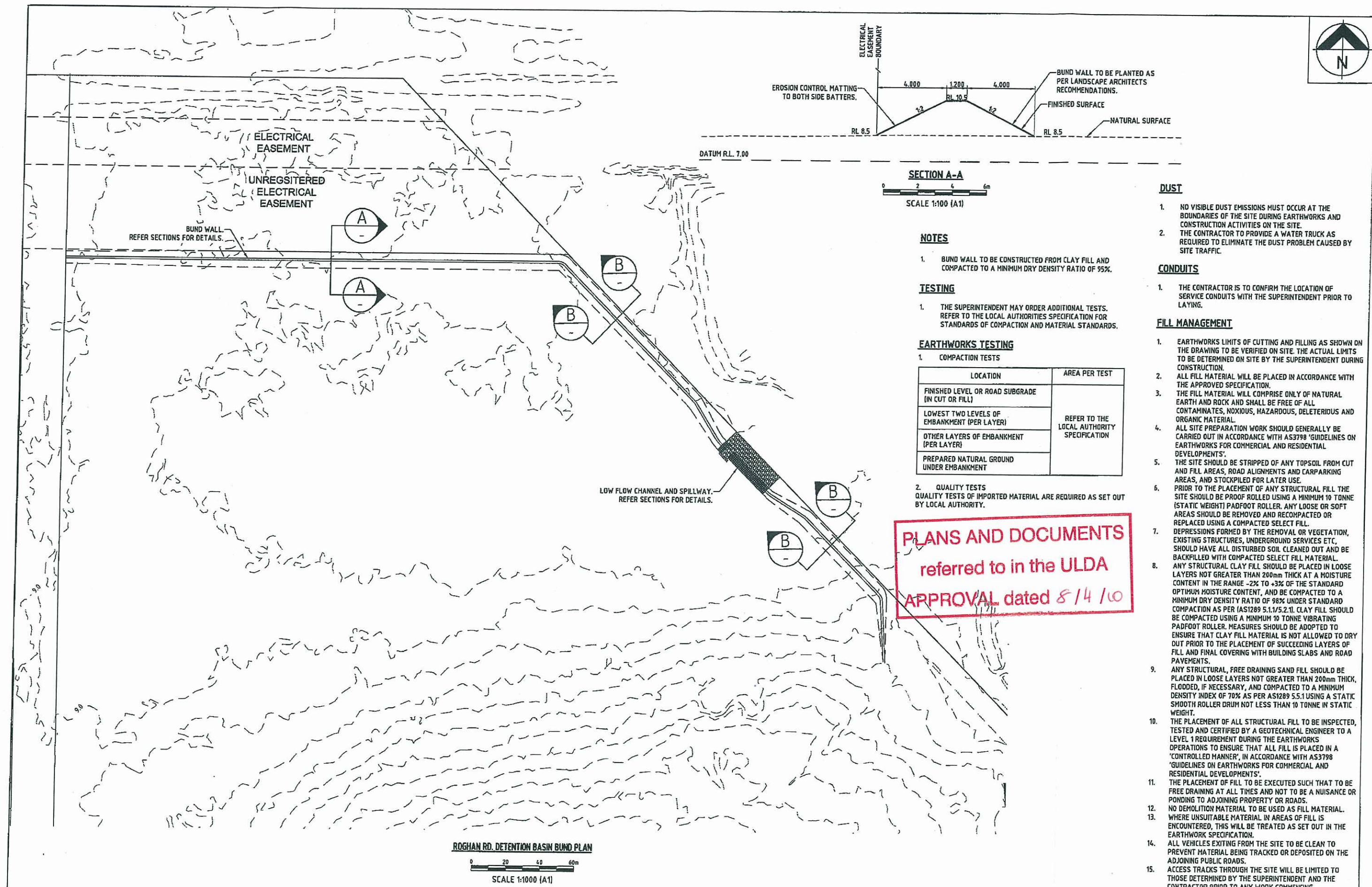
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GROUP
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PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8/7/10



ASSOCIATED CONSULTANTS		CLIENT		DESIGNED		APPROVED		BRISBANE AUSTRALIA		SUNSHINE COAST		JOB CODE:	
		URBAN LAND DEVELOPMENT AUTHORITY		AL		<i>[Signature]</i>		555 CORONATION DRIVE TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5678 EMAIL: mail@etsgroup.net.au		20 INNOVATION PARKWAY BIRKENHEAD QLD 4175 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL: mail@etsgroup.net.au		ULDEFG	
PROJECT		BULK EARTHWORKS - BALANCE OF SITE		DRAWN		KEITH HOWELLS STEPHEN HUGHES		PAPUA NEW GUINEA		PORT MORESBY		SHEET NUMBER:	
LOCATION		253 TELEGRAPH ROAD, FITZGIBBON		CHECKED		DATE		PORT MORESBY		5TH FLOOR CUTHBERTSON HOUSE, PO BOX 908 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7653 EMAIL: etspng@etsgroup.net.pg		REV:	
SHEET TITLE		ROGHAN RD DETENTION BASIN BUND DETAILS SHEET 2 OF 2		DATE		FEBRUARY 2010		AS SHOWN		ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS		C205 P2	
DATE		22/03/10		REV		F1		PRELIMINARY ISSUE		ETS GROUP		FORM E227 10 AUG 2009	
REVISIONS				APPROVED						www.etsgroup.net.au			



DUST

- NO VISIBLE DUST EMISSIONS MUST OCCUR AT THE BOUNDARIES OF THE SITE DURING EARTHWORKS AND CONSTRUCTION ACTIVITIES ON THE SITE.
- THE CONTRACTOR TO PROVIDE A WATER TRUCK AS REQUIRED TO ELIMINATE THE DUST PROBLEM CAUSED BY SITE TRAFFIC.

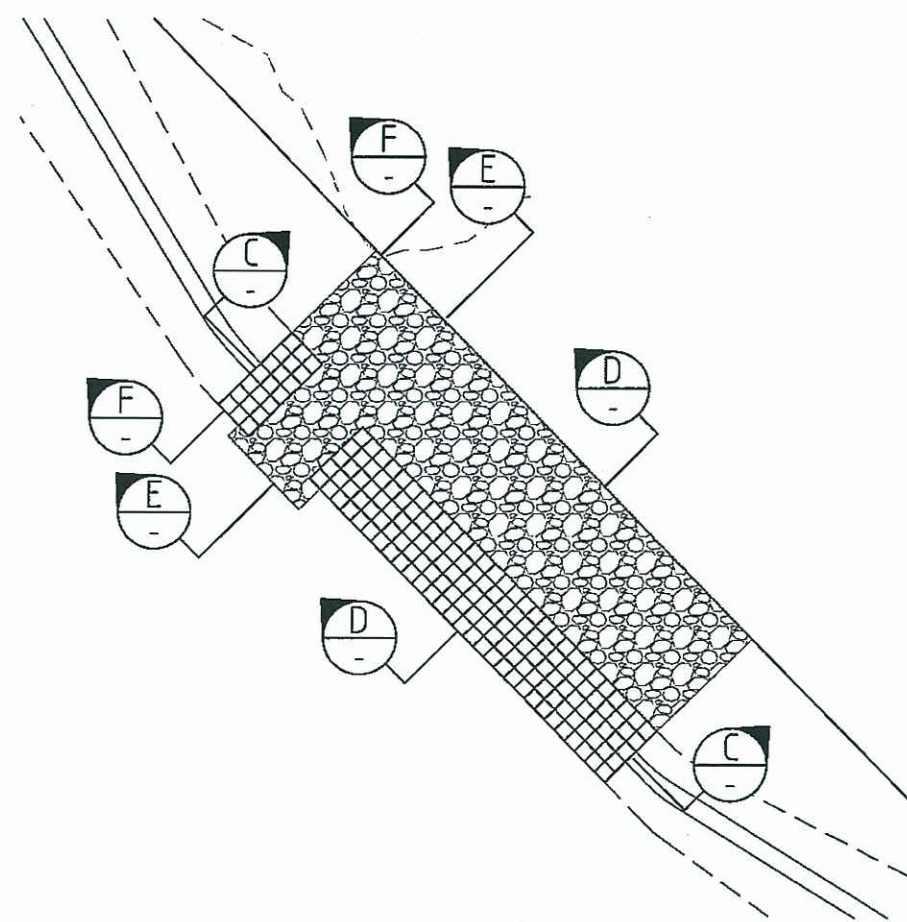
CONDUITS

- THE CONTRACTOR IS TO CONFIRM THE LOCATION OF SERVICE CONDUITS WITH THE SUPERINTENDENT PRIOR TO LAYING.

FILL MANAGEMENT

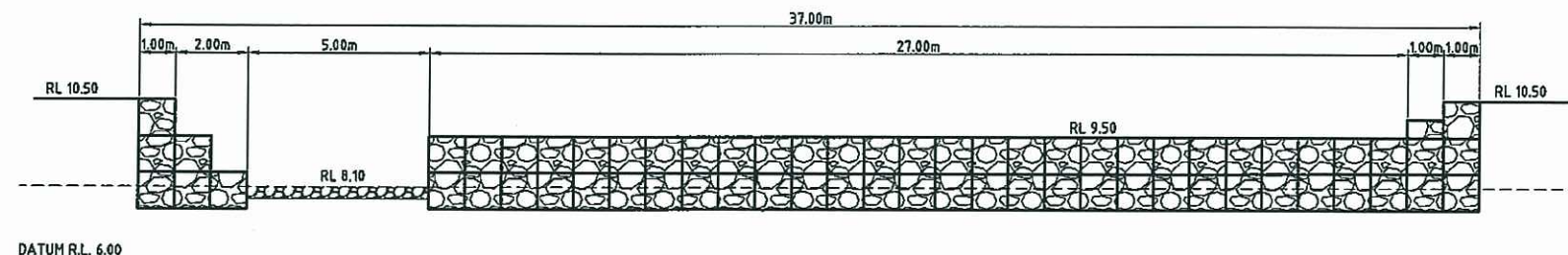
- EARTHWORKS LIMITS OF CUTTING AND FILLING AS SHOWN ON THE DRAWING TO BE VERIFIED ON SITE. THE ACTUAL LIMITS TO BE DETERMINED ON SITE BY THE SUPERINTENDENT DURING CONSTRUCTION.
- ALL FILL MATERIAL WILL BE PLACED IN ACCORDANCE WITH THE APPROVED SPECIFICATION.
- THE FILL MATERIAL WILL COMPRISE ONLY OF NATURAL EARTH AND ROCK AND SHALL BE FREE OF ALL CONTAMINATES, NOXIOUS, HAZARDOUS, DELETERIOUS AND ORGANIC MATERIAL.
- ALL SITE PREPARATION WORK SHOULD GENERALLY BE CARRIED OUT IN ACCORDANCE WITH AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS'.
- THE SITE SHOULD BE STRIPPED OF ANY TOPSOIL FROM CUT AND FILL AREAS, ROAD ALIGNMENTS AND CARPARKING AREAS, AND STOCKPILED FOR LATER USE.
- PRIOR TO THE PLACEMENT OF ANY STRUCTURAL FILL THE SITE SHOULD BE PROOF ROLLED USING A MINIMUM 10 TONNE (STATIC WEIGHT) PADFOOT ROLLER. ANY LOOSE OR SOFT AREAS SHOULD BE REMOVED AND RECOMPACTED OR REPLACED USING A COMPACTED SELECT FILL.
- DEPRESSIONS FORMED BY THE REMOVAL OF VEGETATION, EXISTING STRUCTURES, UNDERGROUND SERVICES ETC, SHOULD HAVE ALL DISTURBED SOIL CLEANED OUT AND BE BACKFILLED WITH COMPACTED SELECT FILL MATERIAL.
- ANY STRUCTURAL CLAY FILL SHOULD BE PLACED IN LOOSE LAYERS NOT GREATER THAN 200mm THICK AT A MOISTURE CONTENT IN THE RANGE -2% TO +3% OF THE STANDARD OPTIMUM MOISTURE CONTENT, AND BE COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 98% UNDER STANDARD COMPACTION AS PER (AS1289 5.1.1/5.2.1). CLAY FILL SHOULD BE COMPACTED USING A MINIMUM 10 TONNE VIBRATING PADFOOT ROLLER. MEASURES SHOULD BE ADOPTED TO ENSURE THAT CLAY FILL MATERIAL IS NOT ALLOWED TO DRY OUT PRIOR TO THE PLACEMENT OF SUCCEEDING LAYERS OF FILL AND FINAL COVERING WITH BUILDING SLABS AND ROAD PAVEMENTS.
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- NO DEMOLITION MATERIAL TO BE USED AS FILL MATERIAL.
- WHERE UNSUITABLE MATERIAL IN AREAS OF FILL IS ENCOUNTERED, THIS WILL BE TREATED AS SET OUT IN THE EARTHWORK SPECIFICATION.
- ALL VEHICLES EXITING FROM THE SITE TO BE CLEAN TO PREVENT MATERIAL BEING TRACKED OR DEPOSITED ON THE ADJOINING PUBLIC ROADS.
- ACCESS TRACKS THROUGH THE SITE WILL BE LIMITED TO THOSE DETERMINED BY THE SUPERINTENDENT AND THE CONTRACTOR PRIOR TO ANY WORK COMMENCING.

ASSOCIATED CONSULTANTS -		CLIENT URBAN LAND DEVELOPMENT AUTHORITY		DESIGNED AL		APPROVED [Signature] DATE		BRISBANE AUSTRALIA 555 CORONATION DRIVE TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5678 EMAIL: mail@etsgroup.net.au		SUNSHINE COAST 20 INNOVATION PARKWAY BIRTHA QLD 4575 PH: (07) 5438 8100 FAX: (07) 5438 8200 EMAIL: mail.sc@etsgroup.net.au		JOB CODE: ULDFEG	
PROJECT BULK EARTHWORKS - BALANCE OF SITE		LOCATION 253 TELEGRAPH ROAD, FITZGIBBON		DRAWN AL		CHECKED DATE		SCALE AS SHOWN		PAPUA NEW GUINEA 5TH FLOOR CUTHBERTSON HOUSE PO BOX 908 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7653 EMAIL: etspng@delco.net.pg		SHEET NUMBER: C206	
DATE 22/03/10		REVISIONS -		SHEET TITLE CARSELDINE DETENTION BASIN BUND DETAILS SHEET 1 OF 2		DATE FEBRUARY 2010		ARCHITECTS CIVIL & STRUCTURAL ENGINEERS		ETS GROUP www.etsgroup.net.au		REV: P1	



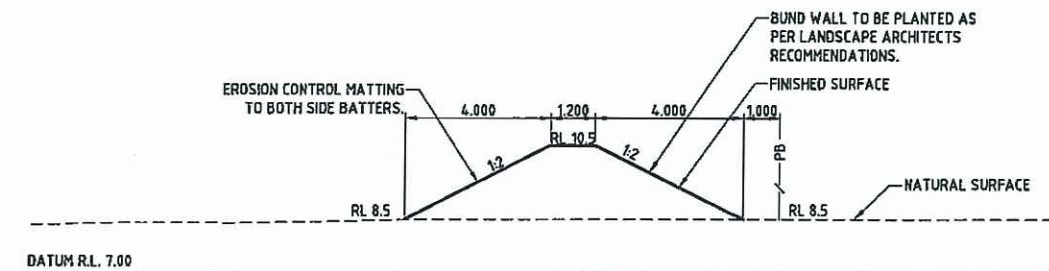
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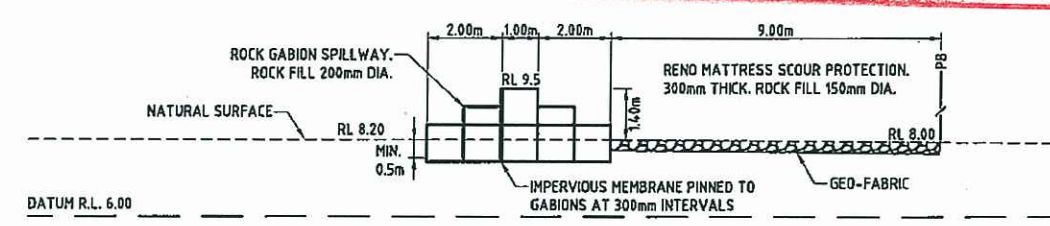
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SECTION C-C

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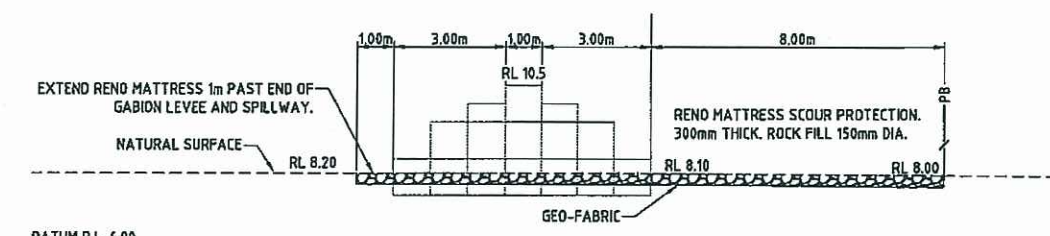
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PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8/7/10



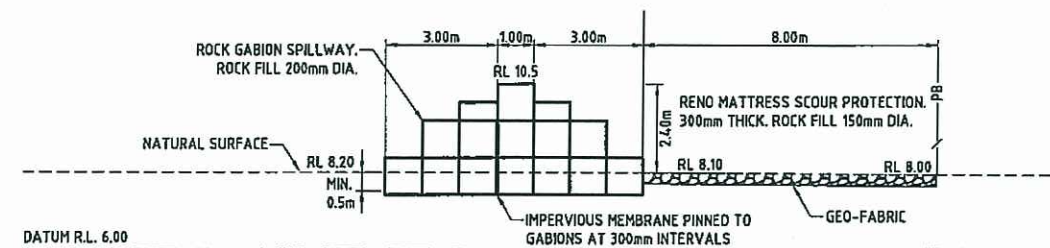
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CARSELDINE DR. DETENTION BASIN LOW FLOW CHANNEL
SECTION E-E

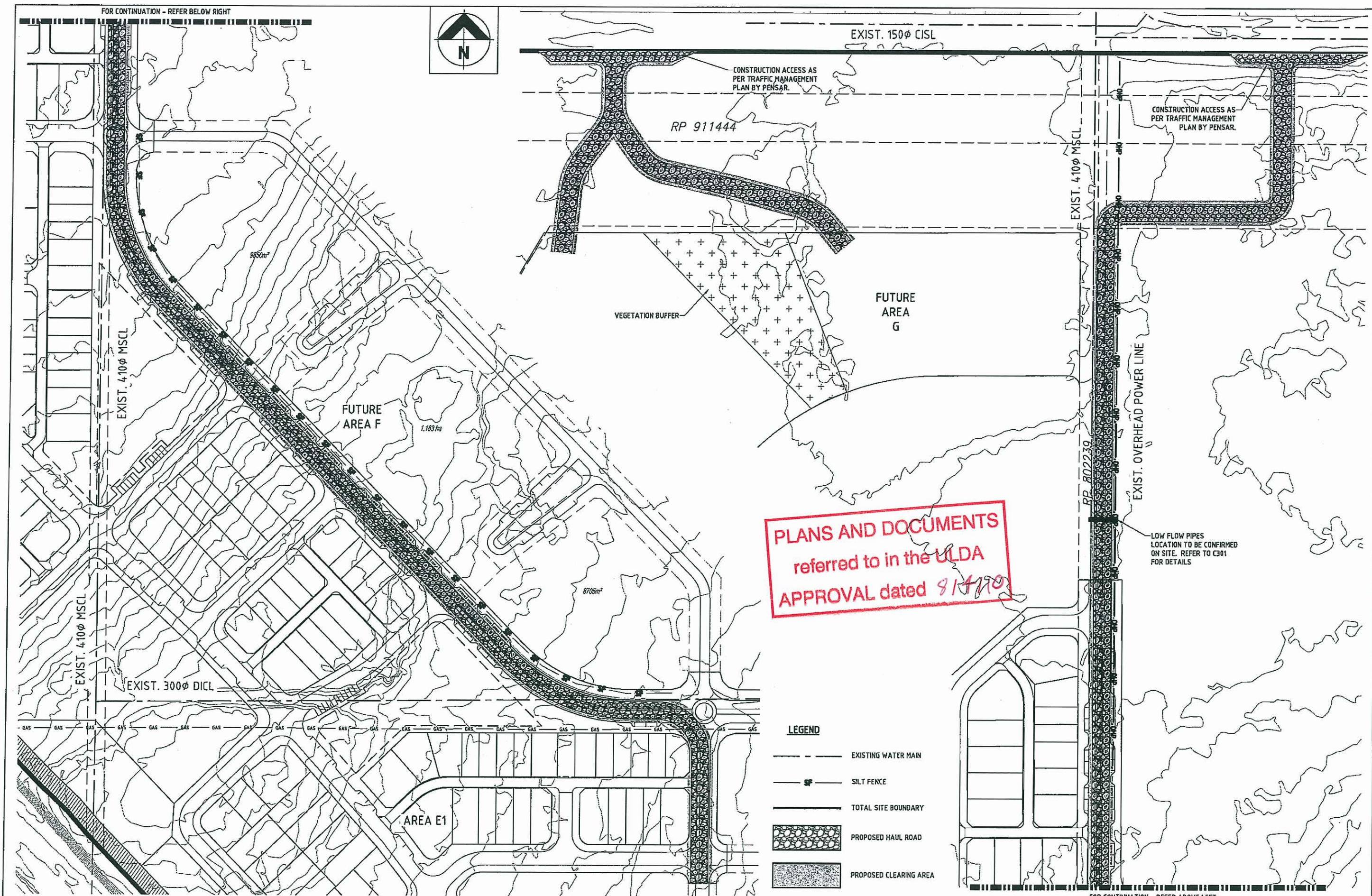
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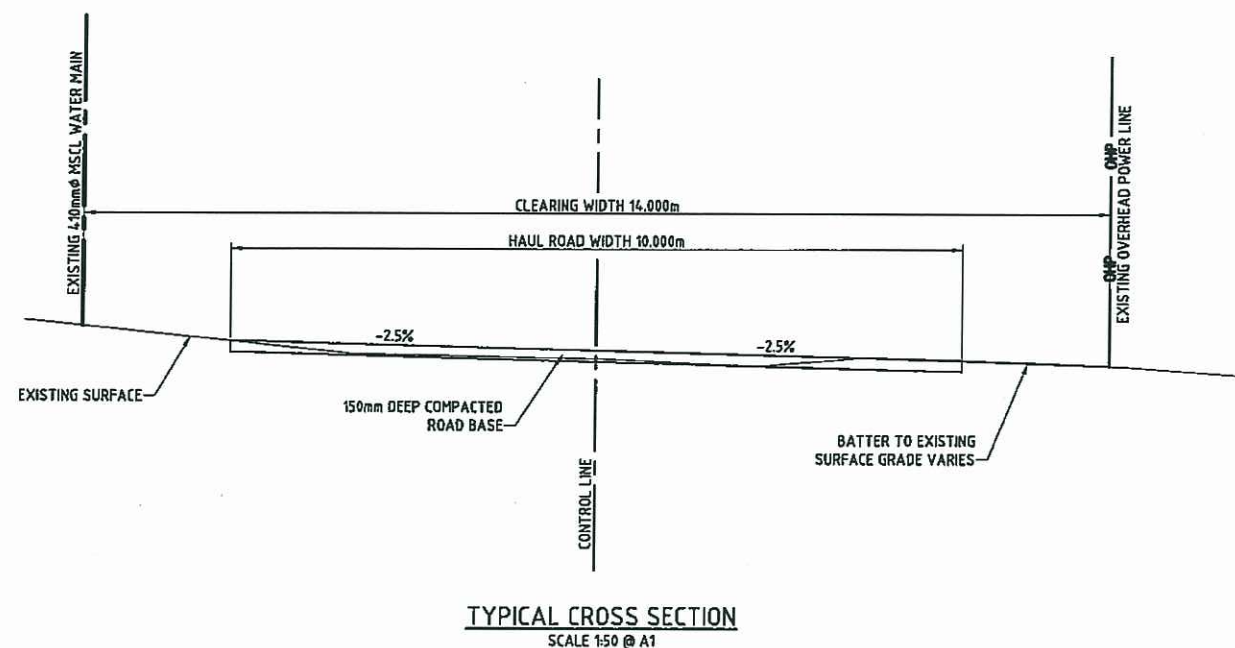
CARSELDINE DR. DETENTION BASIN SPILLWAY
SECTION F-F

0 2 4 6m
SCALE 1:100 (A1)

ASSOCIATED CONSULTANTS		CLIENT		DESIGNED		APPROVED		BRISBANE AUSTRALIA		SUNSHINE COAST		JOB CODE:	
		URBAN LAND DEVELOPMENT AUTHORITY		AL		AL		555 CORONATION DRIVE TOOWONG QLD 4068		20 INNOVATION PARKWAY BIRINYA QLD 4575		ULDEFG	
PROJECT		BULK EARTHWORKS - BALANCE OF SITE		DRAWN		DATE		PH: (07) 3371 7000 FAX: (07) 3371 6079		PH: (07) 5438 8100 FAX: (07) 5438 8200		SHEET NUMBER:	
LOCATION		253 TELEGRAPH ROAD, FITZGIBBON		CHECKED		SCALE		EMAIL: mail@etsgroup.net.au		EMAIL: mail@etsgroup.net.au		C207	
SHEET TITLE		CARSELDINE DETENTION BASIN BUND DETAILS SHEET 2 OF 2		DATE		AS SHOWN		PAPUA NEW GUINEA		PORT MORESBY		REV:	
REVISIONS				FEBRUARY 2010				5TH FLOOR CUTHERBERTSON HOUSE PO BOX 908		TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7053		P1	
								EMAIL: etsprg@detec.net.pg				ARCHITECTS - CIVIL & STRUCTURAL ENGINEERS	
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								www.etsgroup.net.au				FORM E227	
												10 AUG 2009	



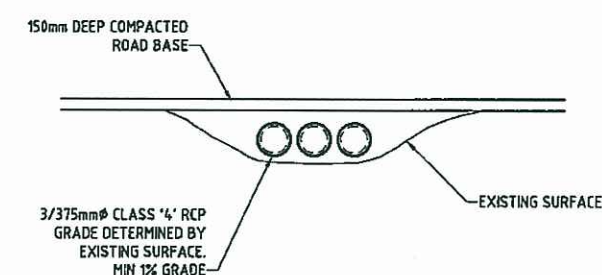
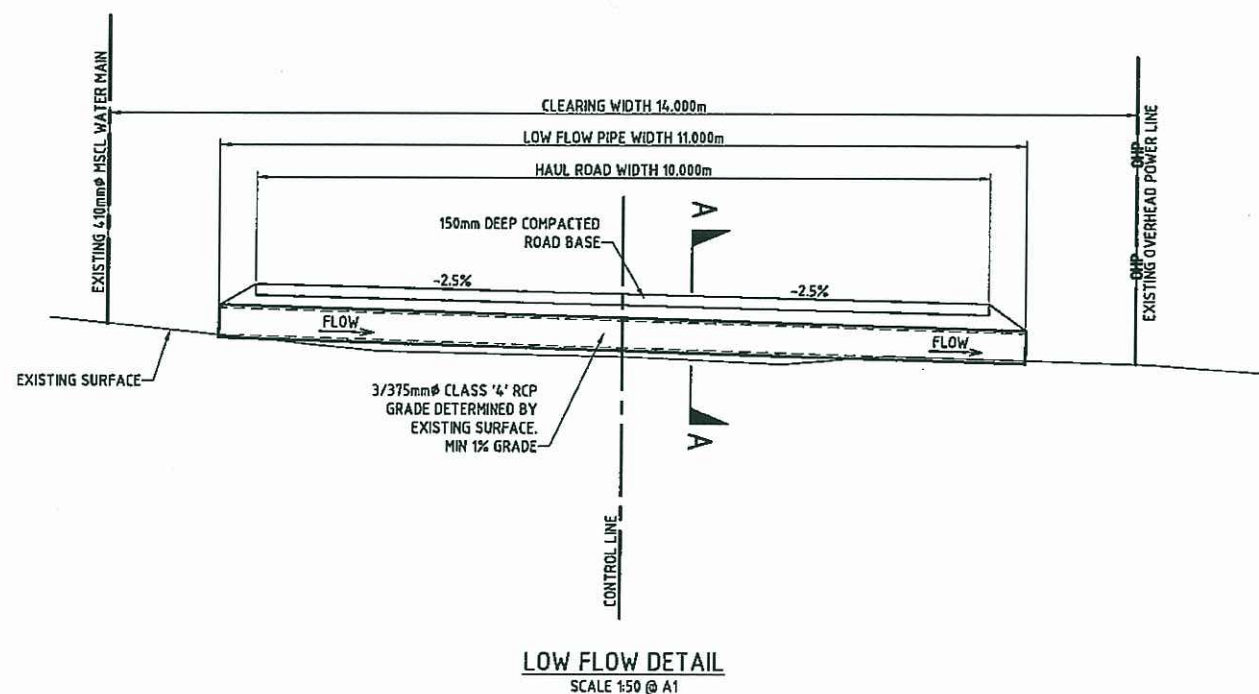
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PROJECT BULK EARTHWORKS - BALANCE OF SITE				LOCATION 253 TELEGRAPH ROAD, FITZGIBBON		DRAWN AL		CHECKED DATE		SCALE 0 20 40 60m		PAPUA NEW GUINEA PORT Moresby 5TH FLOOR CUTHBERTSON HOUSE PO BOX 908 TELEPHONE (075) 321 1333 FACSIMILE (075) 321 7653 EMAIL: etspng@datac.net.pg				SHEET NUMBER: C300		REV: P1	
22/03/10 P1 PRELIMINARY ISSUE				SHEET TITLE ROGHAN ROAD EXTENSION HAUL LAYOUT - SHEET 1 OF 2		DATE FEBRUARY 2010		SCALE SCALE 1:1000 (A1)		ARCHITECTS • CIVIL & STRUCTURAL ENGINEERS				www.etsgroup.net.au				©Copyright FORM E27 10 AUG 2008	
REVISIONS																			



NOTES:

1. HAUL ROAD TO BE CONSTRUCTED AS CLOSE TO EXISTING SURFACE AS POSSIBLE.
2. CROSS FALL IS TO BE MAINTAINED SO THAT NO PONDING OF STORMWATER FLOWS OCCUR.
3. LOW FLOW PIPES ARE TO BE CONSTRUCTED AT LOW POINTS ALONG HAUL ROAD AS PER DETAIL.
4. LOCATION OF EXISTING SERVICES TO BE CONFIRMED ON SITE PRIOR TO CLEARING.

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 8/4/10



ASSOCIATED CONSULTANTS		CLIENT URBAN LAND DEVELOPMENT AUTHORITY		DESIGNED AL	APPROVED <i>[Signature]</i>	DATE FEBRUARY 2010	BRISBANE AUSTRALIA 555 CORONATION DRIVE TOOWONG QLD 4068 PH: (07) 3371 7000 FAX: (07) 3371 5879 EMAIL - mail@etsgroup.net.au		SUNSHINE COAST 20 INNOVATION PARKWAY BIRINYA QLD 4575 PH: (07) 5438 6100 FAX: (07) 5438 8200 EMAIL - mail.sc@etsgroup.net.au		JOB CODE: ULDEFG
PROJECT BULK EARTHWORKS - BALANCE OF SITE		LOCATION 253 TELEGRAPH ROAD, FITZGIBBON		DRAWN AL	SCALE 0 1 2 3m			PAPUA NEW GUINEA PORT MORESBY 5TH FLOOR CUTHBERTSON HOUSE PO BOX 908 TELEPHONE (675) 321 1333 FACSIMILE (675) 321 7653 EMAIL - etapng@etatec.net.pg		SHEET NUMBER: C301	
DATE 22/03/10		SHEET TITLE ROGHAN ROAD EXTENSION HAUL ROAD LAYOUT - SHEET 2 OF 2		CHECKED DATE	SCALE 1:50 (A1)			ARCHITECTS - CIVIL & STRUCTURAL ENGINEERS		REV: P1	
REVISIONS							ETS GROUP www.etsgroup.net.au		FORM E027 10 AUG 2008		