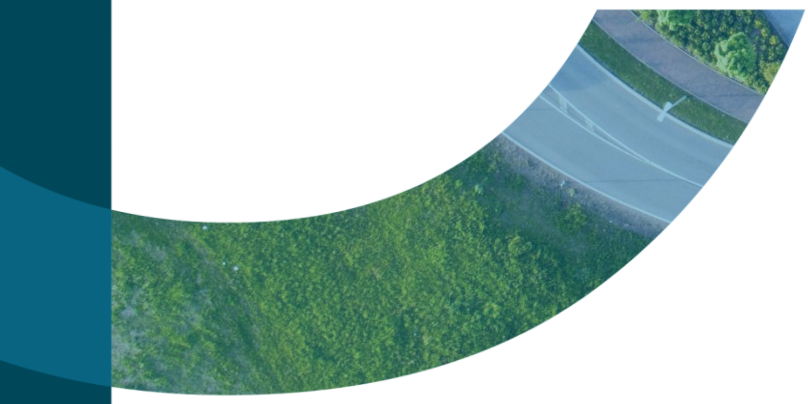
Talia Integrated Housing - Phase 02 Lots 13-20

Civil Engineering Works Development Application



Prepared for Sekisui House

20 May 2025

Document Information

Prepared by
Enspire Solutions Pty Ltd
Level 7, 54 Miller Street
North Sydney NSW 2060
ABN 71 624 801 690

Document Title	**Talia Integrated Housing - Phase 02 Lots 13-20**
Document Subject	Civil Engineering Works Development Application
Prepared For	Sekisui House
Project Name	53A & 53B Warriewood Road, Warriewood
Project Number	220122
File Name	REPT001-220122-02-Enspire-R01-250520-TaliaIntegratedHousing02Report.docx

Transmittal

Revision	Date	Prepared by	Checked by	Approved by
1	20/05/2025	T. Bleasdale	M.Condos	M.Condos
		Issued for Development Application		

Contents

List of Tables

List of Figures

List of Appendices

1 Introduction

Enspire Solutions (**Enspire**) have been engaged by **Sekisui House** to prepare the civil engineering and stormwater management design and documentation in support of a Development Application (**DA**) submission to Northern Beaches Council for the proposed Integrated Housing works associated with eight (8) x residential lots, as depicted in **Figure 1**.

Works associated with this Development Application include:

- Sediment and erosion controls;
- Bulk earthworks;
- Construction of proposed dwellings;
- Construction of residential driveways;
- Construction of retaining walls;
- Construction of minor stormwater drainage infrastructure; and
- Installation and commissioning of essential utility services.

Figure 1 – Integrated Housing Lots 13 – 20 Site Plan

(Source: Nearmap)

2 Related Reports and Documents

This report is to be read in conjunction with the following reports and documents.

1) Development Application documentation prepared by Enspire Solutions

Table 1 - 53A & 53B Warriewood Road Drawing Reference

Drawing Number	Drawing Title
220122-01-DA-C01.01	COVER SHEET AND DRAWING SCHEDULE
220122-01-DA-C01.21	SPECIFICATION NOTES
220122-01-DA-C01.41	GENERAL ARRANGEMENT PLAN
220122-01-DA-C03.01	EROSION AND SEDIMENTATION CONTROL PLAN
220122-01-DA-C03.21	EROSION AND SEDIMENTATION CONTROL DETAILS
220122-01-DA-C04.01	BULK EARTHWORKS - CUT AND FILL PLAN
220122-01-DA-C05.01	SITEWORKS AND STORMWATER MANAGEMENT PLAN
220122-01-DA-C14.01	SITEWORK DETAILS
220122-01-DA-C21.01	CATCHMENT PLAN

2) Northern Beaches Council Water Management for Development Policy, version 2, dated February 2021.
3) Northern Beaches Councill Warriewood Valley Roads Masterplan, dated June 2018.
4) Northern Beaches Council Warriewood Valley Urban Land Release, water management specification, Revised Version, adopted by Pittwater Council on 12 February 2001.
5) Warriewood Valley Draft Planning Framework.
6) Northern Beaches Engineering Design Code (AUSPEC 1).
7) Development Application engineering plans associated with the parent subdivision, prepared by Enspire Solutions [DA2024/1079];
8) Development Application engineering plans associated with the Integrated Housing Phase 01 works, prepared by Enspire Solutions [DA yet to be determined];
9) Development Application engineering plans associated with 53C prepared by Jones Nicholson Consulting Engineers, dated November 2015.
10) Engineering plans associated (DA N0511/10), prepared by Proust and Gardner, dated July 2010 (neighbouring development to the north)

3 The Development

3.1 Proposed Development Works

The development site is located within the Northern beaches Local Government Area (LGA) and occupies a total area of approximately 0.23ha.

The development is generally bound by the following and reflected on **Figure 1**:

- Existing neighbouring residential development to the south, inclusive of Pheasant Place private road; and
- Proposed residential subdivision development to the north, east and west. The parent subdivision is subject to DA2024/1079.
    - An extension of Lorikeet Grove is proposed directly to the west of the site and is expected to be constructed prior to these works commencing.
    - Local roads referred to as 'Road 01' and 'Road 02' are proposed directly to the north and east of the site and are expected to be constructed prior to these works commencing.

The proposed development seeks consent for the construction of eight (8) residential dwellings, stormwater works, minor retaining walls and associated landscaping.

The proposed development has been prepared in accordance with the relevant planning requirements and design specifications referenced in Section 2.

Reference shall be made to DA2024/1079 for details pertaining to the parent subdivision.

3.2 Existing Site Conditions

To facilitate development of the residential allotments and dwellings, levels across the site have been designed to best suit the landform proposed under the parent subdivision DA2024/1079. Levels vary from RL 7.9 at the north-eastern corner, to RL 4.9 at the south-western corner adjacent to Lorikeet Grove.

The proposed development is also largely constrained by works that are to be completed under the parent subdivision, including but not limited to the following:

- Public road known as Lorikeet Grove;
- Internal private road network known as Road 01, and Road 02;
- Major and minor stormwater pit and pipe network;
- On-Site Detention tanks within Roads 01 and 02;
- Site retaining walls;
- Utilities; and
- Creek corridor rehabilitation works.

An existing sewer carrier main is also located directly east of the site, which shall remain un-impeded, retain its current alignment, and be protected throughout all phases of development. Consultation with the relevant authority will be required to faciliate proposed works in proximity to the sewer main.

Reference shall be made to DA2024/1079 for further details.

4 Erosion and Sediment Control

The objectives of the erosion and sediment control for the development site are to ensure:

- Adequate erosion and sediment control measures are applied prior to the commencement of construction and are maintained throughout construction; and
- Construction site runoff is appropriately treated in accordance with Northern Beaches Council requirements.

As part of the works, the erosion and sedimentation control will be constructed in accordance with Council requirements and the NSW Department of Housing Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book) prior to any earthworks commencing on site.

4.1 Sediment Basin

As part of the works, the erosion and sedimentation control will be constructed in accordance with Council requirements and the NSW Department of Housing Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book) prior to any earthworks commencing on site.

The sediment basin is proposed to be constructed under the parent subdivision works and maintained throughout construction of these works. The sediment basin has been designed to capture site runoff during construction of these works.

To ensure the sediment basin is working effectively it will be maintained throughout the construction works. Maintenance includes ensuring adequate settlement times or flocculation and pumping of clean water to reach the minimum storage volume at the lower level of the settling zone. The settling zone will be identified by pegs to clearly show the level at which design storage capacity is available.

The pumped water from the sediment basin can be reused for dust control during construction.

Reference shall be made to DA2024/1079 for further details.

4.2 Sediment and Erosion Control Measures

Prior to any earthworks commencing on site, sediment and erosion control measure shall be implemented generally in accordance with the Development Application drawings and the “Blue Book”. The measures shown on the drawings are intended to be a minimum treatment only as the contractor will be required to modify and stage the erosion and sedimentation control measures to suit the construction program, sequencing and techniques. These measures will include:

- A temporary site security/safety fence is to be constructed around the site;
- Sediment fencing provided downstream of disturbed areas, including any stockpiles;
- Dust control measures including covering stockpiles, installing fence hessian and watering exposed areas;
- Placement of hay bales or mesh and gravel inlet filters around and along proposed catch drains and around stormwater inlets pits;
- Maintenance of the temporary sediment basin constructed under DA2024/1079; and
- Stabilised site access at the construction vehicle entry/exits.

Any stockpiled material, including topsoil, shall be located as far away as possible from any associated natural watercourses or temporary overland flow paths. Sediment fences shall be

installed to the downstream side of stockpiles and any embankment formation. All stockpiles and embankment formations shall be stabilised by hydroseeding or hydro mulching on formation.

5 Bulk Earthworks

5.1 Cut and Fill Operations

The proposed earthworks operations for the site will consist of cut to fill operations to facilitate construction of the public and private roads, residential allotments, retaining walls and public reserve.

The works associated with this Development Application details the following:

- Earthworks and operations to achieve required finished levels;
- Erosion and sediment controls; and
- Retaining wall structures.

Earthworks on the site will consist of cut and fill operations to achieve the desired lot levels.

Approximate cut to fill earthworks operations for the works subject to this development application are summarised within Enspire's engineering drawing package.

The cut and fill earthworks volumes provided are concept only and are subject to change pending final coordination and detailed civil design. It should be noted the cut and fill operations for this development are based on the following assumptions and parameters:

- No allowance for earthworks bulking factors;
- No allowance for spoil generated from utility service and stormwater drainage trenching;
- Allowance for topsoil stripping of the existing ground plane;
- A preliminary bulk earthworks surface has been adopted and includes benching of the residential lots;

Reference shall be made to Enspire's drawing package for further details.

6 Stormwater Management Strategy

6.1 Objectives and Controls

The stormwater strategy has been developed in accordance with Northern beaches council's Water Management for Development Policy and the proposed stormwater management report prepared by Enspire Solutions under DA2024/1079.

The objectives of Council's Water Management for Development Policy are:

a) Improve the quality of water discharged to our natural areas to protect the ecological and recreational condition of our, beaches, waterways, riparian areas and bushland.
b) Minimise the risk to public health and safety.
c) Reduce the risk to life and property from any flooding and groundwater damage.
d) A sustainable and holistic catchment wide approach is taken to development, of both private land uses and public facilities, on flood prone land.
e) Climate change will inform decisions for future water infrastructure.
f) Water sensitive urban design measures will be integrated into the built form to maximise liveability and reduce the impacts of climate change e.g. urban heat island effect and intensified rainfall events.
g) Wherever possible, water courses are to be conserved or restored to their natural state.
h) Reduce the consumption of potable water by encouraging water efficiency, the reuse of water and use of alternative water sources.
i) Protect Council stormwater drainage assets during development works and to ensure Council's drainage rights are not compromised by development activities.

6.2 Proposed Stormwater Management Strategy

In accordance with Council's Water Management for Development Policy, the stormwater management strategy has been designed to ensure site stormwater runoff is managed in the following key areas:

- Existing and developed case catchments;
- Stormwater quantity;
- Stormwater quality; and
- Flooding.

The proposed civil engineering development package documents site levels, grading, and stormwater drainage components and catchments for the site. The overall stormwater management strategy for the site considers external upstream catchments as well as downstream conditions. The lawful point of discharge for the site remains to be to Narrabeen Creek and is consistent with existing conditions.

The proposed design considers Climate Change impacts as outlined in the Stormwater Management report prepared under DA2024/1079.

Reference shall be made to DA2024/1079 for further details around the proposed stormwater management strategy.

6.3 Flooding

Flood modelling of the site has been undertaken by Catchment Simulation Solutions (CSS). Results of the flood study are presented under the parent subdivision works (DA2024/1079) and results reflected in the flood study. Reference shall be made to the flood study for further details.

6.4 Stormwater Quantity

The proposed stormwater management strategy has been developed as part of the parent subdivision application, DA2024/1079, in accordance with Council's Water Management for Development Policy. As part of Council's policy, OSD is required to be implemented to ensure that the development does not increase stormwater discharge downstream and exceed that of the existing stormwater discharge conditions up to the 1% AEP storm event.

The development site is located within 'Region 1 – Northern Stormwater Region' as per Council's Water Management Policy, Section 9.3.1. To ensure post-development runoff is retained to pre-development flow regimes, two (2) separate OSD tanks are proposed under the parent subdivision to restrict outflows to pre-developed conditions.

Reference shall be made to DA2024/1079 for further details.

6.5 Stormwater Quality

6.5.1 Stormwater Quality Objectives (Water Sensitive Urban Design)

The stormwater strategy for the development has been developed in accordance with Northern beaches council's Water Management for Development Policy.

The objectives of Council's Water Management for Development Policy are:

a) Stormwater quality (temperature, salinity, chemical makeup and sediment beds) discharging from the development shall not impact the receiving waters. Reference shall be made to local data if available, including the Warringah Creek Management Study and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC), or other widely accepted guidelines. Stormwater and other drainage shall not be discharged into saltmarsh.
b) Disturbance to stream and wetland sediments is to be minimised by regulated discharge of stormwater and dissipation of flows at discharge locations. Runoff from the development must be retained at natural discharge rates and sediments controlled at the source.
c) Stormwater and groundwater flow is to mimic natural conditions and ensure a dispersed pattern of flow, avoiding centralised or concentrated discharge points into the wetland or waterway. Natural flow regimes must be retained. The reduction or increase in flows, alteration in seasonality of flows, changes to the frequency, duration, magnitude, timing, predictability and variability of flow events, altering surface and subsurface water levels and changing the rate of rise or fall of water levels must be avoided.

6.5.2 Stormwater Quality Management Strategy

A water quality analysis has been undertaken as part of the parent subdivision application, DA2024/1079, to assess the performance of the proposed WSUD strategy against the adopted stormwater quality targets.

The overall development will include a bio-retention basin in the downstream private buffer strip. The remaining treatment system will include the use of a Gross Pollutant Trap, and rainwater tanks for all residential lots as demonstrated on Enspire's engineering drawing package.

Reference shall be made to DA2024/20179 for the proposed MUSIC Model strategy.

7 Siteworks

7.1 General

The proposed development works will involve the construction of multiple new residential dwellings, driveways, and retaining walls. The road network servicing the development will include Lorikeet Grove to the West, Road 01 to the south, and Road 02 to the east, all of which are to be constructed under DA 2024/1079.

Figure 2 demonstrates the proposed road layout for the parent subdivision.

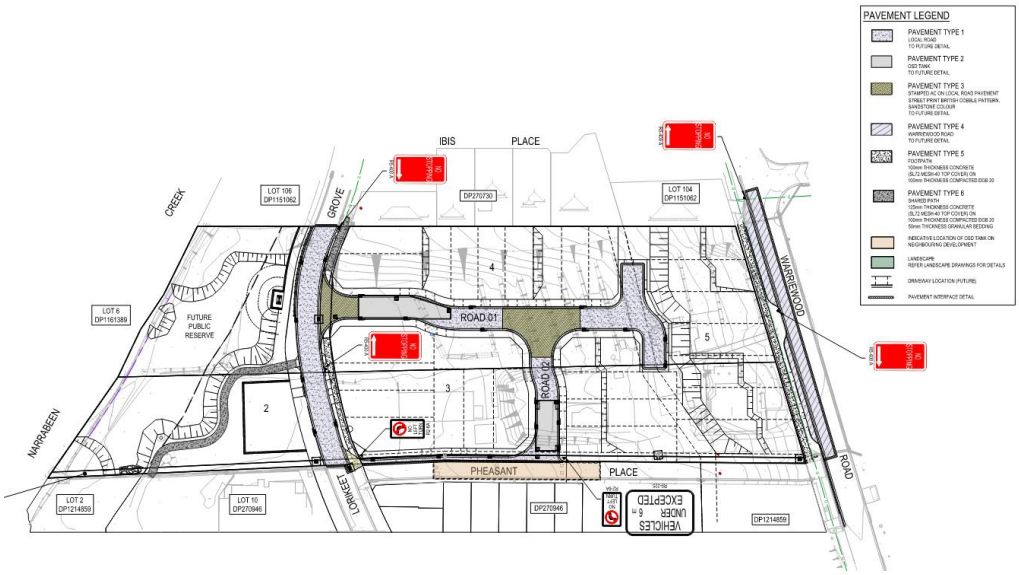


Figure 2 - Proposed Road Layout (DA 2024/1079)

Figure 3 demonstrates the proposed driveway layout for the works proposed under this application.

Figure 3 - Proposed Driveway Layout (Integrated Housing Phase 02)

7.2 Signage & Linemarking

Signage, line marking, and road pavement surface treatments will be provided under the parent subdivision application to ensure appropriate warning to vehicles and traffic calming at local road intersections is incorporated.

Reference is to be made to DA2024/1079 for further details on proposed pavement, signage and line marking.

7.3 Pavement Design

Pavements for the residential driveways will be designed as part of the detailed design phase of the development in accordance with Northern Beaches Engineering Design Code (AUSPEC 1).

- Vehicular Crossings & Residential Driveways – To Council Standard Detail. Indicative profile as follows:
    - 125mm Concrete (SL62 mesh – 50 Top Cover) on
    - 25mm approved fine granular material, except where under the kerb and gutter line where this section is to be placed on
    - 150mm DGB20 Sub-Base

Final pavement design is subject to future detail through the Subdivision Works Certificate phase of the development. Reference shall be made to Enspire's engineering plans for further details on proposed pavement treatments.

7.4 Retaining Walls

Retaining wall structures associated with Lots 13-20 are proposed to be constructed under this Development Application. Wall details and specifications will be provided during the detailed design phase of the development. Indicative sections are reflected on the submitted engineering plans to demonstrate feasibility.

Reference shall be made to Enspire's engineering drawing package for further details.

8 Utilities

New utility infrastructure is to be constructed under the parent subdivision DA2024/1079. Services will be placed in typical shared trench arrangements in accordance with the NSW Streets Opening Conference Guide to Codes and Practices for Streets Opening (2009) or equivalent alternative approved by the relevant authority.

The services that will be available to service this development include:

1. Potable Water;
2. Sewer;
3. Telecommunications;
4. High and low voltage electrical services, including street lighting; and
5. Natural Gas.

The design of all utilities will be submitted as part of the Subdivision Works Certificate application and to each relevant authority.

Reference shall be made to the parent subdivision works (DA2024/1079) for further details around utilities and overall servicing strategy.

9 Conclusion

This Civil Engineering report has been prepared to provide a summary of the adopted design procedures, and a guide to the stormwater quantity and quality management techniques for the proposed development as depicted in **Figure 1**.

The overall stormwater management strategy for the site in its entirety has been prepared as part of the parent subdivision works, DA2024/1079. To ensure consistency across applications. reference must be made to the parent subdivision works DA2024/1079 when assessing this application. The stormwater management works, including water quantity and water quality, proposed under this package is consistent with the overall strategy.

Appendix A Detail Survey

Colliers

Appendix B Civil Subdivision Plans 53A & 53B Warriewood Road (DA2024/1079)

Enspire Solutions

Appendix C Flood Impact Assessment

Catchment Simulation Solutions

Appendix D Pheasant Place DA 53C Warriewood Road

Stephen Bower Architects & Jones Nicholson Consulting Engineers

SEKISUI HOUSE

53A & 53B WARRIEWOOD ROAD WARRIEWOOD NSW 2102

LOTS 13-20

INTEGRATED HOUSING STAGE 02

DEVELOPMENT APPLICATION

DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
220122-02-DA-C01.01	COVER SHEET AND DRAWING SCHEDULE
220122-02-DA-C01.21	SPECIFICATION NOTES
220122-02-DA-C01.41	GENERAL ARRANGEMENT PLAN
220122-02-DA-C03.01	EROSION AND SEDIMENTATION CONTROL PLAN
220122-02-DA-C03.21	EROSION AND SEDIMENTATION CONTROL DETAILS
220122-02-DA-C04.01	BULK EARTHWORKS CUT AND FILL PLAN
220122-02-DA-C05.01	SITEWORKS AND STORMWATER MANAGEMENT PLAN
220122-02-DA-C14.01	SITEWORKS DETAILS
220122-02-DA-C21.01	CATCHMENT PLAN

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	20/05/2025	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB		MC
1	9/05/2025	DRAFT ISSUE	SS	TPB		MC

Client: SEKISUI HOUSE

ISO 9001 QUALITY · ISO 14001 ENVIRONMENT · ISO 45001 SAFETY

Scale: 0 50 100 150m — SCALE 1:1500 @A1

North: N

Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135 enspiresolutions.com.au

Scale: 1:1500
First Issue Date: 09/05/2025
Size: A1
Datum: MGA2020

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-02-DA-C01.01

Revision: 2

DATE PLOTTED: 20 May 2025 1:41 PM BY : SUDHA SHRESTHA

CAD File: \\ensdc01.enspiresolutions.local\Projects\220122 WarriewoodRd\D-Civil\02-Integrated Housing 02\Drawings\6-DACC\1 - DA\220122-02-DA-C01.01 COVER SHEET AND DRAWING SCHEDULE.dwg

GENERAL

1. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH NORTHERN BEACHES COUNCIL STANDARDS.
2. NORTHERN BEACHES COUNCIL STANDARDS DETAILS TO BE USED WHERE POSSIBLE.
3. UTILITY ADJUSTMENTS AT DEVELOPERS EXPENSE.
4. CONDUITS TO BE PLACED WHERE REQUIRED BY THE RELEVANT AUTHORITIES.

SURVEY

1. ORIGIN OF SURVEY

PROJECT:	53A WARRIEWOOD ROAD DATE: 02/01/2021
CARRIED OUT BY:	COLLIERS
SURVEY NAME:	434-20G T01 [02]
REFERENCE NO:	434-20
SSM/PM:	SSM 24840
E:	342191.825
N:	6271409.780
RL:	13.902

2. 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.
3. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT THE SUPERINTENDENT.
4. 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.

BEFORE YOU DIG
www.byda.com.au

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, INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
   d. 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.

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	98% 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 AS3798.
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. 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.
16. 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.
17. 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.

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

1. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 AND AS/NZS 3500 3.2.
2. SUBSOIL DRAINAGE LINES SHALL BE INSTALLED BEHIND ALL KERBS EXCEPT WHERE STORMWATER DRAINAGE IS LOCATED ALONG THE KERBLINE.
3. A MINIMUM OF 3m OF SUBSOIL LINE SHALL BE LAID INTO UPSTREAM SIDE OF ALL DRAINAGE PITS.
4. FLUSHING POINTS SHALL BE INSTALLED TO COUNCIL SPECIFICATION.
5. PIPES UP TO 300 DIA SHALL BE SEWER GRADE uPVC (CLASS SN4) WITH SOLVENT WELDED JOINTS.
6. PIPES 375 DIA. AND LARGER TO BE REINFORCED CONCRETE MIN CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
7. ALL PIPES ARE TO BE LAID AT (min) 1.0% GRADE (UNO)
8. ALL PIPES ARE TO BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE BARREL BY SUITABLE FILL MATERIAL. REFER TO BEDDING SUPPORT TYPE.
9. PIPES WITH SOCKETS SHALL BE LAID IN BEDDING WHERE SUITABLE RECESSES HAVE BEEN PROVIDED TO ENSURE PIPES DO NOT BEAR ON THEIR SOCKETS.
10. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
11. ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE GRADE
12. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
13. WHERE WORKING METHODS REQUIRE HIGHER CLASS PIPE, THE CONTRACTOR SHALL REFER TO AS 3725 TO DETERMINE THE APPROPRIATE PIPE CLASS. ANY CHANGES IN PROPOSED PIPE CLASS SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO INSTALLATION.
14. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
15. PRECAST PITS MAY BE USED SUBJECT TO WRITTEN APPROVAL BY THE SUPERINTENDENT.
16. ALL PIPE PENETRATIONS (EXISTING, IN-SITU AND PRECAST) ARE TO BE FINISHED FLUSH WITH THE INTERNAL PIT WALL AND PROPERLY SEALED WITH CEMENT RENDER. MASS CONCRETE BENCHING IS TO BE INSTALLED TO MATCH THE OUTLET PIPE INVERT LEVEL AND A LOCKABLE HINGED GRATE AND FRAME WITH CONCRETE SURROUND INSTALLED U.N.O.
17. COVERS
    A. USE HOT DIPPED GALVANISED GRATES AND CONCRETE FILLED COVERS WITH HINGES AND HOLD DOWN BOLTS COMPLYING WITH AS3996 AND OTHER RELEVANT AUSTRALIAN AND COUNCIL STANDARDS.
    B. ALL COVERS AND GRATES TO BE POSITIONED IN A FRAME AND MANUFACTURED AS A UNIT.
    C. ALL COVERS AND GRATES TO BE FITTED WITH POSITIVE COVER LIFTING KEYS.
    D. OBTAIN SUPERINTENDENT'S APPROVAL FOR THE USE OF CAST IRON SOLID COVERS AND GRATES. CAST IRON SOLID COVERS (IF APPROVED) TO CONSIST OF CROSS-WEBBED, CELLULAR CONSTRUCTION WITH THE RIBS UPPERMOST TO ALLOW INFILLING WITH CONCRETE. INSTALL POSITIVE COVER LIFTING KEYS AND PLASTIC PLUGS.
    E. UNLESS DETAILED OR SPECIFIED OTHERWISE COVERS AND GRATES TO BE CLASS "D" IN VEHICULAR PAVEMENTS AND CLASS "B" ELSEWHERE.
18. NOTE THAT THE PIT COVER LEVEL NOMINATED IN GUTTERS ARE TO THE INVERT OF THE GUTTER WHICH IS 40mm LOWER THAN THE PAVEMENT LEVEL AT LIP OF GUTTER.
19. Ø100mm SUB-SOIL DRAINAGE LINES SHALL BE CONNECTED TO A STORMWATER DRAINAGE PIT AND PROVIDED IN THE FOLLOWING LOCATIONS:
    A. ADJACENT ALL TRAFFICKED AND CARPARK PAVEMENT AREAS (BEHIND KERB);
    B. ALL PLANTER AND TREE BEDS PROPOSED ADJACENT TO PAVEMENT AREAS;
    C. BEHIND RETAINING WALLS (IN ACCORDANCE WITH DRAWINGS);
    D. BELOW ALL TRAFFICABLE DISH DRAINS;
    E. ALL OTHER AREAS SHOWN ON THE DRAWINGS.
20. THE CONTRACTOR SHALL INSTALL FLUSHING POINTS TO ALL SUBSOIL DRAINAGE LINES AND DOWNPIPE LINES AS SPECIFIED ON DRAWINGS, AT MAXIMUM CENTRES TO COUNCIL SPECIFICATION AND AT ALL UPSTREAM ENDPOINTS.
21. PROVIDE 3.0m LENGTH OF Ø100 SUBSOIL DRAINAGE PIPE WRAPPED IN A NON-WOVEN GEOTEXTILE FABRIC, TO THE UPSTREAM SIDE OF STORMWATER PITS, LAID IN STORMWATER PIPE TRENCHES AND CONNECTED TO THE DRAINAGE PIT.
22. SUBSOIL TRENCHES SHALL BE BACKFILLED WITH SINGLE SIZED 10mm AGGREGATE WRAPPED IN NON-WOVEN GEOTEXTILE FABRIC. SUBSOIL TRENCHES BELOW TRAFFICABLE PAVEMENTS SHALL BE BACKFILLED WITH NO FINES CONCRETE WRAPPED IN NON-WOVEN GEOTEXTILE FABRIC, U.N.O.
23. ALL RECTANGULAR HOLLOW SECTIONS (RHS) SPECIFIED AS STORMWATER CONDUITS TO BE HOT DIPPED GALVANISED AND HAVE (MINIMUM) 5mm WALL THICKNESS.

STORMWATER DRAINAGE (CONT.)

24. ALL BOX CULVERTS SHALL BE STRUCTURALLY DESIGNED BY THE MANUFACTURER AND DELIVERED TO SITE AS FIT FOR PURPOSE.
25. ELECTRICAL PITS ARE TO DRAIN TO THE NEAREST STORMWATER PIT WITH VERMIN PROOF NON-RETURN FLAP VALVES AS REQUIRED. THE CONTRACTOR IS TO CONFIRM WITH THE ELECTRICAL DESIGNER AS PART OF THE TENDER.
26. THE CONTRACTOR SHALL ENSURE AND PROTECT THE INTEGRITY OF ALL STORMWATER PIPES DURING CONSTRUCTION. ANY AND ALL DAMAGE TO THESE PIPES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT, AND AT NO EXTRA COST.
27. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
28. 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.
29. ANY VARIATION TO SPECIFIED PRODUCTS OR DETAILS SHALL BE REFERRED TO THE SUPERINTENDENT FOR APPROVAL.

PAVEMENTS

1. ALL PAVEMENT MATERIALS SHALL COMPLY WITH CURRENT TINSW 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 TINSW 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 TINSW. 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 TINSW. 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 TINSW. 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.

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	20/05/2025	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB		MC
1	9/05/2025	DRAFT ISSUE	SS	TPB		MC

Client: SEKISUI HOUSE

Scale:

North:

enspire
Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
INTEGRATED HOUSING STAGE 02

Title: SPECIFICATION NOTES

Scale: N.T.S

Date: 09/05/2025

Size: A1

Datum: MGA2020

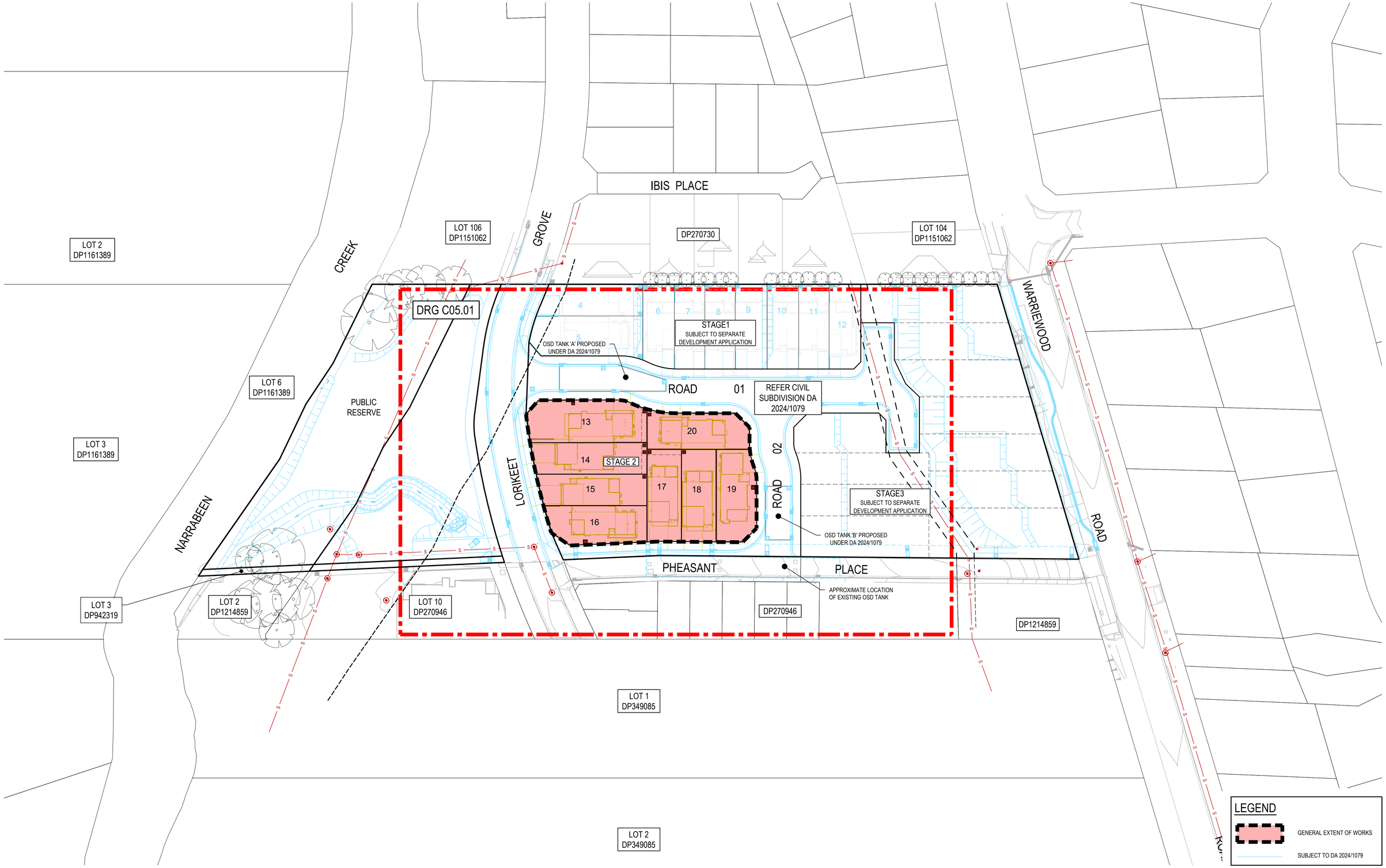
Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-02-DA-C01.21

Revision: 2

DATE PLOTTED: 20 May 2025 1:42 PM BY : SUDHA SHRESTHA

CAD File: \\ensdc01.enspiresolutions.local\Projects\220122 WarriewoodRd\D-Civil\02-Integrated Housing 02\Drawings\6-DACC\1 - DA\220122-02-DA-C01.21 SPECIFICATION NOTES.dwg



REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	20/05/2025	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB		MC
1	9/05/2025	DRAFT ISSUE	SS	TPB		MC

Client

SEKISUI HOUSE

Scale

0 10 20 30 40 50m

SCALE 1:500 @A1

North

enspire

Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project
53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
INTEGRATED HOUSING STAGE 02

Title
GENERAL ARRANGEMENT PLAN

Scale
1:500

Date
09/05/2025

Size
A1

Datum
MGA2020

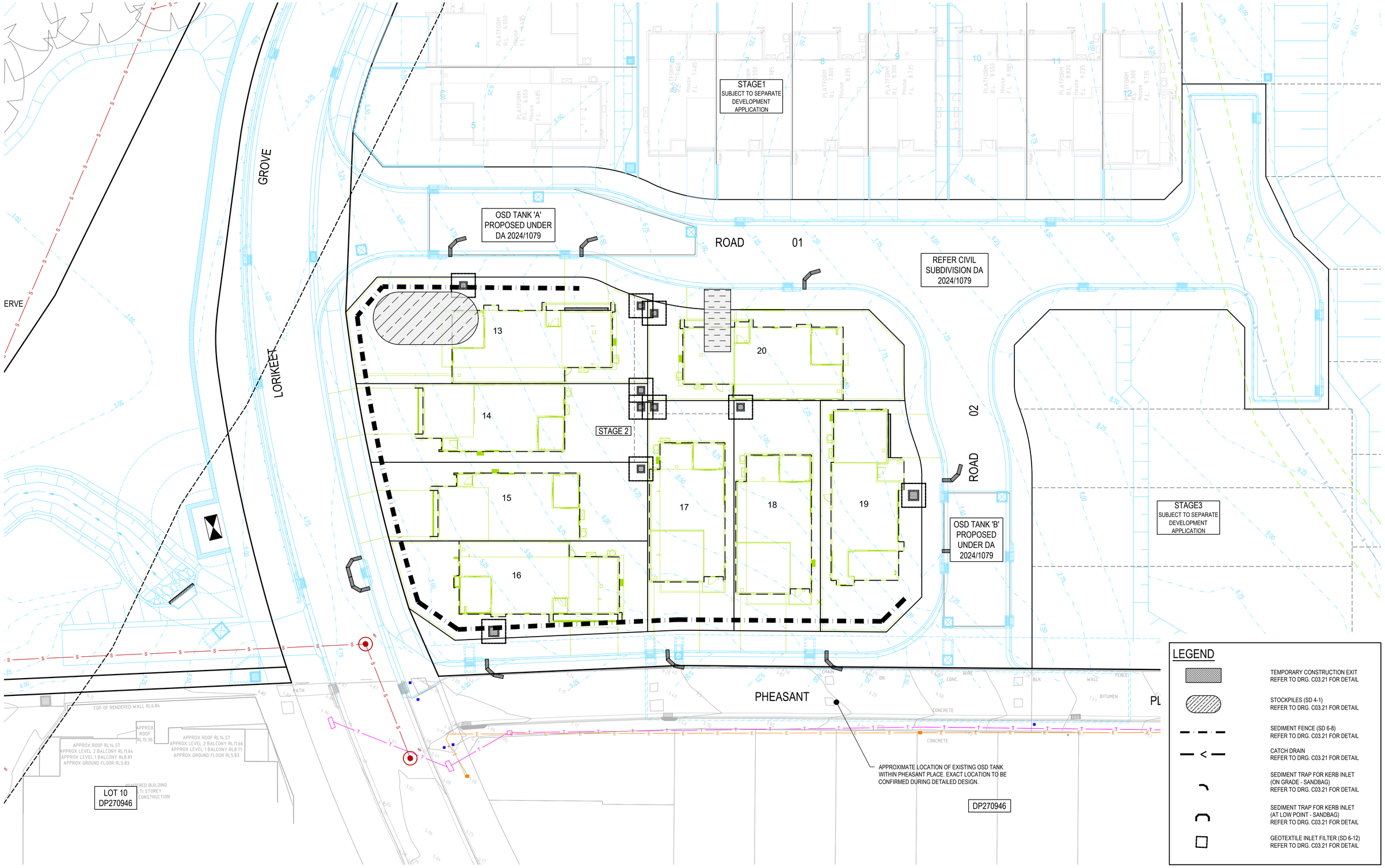
Status
FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number
220122-02-DA-C01.41

Revision
2

DATE PLOTTED: 20 May 2025 1:42 PM BY: SUDHA SHRESTHA

CAD File: \\ensdc01.enspiresolutions.local\Projects\220122 WarriewoodRd\D-Civil\02-Integrated Housing 02\Drawings\6-DACC\1 - DA\220122-02-DA-C01.41 GENERAL ARRANGEMENT PLAN.dwg



LEGEND

- TEMPORARY CONSTRUCTION EXIT — REFER TO DRG. C03.21 FOR DETAIL
- STOCKPILES (SD 4-1) — REFER TO DRG. C03.21 FOR DETAIL
- SEDIMENT FENCE (SD 6-8) — REFER TO DRG. C03.21 FOR DETAIL
- CATCH DRAIN — REFER TO DRG. C03.21 FOR DETAIL
- SEDIMENT TRAP FOR KERB INLET (ON GRADE - SANDBAG) — REFER TO DRG. C03.21 FOR DETAIL
- SEDIMENT TRAP FOR KERB INLET (AT LOW POINT - SANDBAG) — REFER TO DRG. C03.21 FOR DETAIL
- GEOTEXTILE INLET FILTER (SD 6-12) — REFER TO DRG. C03.21 FOR DETAIL

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	20/05/2025	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB		MC
1	9/05/2025	DRAFT ISSUE	SS	TPB		MC

Client: SEKISUI HOUSE

Scale: 0 5 10 15 20m — SCALE 1:200 @A1

North

Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135
enspiresolutions.com.au

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
INTEGRATED HOUSING STAGE 02

Title: EROSION AND SEDIMENTATION CONTROL PLAN

Scale: 1:200

First Issue Date: 09/05/2025

Size: A1

Datum: MGA2020

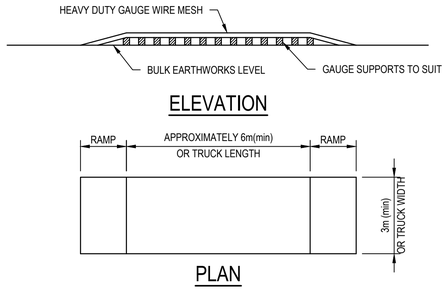
Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-02-DA-C03.01

Revision: 2

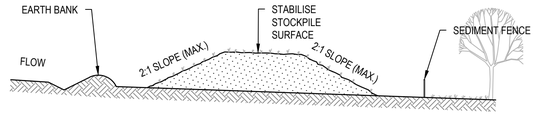
DATE PLOTTED: 20 May 2025 1:43 PM BY - SUDHA SHRESTHA

CAD File: \\ensdc01.enspiresolutions.local\Projects\220122 WarriewoodRd\D-Civil\02-Integrated Housing 02\Drawings\6-DACC\1 - DA\220122-02-DA-C03.01 EROSION AND SEDIMENTATION CONTROL PLANS.dwg



TEMPORARY CONSTRUCTION EXIT (SHAKER PAD DETAIL)

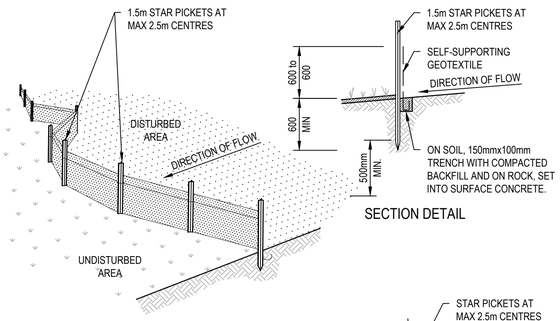
THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. THIS MAY REQUIRE REPAIR AND OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.



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.

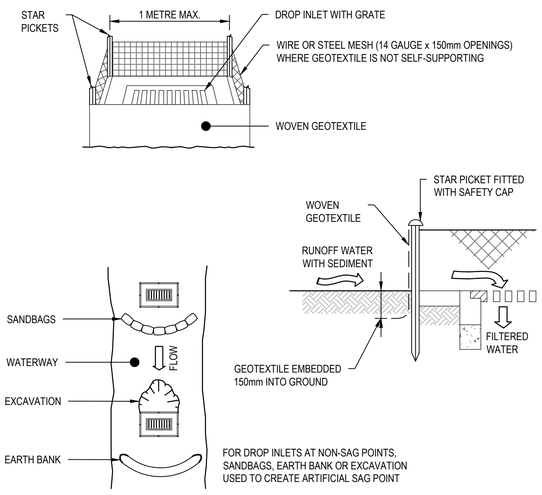
STOCKPILES (SD 4-1)



CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

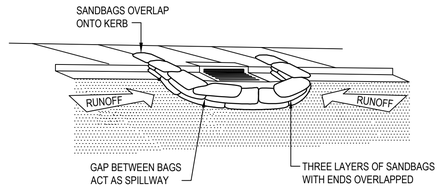
SEDIMENT FENCE (SD 6-8)



CONSTRUCTION NOTES

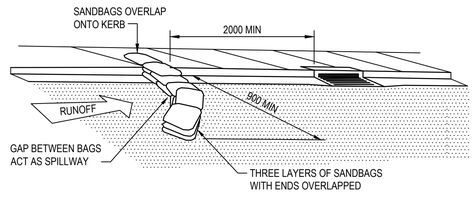
1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS 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)



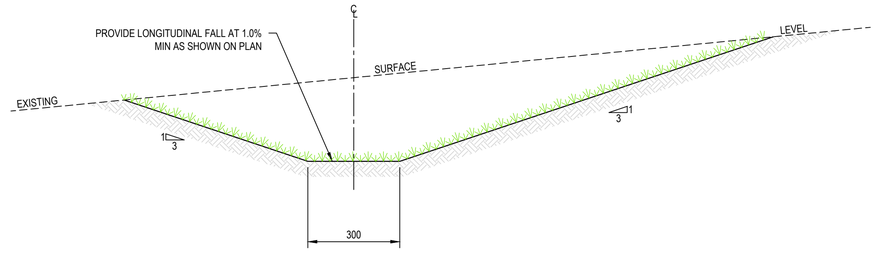
SEDIMENT TRAP FOR KERB INLET (AT LOW POINT - SANDBAG)

NOT TO SCALE



SEDIMENT TRAP FOR KERB INLET (ON GRADE - SANDBAG)

NOT TO SCALE



CATCH DRAIN

SCALE 1:20

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	20/05/2025	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB		MC
1	9/05/2025	DRAFT ISSUE	SS	TPB		MC

Client: SEKISUI HOUSE

Scale: 0 0.5 1 1.5 2m — SCALE 1:20 @A1

North

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

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
INTEGRATED HOUSING STAGE 02

Scale: N.T.S
Date: 09/05/2025

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Title: EROSION AND SEDIMENTATION CONTROL DETAILS

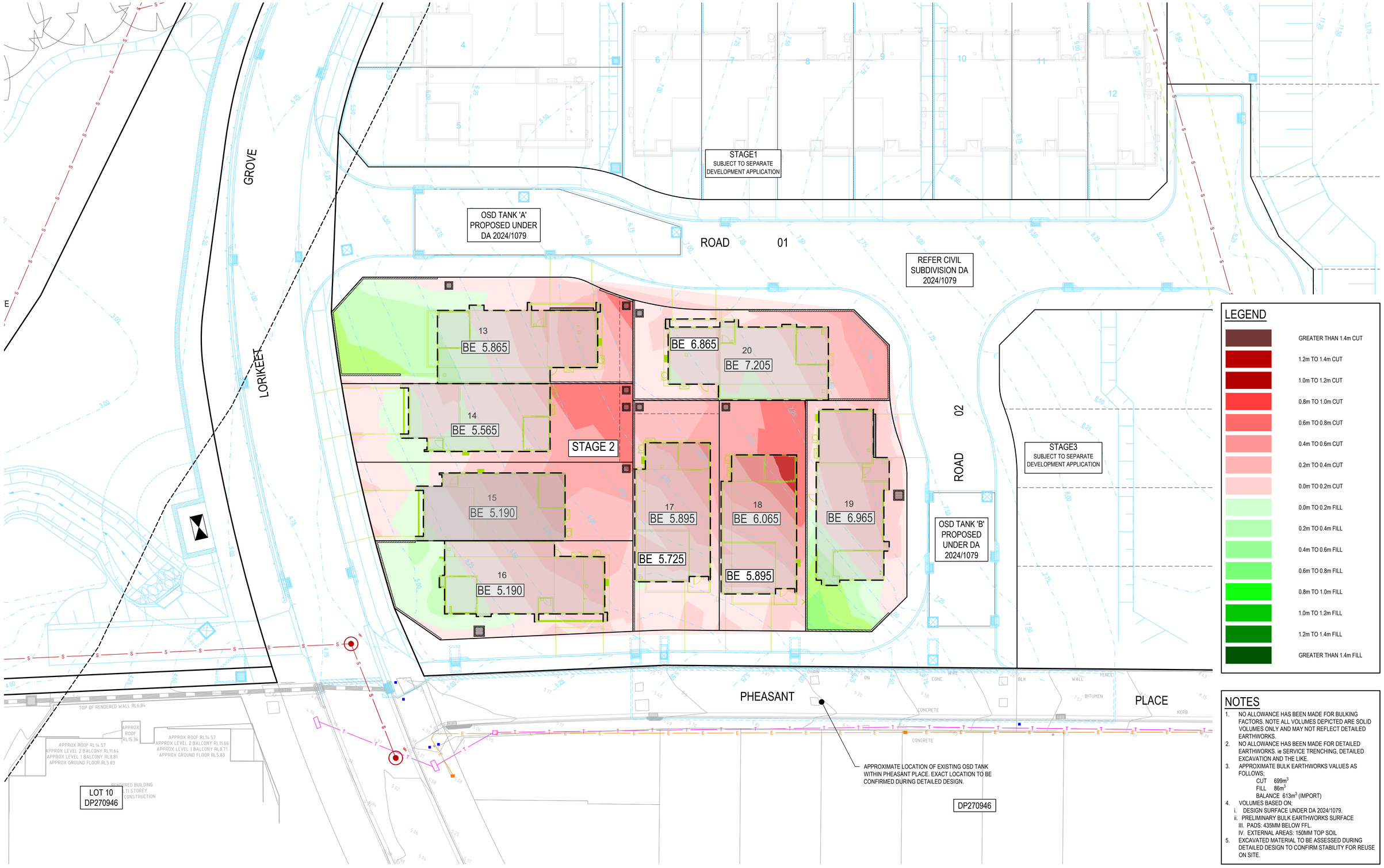
Size: A1
Datum: MGA2020

Project Number/Drawing Number: 220122-02-DA-C03.21

Revision: 2

DATE PLOTTED: 20 May 2025 1:42 PM BY : SUDHA SHRESTHA

CAD File: \\ensdc01.enspiresolutions.local\Projects\220122 WarriewoodRd\D-Civil\02-Integrated Housing 02\Drawings\6-DACC\1 - DA\220122-02-DA-C03.21 EROSION AND SEDIMENTATION CONTROL DETAILS.dwg



NOTES

1. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
2. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS. ie SERVICE TRENCHING, DETAILED EXCAVATION AND THE LIKE.
3. APPROXIMATE BULK EARTHWORKS VALUES AS FOLLOWS;
   CUT 699m^3
   FILL 86m^3
   BALANCE 613m^3 (IMPORT)
4. VOLUMES BASED ON;
   i. DESIGN SURFACE UNDER DA 2024/1079.
   ii. PRELIMINARY BULK EARTHWORKS SURFACE
   III. PADS: 435MM BELOW FFL.
   IV. EXTERNAL AREAS: 150MM TOP SOIL
5. EXCAVATED MATERIAL TO BE ASSESSED DURING DETAILED DESIGN TO CONFIRM STABILITY FOR REUSE ON SITE.

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	20/05/2025	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB		MC
1	9/05/2025	DRAFT ISSUE	SS	TPB		MC

Client: SEKISUI HOUSE

Scale: 0 5 10 15m — SCALE 1:150 @A1

North

Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135
enspiresolutions.com.au

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
INTEGRATED HOUSING STAGE 02

Title: BULK EARTHWORKS
CUT AND FILL PLAN

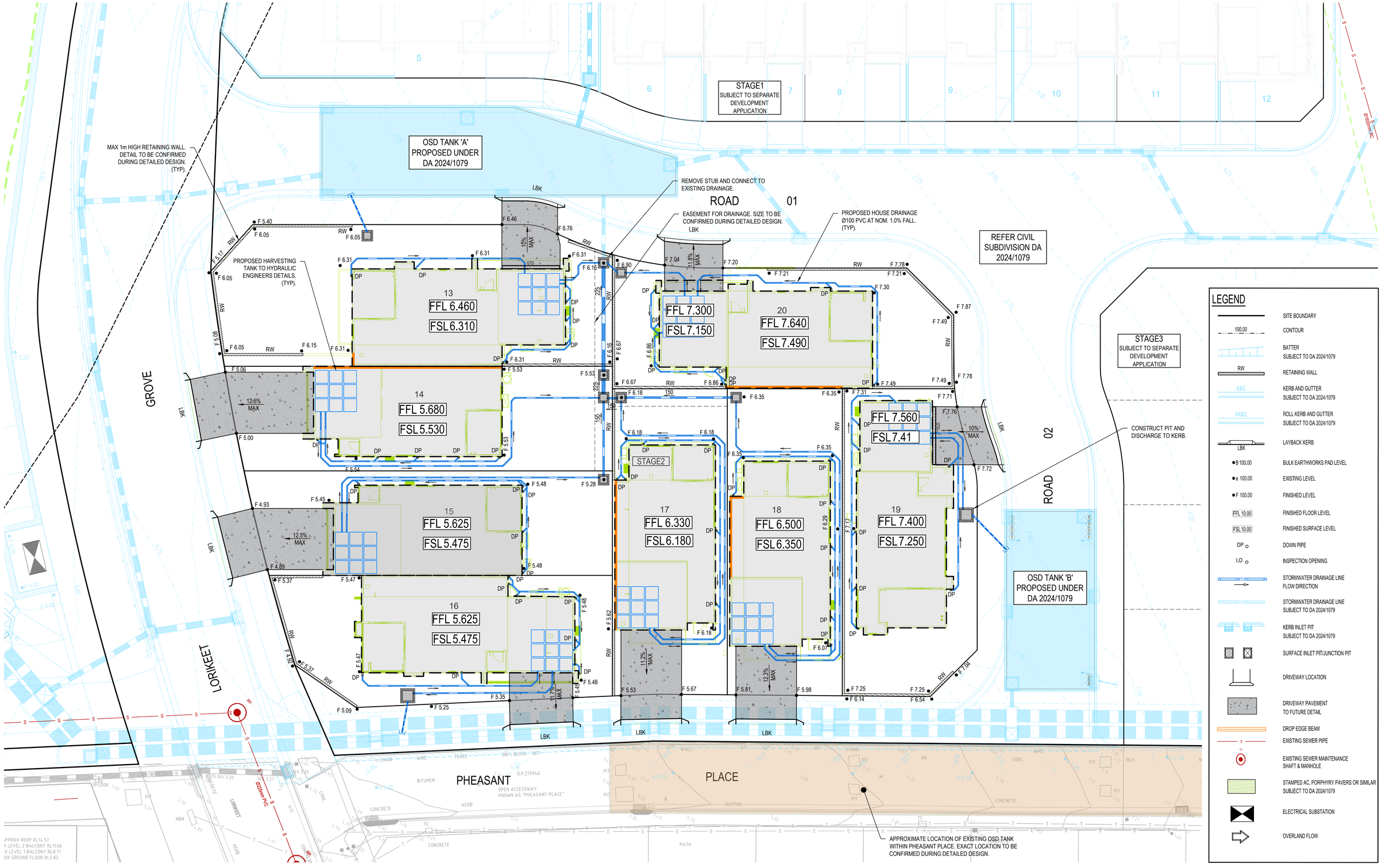
Scale: 1:200
First Issue Date: 09/05/2025
Size: A1
Datum: MGA2020

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-02-DA-C04.01
Revision: 2

DATE PLOTTED: 20 May 2025 1:42 PM BY: SUDHA SHRESTHA

CAD File: \\ensdc01.enspiresolutions.local\Projects\220122 WarriewoodRd\D-Civil\02-Integrated Housing 02\Drawings\6-DACC\1 - DA\220122-02-DA-C04.01 BULK EARTHWORKS-CUT AND FILL PLAN.dwg



REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	20/05/2025	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB		MC
1	9/05/2025	DRAFT ISSUE	SS	TPB		MC

Client: SEKISUI HOUSE

Scale: 0 5 10 15m — SCALE 1:150 @A1

North

enspire
Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135
enspiresolutions.com.au

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
INTEGRATED HOUSING STAGE 02

Title: SITEWORKS AND STORMWATER MANAGEMENT PLAN

Scale: 1:150
First Issue Date: 09/05/2025
Size: A1
Datum: MGA2020

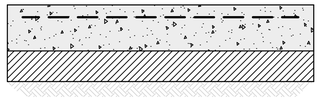
Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-02-DA-C05.01

Revision: 2

DATE PLOTTED: 20 May 2025 1:41 PM BY : SUDHA SHRESTHA

CAD File: \\ensdc01.enspiresolutions.local\Projects\220122 WarriewoodRd\D-Civil\02-Integrated Housing 02\Drawings\6-DACC\1 - DA\220122-02-DA-C05.01 SITEWORKS AND STORMWATER MANAGEMENT PLAN.dwg

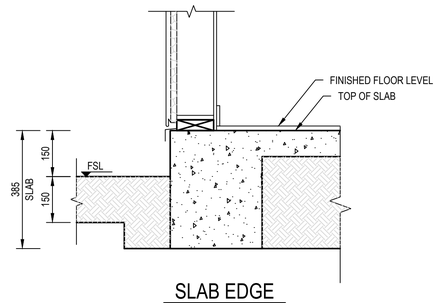


150mm THICKNESS CONCRETE (SL72 MESH - 40 TOP COVER)

100mm THICKNESS COMPACTED DGB 20

DRIVEWAY PAVEMENT

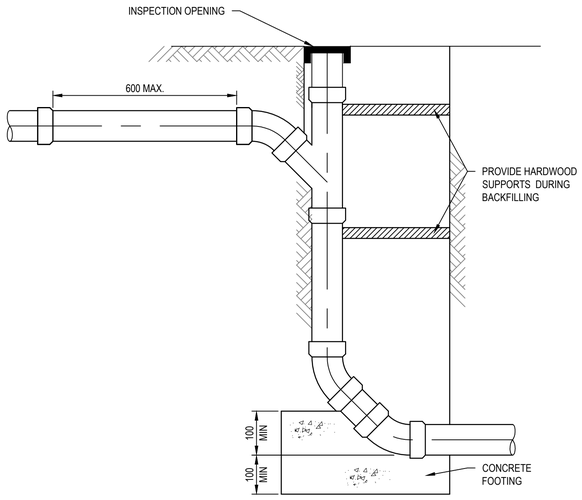
SCALE 1:10



SLAB EDGE

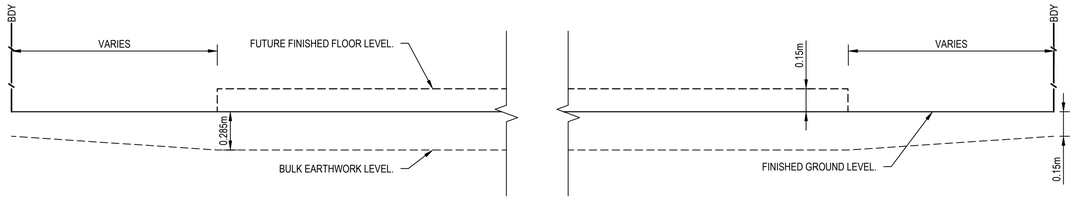
NOT TO SCALE

NOTE: NO BULK FILL OR CUT AS PART OF HOUSE CONSTRUCTION
HATCHED AREA DENOTES TOPSOIL PLACEMENT



INSPECTION OPENING (IO)

SCALE 1:10



TYPICAL LOT EARTHWORKS SECTION

SCALE 1:20

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	20/05/2025	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB		MC
1	9/05/2025	DRAFT ISSUE	SS	TPB		MC

Client: SEKISUI HOUSE

Scale: 0 1 2 3 4 5m — SCALE 1:50 @A1; 0 1 2 4 6 8 10m — SCALE 1:100 @A1

North

Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
INTEGRATED HOUSING STAGE 02

Title: SITEWORKS DETAILS

Scale: AS SHOWN
Date: 09/05/2025
Size: A1
Datum: MGA2020

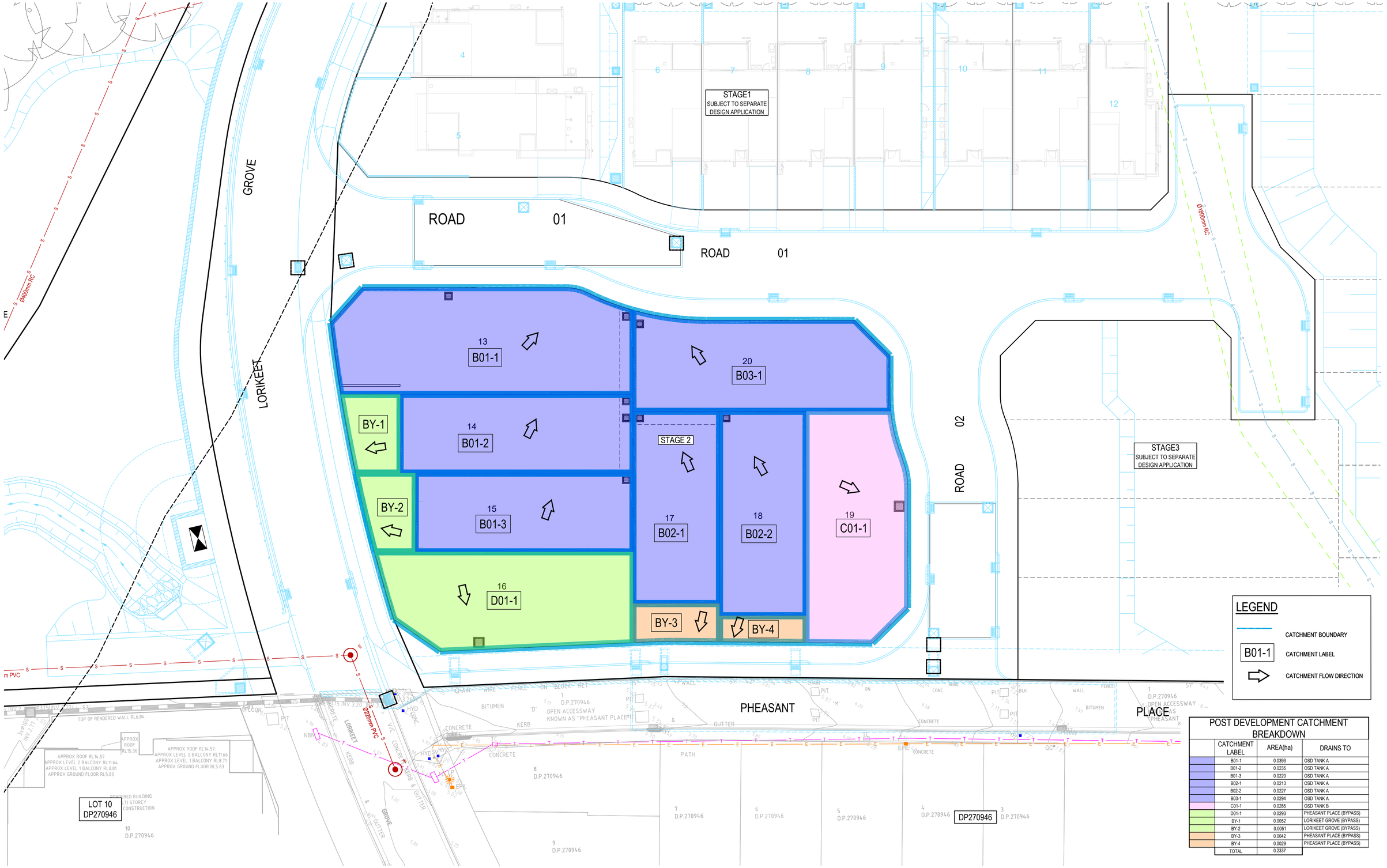
Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-02-DA-C14.01

Revision: 2

DATE PLOTTED: 20 May 2025 1:42 PM BY : SUDHA SHRESTHA

CAD File: \\ensdc01.enspiresolutions.local\Projects\220122 WarriewoodRd\D-Civil\02-Integrated Housing 02\Drawings\6-DACC\1 - DA\220122-02-DA-C14.01 SITEWORKS DETAILS.dwg



POST DEVELOPMENT CATCHMENT BREAKDOWN

CATCHMENT LABEL	AREA(ha)	DRAINS TO
B01-1	0.0393	OSD TANK A
B01-2	0.0235	OSD TANK A
B01-3	0.0220	OSD TANK A
B02-1	0.0213	OSD TANK A
B02-2	0.0227	OSD TANK A
B03-1	0.0294	OSD TANK A
C01-1	0.0285	OSD TANK B
D01-1	0.0293	PHEASANT PLACE (BYPASS)
BY-1	0.0052	LORIKEET GROVE (BYPASS)
BY-2	0.0051	LORIKEET GROVE (BYPASS)
BY-3	0.0042	PHEASANT PLACE (BYPASS)
BY-4	0.0029	PHEASANT PLACE (BYPASS)
TOTAL	0.2337	

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
2	20/05/2025	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB		MC
1	9/05/2025	DRAFT ISSUE	SS	TPB		MC

Client: SEKISUI HOUSE

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

North

enspire
Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135 enspiresolutions.com.au

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
INTEGRATED HOUSING STAGE 02

Scale: 1:200

First Issue Date: 09/05/2025

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Title: CATCHMENT PLAN

Size: A1

Datum: MGA2020

Project Number/Drawing Number: 220122-02-DA-C21.01

Revision: 2

DATE PLOTTED: 20 May 2025 1:41 PM BY : SUDHA SHRESTHA

CAD File: \\ensdc01.enspiresolutions.local\Projects\220122 WarriewoodRd\D-Civil\02-Integrated Housing 02\Drawings\6-DACC\1 - DA\220122-02-DA-C21.01 CATCHMENT PLAN.dwg