LENDLEASE

WERRINGTON STAGE 1D SUBDIVISION

CIVIL ENGINEERING WORKS

DEVELOPMENT APPLICATION

DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
190060-1D-DA-C01.01	COVER SHEET AND DRAWING SCHEDULE
190060-1D-DA-C01.21	SPECIFICATION NOTES - SHEET 01
190060-1D-DA-C01.22	SPECIFICATION NOTES - SHEET 02
190060-1D-DA-C01.41	GENERAL ARRANGEMENT PLAN
190060-1D-DA-C03.01	EROSION AND SEDIMENTATION CONTROL PLAN
190060-1D-DA-C03.21	EROSION AND SEDIMENTATION CONTROL DETAILS
190060-1D-DA-C04.01	BULK EARTHWORKS - CUT AND FILL PLAN
190060-1D-DA-C05.01	SITEWORKS AND STORMWATER MANAGEMENT PLAN
190060-1D-DA-C06.01	ROAD TYPICAL CROSS SECTIONS AND LONGITUDINAL SECTIONS
190060-1D-DA-C11.01	PAVEMENT, SIGNAGE AND LINE MARKING PLAN
190060-1D-DA-C20.01	STORMWATER CATCHMENT PLAN
190060-1D-DA-C22.01	TURNING PATH AND BIN LOCATION PLAN
190060-1D-DA-C23.01	SAFETY IN DESIGN

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

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GENERAL

1. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH PENRITH CITY COUNCIL STANDARDS.
2. PENRITH CITY COUNCIL STANDARD DETAILS TO BE USED WHERE POSSIBLE.
3. UTILITY ADJUSTMENTS AT DEVELOPERS EXPENSE.
4. CONDUITS TO BE PLACED WHERE REQUIRED BY THE RELEVANT AUTHORITIES.
5. SUBSOIL DRAINAGE LINES SHALL BE INSTALLED BEHIND ALL KERBS EXCEPT WHERE STORMWATER DRAINAGE IS LOCATED ALONG THE KERBLINE.
6. A MINIMUM OF 3m OF SUBSOIL LINE SHALL BE LAID INTO UPSTREAM SIDE OF ALL DRAINAGE PITS.
7. FLUSHING POINTS SHALL BE INSTALLED TO COUNCIL SPECIFICATION.

SURVEY

1. THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN SUPPLIED BY REGISTERED SURVEYORS TO PROVIDE A BASIS FOR DESIGN. THE USE OF THIS SURVEY BASE DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.
2. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT THE SUPERINTENDENT.
3. THE RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES ARE DIAGRAMMATIC ONLY. WHERE DISTANCES TO BOUNDARIES ARE CRITICAL THEY SHOULD BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION BY FURTHER SURVEY.

EXISTING SERVICES

1. ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
2. CARE TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER ALL LIVE SERVICES. HAND EXCAVATION ONLY IN THESE AREAS.
3. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING SERVICES THAT ARE TO BE RETAINED IN THE VICINITY OF THE PROPOSED WORKS. ANY AND ALL DAMAGE TO THESE SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT, AND AT NO EXTRA COST.
4. THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.
5. THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS UNLESS DIRECTED OTHERWISE ON THE DRAWINGS OR BY THE SUPERINTENDENT.
6. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
7. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF THE PROGRAM FOR THE RELOCATION AND/OR CONSTRUCTION OF TEMPORARY SERVICES AND FOR ANY ASSOCIATED INTERRUPTION OF SUPPLY.
8. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
9. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION A THOROUGH SEARCH OF ALL SERVICE AUTHORITIES SHOULD BE MADE TO DETERMINE THE POSSIBLE LOCATION OF ANY FURTHER UNDERGROUND SERVICES.
10. AUTHORITY PLANS GENERALLY SHOW ONLY THE PRESENCE OF CABLES AND PLANT AND DO NOT WARRANT OR GUARANTEE THAT SUCH PLANS ARE ACCURATE. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR EXISTING SERVICES AND PLANT. BEFORE USING MACHINE EXCAVATORS SERVICES MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION.
11. THE CONTRACTOR IS TO UNDERTAKE A DIAL-BEFORE-YOU-DIG SEARCH PRIOR TO ANY EXCAVATION AND MAINTAIN A CURRENT SET ON-SITE DURING EXCAVATION WORKS.
12. THE LOCATIONS OF UNDERGROUND SERVICES SHOWN IN THIS SET OF DRAWINGS HAVE BEEN PLOTTED FROM SURVEY INFORMATION AND SERVICE AUTHORITY INFORMATION. THE SERVICE INFORMATION HAS BEEN PREPARED ONLY TO SHOW THE APPROXIMATE POSITIONS OF ANY KNOWN SERVICES AND MAY NOT BE AS CONSTRUCTED OR ACCURATE. ENSPIRE SOLUTIONS CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY INDICATES THE PRESENCE OR ABSENCE OF SERVICES OR THEIR LOCATION AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.
13. CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS. CONTRACTORS ARE TO UNDERTAKE A SERVICES SEARCH, PRIOR TO COMMENCEMENT OF WORKS ON SITE. SEARCH RESULTS ARE TO BE KEPT ON SITE AT ALL TIMES.

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EARTHWORKS

1. AT THE COMMENCEMENT OF THE CUT AND FILLING OPERATIONS FOR BULK EARTHWORKS A GEOTECHNICAL ENGINEER IS TO VISIT THE SITE & CONFIRM THE SUITABILITY OF THE METHODOLOGY OF ACHIEVING THE REQUIRED BUILDING PLATFORMS AND COMPACTION REQUIREMENTS. SUBSEQUENTLY, THE HEAD CONTRACTOR IS TO CONFIRM, IN WRITING TO THE SUPERINTENDENT THAT THE METHODOLOGY APPROVED AT THE TIME OF THE GEOTECHNICAL ENGINEERS VISIT WAS MAINTAINED DURING ALL THE BULK EARTHWORKS PROCESS.
2. STRIP TOPSOIL, ORGANIC MATTER AND RUBBLE FROM CONSTRUCTION AREA TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE AS DIRECTED BY THE SUPERINTENDENT.
3. WHERE FILLING, STRUCTURAL SLABS OR PAVEMENTS ARE REQUIRED, PROOF ROLL THE EXPOSED NATURAL SURFACE WITH A MINIMUM OF TEN PASSES OF A SMOOTH DRUM NON-VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) TO DETECT THEN REMOVE SOFT SPOTS (AREAS WITH MORE THAN 2mm MOVEMENT UNDER ROLLER) IN THE PRESENCE OF THE SUPERINTENDENT. THE CONTRACTOR IS TO ALLOW TO REMOVE AND REPLACE A PROVISIONAL QUANTITY OF UNSUITABLE SUBGRADE MATTER.
4. ALL SOFT, WET OR UNSUITABLE MATERIAL IS TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.
5. EXCAVATED MATERIAL IS NOT TO BE USED AS STRUCTURAL FILL UNLESS APPROVED BY THE GEOTECHNICAL ENGINEER.
6. THE CONTRACTOR IS TO PROVIDE CERTIFICATES VERIFYING THE QUALITY OF IMPORTED MATERIAL FOR THE SUPERINTENDENTS APPROVAL.
7. ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM LAYER THICKNESS TO COUNCIL SPECIFICATIONS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289 E3.1 OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITY IN ACCORDANCE WITH AS1289 E5.1.1.1:

LOCATION	COMPACTION REQUIREMENT
UNDER BUILDING SLABS	100% SMDD
LANDSCAPED AREAS	95% SMDD
ROADS & PAVED AREAS	100% SMDD

8. FOR NON COHESIVE MATERIAL, COMPACT TO NOT LESS THAN
   UNDER ROAD 80% DENSITY
   OTHER AREA 75% DENSITY
9. THE CONTRACTOR IS TO ALLOW FOR COMPACTION TESTING BY NATA REGISTERED LABORATORY FOR PLATFORMS AND FILL LAYERS IN ACCORDANCE WITH THE LATEST VERSION OF AS3798 - FOR TYPE 1 OPERATIONS (MINIMUM 3 TESTS PER LAYER).
10. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN:
    A. 1 TEST PER 200m^3 OF FILL PLACED PER LAYER OF FILL
    B. 3 TESTS PER VISIT
    C. 1 TEST PER 1000m² OF EXPOSED SUBGRADE
11. TESTING SHALL BE "LEVEL 1" UNDERTAKEN IN ACCORDANCE WITH AS1398.
12. WHERE TEST RESULTS ARE BELOW THE SPECIFIED COMPACTION, RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION STANDARD IS ACHIEVED.
13. ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND U.N.O. NO ADDITIONAL PAYMENTS WILL BE MADE FOR EXCAVATION IN WET OR HARD GROUND.
14. WHERE THERE IS INSUFFICIENT EXCAVATED MATERIAL SUITABLE FOR FILLING OR SUBGRADE REPLACEMENT, THE CONTRACTOR IS TO ALLOW TO IMPORT FILL. IMPORTED FILL SHALL COMPLY WITH THE FOLLOWING:
    A. MAXIMUM SIZE 50mm. PASSING 75 MICRON SIEVE (<25%).
    B. PLASTICITY INDEX BETWEEN 2-15% AND CBR>8.
    C. FREE FROM ORGANIC AND PERISHABLE MATTER.
15. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT (PREPARED BY GEOTESTA REF: NE391 DATED: 20/09/2018) FOR GENERAL REQUIREMENTS ON SITE PREPARATION AND RE-USE OF EXISTING SITE MATERIAL AS ENGINEERED FILL.
16. THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED AT THEIR COST.
17. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE AND MAINTAIN THE INTEGRITY OF ALL SERVICES, CONDUITS AND PIPES DURING CONSTRUCTION, SPECIFICALLY DURING THE BACKFILLING AND COMPACTION PROCEDURE. ANY AND ALL DAMAGE TO NEW OR EXISTING SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXTRA COST.
18. PROTECT FINAL SURFACE WITH EITHER A TEMPORARY LOOSE SOIL LAYER OR A GRANULAR SUB-BASE LAYER TO PREVENT DRYING OUT PRIOR TO ON-GROUND SLAB CONSTRUCTION.
19. THE SALINITY MANAGEMENT MEASURES PROVIDED IN THE PRELIMINARY SALINITY AND GEOTECHNICAL ASSESSMENT REPORT (PREPARED BY MARTENS CONSULTING ENGINEERS, REF NO. P1605607JR02V01, DECEMBER 2016) SHALL BE IMPLEMENTED.

EROSION AND SEDIMENT CONTROL

GENERAL INSTRUCTIONS

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, NSW OFFICE OF WATER, OFFICE OF ENVIRONMENT AND HERITAGE. THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND SHALL REPRESENT THE MINIMUM REQUIREMENT ONLY.
2. THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED TO SUIT CONSTRUCTION STAGING AND WORK PRACTICES OR AS OTHERWISE DIRECTED BY THE SUPERINTENDENT.
   ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
   a. LOCAL AUTHORITY REQUIREMENTS
   b. EPA REQUIREMENTS
   c. LANDCOM MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

6. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
   a. INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
   b. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
   c. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN.
   d. INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
   e. UNDERTAKEN SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

7. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
8. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

9. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSTREAM WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
10. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
11. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
12. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
13. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
14. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH SECTION 4 OF AS4970 "PROTECTION OF TREES ON DEVELOPMENT SITES" AND COUNCIL CONSENT CONDITIONS.

SITEWORKS

1. ALL WORKS TO BE IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS. SPECIFICATIONS AND AUSTRALIAN STANDARDS. CONFLICTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR DIRECTION.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO THE SUPERINTENDENT.
3. THE CONTRACTOR IS TO DESIGN, OBTAIN APPROVALS AND CARRY OUT REQUIRED TEMPORARY TRAFFIC CONTROL PROCEDURES DURING CONSTRUCTION IN ACCORDANCE WITH TINSW AND LOCAL AUTHORITY REGULATIONS AND REQUIREMENTS.
4. THE CONTRACTOR IS TO OBTAIN ALL AUTHORITY APPROVALS AS REQUIRED.
5. RESTORE ALL PAVED, COVERED, GRASSED AND LANDSCAPED AREAS TO THEIR ORIGINAL CONDITION ON COMPLETION OF WORKS.
6. ON COMPLETION OF ANY TRENCHING WORKS, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED AREAS AND ROAD PAVEMENTS.
7. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
8. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO LODGMENT OF TENDER AND ON SITE WORKS. THE PRICE AS TENDERED SHALL BE INCLUSIVE OF ALL WORKS SHOWN ON THE TENDER PROJECT DRAWINGS. ADDITIONAL PAYMENTS FOR WORKS SHOWN ON THE TENDER PROJECT DRAWINGS WILL NOT BE APPROVED.
9. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS AND SPECIFICATIONS, AND ANY OTHER WRITTEN INSTRUCTIONS THAT MAY BE ISSUED RELATING TO DEVELOPMENT OF THE SUBJECT SITE.
10. THESE PLANS SHALL BE READ IN CONJUNCTION WITH ALL APPROVED DRAWINGS AND SPECIFICATIONS PREPARED BY OTHER PROJECT CONSULTANTS.
11. DO NOT OBTAIN DIMENSIONS BY SCALING THE DRAWINGS. ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL LEVELS ARE IN METRES (m), UNO. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
12. IN CASE OF DOUBT OR DISCREPANCY REFER TO THE SUPERINTENDENT FOR CLARIFICATION OR CONFIRMATION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. OTHERWISE THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REMEDIATION WORKS.
13. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
14. THE CONTRACTOR SHALL COMPLY WITH ALL STATUTORY AND INDUSTRIAL REQUIREMENTS FOR PROVISION OF A SAFE WORKING ENVIRONMENT INCLUDING TRAFFIC CONTROL.
15. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES ACCESS TO ALL BUILDINGS ADJACENT THE WORKS IS NOT DISRUPTED.
16. WHERE NECESSARY THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE OF VEHICLES AND/OR PEDESTRIANS THROUGH OR BY THE SITE.
17. WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (eg. ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF THESE WORKS.
18. ALL VARIATIONS TO SPECIFIED PRODUCTS OR DESIGNS SHALL BE REFERRED TO THE DESIGN ENGINEER IN WRITING FOR APPROVAL.
19. EPA AND COUNCIL REQUIREMENTS MUST BE ADHERED TO REGARDING THE LEVEL OF NOISE AND WORKING HOURS, TO ENSURE THAT RESIDENTS AND OTHER APPLICABLE NEIGHBOURS TO THE SITE ARE NOT DISTURBED UNREASONABLY. THE GENERATION OF NOISE MUST BE MINIMISED.

STORMWATER DRAINAGE NOTES

1. STORMWATER DESIGN CRITERIA:
   (A) ANNUAL EXCEEDANCE PROBABILITIES (AEP):
   20% (1 IN 5) MINOR (PIPED) NETWORK
   1% (1 IN 100) MAJOR (OVERLAND FLOW) SYSTEM
   (B) RAINFALL INTENSITIES:
   ARR 1987 RAINFALL FROM BUREAU OF METEOROLOGY WEBSITE
   (C) HYDROLOGIC METHOD:
   12D WITH ILSAX METHOD
2. PIPES 375 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
3. PIPES 300 DIA AND LESS SHALL BE DWV GRADE (CLASS SN8) uPVC WITH SOLVENT WELDED JOINTS.
4. EQUIVALENT STRENGTH AND INTERNAL DIMENSION FRC PIPES MAY BE USED SUBJECT TO COUNCIL APPROVAL.
5. ALL PIPES ARE TO BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE BARREL BY SUITABLE FILL MATERIAL. REFER TO BEDDING SUPPORT TYPE.
6. PIPES WITH SOCKETS SHALL BE LAID IN BEDDING WHERE SUITABLE RECESSES HAVE BEEN PROVIDED TO ENSURE PIPES DO NOT BEAR ON THEIR SOCKETS.
7. ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE PN6. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
8. PIPES TO BE INSTALLED TO TYPE HS2 SUPPORT IN ACCORDANCE WITH AS 3725 IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75).
9. REFER TO AS/NRS 3725 TABLE B1 FOR REQUIRED FILL DEPTHS ABOVE PIPE BARREL PRIOR TO USE OF COMPACTION MACHINERY OR TRAVERSING OF PIPES BY GENERAL SITE EQUIPMENT.
10. WHERE WORKING METHODS REQUIRE HIGHER CLASS PIPE, THE CONTRACTOR SHALL REFER TO AS 3725 TO DETERMINE THE APPROPRIATE PIPE CLASS. PROPOSED PIPE CLASS SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO INSTALLATION.
11. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS/NZS 3500.3.
12. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
13. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC PRESSURE PIPE PN6 IS TO BE USED.
14. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
15. GRATES AND COVERS SHALL CONFORM TO AS 3996.
16. ALL BOX CULVERTS SHALL BE STRUCTURALLY DESIGNED BY THE MANUFACTURER AND DELIVERED TO SITE AS FIT FOR PURPOSE.
17. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
18. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

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1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

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Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

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PAVEMENTS

1. ALL PAVEMENT MATERIALS SHALL COMPLY WITH CURRENT TfNSW SPECIFICATIONS. PROVIDE MECHANICAL ANALYSIS FOR EACH BATCH OF PAVEMENT MATERIAL TO ENSURE CONFORMITY.

2. COMPACTION STANDARDS:
   A) BASE: 98% MODIFIED MAXIMUM DRY DENSITY
   B) SUBBASE: 98% MODIFIED MAXIMUM DRY DENSITY

3. THE CONTRACTOR SHALL CONFIRM THE DESIGN CBR WITH A MINIMUM OF 3 TESTS TAKEN AT SUBGRADE LEVEL. WHERE DISCREPANCY IS FOUND, CONTACT THE SUPERINTENDENT.

4. ALLOW FOR COMPACTION TESTING BY NATA REGISTERED LABORATORY FOR: BASE LAYER, SUBBASE LAYER, SUBGRADE IN ACCORDANCE WITH THE LATEST VERSION OF AS3798 FOR PAVEMENTS. ALLOW FOR AT LEAST TWO SUCCESSFUL COMPACTION TESTS IN EACH LAYER.

5. MATCH NEW PAVEMENT LAYERS NEATLY AND FLUSH WITH EXISTING WHERE REQUIRED.

6. KEY NEW BASE AND SUBBASE LAYERS INTO EXISTING WITH 150mm WIDE STEPS. ASPHALTIC CONCRETE WEARING COURSE IS TO EXTEND 150mm (MIN) PAST BASECOURSE INTERFACE.

7. TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MIN 50mm IN BITUMINOUS PAVING.

8. ALL ASPHALTIC CONCRETE (AC) WORK TO BE PREPARED AND CARRIED OUT IN ACCORDANCE WITH GOOD ASPHALTIC PAVING PRACTICE AS DESCRIBED IN AS2734 "ASPHALT (HOT-MIXED) PAVING - GUIDE TO GOOD PRACTICE" AND CURRENT TfNSW SPECIFICATIONS (R116).

9. WHERE NOMINATED, THE CONTRACTOR SHALL ALLOW FOR ALL COMPONENTS OF PROPRIETARY JOINTING SYSTEMS INCLUDING FIXING, TEMPLATES & PEGGING TO ENSURE THAT ALL DOWEL BARS REMAIN IN THE CORRECT ALIGNMENT AND POSITION.

10. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH TfNSW. SPECIFICATION 3051, COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 OF BASECOURSE MATERIAL PLACED.

11. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH TfNSW. SPECIFICATION 3051, AND COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 OF SUB-BASE COURSE MATERIAL PLACED.

12. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (11) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH TfNSW. SPECIFICATION 3051 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF THE COUNCIL ENGINEER.

13. SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THIS SHALL BE CLEARLY INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED.

PAVEMENT JOINTS

PEDESTRIAN PAVEMENTS

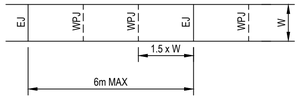
1. ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS U.N.O ON THE DESIGN DRAWINGS.

2. EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 6.0m CENTRES.

3. WEAKENED PLANE JOINTS ARE TO BE LOCATED AT A MAX. SPACING OF 1.5 x WIDTH OF THE PAVEMENT.

4. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.

5. TYPICAL PEDESTRIAN PAVEMENT JOINT DETAIL.



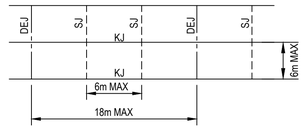
VEHICULAR PAVEMENTS

6. ALL VEHICULAR PAVEMENTS TO BE JOINTED AS FOLLOWS U.N.O ON THE DESIGN DRAWINGS.

7. TIED KEYED CONSTRUCTION JOINTS SHOULD GENERALLY BE LOCATED LONGITUDINALLY AT A MAX OF 6.0m CENTRES

8. SAWN JOINTS SHOULD GENERALLY BE LOCATED LATERALLY AT A MAX OF 6.0m CENTRES WITH DOWELED EXPANSION JOINTS AT MAX 18.0m CENTRES

9. TYPICAL VEHICULAR PAVEMENT JOINT DETAIL.



10. PROVIDE 10mm EXPANSION FOAM BETWEEN NEW CONCRETE WORKS AND EXISTING STRUCTURES.

11. LOCAL AUTHORITY REQUIREMENTS SHALL TAKE PRECEDENCE WITHIN THE PUBLIC ROAD RESERVE.

12. DOWELS TO BE PLACED ON PROPRIETARY CRADLES TO ENSURE CORRECT SPACING AND ALIGNMENT.

CONCRETE

1. THIS SECTION REFERS TO CIVIL CONCRETE WORKS AND DOES NOT INCLUDE BUILDINGS OR BRIDGE STRUCTURES.

2. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

3. CONCRETE QUALITY;
   ALL REQUIREMENTS OF THE CURRENT AS3600 CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

ELEMENT	AS 3600 F'c MPa AT 28 DAYS	SPECIFIED SLUMP	NOMINAL AGG. SIZE	MAX 56 DAY DRYING SHRINKAGE
KERBS AND PATHS	25	60	20	650um
PITS AND VEHICULAR PAVEMENTS	32	80	20	650um

4. CONCRETE PROPERTIES FOR SLABS AND BEAMS SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS:
   A. MINIMUM CEMENT CONTENT 250kg/m3
   B. MAXIMUM 56 DAY SHRINKAGE STRAIN = AS NOMINATED ABOVE
   C. PRIOR TO COMMENCEMENT CONCRETE SUPPLIER TO PROVIDE DRYING SHRINKAGE TEST RESULTS FROM PRODUCTION ASSESSMENT AS EVIDENCE THAT SPECIFIED DRYING SHRINKAGE LIMITS CAN BE ACHIEVED USING NORMAL MIX DESIGN.

5. CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL

6. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379.

7. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY THE DESIGN ENGINEER.

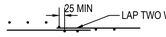
8. CLEAR CONCRETE COVERS SHALL BE (UNO):

ENVIRONMENT	COVER
A. SURFACES OF MEMBERS CAST AGAINST, AND IN CONTACT WITH THE GROUND	50mm
B. SURFACES OF MEMBERS CAST AGAINST, AND IN CONTACT WITH THE GROUND SEPARATED BY MEMBRANE	40mm
C. SURFACES OF MEMBERS IN ABOVE GROUND EXTERIOR ENVIRONMENTS	40mm
D. SURFACES OF MEMBERS IN INTERIOR ENVIRONMENTS	20mm

9. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.

10. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS.

11. FABRIC SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING DETAIL:



FOLLOWING THE FABRIC SYMBOL SL IS THE REFERENCE NUMBER FOR FABRIC TO AS 1304.

12. uPVC SHEET SHALL BE PLACED BELOW ALL CONCRETE PAVEMENTS.

13. ALL PENETRATIONS TO HAVE 2/N12 TRIMMER BARS TOP AND BOTTOM TO EACH FACE U.N.O. EXTEND TRIMMERS 700 BEYOND PENETRATION.

14. FORMWORK CLASS SHALL BE IN ACCORDANCE WITH AS380.

15. SURFACE FINISHES:

ELEMENT	FORMWORK CLASS
STORMWATER PIT	OFF FORM
PAVEMENTS	MACHINE FLOAT/BROOM FINISHED
KERBS	STEEL FLOAT/TROWEL

16. REINFORCEMENT SYMBOLS:
   N DENOTES GRADE 450 N BARS TO AS 1302 GRADE N
   R DENOTES 230 R HOT ROLLED PLAIN BARS TO AS 1302
   SL DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS 1304

NUMBER OF BARS IN A GROUP — BAR GRADE AND TYPE

17 N 20 250

NOMINAL BAR SIZE IN mm — SPACING IN mm THE FIGURE

SIGNAGE AND LINE MARKING

1. LINE MARKING AND PAINT SHALL BE IN ACCORDANCE WITH AS 2700 AND AS 2709 AND TfNSW SPECIFICATIONS.

2. ALL PAINT SHALL BE APPLIED BY MECHANICAL SPRAYER.

3. LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING.

4. PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm TO 0.40mm.

5. TRANSITION LINEMARKING TO SUIT EXISTING WHERE REQUIRED.ALL SIGNAGE TO BE INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS.

6. REMOVE ALL REDUNDANT PAVEMENT MARKING AS REQUIRED.

7. PROVIDE RETRO-REFLECTORISED PAVEMENT MARKERS TO COUNCIL AND TfNSW. REQUIREMENTS.

8. ALL LINEMARKING TO BE WHITE IN COLOUR WITH THE EXCEPTION OF C2 AND C3 LINES ARE TO BE YELLOW.

9. CARPARK LINEMARKING PAINT SHALL BE TYPE 3, CLASS A, AND THE COLOUR SHALL BE WHITE AND NOT DISCOLOURED BY BITUMEN. EACH LINE SHALL BE 80mm WIDE.

10. ALL SIGNAGE TO BE IN ACCORDANCE WITH THE CURRENT VERSION OF THE TfNSW. REGULATORY SIGNS MANUAL.

11. RELOCATE OR REMOVE EXISTING SIGNS AS REQUIRED.

12. PROVIDE ADEQUATE APPROACH WARNING SIGNS DURING AND AFTER CONSTRUCTION.

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

Scale:

North:

enspire
Enspire Solutions Pty Ltd
1302/83 Mount Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

Title: SPECIFICATION NOTES
SHEET 02

Scale: N.T.S

Date: 23/11/2021

Size: A1

Datum: MGA94

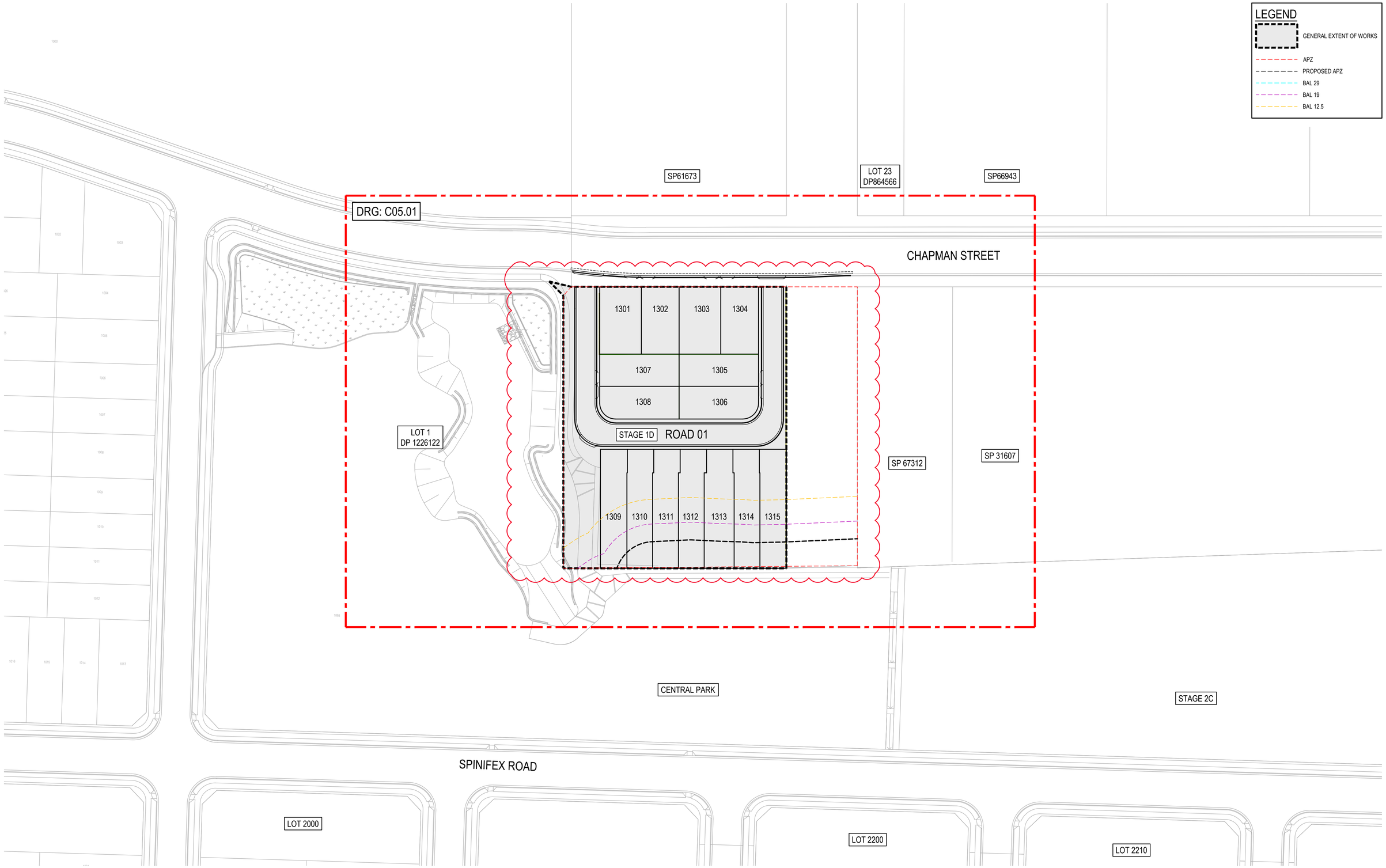
Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 190060-1D-DA-C01.22

Revision: 2

DATE PLOTTED: 8 February 2022 3:25 PM BY: GEORGE IZATT

CAD File: P:\190060 Werrington\D-Civil\01-Stage1D\Drawings\6-DACC\190060-1D-DA-C01.21-C01.22 SPECIFICATION NOTES.dwg



REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

Scale: 0 10 20 30 40 50m — SCALE 1:500 @A1

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1302/83 Mount Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

Title: GENERAL ARRANGEMENT PLAN

Scale: 1:500

Date: 23/11/2021

Size: A1

Datum: MGA94

Status: FOR INFORMATION ONLY
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Project Number/Drawing Number: 190060-1D-DA-C01.41

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DATE PLOTTED: 8 February 2022 3:25 PM BY : GEORGE IZATT

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SP61673

LOT 23
DP864566

SP66943

CHAPMAN STREET

LOCKABLE GATE

STABILISED SITE ACCESS
REFER DETAIL ON DRG: C03.21.

1301 1302 1303 1304

1307 1305

1308 1306

ROAD 01

1309 1310 1311 1312 1313 1314 1315

PROVIDE SEDIMENT FENCE TO DOWNSTREAM BOUNDARY.
REFER DETAIL ON DRG: C03.21.

PROVIDE GEOTEXTILE INLET FILTER TO ALL PROPOSED STORMWATER PITS.
REFER DETAIL ON DRG: C03.21.

EXISTING TREE TO BE REMOVED (TYP).

INDICATIVE LOCATION OF STOCKPILE COVER WHEN NOT IN USE

LOT 1
DP 1226122

SP 67312

SP 31607

3 x Ø375 RES DRAINAGE

TWO STOREY BRICK TOWNHOUSES

BOTTOM OF BANK

TOP OF BANK

BOTTOM OF BANK

LEGEND

- SEDIMENT FENCE (SD 6 - 8) REFER TO DRG. C03-21 FOR DETAIL
- SITE FENCE
- STOCKPILES (SD 4 - 1) REFER TO DRG. C03.21 FOR DETAIL
- STABILISED SITE ACCESS REFER TO DRG. C03-21 FOR DETAIL
- SITE ENTRY / EXIT GATE
- MESH AND GRAVEL INLET FILTER REFER TO DRG. C03.21 FOR DETAIL
- GEOTEXTILE INLET FILTER (SD 6 -12) REFER DRG. C03.21 FOR DETAILS
- EXISTING TREE TO BE REMOVED

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

Scale: 0 5 10 15 20 25m
SCALE 1:250 @A1

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ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

Title: EROSION AND SEDIMENTATION CONTROL PLAN

Scale: 1:250
Date: 23/11/2021
Size: A1
Datum: MGA94

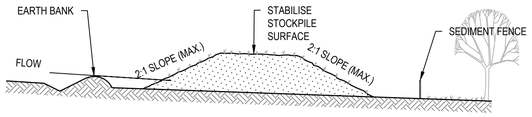
Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 190060-1D-DA-C03.01

Revision: 2

DATE PLOTTED: 8 February 2022 3:25 PM BY : GEORGE IZATT

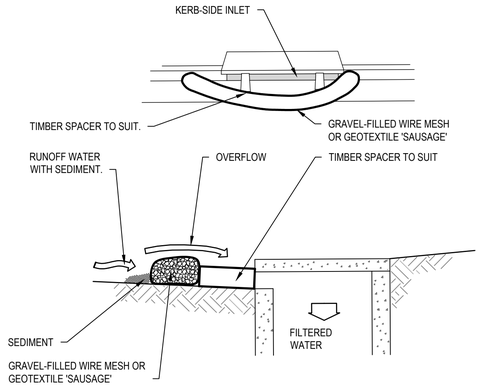
CAD File: P:\190060 Werrington\D-Civil\01-Stage1D\Drawings\6-DACC\190060-1D-DA-C03.01 EROSION AND SEDIMENTATION CONTROL PLAN.dwg



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. 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)

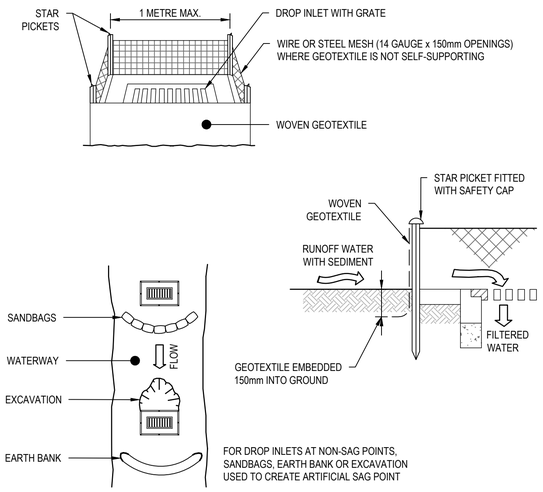


NOTE:THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP.

CONSTRUCTION NOTES

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. 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.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. 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.

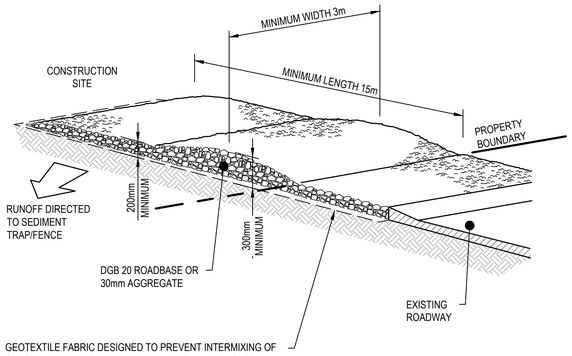
MESH AND GRAVEL INLET FILTER (SD 6-11)



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

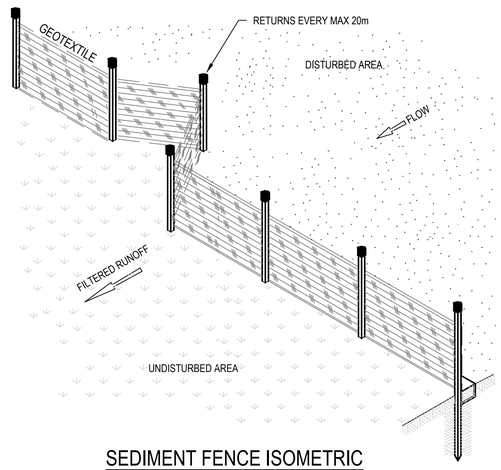
GEOTEXTILE INLET FILTER (SD 6-12)



CONSTRUCTION NOTES

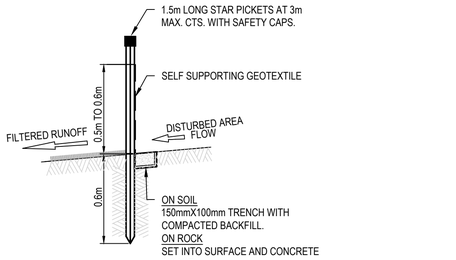
1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS (SD 6-14)



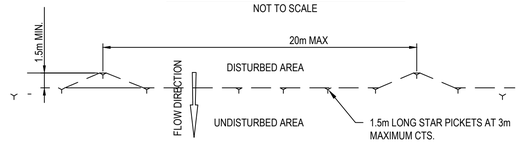
SEDIMENT FENCE ISOMETRIC

NOT TO SCALE



SEDIMENT FENCE SECTION

NOT TO SCALE



SEDIMENT FENCE PLAN

NOT TO SCALE

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
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Client: lendlease

Scale:

North:

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Enspire Solutions Pty Ltd
1302/83 Mount Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D SUBDIVISION CIVIL ENGINEERING WORKS

Scale: AS SHOWN

Date: 23/11/2021

Status: FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION

Title: EROSION AND SEDIMENTATION CONTROL DETAILS

Size: A1

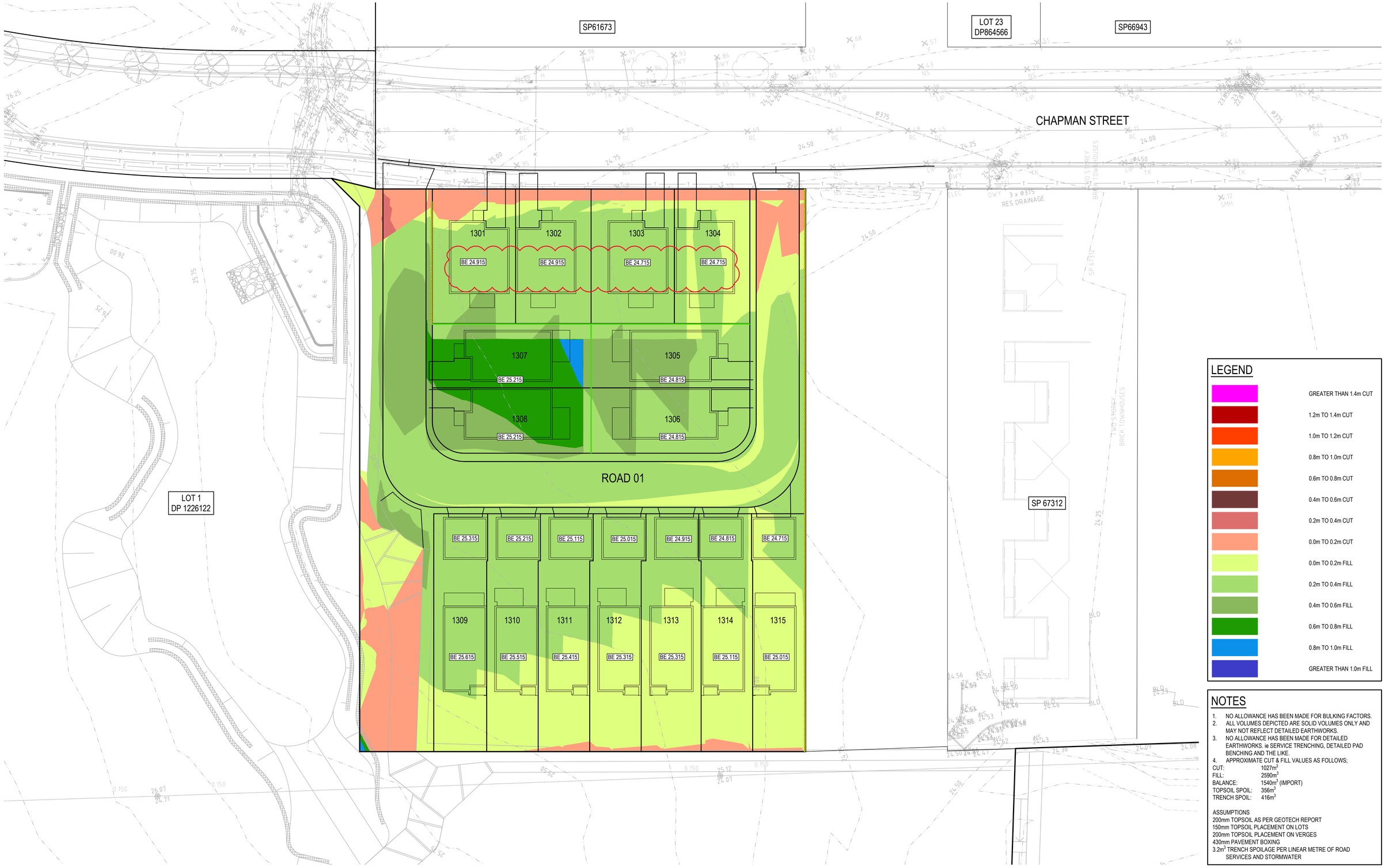
Datum: MGA94

Project Number/Drawing Number: 190060-1D-DA-C03.21

Revision: 2

DATE PLOTTED: 8 February 2022 3:25 PM BY: GEORGE IZATT

CAD File: P:\190060 Werrington\D-Civil\01-Stage1D\Drawings\6-DACC\190060-1D-DA-C03.21 EROSION AND SEDIMENTATION CONTROL DETAILS.dwg



LEGEND

- GREATER THAN 1.4m CUT
- 1.2m TO 1.4m CUT
- 1.0m TO 1.2m CUT
- 0.8m TO 1.0m CUT
- 0.6m TO 0.8m CUT
- 0.4m TO 0.6m CUT
- 0.2m TO 0.4m CUT
- 0.0m TO 0.2m CUT
- 0.0m TO 0.2m FILL
- 0.2m TO 0.4m FILL
- 0.4m TO 0.6m FILL
- 0.6m TO 0.8m FILL
- 0.8m TO 1.0m FILL
- GREATER THAN 1.0m FILL

NOTES

1. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS.
2. ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
3. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS. ie SERVICE TRENCHING, DETAILED PAD BENCHING AND THE LIKE.
4. APPROXIMATE CUT & FILL VALUES AS FOLLOWS;

CUT:	1027m^3
FILL:	2590m^3
BALANCE:	1540m^3 (IMPORT)
TOPSOIL SPOIL:	356m^3
TRENCH SPOIL:	416m^3

ASSUMPTIONS
200mm TOPSOIL AS PER GEOTECH REPORT
150mm TOPSOIL PLACEMENT ON LOTS
200mm TOPSOIL PLACEMENT ON VERGES
430mm PAVEMENT BOXING
3.2m^3 TRENCH SPOILAGE PER LINEAR METRE OF ROAD SERVICES AND STORMWATER

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
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Client: lendlease

Scale: 0 5 10 15 20 25m — SCALE 1:250 @A1

North

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Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

Title: BULK EARTHWORKS
CUT AND FILL PLAN

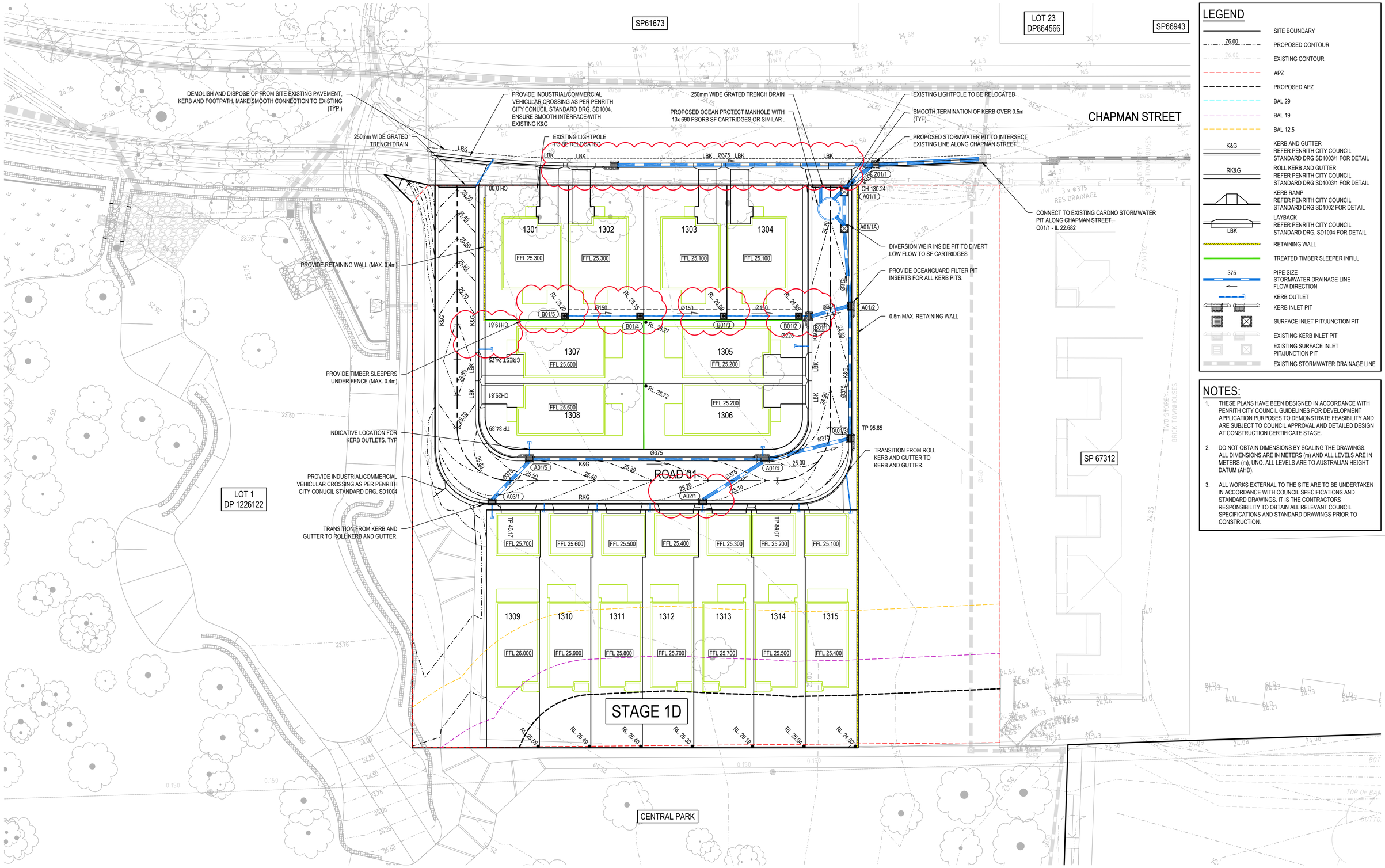
Scale: 1:250
Date: 23/11/2021
Size: A1
Datum: MGA94

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 190060-1D-DA-C04.01
Revision: 2

DATE PLOTTED: 8 February 2022 3:25 PM BY - GEORGE IZATT

CAD File: P:\190060 Werrington\D-Civil\01-Stage1D\Drawings\6-DACC\190060-1D-DA-C04.01 BULK EARTHWORKS - CUT AND FILL PLAN.dwg



LEGEND

- SITE BOUNDARY
- PROPOSED CONTOUR (76.00)
- EXISTING CONTOUR (76.00)
- APZ
- PROPOSED APZ
- BAL 29
- BAL 19
- BAL 12.5
- K&G — KERB AND GUTTER. REFER PENRITH CITY COUNCIL STANDARD DRG SD1003/1 FOR DETAIL
- RK&G — ROLL KERB AND GUTTER. REFER PENRITH CITY COUNCIL STANDARD DRG SD1003/1 FOR DETAIL
- KERB RAMP. REFER PENRITH CITY COUNCIL STANDARD DRG SD1002 FOR DETAIL
- LBK — LAYBACK. REFER PENRITH CITY COUNCIL STANDARD DRG. SD1004 FOR DETAIL
- RETAINING WALL
- TREATED TIMBER SLEEPER INFILL
- 375 — PIPE SIZE. STORMWATER DRAINAGE LINE. FLOW DIRECTION
- KERB OUTLET
- KERB INLET PIT
- SURFACE INLET PIT/JUNCTION PIT
- EXISTING KERB INLET PIT
- EXISTING SURFACE INLET PIT/JUNCTION PIT
- EXISTING STORMWATER DRAINAGE LINE

NOTES:

1. THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH PENRITH CITY COUNCIL GUIDELINES FOR DEVELOPMENT APPLICATION PURPOSES TO DEMONSTRATE FEASIBILITY AND ARE SUBJECT TO COUNCIL APPROVAL AND DETAILED DESIGN AT CONSTRUCTION CERTIFICATE STAGE.
2. DO NOT OBTAIN DIMENSIONS BY SCALING THE DRAWINGS. ALL DIMENSIONS ARE IN METERS (m) AND ALL LEVELS ARE IN METERS (m), UNO. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
3. ALL WORKS EXTERNAL TO THE SITE ARE TO BE UNDERTAKEN IN ACCORDANCE WITH COUNCIL SPECIFICATIONS AND STANDARD DRAWINGS. IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN ALL RELEVANT COUNCIL SPECIFICATIONS AND STANDARD DRAWINGS PRIOR TO CONSTRUCTION.

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF	APPD.
2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

Scale: 0 5 10 15 20 25m — SCALE 1:250 @A1

North

enspire
Enspire Solutions Pty Ltd
1302/83 Mount Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

Title: SITEWORKS AND STORMWATER MANAGEMENT PLAN

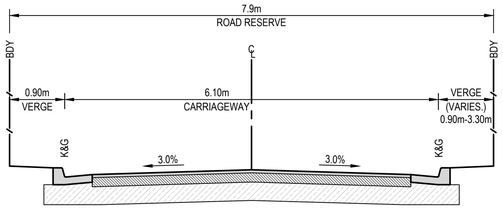
Scale: 1:250
Date: 23/11/2021
Size: A1
Datum: MGA94

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 190060-1D-DA-C05.01
Revision: 2

DATE PLOTTED: 8 February 2022 3:26 PM BY : GEORGE IZATT

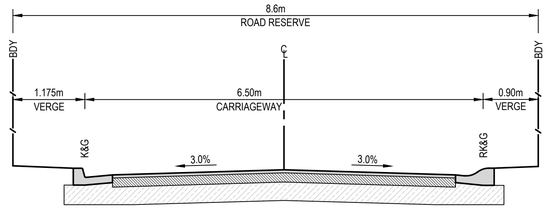
CAD File: P:\190060 Werrington\D-Civil\01-Stage1D\Drawings\6-DACC\190060-1D-DA-C05.01 SITEWORKS AND STORMWATER MANAGEMENT PLAN.dwg



TYPICAL LANEWAY CROSS SECTION - ROAD 01

SCALE 1:50

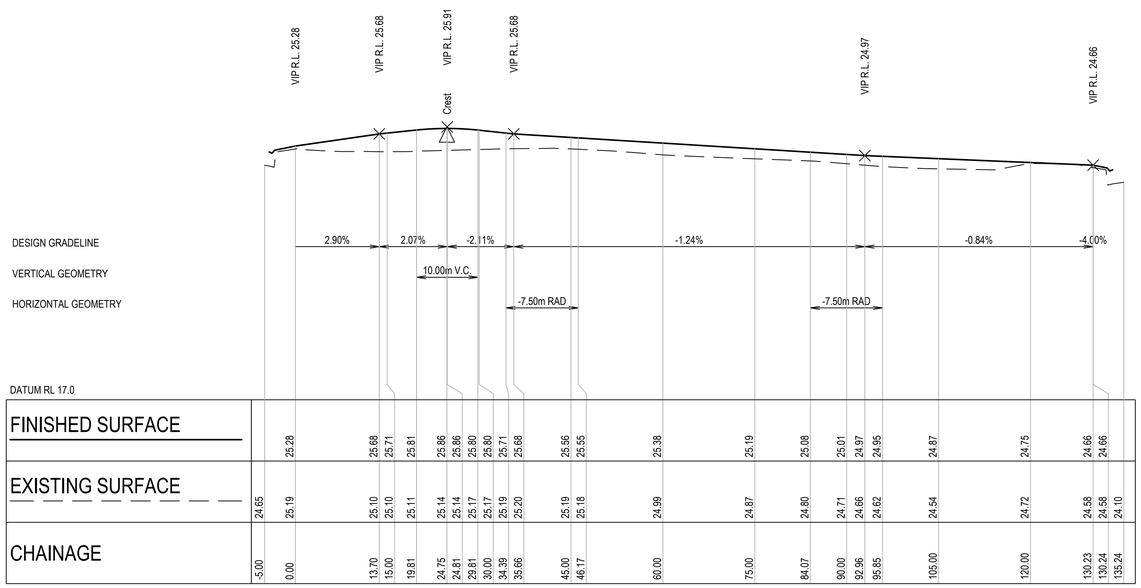
CH. 0.00 TO 34.39 & CH. 95.85 TO 130.24



TYPICAL LANEWAY CROSS SECTION - ROAD 01

SCALE 1:50

CH.46.17 TO 84.07



ROAD LONGITUDINAL SECTION

SCALE 1:500 HORI

SCALE 1:100 VERT

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

Scale: SCALE 1:50 @A1; H: 0 10 20 30 40 50m; V: 0 2 4 6 8 10m SCALE: H:1:500 V:1:100 @A1

North

Enspire Solutions Pty Ltd
1302/83 Mount Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

Title: ROAD TYPICAL CROSS SECTION AND LONGITUDINAL SECTION

Scale: AS SHOWN

Date: 23/11/2021

Size: A1

Datum: MGA94

Status: FOR INFORMATION ONLY
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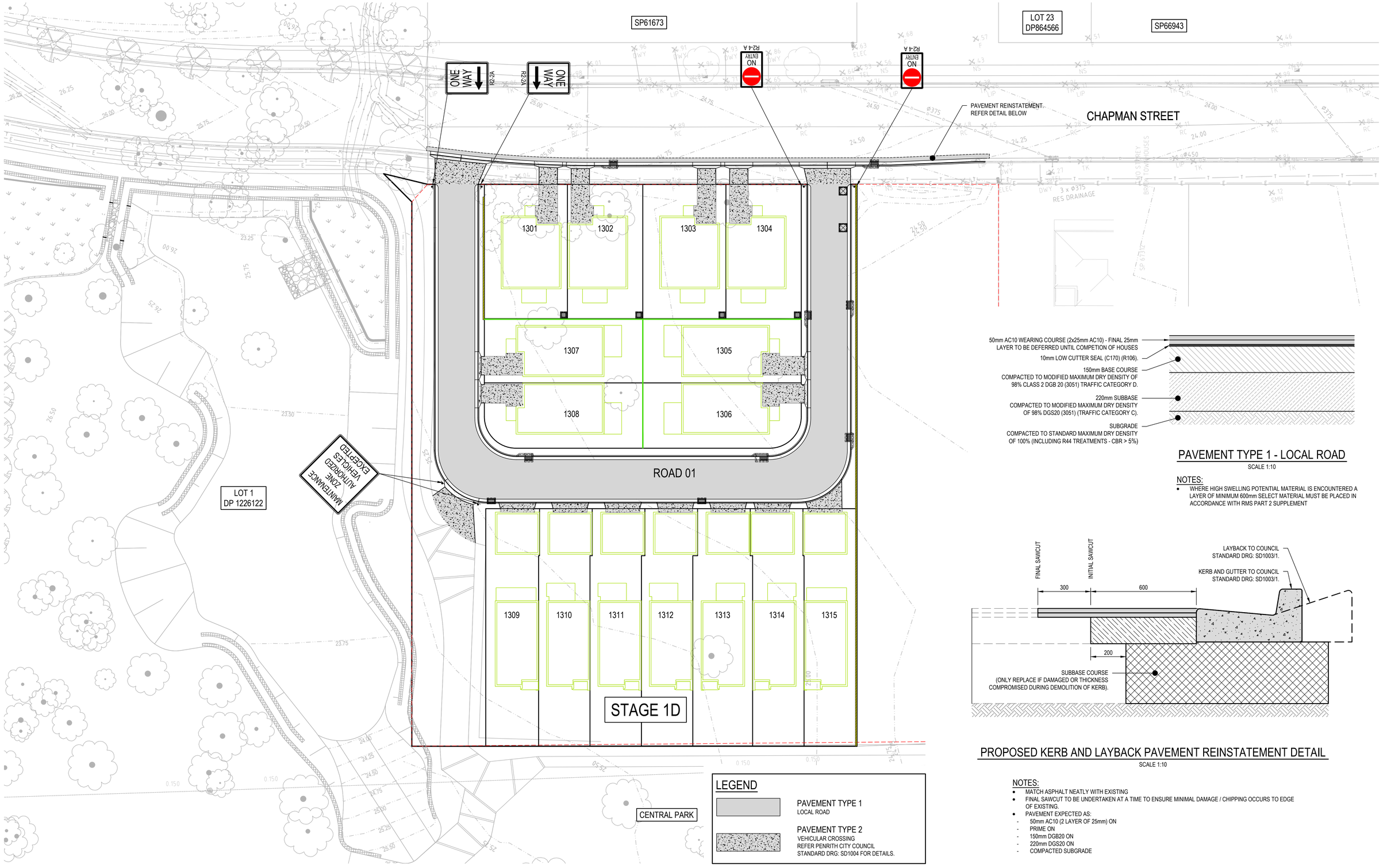
Project Number/Drawing Number: 190060-1D-DA-C06.01

Revision: 2

DATE PLOTTED: 8 February 2022 3:26 PM BY : GEORGE IZATT

CAD File: P:\190060 Werrington\D-Civil\01-Stage1D\Drawings\6-DACC\190060-1D-DA-C06.01 ROAD TYPICAL CROSS SECTION AND LONGITUDINAL SECTION.dwg



PAVEMENT TYPE 1 - LOCAL ROAD

SCALE 1:10

NOTES:

- WHERE HIGH SWELLING POTENTIAL MATERIAL IS ENCOUNTERED A LAYER OF MINIMUM 600mm SELECT MATERIAL MUST BE PLACED IN ACCORDANCE WITH RMS PART 2 SUPPLEMENT

PROPOSED KERB AND LAYBACK PAVEMENT REINSTATEMENT DETAIL

SCALE 1:10

NOTES:

- MATCH ASPHALT NEATLY WITH EXISTING
- FINAL SAWCUT TO BE UNDERTAKEN AT A TIME TO ENSURE MINIMAL DAMAGE / CHIPPING OCCURS TO EDGE OF EXISTING.
- PAVEMENT EXPECTED AS:
  - 50mm AC10 (2 LAYER OF 25mm) ON
  - PRIME ON
  - 150mm DGB20 ON
  - 220mm DGS20 ON
  - COMPACTED SUBGRADE

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2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

Scale: 0 0.2 0.4 0.6 0.8 1m — SCALE 1:10 @A1; 0 5 10 15 20 25m — SCALE 1:250 @A1

North

Enspire Solutions Pty Ltd
1302/83 Mount Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

Title: PAVEMENT, SIGNAGE AND LINEMARKING PLAN

Scale: AS SHOWN
Date: 23/11/2021
Size: A1
Datum: MGA94

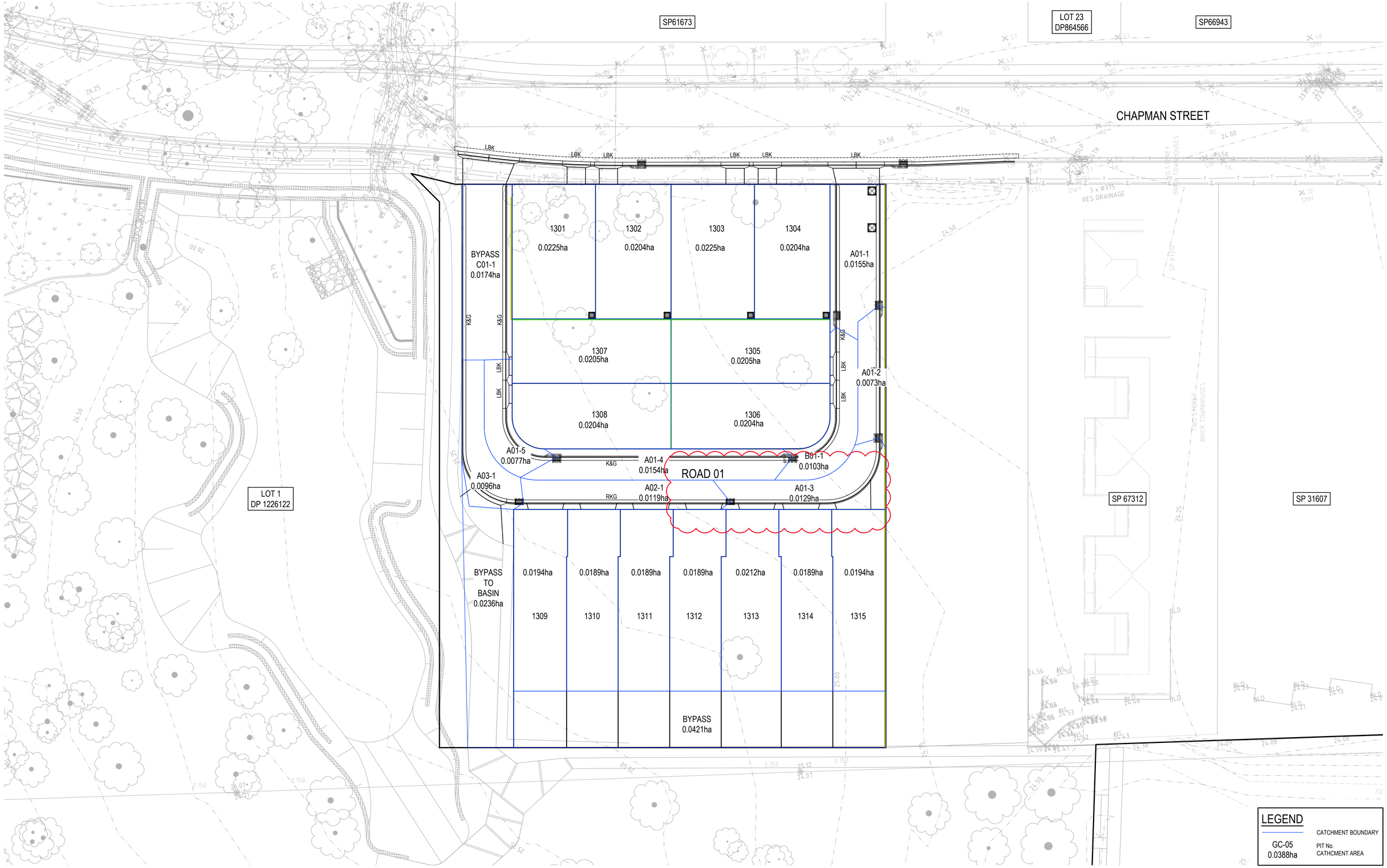
Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 190060-1D-DA-C11.01

Revision: 2

DATE PLOTTED: 8 February 2022 3:26 PM BY : GEORGE IZATT

CAD File: P:\190060 Werrington\D-Civil\01-Stage1D\Drawings\6-DACC\190060-1D-DA-C11.01 PAVEMENT SIGNAGE & LINE MARKING PLAN.dwg



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2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

Scale: 0 5 10 15 20 25m
SCALE 1:250 @A1

North

enspire
Enspire Solutions Pty Ltd
1302/83 Mount Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

Title: STORMWATER CATCHMENT PLAN

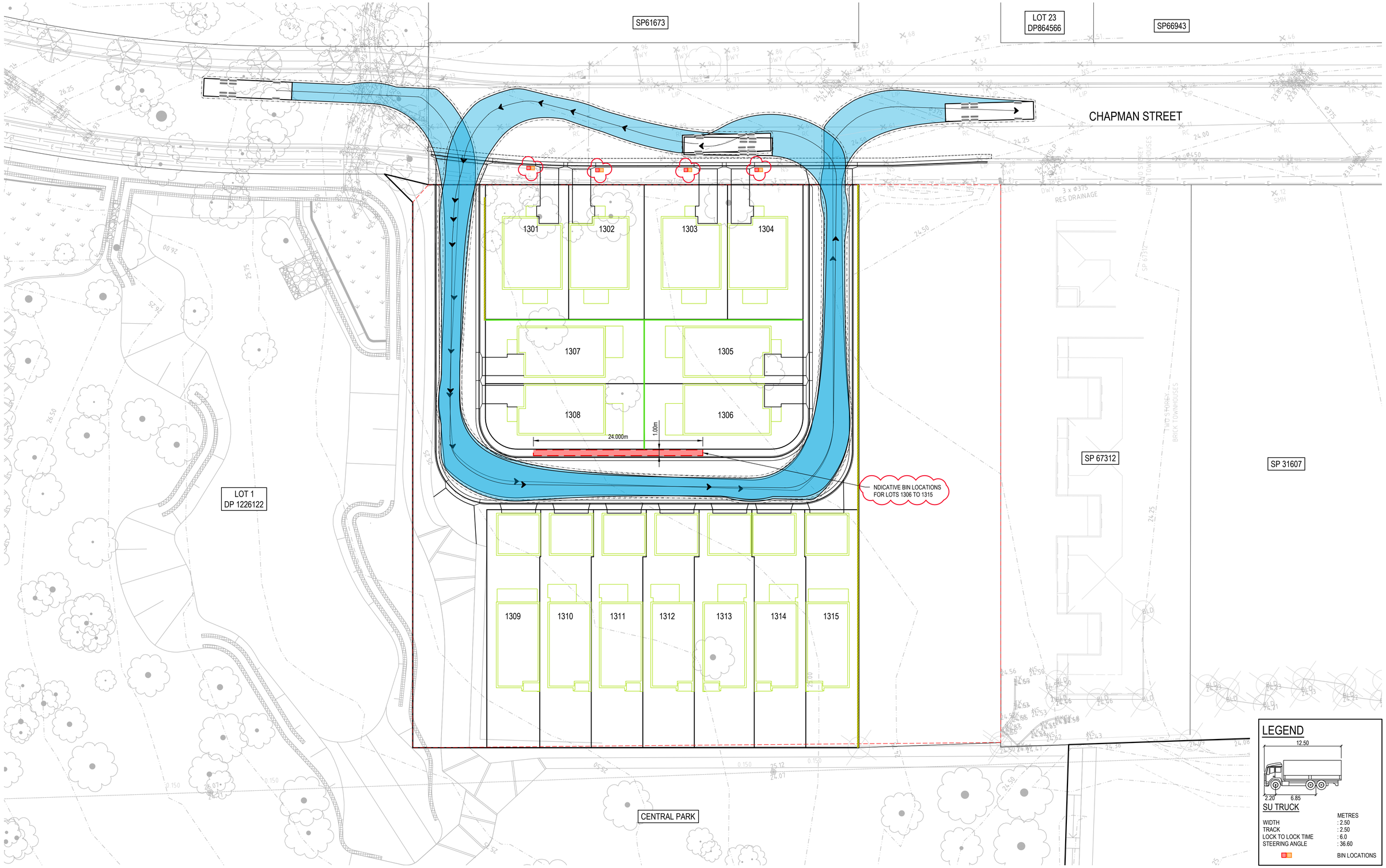
Scale: 1:250
Date: 23/11/2021
Size: A1
Datum: MGA94

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 190060-1D-DA-C20.01
Revision: 2

DATE PLOTTED: 8 February 2022 3:26 PM BY : GEORGE IZATT

CAD File: P:\190060 Werrington\D-Civil\01-Stage1D\Drawings\6-DACC\190060-1D-DA-C20.01 STORMWATER CATCHMENT PLAN.dwg



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2	8/02/2022	RE-ISSUED FOR DEVELOPMENT APPLICATION	BML	AL	CV	RA
1	23/11/2021	ISSUED FOR DEVELOPMENT APPLICATION	GJI	AL	CV	RA

Client: lendlease

Scale: 0 5 10 15 20 25m
SCALE 1:250 @A1

North

enspire
Enspire Solutions Pty Ltd
1302/83 Mount Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D
SUBDIVISION
CIVIL ENGINEERING WORKS

Title: TURNING PATH AND BIN LOCATION PLAN

Scale: 1:250
Date: 23/11/2021
Size: A1
Datum: MGA94

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 190060-1D-DA-C22.01
Revision: 2

DATE PLOTTED: 8 February 2022 3:27 PM BY - GEORGE IZATT

CAD File: P:\190060 Werrington\D-Civil\01-Stage1D\Drawings\6-DACC\190060-1D-DA-C22.01 TURNING PATH AND BIN LOCATION PLAN.dwg

SAFETY IN DESIGN REPORT

INTRODUCTION

ENSPIRE HAS BEEN APPOINTED BY LENDLEASE TO PREPARE DESIGN DOCUMENTATION FOR BULK EARTHWORKS, STORMWATER PIT AND PIPE INFRASTRUCTURE AND SERVICES FOR KINGS CENTRAL. THIS SAFETY IN DESIGN REPORT HAS BEEN DEVELOPED IN PARALLEL WITH THE DESIGN TO IDENTIFY POTENTIAL HAZARDS TO WORK HEALTH AND SAFETY AND DEVELOP RISK ASSESSMENT METHODS TO POTENTIALLY REDUCE THE LIKELIHOOD AND SEVERITY OF HAZARDS.

THIS SAFETY IN DESIGN REPORT HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE WORK HEALTH AND SAFETY REGULATION 2017 AND THE WORK HEALTH AND SAFETY REGULATION PART 6.2 CLAUSE 295. UNDER THE WORK HEALTH AND SAFETY REGULATION DESIGNERS HAVE THE RESPONSIBILITY TO ENSURE THEIR DESIGN ELIMINATES OR MINIMISES RISKS TO HEALTH AND SAFETY AND GIVE ADEQUATE INFORMATION TO PEOPLE COMMISSIONING THE DESIGN AND UNDERTAKING CONSTRUCTION, OPERATION AND MAINTENANCE ACTIVITIES BASED ON THE DESIGN.

THIS REPORT SPECIFIES POTENTIAL HEALTH AND SAFETY RISKS AND HAZARDS ASSOCIATED WITH THE DESIGN ELEMENTS DOCUMENTED IN THIS DRAWING PACKAGE TO RELEVANT PERSONNEL DURING THE DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE, AND DEMOLITION AS WELL AS ULTIMATE DEMOLITION PROCESS AND ASSESSES THEIR LIKELIHOOD AND CONSEQUENCES. THIS REPORT PROPOSES ACTIONS AND STRATEGIES AGAINST RISKS IDENTIFIED TO ACHIEVE EFFECTIVE MITIGATION OF THE RISKS AND HAZARDS, AND ASSESSES RESIDUAL RISKS BASED ON CONTROL MEASURES BEING IMPLEMENTED. ANY SAFETY ISSUES UNRESOLVED THROUGH DESIGN ARE ALSO IDENTIFIED FOR THEIR APPROPRIATE MANAGEMENT.

THE INFORMATION CONTAINED IN THIS SAFETY IN DESIGN REPORT HAS BEEN PREPARED PRIOR TO THE COMMENCEMENT OF THE WORK ON SITE. IT DOES NOT TAKE ACCOUNT OF ANY MATTERS OR INFORMATION WHICH MAY COME TO LIGHT AFTER THAT TIME. WHEN A DESIGN IS ALTERED, AN ADDITIONAL REVIEW MUST BE CONDUCTED TO ENSURE NEW RISKS HAVE BEEN CAPTURED DUE TO MODIFICATION OF THE DESIGN. ADDITIONALLY, CLIENTS ARE REQUIRED TO INFORM ENSPIRE OF ANY EXISTING RISKS AND HAZARDS IN THE AREA WHERE CONSTRUCTION WILL TAKE PLACE.

THE RISKS IDENTIFIED IN THIS SAFETY IN DESIGN REPORT ARE PROJECT AND DESIGN SPECIFIC RISKS WHICH WOULD NOT BE EASILY RECOGNIZED BY A REASONABLY COMPETENT STAKEHOLDER. IT DOES NOT ADDRESS THE COMMON-PLACE HAZARDS OR HAZARDS WHERE KNOWN SOLUTIONS APPLY, AND WHICH ARE ASSOCIATED WITH CONSTRUCTION, OPERATION AND MAINTENANCE AND DEMOLITION GENERALLY. THESE COMMON-PLACE HAZARDS MUST BE CONTROLLED BY THE APPLICATION OF NORMAL GOOD MANAGEMENT PRACTICES.

THIS DESIGN REPORT ASSUMES THAT DURING CONSTRUCTION, OPERATION AND MAINTENANCE OF THE DEVELOPMENT, THE PRINCIPAL WILL ENGAGE EXPERIENCED AND COMPETENT PERSONNEL AS PART OF THE RESPECTIVE TENDER EVALUATION PROCESS. IT IS THE HEAD CONTRACTOR'S OBLIGATION TO PREPARE AND IMPLEMENT SITE SPECIFIC WORK HEALTH AND SAFETY MANAGEMENT PLANS TO MITIGATE COMMON RISKS ASSOCIATED WITH GENERAL CONSTRUCTION AND OPERATION ACTIVITIES IN ACCORDANCE WITH THE WORK HEALTH AND SAFETY REGULATION 2017.

PROPOSED WORKS

THE SCOPE OF THE MAIN ACTIVITIES INVOLVED IN THESE WORKS ARE:

- DETAILED DESIGN OF BULK EARTHWORKS, STORMWATER PIT AND PIPE INFRASTRUCTURE AND SERVICES;
- CONSTRUCTION OF BULK EARTHWORKS, STORMWATER PIT AND PIPE INFRASTRUCTURE AND SERVICES;
- SITE VISITS AND INSPECTIONS;
- POST CONSTRUCTION OPERATION AND MAINTENANCE.
- FUTURE DEMOLITION

INFORMATION TRANSFER

SAFETY IN DESIGN RELIES ON EFFECTIVE DOCUMENTATION AND COMMUNICATION BETWEEN EVERYONE INVOLVED IN THE LIFE CYCLE OF THE DESIGN ELEMENTS. IN ACCORDANCE WITH THE WORK HEALTH AND SAFETY REGULATION 2017, THE DESIGNER MUST PROVIDE A COPY OF THIS SAFETY IN DESIGN REPORT TO THE PRINCIPAL CONTRACTOR IN PARALLEL WITH THE COMPLETED DESIGN DOCUMENTATION AND ENSURE THAT THE FOLLOWING ACTIONS ARE UNDERTAKEN:

- ONSITE SAFETY INDUCTIONS, INCLUDING HAZARDS IDENTIFIED IN THIS REPORT, SHOULD BE CONDUCTED FOR ALL STAFF;
- SAFETY MANAGEMENT PLANS SHOULD BE PREPARED FOR THE HAZARDS IDENTIFIED IN THIS REPORT;
- THERE SHOULD BE NO VARIATION ON DESIGN REQUIREMENTS WITHOUT CONSULTATION WITH THE ORIGINAL DESIGNERS;
- ONSITE MANAGEMENT OF CONTRACTORS TO ENSURE THAT HAZARDS THAT ARISE THROUGH STARTING/COMPLETION OF JOBS DOES NOT OCCUR; AND
- THIS DESIGN MAY INTERFACE WITH OTHER PLANS AND ACCOUNT SHOULD BE TAKEN OF ANY INTERFACE ISSUES.

IT IS RECOMMENDED THAT THIS SAFETY IN DESIGN REPORT BE PASSED ONTO ANY PARTICIPANT IN THE PROJECT WHO MAY EXTEND THE DESIGN OR FURTHER DEVELOP THE DESIGN.

SAFE DESIGN PROCESS

A SAFE DESIGN PROCESS SHOULD BE ENGAGED EARLY IN THE DEVELOPMENT OF THE DESIGN TO IDENTIFY ALL CONCEIVABLE RISKS AND HAZARDS THAT MAY AFFECT THE FUNDAMENTALS OF THE DESIGN AND AVOID UNNECESSARY REWORK. IT SHOULD BE IMPLEMENTED THROUGH A STRUCTURED APPROACH ACROSS EACH PHASE OF THE DESIGN PROCESS.

DELIVERY OF SAFE DESIGN FOR EACH DESIGN PHASE OF THE PROJECT HAS BEEN CARRIED OUT FOLLOWING THE STEPS BELOW:

- STEP 1: PRELIMINARY RISK IDENTIFICATION

  THE DESIGNER/DESIGN TEAM TO CONDUCT A PRELIMINARY ASSESSMENT AND IDENTIFY ANY POTENTIAL RISKS RELEVANT TO THE SCOPE OF DESIGN WORKS. WITH PROJECTS INVOLVING MULTIPLE DISCIPLINES, THE DESIGNER/DESIGN TEAM TO ATTEND SAFETY IN DESIGN WORKSHOP (IF APPROPRIATE) AND IDENTIFY RISKS IN CONSULTATION WITH OTHER KEY PROJECT STAKEHOLDERS.
- STEP 2: RISK ASSESSMENT AND MITIGATION

  THE DESIGNER/DESIGN TEAM TO ASSESS THE LIKELIHOOD AND SEVERITY OF EACH HAZARD AND DEVELOP CONTROLS AND MEASURES TO ELIMINATE OR MINIMISE THE CONSEQUENCES OF THE HAZARD.
- STEP 3: VERIFICATION

  ENSPIRE TO PERFORM INTERNAL VERIFICATION ON THE SAFE DESIGN RISK REGISTER PRIOR TO ISSUING TO THE CONTRACTOR AND CLIENT.
- STEP 4: REVIEW DESIGN

  THE DESIGNER/DESIGN TEAM TO IDENTIFY ANY ALTERATIONS IN DESIGN AND REVIEW AND UPDATE RISK REGISTER ACCORDINGLY.

PROJECT REPRESENTATIVES

ORGANISATION	PROJECT ROLE	MAIN CONTACT	CONTACT DETAILS
LENDLEASE	DEVELOPMENT PROPONENT	REBECCA MCALPINE	TEL: +61 408 786 569 EMAIL: REBECCA.MCALPINE@LENDLEASE.COM ADD: LEVEL 14, TOWER 3, INTERNATIONAL TOWERSSYDNE, EXCHANGE PLACE, 300 BARANGAROO AVE, BARANGAROO, NSW 2000
ENSPIRE SOLUTIONS	CIVIL DESIGN CONSULTANT	RICK ANDREW	TEL: +61 423 963 903 EMAIL: RICK.ANDREW@ENSPIRESOLUTIONS.COM.AU ADD: 1302/83 MOUNT STREET, NORTH SYDNEY, NSW 2060

QUALITATIVE MEASURES OF LIKELIHOOD OR FREQUENCY

LEVEL	MEASURE	CRITERIA
1	RARE	WOULD ONLY OCCUR IN HIGHLY EXCEPTIONAL CIRCUMSTANCES THAT ARE UNLIKELY TO EXIST IN ANY PHASE OF THE DEVELOPMENT'S LIFECYCLE PERIOD. EXTREMELY REMOTE CHANCE OF OCCURRENCE IN DEVELOPMENT'S LIFECYCLE PERIOD. 'ONCE IN A LIFETIME' EVENT.
2	UNLIKELY	NOT LIKELY TO OCCUR IN THE DEVELOPMENT'S LIFECYCLE PERIOD. A SMALL, BUT REMOTE CHANCE OF OCCURRENCE DUE TO CIRCUMSTANCES / SITUATIONS THAT COULD ARISE.
3	POSSIBLE	LIKELY TO OCCUR AT LEAST ONCE BUT NOT EXPECTED TO OCCUR MUCH MORE THAT THIS IN THE DEVELOPMENT'S LIFECYCLE PERIOD.
4	LIKELY	LIKELY TO OCCUR MORE THAN ONCE IN THE DEVELOPMENT'S LIFECYCLE PERIOD BUT NOT AN 'EVERYDAY' OCCURRENCE. PRECONDITIONS WILL ARISE AT TIMES THROUGHOUT THE PERIOD.
5	ALMOST CERTAIN	WILL OCCUR. CIRCUMSTANCES OR SITUATIONS ARE LIKELY TO ARISE OFTEN THROUGHOUT THE DEVELOPMENT'S LIFECYCLE PERIOD WHICH PROVIDES THE OPPORTUNITY FOR CRYSTALLISATION OF RISK. EXPECT FREQUENT, REGULAR OCCURRENCES.

QUALITATIVE MEASURES OF IMPACT - CONSEQUENCE SEVERITY

LEVEL	MEASURE	CRITERIA
1	INSIGNIFICANT	NO INJURIES; NO ENVIRONMENTAL IMPACT.
2	MINOR	FIRST AID; ENVIRONMENTAL RELEASE IMMEDIATELY CONTAINED.
3	MODERATE	MEDICAL TREATMENT; ENVIRONMENTAL RELEASE NOT IMMEDIATELY CONTAINED WITH NO DETRIMENTAL EFFECTS.
4	MAJOR	LOST TIME AND/OR LONG-TERM INJURY/ILLNESS; ENVIRONMENTAL RELEASE NOT IMMEDIATELY CONTAINED WITH TOXIC EFFECTS.
5	CATASTROPHIC	FATALITY; RELEASE TO THE ENVIRONMENT WITH LONG TERM OR PERMANENT TOXIC EFFECTS.

MATRIX FOR DETERMINATION OF RISK LEVEL

CONSEQUENCE			LIKELIHOOD: RARE (1)	UNLIKELY (2)	POSSIBLE (3)	LIKELY (4)	ALMOST CETFNSWIN (5)
	CATASTROPHIC	(5)	HIGH	VERY HIGH	VERY HIGH	VERY HIGH	VERY HIGH
	MAJOR	(4)	HIGH	HIGH	VERY HIGH	VERY HIGH	VERY HIGH
	MODERATE	(3)	MODERATE	MODERATE	HIGH	HIGH	VERY HIGH
	MINOR	(2)	LOW	LOW	MODERATE	HIGH	VERY HIGH
	INSIGNIFICANT	(1)	LOW	LOW	LOW	MODERATE	HIGH

SAFE DESIGN RISK REGISTER

ITEM	ACTIVITY	HAZARD	STAGE	INITIAL RISK: LIKELIHOOD	INITIAL RISK: CONSEQUENCE	INITIAL RISK: RISK LEVEL	DESIGN ACTION	RESIDUAL RISK: LIKELIHOOD	RESIDUAL RISK: CONSEQUENCE	RESIDUAL RISK: RISK LEVEL	PERSON RESPONSIBLE FOR CONTROLS	STATUS
1	CONSTRUCTION TRAFFIC	CONSTRUCTION WORKERS STRUCK BY VEHICLE	CONSTRUCTION	2	5	VERY HIGH	WEAR HIGH VIZ, TRAFFIC MANAGEMENT TO BE IN PLACE, INDUCTION TO DELINEATE TRAFFIC AREAS.	2	5	HIGH	CONTRACTOR	ACTION ASSIGNED
2	PUBLIC ROAD TRAFFIC	CONSTRUCTION WORKERS STRUCK BY VEHICLE	CONSTRUCTION	2	5	VERY HIGH	WEAR HIGH VIZ, TRAFFIC MANAGEMENT TO BE IN PLACE, INDUCTION TO DELINEATE TRAFFIC AREAS.	2	5	HIGH	CONTRACTOR	ACTION ASSIGNED
3	OPERATING AROUND LIVE UTILITIES	UTILITIES STRIKE. ELECTROCUTION, HIGH PRESSURE WATERMAIN HAZARD, GAS LEAK AND RISK OF EXPLOSION	CONSTRUCTION	2	5	VERY HIGH	LOCAL UTILITIES IN LOCATIONS OF CROSSOVERS. HAND EXCAVATE ONLY IN LOCATIONS OF UTILITIES, DYBD INVESTIGATIONS	2	5	HIGH	CONTRACTOR	ACTION ASSIGNED
4	PIPE TRENCHING	UTILITIES STRIKE AND FALLS. ELECTROCUTION, HIGH PRESSURE WATERMAIN HAZARD, GAS LEAK AND RISK OF EXPLOSION	CONSTRUCTION	2	5	VERY HIGH	PROVIDE MARKERS TO IDENTIFY DEEP TRENCHES. LOCATE UTILITIES IN LOCATIONS OF CROSSOVERS. HAND EXCAVATE ONLY IN LOCATIONS OF UTILITIES, DBYD INVESTIGATIONS	2	5	HIGH	CONTRACTOR	ACTION ASSIGNED

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF	APPD
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Client: lendlease

Scale:

North:

Enspire Solutions Pty Ltd
1302/83 Mount Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: WERRINGTON STAGE 1D SUBDIVISION CIVIL ENGINEERING WORKS

Title: SAFETY IN DESIGN

Scale: N.T.S

Date: 23/11/2021

Size: A1

Datum: MGA94

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 190060-1D-DA-C23.01

Revision: 2

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