



Ardill Payne
& PARTNERS

ENGINEERS PLANNERS SURVEYORS ENVIRONMENTAL PROJECT MANAGEMENT

STORMWATER MANAGEMENT PLAN

Submission to Byron Shire Council

2-6 KEATS STREET, BYRON BAY

for:

Stanford Finance Solutions Pty Ltd

October 2020

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Revision No:	Description
0	First Issue
1	Revised based on Council comments
2	Revised based on Council comments
3	Tank arrangement and driveway layout adjusted

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1. Introduction

Ardill Payne and Partners (APP) has been commissioned to develop a Stormwater Management Plan (SMP) for the proposed subdivision at 2-6 Keats Street, Byron Bay.

The SMP outlines a concept stormwater design in order to demonstrate compliance with the requirements of Byron Shire Council's (BSC) Development Control Plan 2014 (DCP) – Chapter B3 Services and the BSC's Comprehensive Guidelines for Stormwater Management. Where not possible to comply to work with Council for a suitable outcome.

The report illustrates that:

- The SMP provisions can reduce the post development additional peak flows to predevelopment conditions to mitigating any downstream adverse impacts due to increased peak flows.
- The SMP improves the post development stormwater quality and meets the treatment objectives nominated within Councils Guidelines.
- The proposed SMP provides aesthetic integration of stormwater infrastructure into the built environment and embodies the principles of ESD and WSUD.

The proposed SMP with consideration of the above requirements is detailed in this report. The SMP is shown in Drawing SW1, **Attachment 2**.

Incorporation of items within Councils Request for Further Information are included within the report where appropriate.

2. Site Condition

The proposed subdivision is located on Lot2 DP1257709 known as 2-6 Keats Street, Byron Bay. Lot 2 (the site) is bounded by residential properties from the north and the east and undeveloped swamp forest areas from the south and the west. The development include a 10 lot subdivision with a total area of 5889m². The site plan is shown in **Figure 2.1**. The existing building at the site will be demolished as part of the development. The site pre and post development surfaces are shown in **Table 2.1**.

The regional elevations are shown in **Figure 2.2**. The elevations are based on the 2010 Lidar Data. The site discharge point is an existing swale located within the site along the southern boundary. The swale primarily conveys IAD from the lots to the north between the site and Keats Street as well as road drainage from Bangalow Road which discharges through the sites narrow handle to Bangalow Road. The location of the swale is shown in **Figure 2.1** and **Figure 2.2**.

The external catchment from the north is generally cut off by Keats Street. The lots on the southern side of Keats Street are serviced by inter allotment drainage. In large events overflows from the northern catchment may enter the site. Flows from the external catchment from the east mainly bypass the main portion of the site and enter the existing swale along the site's southern boundary.

The coastal wetland to the south west of the site is the final discharge point of the site and the external catchments.

Table 2.1: Site pre and post development catchments

Site Catchments	Pre Development		Post Development	
	Area (m ²)	Imperviousness (%)	Area (m ²)	Imperviousness (%)
Roof	70	100	2002	100
Road	320	50	1393	85
Ground	5499	0	2352	30
Pool	0	100	142	N/A
Total	5889	3.9	5889	55.9

Note: Above total area does not include the long narrow part of the site extended along the south boundary of Lot 6 DP 20604. Total site area is 6013m².



Figure 2.1: Site Locality Plan



Figure 2.2: Regional Elevations

3. Proposed Stormwater Management

APP has undertaken a detailed review of the SMP options for the subject site. The selection criteria utilised in the decision making process include:

- Site Constraints – Including landform and protected zones
- Proposed design layout – Aesthetics, new road and structure layouts, landscaping
- Costs – Construction/implementation/maintenance
- Engineering – hydraulic/civil design requirements

The proposed SMP for the development is shown in the drawing provided in **Attachment 2** and is summarised below.

- Roof runoffs will be directed to rainwater tanks proposed on each lot. Each rainwater tank will include 1.5kL volume for reuse to address Basix requirement. 3.0kL additional storage will be provided in all rainwater tanks. DRAINS modelling shows that the provided detention within eight tanks is adequate however ten tanks have been provided.
- The discharge from the rainwater tanks detention volume will be controlled by installing 40mm orifice plates on the discharge pipes. The tanks detention outlet and surcharge pipes will be directed to the existing swale along the site southern boundary. As shown in the SMP drawing in Attachment 1, the outlet of all tanks will be located above the reuse volumes much higher than the flood levels. As such, the tailwater condition due to flooding of the point of discharge will not influence the tanks outlets capacity.
- Surface runoff generated at parts of the road will pass through grassed buffer areas prior to discharge to the existing swale at the site boundary.
- Surface runoff generated at other parts of the road will flow to landscaping garden areas prior to discharge from the site. The garden areas are included in the stormwater quality modelling as bioretentions.
- A detailed design will be provided at post DA stage for the site drainage system proposed in this concept stormwater management plan.

Control and conveyance of External catchments and flows:

- In frequent events flows from the site north external catchment will be contained at Keats Street. The upstream lots on the southern side of Keats Street discharge via inter allotment drainage and is directed to the southern swale.

- It is proposed to realign the IAD line which services number 10 and 12 Keats Street to the north to run orthogonal to the northern and internal strata boundaries. This alignment is shown in the SMP plan within attachment 2.
- In major events the flows from the north will primarily flow down the sites internal access driveway to the southern swale and ultimately into the costal wetland area located to the south west of the site. Sheet flows can traverse the site around and between the proposed buildings with no impediment.
- External flows from the east will flow through the existing RCP from Bangalow road then into southern swale. The proposed development does not reduce the size and hydraulic capacity of the swale. It is proposed to extend this RCP to allow pedestrian access over the top of this RCP to Banglow Road.
- Given the elevation changes between the surrounding land and the southern swale the development will not cause upstream afflux issues outside of the development property. Further the control of development flows as above will minimise any potential impacts to the downstream costal wetland.

4. Catchment Hydraulics

The DRAINS computer software was used to model the site catchments, quantify the flows generated and assess the stormwater management requirements. Intensity Frequency Duration (IFD) data and rainfall temporal patterns used in the modelling is based on ARR 2016 extracted for the location of the site. Pre and post development catchments were modelled with the areas and impervious rates shown in **Table 2.1**.

Initial and continuous loss hydrologic model used in the runoff calculations. The loss parameters were selected with consideration of the ARR data hub information for the location of the site.

- Impervious Areas: IL=0 mm, CL=0 mm/hr
- Pervious Areas: IL=20 mm, CL=2.1 mm/hr

Surface runoff peak discharges at the site discharge point is shown in **Table 4.1** for different ARI events. The table provides a comparison between the predeveloped, developed-unmitigated and developed-mitigated conditions.

Table 4.1: Comparison of the site flows and flows at the discharge point

Design Event	Predeveloped (m ³ /s)	Postdeveloped - Unmitigated (m ³ /s)	Postdeveloped - Mitigated (m ³ /s)
100 year	0.260	0.274	0.255
20 year	0.206	0.216	0.183
5 year	0.141	0.162	0.141

As shown by incorporating the proposed 3.0kL detention volumes on Lot 1 and Lots 4 to 10, (total of 24 kL) the peak flows will be reduced to less than the existing condition for all design events. Further detention achieved by possible available volume at reuse portion of the rainwater tanks is not included in the above flow mitigation assessment.

It is noted that Section 6.2(b) of Council's Comprehensive Guidelines for Stormwater Management nominate that only 15% of the impervious area of the site may bypass the OSD system. It is understood that the intention of the requirement of a maximum 15% of impervious area bypassing On-Site Detention (OSD) is to ensure the assumptions of the simplified OSD calculation sheet within Councils comprehensive guidelines are met.

Given the size of this development the use of this simplified calculation is not suitable. The DRAINS model assesses the post development site with and without attenuation and compare to the predevelopment case to ensure no increase in post development peak stormwater flows for all events up to and including the 100 yr. Given the models ability to assess and combine both captured and bypassing areas the requirement of directing a minimum of 85% of the impervious

to OSD is not considered necessary if the provided OSD maintains or reduces peak discharge rates as compared to pre development rates.

In summary, directing the paved areas to OSD would require replacement of the proposed rainwater tanks to underground detention pond. The DRAINS model shows that the reduction in peak flows to the predevelopment numbers are achieved by diverting only the roof runoff.

DRAINS model layout and results for selected events can be found in **Attachment 3** of this report.

5. MUSIC Modelling

The load based pollutant reduction objectives of stormwater quality treatment are outlined in Section B3.2.3 of Council's DCP 2014 as follows:

Table 3: Pollutants and Retention Criteria

Pollutant/Issue	Retention Criteria
Litter	70% of average annual load greater than 5mm
Coarse Sediment	80% of average annual load for particles 0.5mm or less
Fine Particles	50% of average annual load for particles 0.1mm or less
Total Phosphorous	45% of average annual load
Total Nitrogen	45% of average annual load
Hydrocarbons, motor fuels, oil & grease	90% of average annual load

To demonstrate compliance with these objectives, the site has been modelled using MUSIC software package and the load based pollutant reduction (treatment train effectiveness) figures derived for comparison with the objectives. MUSIC is widely accepted as the industry standard for WSUD modelling and is an excellent tool for comparing treatment train effectiveness.

For the purpose of the MUSIC modelling the site has been broken up into different catchments according to their drainage paths and treatment system. The catchment parameters modelled for these land uses have been derived from the *Water by Design MUSIC modelling guidelines V1.0, 2010* for commercial developments.

The modelling results in this report provide a realistic assessment of the amount of the treatment achieved prior to discharge of the site runoff into the downstream swamp area. The MUSIC model layout is included in Attachment 3. The results of the MUSIC modelling are summarised in **Table 5.1**.

Table 5.1: Site Pollutant Reductions

Pollutant	Post Developed	Post Developed with Mitigation	% Reduction	Target %
Flow (ML/yr)	5.31	3.7	30.4	-
Total Suspended Solids (kg/yr)	816	55.1	93.2	80
Total Phosphorus (kg/yr)	1.69	0.488	71.1	45
Total Nitrogen (kg/yr)	11.4	6.11	46.2	45
Gross Pollutants (kg/yr)	119	0	100	90

As shown, the proposed stormwater quality treatment train achieves all the pollutant reduction objectives and therefore provides an acceptable level of treatment for the site.

6. Conclusion

The SMP developed by Ardill Payne & Partners demonstrates compliance with Council's requirements with respect to stormwater management.

The stormwater related impacts of the development will be offset by providing onsite detention volume within the proposed rainwater tanks as detailed in the report.

Stormwater quality is to be improved through a combination of rainwater re-use, grassed buffer areas, garden areas and vegetated swales. MUSIC modelling indicates the proposed measures will provide adequate treatment of the stormwater run-off.

The stormwater concept presented in this report therefore complies with the requirements of Council's DCP and design specifications.

7. Scope of Engagement

This report has been prepared by Ardill Payne & Partners (APP) at the request of Stanford Finance Solutions Pty Ltd for the purpose of stormwater management and is not to be used for any other purpose or by any other person or corporation.

This report has been prepared from the information provided to us and from other information obtained as a result of enquiries made by us. APP accepts no responsibility for any loss or damage suffered howsoever arising to any person or corporation who may use or rely on this document for a purpose other than that described above.

No part of this report may be reproduced, stored or transmitted in any form without the prior consent of APP.

APP declares that it does not have, nor expects to have, a beneficial interest in the subject project.

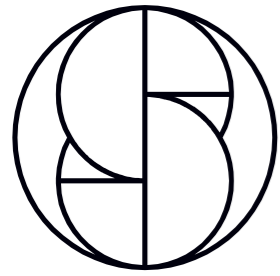
To avoid this advice being used inappropriately it is recommended that you consult with APP before conveying the information to another who may not fully understand the objectives of the report. This report is meant only for the subject site/project and should not be applied to any other.

8. Attachments

Attachment 1	Architectural Drawings
Attachment 2	SMP Drawings
Attachment 3	DRAINS Modelling
Attachment 4	MUSIC Modelling

ATTACHMENT 1

Attachment 1: Architectural Drawings



Stuart
Osman

Designed by us,
inspired by you.

PROPOSED SUB-DIVISION

MR. Z. KENNEDY

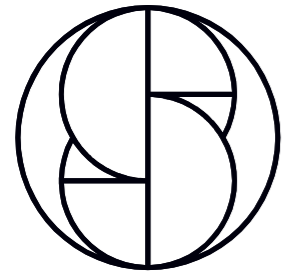
PROPOSED LOTS

KEATS STREET, BYRON BAY

JOB NUMBER

7890

STUARTOSMAN.COM.AU [FACEBOOK](#) [INSTAGRAM](#) [LINKEDIN](#)



Stuart Osman

PROPOSED SUB-DIVISION

PROJECT CLIENT

MR. Z. KENNEDY

PROPOSED LOTS

KEATS STREET, BYRON BAY

JOB NUMBER

7890



IMAGES ARE DIAGRAMMATIC ONLY - REFER TO ELEVATIONS FOR DETAILS

PROPOSED SUB-DIVISION

MR. Z. KENNEDY
 PROPOSED LOTS
 KEATS STREET
 BYRON BAY

JOB NUMBER - 7890

REV	DESCRIPTION	INITIAL	DATE
A	PRELIMINARY PLANS ISSUED	RH	181219
B	AMENDMENTS TO CONCEPT	MB	050220
C	AMENDMENTS TO CONCEPT	MB	170220
D	AMENDMENTS TO CONCEPT	MB	260220
E	AMENDMENTS TO CONCEPT	MB	280220
F	3D PERSPECTIVES	MB	040320
G	ANNOTATION AMENDMENT	MB	200320
H	SITE SURVEY CORRECTIONS	MB	170420
I	SITE SURVEY CORRECTIONS	MB	200420
J	AMENDMENT - LANDSCAPING	MB	200420
K	AMENDMENT	MB	200420
L	AMENDMENT - COASTAL WETLANDS	MB	280420
M	AMENDMENT	MB	280420
N	RETAINING & BATTER DETAILS	MB	020620
O	GARAGE & CARPORT AMENDMENTS	MB	180820
P	AMEND - ENLARGE LANDSCAPING/ SITE SIZES	MB	021120
Q	AMEND - VEGETATION ANNOTATION	MB	021120
R	AMEND - VEGETATION INCREASED	MB	171120
S	AMEND - BOUNDARY FENCING HEIGHT	MB	181120

GENERAL NOTES

DO NOT SCALE PLANS, USE WRITTEN DIMENSIONS ONLY.

THE OWNER/BUILDER SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, SETBACKS AND SPECIFICATIONS PRIOR TO COMMENCING WORKS OR ORDERING MATERIALS AND SHALL BE RESPONSIBLE FOR ENSURING THAT ALL BUILDING WORKS CONFORM TO THE CURRENT NATIONAL CONSTRUCTION CODE SERIES, CURRENT AUSTRALIAN STANDARDS, BUILDING REGULATIONS AND TOWN PLANNING REQUIREMENTS, REPORT ANY DISCREPANCIES TO THIS OFFICE.

ALL WORKS SHALL COMPLY WITH BUT NOT LIMITED TO THE NATIONAL CONSTRUCTION CODE SERIES (N.C.C) OF AUSTRALIAN AND THE CURRENT AUSTRALIAN STANDARDS LISTED IN NOTE 4.

- AS 1288 - GLASS IN BUILDINGS - SELECTION AND INSTALLATION
- AS 1562 - DESIGN AND INSTALLATION OF SHEET ROOF AND WALL CLADDING
- AS 1684 - NATIONAL TIMBER FRAMING CODE
- AS 2049 - ROOF TILES
- AS 2050 - INSTALLATION OF ROOF TILES
- AS 2870 - RESIDENTIAL SLAB AND FOOTINGS - CONSTRUCTION
- AS/NZS 2904 - DAMP-PROOF COURSES AND FLASHINGS
- AS 3600 - CONCRETE STRUCTURES
- AS 3660 - BARRIERS FOR SUBTERRANEAN TERMITES
- AS 3700 - MASONRY IN BUILDINGS
- AS 3740 - WATERPROOFING OF WET AREAS IN RESIDENTIAL BUILDINGS
- AS 3786 - SMOKE ALARMS
- AS 4055 - WIND LOADINGS FOR HOUSING
- AS 4100 - STEEL STRUCTURES

THESE PLANS SHALL BE READ IN CONJUNCTION WITH ANY STRUCTURAL AND CIVIL ENGINEERING COMPUTATIONS AND DRAWINGS.

SOIL CLASSIFICATION - REFER TO STRUCTURAL ENGINEERS SOIL TEST.

ALL BUILDINGS SHALL BE PROTECTED AGAINST TERMITE ATTACK IN ACCORDANCE WITH AS 3660.1 AND A DURABLE NOTICE SHALL BE PLACED IN THE METER BOX INDICATING TYPE OF BARRIER AND REQUIRED PERIODICAL INSPECTIONS.

SAFETY GLAZING TO BE USED IN THE FOLLOWINGS CASES -
 i) ALL ROOMS - WITHIN 500mm VERTICAL OF THE FLOOR
 ii) BATHROOMS - WITHIN 1500mm VERTICAL OF THE BATH BASE
 iii) FULLY GLAZED DOORS
 iv) SHOWER SCREENS
 v) WITHIN 300mm OF A DOOR AND <1200mm ABOVE FLOOR LEVEL
 vi) WINDOW SIZES ARE NOMINAL ONLY, ACTUAL SIZES WILL VARY WITH MANUFACTURER, FLASHING ALL ROUND.

ALL GUTTERS TO BE STRAMIT QUEENSLANDER QUAD GUTTERING WITH MIN. 100x75 RECTANGULAR OR 100 dia. DOWNPIPES, EACH DOWNPIPE SHALL SERVICE A MAXIMUM ROOF AREA OF 36 sq.m OR SHALL BE POSITIONED AS PER AS 3500.3, SECTION 3.

STORMWATER TO BE TAKEN TO THE LEGAL POINT OF DISCHARGE AS DETERMINED BY THE RELEVANT AUTHORITY.

TILED DECKS OVER LIVABLE AREAS ARE TO BE, IN THE FOLLOWING ORDER OVER THE FLOOR JOISTS : 19mm COMPRESSED FIBRE CEMENT SHEET, WITH ONE LAYER OF PARCHEM EMERPROOF 750 WITH A SECOND LAYER OF SAND SEED WITH A DFT OF 1300 MICRON, INSTALLED TO MANUF. SPECIFICATIONS, AND FLOOR TILES OVER, ALL CORNERS TO HAVE 20mm MASTIC SEALANT UNDER THE PARCHEM EMERPROOF 750.

FOOTINGS NOT TO ENCROACH TITLE BOUNDARIES OR EASEMENTS. IT IS RECOMMENDED THAT WHERE BUILDINGS ARE TO BE LOCATED IN CLOSE PROXIMITY OF BUNDARIES, A CHECK SURVEY BE CONDUCTED BY A LICENSED SURVEYOR.

ALL STEELWORK IN MASONRY TO BE HOT DIP GALVANISED.

ALL WET AREAS TO COMPLY WITH N.C.C 3.8.1.2 AND AS 3740. SPLASH BACKS SHALL BE IMPERVIOUS FOR 150mm ABOVE SINKS, TROUGHS AND HAND BASINS WITHIN 75mm OF THE WALL.

PROVIDE WALL TIES AT 600mm SPACINGS BOTH VERTICAL AND HORIZONTAL AND WITHIN 300mm OF ARTICULATION JOINTS. BRICK TIES TO BE STAINLESS STEEL.

SUB-FLOOR VENTILATION MINIMUM 7500mm sq FOR EXTERNAL WALLS AND 1500mm sq FOR INTERNAL WALLS BELOW BEARER.

THERMAL INSULATION; R2.5 BATTS TO CEILING AND R1.5 BATTS AND REFLECTIVE FOIL TO EXTERNAL WALLS OR AS PER ENERGY RATING.

STAIR REQUIREMENTS : MIN. TREAD 240mm, MIN. RISER 115mm, MAX. RISER 190mm, SPACE BETWEEN OPEN TREADS MAX. 125mm. TREADS TO BE NON SLIP SURFACE.
 BALUSTRADES : MIN. 1000mm ABOVE LANDINGS WITH MAX. OPENING OF 125mm AND IN ACCORDANCE WITH N.C.C 3.9.2
 FOR STAINLESS STEEL BALUSTRADE, REFER TO Table 3.9.2.1 (WIRE BALUSTRADE CONSTRUCTION - REQUIRED WIRE TENSION AND MAXIMUM PERMISSIBLE DEFLECTION) OF THE N.C.C.

THE BUILDER SHALL TAKE ALL STEPS NECESSARY TO ENSURE THE STABILITY OF EXISTING AND NEW STRUCTURES THROUGH-OUT CONSTRUCTION.

● DENOTES LOCATION OF SMOKE DETECTORS (refer electrical layout plans), TO BE HARD WIRED WITH EMERGENCY BACK-UP AND COMPLY WITH AS 3786.

WIND SPEED AS NOMINATED ON BRACING PLAN.

PROVIDE LIFT OFF HINGES TO W.C OR OPEN OUT DOOR OR MIN 1200mm CLEARANCE FROM DOOR TO PAN.

EXHAUST FANS FROM SANITARY COMPARTMENTS TO BE DUCTED TO THE OUTSIDE ARE AIR OR TO A VENTED ROOF SPACE AND AS PER AS 1668.2

THESE NOTES ARE NEITHER EXHAUSTIVE NOR A SUBSTITUTE FOR REGULATIONS, STATUTORY REQUIREMENTS, BUILDING PRACTICE OR CONTRACUAL OBLIGATIONS.

ALL CONSTRUCTION MATERIALS SUPPLIED MUST TAKE INTO ACCOUNT PROXIMITY TO COASTAL OR INDUSTRIAL ENVIRONMENTS, IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS

THESE PLANS ARE PROTECTED BY COPY RIGHT AND ARE THE PROPERTY OF THE AUTHOR.

SITE NOTES

ALL STORMWATER AND DRAINAGE TO BE IN COMPLIANCE WITH NCC PARTS 3.1.2 & 3.5.2 AS WELL AS AS/NZS 3500.

ENSURE 90mm DIAMETER AGRICULTURAL DRAINS ARE PROVIDED TO THE BASE OF ALL CUTS AND RETAINING WALLS AND ARE CONNECTED TO THE STORMWATER SYSTEM VIA SILT PIT/S TO THE RBS REQUIREMENTS.

THE EXTERNAL FINISHED SURFACE SURROUNDING THE BUILDING MUST BE DRAINED TO MOVE SURFACE WATER AWAY FROM THE BUILDING AND GRADE TO PROVIDE A SLOPE NOT LESS THAN 50mm OVER THE FIRST 1000mm FROM THE BUILDING.

A MINIMUM HEIGHT OF 150mm SHALL BE MAINTAINED BETWEEN THE TOP OF THE OVERFLOW GULLY RISER & THE LOWEST FIXTURE CONNECTED TO THE DRAIN. THE OVERFLOW GULLY RISER SHALL BE LOCATED AT 75mm ABOVE SURROUNDING GROUND LEVEL OR SHALL BE FINISHED AT A HEIGHT TO PREVENT THE INGRESS OF WATER WHEN LOCATED IN A PATH OR PAVED AREA.

CONNECT DOWNPIPES TO LEGAL POINT OF DISCHARGE VIA 100mm DIAMETER UPVC STORMWATER PIPE LAID WITH A MINIMUM FALL OF 1:100, DISCHARGE TO THE SATISFACTION OF THE RELEVANT AUTHORITY.

ALL STORMWATER DRAINAGE BELOW GROUND SHALL BE SEWER GRADE WITH NO JOINTS UNDER SLAB INSTALLED TO AS3500.3, 2003.
 MINIMUM PIPE SIZE 100mm
 MINIMUM GRADE 1:100

ALL POOL FENCING SHALL BE MIN. 1200mm HIGH AND INACCORDANCE WITH AS 1926.1

LEGEND

- CJ CONSTRUCTION JOINT
- DP DOWNPIPE
- FP FIRE PLACE
- FW FLOOR WASTE
- HWS HOT WATER SYSTEM
- AC AIR CONDITIONING
- PS PLUMBING STACK / DUCT
- SP STEEL POST
- CP COVERPLATE
- T.B.C TO BE CONFIRMED
- RL RELATIVE LEVEL
- FL FLOOR LEVEL
- AHD AUSTRALIAN HEIGHT DATUM
- CSD CAVITY SLIDING DOOR
- OHC OVER HEAD CUPBOARD
- FSR FLOOR SPACE RATIO
- LB LOAD BEARING
- NGL NATURAL GROUND LINE
- UBO UNDER BENCH OVEN
- WO WALL OVEN
- DW DISHWASHER
- MW MICROWAVE
- APPL APPLIANCE
- WM WASHING MACHINE
- WIR WALK-IN-ROBE
- FG FIXED GLASS
- SD SLIDING GLASS DOOR
- ASW ALUMINIUM SLIDING WINDOW
- ADH ALUM. DOUBLE HUNG WINDOW
- AAW ALUM. AWNING WINDOW
- ALW ALUM. LOUVRE WINDOW
- AFG ALUM. FIXED GLASS WINDOW
- AFGL ABOVE FINISHED FLOOR LEVEL
- NCC NATIONAL CONSTRUCTION CODE SERIES OF AUSTRALIA
- AS AUSTRALIAN STANDARDS



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QBCC License No: 1129687



PROPOSED SUB-DIVISION

BUILDER: TBC

CLIENT: MR. Z. KENNEDY
 PROJECT: PROPOSED LOTS
 KEATS STREET
 BYRON BAY

DRAWN BY: RH/MB
 CHECKED BY: SO
 DESIGN: CUSTOM
 DATE: A 18/12/2019
 SCALES: 1:100 @ A3

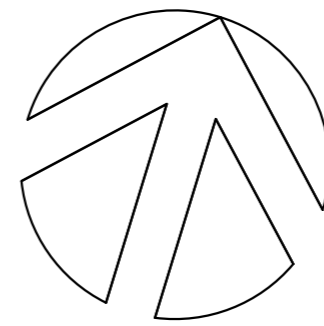
AMENDMENTS:
 B050220 K200420 O180820 S181120
 ... L280420 P021120
 i200420 M280420 Q021120
 J200420 N020620 R171120
 SHEET NUMBER: 3 of 11
 JOB NUMBER: **7890**

© Copyright reserved in part or whole. THIS DESIGN IS THE EXCLUSIVE PROPERTY OF STUART OSMAN N.B ALL WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED SIZES Contractor to verify dimensions. Notify designers of discrepancies. Failure to do so shall void the designers responsibilities. BE WARNED: SUBSTITUTION OF ANY STRUCTURAL MEMBERS, AND OR ANY VARIATION TO ANY PART OF THE DESIGN WILL VOID ANY RESPONSIBILITIES OF STUART OSMAN FOR THE STRUCTURAL INTEGRITY AND PERFORMANCE OF THE BUILDING

- NOTES:
- * Discharge waste to connection point
 - * Provide sediment control to site where req'd
 - * Discharge stormwater to TANK, where possible, all other stormwater & overflow to kerb & channel
 - * Meter box position T.B.C on site
 - * All retaining walls by owner

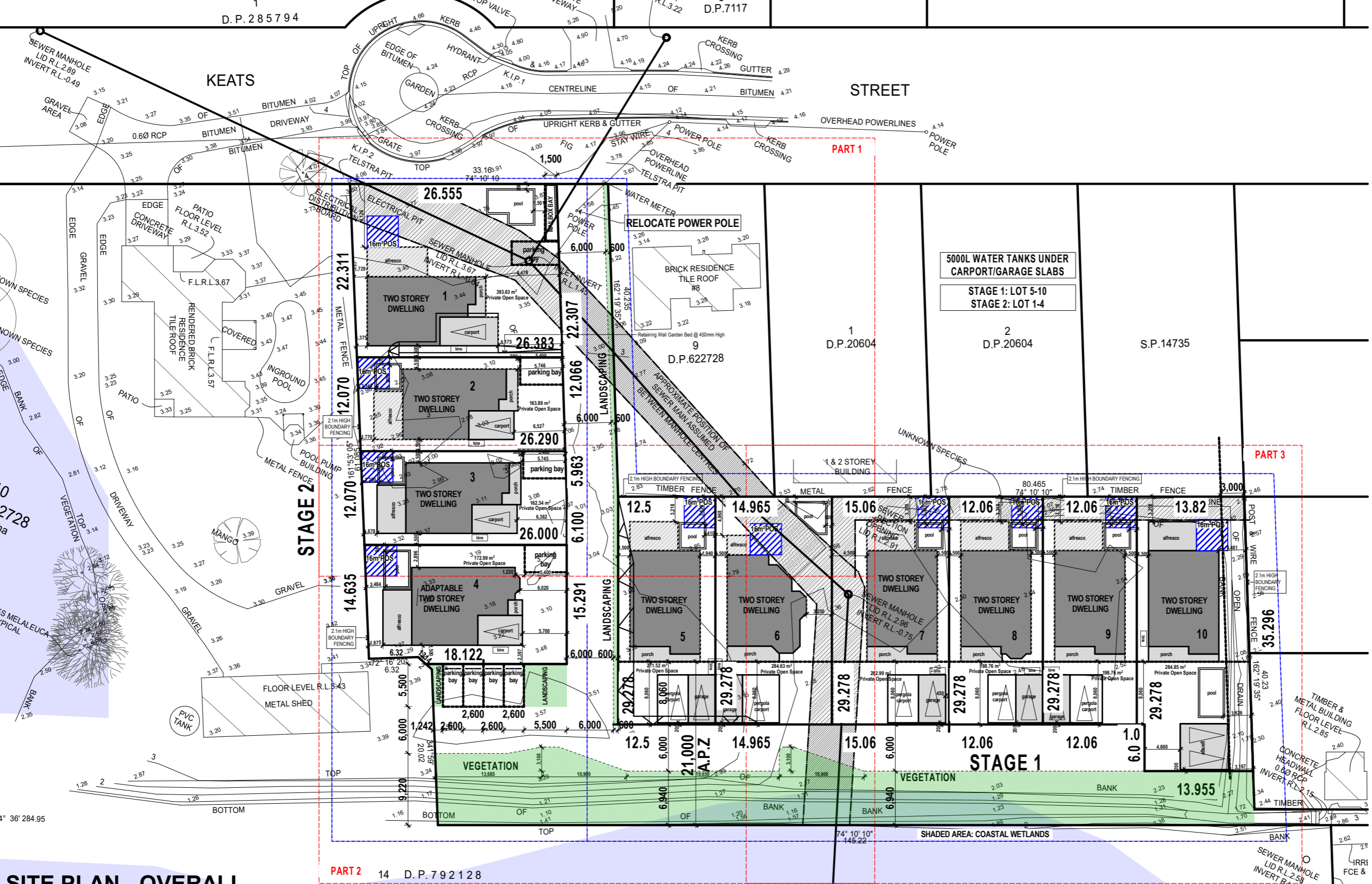
NOTE ALL STORMWATER & DRAINAGE TO BE IN COMPLIANCE WITH NCC PARTS 3.1.2. & 3.5.2. AS WELL AS ASNZS3500

- * GUTTERS TO BE 125MM D-SECTION COLORBOND GUTTERS
- * 2 DOWNPIPES MAX. TO EACH 100mm STORMWATER PIPE, SUBSURFACE PIPES TO BE 100mm DIAMETER, ANY UNDERSLAB PIPING TO HAVE AN INSPECTION OPENING AT UPPER END, THEN TO BE 100mm SEWER GRADE PIPING WITH NO JOINS UNDER SLAB.



G.L	GL 00.000	approx.
CUT	00.000	
FILL	00.000	
F.L	----	

**** 1:5 MAX DRIVEWAY SLOPE TO LOCAL GOVERNMENT REQUIREMENTS AND STANDARDS ****



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MASTER BUILDERS QUEENSLAND

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

bdia building designers association of queensland inc.

PROPOSED SUB-DIVISION

BUILDER: TBC

CLIENT: MR. Z. KENNEDY

PROJECT: PROPOSED LOTS KEATS STREET BYRON BAY

DRAWN BY: RH/MB

CHECKED BY: SO

DESIGN: CUSTOM

DATE: A 18/12/2019

SCALES: 1:100 @ A3

AMENDMENTS:
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J200420 N020620 R171120

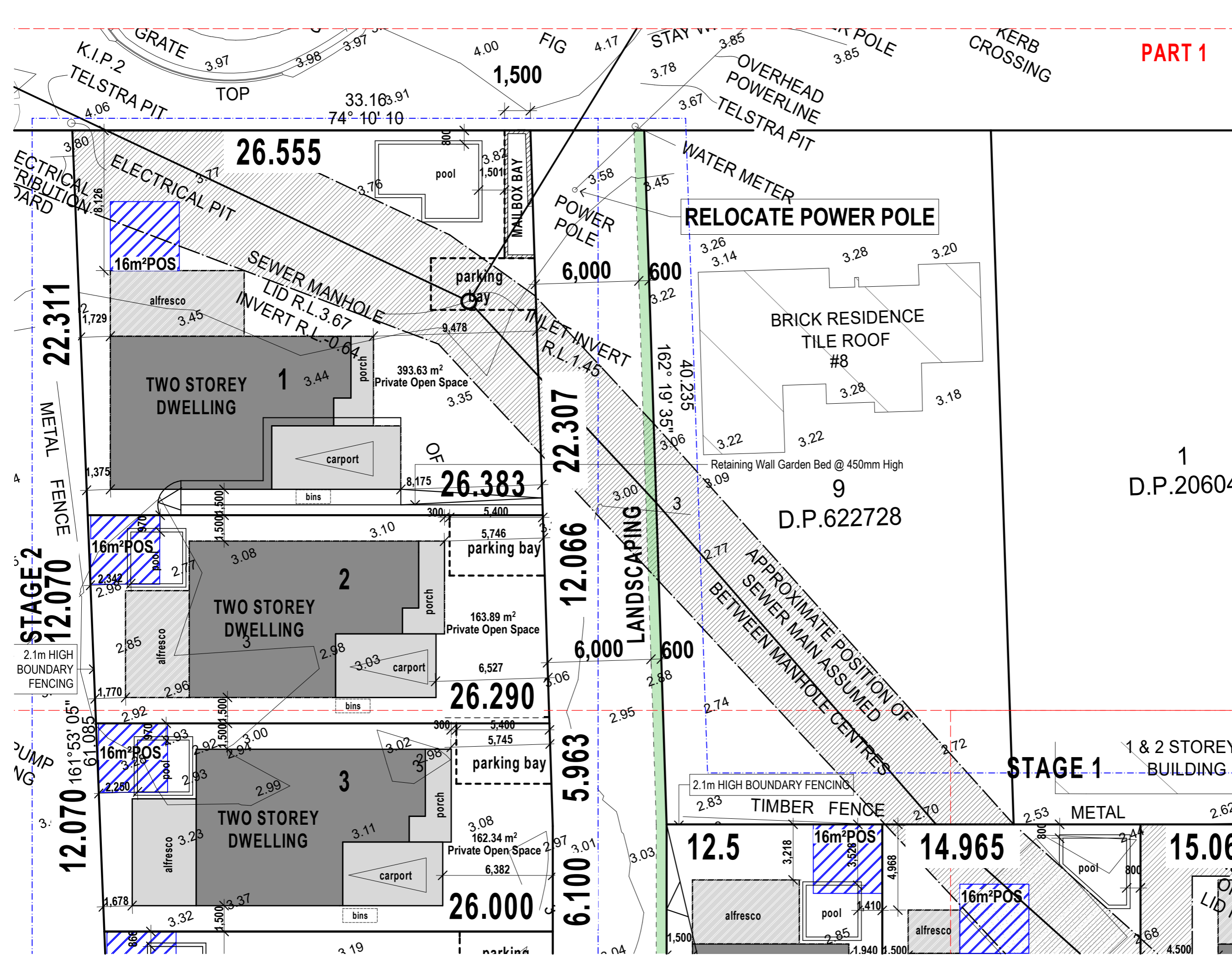
SHEET NUMBER: 4 of 11
JOB NUMBER: 7890

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PROPOSED SUB-DIVISION

BUILDER:	TBC
CLIENT:	MR. Z. KENNEDY
PROJECT:	PROPOSED LOTS KEATS STREET BYRON BAY
DRAWN BY:	RH/MB
CHECKED BY:	SO
DESIGN:	CUSTOM
DATE:	A 18/12/2019
SCALES:	1:100 @ A3
AMENDMENTS:	B050220 K200420 O180820 S181120 ... L280420 P021120 i200420 M280420 Q021120 J200420 N020620 R171120
SHEET NUMBER:	5 of 11
JOB NUMBER:	7890

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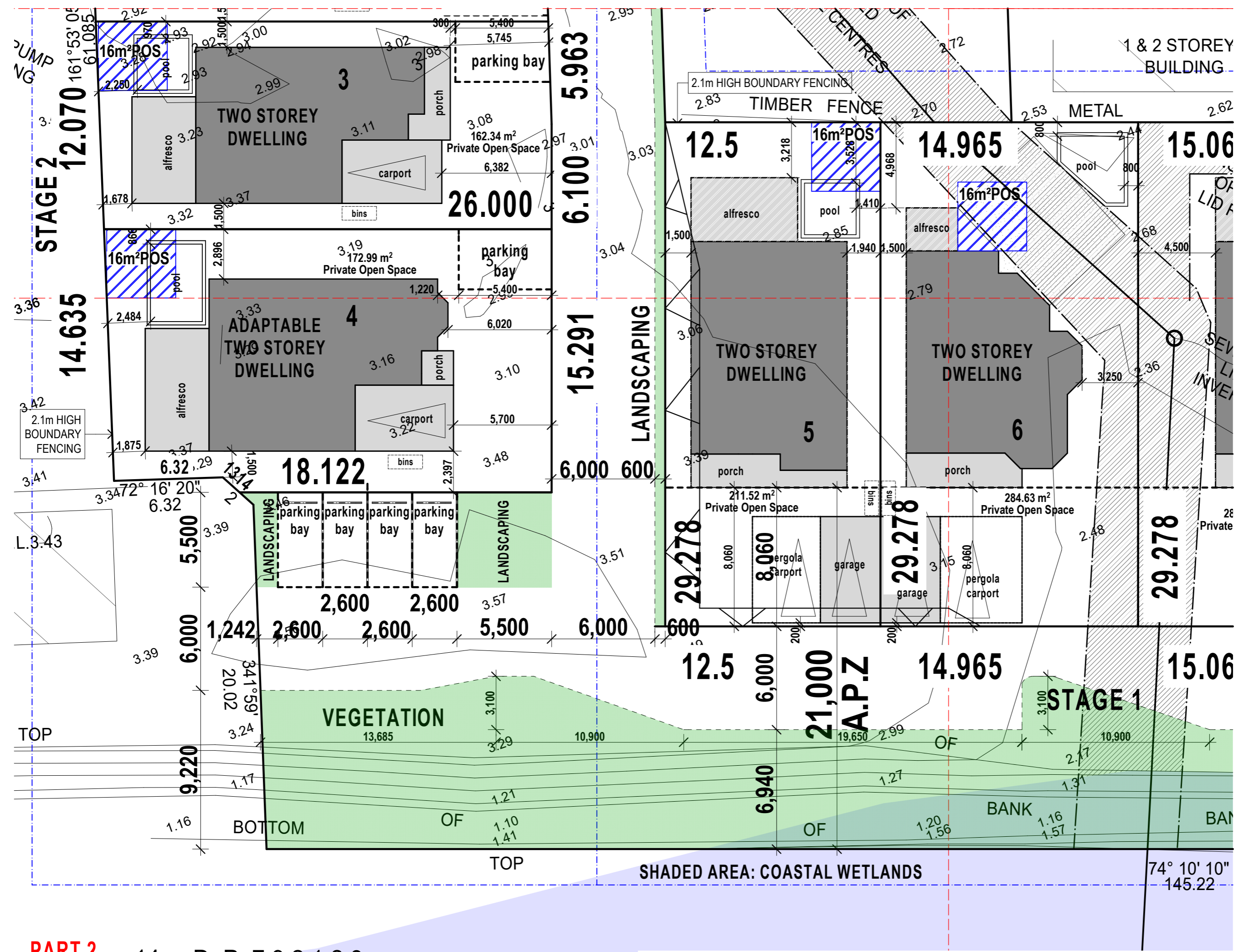


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CLIENT:	MR. Z. KENNEDY
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DRAWN BY:	RH/MB
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JOB NUMBER:	7890

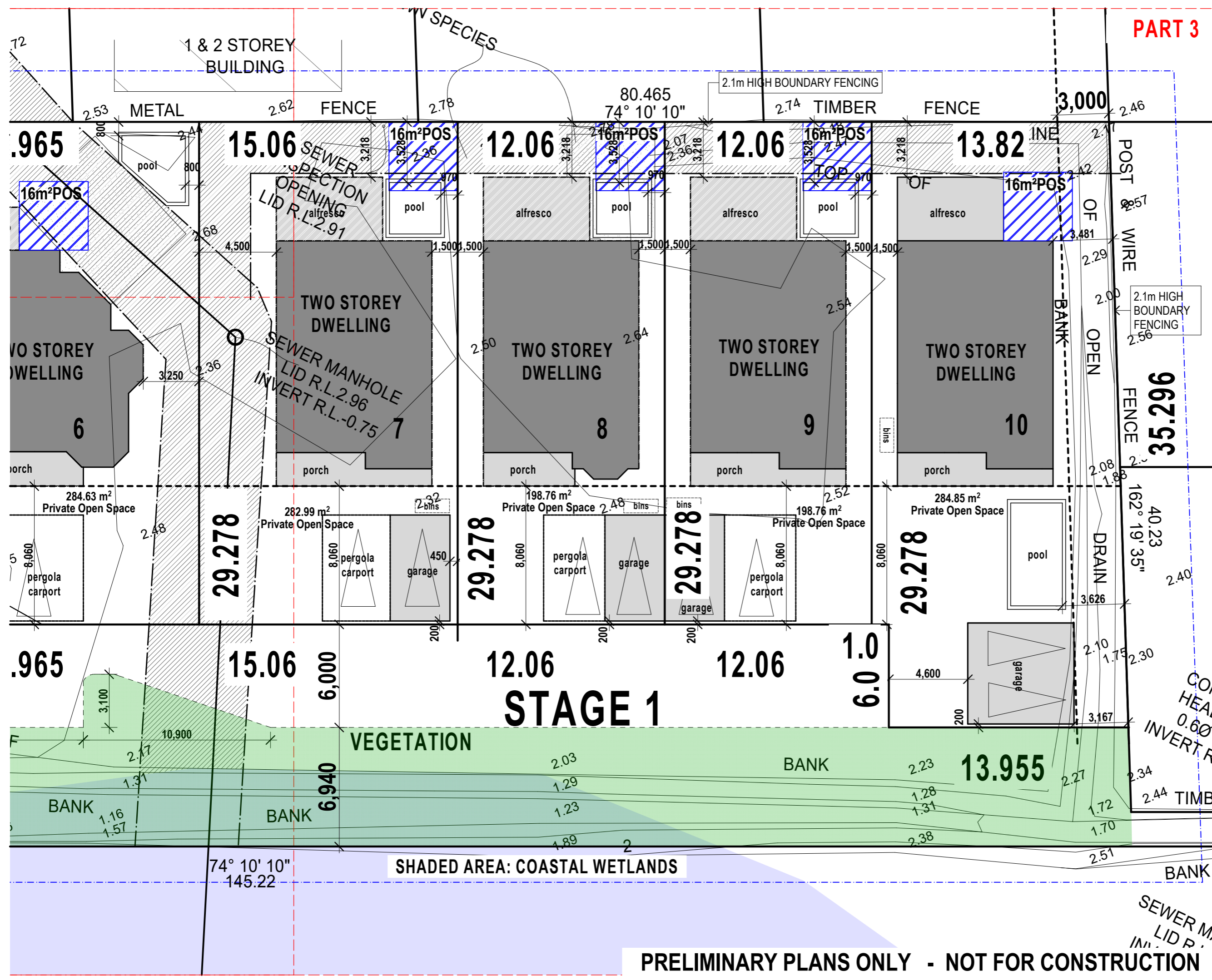
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PROJECT:	PROPOSED LOTS KEATS STREET BYRON BAY
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SHEET NUMBER:	7 of 11
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PROPOSED SUB-DIVISION

BUILDER: TBC
 CLIENT: MR. Z. KENNEDY
 PROJECT: PROPOSED LOTS
 KEATS STREET
 BYRON BAY
 DRAWN BY: RH/MB
 CHECKED BY: SO
 DESIGN: CUSTOM
 DATE: A 18/12/2019
 SCALES: 1:100 @ A3
 AMENDMENTS:
 B050220 K200420 O180820 S181120
 ... L280420 P021120
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 JOB NUMBER: **7890**

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PROPOSED SUB-DIVISION

BUILDER: TBC
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 PROJECT: PROPOSED LOTS
 KEATS STREET
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 CHECKED BY: SO
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ABN 73 097 995 616
QBCC License No: 1129687



PROPOSED SUB-DIVISION

BUILDER: TBC

CLIENT: **MR. Z. KENNEDY**

PROJECT: PROPOSED LOTS
KEATS STREET
BYRON BAY

DRAWN BY: RH/MB

CHECKED BY: SO

DESIGN: CUSTOM

DATE: A 18/12/2019

SCALES: 1:100 @ A3

AMENDMENTS:
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... J200420
F040320 K200420
G200320 L280420
H170420 M280420
SHEET NUMBER: 10 of 96

JOB NUMBER: **7890**

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STAGE TWO PERSPECTIVES

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PROPOSED SUB-DIVISION

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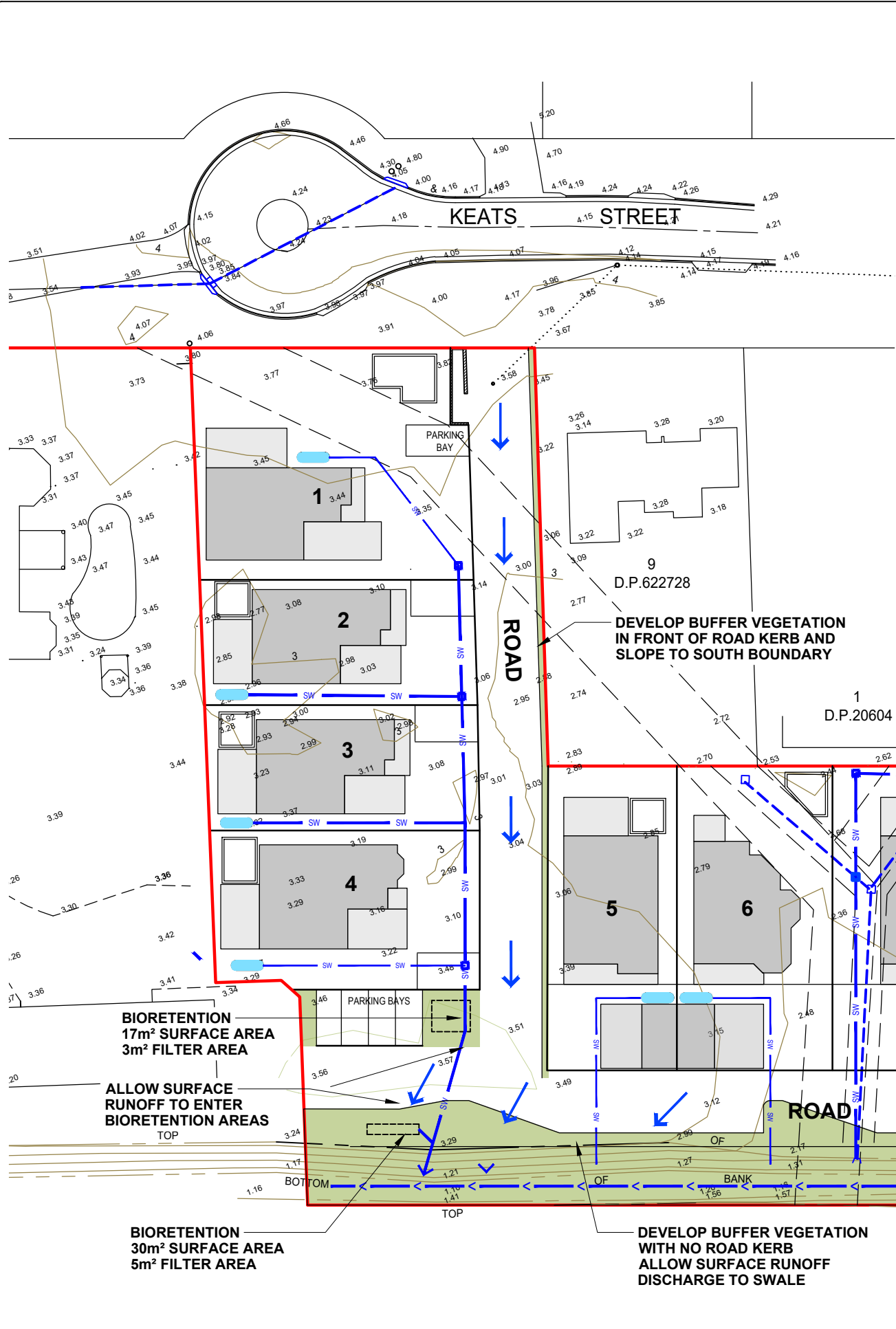
STREETSCAPE

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ATTACHMENT 2

Attachment 2: SMP Drawings



GENERAL NOTES

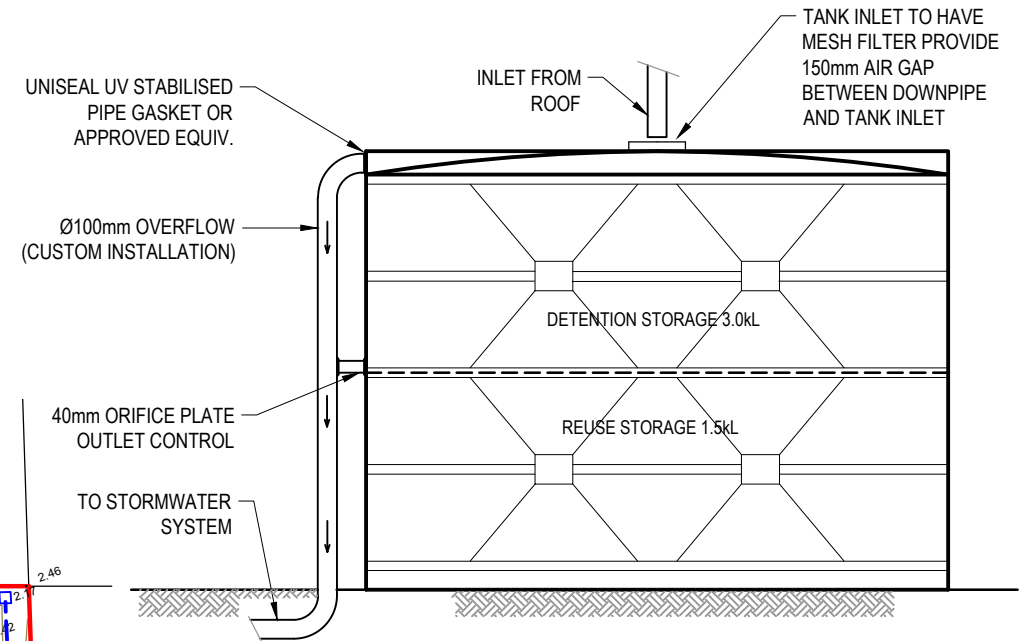
- 1. DIMENSIONS ARE GENERALLY IN METRES UNLESS NOTED OTHERWISE.
- 2. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.

STORMWATER NOTES

- 1. ROOF WATER SYSTEM INCLUDING DOWNPIPES, GUTTER AND STORMWATER PIPE SIZES TO BE CONFIRMED IN DETAILED DESIGN STAGE.
- 2. LOCATION AND SHAPE OF RAIN WATER TANKS ARE INDICATIVE.

LEGEND

- LOT BOUNDARY
- PROPOSED STORMWATER LINE
- EXISTING SWALE
- OVERLAND FLOW
- PROPOSED 4.5kL (MINIMUM) STORMWATER RAINWATER TANK
1.5 kL REUSE, 3.0 kL DETENTION
- LANDSCAPING



ISSUE	DATE	DESCRIPTION	APPD
D	22/12/2020	DRIVEWAY LAYOUT CHANGES, UNITS 2 & 3 TANKS	RB
C	1/10/2020	LAYOUT & TANK DETAILS UPDATED	PG
B	25/08/2020	EXISTING IAD ADDED, RWT RELOCATED	RB
A	17/03/2020	PRELIMINARY ISSUE P1	PG

CLIENT:
STANDARD FINANCE SOLUTIONS PTY LTD

PROJECT:
**PROPOSED UNIT DEVELOPMENT
LOT 1 DP1257709
6 KEATS STREET, BYRON BAY**

TITLE:
STORMWATER MANAGEMENT PLAN

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Ardill Payne & PARTNERS

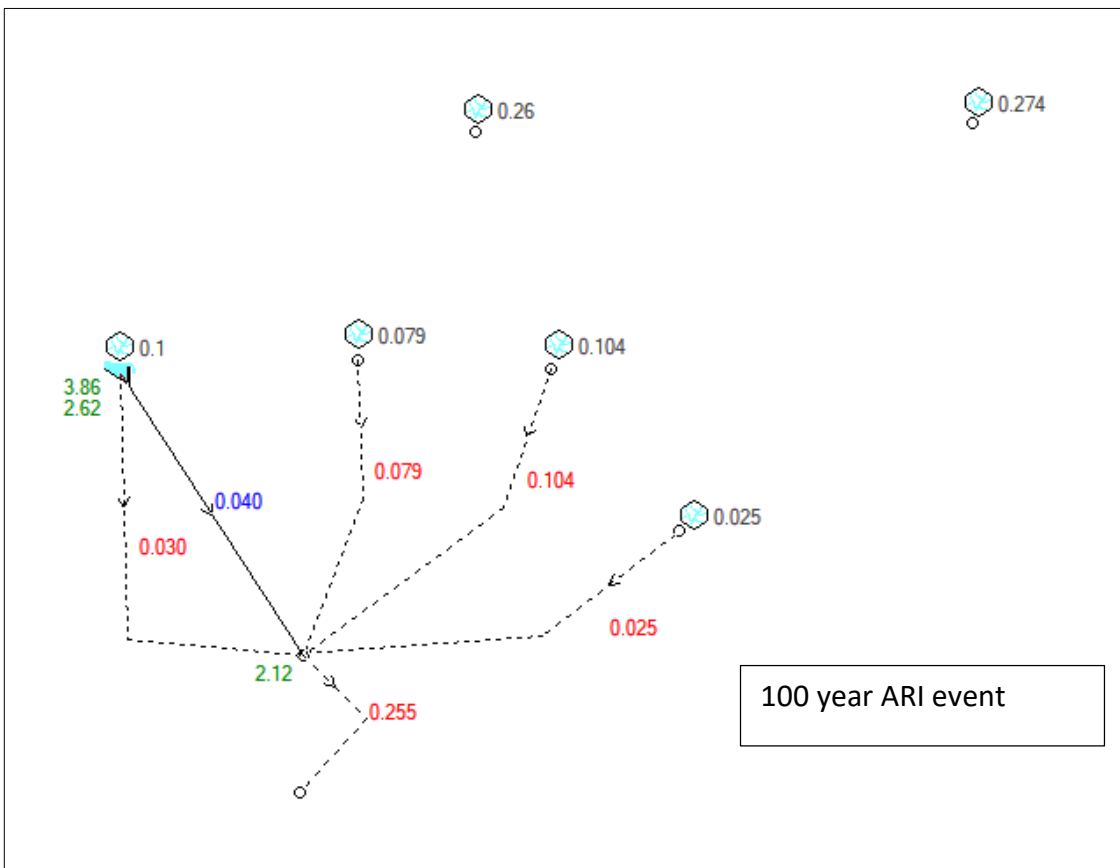
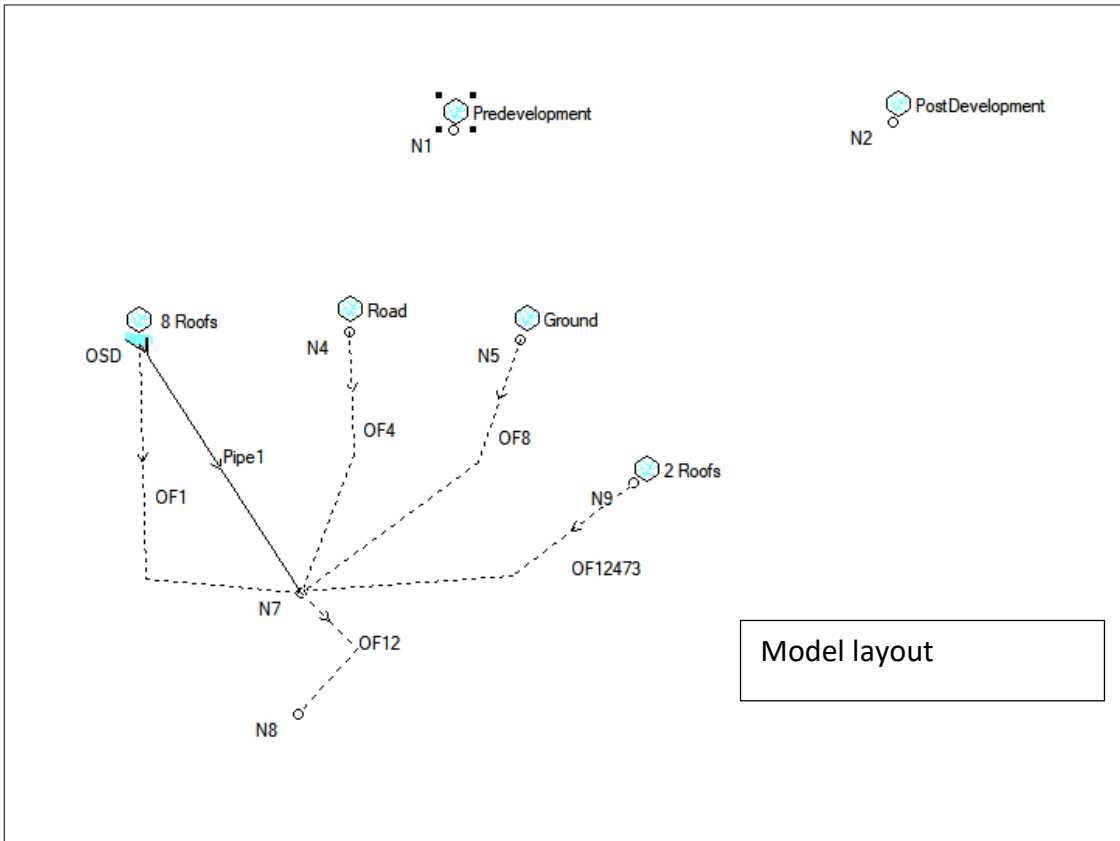
ENGINEERS | PLANNERS | SURVEYORS | ENVIRONMENTAL | PROJECT MANAGEMENT
BALLINA 45 RIVER STREET 02 66863280
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ABN51808558977 info@ardillpayne.com.au

PRELIMINARY ISSUE

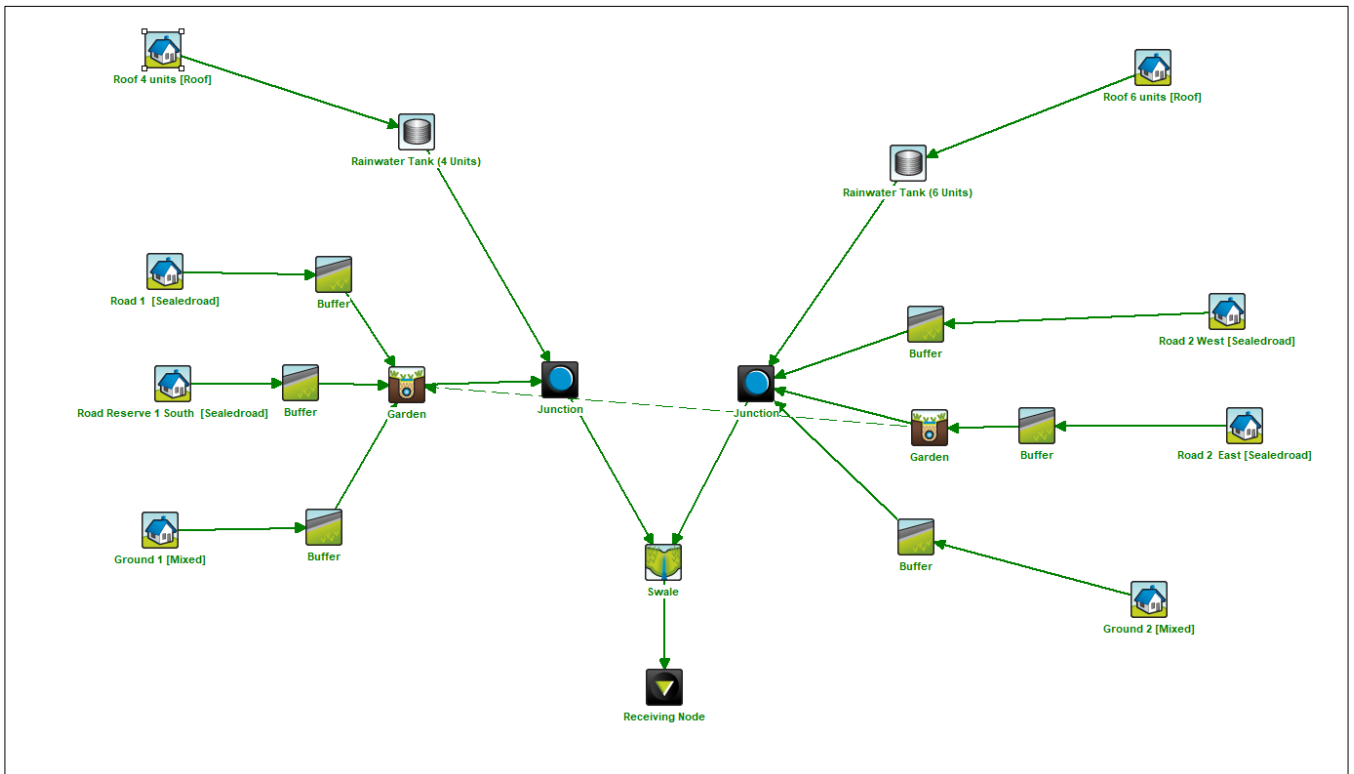
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DESIGNED	PG	DRAWN	SN
CHECKED	PG	DATE	MAR. 2020
APPROVED		CAD FILE	10074-SW01 Iss E.dwg
JOB No	10074	DWG No	SW01
		ISSUE	D

ATTACHMENT 3

Attachment 3: DRAINS Modelling



ATTACHMENT 4



	Sources	Residual Load	% Reduction
Flow (ML/yr)	5.31	3.7	30.4
Total Suspended Solids (kg/yr)	816	55.1	93.2
Total Phosphorus (kg/yr)	1.69	0.488	71.1
Total Nitrogen (kg/yr)	11.4	6.11	46.2
Gross Pollutants (kg/yr)	119	0	100