Sinclair Knight Merz
2 James Street
PO Box 1062
Cairns QLD 4870 Australia

Tel: +61 7 4031 4599
Fax: +61 7 4031 3967
Web: www.skmconsulting.com

Cairns Regional Council
PO Box 359
CAIRNS QLD 4870

Attention: Mr Peter DeRoma

7 December 2009

L-19011.docx
CB22504:RJB:rjb

Dear Peter

COOYA BEACH – STAGE 4A (18 LOTS)
YOUR REFERENCE: CA46
OPERATIONAL WORKS APPLICATION

Please find enclosed Operational Works Application for proposed Cooya Beach – Stage 4A for your consideration and approval:

1) Cairns Regional Council required documents including:
   a) Operational Works Receipting Checklist
   b) Statement of Compliance
   c) Receipt for checking fee (18 Lots x $131 + $1195 Base = $3553)
2) IDAS Forms Part A, E and Assessment Checklist
3) Subdivision Approval Conditions
4) Report addressing RoL Conditions
5) Stormwater Drainage calculations
6) Potential Acid Sulphate Soil Investigation
7) Water Reticulation Network Analysis
8) Masterplans and referenced drawings
9) Engineering drawings (1 x A1 set + 2 x A3 sets + 1 x PDF set – refer enclosed CD)

Please note that the Erosion and Sediment Control Plan forms part of the engineering drawing set (refer drawing no. CB22504-C-12, C-13 and C-14).

Electrical reticulation and street lighting is currently being designed. This will be forwarded once complete. Similarly a landscape plan is currently being prepared and will be forwarded to your office in the near future.

We trust the above meets with your approval and look forward to receipt of your approval. Should you require any additional information, please do not hesitate to contact this office.

Yours sincerely

Robert Carman
Project Engineer
Phone: 07 4031 4599
Fax: 07 4031 3967
E-mail: rcarman@skm.com.au

enc Drawing Numbers CB22504- C-00 to C-16.

cc SGA Property Consultancy – Attn David Kozik
Conics – Attn Evan Yelavich

Item 1

Operational Works Receipting Checklist

(To be completed by Consulting Engineer making the application)

Name of Council: CAIRNS REGIONAL COUNCIL

Development name and location: COOYA BEACH - STAGE 4A

Planning Permit No/Council File No: ...CA / 46 / .....

DESIGN SUBMISSION	CHECK	COMMENT
1. Completed 'Statement of Compliance' form. (FNQROC - AP1 – Appendix A)	✓	
2. IDAS Forms A ,E & IDAS Assessment Checklist (Available from www.ipa.qld.gov.au)	✓	
3. Payment of Engineering Application Fees (Copy of receipt to be attached) (Available from www.cairns.qld.gov.au)	✓	
4. Copy of Decision Notice for Development Application Conditions, inc. explanation of how each condition is to be addressed (Statement of Compliance)	✓	
5. Engineering Design drawings - Complete sets (1 x A1 set, 2 x A3 sets and 1 x electronic copy on compact disc in 'PDF' format)	✓	
6. One copy of Design and Standard Specifications (Unbound Copy Preferable)	N/A	FNQROC Spec. to be used
7. Written consent from adjoining property owners authorising any works on their property	N/A	
8. Water reticulation network in electronic format (Engineer to confirm system requirements and compatibility with Cairns Water)	✓	
9. Landscape drawings - Complete set (1 x A1 set, 2 x A3 sets and 1 x electronic copy on compact disc in 'PDF' format). These must be accompanied by elements of the stormwater & street ltg. layout design, to avoid conflicts.	X	Being prepared. Will forward to your office when complete

DESIGN SUBMISSION	CHECK	COMMENT
10. Overall network drawings (for staged development) for:		
• Water	✓	
• Stormwater	✓	
• Sewer	✓	
• Pathways and roads	X	
• Street Lighting	N/A	
• Electrical	N/A	
• Gas	N/A	
• Public Transport	N/A	
• Park Reserves	N/A	
• Drainage Reserves	N/A	
11. Pavement design criteria	✓	
12. Geotechnical reports for proposed earthworks	N/A	
13. Structural and geotechnical certificates for retaining walls etc.	N/A	
14. Water supply/sewerage pump station design parameters	N/A	
15. Stormwater drainage calculations	✓	
16. Erosion and Sediment Control Strategy (ESCS)	✓	
17. Declared Pest Management Plan (if applicable)	N/A	
18. The approval of any other Authorities & concurrence agencies likely to be affected by the works.	N/A	

19. Contact details of the Consulting Engineer who is submitting the Application:

Name of Engineer	Robert Carman	
Name of Company	SINCLAIR KNIGHT MERZ	
Telephone Number (s)	Office: 07 40314599	Mobile: 0417747030
Email address	rcarman@skm.com.au	
RPEQ No.	6641	

20. Date of submission of application ..7../ ..12../ 200 9..

(For further information on all of the above refer to the FNQROC Development Manual Section AP1)

FNQROC DEVELOPMENT MANUAL

Council Cairns Regional Council
(INSERT COUNCIL NAME)

STATEMENT OF COMPLIANCE
OPERATIONAL WORKS DESIGN

This form duly completed and signed by an authorised agent of the Designer shall be submitted with the Operational Works Application for Council Approval.

Name of Development Cooya Beach - Stage 4A

Compliance with the requirements of the Operational Works Design Guidelines	Non-Compliance refer to non-compliance report / drawing number
Plan Presentation	
Geotechnical requirements	N/A
Geometric Road Design	ROAD WIDTHS AS PER APPROVED RoL PLAN
Pavements	
Structures / Bridges	N/A
Subsurface Drainage	
Stormwater Drainage	
Site Re-grading	
Erosion Control and Stormwater Management	
Pest Plant Management	N/A
Cycleway / Pathways	N/A
Landscaping	Being prepared. Will forward to your office when complete
Water Source and Disinfection/Treatment Infrastructure (if applicable)	N/A
Water Reticulation and Pump Stations	NO PUMP STNS
Sewer Reticulation and Pump Stations	" " "
Electrical Reticulation and Street Lighting	Being prepared. Will forward to your office when complete
Public Transport	N/A
Associated Documentation/ Specification	N/A - USING CRC STD SPECS
Priced Schedule of Quantities	Being prepared. Will forward to your office when complete
Referral Agency Conditions	N/A TO THIS STAGE
Other	N/A

SEPARATE DMR APPROVAL WILL BE SOUGHT FOR THE BONNIE DOON/COOK HWY INTERSECTION UPGRADE.

APPLICATION PROCEDURES

Location of Development Lot 905 SP010324

Applicant SALSON PTY LTD

Designer SINCLAIR KNIGHT MERZ PTY LTD

It is hereby certified that the Calculations, Drawings, Specifications and related documents submitted herewith have been prepared, checked and amended in accordance with the requirements of the FNQROC Development Manual and that the competed works comply with the requirements therein, **except** as noted below.

Conscientiously believing the above statements to be true and correct, signed on behalf of:

Designer ROBERT CARMAN **RPEQ No** 6641

Name in Full SINCLAIR KNIGHT MERZ PTY LTD

Signature [signature] **Date** 7/12/09

Item 2

Form 1 Development Application idas

Part A

Common details

NOTE: Answer **all** questions unless directed to go to a particular question. Refer to the end of the form for advice on how to complete this form.

Applicant details *(The Applicant is the person responsible for making the application and need not be the owner of the land. The Applicant is responsible for ensuring the information provided on the IDAS Application Form is correct. This information is relied upon by the Assessment Manager and any referral agencies when assessing and deciding this application. By lodging this application, the Applicant incurs the obligations and responsibilities prescribed by the IPA. Any development permit or preliminary approval that may be issued as a consequence of this application will be issued to the Applicant.)*

Company/organisation name *(if applicable)*	Salson Pty Ltd (Receivers and Managers Appointed)

Individual applicant/Contact person *(If there is more than one applicant, provide additional applicant details on an attachment to this form)*

Title	MR	First name	ROBERT	Last name	CARMAN
Postal address	c/- SINCLAIR KNIGHT MERZ, PO BOX 1062, CAIRNS QLD 4870				
Contact telephone number	07 4031 4599			Mobile phone number	0417 747 030
Facsimile number	07 4031 3967			e-mail address	rcarman@skm.com.au

Details of the premises *(i.e. the land on which the development is proposed - refer to the advice at the end of the form)*

1. Identify the premises by completing Table A, **or** Table B **and/or** Table C *(ensure adequate information is given to identify the premises)*

Table A If the application is for a **mobile and temporary Environmentally Relevant Activity (ERA),** complete Table A only. Then go to Q2.

	Name of each local government area in which the mobile and temporary ERA is proposed to operate
1	

OR

Table B Street address for the premises *(tick applicable box/es below and insert property description in the table. Identify each lot in a separate row.)*

(i) ☒ Street address / lot on plan for the **premises** *(Appropriate for most applications including building applications);* or

(ii) ☐ Street address /lot on plan for the **land adjoining or adjacent to the premises** *(Appropriate for development in water e.g. jetty, pontoon etc) (Note: Loton plan details may be obtained from title documents, a `Rate' notice, or from the local government.)*

	Street Address				Lot on plan description		Local government area *(e.g. Logan, Cairns)*
	Unit No.	*Street No.*	*Street Name and official suburb/locality name*	*Post Code*	*Lot No.*	*Plan type and Plan Number*	
1			BAYIL DRIVE, COOYA BEACH ROAD	4873	905	SP010324	CAIRNS

AND / OR

Table C Coordinates and/or a map of the premises *(Appropriate for development in remote areas, over part of a lot, in water (e.g. channel dredging in Moreton Bay) etc.)*

	Coordinates *(Note: place each set of coordinates in a separate row)*				Zone Reference	Datum	Local government area *(If applicable)*
	Easting	Northing	Latitude	Longitude			
1						☐ DGDA94 ☐ WGS84 ☐ Other -	

2. Identify if any of the following apply to the premises by completing Tables D, E, or F. *(Note: In most instances, the premises will not involve any of the following characteristics, however some applications may involve one or more of these characteristics - complete only if applicable)*

Table D Complete if the premises are adjacent to or associated with a water body, watercourse or aquifer *(e.g. river, creek, lake, canal)*

	Name of water body, watercourse or aquifer *(If known)*
1	

Table E Complete if the premises are on Strategic Port Land under the *Transport Infrastructure Act 1994*

	Lot on plan description for strategic port land	Port Authority for the lot
1		

Table F Complete if the premises are in tidal water

	Name of local government for the tidal area *(if applicable)*	Name of port authority for the tidal area *(If applicable)*
1		

3. Indicate the total area of the premises on which the development is proposed: *(Note: The total area may include land both above and below water)*

Total area of premises	
1.80	☐ m² ☒ hectares *(Tick applicable unit)*

Existing use of the premises

4. Current use/s of the premises: *(e.g. vacant land, house, townhouses, apartment building, shop, service station, school, sugar cane farming etc.)*

1	VACANT LAND

5. Are there any existing easements on the premises? *(e.g. for vehicular access, electricity, overland flow, water etc.)?*

☒ No ☐ Yes - *Ensure the type, location and dimensions of each easement are included in plans, submitted with the application*

Proposal details

6. Brief description of the proposal *(e.g. 6 unit apartment building, 30 lot residential subdivision, a bore, aquaculture)*

18 LOT RESIDENTIAL SUBDISIVION

7. Does the poposal include new buildings or operational work (including any services) on the premises?

☒ No ☐ Yes - *Ensure the nature, location and dimensions of the proposed works are included in plans, submitted with the application*

Resource entitlement *(if applicable)* - *further information is provided in the advice section at the end of the form*

8. Does the application involve taking or interfering with a State resource and therefore require a resource entitlement? *(e.g. the application involves State land (leased and freehold), declared Fish Habitat areas, taking quarry material, taking or interfering with water under the Water Act 2000, etc.)*

☒ No - *Go to Q9* ☐ Yes - *Complete Table G - provide details for each evidence required on a separate row, if applicable. Evidence of resource allocation or entitlement must be submitted with the application. You do not need to answer Q9 - go to the next section.*

Owner's consent *(if applicable)* - *further information is provided in the advice section at the end of the form*

9. Complete Table H for applications involving a material change of use; reconfiguration of a lot; work on land below high-water mark and not within a canal as defined under the *Coastal Protection and Management Act 1995*; or work on rail corridor land defined under the *Transport Infrastructure Act 1994* - *provide details for each owner on a separate row, or on an attachment to this form if applicable.*

Table H	Premises Owner's name/s and postal address	Details of the premises owned *(street address or lot on plan description)*	Owner's signature*	Date consent was obtained
1	Salson Pty Ltd (Receivers and Managers Appointed) GPO Box 1003 Brisbane Q 4001	LOT 905 SP210324		

* Owner's signature cannot be provided on the form if you intend to submit the application electronically. Owner's consent must be provided to the assessment manager on an attachment containing appropriate written documentation of the owner's consent. If the owner is a company, s127 of the *Corporations Act 2001* (Cwealth) details how a company may sign as owner. Templates for the provision of owner's consent are available on the IPA website.

Attachments and supporting information *(Complete Table I - Use a separate row for each type of attachment or information, including information required under this Part)* ***Please ensure all documentation submitted with this form, including other Parts of Form 1, or owner's consent, etc, are securely attached to this Part of the Form.***

Table I		Description of attachment or information *(e.g. Part C of Form 1, owner's consent, evidence of resource allocation/entitlement, plans, drawings, reports)*	Title *(if applicable)* *(e.g. General Authority,James StreetTraffic Report)*	Date	Method of delivery to assessment manager
	1	ENGINEERING OPERATIONAL WORKS REPORT AND DRAWINGS		04-Dec-2009	over the counter

Portable Long Service Leave (PLSL) levy *(Applicable for certain building and construction work valued over $80,000 only)*

10. The Portable Long Service Leave Levy (PLSL) is not applicable to this application if any of the following apply: *(Tick box if applicable)*

☐ the application seeks a preliminary approval only;

☐ the application is not for building and construction work under the *Building and Construction Industry (Portable Long Service Leave) Act 1991*, section 3AA *(e.g. the application is only for a change of use, or for the following types of work* ***carried out solely for farming purposes****: land clearing, site preparation, earthworks, fences, fodder harvesting, clearing of encroaching vegetation, clearing of regrowth, thinning vegetation or controlling weeds or pests);*

☐ all costs, that relate to the work both directly and indirectly, are less than $80,000, inclusive of GST; or

☐ the work is being carried out under an owner-builder permit issued under the *Queensland Building Services Authority Act 1991* - *Complete and submit a QLeave Notification and Payment Form (no payment required if owner-builder permit number stated). The receipted form must be sighted by the assessment manager before a development permit can be given.*

11. Is payment of a PLSL levy applicable to this application? *(Refer to Q10 and the Advice below for more information)?*

☐ No - *End of Part A*

☒ Yes - *Answer Q12 below*

12. Has the PLSL levy been paid?

☒ No - *(NOTE: An application can be lodged prior to payment of the applicable PLSL levy. However, the levy must be paid and the receipted form sighted by the Assessment Manager* ***before a development permit may be given for this application****. To pay the levy you will need to complete and submit a Notification and Payment Form to QLeave.)*

☐ Yes - *Complete Table J and submit, with the application, the "yellow" (Local Government's (Council) / Private Certifier's) copy of the receipted QLeave Form*

OFFICE USE ONLY *(For use by the Assessment Manager / Private Certifier) (Optional)*

Fee ($)		Date received		Receiving officer's name		Reference numbers	

NOTIFICATION OF ENGAGEMENT OF PRIVATE CERTIFIER

To: _____ Council. I have been engaged as the private certifier for the building work referred to in this application.

Date of engagement	Name	BSA Certification number	Building classification/s

QLEAVE NOTIFICATION AND PAYMENT *(for completion by assessment manager or private certifier if applicable)*

	Description of the work	QLeave Project Number	Amount paid ($)	Date paid	Date receipted form sighted by assessment manager	Name of officer who sighted the form
1						

Privacy Statement

The information collected on Form 1 will be used by the Department of Infrastructure and Planning (DIP) in accordance with the processing and assessment of your Application. Your personal details will not be disclosed for a purpose outside of the IDAS process, except where required by legislation (including the Freedom of Information Act 1992) or as required by Parliament. This information may be stored in a DIP database. The information collected will be retained as required by the Public Records Act 2002.

Advice for completing Part A

General advice

- Part A of IDAS Development Application Form 1 must be completed and accompany all development applications. The applicant is responsible for answering **all** questions fully and correctly, unless following a response there is a statement to go directly to another question. The Assessment Manger may refuse to receive an application that is not properly made.
- The IDAS Assessment Checklist must also be completed for all development applications, other than those requiring assessment against the *Building Act 1975* only, i.e. those applications requiring the completion of Parts A and B only.

Applicant details

- If the applicant is a company or organisation, a contact person must be nominated. The applicant's signature is not required to be provided under the IPA.

Details of the premises

- The term 'premises' is defined by the IPA, schedule 10 to mean a building or other structure, and land (whether or not a building or other structure is situated on the land). The term 'land' is also defined to include the estate in, on, over or under the land.
- Details of the land are not required if the application involves a mobile and temporary Environmentally Relevant Activity only. Instead complete Table A.
- The premises may be identified in a number of ways --
  - Street address and lot on plan are most common and will apply to most applications.
  - Coordinates may provide the best means of accurately identifying the location of development proposed in waters, or on a relatively small development site distant from property boundaries on a large lot. Sufficient coordinates need to be provided to identify the boundary of the premises the subject of the application. Eastings and northings using GDA94 datum is preferred, but longitude and latitude and other (specified) datum such as Zone Reference or GS84 may be provided.
- The definition of 'water body' and 'watercourse' can vary from Act to Act.
- StrategicPortLandis within a local government area but a local government's planning scheme does not apply onStrategicPortLand. StrategicPortLandis declared under the *Transport Infrastructure Act 1994*. For further information go to IDAS Guide 11 (Development on strategic port land) and the Queensland Transport (Ports) website.
- 'Tidal water' is defined in the *Coastal Protection and Management Act 1995* (Schedule) and 'tidal area' for a local government and for strategic port land is defined in the IPA (schedule 10). Generally, the area below 'high-water mark' *(defined by the Coastal Act in relation to high water mark at spring tides)* establishes the boundary of a tidal area. Land below high water mark is not within a local government's area unless provided for under the *Local Government Act 1993*. Unless otherwise provided for by legislation, a local government has no jurisdiction below high water mark. A tidal area for strategic port land is within the jurisdiction of the relevant port authority, while the Environmental Protection Agency generally has jurisdiction for a local government tidal area. However, the IPA gives local governments jurisdiction for assessing and deciding applications for prescribed tidal works within the local government tidal area, and the planning scheme may be applied to that assessment (to the extent provided for in the code for prescribed tidal work).

Resource entitlement

- Section 3.2.1(5) of the IPA requires evidence of resource entitlement be given for applications if they involve taking or interfering with a prescribed State resource. Schedule 10 of the *Integrated Planning Regulation 1998* (IPR) prescribes the State resources, including State-owned land, where evidence is required to be given, and the evidence required to support the application. Link to Integrated Planning Regulation. Section 3.2.1(10)(a)(ii) states an application **cannot** be taken to be properly made without the required evidence.
- For applications involving the **taking or interfering with water under the Water Act**, the development application may be made at the same time as the request for resource entitlement, and the Department of Natural Resources and Water will accept the application as properly made.
- For **State-controlled roads,** a resource entitlement is not required for an activity that is exempt ancillary works or encroachment (identified by gazette notice under the *Transport Infrastructure Act 1994*, section 50), or if the activity requires referral to the Department of Main Roads.
- Evidence may be required from more than one Department responsible for a State-owned resource, e.g. from the Environmental Protection Agency for quarry material below high water mark, and the Department of Natural Resources and Water in relation to the State-owned land above high water mark.

Owner's consent

- Section 3.2.1(3) of the IPA prescribes that an application must contain, or be supported by, the written consent of the land owner/s, if the application involves: a material change of use; reconfiguration of a lot; work on land below high-water mark and not within a canal as defined under the *Coastal Protection and Management Act 1995*; or work on rail corridor land defined under the *Transport Infrastructure Act 1994*.
- Evidence of this consent may need to be provided before the application will be accepted as properly made by the Assessment Manager, during the processes of the application or in the event of an appeal about the outcome of the application.
- 'Owner' for the purpose of a lodging an IDAS development application means the person at the time of lodging the application, entitled to receive the rent for the land (or would be entitled to receive the rent for it if it were let to a tenant at a rent).
- Templates are available from the IPA website for the provision of owner's consent as an attachment to this form. However other documentation may be used for providing owner's consent provided it is clear the documentation relates to the development application for the premises.
- Owner's consent, if required, must be provided even if the applicant is the owner. Owner's consent is not required for a mobile and temporary ERA.

Portable Long Service Leave (PLSL) Levy

- The Building and Construction Industry Portable Long Service Leave Scheme provides long service leave entitlements to workers in the building and construction industry who would be unlikely to accrue enough service with one employer to qualify for long service leave. To fund the scheme, a Portable Long Service Leave Levy (PLSL levy) is collected on certain building and construction work carried out inQueensland.
- The PLSL levy amount and other prescribed percentages and rates for calculating the levy are stated in the *Building and Construction Industry (Portable Long Service Leave) Regulation 2002.* Included in the amount collected by QLeave is the Workplace Health and Safety Fee and the Building and Construction IndustryTrainingLevy.
- The *Building and Construction Industry (Portable Long Service Leave) Act 1991* (PLSL Act) defines the building and construction work subject to the PLSL levy and includes renovating, relocating, constructing, altering, demolishing, maintaining or repairing buildings, pools, roads, jetties, pipelines, fences or earthworks, and works for subdividing, irrigating or draining land.
- The PLSL levy need not be paid when the application is made, but the PLSL Act requires the levy to be paid before a development permit may be issued.
- The Assessment Manager must sight an approved form issued by QLeave advising of the status of the payment of the PLSL levy. Building and Construction Industry Notification and Payment Forms are available from anyQueenslandpost office or agency, on request from QLeave, or can be completed on the QLeave website at www.qleave.qld.gov.au. For further information contact QLeave (Tel: 1800 803 481 Web: www.qleave.qld.gov.au)

Form 1 Development Application idas

Part E

Building &/or operational works assessable against a planning scheme[1]

Nature of the works

1. Nature of **work** that requires assessment against a **planning scheme**:

☐ Building work - *Complete Table A* ☒ Operational work - *Complete Table B*

Table B

(i) What is the nature of the operational work?

☒ Roadworks ☒ Stormwater ☒ Water infrastructure ☒ Sewerage infrastructure
☒ Landscaping ☒ Earthworks ☐ Drainage Works ☐ Signage
☐ Clearing vegetation under the planning scheme ☐ Other - *Specify below*

(ii) What type of approval is being sought? *(NOTE: If you have indicated multiple operational works in question (i) above and your answers to this question would be different for different operational work, it may be more appropriate to provide these details in an attachment to this form)*

☒ Development Permit ☐ Preliminary approval ☐ Both *(Specify below)*

(iii) Is the operational work necessary to facilitate the creation of new lots *(i.e. subdivision)*?

☐ No ☒ Yes - *Specify the number of lots being created*

18 Residential Lots

(iv) Are there any current approvals associated with this application? *(e.g. Development Permit or Preliminary Approval for MCU or reconfiguring a lot)*

☐ No ☒ Yes - *Complete Table B(a)*

Table B(a)

	List of approval references	Date approved	Date approval lapses *(if known)*
1	DEVELOPMENT PERMIT FOR RECONFIGURATION OF A LOT (Application Number CA46)	7 September 2007	

2. What is the dollar value of this operational work? *(i.e. the total value including GST, materials and labour)* $ 490000

Mandatory Information

3. Confirm that the following mandatory information accompanies this application

	Confirmation of lodgement	Method of lodgement
Plans, andspecifications if applicable, showing the nature and location of the proposed works *(including the extent of any cut and fill)*	☒ Confirmed	over the counter

OFFICE USE ONLY

Date Received Reference Numbers

Advice for completing Part E

General advice

- Part A must also be completed for all IDAS development applications.
- The applicant is responsible for answering all questions fully and correctly, unless following a response there is a statement to go directly to another question.

Q1	A development permit authorises development to occur, while a preliminary approval is a step in the approval process and does not authorise development to occur

[1] This form is also used for building or operational work assessable against the land use plan for Cairns airport land or Mackay airport land. Wherever planning scheme is mentioned, take it to mean the land use plan for the airport land.

Form 1 Development Application idas

IDAS

Assessment Checklist

IDAS Development Application Form 1 is the approved form for all development applications under the *Integrated Planning Act 1997* IPA). Form 1 is made up of various Parts.

Part A (Common details) of Form 1 must be completed for all applications. The relevance of other Parts of Form 1 depends on the nature of the application.

Form 1 also includes this IDAS Assessment Checklist, which is used to assist in determining State assessment and referral requirements, and the Parts of Form 1 relevant to the application.

Section 1 and all other relevant sections of the IDAS Assessment Checklist, as identified in the Table below, must be completed for all development applications except those proposed on land in an urban development area, or for building work requiring assessment against the *Building Act 1975* only.

For more information about development applications on land in an urban development area, refer to www.ulda.qld.gov.au. For more advice about building applications refer to Part B of the IDAS Application Form.

Answering the following questions will assist you in determining which sections of the checklist must be completed for your application. If unsure, phone or visit your local government or log onto the DIP website www.dip.qld.gov.au for help

For all IDAS development applications (except those for building work requiring assessment against the *Building Act 1975* only) - *complete Section 1 of this checklist*		
Does the application seek approval to make a material change of use of the premises? *If yes - complete Section 2 of this checklist*	☐ Yes	☒ No
Does the application seek approval to reconfigure a lot? *If yes - complete Section 3 of this checklist and Part F of IDAS Application Form 1. If the premises are completely within a single local government area assessment is by the local government.*	☐ Yes	☒ No
Does the application seek approval to carry out operational work? *If yes - complete Section 4 of this checklist*	☒ Yes	☐ No
Does the application seek approval to carry out building work requiring assessment against the *Fisheries Act 1994*? *If yes - complete Section 5 of this checklist*	☐ Yes	☒ No
Have you received a referral agency response under section 3.3.2.of the IPA, in relation to this development application? *If yes - complete Section 6 of this checklist*	☐ Yes	☒ No
Does the application seek approval to carry out building work requiring assessment against a local government planning scheme? *If yes - complete Form 1 Part E of IDAS Application Form 1. Assessment is by the local government.*	☐ Yes	☒ No
Does the application seek approval to carry out building work requiring assessment against the *Building Act 1975*? *If yes - go to Appendix 1 of this checklist for advice on building referrals. Complete Part B of IDAS Application Form 1.* *Assessment is by a building certifier*	☐ Yes	☒ No
Do you wish the application *to be assessed against a superseded planning scheme*? *If yes - complete Form 1 Attachment 1*	☐ Yes	☒ No
Is the application for development completely or partly on Cairns and Mackay airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*? *If yes - Assessment is by the Department of Infrastructure and Planning. Complete Form 1 Part D of IDAS Application Form 1 if the application is for a material change of use, and Part E if for building or operational work. Also, the application must be referred to the local government as Advice Agency.*	☐ Yes	☒ No

SECTION 1 Section 1 must be completed for all applications that require completion of the IDAS Assessment Checklist.

HERITAGE

1.1A Is any part of the proposal intended to be carried out on a Queensland heritage place under the *Queensland Heritage Act 1992*?

☒ No - *Go to 1.1B* ☐ Yes

IPA, schedule 8, part 1, table 5, item 2; IP Regulation, schedule 2, table 2, item 18.

1.1B Does the proposal involve development intended to be carried out on a place entered in a local heritage register under part 11 of the Queensland Heritage Act 1992, other than if the place is on Cairns or Mackay airport land?

☒ No - *Go to Q1.2* ☐ Yes

IPA, schedule 8, part 1, table 5, item 2A, IP Regulation, schedule 1, part 2, table 5, item 2

REMOVING QUARRY MATERIAL; WILD RIVER AREA

1.2 Does the proposal involve removing quarry material from a watercourse or lake as defined under the *Water Act 2000*?

☒ No - *Go to Q1.3* ☐ Yes

IPA, schedule 8, part 1, table 5, item 1; IP Regulation, schedule 2, table 2, item 11; IP Regulation, schedule 1, table 5, item 2 (wild river area); Water Act 2000, section 966C; Wild Rivers Act 2005, section 43A

ENVIRONMENTALLY RELEVANT ACTIVITY; WILD RIVER AREA

1.3 Does the proposal involve an environmentally relevant activity (ERA), other than a mining activity or a petroleum activity?

☒ No - *Go to Q1.4* ☐ Yes

IPA, schedule 9, part 1, table 2, item 1, IPA, schedule 8, part 1, table 5, items 3 and 4, IP Regulation, schedule 2, table 2, items 1 and 23, Environmental Protection Act 1994, section 73AA (wild river area), Wild Rivers Act 2005, section 43A, relevant wild river declaration; Wild Rivers Code.

WITHIN THE LIMITS OF A PORT

1.4 Is any part of the premises within the limits of a port under the *Transport Infrastructure Act 1994*?

☒ No - *Go to Q1.5*

☐ Yes

IP Regulation, schedule 2, table 2, items 15 and 16

DECLARED FISH HABITAT AREA

1.5 Does any part of the premises adjoin a declared fish habitat area under the *Fisheries Act 1994*?

☒ No - *Go to Q1.6*

☐ Yes - *If answers to questions in other sections of this checklist indicate that the proposed development is assessable under IPA, schedule 8, this application requires assessment by the Department of Primary Industries and Fisheries (DPI&F). If DPI&F is not the Assessment Manager for the application, the agency has jurisdiction as Advice Agency.*

IP Regulation, schedule 2, table 2, item 26

COMMUNITY INFRASTRUCTURE

1.6 Is any part of the premises designated for community infrastructure?

☒ No - *Go to Q1.7*

☐ Yes

IP Regulation, schedule 2, table 3, item 7

WASTE WATER MANAGEMENT

1.7 Does the proposal involve the establishment or expansion of a waste water disposal system?

☒ No - *End of Section 1* ☐ Yes

IP Regulation, schedule 2, table 3, item 5

SECTION 4 - Section 4 must be completed when the application seeks approval to carry out operational work.

PLANNING SCHEME

4.1 Is the proposed operational work assessable under any State planning regulatory provisions?

☒ No ☐ Yes

If no, is the proposed operational work assessable under the planning scheme?

☐ No - *Go to Q4.2* ☒ Yes - *Complete Form 1, Part E and answer Q4.1.1 - 4.1.7 below*

STATE-CONTROLLED ROAD

4.1.1 Is any part of the premises located in part of a future State-controlled road, or within 100m of a State-controlled road?

☒ No ☐ Yes

If no, is the proposed operational work for filling or excavating listed in *Integrated Planning Regulation 1998*, schedule 5 and does it exceed the threshold?

☒ No - *Go to Q4 1.2*

☐ Yes - *This application must be referred to the Department of Main Roads (DMR) as Concurrence Agency.*

IP Regulation, schedule 2, table 3, item 3; IP Regulation, schedule 2, table 3, item 1(b)

ACID SULFATE SOILS

4.1.2 Is any of the operational work proposed in a local government area listed[4.1] in *State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils*

☐ No - *Go to Q4.1.3* ☒ Yes

[4.1] Aurukun, Bowen, Brisbane, Broadsound, Bundaberg, Burdekin, Burke, Burnett, Caboolture, Cairns, Calliope, Caloundra, Cardwell, Carpentaria, Cook, Coolcola, Douglas, Fitzroy, Gladstone, Gold Coast, Hervey Bay, Hinchinbrook, Isis, Johnstone, Livingstone, Logan, Mackay, Maroochy, Maryborough, Mirium Vale, Mornington, Noosa, Pine Rivers, Redcliffe, Redland, Rockhampton, Sarina, Thuringowa, Tiaro, Torres, Townsville, Whitsunday

If yes, is the natural ground level of any point where work is being carried out less than 20m AHD?

☐ No

☒ Yes

If yes, does the proposed operational work involve the following?

(i) Excavating more than 1,000m^3 of soil or sediment at or below 5m AHD ☒ No ☐ Yes

(ii) Filling the premises with 1,000m^3 or more of material with an average depth of 0.5m on land, soil or sediment at or below 5m AHD ☒ No ☐ Yes

If yes to either or both (i) or (ii) above - *This application must to be referred to the Department of Natural Resources and Water (NRW) as Advice Agency*

IP Regulation, schedule 2 table 3, item 4; State Planning Policy 2/02: Planning and Managing Development involving Acid Sulfate Soils, section 3.6

EASEMENTS AND SUBSTATIONS

4.1.3 Is any of the proposed operational work for filling or excavation?

☐ No - *Go to Q4.1.4*

☒ Yes

If yes, is the filling or excavation associated with reconfiguring a lot?

☒ Yes - *Go to Q4.1.4*

☐ No - *Answer both (a) and (b) below*

IP Regulation, schedule 2, table 3 item 10(a); IP Regulation, schedule 2, table 3 item 10(b)

4 1.4 Is any part of the premises subject to an easement in favour of the holder of Pipeline Licence Number 1 issued under the *Petroleum Act 1923* for the construction or operation of the Moonie to Brisbane strategic pipeline under that Act?

☒ No - *Go to Q4.1.5* ☐ Yes

IP Regulation, schedule 2, table 3, item 17

PUBLIC PASSENGER TRANSPORT

4.1.5 Is any of the proposed operational work listed in schedule 13C of the *Integrated Planning Regulation 1998* and does it exceed the specified threshold?

☒ No- *Go to Q4.1.6* ☐ Yes - *This application must be referred to QueenslandTransport (QT) as Concurrence Agency.*

IP Regulation schedule 2 table 3, item 14

RAILWAY SAFETY AND EFFICIENCY

4.1.6 Is any of the proposed operational work listed in schedule 13D of the *Integrated Planning Regulation 1998* and does it exceed the specified threshold?

☒ No- *Go to Q4.1.7* ☐ Yes - *This application must be referred to QueenslandTransport (QT) as Concurrence Agency.*

IP Regulation, schedule 2, table 3, item 15

KOALA CONSERVATION (outside SEQ urban footprint)

4.1.7 Is any part of the premises in a koala conservation area or koala sustainability area, other than in an SEQ urban footprint area?

☒ No - *Go to Q4.2* ☐ Yes

IP Regulation, schedule 2, table 3, item 19

WILD RIVER AREA - Although legislation provides for assessment of operational works for residential, commercial and industrial development for the purposes of the *Wild Rivers Act 2005*, currently no declarations for any of the wild river areas apply the Wild Rivers code to that type of development.

ASSOCIATED WITH RECONFIGURING A LOT; RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT IN A WILD RIVER AREA

4.2 Is any of the proposed operational work associated with reconfiguring a lot and the reconfiguration is also assessable?

☒ No - *Go to Q4.3* ☐ Yes

IPA, schedule 8, part 1, table 4, item 2; IP Regulation, schedule 1, part 2, table 5, item 1(c)
Wild Rivers code (Note: the code does not currently contain applicable provisions for residential, industrial or commercial development inside a designated urban area)

KOALA CONSERVATION (Inside SEQ urban footprint)

4.3A Is any part of the premises in an interim koala habitat protection area?

☒ No - *Go to Q4.3B* ☐ Yes

IP Regulation, schedule 2, table 2, item 34A

VEGETATION CLEARING; KOALA CONSERVATION; WILD RIVER AREA

4.3B Is any of the proposed operational work for the clearing of native vegetation to which the *Vegetation Management Act 1999* applies?

☒ No - *Go to Q4.4* ☐ Yes

IPA, schedule 8, part 1, table 4, items 1A-1G; IP Regulation, schedule 2, table 2, item 5 (vegetation clearing); IP Regulation, schedule 2, table 2, item 34 (koala conservation); IP Regulation, schedule 1, part 3, table 4, item (vegetation clearing/wild river area); Vegetation Management Act 1999, section 22A (vegetation clearing/wild river area); Wild Rivers Act 2005, sections 31F and 43A

TAKING OR INTERFERING WITH WATER; WILD RIVER AREA

4.4 Is any of the proposed operational work for any thing constructed or installed that allows, under the *Water Act 2000*, for taking or interfering with water from a watercourse, lake or spring (other than using a water truck to pump water; and other than under the *Water Act 2000*, section 20(2), (3) or (5)), or from a dam constructed on a watercourse or lake?

☒ No - *Go to Q4.5* ☐ Yes - *Answer (a) and (b) below*

IPA, schedule 8, part 1, table 4, items 3(a); IP Regulation, schedule 2, table 2 item 8; IP Regulation, schedule 1, part 3, table 4, items 3 and 3A; Water Act 2000, section 968A (wild river area); Wild Rivers Act 2005, section 43A, relevant wild river declaration, Wild Rivers Code

4.5 Is any of the proposed operational work for any thing constructed or installed that allows, under the *Water Act 2000*, for taking or interfering with artesian water *(other than using a water truck to pump water)*?

☒ No *Go to Q4.6* ☐ Yes - *(Complete Form 1, Part K$_1$) This application requires assessment by the Department of Natural Resources and Water (NRW). If NRW is not the Assessment Manager for the application, the agency has jurisdiction as Concurrence Agency.*

IPA, schedule 8, part 1, table 4, item 3(b); IP Regulation, schedule 2, table 2, item 8; IP Regulation, schedule 1, part 3, table 4, item 3
Wild Rivers code (Note: the code does not currently contain applicable provisions for taking or interfering with artesian water)

4.6 Is any of the proposed operational work for any thing constructed or installed that allows, under the *Water Act 2000*, for taking overland flow water (other than using a water truck to pump water)?

☒ No - *Go to Q4.7* ☐ Yes - *Answer (a) and (b) below*

IPA, schedule 8, part 1, table 4, item 3(c)(i), IP Regulation, schedule 2, table 2, item 8, IP Regulation, schedule 1, part 3, table 4, item 3; Water Act 2000, section 966A (wild river area), Wild Rivers Act 2005, section 43A, relevant wild river declaration, Wild Rivers Code

4.7 Is any of the proposed operational work for any thing constructed or installed that allows, under the *Water Act 2000*, for taking or interfering with subartesian water *(other than using a water truck to pump water)*?

☒ No - *Go to Q4.8* ☐ Yes

IPA, schedule 8, part 1, table 4, item 3(c)(ii); IP Regulation, schedule 2, table 2, item 8; IP Regulation, schedule 1, part 3, table 4, item 3 Water Act 2000, section 966A (wild river area)(Note: no current Wild River declaration identifies taking or interfering with subartesian water as assessable) Wild River code (Note: the code does not currently contain applicable provisions for sub artesian water)

4.8 Does any of the proposed operational work for any thing constructed or installed that allows, under the *Water Act 2000*, for interfering with overland flow water *(other than using a water truck to pump water)*?

☒ No - *Go to Q4.9* ☐ Yes - *Answer both (a) and (b) below*

IPA, schedule 8, part 1, table 4, items 3(c)(i) and 3(d), IP Regulation, schedule 2, table 2, item 9, IP Regulation, schedule 1, part 3, table 4, item 3A, Water Act 2000, section 966B (wild river area), relevant wild river declaration Wild Rivers Code,

4.9 Is the proposed operational work for the following?

(i) For the construction of a referable dam as defined under the *Water Supply (Safety and Reliability) Act 2008* ☒ No ☐ Yes

(ii) To increase the storage capacity of a referable dam by more than 10% ☒ No ☐ Yes

If yes to either or both (i) or (ii) above - *(Complete Form 1, Part K5) This application requires assessment by the Department of Natural Resources and Water (NRW). If NRW is not the Assessment Manager for the application, the agency has jurisdiction as Concurrence Agency.*

IPA, schedule 8, part 1, table 4, item 4; IP Regulation, schedule 2, table 2, item 10

TIDAL WORK; WILD RIVER AREA

4.10 Is any of the proposed operational work tidal work, other than excluded work defined under the IPA?

☒ No - *Go to Q4.11* ☐ Yes - *Answer (a) and (b) below*

IPA, schedule 8, part 1, table 4, item 5; IP Regulation, schedule 2, table 2, items 12, 14 and 17, IP Regulation, schedule 1, part 3, table 4, items 4A and 5 Coastal Protection and Management Act 1995, section 104A (wild river area)

COASTAL MANAGEMENT DISTRICT; WILD RIVER AREA

4.11 Is any of the operational work proposed to be carried out within a coastal management district?

☒ No - *Go to Q4.12* ☐ Yes

IPA, schedule 8, part 1, table 4, item 5; IP Regulation, schedule 2, table 2, items 12 and 14; IP Regulation, schedule 1, part 3, table 4, items 4A and 5 Coastal Protection and Management Act 1995 Act 1995, section 104A (wild river area); Wild Rivers Act 2005, section 43A

WATERWAY BARRIER WORKS; WILD RIVER AREA

4.12 Is any of the proposed operational work for constructing or raising waterway barrier works under the *Fisheries Act 1994*?

☒ No - *Go to Q4.13* ☐ Yes

IPA, schedule 8, part 1, table 4, item 6; IPA, schedule 8, part 2, table 4, item 2, Fisheries Regulation 1995 s113A (self-assessable codes), IP Regulation, schedule 2, table 2, item 28, IP Regulation, schedule 1, part 3, table 4, item 6, Fisheries Act 1994, section 76D (wild river area), Wild Rivers Act 2005, section 43A.

DECLARED FISH HABITAT AREA; WILD RIVER AREA

4.13 Is any of the operational work proposed to be carried out completely or partly within a declared fish habitat area under the *Fisheries Act 1994*?

☒ No - *Go to Q4.14*

☐ Yes

IPA, schedule 8, part 1, table 4, item 7, IPA, schedule 8, part 2, table 4, item 3; Fisheries Regulation 1995 s113A (self-assessable codes), IP Regulation, schedule 2, table 2, item 25, IP Regulation, schedule 1, part 3, table 4, item 7; Wild Rivers Act 2005, sections 43A, Fisheries Act, section 76DC (wild river area)

REMOVAL, DESTRUCTION OR DAMAGE OF A MARINE PLANT; WILD RIVER AREA

4.14 Is any of the proposed operational work removing, destroying or damaging marine plants under the *Fisheries Act 1994*?

☒ No - *Go to Q4.15* ☐ Yes

IPA, schedule 8, part 1, table 4, item 9; IPA, schedule 8, part 2, table 4, item 4, Fisheries Regulation 1995 s113A (self-assessable codes), IP Regulation, schedule 2, table 2, item 29, IP Regulation, schedule 1, part 3, table 4, item 8; Fisheries Act 1994, section 76DB (wild river area), Wild Rivers Act 2005, section 43A, relevant wild river declaration, Wild Rivers Code

WILD RIVER AREA

4.15 Is any of the operational work proposed to be carried out in a wild river area declared under the *Wild River Act 2005*?

☒ No - *Go to Q4.16* ☐ Yes

IPA, schedule 8, part 1, table 4, item 10; IP Regulation, schedule 2, table 2, item 37; Wild Rivers Act 2005, sections 42, 43A

STATE-CONTROLLED ROAD

4.16 Is any part of the premises located in part of a future State-controlled road, or within 100m of a State-controlled road?

☒ No - *End of section 4* ☐ Yes

IP Regulation, schedule 2, table 2, item 3

Item 3

DOUGLAS SHIRE COUNCIL

ENQUIRIES: Mr Paul Gleeson – Manager Planning Services
DEPARTMENT: Planning Services - ☎ (07) 4099 9450
EMAIL:

OUR REF: PTG
YOUR REF: CA46

Salson Pty Ltd as Trustee for the Simon White Family Trust
C/- C & B Group
P O Box 1949
CAIRNS QLD 4870

7 September 2007

INTEGRATED PLANNING ACT
AMENDED DECISION NOTICE

DEVELOPMENT APPLICATION

Applicant's Name	:	**Salson Pty Ltd as Trustee for the Simon White Family Trust**
Owner's Name	:	**Salson Pty Ltd**
Proposal	:	**Material Change of Use and Reconfiguring a Lot to permit 250 Residential A lots, 38 Residential B lots, 0.7 hectares to be used for commercial and community uses and 11.1 hectares to be used generally as open space**
Application Number	:	**CA46**
Site Address	:	**Cooya Beach Road, Bonnie Doon Road and Melaleuca Drive, Cooya Beach**
Property Description	:	**Lot 1 on RP 720316 and Lots 2 and 3 on SR 614**

This Amended Decision Notice supersedes the Negotiated Decision Notice dated 15 June 2005. Advice note 1 has been added to reflect the specific conditions required to be addressed with each stage of the subdivision. All other conditions remain unchanged.

1. Decision: **Decision Date:** 8 June 2005

Approved subject to Conditions

2. Type of Development Approval:

Material Change of Use	Preliminary Approval
Reconfiguration a Lot	Development Permit

3. Referral Agencies:

Concurrence Agencies:

Department of Main Roads	Conditions attached
Environmental Protection Agency	
Natural Resources & Mines	

4. Conditions

Assessment Manager Conditions

Plan of Reconfiguration

1. The approved reconfiguration and the carrying out of any works on the premises associated with the development must generally be in accordance with Plan of Reconfiguration No. 8021-3, Issue G, dated 18th May 2004, prepared by the C &B Group, and attached to this approval subject to:

   (a) Modifications required by any condition of this approval and any minor alterations found necessary by Council at the time of examination of engineering plans; and

   (b) Any development permit for operational works relating to the reconfiguration.

2. The Plan of Reconfiguration No. 8021-3 Issue G, dated 18th May 2004, must be amended as follows:

   (a) A pathway with a minimum width of four (4) metres must be provided from the cul-de-sac in the south-eastern corner of the site to Melaleuca Drive and a 1.5 metre wide concrete footpath must be constructed within the pathway.

Water Supply

3. The reticulated water supply must be constructed with the design plans approved by Council.

Internal

4. The applicant must provide a reticulated water supply to the development.

5. This system must make provision for services to the boundaries of all lots, including main works, enveloper pipes at cross street services, valve and hydrant markers and a water meter to each lot.

6. The plans and specifications of the internal water supply must be submitted to Council at Operational Works application stage for this reconfiguration for review.

External

7. Provision of water supply headworks contributions in accordance with Council's Policy on Applicant Contributions for Water Supply and Sewerage Services and Council's Schedule of Fees and Charges which provides for contribution amounts to be varied if not paid in full within12 months of the date of this approval. Headworks are to apply based on $4,449.00 per E.D.C. for water supply. Payment of such contributions shall be made prior to Council Signing and Sealing of the Plan of Survey except that in relation to the Commercial/ Community Purpose land (proposed Lot 900) the payment equivalent to one (1) EDC for water supply headworks shall be paid prior to Council Signing and Sealing the Plan of Survey. The balance of the water supply headworks contribution is to be paid prior to the issue of a Building Works Development Permit in respect of any development on the Commercial/Community Purposes land (proposed Lot 900). A notice will be placed on Council's rates database to this effect on Lot 900 when the title is created.

8. (a) The applicant is responsible for the external works to connect the site with Council's water supply at Cooya Beach Road and to upgrade the water main to 200mm diameter for the full length of the site frontage to Cooya Beach Road.

   (b) The applicant must design and construct a 3.5 megalitre reservoir at the existing reservoir site.

   The total cost of the works to install this reservoir will be determined on the basis of the ratio of the number of lots in the proposed development to the number of existing and currently approved lots in Cooya Beach. The applicant will construct all works and the equivalent amount for Council's contribution (existing allotments) to the reservoir will be subtracted from the applicant's water supply headworks contributions for the development.

Sewerage

Internal

9. Provision of sewerage reticulation to plans approved by Council. Provision shall be made for house connection branches for each allotment.

10. The plans and specifications of the internal sewerage works must be submitted to Council at Operational Works application stage for review.

11. Pumping stations are to be located on land vested under Council's control.

12. The design information submitted for Operational Works approval shall include design flows, pipe sizes, grades, pump rates, catchments and pressure main hydraulics.

13. Pumping stations shall incorporate aluminium fabricated covers to Council's standards. Switchboards are to be aluminium or stainless steel construction. Amp meters are required for each pump motor.

External

14. Provision of sewerage headworks contributions in accordance with Council's Policy on Applicant Contributions for Water Supply and Sewerage Services and Council's Schedule of Fees and Charges which provides for contribution amounts to be varied if not paid in full within 12months of the date of this approval. Headworks are to apply based on $2,665.00 per E.D.C. for sewerage. Payment of such contributions shall be made prior to Council Signing and Sealing of the Plan of Survey except that in relation to the Commercial/Community Purpose land (proposed Lot 900) the payment equivalent to one (1) EDC for sewerage headworks shall be paid prior to Council Signing and Sealing the Plan of Survey. The balance of the sewerage headworks contribution is to be paid prior to the issue of a Building Works Development Permit in respect of any development on the Commercial/Community Purposes land (proposed Lot 900). A notice will be placed on Council's rates database to this effect on Lot 900 when the title is created.

15. (a) The applicant must construct a pump station and rising main between the site and the Mossman Treatment Plant to provide a sewerage service to the proposed lots.

(b) The pump station is to be located adjacent to Cooya Beach Road at the eastern end of the park.

(c) The pump station and the rising main are to be sized to cater for the proposed development and for other areas of Cooya Beach which may ultimately be included in the sewerage scheme.

(d) The total cost of these works to install this reservoir will be determined on the basis of the ratio of the number of lots in the proposed development to the number of existing and currently approved lots in Cooya Beach. The applicant will construct all works and the equivalent amount for Council's contribution (existing allotments) to the reservoir will be subtracted from the applicant's water supply headworks contributions for the development.

Electrical & Telephone Services

16. Prior to the approval of the Plan of Survey, the Applicant must submit to Council a copy of a letter from Ergon Energy stating that satisfactory arrangements have been made for the provision of:

(a) an underground electrical supply to each lot; and

(b) street lighting in accordance with Council's adopted standards.

(c) locating of all above ground transformer cubicles clear of footpath and parkland areas.

17. Prior to the approval of the Plan of Survey, the Applicant must submit to Council a copy of a letter from Telstra stating that satisfactory arrangements have been made for the provision of:

(a) an underground telephone service to each lot; and

(b) locating of all above ground switching station cubicles clear of footpath and parkland areas.

18. (a) The applicant must transfer the area shown as Park and Mangrove on the Proposed Plan to Council in partial satisfaction of the applicant's obligation to provide parkland to Council in accordance with Local Planning Policy No.5 – Applicant Contributions – Parks. The applicant must bear all costs of the transfer.

(b) The applicant must contribute $250.00 per lot in partial satisfaction of the applicant's obligation to provide parkland to Council in accordance with the Local Planning Policy. This amount is based on the usable parkland area being 75% of the total parkland required and $250.00 being 25% of the standard Parkland Contribution under Planning Policy No. 5.

Alternatively, the amount of the contribution may be expended on works within the proposed parkland including landscaping, pathways, play equipment, shelter structures and water supply. In this case, a detailed design and costing is to be submitted for approval by Council at Operational Works stage.

Earthworks

19. All proposed lots must be drained from the rear boundary to the frontage of the lot in accordance with the Far North Queensland Regional Organisation of councils Development Manual, except as otherwise modified by these conditions or an Operational Works Development Permit.

20. All allotment and footpath slopes must be designed in accordance with the Far North Queensland Regional Organisation of Councils Development Manual.

21. Details of the proposed filling and excavation for the reconfiguration must be included in a plan and submitted at the time of lodgement of the application for Operational Works.

Stormwater Drainage

22. The proposed drainage area must be designed in accordance with the Far North Queensland Regional Organisation of Councils Development Manual. All easements and/or reserves are to be transferred to Council as a drainage easement and/or reserve in fee simple at the applicant's cost.

23. Prior to lodgement of the Plan of Survey for Signing and Sealing / an application for Operational Works, the applicant must submit to Council a plan:

(a) Detailing the drainage works to be undertaken on the land in connection with the reconfiguration;

(b) Detailing the ability of the proposed drainage works to meet with the requirements of the Far North Queensland Regional Organisation of Councils Development Manual.

24. Drainage (including underground), together with acceptable points of discharge are required in localities to be determined following submission of engineering drawings and designs at Operational Works stage.

25. The calculated design frequency for all storm water drainage shall be determined on a five (5) year recurrence interval and all relevant design data shall be submitted with the engineering drawings at Operational Works application stage.

26. Such storm water drainage work shall be designed and constructed in accordance with the requirements of the Far North Queensland Regional Organisation of Councils Development Manual and will not cause scouring, erosion, loss of vegetation, excess turbidity and landslip either within or external to the site.

27. The Applicants are required to place pollution control devices in stormwater drains in accordance with the requirements of the Far North Queensland Regional Organisation of Councils Development Manual. The design and location of these devices must be submitted at Operational Works application stage.

Truncations

28. Truncations in accordance with the provisions of Council's subdivisional Local Laws are to be provided.

Bikeway/Pathway

29 (a) A bikeway/walkway shall be constructed to a minimum width of two (2) metres on the southern side of Cooya Beach Road for the full frontage of the site from the eastern extent of the site to the north-western extent of the site adjacent to the unnamed road reserve along the northern boundary of the site. This pathway is intended to be constructed of bitumen with concrete edge restraints. This part of the bikeway/walkway is to be constructed at the applicant's expense.

(b) A bikeway/walkway shall be constructed to a minimum width of two (2) metres from the north-western extent of the site along Cooya Beach Road to connect to the existing bikeway/walkway at the Junction Bridge. . This pathway is intended to be constructed of bitumen with concrete edge restraints. This part of the bikeway/walkway is to be constructed by Council. The total cost of these works to install this part of the bikeway/walkway will be determined on the basis of the ratio of the number of lots in the proposed development to the number of existing and currently approved lots in Cooya Beach. The applicant is to provide cost estimates for this work at Operational Works stage.

30. The bikeway/walkway shall be suitably designed in accordance with the relevant Standards Association of Australia Code. The style and construction of all footpaths and bikeways internal and external to the development is to be bitumen centre with concrete edge restraints.

Operational Works Development Permit

31. The applicant must submit as part of an application for a Development Permit for Operational Works information and plans in accordance with the Far North Queensland Regional Organisation of Councils Development Manual.

32. Full engineering drawings, prepared and/or checked by a Registered Professional Engineer, shall be submitted for all road works, stormwater drainage and allotment improvement at Operational Works Application stage. Drawings should, in general, include the following:

    (a) locality plan;

    (b) layout and staging plan, where applicable;

    (c) layout plan for each new road;

    (d) longitudinal section of each road;

    (e) cross sections for each road, including standard cross sections;

    (f) detailed plan of each intersection and cul-de-sac head where longitudinal grades do not exceed 1%;

    (g) layout plan for each stormwater drainage;

    (h) longitudinal sections for each stormwater drain line;

    (i) details for non-standard drainage structures; and

    (j) such other details for the proper construction of the works i.e. retaining walls etc.

Street Names

33. At the time of lodging the Survey Plan with Council for endorsement, the applicant must lodge a plan of the reconfiguration displaying the proposed street names for the reconfiguration.

34. The street name signs shall be supplied and erected by the Applicant. The signs shall be aluminium on steel posts with reflective white legend (on both sides) on a green background.

Currency Period

35. The development authorised by this Development Permit must cease at the expiration of four (4) years from the day that this Development Permit takes effect under the *Integrated Planning Act 1997* unless a detailed plan of survey has been lodged with Council for endorsement and all conditions of this approval complied with.

Compliance with Conditions

36. The Plan of Survey with associated documents shall not be endorsed by Council until all of the conditions of approval have been complied with.

Acid Sulphate Soils

37. At the time of lodgement of an application for development approval for Operational Works for the reconfiguration, the applicant must submit to Council a report identifying:

(a) The location and extent of acid sulphate soils on the site;
(b) The applicant's proposed treatment of the acid sulphate soils identified.

Road Works

38. The applicant must undertake the following works:

Internal

Provision of kerb-to-kerb bitumen streets to widths required by the Far North Queensland Regional Organisation of Councils Development Manual.

Construction of a 1.5 metre wide footpath on one side of the full length of the internal loop road in the southern sector of the site and on one side of the full length of the loop road in the northern sector of the site and, in both cases, extending to Cooya Beach Road.

External

Provision is to be made for the following works external to the subject site in accordance with the Far North Queensland Regional Organisation of Councils Development Manual (FNQ ROC Development Manual).

The plans and specifications of the internal and external road works must be submitted to Council at Operational Works application stage for review.

39. Cooya Beach Road

Upgrading to the full frontage of the site in accordance with the Development Manual and generally as described in the Engineering Report submitted with the application to provide:

- a ten (10) metre wide sealed carriageway;
- kerb and channel and any associated drainage works on both sides of the carriageway;
- formed footpaths with a nominal width of 4.5 metres.

The design and construction of the works must provide for the retention of the grove of Melaleucas and other trees at the eastern end of Cooya Beach Road.

Bonnie Doon Road

Upgrading to the full frontage of the site in accordance with the FNQ ROC Development Manual. In regard to the minimum standard for the construction of Bonnie Doon Road

for the frontage of the development. Council's engineers have indicated that the carriageway will need to be upgraded to the following minimum standards in accordance with Section D1.27 part 1 of the FNQ Development Manual:

Traffic Volume/Road Class:	**1000 –7999 vpd (or sub-arterial)**
Formation	10m
Pavement Width	8m
Seal Width	8m
Shoulders	Incl. 0.5m seal on each side

Cooya Beach Road/Bonnie Doon Road Intersection

Construction of a channelised intersection in accordance with the FNQ ROC Development Manual.

Landscaping, Buffering and Fencing

40. (a) A street landscaping plan providing for street tree planting within the proposed internal roads and Cooya Beach Road and for landscaping of the proposed roundabouts must be submitted for approval at Operational Works stage.

(b) A planted buffer must be established to the full frontages of the site to Melaleuca Drive, Bonnie Doon Road and the un-constructed Palm Road adjacent to the northern boundary of the site. This buffer is to be densely planted and is to have a minimum width of 6.0metres.

The buffer must generally be in accordance with the details provided in the advice from the C&B Group dated 22nd October 2004.

Details including design of the buffer must be submitted for approval at the Operational Works stage.

The buffer must be established to the respective road frontages of each stage of the proposed development as a particular stage is constructed.

The applicant is to install a 1.8metre high fence along the un-constructed road reserve frontage to separate the agricultural uses from the residential uses. The purpose of this fence is for safety.

41. The subdivider shall lodge with the Council cash or bank bond calculated at the rate of ten percent (10%) of the contract price for the works concerned in the subdivision as a security that the maintenance works be not completed to the satisfaction of the Director Engineering Services the Council shall make good any of the said defects and deduct the costs thereof from the cash deposit or bank bond.

Commercial Development

42. The maximum permissible gross floor area for retail uses on the land designated for commercial purposes is 450m².

43. A detailed plan of development will be required to be submitted to Council prior to any self-assessable use commencing on the area designated for commercial and community purposes.

44. The Applicant shall pay to the Council headworks contributions for water supply and sewerage in accordance with Council's Local Planning Policy: "*Determination of Contributions for Water Supply and Sewerage Headworks and External Works*" ("the Policy").

The contribution shall be calculated at the rate per Equivalent Domestic Connection ("EDC") applicable at the time of payment in accordance with the Policy.

For information purposes only:

(a) The current rates per EDC at the time of this approval are:

Water Supply	$ 4,449.00
Sewerage	$ 2,665.00

(b) The current number of EDCs for the approved use are:

Water Supply	7
Sewerage	7

The payment equivalent to one (1) EDC each for water supply and sewerage headworks shall be paid prior to Council Signing and Sealing the Plan of Survey. The balance of the water supply and sewerage headworks contribution is to be paid prior to the issue of a Building Works Development Permit in respect of any development on the Commercial/ Community Purposes land (proposed Lot 900). A notice will be placed on Council's rates database to this effect on Lot 900 when the title is created.

Advice Note 1

The following is a ready reference to the specific conditions that must be met before the Plan of Survey for each stage can be endorsed by Council. The reference to stages is specific to Plan No.8021-3. If staged layout is amended, then the conditions relevant to the lots contained within the stages as shown on Plan No.8021-3 will need to be met when those lots are submitted for endorsement. All other conditions not referenced below relate to all stages and are to be met prior to the endorsement of the Plan of Survey.

Condition	**Stages as shown staged on Plan** 8021-3 Issue G
2	2
part 7 (commercial)	3
8	1
part 14 (commercial)	3
15	1
18(a)	1

29(a)	1; 2; 3; 4; 5
38	1
39 (Cooya Beach Rd)	1; 2; 3; 4; 5
39 (Bonnie Doon Rd)	4;
40(b)	2; 3; 4; 5; 6
42	2
43	2
44	2

5. Further Development Approvals Required:

Operational Works Development Permit

Paul Trotman
General Manager Development & Environment

Division 8 – Appeals to court relating to development applications

Appeals by applicants

4.1.27. **(1)** An applicant for a development application may appeal to the court against any of the following:-

(a) the refusal, or the refusal in part, of a development application;

(b) a matter stated in a development approval, including any condition applying to the development, and the identification of a code under Section 3.1.6;66

(c) the decision to give a preliminary approval when a development permit was applied for;

(d) the length of a currency period;

(e) a deemed refusal.

(2) An appeal under subsection (1)(a) to (d) must be started within twenty (20) business days (the **"applicant's appeal period")** after the day the decision notice or negotiated decision notice is given to the applicant.

(3) An appeal under subsection (1)(e) may be started at any time after the last day a decision on the matter should have been made.

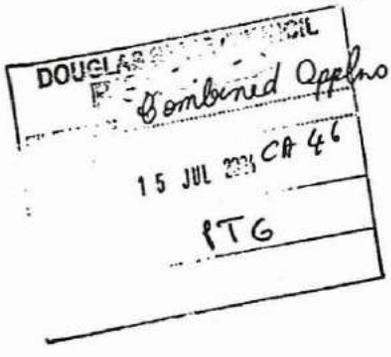
DOUGLAS SHIRE COUNCIL

COUNCIL & CORPORATE SERVICES GENERAL MEETING
30th November 2004
CONSULTANT PLANNER'S REPORT
APPLICATION FOR MATERIAL CHANGE OF USE AND RECONFIGURING A LOT
APPLICATION NO CA46

CONCURRENCE AGENCY – DEPT OF MAIN ROADS – APPENDIX A

Queensland Government

Department of Main Roads



14 July 2004

Mr T Melchert
Chief Executive Officer
Douglas Shire Council
PO Box 357
Mossman Qld 4873

Dear Mr Melchert

Douglas Shire : Captain Cook Highway
Located at Bonnie Doon Road, Cooya Beach Road & Melaleuca Drive, Cooya Beach
Lot 1 on RP 720316, and Lots 2 & 3 on SR 614, Parish of Victory
Salson Pty Ltd
Proposed Material Change of Use & Reconfiguration of Lot (250 Residential A allotments, 38 Residential B allotments, Community Centre/ Commercial allotment, Park & New Roads) Application
Referral Agency's Response (conditions apply)

I refer to the above application received at the Department 25 & 28 November 2003 and 27 & 31 May 2004 requesting consideration of the above development.

A. CONDITIONS OF DEVELOPMENT

Pursuant to the *Integrated Planning Act 1997*, the Queensland Department of Main Roads, as a Concurrence Agency, has assessed the impact of the proposed development on the State-controlled road network and requires that Council include the following conditions of development for the subject application:

1. Permitted Road Access Location

(i) Access between the State-controlled road (i.e. Captain Cook Highway) and the subject land shall be via Bonnie Doon Road and Cooya Beach Road, to the satisfaction of Douglas Shire Council.

(ii) No direct access between the State-controlled road reserve (i.e. Captain Cook Highway) and the subject land is permitted.

2. Road Intersection Works

(i) Road intersection works at the intersections of Captain Cook Highway and Bonnie Doon Road and of Captain Cook Highway and Junction Street (in Mossman) are required and shall be constructed in accordance with:

North Queensland Region
Peninsula District
PO Box 6185
CAIRNS Queensland 4870
ABN 57 836 727 711

Our ref 45/20A/102(3152)
Your ref CA 46/03
Enquiries MALCOLM HARDY
Telephone +61 7 4050 5511
Facsimile +61 7 4050 5438

DOUGLAS SHIRE COUNCIL

COUNCIL & CORPORATE SERVICES GENERAL MEETING
30th November 2004
CONSULTANT PLANNER'S REPORT
APPLICATION FOR MATERIAL CHANGE OF USE AND RECONFIGURING A LOT
APPLICATION NO CA46

- the Department of Main Roads *Road Planning and Design Manual*, and
- current Department of Main Roads standards.

A recent site inspection indicates the requirement for the provision of the following works:

- at the intersection of Captain Cook Highway and Bonnie Doon Road – upgrade to a Type CHR (channelised right turn treatment) in accordance with the Department's *Road Planning and Design Manual*, and
- at the intersection of Captain Cook Highway and Junction Street (in Mossman) – construct a through lane and right turn lane along the Highway travelling north, with the minimum storage capacity of the right turn lane in accordance with the Department's *Road Planning and Design Manual*.

(ii) The landowner/ applicant shall submit intersection design drawings prepared by a suitably qualified Registered Professional Engineer Queensland (RPEQ) for approval of the Cairns office of the Department of Main Roads prior to commencing any onsite works within the State-controlled road reserve (i.e. Captain Cook Highway).

(iii) All required works shall be completed to the satisfaction of the Director-General of the Department of Main Roads:

- at the intersection of Captain Cook Highway and Bonnie Doon Road – prior to Council sealing the plan of survey creating the 100th residential allotment (proposed Stage 2C), and
- at the intersection of Captain Cook Highway and Junction Street (in Mossman) – prior to Council sealing the first plan of survey of the subject land.

3. **Advertising**

No advertising device for the proposed development is permitted within the State-controlled road reserve (i.e. Captain Cook Highway).

Reasons

The reasons and information used in the setting of conditions detailed above include:

- Department of Main Roads Access Policy,
- Department of Main Roads Involvement in Development Applications Referrals and Assessment Guide, and
- Douglas Shire Planning Scheme.

B. GENERAL DISCUSSION

Council is requested to reflect Conditions 1 and 3 above on its Rates Record, to ensure that the planning intentions of Conditions 1and 3 are secured.

This Department would appreciate a copy of Council's decision notice regarding the application.

A copy of this letter has been sent to the applicant.

Yours sincerely

for Brad Finegan
A/MANAGER (TRANSPORT PLANNING) PENINSULA

Item 4

COOYA BEACH SUBDIVISION – STAGE 4A (18 LOTS)
REPORT ADDRESSING RoL CONDITIONS

1) Done
2) N.A. to this stage
3) N.A. to Op Works
4) Done
5) Done – Loop main provided in accordance with FNQROC. Water meters to be installed by the future property owners. This approach was agreed with Ricky Hewitt of CRC.
6) Done – Using FNQROC Specifications
7) N.A to Op Works
8) a) Completed in previous stage
   b) Completed in previous stage
9) Done
10) Done
11) N.A. to this stage
12) N.A. to this stage
13) N.A. to this stage
14) N.A. to Op Works
15) a) Completed in previous stage
    b) Completed in previous stage
    c) Completed in previous stage
    d) Completed in previous stage
16) N.A. to Op Works
17) N.A. to Op Works
18) a) N.A. to this stage
    b) N.A. to Op Works
19) Done
20) Done
21) Done
22) Done

23) Done
24) Done
25) Done
26) Done
27) Completed in previous stage
28) Done
29) a) N.A. to this stage
    b) N.A. to this stage
30) N.A. to this stage
31) Done
32) Done
33) N.A. to Op Works
34) N.A. to Op Works
35) N.A. to Op Works
36) N.A. to Op Works
37) Refer Item 6
38) Done
39) Cooya Beach Road - N.A. to this stage – will apply to future Stages where lots front Cooya Beach Road

    Bonnie Doon Road – The existing sealed road is currently 8m wide (see attached attached survey drawing) therefore no upgrade is required

    Cooya Beach Road/Bonnie Doon Road Intersection – N.A. to this stage. Will apply to future stages that front the intersection – Cost of upgrade has been bonded with Stage 1 works
40) Landscaping Plans are currently being prepared. Will forward to your office when complete
41) N.A. to Op Works – To be provide prior to prestart
42) N.A. to this stage
43) N.A. to this stage
44) N.A. to this stage

COOYA BEACH SUBDIVISION – STAGE 4A (18 LOTS)
REPORT ADDRESSING DEPARTMENT OF MAIN ROADS CONDITIONS

1) Agreed
2) Agreed
3) Agreed

Item 5

COOYA BEACH – STAGE 4A

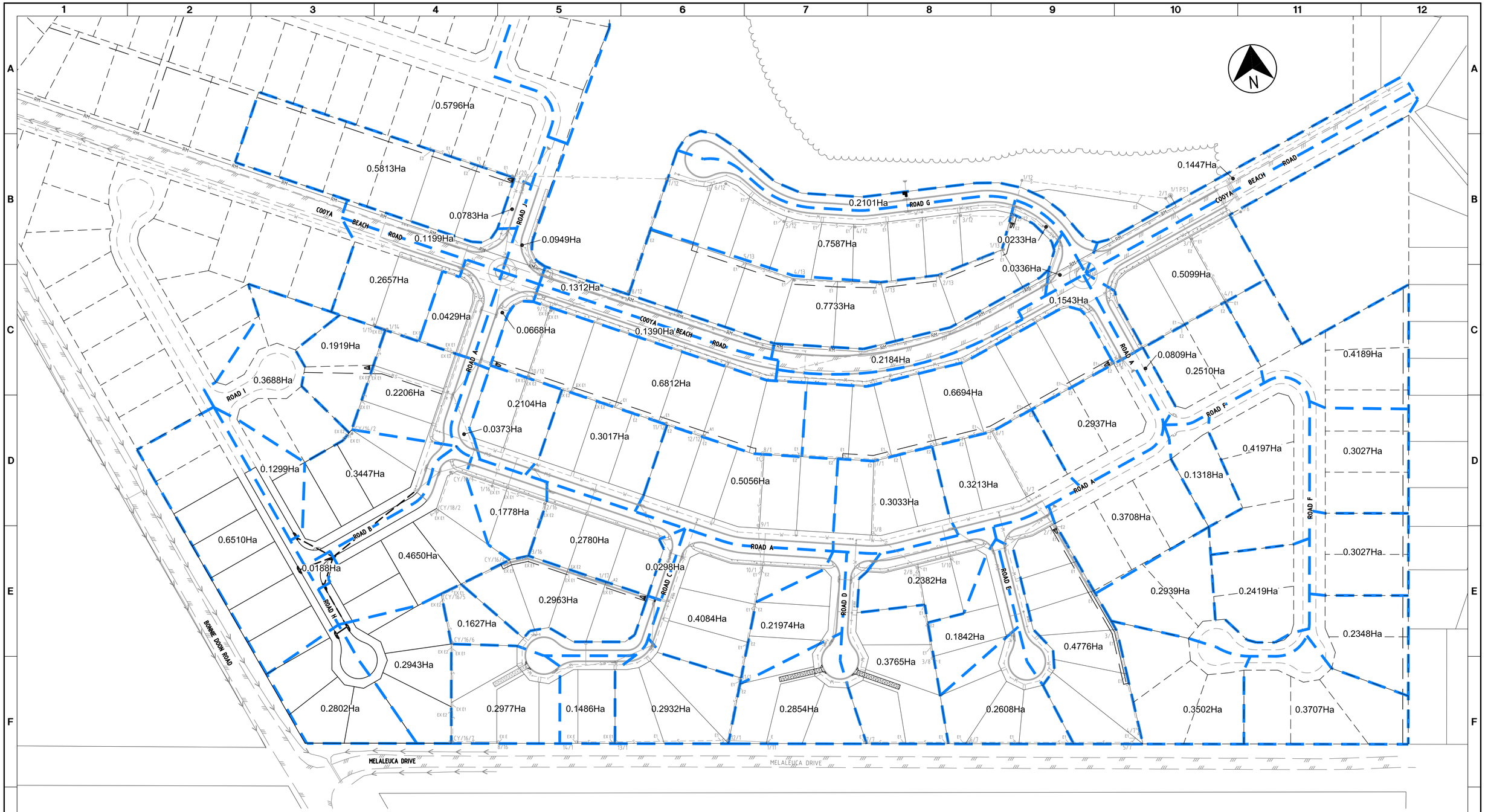
STORMWATER CALCULATIONS

The stormwater design has been designed in accordance with the FNQROC requirements:

- Minor Storm – Q_5
- Major Storm – Q_{100}

The Stage 4A design has been added to the existing Stage 1 design.

Attached are the supporting Catchment details and Calculations



LEGEND

0.23Ha	CATCHMENT AREA
	CATCHMENT BOUNDARY
	STORMWATER DRAINAGE PIPE
SW	EXISTING STORMWATER
S	EXISTING SEWER
W	EXISTING WATER

1:1000 — 0 20 40 60 80 100m — 20 10 — FULL SIZE ON A1

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No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: STORMWATER CATCHMENT AREAS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:1000 (A1)	CB22504	CB22504-C-15	A

LOCATION				TIME	SUB-CATCHMENT RUNOFF							INLET DESIGN									DRAIN DESIGN										HEADLOSSES									PART FULL		DESIGN LEVELS						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34 - 35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
				tc	I	C	A	(CxA)	+(CxA)	Q				Wf		dg	Vg		Qg		tc	I	+(CxA)	Qt	Qm	Qs	Qo	L	S		V	T		V2/2g	Ku	hu	Kl	hl	Kw	hw	Sf	hf		Vp						
DESIGN A.R.I.	STRUCTURE NO.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	SUB-CATCHMENT TIME OF CONCENTRATION	RAINFALL INTENSITY	COEFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF CONTRIBUTING EQUIVALENT AREAS	SUB-CATCHMENT DISCHARGE	FLOW PAST PREVIOUS GULLIES	FLOW IN K&C (INCLUDING BYPASS)	ROAD GRADE AT INLET	FLOW WIDTH	BYPASS WIDTH PAST PIT	FLOW DEPTH AT INVERT	GUTTER FLOW VELOCITY	dg x Vg	FLOW INTO INLET	BYPASS FLOW	CRITICAL TIME OF CONCENTRATION	RAINFALL INTENSITY	TOTAL CONTRIBUTING EQUIVALENT AREA	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	FLOW IN PIPE	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCTURE HEADLOSS	LATERAL HEADLOSS COEFFICIENT	LATERAL PIPE STRUCTURE HEADLOSS	W.S.E COEFFICIENT	CHANGE IN W.S.E	FRICTION SLOPE	PIPE FRICTION HEADLOSS	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	U/S H.G.L	WATER LEVEL IN STRUCTURE (W.S.E.)	SURFACE OR K&C INVERT LEVEL	FREEBOARD	STRUCTURE No.
					From intensity Chart			9 x 10	sum 11	(8x12)/360	sum 25	13 + 14						28 x 19	From Charts	15 - 24		From Intensity Chart	sum of U/S 12								32/Area of Sect	33/ (36x60)	FROM Q.U.D.M. CHARTS VOLUME 2	36x36/2g	From Q.U.D.M. Volume 2	40 x 41	From Q.U.D.M. Volume 2		From Q.U.D.M. Volume 2	From Sect. 14.5.7 A.R.R. Vol. 1 1987	47 x 337/ 100			U/S RL D/S RL	U/S RL D/S RL					
years				min	mm/h		ha	ha	ha	cumec	cumec	cumec	%	m	m	m	m/sec	m2/s	cumec	cumec	min	mm/h	ha	cumec	cumec	cumec	cumec	m	%	mm	m/sec	min		m		m		m		%	m	m	m/sec	m	m	m	m	m	m	
5 100	5/12	5/12 to 5A/12	5/12	15.00 15.00	139 221	0.76 0.96	0.280 0.280	0.213 0.269	0.213 0.269	0.082 0.165	0.000	0.082	0.50	2.473	1.276	0.094	0.65	0.06	0.062	0.020 1/15	15.00 15.00	139 221	0.213 0.269	0.165	0.917	0.103 (Pipe flow= Grate flow)	0.062	7.023	0.61	375(2)	0.56 (1.24)	0.12		0.016	5.10	0.081			5.10	0.081	0.13	0.009			5.351 5.308	5.827 5.818	5.908	5.908	6.286	0.378	5/12
5 100	5A/12	5A/12 to 4/12	5/12;5A/12	15.00 15.00	139 221	0.76 0.96	0.294 0.294	0.224 0.283	0.224 0.283	0.086 0.173	0.000	0.086	0.50	2.525	1.308	0.096	0.66	0.06	0.065	0.021 4/12	15.12 15.12	138 220	0.437 0.552	0.337	0.917	0.211 (Pipe flow= Sum upstr atten flows)	0.126	25.285	0.35	450(2)	0.79 (1.06)	0.42		0.032	1.90	0.060			1.90	0.060	0.20	0.050			5.308 5.220	5.758 5.708	5.818	5.818	6.250	0.432	5A/12
5 100	4/12	4/12 to 3/12	5/12;5A/12;4/12	15.00 15.00	139 221	0.76 0.96	0.083 0.083	0.063 0.079	0.063 0.079	0.024 0.049	0.021	0.045	0.50	1.890	0.821	0.077	0.57	0.04	0.036	0.009 3/12	15.54 15.54	137 217	0.500 0.631	0.380	0.917	0.220 (Pipe flow= Sum upstr atten flows)	0.161	16.563	1.58	450(2)	1.01 (2.25)	0.27		0.052	1.70	0.088			1.70	0.088	0.32	0.053			5.200 4.938	5.620 5.567	5.708	5.708	6.162	0.454	4/12
5 100	1/14	1/14 to 3/12	1/14	15.00 15.00	139 221	0.76 0.96	0.130 0.130	0.099 0.125	0.099 0.125	0.038 0.077	0.000	0.038	0.51	1.739	0.760	0.072	0.55	0.04	0.030	0.008 1/13	15.00 15.00	139 221	0.099 0.125	0.077	0.925	0.047 (Pipe flow= Grate flow)	0.030	22.734	0.60	375(2)	0.27 (1.23)	0.38		0.004	4.10	0.015			4.10	0.015	0.03	0.007			5.075 4.938	5.574 5.567	5.589	5.589	6.163	0.574	1/14
5 100	1/15	1/15 to 3/12	1/15	15.00 15.00	139 221	0.76 0.96	0.651 0.651	0.495 0.625	0.495 0.625	0.191 0.384	0.020	0.211	0.00	3.183		0.116			0.211	0.000	15.00 15.00	139 221	0.495 0.625	0.384		0.211 (Pipe flow= Grate flow)		19.424	0.25	525(2)	0.94 (1.00)	0.32		0.045	3.60	0.162			3.60	0.162	0.22	0.043			4.930 4.882	5.610 5.567	5.772	5.772	6.104	0.332	1/15
5 100	3/12	3/12 to 2/12	5/12;5A/12;6/12;1/14;1/15;3/12	15.00 15.00	139 221	0.76 0.96	0.019 0.019	0.014 0.018	0.014 0.018	0.005 0.011	0.009	0.014	0.64	0.988	0.330	0.050	0.49	0.02	0.011	0.003 2/12	15.81 15.81	136 216	1.108 1.399	0.839	1.110	0.433 (Pipe flow= Sum upstr atten flows)	0.406	76.958	0.40	600(2)	1.39 (1.39)	0.92		0.098	1.08	0.106			1.08	0.106	0.40	0.309			4.938 4.629	5.461 5.152	5.563	5.563	5.713	0.150	3/12
5 100	1/13	1/13 to 2/12	1/13	15.00 15.00	139 221	0.76 0.96	0.345 0.345	0.262 0.331	0.262 0.331	0.101 0.203	0.008	0.109	0.00	1.567		0.067			0.109	0.000	15.00 15.00	139 221	0.262 0.331	0.203	1.626	0.094 (Pipe flow= Grate flow)	0.109	6.987	0.10	1050(2)	0.12 (1.01)	0.12		0.001	4.40	0.003			4.40	0.003	0.00	0.000			4.656 4.649	5.152 5.152	5.155	5.155	5.247	0.092	1/13
5 100	2/12	2/12 to 1/12	5/12 to 3/12;1/13;2/12	15.00 15.00	139 221	0.76 0.96	0.375 0.375	0.285 0.360	0.285 0.360	0.110 0.221	0.011	0.121	0.00	1.767		0.073			0.121	0.000	16.73 16.73	133 211	1.655 2.090	1.225	1.626	0.608 (Pipe flow= Sum upstr atten flows)	0.617	15.043	0.10	1050(2)	0.69 (1.01)	0.25		0.024	0.90	0.022			0.90	0.022	0.05	0.007			4.629 4.614	5.130 5.123	5.101	5.101	5.251	0.150	2/12

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No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: STORMWATER CALCULATION TABLES

SCALE	SKM PROJECT No	DRAWING No	AMDT
N.T.S.	CB22504	CB22504-C-16	A

Item 6

C&B GROUP

- Project Management
- Planning
- Environmental Services
- Surveying

Potential Acid Sulfate Soil Investigation

Lot 1 on RP720316 & Lots 2 & 3 on SR614 Cooya Beach

Salson Pty Ltd

Date: October 2003
Ref: 8021 (R43337)

CAIRNS
1st Floor, Florence House, 26 Florence Street, Cairns Queensland 4870
PO Box 1949, Cairns Queensland 4870

Telephone: (07) 4031 1336 Facsimile: (07) 4031 2942
E-Mail Address: cairns@cbgroup.com.au

benchmark
IN QUALITY
AS/NZS ISO 9001

TABLE OF CONTENTS

FIGURES

ANNEXURES

1.0 INTRODUCTION

C&B Consulting Group was commissioned by Salson Pty Ltd. to conduct an assessment of the presence and location of Potential Acid Sulphate Soils (PASS) in the area including Lot 1 RP720316 and Lots 2 & 3 on SR614 Cooya Beach. The site has been proposed for a 270 lot residential estate. The following report provides supporting information in the form of a baseline survey and an assessment of risk from earthworks during site construction.

During field investigations, PASS was identified at approximately 0.0 metres AHD. The development constraints that PASS poses to the proposed development and management options are identified in this report.

2.0 SITE DESCRIPTION

Bonnie Doon Road in the West and Melaleuca Drive in the south bound the subject lot 1 on RP 720316 and Lots 2 & 3 on SR614 (Refer **Figure 1**). Cooya Beach Road bisects the subject lots 2 on SR614 and Lot 3 on SR614 and extends in a roughly west to east direction providing access to the community of Cooya Beach. The eastern boundaries of Lot 1 on RP720316 and Lot 2 & 3 on SR614 are located directly adjacent to residential housing.

The highest point of the subject lands (8 metres AHD) is located towards the western corners of both Lots 2 & 3 on SR614 (Refer **Figure 2**). From this point, land recedes gently towards the east and northeast, intersecting a shallow drain towards the central areas of Lot 1 on RP 720316 and Lot 2 on SR614. Elevated lands in the west (3 to 8 metres AHD) are proposed for residential housing, with areas below 3 metres in the central and eastern sections being maintained for a park and mangrove regeneration.

From the corner of Bonnie Doon Road and Melaleuca Drive in the south west of Lot 3 on SR614, land recedes gently towards the east intersecting shallow drain between existing and proposed residential housing.

Drainage relief from Lot 1 on RP 720316 and Lot 2 on SR614 is provided by a shallow easterly flowing drain in the north and east (Refer **Figure 2**). Drainage from Lot 3 on SR614 flows into a shallow northerly flowing drain along the eastern boundary. Both drains flow into the Mossman River estuary. Vegetation on all three allotments has been extensively cleared for sugar cane production. Vegetation remains in the riparian zone along the easterly flowing drain in Lot 1 on RP720316 and Lot 2 on SR614. Vegetation in this riparian zone will be retained as part of the proposed park and mangrove regeneration areas.

3.0 NATURE OF DISTURBANCE

3.1 EXCAVATION OF FILL MATERIAL

It is intended that fill for low-lying areas be sourced on-site from the high area (7 to 8 metres AHD) in the west near the existing shed (Refer **Figure 2**). All fill will be sourced from above 5 metres AHD and therefore does not trigger the SPP 2/02 Planning and Managing Development involving Acid Sulfate Soils.

Proposed fill material was sampled at three sites including waypoint 6, 8 and 15 (Refer **Figures 1 & 2**). Fill material sampled at these sites generally consists of organic sandy loams underlain by red and yellow clayey sands. PASS was not detected in these more elevated areas however the re-activity of some soils during field-testing indicated the presence of manganese.

3.2 FILLING ACTIVITIES

Disturbances associated with the proposed development include filling of selected low lying lands to 3.2 metres AHD, being the minimum site level required by Douglas Shire Council. Areas to be filled are included as the hatched areas on **Figure 2.** Areas requiring fill are also included in the Flanagan Consulting Group Report 1329/01 Engineering Issues, Material Change of Use and Reconfiguration Lot 1 on RP720316 and Lots 2 and 3 on SR614 Cooya Beach, **Figure 2**.

The three areas requiring fill include:

1. The NE corner of Lot 3 on SR614

This 1.9-Hectare area including Lots 1 through to 6 (Refer **Figure 1 & 2**) is bounded by a shallow drain in the East. Elevation of land to be filled ranges from 2 to 3.2 metres with an average fill depth of 0.8 metres (approx). Fill volume will exceed 500m^3 and 0.5 metre depth thereby triggering the State Planning Policy 2/02 Planning and Managing Development involving Acid Sulfate soils, Section 3.6.

Test pits excavated in this area include waypoint 9, 10 and 13 (Refer **Figure 2**). No actionable PASS was encountered at any of these three test pits however low levels of reduced sulfur species were encountered towards the base of waypoint 10 and 13. Non-actionable material was encountered below 1 metre AHD with a gentle increase in re-activity with increasing depth.

Below 0.45 metres AHD a sulfurous odour was identifiable however this is believed to be a gradual transition into the PASS layer identified elsewhere at 0 metres AHD. Using a conservative approach, actionable PASS may occur below 0.45 metres AHD.

Fill depth along the drain will approach 1.2 metres however the risk of any de-watering or hydraulic movement of PASS material into the shallow drain is negligible due to:

- Deposition of fill will not de-water underlying coarse sands as coarse sand does not pack tightly. Loosely packed coarse sand allows almost unimpeded groundwater movement.

- Coarse Sand does not undergo subsoil displacement. Subsoil displacement is usually associated with heavy wet marine clays. Any PASS occurring below 0.4 metres AHD would have to be forced in excess of 1 metre (vertically) in order to intercept the shallow drain.

Due to the coarse texture of sands and sandy clays adjacent to the drain, it would be advisable to stabilise the western drainage embankment. Sands and sandy clays exposed in the drain batters are predominantly unconsolidated and could erode causing erosion issues on site and sedimentation problems in the culvert under Cooya Beach Road.

2. The NW corner of Lot 1 on RP720316

This 0.3-Hectare area includes Lots 237 to 243 and Lots 248 to 250 (Refer (**Figure 1 & 2**) and is bisected by a shallow NE flowing drain. Elevation of land to be filled ranges from 2.25 to 3.2 metres AHD with an average fill depth of 0.6 metres (approx). Fill volume will exceed 500 m^3 and 0.5 metres depth thereby triggering the State Planning Policy 2/02 Planning and Managing Development involving Acid Sulfate Soils, Section 3.6.

The test pit at waypoint 18 is representative of soils in the NW corner of Lot 1 on RP720316. Testing of soils from WP 18 suggests that non-actionable quantities of reduced sulfide species occur below 0.5 metres AHD with actionable PASS likely to occur below 0 metres AHD. Using the most conservative approach, actionable PASS may occur below 0.5 metres AHD.

3. The Northern Central area of Lot 1 on RP720316

This 0.82-Hectare area includes Lots 226 to 228 (Refer **Figure 1 & 2**). Elevation of land to be filled ranges between 2 to 3.2 metres AHD with an average fill depth of 0.6 metres (approx). Fill volume will exceed 500 m^3 and 0.5 metres depth thereby triggering the State Planning Policy 2/02 Planning and Managing Development involving Acid sulfate Soils, Section 3.6.

Test pits excavated in this area include waypoint 17 and 19. No PASS was encountered in the test pit at WP17, which reached a maximum depth of 0.75 metres AHD. Marginally actionable PASS material was encountered below 0 metres AHD at WP19 however these lands are to become part of the proposed parkland area (Refer **Figure 1**).

3.3 SEWERAGE AND WATER INFRASTRUCTURE

As the residential development will require water supply and sewerage services, excavation will be required to facilitate installation. It is anticipated that the deepest excavation would be in the order of 2.5 m below filled ground level (maximum depth 0.7 metres AHD) and be associated with the sewerage service. Excavation volume will exceed 100 m^3 at or below 5 metres AHD thereby triggering the State Planning Policy 2/02 Planning and Managing Development involving Acid Sulfate Soils, Section 3.6.

4.0 SOIL DESCRIPTION

Soil mapping (Murtha, 1989), (Refer **Figure 3**), indicates that soil comprises;

Br (Brosnan) Dark Grey Sandy loam A1; yellowish red or red sandy loam to sandy clay loam massive B horizon

Mm (Mossman) Dark grey brown medium clay Ap to 30 cm; olive brown or brownish yellow, moderate to strong fine blocky structured medium clay B horizon.

Surface soils in the more elevated lands on Brosnan soil type (waypoints 6, 8, 9, and 15) typically comprised dark organic sandy loams underlain by well-drained red and yellow clayey sands respectively. In low-lying areas represented by waypoints 10, 13, 16, 17 and 19, surface soil comprised dark organic sandy loams underlain by grey coarse sands and sandy clays.

The Mossman soil type represented by waypoint 18 consisted of brown clays surface soils underlain by sandy grey clays and grey sand respectively.

5.0 FIELD INVESTIGATIONS

Field investigations, excluding sampling intensity were undertaken in accordance with the Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998 (QASSIT Guidelines).

The investigation involved the excavation of 10 test pits over the 41.202 Hectare site. Whilst up to 84 test pits are recommended for a site up to 41 Hectares, this number was reduced due to the following;

- The majority of subject lands will not require any filling and therefore will not trigger the SPP 2/02. Over the 41.2 Hectare site, approximately 3.04 Hectares will require some filling (Refer **Figure 2**)

- Test pits were strategically located to provide good coverage across the areas proposed for the location of fill. Locating test pits in low-lying areas increased the likelihood of locating PASS (Refer **Figure 2**).

- Excavations associated with the proposed development will only be shallow (associated with the provision of drainage and sewerage infrastructure) and are considered to be of low risk.

- Soil strata appeared to be relatively uniform across the site. PASS encountered appeared to be weak and closely associated with the permanent groundwater level around RL = 0 metres AHD.

Field works involved test pitting with a backhoe and sampling of each soil horizon or every 0.25 m interval to depth of approximately 2 m below ground level.

The test pits allowed good opportunity for observation and sampling of soil horizons. Samples were immediately placed in sealable High-Density Poly-Ethylene (HDPE) plastic bags, air excluded and then sealed. Samples were placed on ice after the excavation of each test pit.

Soil colour and texture descriptions were recorded for each soil horizon and are presented in **Annexure 1**.

Field acid sulphate soil tests were then carried out on the soil samples. Field tests involve the determination of field pH (pH_F) using a pH meter and distilled water, followed by oxidation of the soil sample with pH buffered 30% hydrogen peroxide and determination of the field oxidation pH (pH_{FOX}).

The pH_F and pH_{FOX} values were recorded in addition to the strength of the observed reaction of the sample with hydrogen peroxide.

Interpreted correctly, field tests can indicate the possible presence of acid sulphate soil and can be used to assist in the selection of samples submitted for laboratory determination. It is noted that while field tests indicate the likely presence of a potential acid sulphate soil, they do not replace laboratory techniques, which confirm the presence or quantify the risk of a PASS. Refer to Section 7.1.2 for laboratory analysis. Complete soil descriptions for each test pit are presented in **Annexure 1.**

5.1 GROUND WATER QUALITY

Ground water levels were determined during the field test pitting exercise by observation of the level where ground water was observed to be flowing freely into the pit. Ground waters at waypoints 10, 13, 16, 18 and 19 were measured for pH, Electrical Conductivity and Salinity.

Location	PH	EC	Salinity
WP10	5.29	100.3 uS	46.8 ppm
WP13	5.36	141 uS	67.3 ppm
WP16 (Brackish)	5.19	227.9 uS	108 ppm
WP18	5.14	149.6 uS	71 ppm
WP19 (Saline)	5.38	15.85mS	9.30ppK

6.0 SAMPLE AND LABORATORY INTEGRITY

Soil samples were collected and recorded by a suitably qualified and experienced environmental scientist.

Samples were presented to the laboratory in a chilled state and in good condition within sample holding times.

Samples submitted for laboratory determination were analysed for Action criteria using a Combination of TAA (Total Actual Acidity) and Scr (Chromium Reducible Sulfur) method. One sample was analysed for manganese.

Laboratory determinations were carried out by NATA Registered laboratory (Australian Environmental Laboratories, Cairns).

The portable field meter used to determine soil and water pH and electrical conductivity was calibrated prior to and after use.

7.0 RESULTS

7.1 DELINEATION OF THE PASS HORIZON

7.1.1 Field Testing

Field-testing was used to determine if PASS occurs on lands defined as Lot 1 on RP720316 and Lots 2 & 3 on SR614. Field-testing suggests that PASS occurs below 0 metres (AHD) and may occur below 0.5 metres AHD (Refer **Annexure 1**). After field testing, twelve soil samples were selected laboratory analysis. Samples were taken from the depth considered to represent the NON-PASS/PASS boundary so that a maximum cut depth for sewerage infrastructure might be determined.

7.1.2 Lab Analysis

PASS action criteria, as presented in the QASSIT Guidelines, for three broad soil texture categories are provided in Table 1. The action criteria have been prepared with consideration of the texture of coarse, medium and fine textured soils which each have variable buffering capacity against acidity.

Table 1 – ASS Action Criteria (For 3 Broad Texture Classes)

Type of Material		**Action Criteria**			
		1 – 1000 t disturbed		**> 1000 t disturbed**	
Texture Range	**Approx. clay content (%)**	Sulfur trail % S	Acid trail mol H^+ / t	Sulfur trail % S	Acid trail mol H^+ / t
Coarse Texture	≤5	0.03	18	0.03	18
Medium Texture Sandy loams to light clays	5 – 40	0.06	36	0.03	18
Fine Texture Medium to heavy clays	≥ 40	0.1	62	0.03	18

Sulfur Trail (% S) is determined by dividing the TAA (Total Actual Acidity) by a conversion factor of 30.59 and adding the result to the Scr (Chromium Reducible Sulfur).

%S = (TAA/30.59) + Scr

Note that the laboratory analysis results for TAA (Total Actual Acidity) are expressed with a limit of reporting of 0.5 kg H_2SO_4/t (dry weight). When the TAA is <0.5, 0.5 is used to allow margin or a "worst case" figure. The TAA for all laboratory samples was less than 0.5 kg H_2SO_4/tonne (dry weight).

Laboratory testing confirmed that the PASS/NON-PASS boundary was successfully identified at 0.0 metres AHD with some residual low-level sulfidic material detected between 0.5 and 0 metres AHD (Refer **Annexure 1**). Residual sulfidic material above 0.0 metres AHD suggests that the water table is transitional, usually residing above 0.5 metres AHD with permanent water below 0 metres AHD.

7.2 LIMING RATE FOR THE STRONGEST PASS SOIL ENCOUNTERED

From laboratory analysis of PASS found on the site, the strongest PASS was used to formulate an interim-liming rate. In the event that PASS is exposed during excavations this liming rate can be used to treat soils until proper laboratory results for the exposed PASS become available.

Liming Rate = %S * Conversion to $H_2SO_4^-$ * conversion to $CaCO_3^-$ * 1.5 (Safey Factor)

= 0.016634 * 30.52 * 1.02 * 1.5

= **7.768 Kg $CaCO_3^-$/tonne**

Conversion to Kg $CaCO_3^-$ /m^3 (Approximate Specific Gravity of wet sand is 1.92 tonnes/m^3)

= 7.768 * 1.92

= **14.914 Kg $CaCO_3^-$/m^3**

7.3 ACTUAL ACID SULFATE SOILS

The pH_F field test results indicate that the soils in their natural state are acidic with pH ranging from pH 4.40 to 6.44 (Refer **Annexure 1**). Acidic soils are commonly encountered in north Queensland where soils are strongly weathered and in locations where soils have previously underlain freshwater swamps rich in organic matter.

Total Actual Acidity (TAA) values were not within detection limits indicating that while some of the soils are mildly acidic, they are not AASS (Actual Acid Sulphate Soil). Interpolation of laboratory and field assessments indicates the absence of ASS soils (Refer **Annexure 2**).

8.0 ENVIRONMENTAL MANAGEMENT PLAN

Objective/Target

To ensure that during construction/excavation, potential acid sulfate soils are not disturbed, however if they are disturbed, to undertake the necessary mitigation measures to neutralise the soil and prevent any runoff of acidic waters.

Tasks/Actions

- An acid sulfate soil investigation of the site (C&B Group, September 2003) indicates potential acid sulfate soils (PASS) may occur below 0.5 metres AHD. The investigation was confined to a maximum excavation depth of -0.4 metres AHD. Any proposed excavation works below –0.4 metres AHD shall be subject to further investigation prior to commencement of works.

- In the event that soils with PASS or ASS characteristics are disturbed and remain exposed to the atmosphere, the area shall be treated with up to 15 kg / m^3 (to be confirmed through laboratory analysis) fine agricultural lime. This figure was calculated from the highest %S found in the test pit at waypoint 16 between –0.22 to –0.4 m AHD. The calculations are in accordance with the Queensland Acid Sulfate Technical Manual Soil Management Guidelines (version 3.8)

- Prevent any lowering of the permanent groundwater table height that may be caused by the proposed activity. If groundwater table height is expected to be lowered by activities such as temporary dewatering, implement groundwater monitoring. As a minimum pH, EC and the chloride and sulfate concentration should be monitored for each aquifer. This activity should be continued should the pH drop by greater than 1 pH unit, or EC increase by 10 % or more.

- Any suspected PASS material disturbed shall be stockpiled separately and tested using pH field oxidation tests and laboratory analysis to confirm if the soil is PASS. Bunding, diversion drains, and contaminated water treatment impoundments shall be used to contain run off from the storage area.

- Prior to release, impounded stormwater from the bunded area will be monitored to ensure acceptable turbidity and pH concentrations (Total suspended solids (TSS) 50mg/L and pH 6.0-8.5)

- As an alternative to liming treatment, PASS may be buried below the water table. However, AASS (Actual Acid Sulfate Soil) will require neutralisation prior to burial under the water table.

- Minimise the depth in essential drainage structures. Manage drainage to maintain the watertable surrounding drainage structures above any sulfidic layer (ie above 0.5 metres AHD) in the soil (eg. Shallow grassed drains)

- In the event that an alternative procedure to neutralisation by lime is to be undertaken, the efficiency of the techniques shall be trialed using material from the site. If the techniques are found to be suitable, the use shall be approved in writing by the EPA and DNRM prior to commencement of construction.

- Removal of any neutralised PASS material offsite shall be approved by the Douglas Shire Council, Environmental Protection Agency and or the Department of Natural Resources and Mines.

- Earthwork contractors (if required) shall be briefed in relation to the identification and potential environmental risks associated with PASS.

Performance Indicators

The pH of any off site discharge or runoff from any excavations below 0.5 metres AHD or stockpiled PASS shall be within QASSIT guidelines (6.0-8.5 pH units) or above background surface water pH.

Monitoring

Visual monitoring should be undertaken to identify signs of ASS oxidation, including:

- Rust coloured deposits on plants and on banks of drains, water bodies and watercourses indicating iron precipitates;
- Areas of green-blue water or extremely clear water indicating high concentrations of dissolved metals in solution;
- Sulfurous smells (eg. Mangrove Mud Smell);
- Formation of the mineral jarosite and other acidic salts in exposed or excavated soils;
- Black or odorous waters indicating de-oxygenation;
- Unexplained scalding, degradation or death of vegetation;
- Unexplained death or disease in aquatic organisms;
- A transition to, or establishment of, a community dominated by acid tolerant species;
- Invasion of a community or area by acid tolerant species;
- Corrosion of concrete and/or steel structures in contact with soil or water;
- Monitoring the pH of soil and runoff, to be undertaken as required.

Responsible Person/Organisation

The earthwork contractor shall be responsible for the appointment of suitably qualified personnel to undertake PASS testing of any suspicious soils and routine monitoring of site runoff and stockpiles.

Corrective Action

In the event that monitoring indicates the presence of PASS or acidic runoff, application of agricultural or hydrated lime (water) at rates appropriate to neutralise acidic soils or runoff shall be immediately undertaken.

Reporting/Review

A review of the PASS management plan to be undertaken following any exceedance of performance criteria.

9.0 CONCLUSION

9.1 FILLING ACTIVITIES

From the analysis of field and laboratory results, filling activities described in Section 3.2 and **Figure 2** are not considered to pose any foreseeable risk in relation to the exposure and/or disturbance of potential acid sulfate soils.

Due to the porous nature and low compaction of sandy Brosnan Soils, compaction related de-watering is highly unlikely. Filling on Mossman soils will be light (around 0.6 metres depth) and it is unlikely that the deep PASS layer could hydraulically penetrate the shallow drain. Actual Acid Sulfate Soils were not encountered during laboratory analysis and therefore any acidity released from soils being moved beneath the water table is considered to be negligible.

9.2 CUTTING ACTIVITIES

The design plan for sewerage system installation is available in the Flanagan Consulting Group Report 1329/01 Engineering Issues, Material Change of Use and Reconfiguration Lot 1 on RP720316 and Lots 2 and 3 on SR614 Cooya Beach, **Figure 6**.

Depth of sewerage system infrastructure generally ranges from 1 to 2.5 metres below ground surface level. From the required minimum ground surface level of 3.2 metres AHD, sewerage pipes would lie between 2.2 and 0.7 metres AHD. Therefore trenches cut for the emplacement of sewerage infrastructure will be above the weak marginally actionable layer at 0.5 metres AHD and are highly unlikely to disturb PASS below 0 metres AHD.

To avoid PASS disturbance, it would be considered prudent that any disturbances or excavations below 0.5 metres AHD should be subject to further on-site testing and performance criteria set out in the Environmental Management Plan (Refer Section 8.0).

10.0 REFERENCES

State Planning Policy Guideline, 2/02, Planning and Managing Development involving Acid Sulfate Soils V2, Queensland Government.

Queensland Acid Sulphate Soils Investigation Team (1998) Guidelines for Sampling and Analysis of Lowland Acid Sulphate Soils (ASS) in Queensland 1998 (October 1998, Revision 4.0), Department of Natural Resources, Brisbane.

Instructions for the Treatment and management of Acid Sulfate Soils (2001) (version 1.0) Produced by the Environmental Protection Agency in consultation with the Department of Natural Resources and Mines and the Department of Primary Industries.

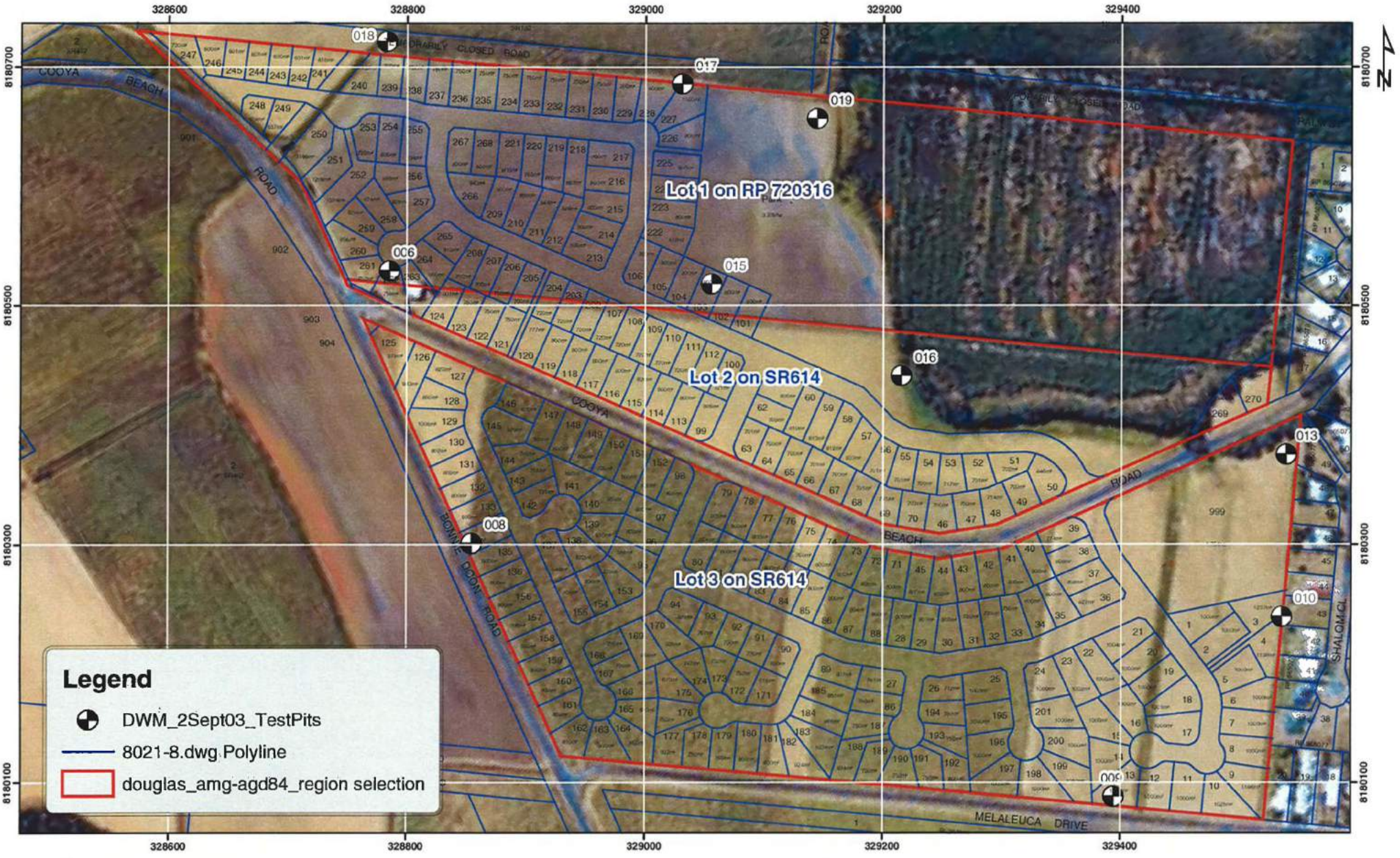
Dear SE, Moore NG, Dobos SK, Watling KM, Ahern CR (2002) Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines (version 3.8) Department of Natural Resources and Mines, Brisbane.

Murtha, G. G. (1989) Soils of the Mossman Cape Tribulation Area, North Queensland. CSIRO.

Figure 1

C&B Group Plan 8021-4 Location and Layout of the Proposed Residential Development including Test Pit locations

Borehole Locations on Lot 1 RP720316 and Lots 2 & 3 on SR614



C&B GROUP

Note : Borehole Locations were taken with a hand held GPS unit and may be subject to errors up to 5 metres

Borehole Location Plan
C&B Group Plan 8021-4
Drafted by DwM 29-09-2003
Scale 1:3000 @ A3

Figure 2

C&B Group Plan 8021-5 Elevation, Drainage and areas requiring fill

Elevation (AHD) over Lot 1 on RP720316 and Lots 2 & 3 on SR614

C&B GROUP

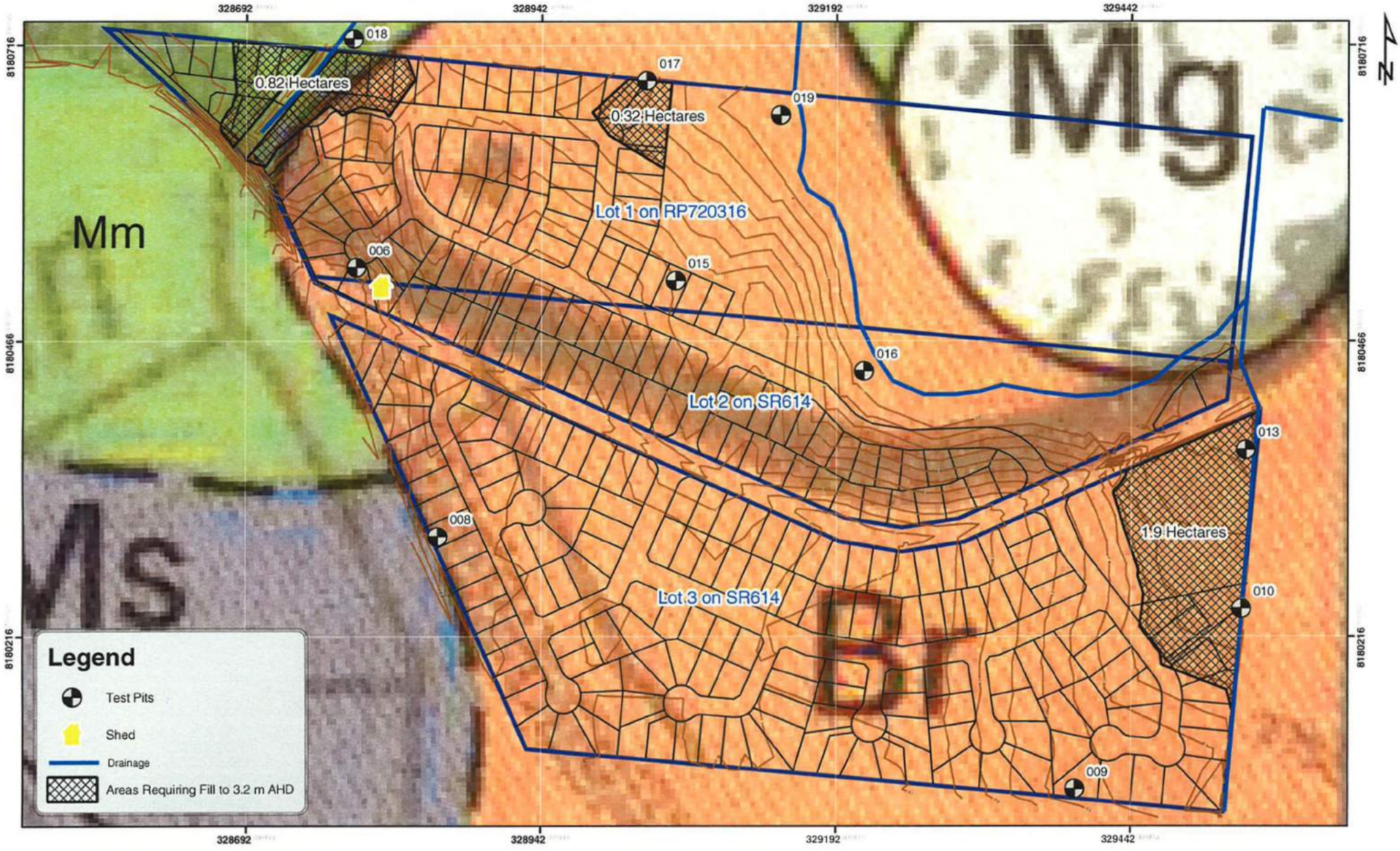
Note : Borehole Locations were taken with a hand held GPS unit and may be subject to errors up to 5 metres

C&B Group Plan 8021-5
Drafted DwM 30-09-2003
Scale 1:3000 @ A3

Figure 3

C&B Group Plan 8021-9 Soils on Lot 1 RP 720316 and Lots 2 & 3 on SR614

Soils on Lot 1 on RP720316 and Lots 2 & 3 on SR614



C&B GROUP

0 125 250
Metres

SOIL TYPES

Br (Brosnan)	Dark Grey Sandy loam A1; yellowish red or red sandy loam to sandy clay loam massive B horizon.
Mm (Mossman)	Dark grey bown medium clay Ap to 30 cm; olive brown or brownish yellow, moderate to strong fine blocky structured medium clay B horizon.

C&B Group Plan 8021-9
Drafted DwM 3-10-2003
Scale 1:3000 @ A3

Annexure 1

PASS/ASS Investigation Summary Results

Annexure 1 2/06/2003

Test Site	Depth Below GSL	RL (AHD) (metres)	Description	pHF	pHFox	Difference	Reaction	Manganese (mg/kg)	S Pos (% w/w)	Scr (% w/w)	TAA (kg H2SO4 / tonne)	TAA (as %S) (%S)	Action Criteria (%S)	Comment
HP6														
Ground Surface	0	7.25	Greyey Brown Organic Sandy Loam	5.73	5.02	0.71	L							Organic Reaction
	0.3	6.95	Reddy Brown Clayey Fine Sand	5.77	4.7	1.07	VL							Organic Reaction
	0.51	6.74	Red Fine-Medium Sand	5.56	5.05	0.51	-							
	1	6.25	Red Fine-Medium Sand	5.75	4.46	1.29	-							
	1.5	5.75	Red Fine-Medium Sand	5.35	4.75	0.59	-							
	2	5.25	Yellow Fine-Med Sand (slight orange mottle)	5.15	4.38	0.77	-							
Pit Base	2.5	4.75												
HP8														
Ground Surface	0	5.25	Light Brown Pebbly Clay (likely imported fill)	6.44	5.18	1.26	H							
	0.22	5.03	Chocolate Brown Organic Sandy Loam	5.26	4.38	0.88	M							
	0.4	4.85	Brown Loamy Sand	5.21	4.25	0.96	L-M							
	0.62	4.73	Browny Red Clayey Pebbly Sand	4.52	4.48	0.04	M							
	0.8	4.45	Browny Red Coarse Clayey Sand (poorly sorted)	4.4	4.70	-0.30	M							
	1.2	4.05	Browny Red Coarse Clayey Pebbly Sand	5.25	5.48	-0.23	M							
	1.5	4.75	Reddy Yellow Clayey Sand (poorly sorted)	4.57	4.82	-0.25	M							
	2	4.25	Yellow Clayey Sand (Dark mineral agregate ~20% manganese?)	5.41	5.35	0.05	H							Reaction with Manganese
Pit Base	2.3	3.95												
HP9														
Ground Surface	0	4.75	Dark Organic Sandy Loam	4.79	4.57	0.22	-							
	0.45	4.28	Light Grey Loamy Sand (poorly sorted)	4.54	4.51	0.03	-							
	0.7	4.05	White Grey Loamy Sand (poorly sorted)	4.59	4.45	0.14	-							
	0.89	3.86	Yellowy Orange Clayey Sand (poorly sorted)	4.59	4.51	0.08	-							
	1.3	3.45	Yellow Clayey Sand (minor orange mottle)	4.81	4.37	0.44	-							
	1.6	3.15	Light Grey Coarse Sand (heavy red mottle)	8.04	8.57	-0.53	H	10	<0.005		<0.5	0.016045211		Manganese Nodules Found
Pit Base	2	2.75												
HP12														
Ground Surface	0	2	Dark Grey Black Silty Sand	4.82	3.73	1.09	-							
	0.25	1.60	Grey Brown Clayey Sand (poorly sorted)	5.38	4.44	0.94	-							
	0.6	1.4	Damp Browny Grey Coarse Sand	5.15	4.7	0.45	-							
	0.8	1.2	Damp Grey Brown Clayey Coarse Sand	5.27	4.27	1	-							
	1	1	Damp Grey Clayey Coarse Sand	5.32	4.27	1.05	-			0.01	<0.5	0.016045211		
	1.3	0.7	Damp Light Grey Coarse Sand	5.13	3.2	1.93	VL			0.005	<0.5	0.016045211		
[illegible]	[illegible]	0.45	Wet Light Grey Coarse Sand (sulfurous smell)	5.32	2.93	2.39	L							
[illegible]	[illegible]	0.3												
HP13														
Ground Surface	0	2	Dark Organic Sandy Silt	5.42	3.44	1.98	L							Organic Reaction
	0.32	1.68	Yellow Grey Coarse Sandy Clay	5.36	4.22	1.14	-							
	0.45	1.55	Moist Grey Brown Clayey Sand	5.32	4.61	0.71	-							
	0.69	1.31	Yellow Grey Coarse Sandy Clay (heavy orange mottle)	5.56	4.37	1.19	-							
	1	1	Damp Yellowy Grey Coarse Sand	5.49	4.24	1.25	-			0.005	<0.5	0.016045211		
	1.2	0.8	Coarse Grey Sand (yellow mottle, no smell)	5.79	2.09	2.8	L-M			0.007	<0.5	0.016045211		
	1.5	0.5	Medium Grey Coarse Clayey Sand (minor yellow mottle)	5.77	3.83	1.94	L-M							Likely Transitional Horizon
[illegible]	[illegible]	0.27	Wet Medium Grey Coarse Sand	5.37	3.98	1.39	L							Likely Transitional Horizon
[illegible]	[illegible]	0												
HP15														
Ground Surface	0	4.5	Dark Organic Sandy Loam	4.78	3.66	1.12	L							Organic Reaction
	0.32	4.18	Brown Sandy Clay	4.77	3.86	0.91	L							Organic Reaction
	0.65	3.84	Yellowy Red Sandy Clay	4.72	3.82	0.9	L							
	1	3.5	Reddy Yellow Sandy Clay	4.64	4.07	0.57	L							
	1.23	3.28	Yellowy Grey Sandy Clay	4.42	4.1	0.32	L							
	1.5	3	Yellowy Grey Sandy Clay	4.55	4.05	0.49	-							
	1.75	2.75	Light Grey Sandy Clay (minor reddy yellow mottle)	4.88	3.87	1.01	L-M			0.005	<0.5	0.016045211		Likely Reaction with Manganese
	2	2.5	Light Grey Sandy Clay (minor mottle)	5.37	4.14	1.23	-							
Pit Base	2.2	2.3												
HP16														
Ground Surface	0	1.5	Dark Organic Sandy Silt	5.21	4.05	1.16	-							
	0.4	1.1	Dark Browny Grey Sandy Clay	5.05	4.26	0.75	-							
	0.6	0.9	Dark Grey Clayey Sand	6.76	5.18	1.62	-							
	0.8	0.7	Dark Grey Clayey Sand	5.57	5.05	0.52	-							
	1	0.5	Light Grey Sandy Clay (no odour)	5.54	4.87	0.67	-							
	1.2	0.3	Moist Grey Clay	5.65	4.71	0.94	-							
	1.5	0	Wet Grey Sand (no smell)	5.52	4.36	1.16	-			0.02	<0.5	0.016045211		Weak PASS
[illegible]	[illegible]	-0.23	Light to Medium Grey Clayey Sand (Sulfurous Smell)	5.76	1.63	4.13	H			0.15	<0.5	0.016045211		PASS
[illegible]	[illegible]	-0.4												
HP17														
Ground Surface	0	2.76	Dark Organic Coarse Sandy Loam	4.97	3.86	1.11	L							
	0.5	2.25	Yellow Grey Sandy Clay	5.29	4.6	0.69	-							
	1	1.75	Grey Sandy Clay (heavy orange mottle)	5.15	4.3	0.85	-							
	1.3	1.46	Grey Coarse Sand (heavy orange mottle)	5.1	4.21	0.89	-							
	1.6	1.15	Coarse Grey Sand	5.22	4.15	1.07	-							
Pit Base	2	0.76												
HP18														
Ground Surface	0	2	Brown Medium Clay	5.05	3.86	1.22	H							Organic Reaction
	0.32	1.68	Dark Brown Medium Clay	5.13	3.48	1.65	M							Organic Reaction
	0.6	1.4	Dark Browny Grey Clay	5.25	3.79	1.46	L							
	0.83	1.17	Dark Grey Medium Clay	5.31	4.18	1.13	L							
	1.2	0.8	Mid Grey Medium Clay	5.59	4.05	1.54	H							
	1.5	0.5	Heavy Grey Clay	5.47	3.89	1.58	VL			0.009	<0.5	0.016045211		
[illegible]	[illegible]	0.38	Grey Clayey Coarse Sand (Sulfurous smell)	5.79	2.68	3.11	VL			0.021	<0.5	0.016045211		Weak PASS
[illegible]	[illegible]	0												
HP19														
Ground Surface	0	1.5	Browny Grey Organic Clay	4.55	3.98	0.57	VL							Organic Reaction
	0.3	1.2	Medium Grey Clay	5.15	4	1.15	-							
	0.6	0.9	Light Grey Sandy Clay	5.71	4.29	1.42	-							
	0.9	0.6	Moist Light Grey Sandy Clay	5.8	4.28	1.52	-							
	1.1	0.4	Light Grey Sandy Clay	5.58	4.15	1.43	-							Likely Transitional Horizon
	1.3	0.2	Light Grey Medium Clay	5.21	4.28	0.93	-			0.072	<0.5	0.016045211		Weak PASS
	1.5	0	Medium Grey Clay (sulfurous smell)	5.8	1.72	4.08	L-M			0.08	<0.5	0.016045211		Weak PASS
[illegible]	[illegible]	-0.3												

Key (Groundwater)

[illegible]
Pit Base

Key (Action Criteria)

Non-PASS	Below Action Criteria
[illegible]	Below Action Criteria
PASS	Above Action Criteria

Annexure 2

Laboratory Report

SGS

CERTIFICATE OF ANALYSIS

25 September, 2003

Mr David Morrison
C & B Group
PO Box 1949
CAIRNS QLD 4870

Your Order No: -
Laboratory Report No: 45871

Date Received: 8 September 2003

Dear Sir:

Twelve soil samples labelled according to the following tables were received and analysed for the parameters as listed. Please find the results in the attached report.

Yours faithfully,

SGS Environmental Services

Jon Dicker
Operations Manager
CAIRNS

Jon Scott
Inorganic Chemist
CAIRNS

NATA Accredited Laboratory No: 2562
NATA Endorsed Test Report
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Environmental Services Unit 2, 58 Comport Street, Portsmith 4870 QLD Australia www.sgs.com
t +61 (0)7 4035 5111 f +61 (0)7 4035 5122

SGS

Laboratory Report No: 45871

RESULTS I

SGS Reference	Your Reference	Moisture* % H_2O	pH KCl	TAA (pH 5.5) kg H_2SO_4/tonne
Blank		-	5.8	-
45871-02	**WP10: 1.0-1.3**	14	4.8	<0.5
45871-03	**WP10: 1.3-1.5**	16	4.9	<0.5
45871-04	**WP13: 1.0-1.2**	15	4.8	<0.5
45871-05	**WP13: 1.2-1.5**	14	4.8	<0.5
45871-06	**WP15: 1.75-2.0**	10	5.3	<0.5
45871-07	**WP16: 1.5-1.72**	11	5.5	<0.5
45871-08	**WP16: 1.72-2.0**	9	5.0	<0.5
45871-09	**WP18: 1.5-1.64**	23	4.4	<0.5
45871-10	**WP18: 1.64-2.0**	16	4.8	<0.5
45871-11	**WP19: 1.3-1.5**	16	5.1	<0.5
45871-12	**WP19: 1.5-1.8**	17	5.0	<0.5
	Limit of Reporting	1	0.1	0.5
	ASSMAC Method	2B1	21A	21F

Results determined on a dry basis.

* NATA accreditation does not cover the performance of this analysis.

SGS

Laboratory Report No: 45871

RESULTS II

SGS Reference	Your Reference	Chromium Reducible Sulphur* (S_{Cr}) % w/w
45871-02	**WP10: 1.0-1.3**	0.010
45871-03	**WP10: 1.3-1.5**	0.005
45871-04	**WP13: 1.0-1.2**	<0.005
45871-05	**WP13: 1.2-1.5**	0.007
45871-06	**WP15: 1.75-2.0**	<0.005
45871-07	**WP16: 1.5-1.72**	0.020
45871-08	**WP16: 1.72-2.0**	0.15
45871-09	**WP18: 1.5-1.64**	0.009
45871-10	**WP18: 1.64-2.0**	0.021
45871-11	**WP19: 1.3-1.5**	0.072
45871-12	**WP19: 1.5-1.8**	0.080
	Limit of Reporting	0.005
	ASSMAC† Method	22B

Results determined on a dry basis.

† Acid Sulfate Soils Management Advisory Committee.

SGS

Laboratory Report No: 45871

RESULTS III

SGS Reference	Your Reference	Manganese (Mn) mg/kg
45871-01	**WP09: 1.6-2.0**	59
	Limit of Reporting	0.05
	SGS Method	CEI-200

Results determined on a dry basis.

SGS

Laboratory Report No: 45871

RESULTS IV

Our Reference	Your Reference	Moisture‡ % H_2O	pH $_{KCl}$	TAA (pH 5.5) kg H_2SO_4/tonne	pH $_{OX}$	TPA (pH 5.5) kg H_2SO_4/tonne	TSA (pH 5.5) kg H_2SO_4/tonne
Blank		-	5.8	-	5.9	-	-
45871-1	WP9: 1.6-2.0	20	5.0	<0.5	4.7	<0.5	<0.5
R45871-1	*Repeat* WP9: 1.6-2.0	-	5.0	<0.5	4.8	<0.5	<0.5
	Limit of Reporting	1	0.1	0.5	0.1	0.5	0.5
	ASSMAC§ method	2B1	21A	21F	21B	21G	21H

Our Reference	Your Reference	S $_{KCl}$‡ % w/w	S $_{P}$‡ % w/w	S $_{POS}$‡ % w/w	Ca $_{KCl}$‡ % w/w	Ca $_{P}$‡ % w/w	Ca $_{A}$‡ % w/w	Mg $_{KCl}$‡ % w/w	Mg $_{P}$‡ % w/w	Mg $_{A}$‡ % w/w	Na $_{KCl}$‡ % w/w	Na $_{P}$‡ % w/w	Na $_{A}$‡ % w/w
Blank		-	-	-	-	-	-	-	-	-	-	-	-
45871-1	WP9: 1.6-2.0	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
R45871-1	*Repeat* WP9: 1.6-2.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Limit of Reporting	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
	ASSMAC Method	21Ce	21De	21Ee	21Vh	21Wh	21Xh	21Sm	21Tm	21Um	21Ms	21Ns	21Ps

Results determined on a dry basis.

‡ NATA accreditation does not cover the performance of this analysis.
§ ASSMAC - Acid Sulfate Soils Management Advisory Committee - Acid Sulfate Soil Manual, August 1998

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Item 7

Cooya Beach Subdivision

WATER RETICULATION NETWORK ANALYSIS

- R-1
- September 2005

Cooya Beach Subdivision

WATER RETICULATION NETWORK ANALYSIS

- R-1
- September 2005

Sinclair Knight Merz
ABN 37 001 024 095
2 James Street
PO Box 1062
Cairns QLD 4870 Australia
Tel: +61 7 4031 4599
Fax: +61 7 4031 3967
Web: www.skmconsulting.com

Contents

Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
R-1					

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Author:	Tim Saxby
Project manager:	Robert Carman
Name of organisation:	Salson Pty Ltd
Name of project:	Cooya Beach Subdivision
Name of document:	Water Reticulation Network Analysis
Document version:	R-1
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1. Introduction

The analysis of the water reticulation network for the Cooya Beach development has been completed to evaluate the network's ability to meet demand under interim and ultimate development conditions.

This report summarises the input model assumptions and results.

2. Modelling Parameters

2.1 Model

The reticulation network was modelled using the WATSYS program. The WATSYS program analysed the headlosses within the network using the Colebrook-White headloss formula.

Two different reticulation networks with their respective demands were modelled. These are summarised as the following scenarios:

Scenario 1 – External Demands + Stage 1 Lots

Scenario 2 – External Demands + All proposed allotments

The modelling was divided into two (2) separate scenarios to assess the ability of the existing trunk network to meet existing demands, and assess the required upgrade of the trunk delivery main under ultimate design conditions.

2.2 Residential Demands

The demands that have been used for this modelling exercise are based on the following:

- External demands to the development (Existing Cooya Beach demands).
- Proposed allotments within the development.

The number of connections within the development has been taken from the current lot layout. The external demands are based on information provided by Douglas Shire Council.

The number of connections for each model scenario is summarised in **Table 1 and 2 Number of Connections**.

- **Table 1 Number of Connections – Scenario 1**

Demand Description	Number of EDC's
External Demand	280
Stage 1 Lots	69
Total Development Demand	**349**

- **Table 2 Number of Connections – Scenario 2**

Demand Description	Number of EDC's
External Demand	280
All Allotments	288
Total Development Demand	**568**

The surface elevations at the model nodes have been taken from the Concept Plan for the development.

The assignment of demands for the development are taken from the Concept Plan.

The external demands have been modelled as a single point demand of 280 lots located at Node 62 (refer Figures 1 and 2 for details).

2.3 Water Supply Requirements

The water supply requirements for the model have been taken from the Department of Natural Resources '*Guidelines for Planning and Design of Urban Water Supply Schemes*'. The average daily usage is 700 L / person / day in accordance with the FNQ-ROC Development Manual. An average occupancy of 3.2 persons per connection has been used as agreed with Douglas Shire Council Engineering officers.

Peak daily factors of 1.5 for mean day maximum month (MDMM), 2.25 for maximum day maximum month (MD) and the Maximum Hour (MH) equal to $1/12^{th}$ x Maximum Day (1/12 x MD) over a 1 hour period have been applied to the average daily demand.

Maximum hour (MH) was assessed as the critical design criteria to satisfy DNR requirements. To simulate maximum hour demand within the model, the No. 5 curve from WATSYS has used. This curve applies a factor of 2.1 at 7pm. The factor of 2.1 x MD gives maximum hour demand within the model.

The residual pressure during maximum day (and hence maximum hour) flow should range between 22 m and 80 m for the above mentioned design criteria.

2.3.1 Fire Flow Analysis

A static fire flow analysis was conducted in accordance with the Water Supply Guidelines. The size of the assessable network takes into consideration other areas surrounding the development. The population for this area is less than 2,000 persons, therefore, in accordance with the guidelines, a maximum hour flow factor of 2/3 has been applied ie the analysis has combined the Fire Flow with 2/3 x Maximum Hour demand.

The fire flow analysis was conducted with the following parameters:

- Design Flow: 15 L/s
- Minimum Residual Head: 12 m
- Maximum Hour Flow Factor: 2/3

2.4 Connections to Trunk Water Supply Network

The trunk water supply network has been modelled by placing a 3.5ML reservoir adjacent to the existing reservoir off Cooya Beach Road. The existing reservoir is understood to no longer be in use, therefore it has not been incorporated into the model. Connections from the subdivision to the 150mm / 200mm diameter trunk water main along Cooya Beach Road have been made to maintain pressure and flow requirements.

2.5 Preparation of Reticulation Network

The water supply network within the development has been developed to ensure that the Department of Natural Resources '*Guidelines for Planning and Design of Urban Water Supply Schemes*' and FNQ-ROC design guidelines are met. **Figure 1** presents the reticulation network for Scenario 1 with Stage 1 of the new Cooya Beach subdivision. **Figure 2** presents the reticulation network for Scenario 2 with complete development of the new Cooya Beach subdivision. It should be noted that the reticulation network for the existing allotments within Cooya Beach has not been included in this analysis. As previously mentioned, the existing network and associated demands have been simplified and modelled as a point demand at Node 62.

3. Model Results

Each scenario was modelled for peak design capacity at maximum hour flow and 2/3^{rds} maximum hour fire flow requirements. The results for each scenario is presented in the following sections.

3.1 Scenario 1 – External Demands + Stage 1 Lots

3.1.1 Maximum Hour – No Fire Flow

The model flow rates and residual pressure for the maximum hour flows for Scenario 1 are presented in **Figure 3**.

The residual pressures during the maximum hour are greater than the required minimum of 22 m head. The residual pressure does not fall below this level at any node.

3.1.2 Maximum Hour – Fire Flow

Following a number of model examinations, it was found that the worst case occurred at Node 22. The model flow rates and residual pressure for fire flows are presented in **Figure 4.**

The residual pressures during the 2/3rd maximum hour plus fire flow are greater than the required minimum of 12 m head. The residual pressure does not fall below this level at any node.

3.2 Scenario 2 – External Demands + All proposed allotments

3.2.1 Maximum Hour – No Fire Flow

The model flow rates and residual pressure for the maximum hour flows for Scenario 2 are presented in **Figure 5**.

The residual pressures during the maximum hour are greater than the required minimum of 22 m head. The residual pressure does not fall below this level at any node.

3.2.2 Maximum Hour – Fire Flow

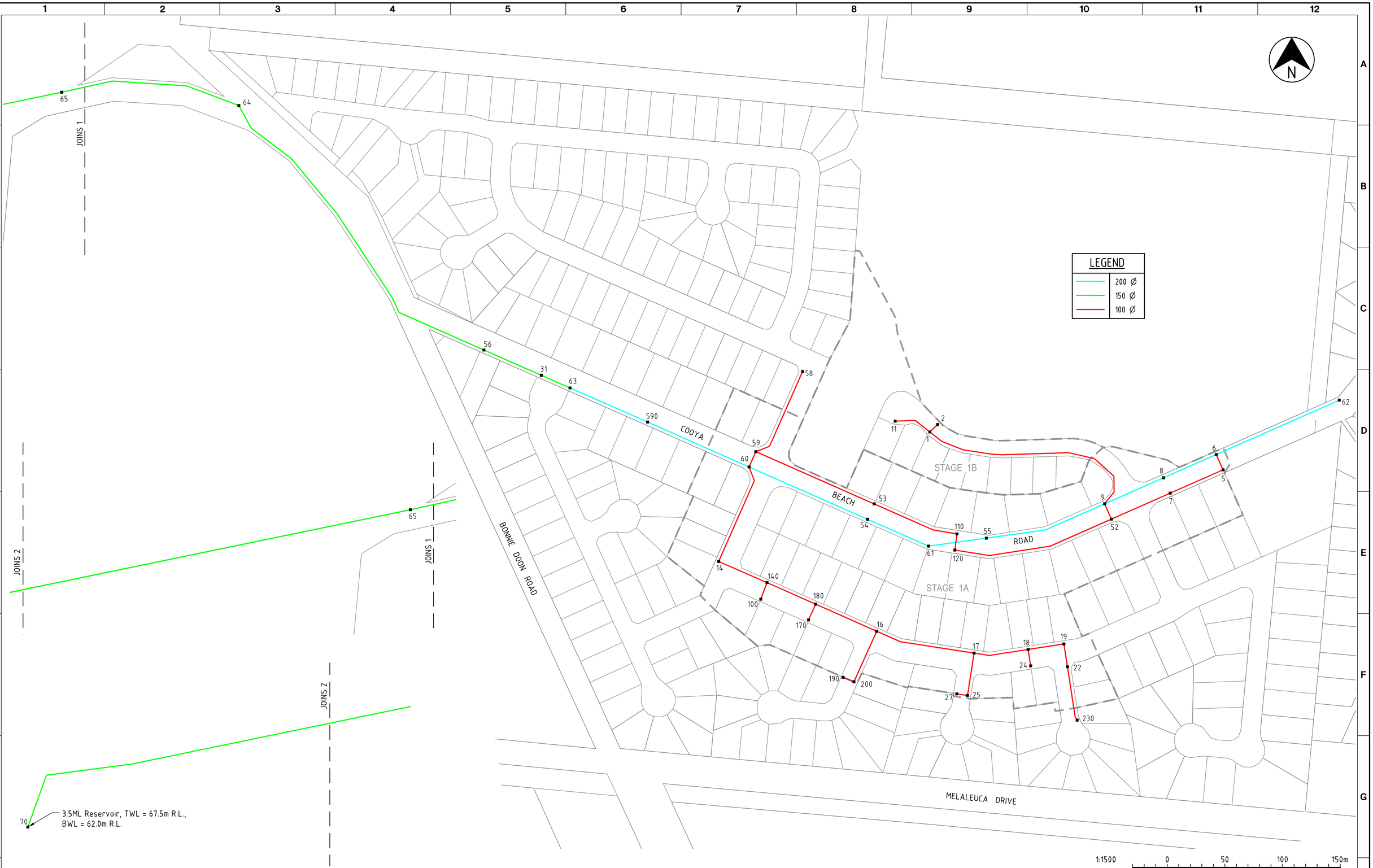
Following a number of model examinations, it was found that the worst case occurred at Node 21. The model flow rates and residual pressure for fire flows are presented in **Figure 6.**

The residual pressures during the 2/3rd maximum hour plus fire flow are greater than the required minimum of 12 m head. The residual pressure does not fall below this level at any node.

4. Conclusion

From the analysis, it can be concluded that the water supply network as shown in Figure 2 has sufficient capacity to support the ultimate development within the new Cooya Beach subdivision. The reticulation network within Cooya Beach has adequate capacity to meet future development demands.

It is recommended that the water supply network as shown in Figure 2 be adopted as the water supply master plan for the development.



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SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
G.C.P.			
DESIGNED	DESIGN REVIEW		RPEQ No.
T.J.S.			

TITLE: FIGURE 01
WATER RETICULATION NETWORK LAYOUT
SCENARIO 1

SCALE	SKM PROJECT No	DRAWING No	AMDT
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Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
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TITLE
FIGURE 02
WATER RETICULATION NETWORK LAYOUT
SCENARIO 2

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SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION

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TITLE
FIGURE 03
RESIDUAL PRESSURES AND FLOWS
SCENARIO 1 - MAXIMUM HOUR

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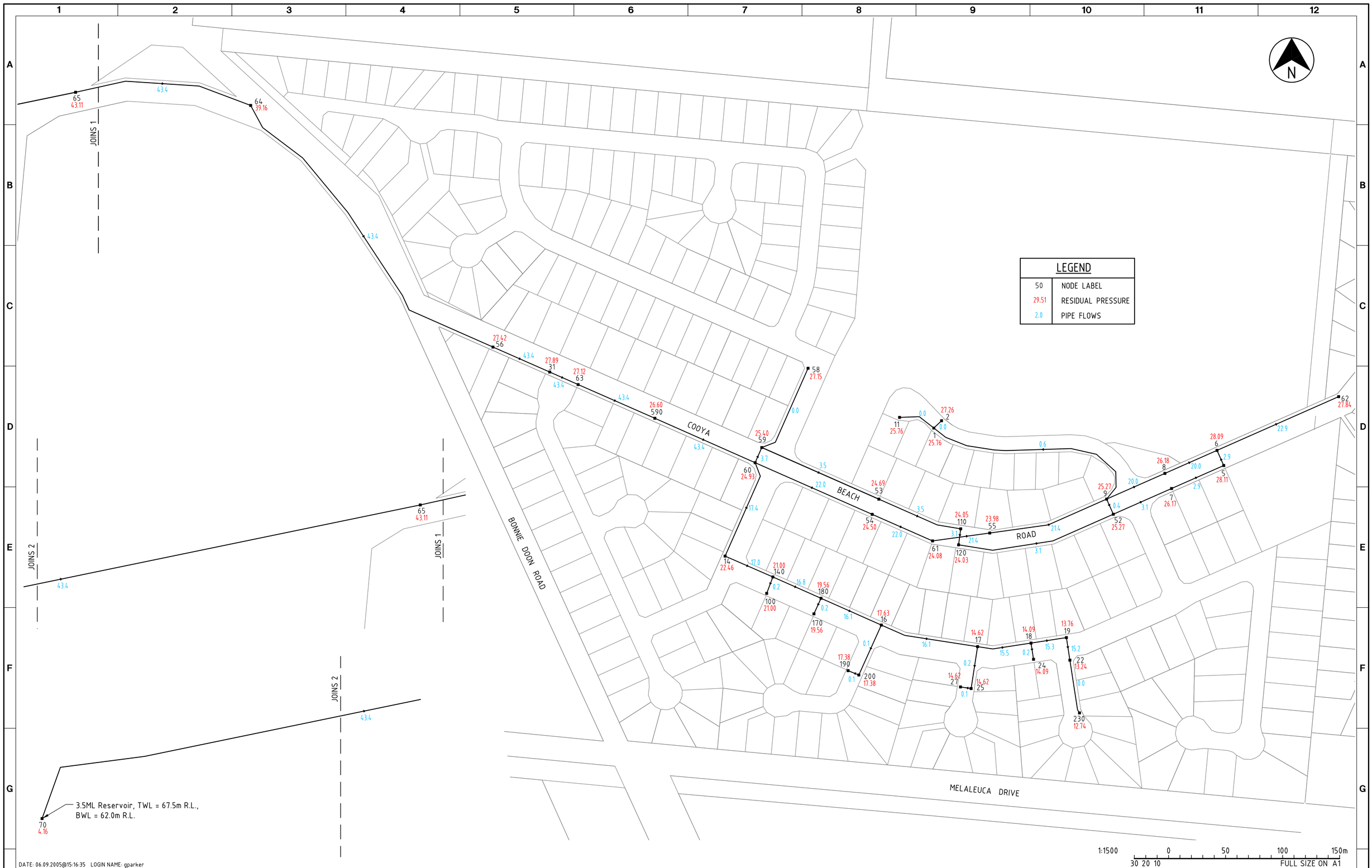

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Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION

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T.J.S.			

TITLE
FIGURE 04
RESIDUAL PRESSURES AND FLOWS
SCENARIO 1 - 2/3 MH + FIRE FLOW

SCALE	SKM PROJECT No	DRAWING No	AMDT
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Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION

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DESIGNED	DESIGN REVIEW		RPEQ No.
T.J.S.			

TITLE
FIGURE 05
RESIDUAL PRESSURES AND FLOWS
SCENARIO 2 - MAXIMUM HOUR

SCALE	SKM PROJECT No	DRAWING No	AMDT
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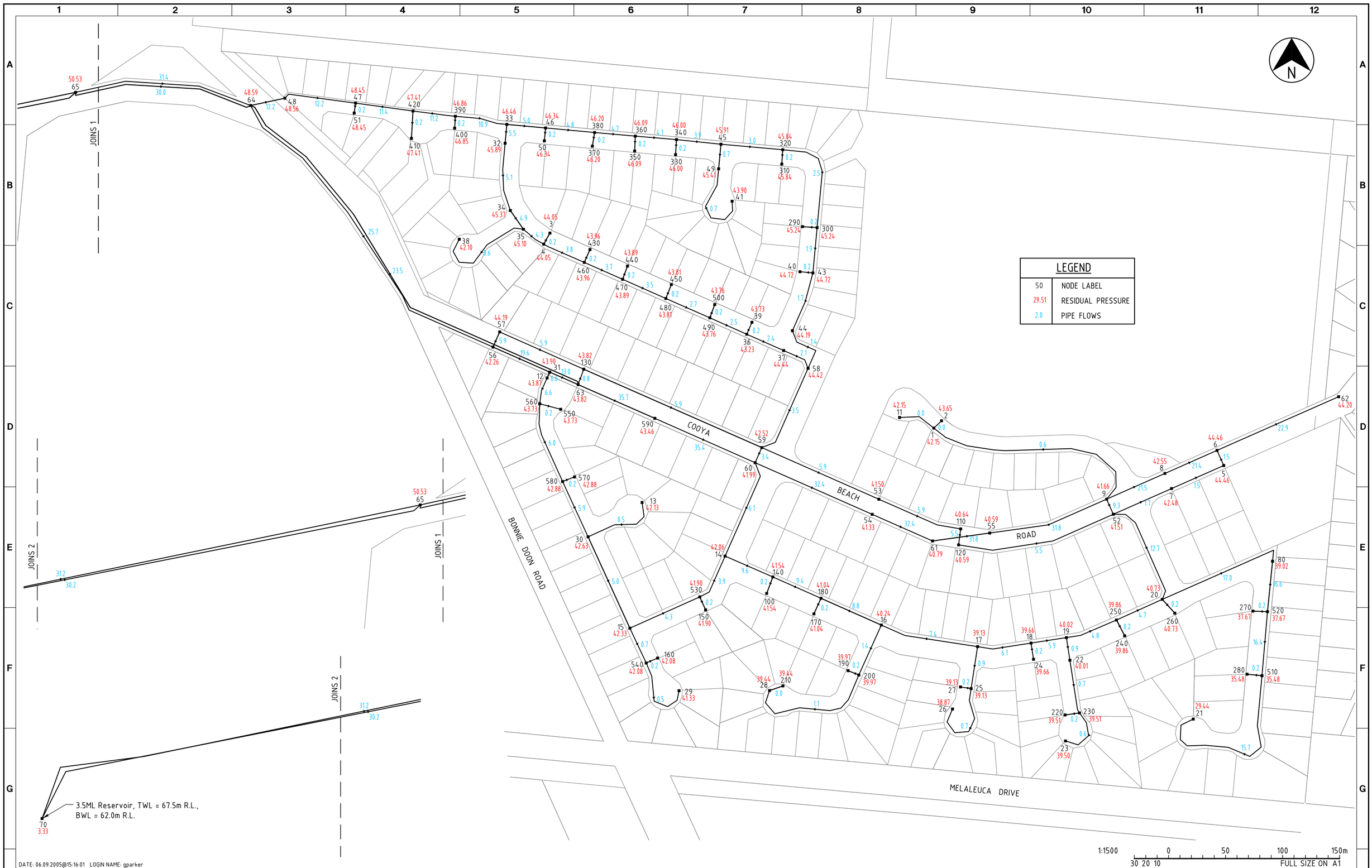

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SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION

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TITLE
FIGURE 06
RESIDUAL PRESSURES AND FLOWS
SCENARIO 2 - 2/3 MH + FIRE FLOW

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Item 8

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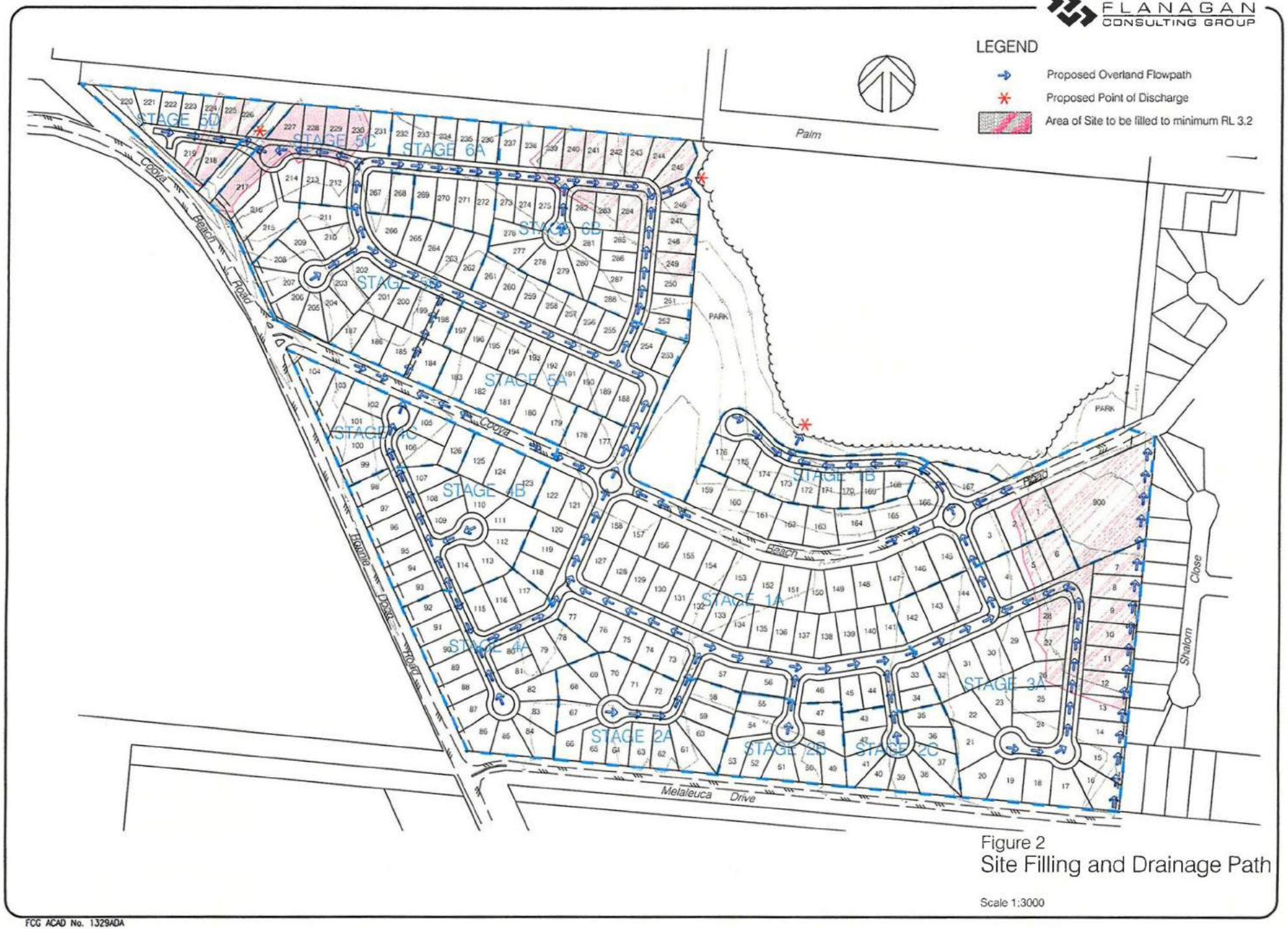

Figure 2
Site Filling and Drainage Path

Scale 1:3000

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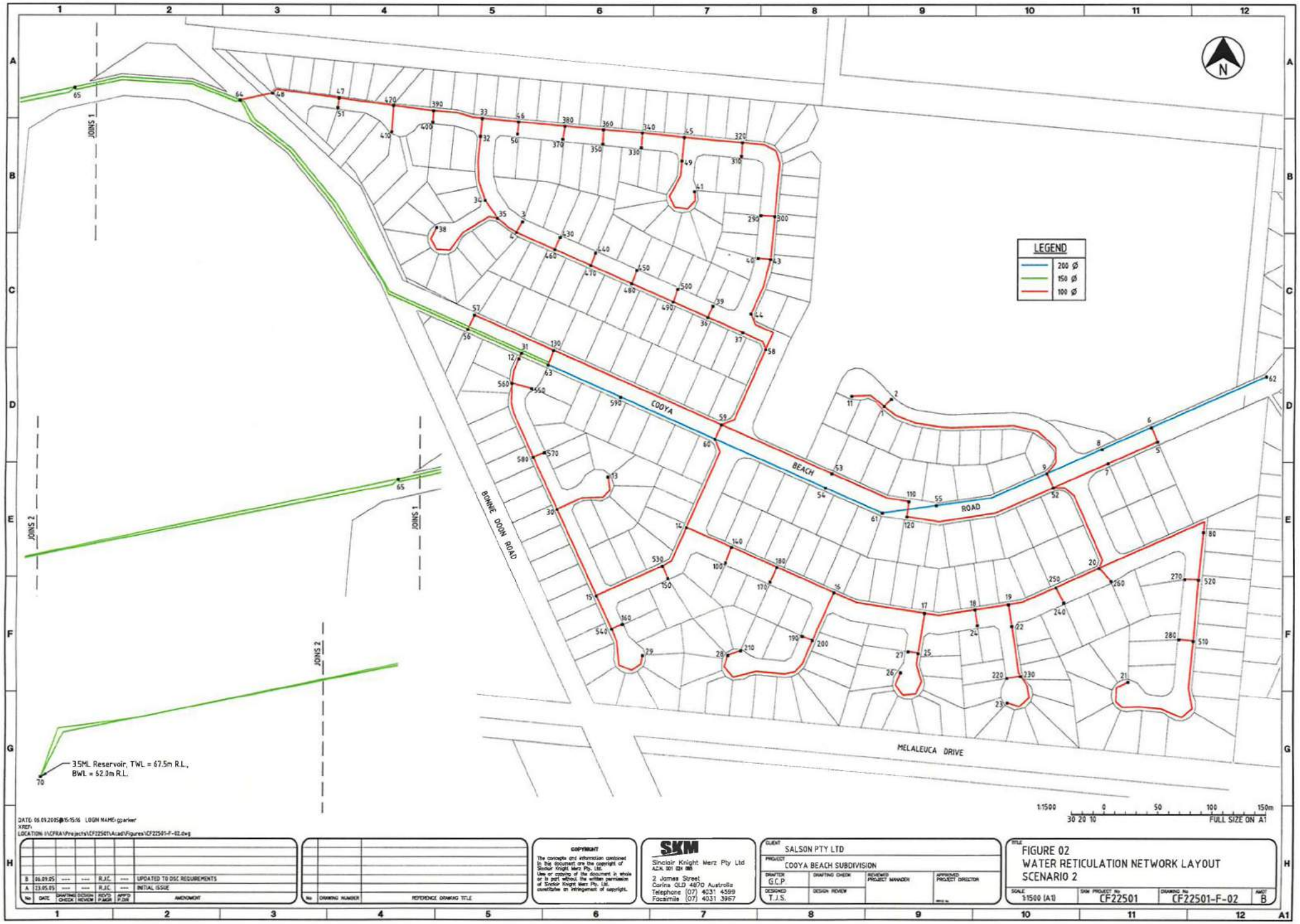

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SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 Jones Street
Carina QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION
DRAFTER: G.C.P.
DRAFTING CHECK:
REVIEWED PROJECT MANAGER:
APPROVED PROJECT DIRECTOR:
DESIGNED: T.J.S.
DESIGN REVIEW:

TITLE: FIGURE 02
WATER RETICULATION NETWORK LAYOUT
SCENARIO 2

SCALE: 1:1500 (A1)
SKM PROJECT No: CF22501
DRAWING No: CF22501-F-02
AMDT: B

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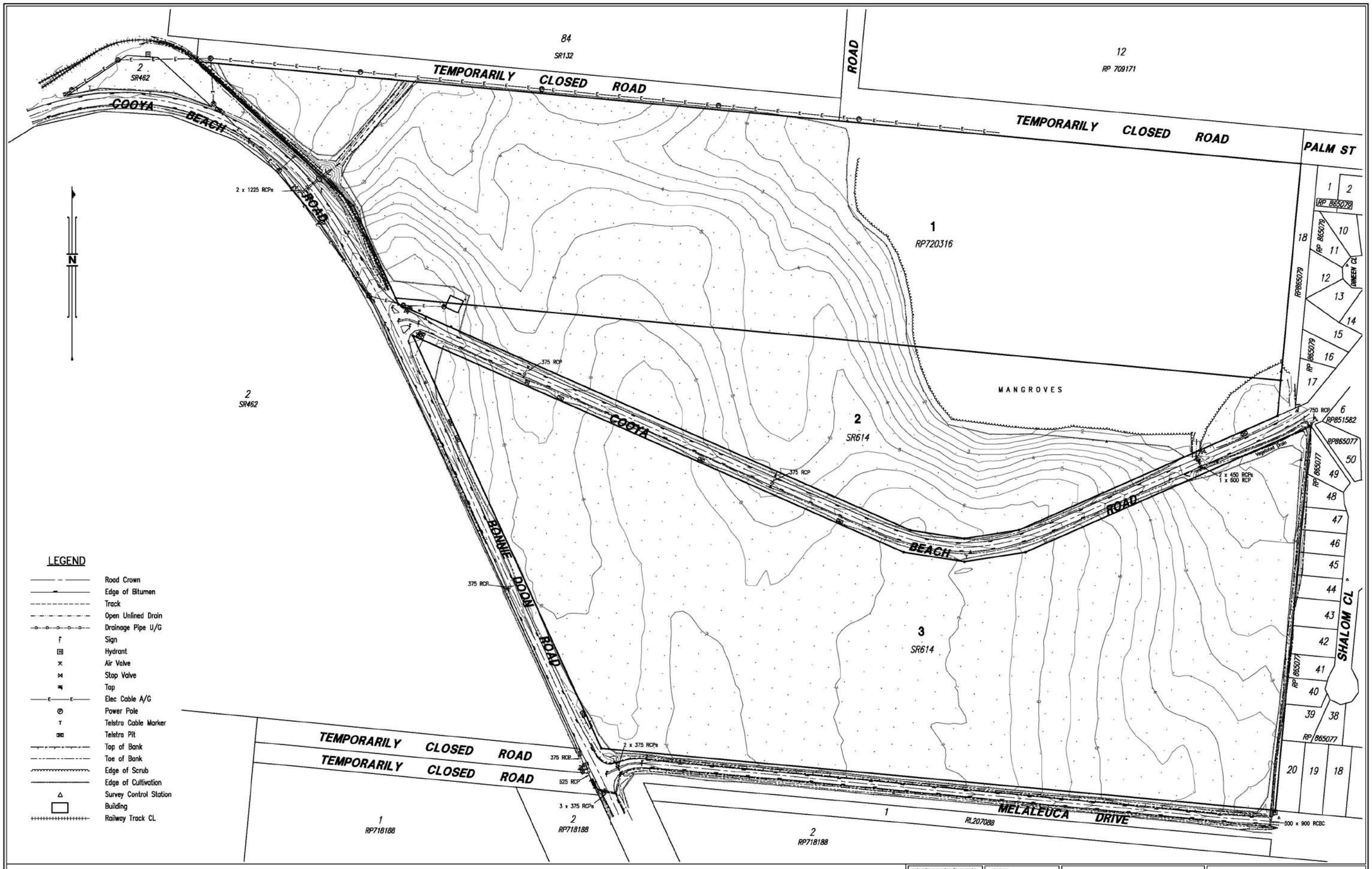
Figure 6
Sewerage Reticulation
Scale 1:3000

FCC ACAD No. 1329ABA



LEGEND

- Road Crown
- Edge of Bitumen
- Track
- Open Unlined Drain
- Drainage Pipe U/G
- Sign
- Hydrant
- Air Valve
- Stop Valve
- Tap
- Elec Cable A/G
- Power Pole
- Telstra Cable Marker
- Telstra Pit
- Top of Bank
- Toe of Bank
- Edge of Scrub
- Edge of Cultivation
- Survey Control Station
- Building
- Railway Track CL

IMPORTANT NOTE

The title boundaries as shown hereon were not marked at the time of survey and have been determined by plan dimensions only and not by field survey. If not able to be so located, services have been plotted from the records of relevant authorities where available and have been noted accordingly on this plan. Where such records either do not exist or are inadequate a notation has been made hereon.

Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services.

NOTES

Level Datum: AHD

Origin of Levels: PSM 76389
RL 3.363

Meridian: MGA Zone 55

Contour Interval: 0.5m
Index: 1.0m

Origin of Coordinates: PSM 76389
East 9853.42
North 80445.36

Only visable services have been located.

0 15 30 45 60 75
metres

SCALE 1:1500 IS APPLICABLE ONLY TO THE ORIGINAL SHEET SIZE. (A1)

PROJECT MANAGER/SURVEYOR: O. DALTON	DESIGNED		
CHECKED	SURVEYED: J.Zybura	21/12/04	
DRAWN: AMK 7/1/05	FIELD BK.	LEVEL DATUM: AHD	
DRAFTING CHECKED	SHEET SIZE: A1	SHEET OF SHEETS: 1 1	
CAD: 8021-13.DWG 8021200.CC6	SCALE: 1:1500		

SALSON PTY LTD

DETAIL PLAN
Lots 2 & 3 on SR614
& Lot 1 on RP720316
Cooya Beach

CAIRNS OFFICE PO Box 1949 CAIRNS QLD 4870
Tel: (07) 4031 1336 Fax: (07) 4031 2942
cairns@cbgroup.com.au www.cbgroup.com.au

PROJECT MANAGEMENT
PLANNING
ENVIRONMENTAL SERVICES
SURVEYING

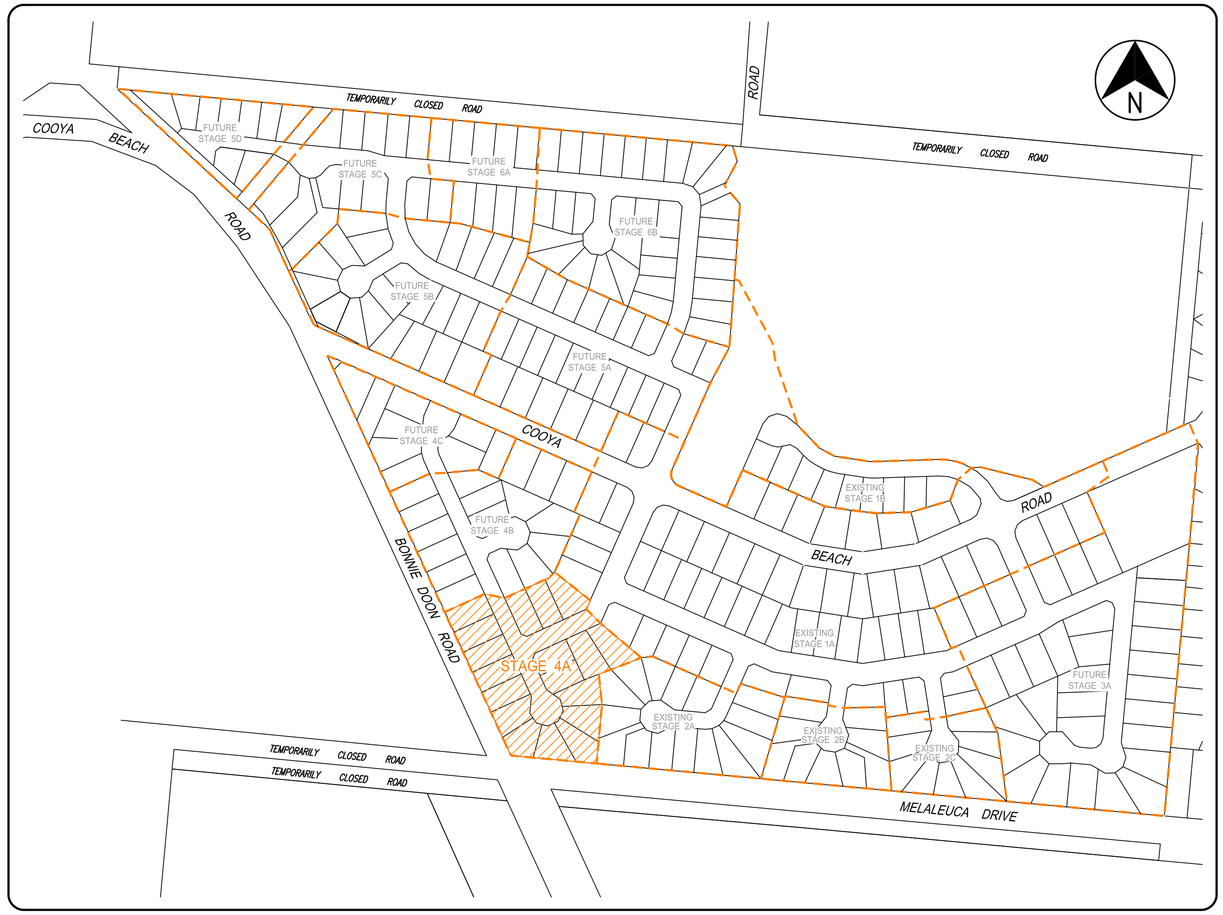
C&B CONSULTANTS PTY LTD
ACN 055 931 096

C&B GROUP

AMENDED	ISSUE	DRAWING NO.
		8021-13

Item 9

COOYA BEACH SUBDIVISION - STAGE 4A



LOCALITY PLAN
N.T.S.

DRAWING INDEX

DRAWING No.	DRAWING TITLE
CB22504-C-01	GENERAL ARRANGEMENT
CB22504-C-02	EARTHWORKS
CB22504-C-03	MISCELLANEOUS SECTIONS AND DETAILS
CB22504-C-04	ROAD LONGITUDINAL SECTIONS
CB22504-C-05	ROAD CROSS SECTIONS
CB22504-C-06	INTERSECTION DETAILS
CB22504-C-07	STORMWATER DRAINAGE
CB22504-C-08	STORMWATER DRAINAGE LONGITUDINAL SECTIONS
CB22504-C-09	SEWERAGE
CB22504-C-10	SEWERAGE LONGITUDINAL SECTIONS
CB22504-C-11	WATER RETICULATION
CB22504-C-12	EROSION AND SEDIMENT CONTROL STRATEGY - PHASE 1
CB22504-C-13	EROSION AND SEDIMENT CONTROL STRATEGY - PHASE 2
CB22504-C-14	EROSION AND SEDIMENT CONTROL STRATEGY - PHASE 3
CB22504-C-15	STORMWATER CATCHMENT AREAS
CB22504-C-16	STORMWATER CALCULATION TABLES

FNQROC STANDARD DRAWINGS

DRAWING No.	DRAWING TITLE
S1000 - S1110	ROADWORKS AND DRAINAGE
S2000 - S2025	WATER
S3000 - S3015	SEWERAGE

DATE: 07.12.2009@13:57:05 LOGIN NAME: sbest
XREF:
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C00.dwg

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: LOCALITY PLAN AND DRAWING INDEX

SCALE	SKM PROJECT No.	DRAWING No.	AMDT
N.T.S.	CB22504	CB22504-C-00	A

A1

NOTES

GENERAL

1. FOR EARTHWORKS DETAILS REFER DWG. CB22504-C-02.
2. FOR ROAD LONGITUDINAL SECTIONS REFER DWG. CB22504-C-04.
3. FOR TYPICAL CROSS SECTIONS AND CONTROL LINE SETOUT DETAILS REFER DWGS. CB22504-C-03.
4. FOR KERB PROFILE DETAILS REFER FNQROC STD. DWGS. S1000 AND S1001.
5. FOR KERB RAMP DETAILS REFER FNQROC STD. DWG. S1016.
6. FOR PUBLIC NOTIFICATION/SIGNS DETAILS REFER FNQROC DEVELOPMENT MANUAL CP1.11.
7. CLEARED VEGETATION SHALL BE MULCHED ON SITE BY THE CONTRACTOR.

EXISTING SERVICES

1. EXISTING SERVICES ARE PLOTTED FROM THE BEST INFORMATION AVAILABLE. NO RESPONSIBILITY IS TAKEN BY THE PRINCIPAL OR SUPERINTENDENT FOR THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN.
2. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR IS TO ESTABLISH ON SITE THE EXACT POSITION OF ALL UNDERGROUND SERVICES IN THE PROPOSED WORKS AREA. METHODS FOR ACHIEVING THIS WILL INCLUDE BUT NOT BE LIMITED TO:-
   - CAREFUL EXAMINATION OF THE CONTRACT DRAWINGS.
   - CONSULTATION WITH THE RELEVANT SERVICE AUTHORITIES.
   - COMPREHENSIVELY SCANNING THE AFFECTED AREAS WITH A CABLE DETECTOR AND MARKING ON THE GROUND THE POSITION OF ALL SERVICES.
   - HAND EXCAVATING TO EXPOSE ALL SUCH SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS UNDER THE DIRECTION OF THE RELEVANT SERVICE AUTHORITY.
3. THE CONTRACTOR IS TO BRING TO THE SUPERINTENDENT'S ATTENTION ANY DISCREPANCIES BETWEEN THE EXISTING SERVICES THUS IDENTIFIED AND DOCUMENTED SERVICES WHICH MIGHT AFFECT THE PROPOSED WORKS. APPROPRIATE MEASURES TO RESOLVE ANY CONFLICTS WILL BE DOCUMENTED BY THE SUPERINTENDENT.

LEGEND

- ASPHALT SEALED PAVEMENT
- BATTER
- STAGE BOUNDARY
- DESIGN SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING SURFACE CONTOURS (0.5m INTERVAL)
- EXISTING STORMWATER
- EXISTING WATER
- EXISTING SEWER
- EXISTING EDGE OF BITUMEN
- FALL OF LOTS
- EXISTING TABLE DRAIN
- D4-5

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

DATE: 07.12.2009@13:57:14 LOGIN NAME: sbest
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2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: GENERAL ARRANGEMENT

SCALE	SKM PROJECT No	DRAWING No	AMDT
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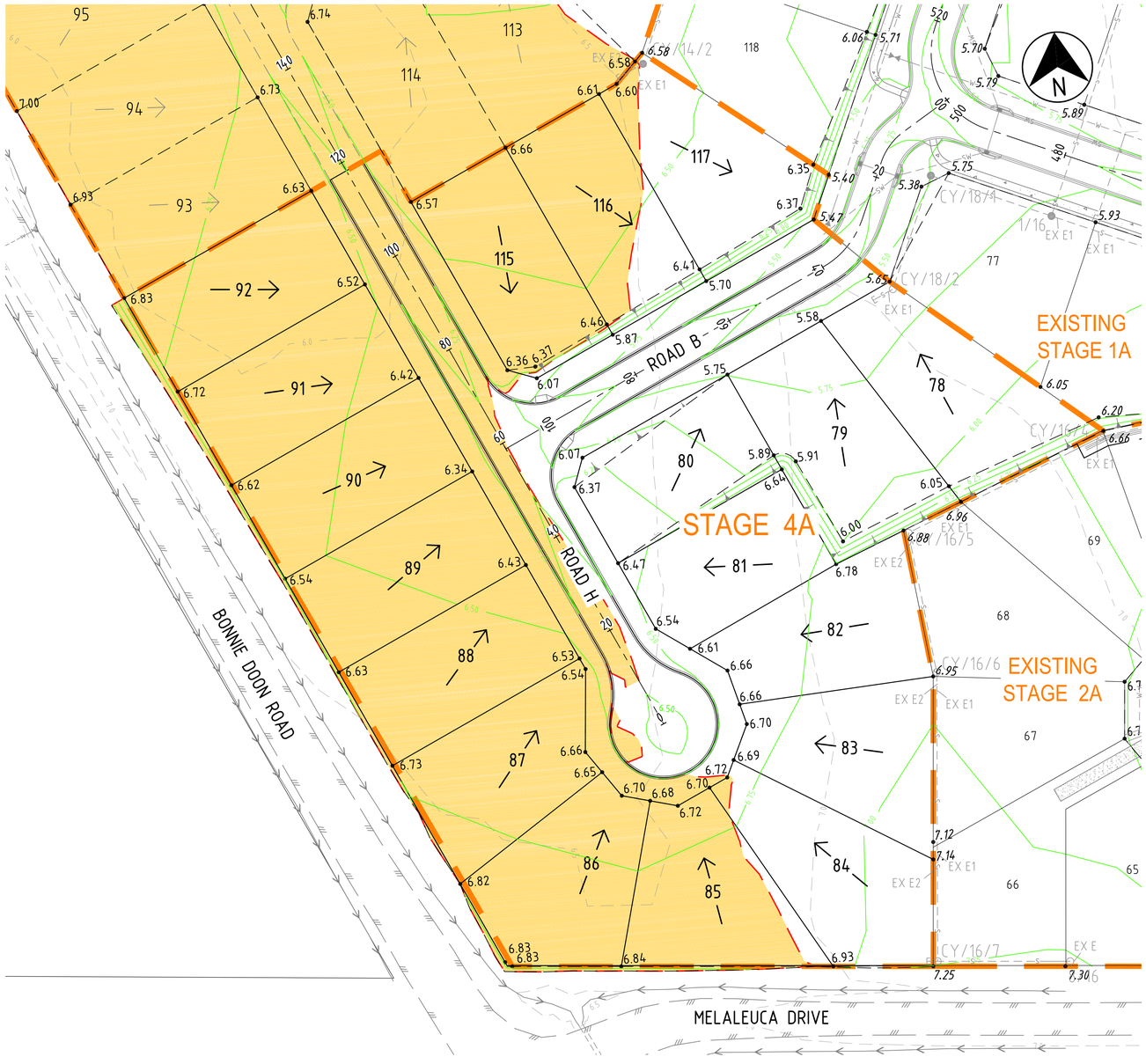
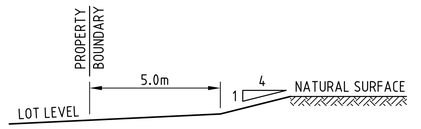
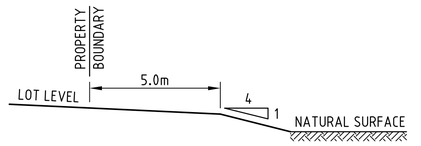


NOTES

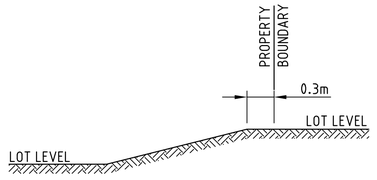
1. FOR NOTES REGARDING EXISTING SERVICES REFER DWG. CB22504-C-01.
2. ALL BATTERS TO ROAD FRONTAGES ARE NOMINALLY 1 ON 4 OR FLATTER. ALL OTHER BATTERS ARE 1 ON 1.
3. FOR STORMWATER PIT LOCATIONS REFER DWGS. CB22504-C-07.



TYPICAL SECTION - STAGE 2 INTERFACE - CUT
N.T.S.



TYPICAL SECTION - STAGE 2 INTERFACE - FILL
N.T.S.



TYPICAL SECTION - TOP OF BATTER SET BACK
N.T.S.

LEGEND

- AREAS OF FILL
- 18.70 FINISHED SURFACE LEVEL
- 18.68 NATURAL SURFACE LEVEL
- FALL OF LOTS
- BATTER
- STAGE BOUNDARY
- 57.0 DESIGN SURFACE CONTOURS (0.25m INTERVAL)
- 57.0 EXISTING SURFACE CONTOURS (0.5m INTERVAL)
- SW EXISTING STORMWATER
- W EXISTING WATER
- E EXISTING ELECTRICAL
- S EXISTING SEWER
- EXISTING TABLE DRAIN

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

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A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

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Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: EARTHWORKS

SCALE	SKM PROJECT No	DRAWING No	AMDT
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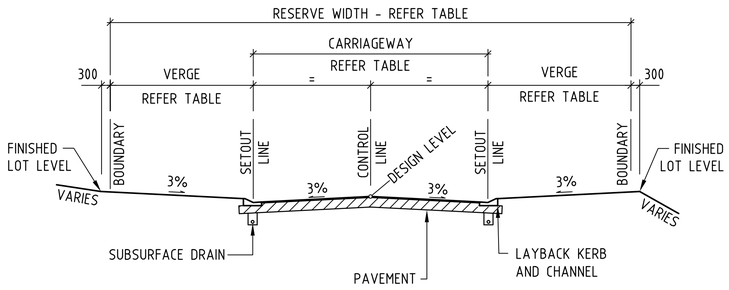
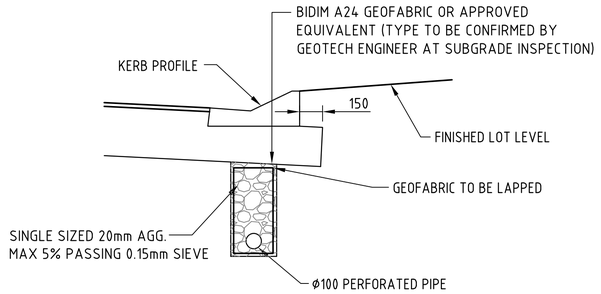


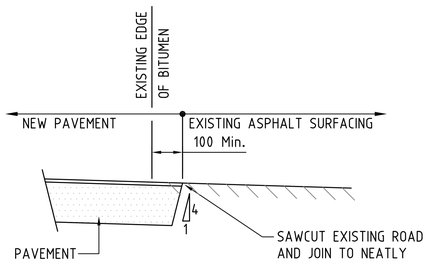
TYPICAL ROAD CROSS SECTION

N.T.S.



SUB SURFACE DRAINAGE DETAIL

N.T.S.



JOIN DETAIL

N.T.S.

TABLE OF WIDTHS

ROAD	CARRIAGEWAY WIDTH (m)	VERGE WIDTH (m)		RESERVE WIDTH (m)
		LHS	RHS	
ROAD B	7.00	5.00	5.00	17
ROAD H	7.00	4.00	4.00	15

PROVISIONAL PAVEMENT DETAILS

ROAD	SURFACING (U.N.O.)	SUBBASE CBR 45 (mm)	BASE CBR 60 (mm)
ROAD B	30mm ASPHALT	100	100
ROAD H	30mm ASPHALT	100	100

NOTE
PROVISIONAL PAVEMENT DESIGN IS BASED ON AN ASSUMED SUBGRADE SOAKED CBR OF 10. THE CONTRACTOR IS TO CONFIRM SUBGRADE CBR DURING CONSTRUCTION AND THE PAVEMENT DESIGN MAY BE AMENDED ACCORDINGLY BY CAIRNS REGIONAL COUNCIL.

CONTROL LINE ROAD B SETOUT

CHAINAGE	COORDINATES		BEARING	RADIUS OF	TANGENT	ARC
	EASTING	NORTHING	DEG MIN SEC	CURVATURE	LENGTH	LENGTH
0.000	9024.429	80277.156	239° 0' 52"	STRAIGHT		
9.980	9015.873	80272.018	239° 0' 52"	-11.500		
IP 13.512	9012.746	80270.140	-	-11.500	3.648	7.064
17.044	9011.273	80266.804	203° 49' 8"	STRAIGHT		
28.269	9006.740	80256.535	203° 49' 8"	16.000		
IP 34.083	9004.283	80250.969	-	16.000	6.085	11.629
39.897	8998.748	80248.442	245° 27' 40"	STRAIGHT		
107.744	8937.029	80220.264	245° 27' 40"	STRAIGHT		

CONTROL LINE ROAD H SETOUT

CHAINAGE	COORDINATES		BEARING	RADIUS OF	TANGENT	ARC
	EASTING	NORTHING	DEG MIN SEC	CURVATURE	LENGTH	LENGTH
0.000	8961.453	80166.765	335° 27' 40"	STRAIGHT		
251.458	8857.020	80395.511	335° 27' 40"	18.500		
IP 259.265	8853.571	80403.067	-	18.500	8.306	15.614
267.072	8856.925	80410.666	23° 49' 8"	STRAIGHT		
284.838	8864.100	80426.918	23° 49' 8"	STRAIGHT		

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A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

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SKM
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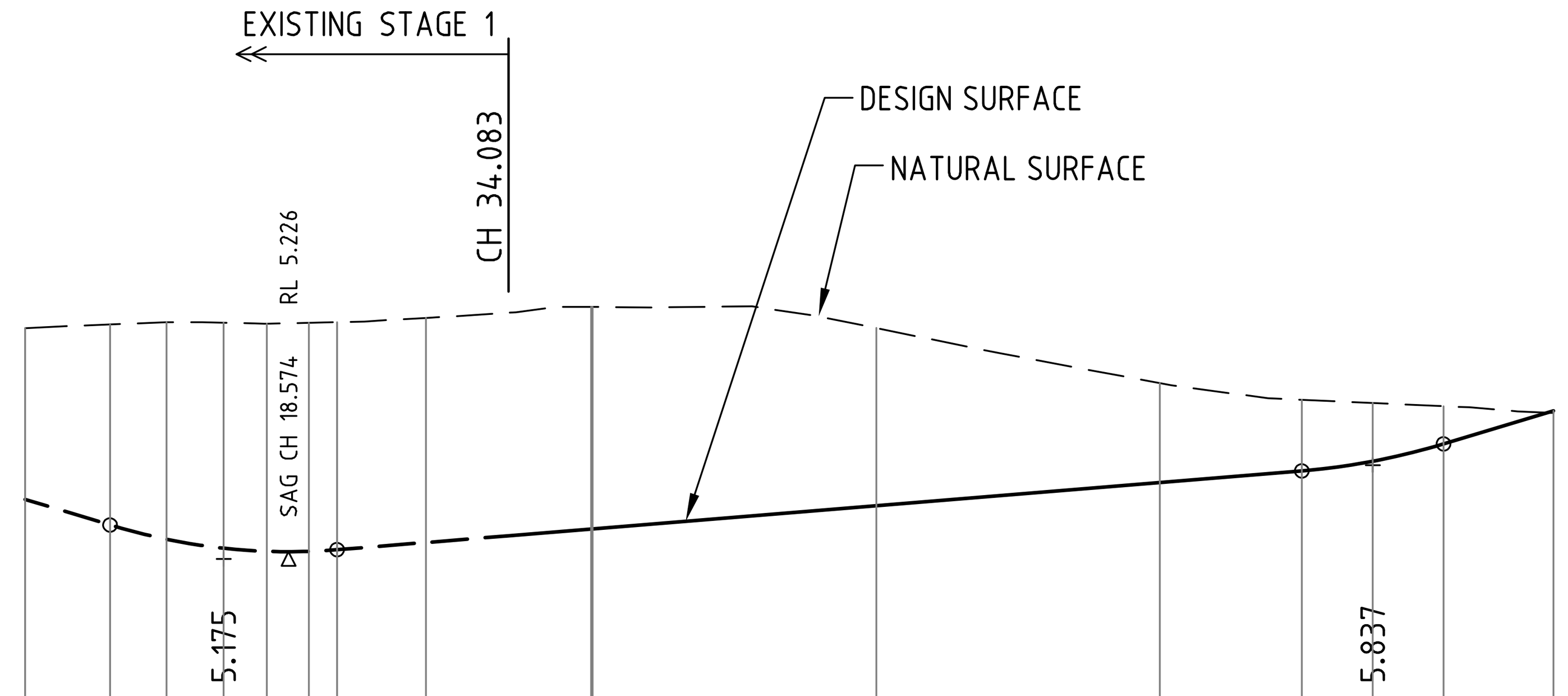
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: MISCELLANEOUS SECTIONS AND DETAILS

SCALE	SKM PROJECT No	DRAWING No	AMDT
N.T.S.	CB22504	CB22504-C-03	A



VERTICAL CURVE: L16m R419m; L10m R459m

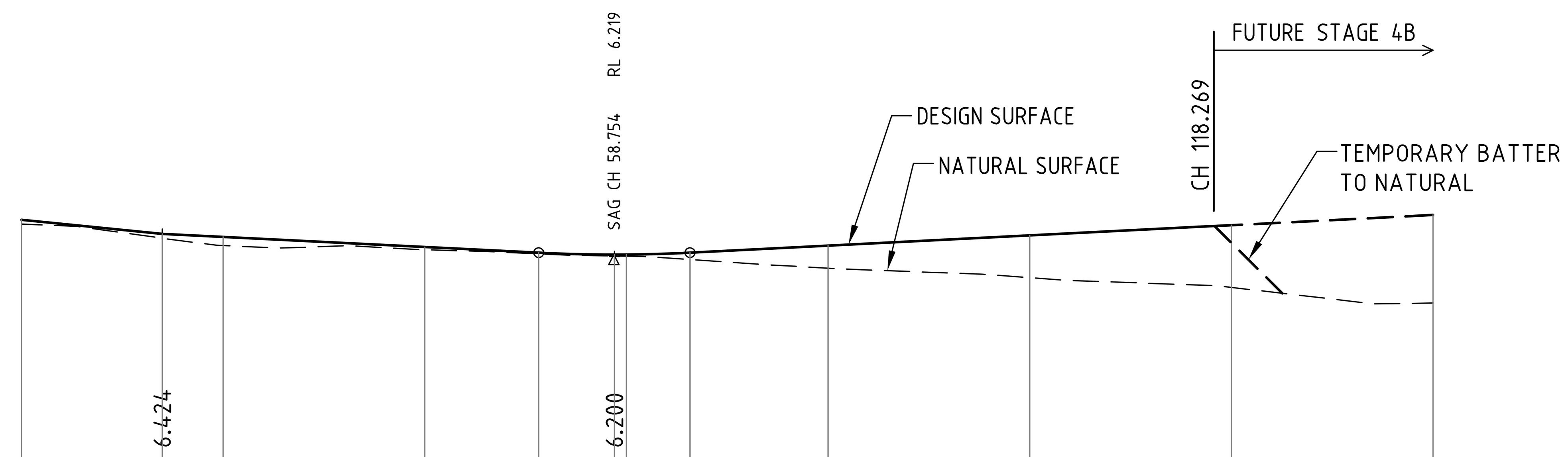
VERTICAL GRADE: -3.00%; 0.82%; 3.00%

DATUM RL 2.0

CHAINAGE	CUT - / FILL +	DESIGN SURFACE LEVEL	EXISTING SURFACE LEVEL
0.000	-1.207	5.595	6.802
6.000	-1.413	5.415	6.828
9.980	-1.529	5.314	6.844
14.000	-1.589	5.251	6.841
17.044	-1.604	5.229	6.833
20.000	-1.611	5.229	6.840
22.000	-1.604	5.240	6.844
28.269	-1.582	5.292	6.873
39.897	-1.565	5.387	6.952
40.000	-1.564	5.387	6.951
60.000	-1.251	5.551	6.802
80.000	-0.699	5.714	6.414
90.000	-0.501	5.796	6.297
95.000	-0.410	5.864	6.275
100.000	-0.265	5.987	6.252
107.744	0.014	6.219	6.205

HORIZONTAL DATA: R-11.5m; R16m

LONGITUDINAL SECTION ROAD B



VERTICAL CURVE: L15m R1489m

VERTICAL GRADE: -1.00%; -0.50%; 0.51%

DATUM RL 2.0

CHAINAGE	CUT - / FILL +	DESIGN SURFACE LEVEL	EXISTING SURFACE LEVEL
0.000	0.041	6.564	6.523
13.957	0.043	6.424	6.382
20.000	0.085	6.394	6.309
40.000	0.027	6.294	6.267
51.311	0.011	6.237	6.227
58.811	0.014	6.219	6.205
60.000	0.017	6.219	6.203
66.311	0.068	6.238	6.170
80.000	0.223	6.308	6.085
100.000	0.419	6.409	5.990
120.000	0.617	6.511	5.893
140.000	0.873	6.612	5.739

HORIZONTAL DATA:

LONGITUDINAL SECTION ROAD H

1:50 — 1 0.5 0 1 2 3 4 5m FULL SIZE ON A1

1:500 — 10 8 6 4 2 0 10 20 30 40 50m FULL SIZE ON A1

DATE: 07.12.2009@13:57:33 LOGIN NAME: sbest
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No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
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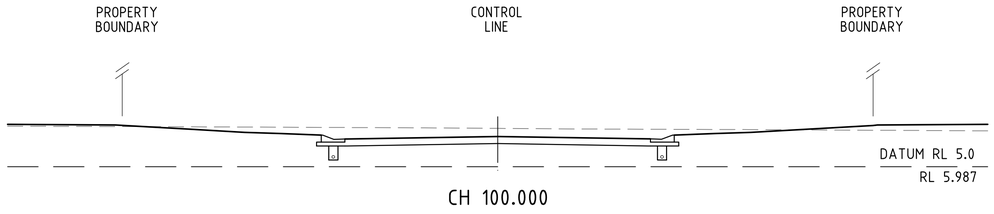
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A
DRAFTER: SAB — DRAFTING CHECK: RJB — REVIEWED PROJECT MANAGER: C.J.CAPLICK — APPROVED PROJECT DIRECTOR: R.J.CARMAN — RPEQ No.
DESIGNED: PAM — DESIGN REVIEW: RJB

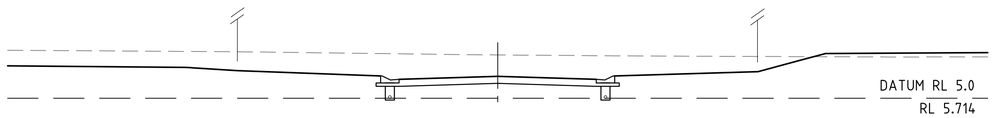
TITLE: ROAD LONGITUDINAL SECTIONS

SCALE: 1:500H;1:50V(A1) — SKM PROJECT No: CB22504 — DRAWING No: CB22504-C-04 — AMDT: A

A1



CH 100.000



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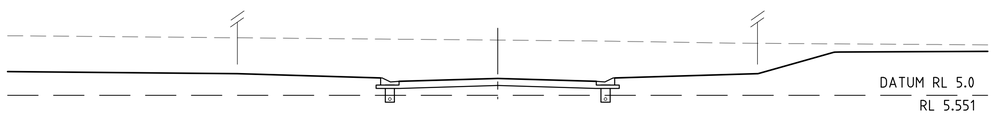

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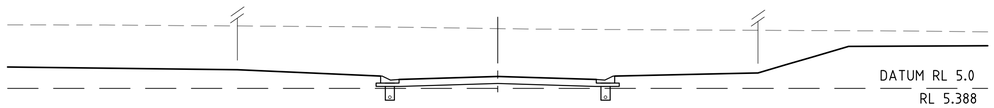
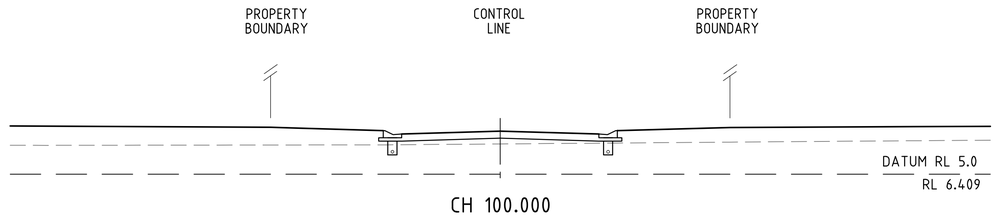


CH 40.000

ROAD B



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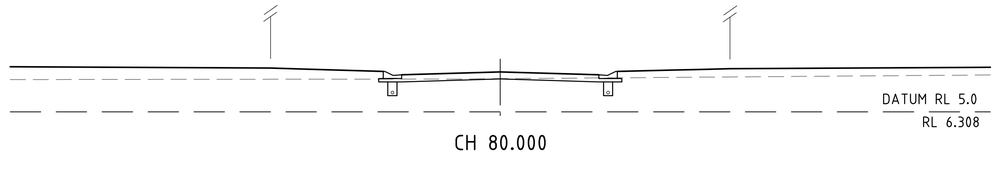

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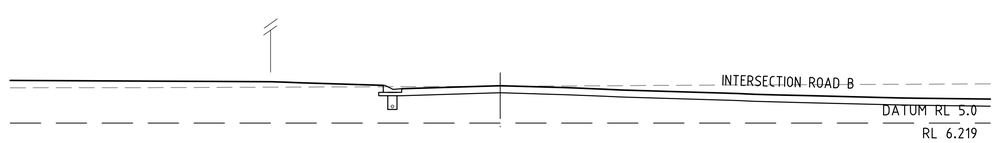

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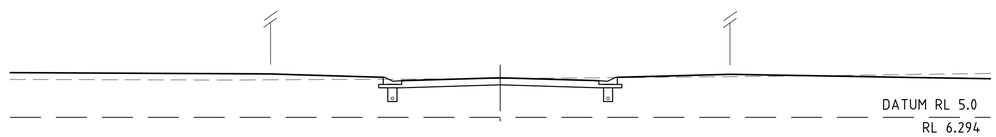
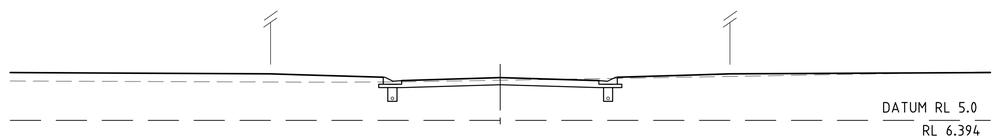


CH 40.000



CH 20.000

ROAD H

1:100 0 2 4 6 8 10m
2 1 FULL SIZE ON A1

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XREF:
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C05.dwg

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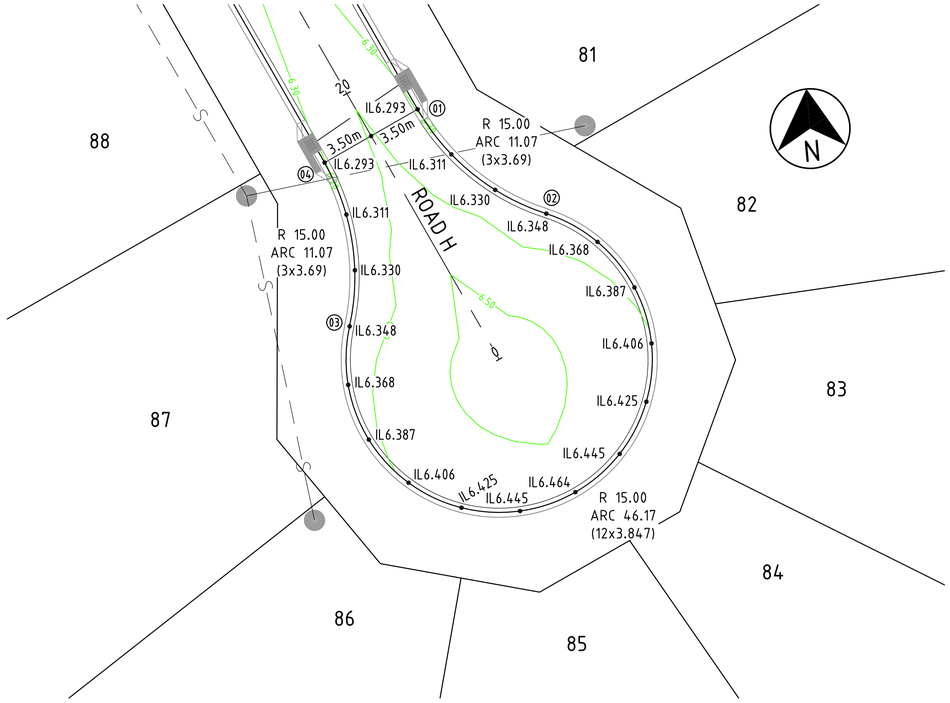
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

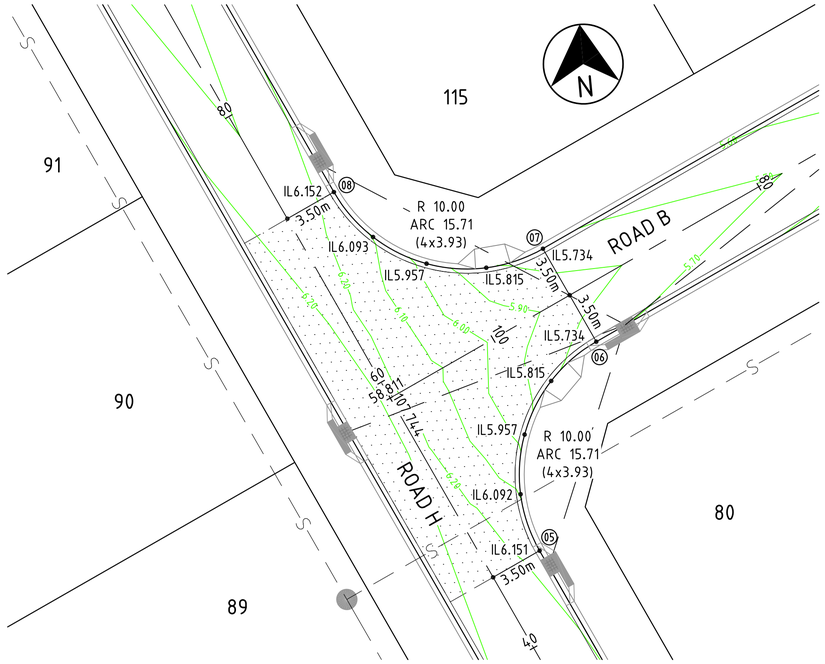
DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: ROAD CROSS SECTIONS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:100 (A1)	CB22504	CB22504-C-05	A



CUL-DE-SAC ROAD H



INTERSECTION ROAD H AND ROAD B

INTERSECTION SETOUT TABLE

POINT	EASTING	NORTHING
01	8957.654	80183.515
02	8965.392	80175.957
03	8951.928	80169.811
04	8951.286	80180.608
05	8945.819	80209.437
06	8950.763	80222.687
07	8947.856	80229.055
08	8934.606	80233.998

NOTES

1. ALL KERB SETOUT DETAILS REFER TO THE SETOUT LINE OF KERB AND CHANNEL.
2. FOR KERB PROFILE DETAILS REFER FNQROC STD. DWG. S1000.

LEGEND

- •IL4.580 — INVERT LEVEL OF KERB & CHANNEL
- (16) — SETOUT POINT
- LAYBACK KERB AND CHANNEL
- PROPOSED STORMWATER
- 5.50 — DESIGN SURFACE CONTOURS (0.1m INTERVAL)
- 50mm ASPHALT SURFACE

1:200 0 4 8 12 16 20m
4 3 2 1 FULL SIZE ON A1

DATE: 07.12.2009@13:57:46 LOGIN NAME: sbest
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No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

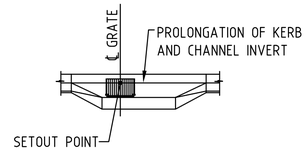
SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: INTERSECTION DETAILS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:200 (A1)	CB22504	CB22504-C-06	A



KERB INLET PIT

STRUCTURE SETOUT POINTS

N.T.S.

NOTES

1. FOR STANDARD STORMWATER DRAINAGE DETAILS REFER FNQROC STD. DWGS. S1045-S1100 INCLUSIVE.
2. THE CONTRACTOR IS TO LOCATE ALL EXISTING SERVICES IN THE WORKS AREA PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. FOR NOTES REGARDING EXISTING SERVICES REFER DWG. CB22504-C-01.
3. SUBSURFACE DRAINS TO BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATION, FLUSHING POINTS IN ACCORDANCE WITH FNQROC STD. DWG. S1095.
4. SETOUT OF STORMWATER DRAINAGE STRUCTURES REFER TO:
   a) CENTER OF GRATE ON KERB INLET LINE FOR KERB INLET PITS
   b) CENTRELINE OF PIPE AT TOP OF HEADWALL FOR HEADWALLS
   c) CENTRE OF COLLECTION PIT FOR GROSS POLLUTANT TRAP
5. FOR STORMWATER LONGITUDINAL SECTIONS REFER DWGS. CB22504-C-08.
6. ALL STORMWATER PIPES ARE TO BE CLASS 2 RRJ, RCP'S U.N.O.
7. FOR PIPES WHERE ANY PART OF THE PIPE IS BELOW THE H.A.T. (RL1.80m AHD) THE PIPE SHALL HAVE SALTWATER COVER TO REINFORCING.

FLUSHING POINT LEGEND

⊠ FP1	FLUSHING POINT IN PIT
⊠ FP2	FLUSHING POINT IN LINE
⊠ FP3	FLUSHING POINT HEAD

LEGEND

2/1	STRUCTURE No. / LINE NUMBER
EX2/3	EXISTING STRUCTURE No.
	STORMWATER DRAINAGE PIPE & MANHOLE
	SUBSURFACE DRAINAGE
OR	KERB INLET PIT
	EXISTING TABLE DRAIN
	SEWER MAIN, MANHOLE AND ENDCAP
	FALL OF LOTS
	BATTER
	STAGE BOUNDARY
57.0	DESIGN SURFACE CONTOURS (0.25m INTERVAL)
57.0	EXISTING SURFACE CONTOURS (0.5m INTERVAL)
SW	EXISTING STORMWATER
W	EXISTING WATER
S	EXISTING SEWER

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

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LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C07.dwg

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

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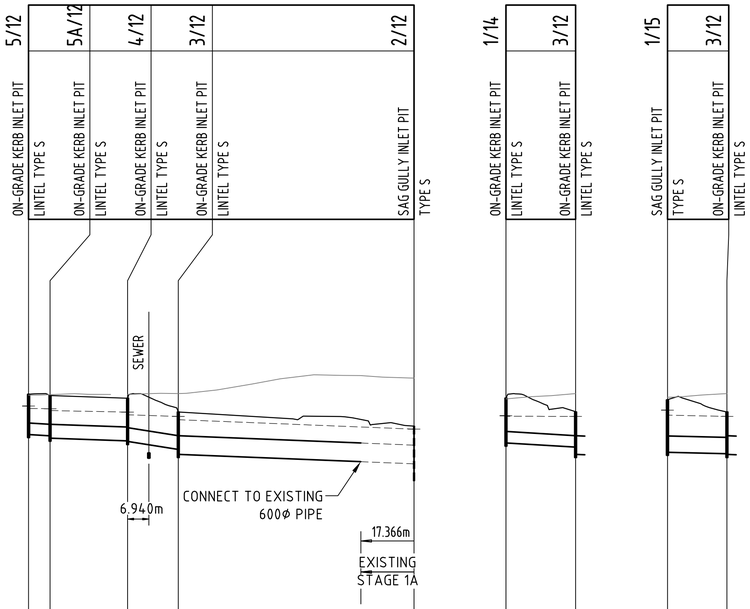
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD			
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A			
DRAFTER: SAB	DRAFTING CHECK: RJB	REVIEWED PROJECT MANAGER: C.J.CAPLICK	APPROVED PROJECT DIRECTOR: R.J.CARMAN
DESIGNED: PAM	DESIGN REVIEW: RJB		RPEQ No.

TITLE: STORMWATER DRAINAGE

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-07	A

STRUCTURE NAME	5/12	5A/12	4/12	3/12	2/12	1/14	3/12	1/15	3/12
STRUCTURE DESCRIPTION	ON-GRADE KERB INLET PIT LINTEL TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	SAG GULLY INLET PIT TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	SAG GULLY INLET PIT TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S
PIPE SIZEmm (Class)		375(2)	450(2)	450(2)	600(2)		375(2)		525(2)
PIPE GRADE %		0.61%	0.35%	1.58%	0.40%		0.60%		0.25%
PIPE SLOPE 1 in X		163.33	287.33	63.12	249.43		165.44		403.19
FULL PIPE FLOW VELOCITY (m/s)		0.56	0.79	1.01	1.39		0.27		0.94
PART FULL FLOW VELOCITY (m/s)									
DATUM RL –8.0									
WATER LEVEL IN STRUCTURE	5.908	5.818	5.708	5.563	5.152	5.589	5.567	5.772	5.563
HYDRAULIC GRADE LEVEL	5.908 / 5.827	5.818	5.758 / 5.708	5.620 / 5.563	5.461 / 5.101	5.589 / 5.574	5.567 / 5.461	5.772 / 5.610	5.563 / 5.461
PIPE FLOW (Cumecs)		0.062	0.126	0.161	0.406		0.030		0.211
DEPTH TO INVERT		1.310	1.317	1.392	1.392	1.412	1.225	1.385	1.232	1.463	1.150	1.708	1.365
INVERT LEVEL OF DRAIN		4.976	4.933	4.858	4.770	4.750	4.488	4.328	4.019	4.700	4.563	4.396	4.348
DESIGN SURFACE LEVEL	6.286		6.250		6.162		5.713		5.251	6.163	5.713	6.104	5.713
SETOUT CO-ORDINATES	8950.682 E 80181.930 N		8956.819 E 80185.344 N		8946.329 E 80208.351 N	8952.757 E 80223.616 N		9015.908 E 80267.598 N	8933.692 E 80236.000 N	8952.757 E 80223.616 N		8934.070 E 80218.318 N	8952.757 E 80223.616 N
CHAINAGE	0.000	7.023		32.308		48.871		125.829	0.000	22.734		0.000	19.424	
LENGTH		7.023		25.285		16.563		76.958		22.734			19.424	
LINE				12				14				15		



1:100 0 2 4 6 8 10m
2 1 FULL SIZE ON A1

1:1000 0 20 40 60 80 100m
20 10 FULL SIZE ON A1

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No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
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Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:1000H;1:100V(A1)	CB22504	CB22504-C-08	A

NOTES

1. ALL SEWER PIPES SHALL BE 150Ø uPVC CLASS 'S.N.8.' (U.N.O.).
2. FOR STANDARD DETAILS OF SEWER MAINS, ETC. REFER FNQROC STD. DWGS. S3000 - S3015 INCLUSIVE.
3. MANHOLES ADJACENT ROAD BOUNDARIES SHALL BE ON A 1.5m ALIGNMENT U.N.O. ALL OTHER MANHOLES SHALL BE ON A 0.8m ALIGNMENT U.N.O.
4. SEWER MANHOLES SHALL BE FINISHED 25mm ABOVE FINISHED SURFACE LEVEL IN ALLOTMENTS AND FLUSH IN ROAD RESERVES.
5. EXISTING LOTS TO BE REINSTATED AFTER CONSTRUCTION OF THE SEWER.
6. HCB's ARE TO BE CONSTRUCTED 1.0m CLEAR OF ANY EARTHWORKS BATTER THAT IS STEEPER THAN 1V:2H.
7. FOR SEWER LONGITUDINAL SECTIONS REFER DWG. CB22504-C-10.
8. THE CONTRACTOR IS TO LOCATE ALL EXISTING SERVICES IN THE WORKS AREA PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. FOR NOTES REGARDING EXISTING SERVICES REFER DWG. CB22504-C-01.

LEGEND

- 2/1 — STRUCTURE No. / LINE NUMBER
- SEWER MAIN, MANHOLE AND ENDCAP
- E1 — HOUSE CONNECTION BRANCH / TYPE
- PROPOSED STORMWATER
- FUTURE SEWER
- FALL OF LOTS
- BATTER
- STAGE BOUNDARY
- 57.0 — DESIGN SURFACE CONTOURS (0.25m INTERVAL)
- 57.0 — EXISTING SURFACE CONTOURS (0.5m INTERVAL)
- SW — EXISTING STORMWATER
- W — EXISTING WATER
- S — EXISTING SEWER
- 34.00 — MINIMUM LEVEL OF LOT ABLE TO BE SERVICED BY SEWER
- EXISTING TABLE DRAIN

SEWER DRAINAGE DETAILS

STRUCTURE No.	EASTING	NORTHING
3/18	8979.115	80228.486
4/18	8932.995	80207.430
5/18#	8896.174	80288.080
3/14	8941.048	80276.294
1/5	8946.011	80178.918
2/5	8948.473	80157.404
1/9	8968.435	80181.436
1/19	8987.105	80120.146

# DENOTES FUTURE MANHOLE

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

DATE: 07.12.2009@13:58:09 LOGIN NAME: sbest
XREF: X-22504-DESIGN
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C09.dwg

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
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Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: SEWERAGE

SCALE	SKM PROJECT No	DRAWING No	AMDT
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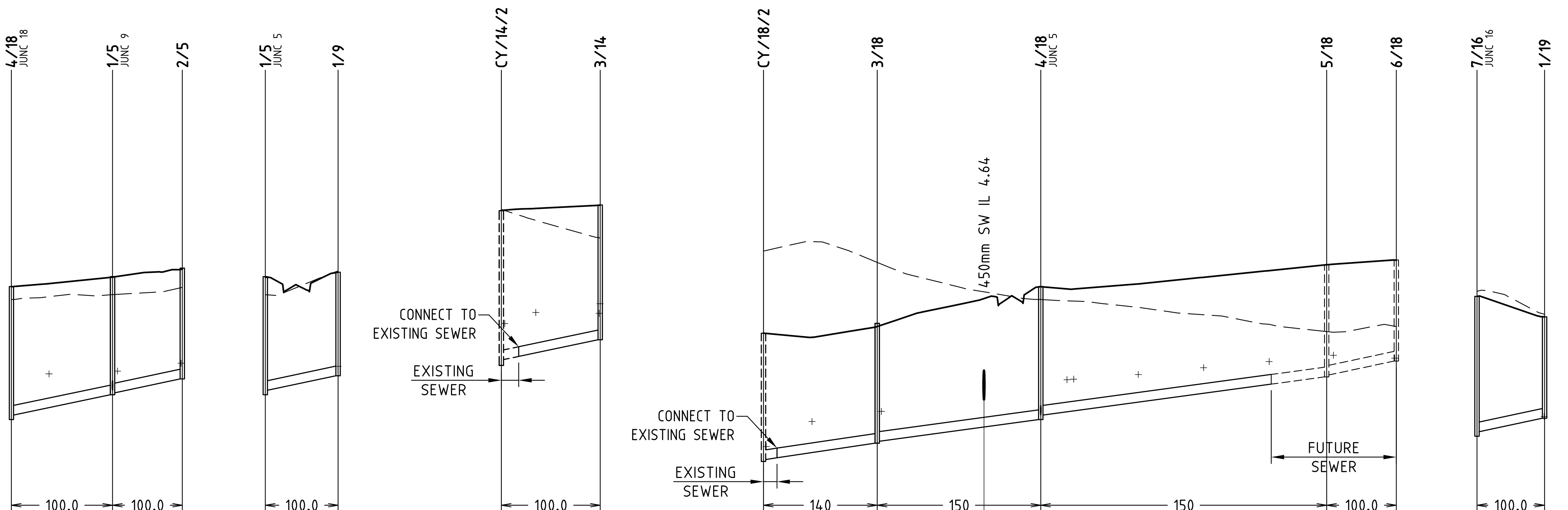

LINE 5

	4/18 (JUNC 18)	1/5 (JUNC 9)	2/5
GRADE (1 in ...)	100.0	100.0	
PIPE SIZE (mm)	150	150	
DATUM	2.000		
DEPTH TO INVERT	2.06 / 1.99	1.83 / 1.80	1.70
INVERT LEVEL	4.330 / 4.400	4.713 / 4.743	4.960
DESIGN SURFACE LEVEL	6.39	6.54	6.66
EXISTING SURFACE LEVEL	6.19	6.27	6.38
CHAINAGE	0.00	31.34	53.00
LENGTH	31.34	21.65	

LINE 9

	1/5 (JUNC 5)	1/9
GRADE (1 in ...)	100.0	
PIPE SIZE (mm)	150	
DATUM	2.000	
DEPTH TO INVERT	1.83 / 1.76	1.61
INVERT LEVEL	4.713 / 4.783	5.009
DESIGN SURFACE LEVEL	6.54	6.62
EXISTING SURFACE LEVEL	6.27	6.63
CHAINAGE	0.00	22.56
LENGTH	22.56	

LINE 14

	CY/14/2	3/14
GRADE (1 in ...)	100.0	
PIPE SIZE (mm)	150	
DEPTH TO INVERT	2.40 / 2.31	2.09
INVERT LEVEL	4.170 / 4.260	4.567
DESIGN SURFACE LEVEL	6.57	6.66
EXISTING SURFACE LEVEL	6.57	6.66
CHAINAGE	140.40	171.07
LENGTH	30.67	

LINE 18

	CY/18/2	3/18	450mm SW	4/18 (JUNC 5)	5/18	6/18
GRADE (1 in ...)	140	150		150	100.0	
PIPE SIZE (mm)	150	150		150	150	
DATUM	2.000					
DEPTH TO INVERT	1.99 / 1.96	1.81 / 1.78		2.06 / 1.99	1.74 / 1.71	1.56
INVERT LEVEL	3.680 / 3.710	3.962 / 3.992	4.214	4.330 / 4.400	4.991 / 5.021	5.237
DESIGN SURFACE LEVEL	5.67	5.77		6.39	6.73	6.80
EXISTING SURFACE LEVEL	6.94	6.77		6.19	5.69	5.77
CHAINAGE	45.81	81.10	114.177	131.80	220.45	242.05
LENGTH	35.29	50.70		88.66	21.60	

LINE 19

	7/16 (JUNC 16)	1/19
GRADE (1 in ...)	100.0	
PIPE SIZE (mm)	150	
DATUM	3.000	
DEPTH TO INVERT	2.17 / 2.10	1.57
INVERT LEVEL	5.070 / 5.140	5.350
DESIGN SURFACE LEVEL	7.24	6.92
EXISTING SURFACE LEVEL	7.24	6.92
CHAINAGE	0.00	20.97
LENGTH	20.97	

1:1000 — 20 10 0 20 40 60 80 100m — FULL SIZE ON A1

1:200 — 4 3 2 1 0 4 8 12 16 20m — FULL SIZE ON A1

DATE: 07.12.2009@13:58:13 LOGIN NAME: sbest
XREF:
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C10.dwg

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
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Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
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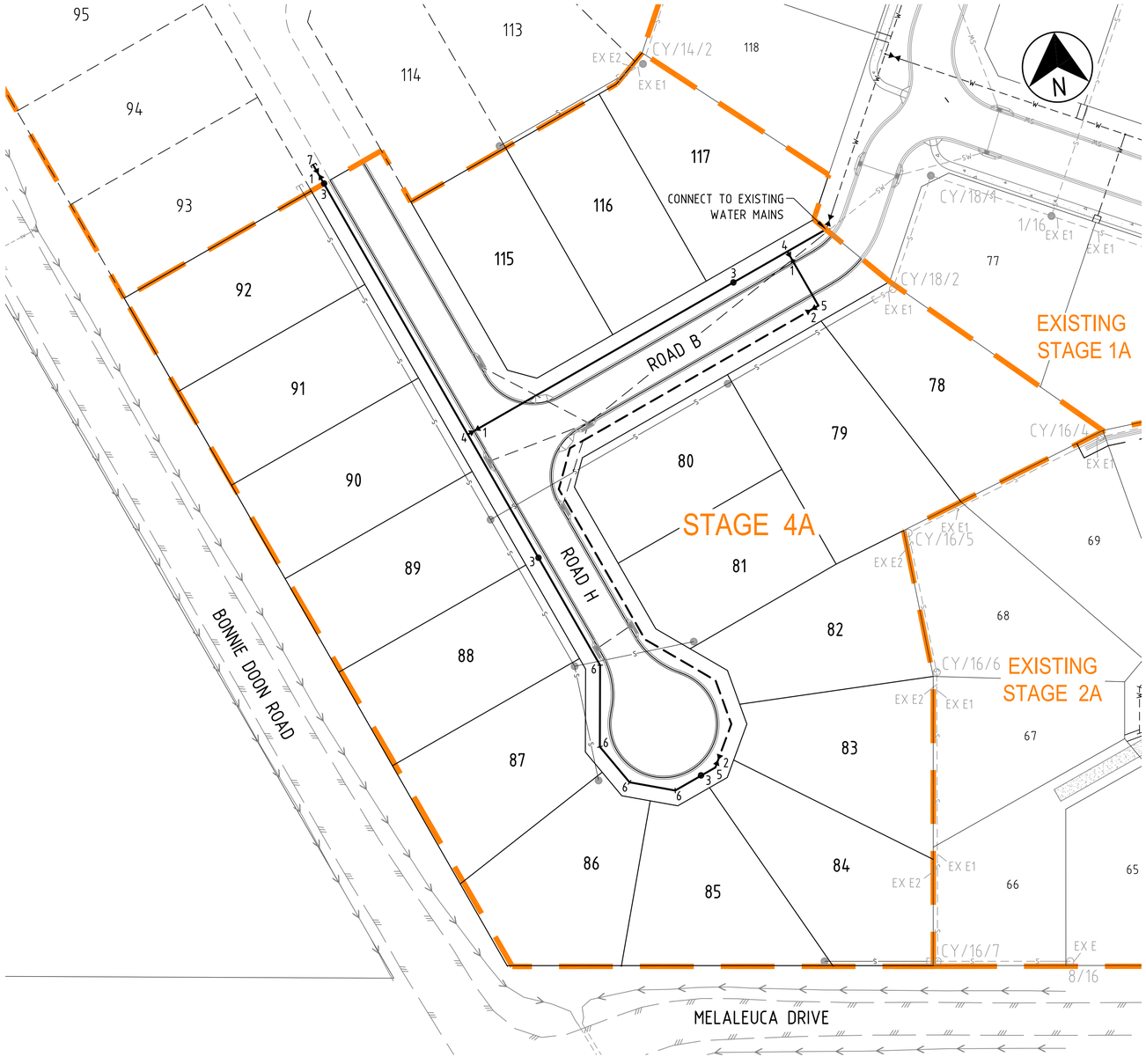
CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A
DRAFTER: SAB | DRAFTING CHECK: RJB | REVIEWED PROJECT MANAGER: C.J.CAPLICK | APPROVED PROJECT DIRECTOR: R.J.CARMAN
DESIGNED: PAM | DESIGN REVIEW: RJB | RPEQ No.

TITLE: SEWERAGE LONGITUDINAL SECTIONS
SCALE: 1:1000H;1:200V(A1) | SKM PROJECT No: CB22504 | DRAWING No: CB22504-C-10 | AMDT: A



WATER SUPPLY PIPE AND FITTINGS LIST

REF.	CODE	DESCRIPTION
1		SLUICE VALVE CLASS '14' COMPLETE WITH C.I. COVER BOX, CONCRETE MARGIN AND MARKER
2		50 BRONZE GATE VALVE COMPLETE WITH C.I. COVER BOX, CONCRETE MARGIN AND MARKER
3		80 SPRING HYDRANT COMPLETE WITH RISER, TEE, C.I. COVER BOX, CONCRETE MARGIN AND MARKER
4		TEE WITH CONCRETE THRUST BLOCK
5		SERVICE MAIN CONNECTION
6		BEND TO SUIT WITH CONCRETE THRUST BLOCK
7		DEAD END CAP WITH CONCRETE THRUST BLOCK
		100 uPVC WATER MAIN CLASS '16' RUBBER RING JOINTED
		50 uPVC WATER MAIN CLASS '12' SOLVENT WELD JOINTED

NOTES

1. ALL WATER MAINS ARE ON 2.75m ALIGNMENTS FROM R.P. BOUNDARY U.N.O.
2. FOR STANDARD DETAILS REFER FNQROC STD. DWGS. S2000-S2035 INCLUSIVE.
3. CONNECTIONS TO EXISTING COUNCIL MAINS TO BE MADE UNDER THE DIRECTION OF THE LOCAL AUTHORITY.
4. THE CONTRACTOR IS TO LOCATE ALL EXISTING SERVICES IN THE WORKS AREA PRIOR TO COMMENCEMENT OF CONSTRUCTION. REFER DWG. CB22504-C-01 FOR NOTES REGARDING EXISTING SERVICES.

LEGEND

- STAGE BOUNDARY
- PROPOSED SEWER MAIN, MANHOLE AND ENDCAP
- PROPOSED STORMWATER
- EXISTING STORMWATER
- EXISTING SEWER

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

DATE: 07.12.2009@13:58:19 LOGIN NAME: sbest
XREF: X-22504-DESIGN
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C11.dwg

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A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
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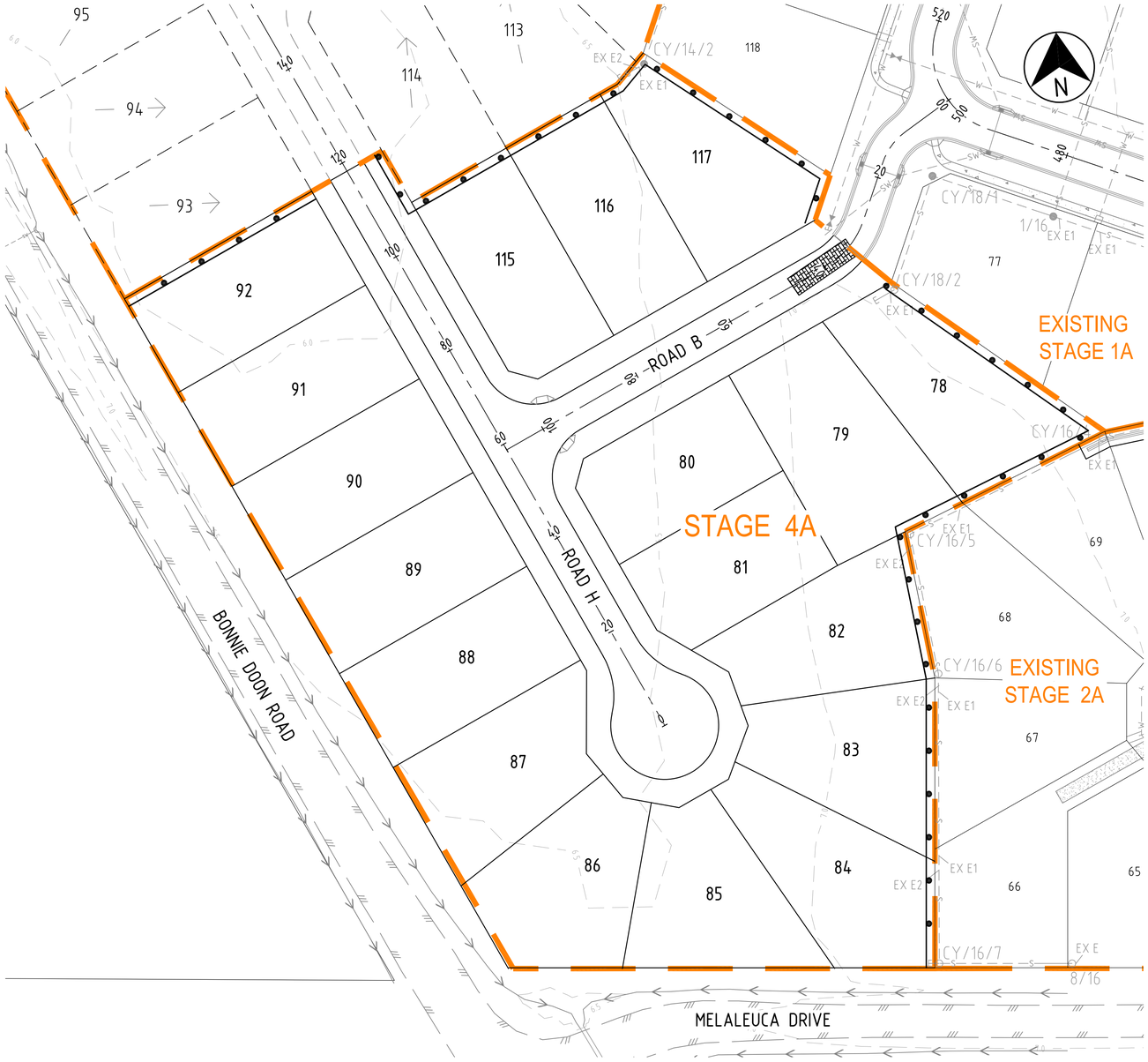
CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: WATER RETICULATION

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-11	A



NOTES

1. SEQUENCING OF CONTROL MEASURES
   a) INSTALL STABLE POINT OF ENTRY
   b) INSTALL SILT FENCES
   c) PROTECT TOPSOIL STOCKPILES
   d) INSTALL STORMWATER PIPES
   e) CONSTRUCT TEMPORARY SEDIMENT BASINS
   f) IMPLEMENT PROTECTION MEASURES TO STORMWATER PITS
   g) REVEGETATE BARE AREAS UPON COMPLETION OF EARTHWORKS
   h) THE SEDIMENT CONTROL STRUCTURES ARE TO BE CLEANED & MAINTAINED AFTER EVERY STORM EVENT. ERODED SOILS SHALL BE STOCKPILED AS DIRECTED.
2. THE AMOUNT OF DISTURBANCE TO EXISTING VEGETATION BE KEPT TO A MINIMUM.
3. EXACT LOCATION OF SEDIMENT CONTROL STRUCTURES TO BE DETERMINED ON SITE BY COUNCIL & SUPERINTENDENT.
4. STOCKPILE LOCATIONS TO BE AGREED WITH COUNCIL & THE SUPERINTENDENT. STOCKPILES TO BE PROTECTED VIA DIVERSION DRAIN ON THE UPSLOPE & SILT FENCE ON THE DOWNSLOPE.
5. STORMWATER PIPES TO HAVE PIT PROTECTION MEASURES AS DETAILED IN FNQROC DEVELOPMENT MANUAL.
6. ALL SEDIMENT CONTROL MEASURES TO BE IN ACCORDANCE WITH FNQROC STD. DWGS. S5000 - S5015 INCLUSIVE AND THE ENGINEER CERTIFIED CONTRACTORS ESC PLAN.
7. THE FOLLOWING REVEGETATION MEASURES ARE TO BE UNDERTAKEN IMMEDIATELY UPON COMPLETION OF EARTHWORKS.
   a) CUT & FILL BATTERS TO BE HYDROMULCHED.
   b) VERGES & ALLOTMENTS TO BE GRASS SEEDED.
   c) PLACE TURF STRIPS BEHIND ALL KERB LINES.
8. REVEGETATION IS TO BE WATERED & MAINTAINED UNTIL GROWTH IS ESTABLISHED.
9. SEDIMENT BASIN
   a) INLET PROTECTION TO MINIMISE SCOUR & EVENLY DISTRIBUTE FLOW THROUGH BASIN.
   b) A MARKER PEG SHOULD BE INSTALLED TO SHOW THE STORAGE DEPTH. SEDIMENT SHALL BE REMOVED FROM BASIN WHEN 30% STORAGE DEPTH IS ENCROACHED & APPROPRIATELY DISPOSED ON SITE BY RESPREADING IN AREAS OF NON-EROSIVE FLOWS.
10. WATER QUALITY MONITORING SHOULD BE UNDERTAKEN DURING SIGNIFICANT RAINFALL EVENTS (I.E. > 10mm). MONITORING SHOULD INVOLVE MEASUREMENT OF TURBIDITY. TURBIDITY AT A POINT 50m BELOW THE LAST SITE DISCHARGE LOCATION SHOULD BE NO MORE THAN 10% ABOVE THAT AT A POINT IMMEDIATELY ABOVE THE SITE, AS MEASURED BY A TURBIDITY METER OR TURBIDITY TUBE. IF THIS IS EXCEEDED A SAMPLE AT EACH LOCATION SHOULD BE TAKEN AND ANALYSED FOR TOTAL SUSPENDED SOLIDS (TSS). DOWNSTREAM TSS SHOULD NOT EXCEED UPSTREAM TSS PLUS 10%.
11. DESIGN CRITERIA FOR CONTRACTOR'S EROSION & SEDIMENT CONTROL PLAN TO BE IN ACCORDANCE WITH THE FNQROC DEVELOPMENT MANUAL.

LEGEND

- SEDIMENT BASIN
- SHAKER GRID
- SILT FENCE
- PIT PROTECTION MEASURES
- TEMPORARY CUT OFF DRAIN
- STORMWATER DRAINAGE PIPE
- KERB INLET PIT
- HEADWALL
- FALL OF LOTS
- BATTER
- STAGE BOUNDARY
- DESIGN SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING SURFACE CONTOURS (0.5m INTERVAL)
- EXISTING STORMWATER
- EXISTING SEWER
- CONCRETE DRIVEWAY (2.5m WIDE U.N.O.)
- TURF STRIPS
- ROCK CHECK DAM
- TEMPORARY CUT-OFF DRAIN

1:600 — 0 12 24 36 48 60m — 12 6 — FULL SIZE ON A1

DATE: 07.12.2009@13:58:28 LOGIN NAME: sbest
XREF: X-22504-DESIGN
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C12-C14.dwg

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No	DRAWING NUMBER	REFERENCE DRAWING TITLE

SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: EROSION AND SEDIMENT CONTROL STRATEGY
PHASE 1 - TOPSOIL STRIPPING

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-12	A

SEDIMENT BASIN CALCS

EXPECTED LIFE OF EROSION CONTROL MEASURES 0-6 MONTHS.

DESIGN ARI = 10 YEAR, 6 HOUR STORM

SEDIMENT BASIN

AREA = 1.80ha

I = 33.96mm/hr

C = 0.7
Q = 0.12m3/s

TARGET PARTICLE SIZE = 0.05mm

SETTLING VELOCITY = 0.0019m/s

THEREFORE, BASIN AREA = 635m2/m3/s

BASIN AREA = 75.48m2

LENGTH:WIDTH RATIO = 3:1

15.05m LONG X 5.02m WIDE X 0.80m DEEP

NOTE

1. FOR NOTES AND LEGEND REFER DWG. CB22504-C-12.

1:600 0 12 24 36 48 60m
12 6 FULL SIZE ON A1

DATE: 07.12.2009@13:58:31 LOGIN NAME: sbest
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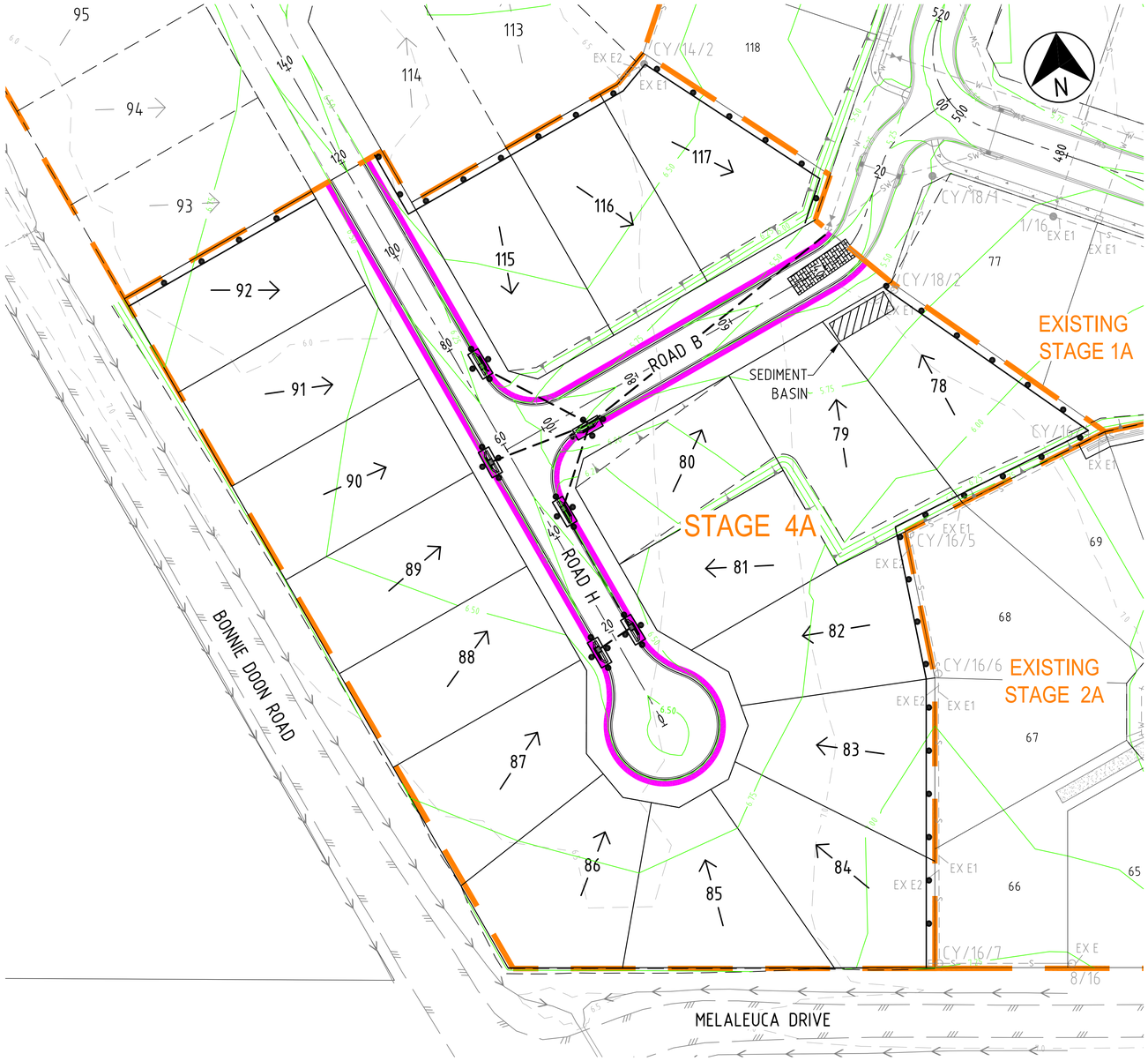
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: EROSION AND SEDIMENT CONTROL STRATEGY PHASE 2 - EARTHWORKS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-13	A



NOTE

1. FOR NOTES AND LEGEND REFER DWG. CB22504-C-12.

1:600 — 0 12 24 36 48 60m — 12 6 — FULL SIZE ON A1

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Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

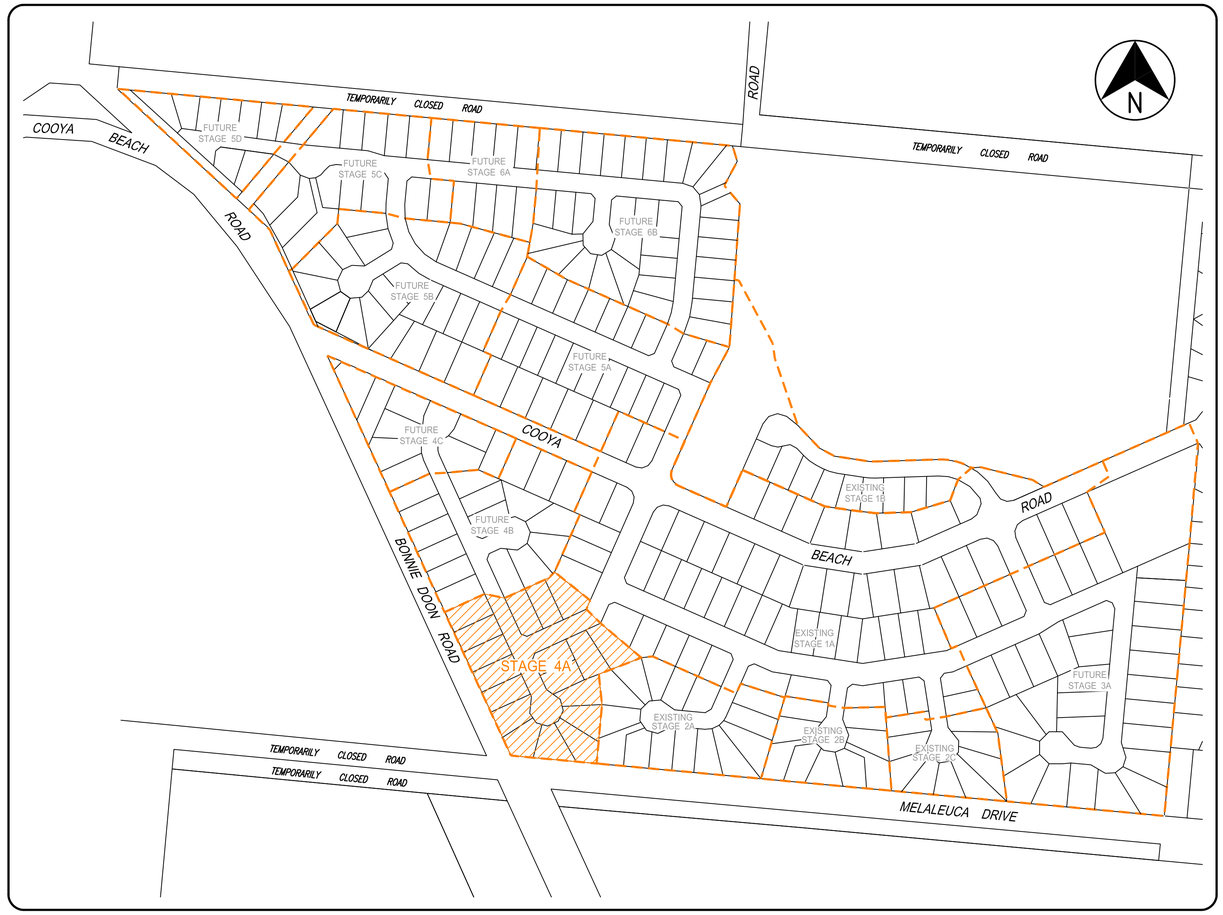
CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: EROSION AND SEDIMENT CONTROL STRATEGY
PHASE 3 - ROAD WORKS

SCALE	SKM PROJECT No.	DRAWING No.	AMDT
1:500 (A1)	CB22504	CB22504-C-14	A

COOYA BEACH SUBDIVISION - STAGE 4A



LOCALITY PLAN
N.T.S.

DRAWING INDEX

DRAWING No.	DRAWING TITLE
CB22504-C-01	GENERAL ARRANGEMENT
CB22504-C-02	EARTHWORKS
CB22504-C-03	MISCELLANEOUS SECTIONS AND DETAILS
CB22504-C-04	ROAD LONGITUDINAL SECTIONS
CB22504-C-05	ROAD CROSS SECTIONS
CB22504-C-06	INTERSECTION DETAILS
CB22504-C-07	STORMWATER DRAINAGE
CB22504-C-08	STORMWATER DRAINAGE LONGITUDINAL SECTIONS
CB22504-C-09	SEWERAGE
CB22504-C-10	SEWERAGE LONGITUDINAL SECTIONS
CB22504-C-11	WATER RETICULATION
CB22504-C-12	EROSION AND SEDIMENT CONTROL STRATEGY - PHASE 1
CB22504-C-13	EROSION AND SEDIMENT CONTROL STRATEGY - PHASE 2
CB22504-C-14	EROSION AND SEDIMENT CONTROL STRATEGY - PHASE 3
CB22504-C-15	STORMWATER CATCHMENT AREAS
CB22504-C-16	STORMWATER CALCULATION TABLES

FNQROC STANDARD DRAWINGS

DRAWING No.	DRAWING TITLE
S1000 - S1110	ROADWORKS AND DRAINAGE
S2000 - S2025	WATER
S3000 - S3015	SEWERAGE

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No	DRAWING NUMBER	REFERENCE DRAWING TITLE

SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: LOCALITY PLAN AND DRAWING INDEX

SCALE	SKM PROJECT No.	DRAWING No.	AMDT
N.T.S.	CB22504	CB22504-C-00	A

A1

NOTES

GENERAL

1. FOR EARTHWORKS DETAILS REFER DWG. CB22504-C-02.
2. FOR ROAD LONGITUDINAL SECTIONS REFER DWG. CB22504-C-04.
3. FOR TYPICAL CROSS SECTIONS AND CONTROL LINE SETOUT DETAILS REFER DWGS. CB22504-C-03.
4. FOR KERB PROFILE DETAILS REFER FNQROC STD. DWGS. S1000 AND S1001.
5. FOR KERB RAMP DETAILS REFER FNQROC STD. DWG. S1016.
6. FOR PUBLIC NOTIFICATION/SIGNS DETAILS REFER FNQROC DEVELOPMENT MANUAL CP1.11.
7. CLEARED VEGETATION SHALL BE MULCHED ON SITE BY THE CONTRACTOR.

EXISTING SERVICES

1. EXISTING SERVICES ARE PLOTTED FROM THE BEST INFORMATION AVAILABLE. NO RESPONSIBILITY IS TAKEN BY THE PRINCIPAL OR SUPERINTENDENT FOR THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN.
2. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR IS TO ESTABLISH ON SITE THE EXACT POSITION OF ALL UNDERGROUND SERVICES IN THE PROPOSED WORKS AREA. METHODS FOR ACHIEVING THIS WILL INCLUDE BUT NOT BE LIMITED TO:-
   - CAREFUL EXAMINATION OF THE CONTRACT DRAWINGS.
   - CONSULTATION WITH THE RELEVANT SERVICE AUTHORITIES.
   - COMPREHENSIVELY SCANNING THE AFFECTED AREAS WITH A CABLE DETECTOR AND MARKING ON THE GROUND THE POSITION OF ALL SERVICES.
   - HAND EXCAVATING TO EXPOSE ALL SUCH SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS UNDER THE DIRECTION OF THE RELEVANT SERVICE AUTHORITY.
3. THE CONTRACTOR IS TO BRING TO THE SUPERINTENDENT'S ATTENTION ANY DISCREPANCIES BETWEEN THE EXISTING SERVICES THUS IDENTIFIED AND DOCUMENTED SERVICES WHICH MIGHT AFFECT THE PROPOSED WORKS. APPROPRIATE MEASURES TO RESOLVE ANY CONFLICTS WILL BE DOCUMENTED BY THE SUPERINTENDENT.

LEGEND

- ASPHALT SEALED PAVEMENT
- BATTER
- STAGE BOUNDARY
- DESIGN SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING SURFACE CONTOURS (0.5m INTERVAL)
- EXISTING STORMWATER
- EXISTING WATER
- EXISTING SEWER
- EXISTING EDGE OF BITUMEN
- FALL OF LOTS
- EXISTING TABLE DRAIN
- D4-5

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

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SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: GENERAL ARRANGEMENT

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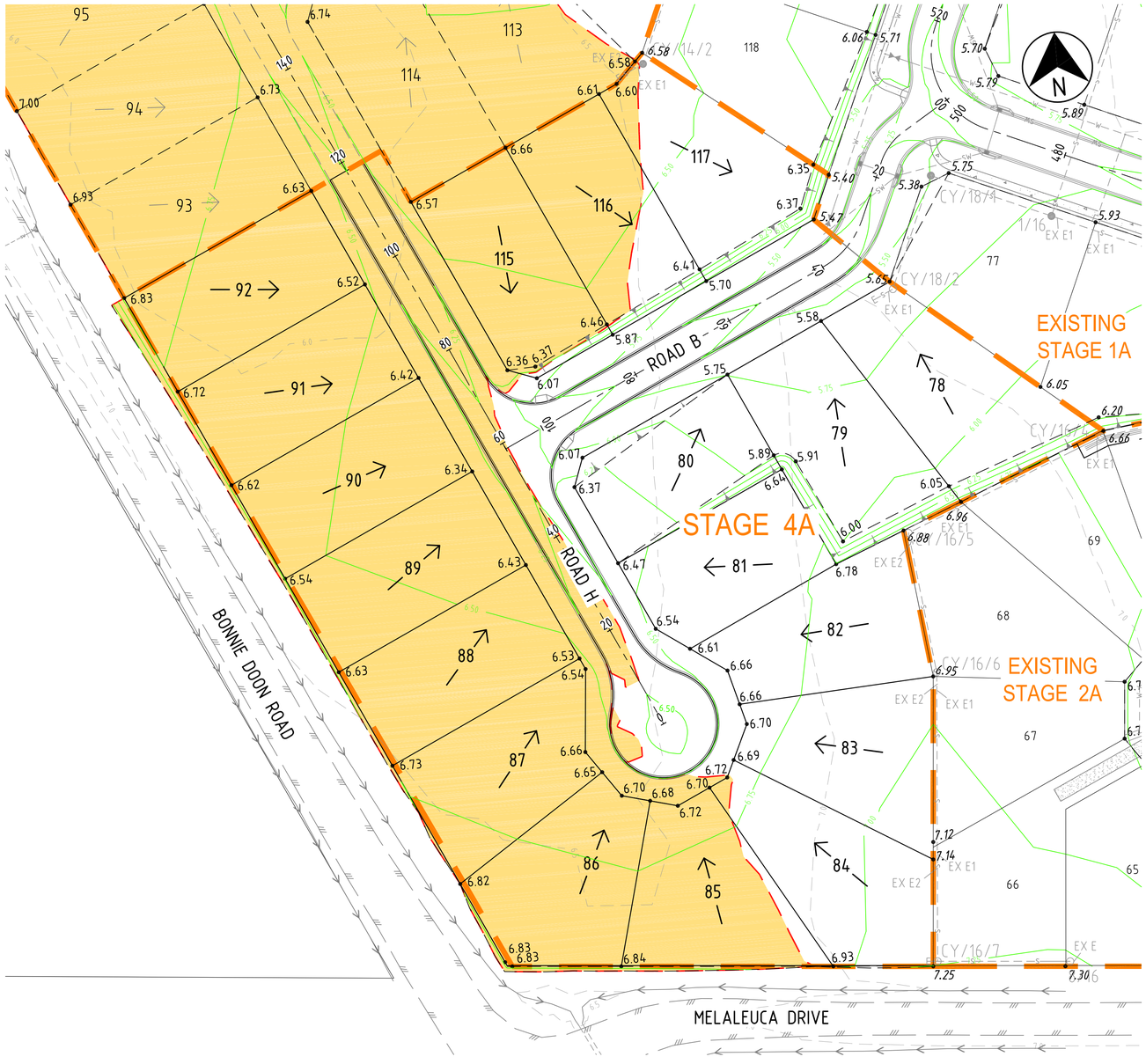
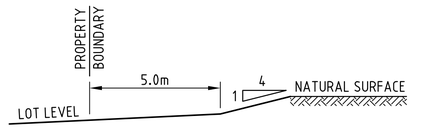
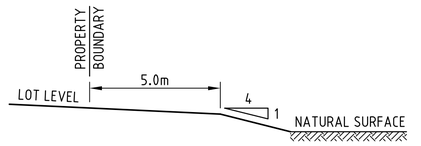


NOTES

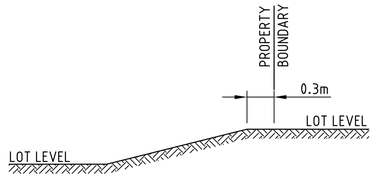
1. FOR NOTES REGARDING EXISTING SERVICES REFER DWG. CB22504-C-01.
2. ALL BATTERS TO ROAD FRONTAGES ARE NOMINALLY 1 ON 4 OR FLATTER. ALL OTHER BATTERS ARE 1 ON 1.
3. FOR STORMWATER PIT LOCATIONS REFER DWGS. CB22504-C-07.



TYPICAL SECTION - STAGE 2 INTERFACE - CUT
N.T.S.



TYPICAL SECTION - STAGE 2 INTERFACE - FILL
N.T.S.



TYPICAL SECTION - TOP OF BATTER SET BACK
N.T.S.

LEGEND

- AREAS OF FILL
- 18.70 FINISHED SURFACE LEVEL
- 18.68 NATURAL SURFACE LEVEL
- FALL OF LOTS
- BATTER
- STAGE BOUNDARY
- 57.0 DESIGN SURFACE CONTOURS (0.25m INTERVAL)
- 57.0 EXISTING SURFACE CONTOURS (0.5m INTERVAL)
- SW EXISTING STORMWATER
- W EXISTING WATER
- E EXISTING ELECTRICAL
- S EXISTING SEWER
- EXISTING TABLE DRAIN

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

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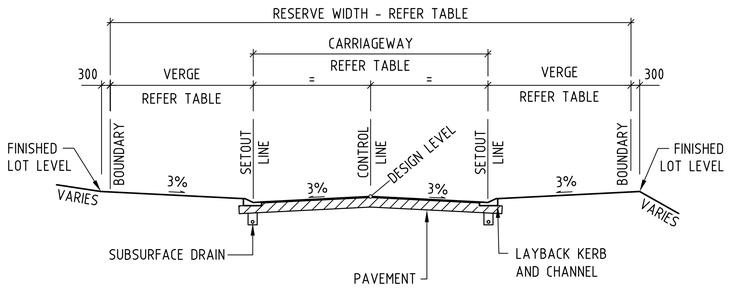
SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

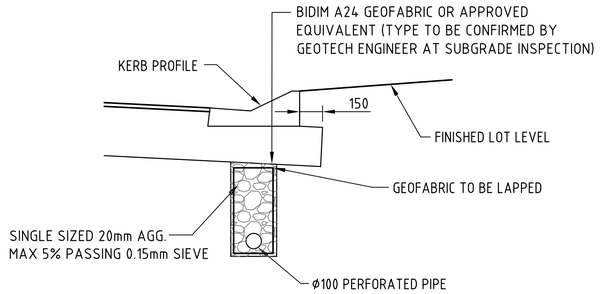
TITLE: EARTHWORKS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-02	A



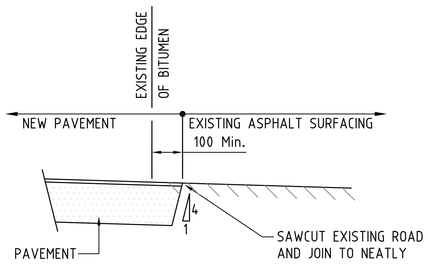
TYPICAL ROAD CROSS SECTION

N.T.S.



SUB SURFACE DRAINAGE DETAIL

N.T.S.



JOIN DETAIL

N.T.S.

TABLE OF WIDTHS

ROAD	CARRIAGEWAY WIDTH (m)	VERGE WIDTH (m)		RESERVE WIDTH (m)
		LHS	RHS	
ROAD B	7.00	5.00	5.00	17
ROAD H	7.00	4.00	4.00	15

PROVISIONAL PAVEMENT DETAILS

ROAD	SURFACING (U.N.O.)	SUBBASE CBR 45 (mm)	BASE CBR 60 (mm)
ROAD B	30mm ASPHALT	100	100
ROAD H	30mm ASPHALT	100	100

NOTE
PROVISIONAL PAVEMENT DESIGN IS BASED ON AN ASSUMED SUBGRADE SOAKED CBR OF 10. THE CONTRACTOR IS TO CONFIRM SUBGRADE CBR DURING CONSTRUCTION AND THE PAVEMENT DESIGN MAY BE AMENDED ACCORDINGLY BY CAIRNS REGIONAL COUNCIL.

CONTROL LINE ROAD B SETOUT

CHAINAGE	COORDINATES		BEARING	RADIUS OF	TANGENT	ARC
	EASTING	NORTHING	DEG MIN SEC	CURVATURE	LENGTH	LENGTH
0.000	9024.429	80277.156	239° 0' 52"	STRAIGHT		
9.980	9015.873	80272.018	239° 0' 52"	-11.500		
IP 13.512	9012.746	80270.140	-	-11.500	3.648	7.064
17.044	9011.273	80266.804	203° 49' 8"	STRAIGHT		
28.269	9006.740	80256.535	203° 49' 8"	16.000		
IP 34.083	9004.283	80250.969	-	16.000	6.085	11.629
39.897	8998.748	80248.442	245° 27' 40"	STRAIGHT		
107.744	8937.029	80220.264	245° 27' 40"	STRAIGHT		

CONTROL LINE ROAD H SETOUT

CHAINAGE	COORDINATES		BEARING	RADIUS OF	TANGENT	ARC
	EASTING	NORTHING	DEG MIN SEC	CURVATURE	LENGTH	LENGTH
0.000	8961.453	80166.765	335° 27' 40"	STRAIGHT		
251.458	8857.020	80395.511	335° 27' 40"	18.500		
IP 259.265	8853.571	80403.067	-	18.500	8.306	15.614
267.072	8856.925	80410.666	23° 49' 8"	STRAIGHT		
284.838	8864.100	80426.918	23° 49' 8"	STRAIGHT		

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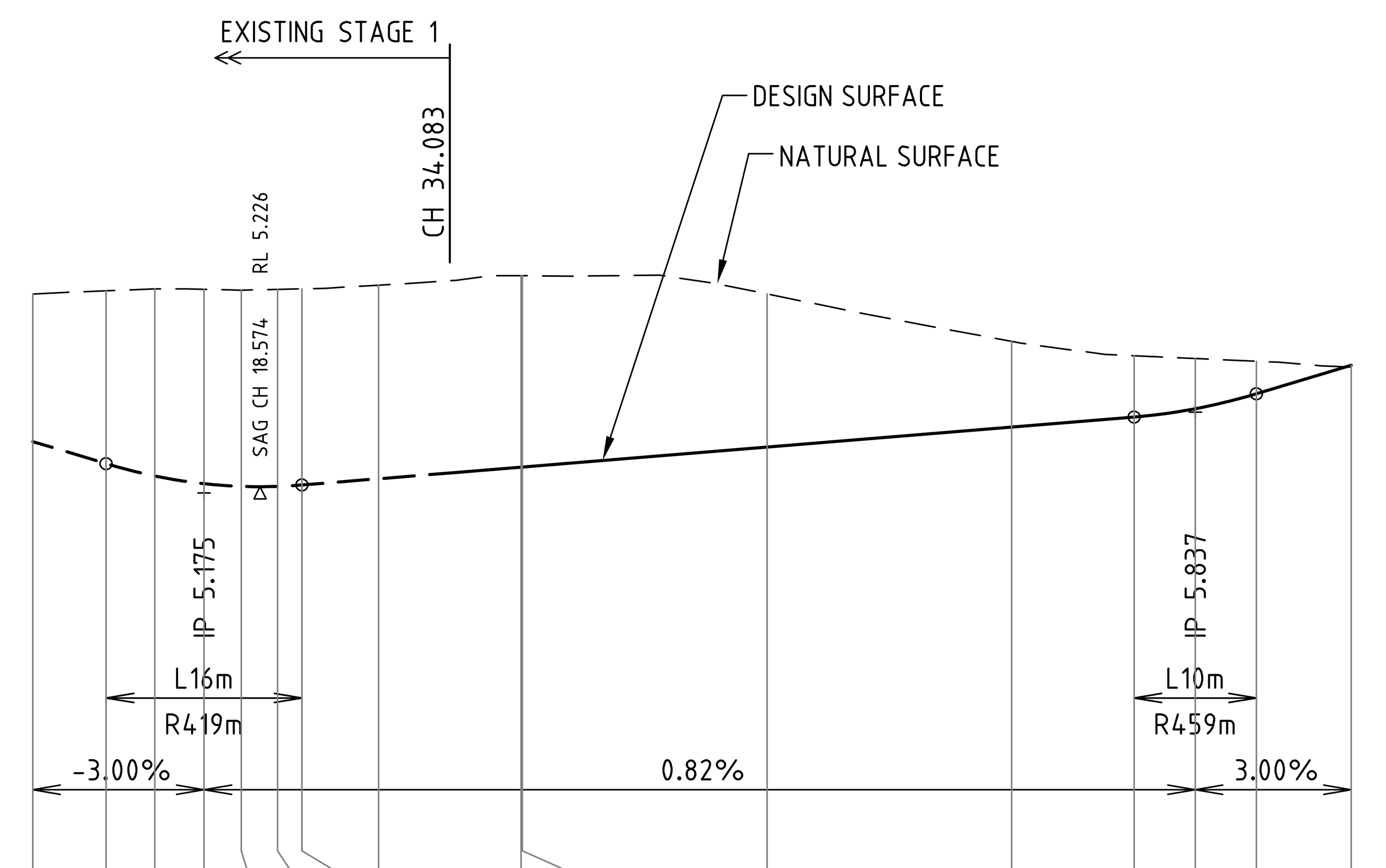
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

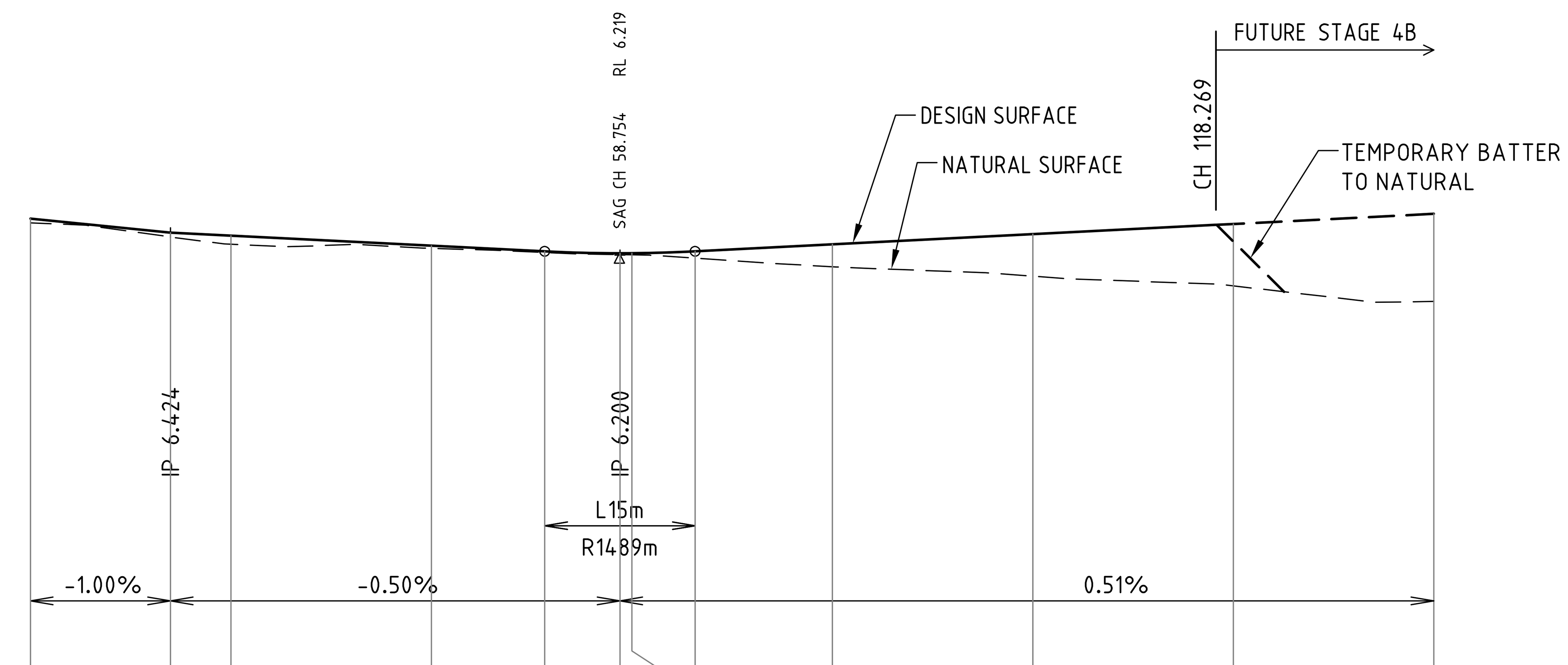
TITLE: MISCELLANEOUS SECTIONS AND DETAILS

SCALE	SKM PROJECT No	DRAWING No	AMDT
N.T.S.	CB22504	CB22504-C-03	A



CUT - FILL +	-1.207	-1.413	-1.529	-1.589	-1.604	-1.611	-1.604	-1.582	-1.565	-1.564	-1.251	-0.699	-0.501	-0.410	-0.265	0.014
DESIGN SURFACE LEVEL	5.595	5.415	5.314	5.251	5.229	5.229	5.240	5.292	5.387	5.387	5.551	5.714	5.796	5.864	5.987	6.219
EXISTING SURFACE LEVEL	6.802	6.828	6.844	6.841	6.833	6.840	6.844	6.873	6.952	6.951	6.802	6.414	6.297	6.275	6.252	6.205
CHAINAGE	0.000	6.000	9.980	14.000	17.044	20.000	22.000	28.269	39.897	40.000	60.000	80.000	90.000	95.000	100.000	107.744
HORIZONTAL DATA			R-11.5m					R16m								

LONGITUDINAL SECTION ROAD B



CUT - FILL +	0.041	0.043	0.085	0.027	0.011	0.014	0.017	0.068	0.223	0.419	0.617	0.873
DESIGN SURFACE LEVEL	6.564	6.424	6.394	6.294	6.237	6.219	6.219	6.238	6.308	6.409	6.511	6.612
EXISTING SURFACE LEVEL	6.523	6.382	6.309	6.267	6.227	6.205	6.203	6.170	6.085	5.990	5.893	5.739
CHAINAGE	0.000	13.957	20.000	40.000	51.311	58.811	60.000	66.311	80.000	100.000	120.000	140.000
HORIZONTAL DATA												

LONGITUDINAL SECTION ROAD H

1:50 — 1 0.5 0 1 2 3 4 5m — FULL SIZE ON A1

1:500 — 10 8 6 4 2 0 10 20 30 40 50m — FULL SIZE ON A1

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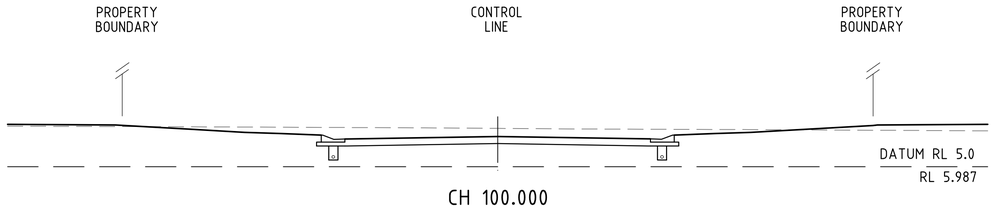
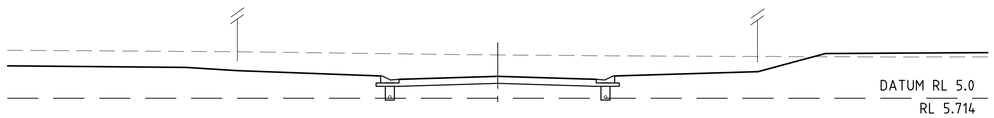
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A
DRAFTER: SAB | DRAFTING CHECK: RJB | REVIEWED PROJECT MANAGER: C.J.CAPLICK | APPROVED PROJECT DIRECTOR: R.J.CARMAN | RPEQ No.
DESIGNED: PAM | DESIGN REVIEW: RJB

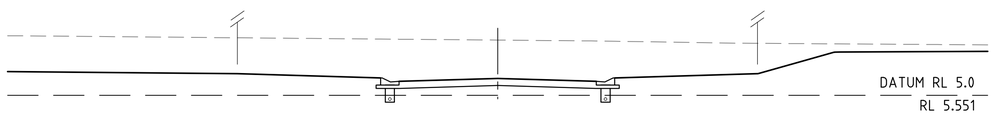
TITLE: ROAD LONGITUDINAL SECTIONS
SCALE: 1:500H;1:50V(A1) | SKM PROJECT No: CB22504 | DRAWING No: CB22504-C-04 | AMDT: A



CH 100.000



CH 80.000



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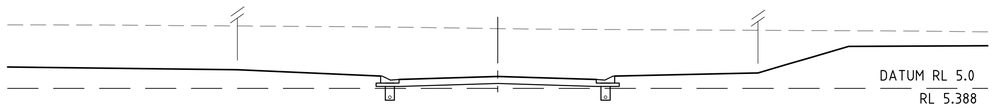
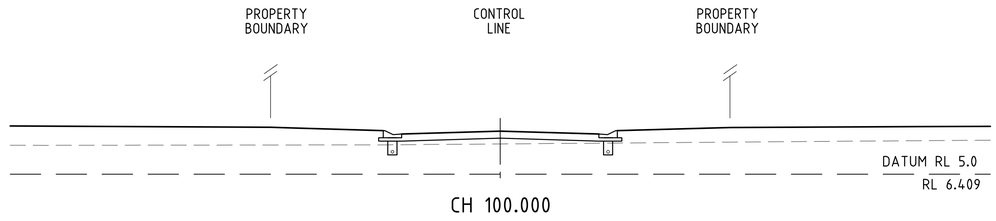


CH 40.000

ROAD B



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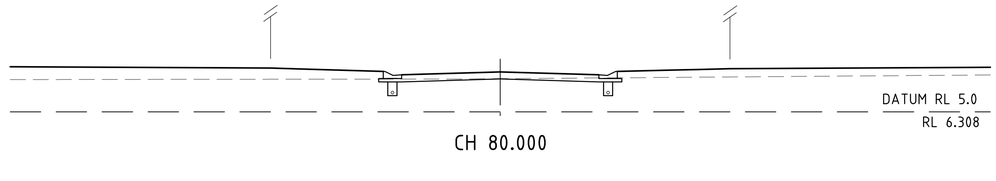

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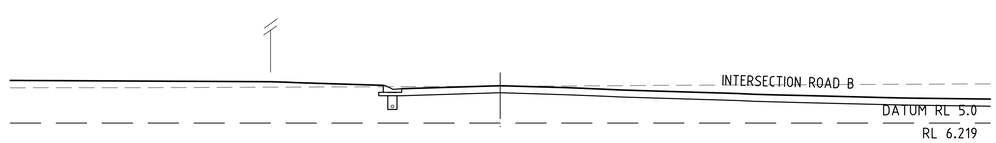

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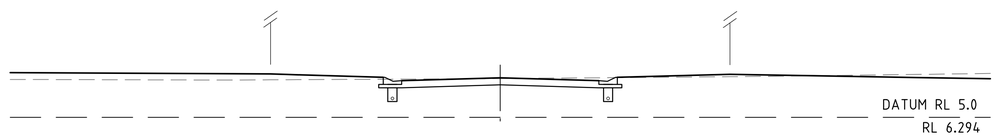

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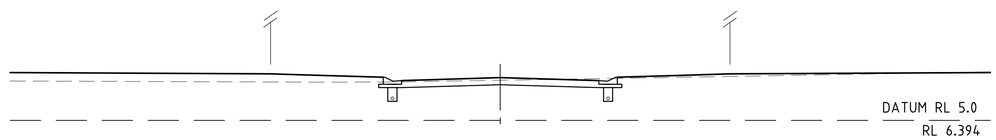

CH 20.000

ROAD H

1:100 0 2 4 6 8 10m
2 1 FULL SIZE ON A1

DATE: 07.12.2009@13:57:36 LOGIN NAME: sbest
XREF:
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No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

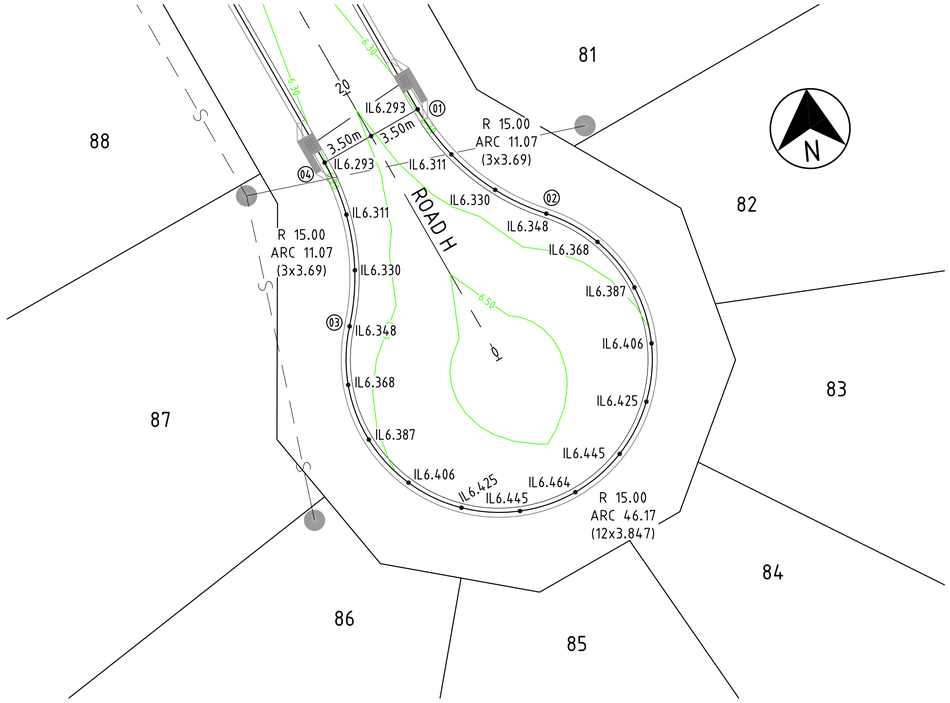
SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

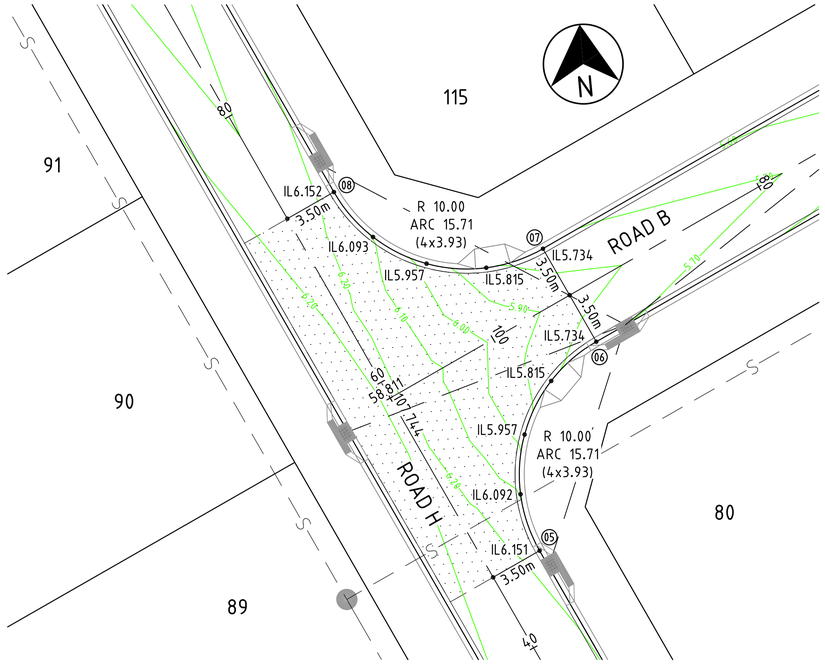
DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: ROAD CROSS SECTIONS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:100 (A1)	CB22504	CB22504-C-05	A



CUL-DE-SAC ROAD H



INTERSECTION ROAD H AND ROAD B

INTERSECTION SETOUT TABLE

POINT	EASTING	NORTHING
01	8957.654	80183.515
02	8965.392	80175.957
03	8951.928	80169.811
04	8951.286	80180.608
05	8945.819	80209.437
06	8950.763	80222.687
07	8947.856	80229.055
08	8934.606	80233.998

NOTES

1. ALL KERB SETOUT DETAILS REFER TO THE SETOUT LINE OF KERB AND CHANNEL.
2. FOR KERB PROFILE DETAILS REFER FNQROC STD. DWG. S1000.

LEGEND

- •IL4.580 — INVERT LEVEL OF KERB & CHANNEL
- (16) — SETOUT POINT
- LAYBACK KERB AND CHANNEL
- PROPOSED STORMWATER
- 5.50 — DESIGN SURFACE CONTOURS (0.1m INTERVAL)
- 50mm ASPHALT SURFACE

1:200 0 4 8 12 16 20m
4 3 2 1 FULL SIZE ON A1

DATE: 07.12.2009@13:57:46 LOGIN NAME: sbest
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LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C06.dwg

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

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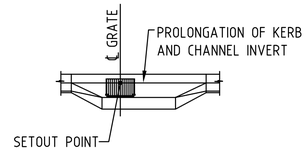
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: INTERSECTION DETAILS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:200 (A1)	CB22504	CB22504-C-06	A



KERB INLET PIT

STRUCTURE SETOUT POINTS

N.T.S.

NOTES

1. FOR STANDARD STORMWATER DRAINAGE DETAILS REFER FNQROC STD. DWGS. S1045-S1100 INCLUSIVE.
2. THE CONTRACTOR IS TO LOCATE ALL EXISTING SERVICES IN THE WORKS AREA PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. FOR NOTES REGARDING EXISTING SERVICES REFER DWG. CB22504-C-01.
3. SUBSURFACE DRAINS TO BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATION, FLUSHING POINTS IN ACCORDANCE WITH FNQROC STD. DWG. S1095.
4. SETOUT OF STORMWATER DRAINAGE STRUCTURES REFER TO:
   a) CENTER OF GRATE ON KERB INLET LINE FOR KERB INLET PITS
   b) CENTRELINE OF PIPE AT TOP OF HEADWALL FOR HEADWALLS
   c) CENTRE OF COLLECTION PIT FOR GROSS POLLUTANT TRAP
5. FOR STORMWATER LONGITUDINAL SECTIONS REFER DWGS. CB22504-C-08.
6. ALL STORMWATER PIPES ARE TO BE CLASS 2 RRJ, RCP'S U.N.O.
7. FOR PIPES WHERE ANY PART OF THE PIPE IS BELOW THE H.A.T. (RL1.80m AHD) THE PIPE SHALL HAVE SALTWATER COVER TO REINFORCING.

FLUSHING POINT LEGEND

⊠ FP1	FLUSHING POINT IN PIT
⊠ FP2	FLUSHING POINT IN LINE
⊠ FP3	FLUSHING POINT HEAD

LEGEND

2/1	STRUCTURE No. / LINE NUMBER
EX2/3	EXISTING STRUCTURE No.
	STORMWATER DRAINAGE PIPE & MANHOLE
	SUBSURFACE DRAINAGE
OR	KERB INLET PIT
	EXISTING TABLE DRAIN
	SEWER MAIN, MANHOLE AND ENDCAP
	FALL OF LOTS
	BATTER
	STAGE BOUNDARY
57.0	DESIGN SURFACE CONTOURS (0.25m INTERVAL)
57.0	EXISTING SURFACE CONTOURS (0.5m INTERVAL)
SW	EXISTING STORMWATER
W	EXISTING WATER
S	EXISTING SEWER

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

DATE: 07.12.2009@13:57:57 LOGIN NAME: sbest
XREF: X-22504-DESIGN
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C07.dwg

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

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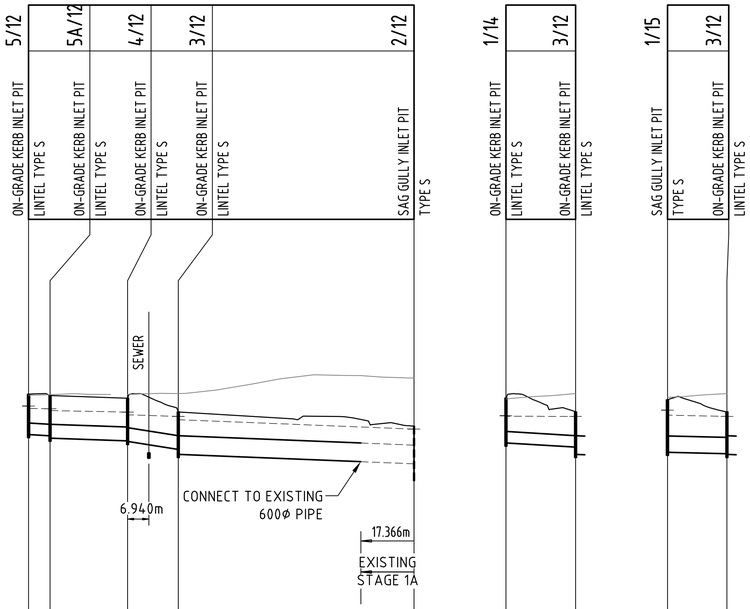
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD			
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A			
DRAFTER: SAB	DRAFTING CHECK: RJB	REVIEWED PROJECT MANAGER: C.J.CAPLICK	APPROVED PROJECT DIRECTOR: R.J.CARMAN
DESIGNED: PAM	DESIGN REVIEW: RJB		RPEQ No.

TITLE: STORMWATER DRAINAGE

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-07	A

STRUCTURE NAME	5/12	5A/12	4/12	3/12	2/12	1/14	3/12	1/15	3/12
STRUCTURE DESCRIPTION	ON-GRADE KERB INLET PIT LINTEL TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	SAG GULLY INLET PIT TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S	SAG GULLY INLET PIT TYPE S	ON-GRADE KERB INLET PIT LINTEL TYPE S
PIPE SIZEmm (Class)		375(2)	450(2)	450(2)	600(2)		375(2)		525(2)
PIPE GRADE %		0.61%	0.35%	1.58%	0.40%		0.60%		0.25%
PIPE SLOPE 1 in X		163.33	287.33	63.12	249.43		165.44		403.19
FULL PIPE FLOW VELOCITY (m/s)		0.56	0.79	1.01	1.39		0.27		0.94
PART FULL FLOW VELOCITY (m/s)									
DATUM RL –8.0									
WATER LEVEL IN STRUCTURE	5.908	5.818	5.708	5.563	5.152	5.589	5.567	5.772	5.563
HYDRAULIC GRADE LEVEL	5.908 / 5.827	5.818	5.758 / 5.708	5.620 / 5.563	5.461 / 5.101	5.589 / 5.574	5.567 / 5.461	5.772 / 5.610	5.563 / 5.461
PIPE FLOW (Cumecs)		0.062	0.126	0.161	0.406		0.030		0.211
DEPTH TO INVERT		1.310	1.317	1.392	1.392	1.412	1.225	1.385	1.232	1.463	1.150	1.708	1.365
INVERT LEVEL OF DRAIN		4.976	4.933	4.858	4.770	4.750	4.488	4.328	4.019	4.700	4.563	4.396	4.348
DESIGN SURFACE LEVEL	6.286		6.250		6.162		5.713		5.251	6.163	5.713	6.104	5.713
SETOUT CO-ORDINATES	8950.682 E 80181.930 N		8956.819 E 80185.344 N		8946.329 E 80208.351 N	8952.757 E 80223.616 N		9015.908 E 80267.598 N	8933.692 E 80236.000 N	8952.757 E 80223.616 N		8934.070 E 80218.318 N	8952.757 E 80223.616 N
CHAINAGE	0.000	7.023		32.308		48.871		125.829	0.000	22.734		0.000	19.424	
LENGTH		7.023		25.285		16.563		76.958		22.734			19.424	
LINE				12				14				15		



1:100 0 2 4 6 8 10m
2 1 FULL SIZE ON A1

1:1000 0 20 40 60 80 100m
20 10 FULL SIZE ON A1

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XREF:
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No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

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SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:1000H;1:100V(A1)	CB22504	CB22504-C-08	A

NOTES

1. ALL SEWER PIPES SHALL BE 150Ø uPVC CLASS 'S.N.8.' (U.N.O.).
2. FOR STANDARD DETAILS OF SEWER MAINS, ETC. REFER FNQROC STD. DWGS. S3000 - S3015 INCLUSIVE.
3. MANHOLES ADJACENT ROAD BOUNDARIES SHALL BE ON A 1.5m ALIGNMENT U.N.O. ALL OTHER MANHOLES SHALL BE ON A 0.8m ALIGNMENT U.N.O.
4. SEWER MANHOLES SHALL BE FINISHED 25mm ABOVE FINISHED SURFACE LEVEL IN ALLOTMENTS AND FLUSH IN ROAD RESERVES.
5. EXISTING LOTS TO BE REINSTATED AFTER CONSTRUCTION OF THE SEWER.
6. HCB's ARE TO BE CONSTRUCTED 1.0m CLEAR OF ANY EARTHWORKS BATTER THAT IS STEEPER THAN 1V:2H.
7. FOR SEWER LONGITUDINAL SECTIONS REFER DWG. CB22504-C-10.
8. THE CONTRACTOR IS TO LOCATE ALL EXISTING SERVICES IN THE WORKS AREA PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. FOR NOTES REGARDING EXISTING SERVICES REFER DWG. CB22504-C-01.

LEGEND

- 2/1 — STRUCTURE No. / LINE NUMBER
- SEWER MAIN, MANHOLE AND ENDCAP
- E1 — HOUSE CONNECTION BRANCH / TYPE
- PROPOSED STORMWATER
- FUTURE SEWER
- FALL OF LOTS
- BATTER
- STAGE BOUNDARY
- 57.0 — DESIGN SURFACE CONTOURS (0.25m INTERVAL)
- 57.0 — EXISTING SURFACE CONTOURS (0.5m INTERVAL)
- SW — EXISTING STORMWATER
- W — EXISTING WATER
- S — EXISTING SEWER
- 34.00 — MINIMUM LEVEL OF LOT ABLE TO BE SERVICED BY SEWER
- EXISTING TABLE DRAIN

SEWER DRAINAGE DETAILS

STRUCTURE No.	EASTING	NORTHING
3/18	8979.115	80228.486
4/18	8932.995	80207.430
5/18#	8896.174	80288.080
3/14	8941.048	80276.294
1/5	8946.011	80178.918
2/5	8948.473	80157.404
1/9	8968.435	80181.436
1/19	8987.105	80120.146

# DENOTES FUTURE MANHOLE

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

DATE: 07.12.2009@13:58:09 LOGIN NAME: sbest
XREF: X-22504-DESIGN
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C09.dwg

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A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

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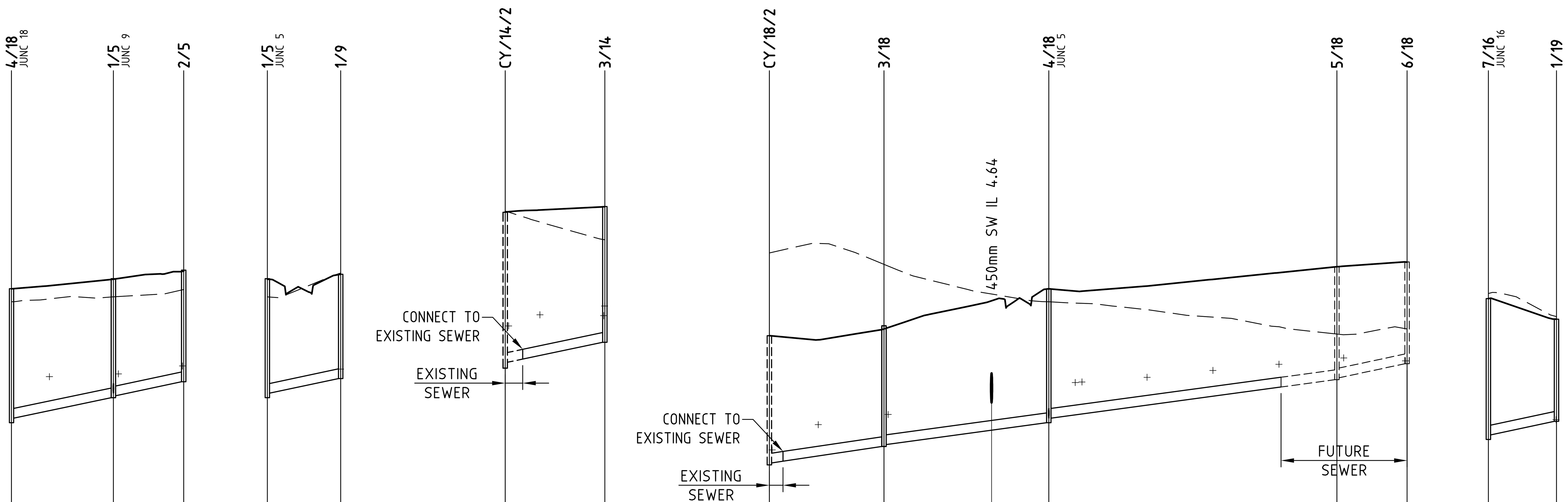
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: SEWERAGE

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-09	A



LINE 5

	4/18		1/5		2/5
GRADE (1 in ...)	100.0		100.0		
PIPE SIZE (mm)	150		150		
DATUM	2.000				
DEPTH TO INVERT	2.06 / 1.99		1.83 / 1.80		1.70
INVERT LEVEL	4.330 / 4.400		4.713 / 4.743		4.960
DESIGN SURFACE LEVEL	6.39		6.54		6.66
EXISTING SURFACE LEVEL	6.19		6.27		6.38
CHAINAGE	0.00		31.34		53.00
		31.34		21.65	

LINE 9

	1/5		1/9
GRADE (1 in ...)	100.0		
PIPE SIZE (mm)	150		
DATUM	2.000		
DEPTH TO INVERT	1.83 / 1.76		1.61
INVERT LEVEL	4.713 / 4.783		5.009
DESIGN SURFACE LEVEL	6.54		6.62
EXISTING SURFACE LEVEL	6.27		6.63
CHAINAGE	0.00		22.56
		22.56	

LINE 14

	CY/14/2		3/14
GRADE (1 in ...)	100.0		
PIPE SIZE (mm)	150		
DEPTH TO INVERT	2.40 / 2.31		2.09
INVERT LEVEL	4.170 / 4.260		4.567
DESIGN SURFACE LEVEL	6.57		6.66
EXISTING SURFACE LEVEL	6.57		6.66
CHAINAGE	140.40		171.07
		30.67	

LINE 18

	CY/18/2		3/18		450mm SW		4/18		5/18		6/18
GRADE (1 in ...)	140		150				150		100.0		
PIPE SIZE (mm)	150		150				150		150		
DATUM	2.000										
DEPTH TO INVERT	1.99 / 1.96		1.81 / 1.78				2.06 / 1.99		1.74 / 1.71		1.56
INVERT LEVEL	3.680 / 3.710		3.962 / 3.992		4.214		4.330 / 4.400		4.991 / 5.021		5.237
DESIGN SURFACE LEVEL	5.67		5.77				6.39		6.73		6.80
EXISTING SURFACE LEVEL	6.94		6.77				6.19		5.69		5.77
CHAINAGE	45.81		81.10		114.177		131.80		220.45		242.05
		35.29		50.70				88.66		21.60	

LINE 19

	7/16		1/19
GRADE (1 in ...)	100.0		
PIPE SIZE (mm)	150		
DATUM	3.000		
DEPTH TO INVERT	2.17 / 2.10		1.57
INVERT LEVEL	5.070 / 5.140		5.350
DESIGN SURFACE LEVEL	7.24		6.92
EXISTING SURFACE LEVEL	7.24		6.92
CHAINAGE	0.00		20.97
		20.97	

1:1000 — 20 10 0 20 40 60 80 100m — FULL SIZE ON A1

1:200 — 4 3 2 1 0 4 8 12 16 20m — FULL SIZE ON A1

DATE: 07.12.2009@13:58:13 LOGIN NAME: sbest
XREF:
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C10.dwg

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
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Facsimile (07) 4031 3967

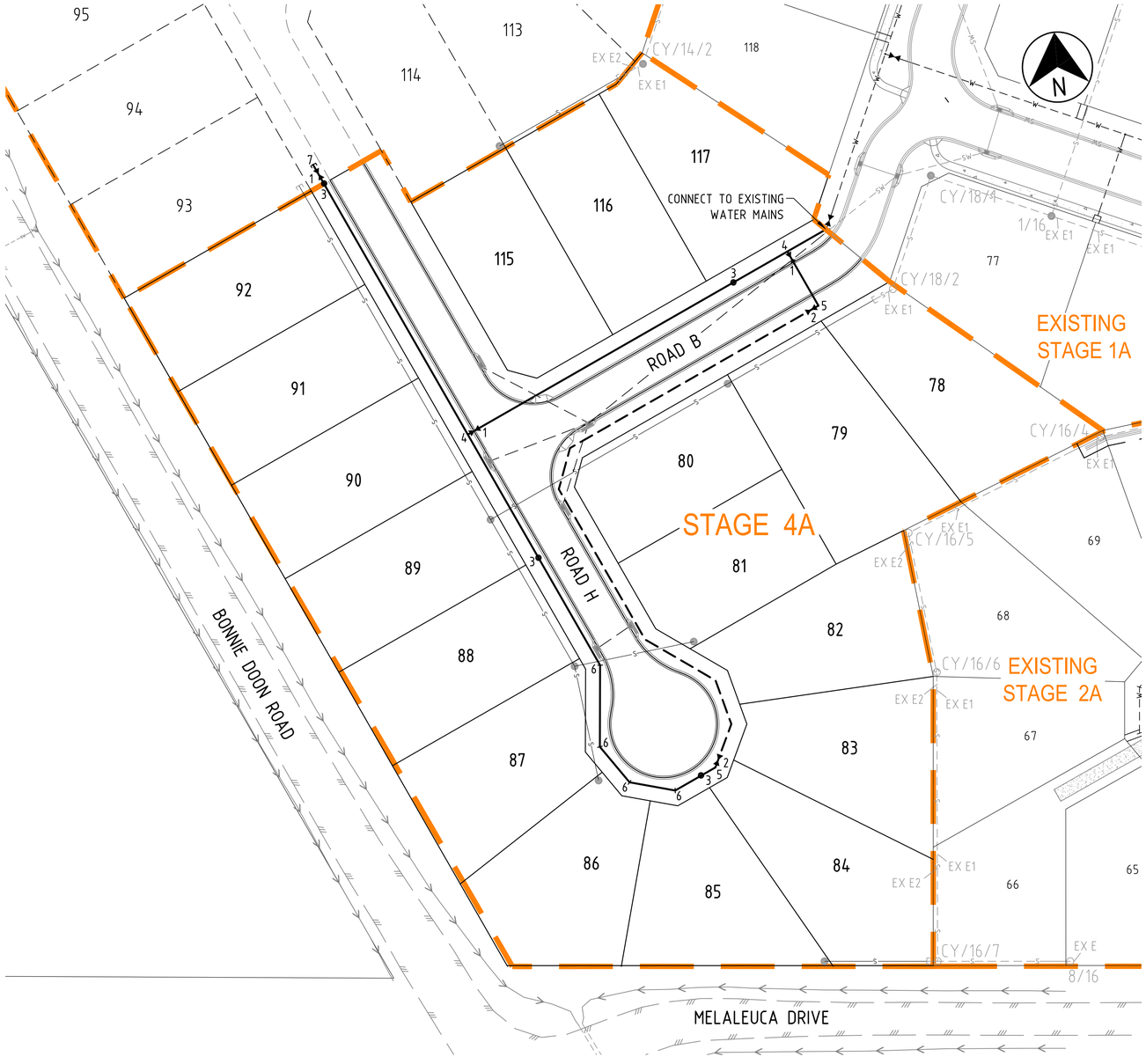
CLIENT SALSON PTY LTD
PROJECT COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED PAM	DESIGN REVIEW RJB		RPEQ No.

TITLE
SEWERAGE LONGITUDINAL SECTIONS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:1000H;1:200V(A1)	CB22504	CB22504-C-10	A

A1



WATER SUPPLY PIPE AND FITTINGS LIST

REF.	CODE	DESCRIPTION
1		SLUICE VALVE CLASS '14' COMPLETE WITH C.I. COVER BOX, CONCRETE MARGIN AND MARKER
2		50 BRONZE GATE VALVE COMPLETE WITH C.I. COVER BOX, CONCRETE MARGIN AND MARKER
3		80 SPRING HYDRANT COMPLETE WITH RISER, TEE, C.I. COVER BOX, CONCRETE MARGIN AND MARKER
4		TEE WITH CONCRETE THRUST BLOCK
5		SERVICE MAIN CONNECTION
6		BEND TO SUIT WITH CONCRETE THRUST BLOCK
7		DEAD END CAP WITH CONCRETE THRUST BLOCK
		100 uPVC WATER MAIN CLASS '16' RUBBER RING JOINTED
		50 uPVC WATER MAIN CLASS '12' SOLVENT WELD JOINTED

NOTES

1. ALL WATER MAINS ARE ON 2.75m ALIGNMENTS FROM R.P. BOUNDARY U.N.O.
2. FOR STANDARD DETAILS REFER FNQROC STD. DWGS. S2000-S2035 INCLUSIVE.
3. CONNECTIONS TO EXISTING COUNCIL MAINS TO BE MADE UNDER THE DIRECTION OF THE LOCAL AUTHORITY.
4. THE CONTRACTOR IS TO LOCATE ALL EXISTING SERVICES IN THE WORKS AREA PRIOR TO COMMENCEMENT OF CONSTRUCTION. REFER DWG. CB22504-C-01 FOR NOTES REGARDING EXISTING SERVICES.

LEGEND

- STAGE BOUNDARY
- PROPOSED SEWER MAIN, MANHOLE AND ENDCAP
- PROPOSED STORMWATER
- EXISTING STORMWATER
- EXISTING SEWER

1:500 0 10 20 30 40 50m
10 8 6 4 2 FULL SIZE ON A1

DATE: 07.12.2009@13:58:19 LOGIN NAME: sbest
XREF: X-22504-DESIGN
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C11.dwg

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A	07.12.09	RJB	RJB	CJC	RJC	INITIAL ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

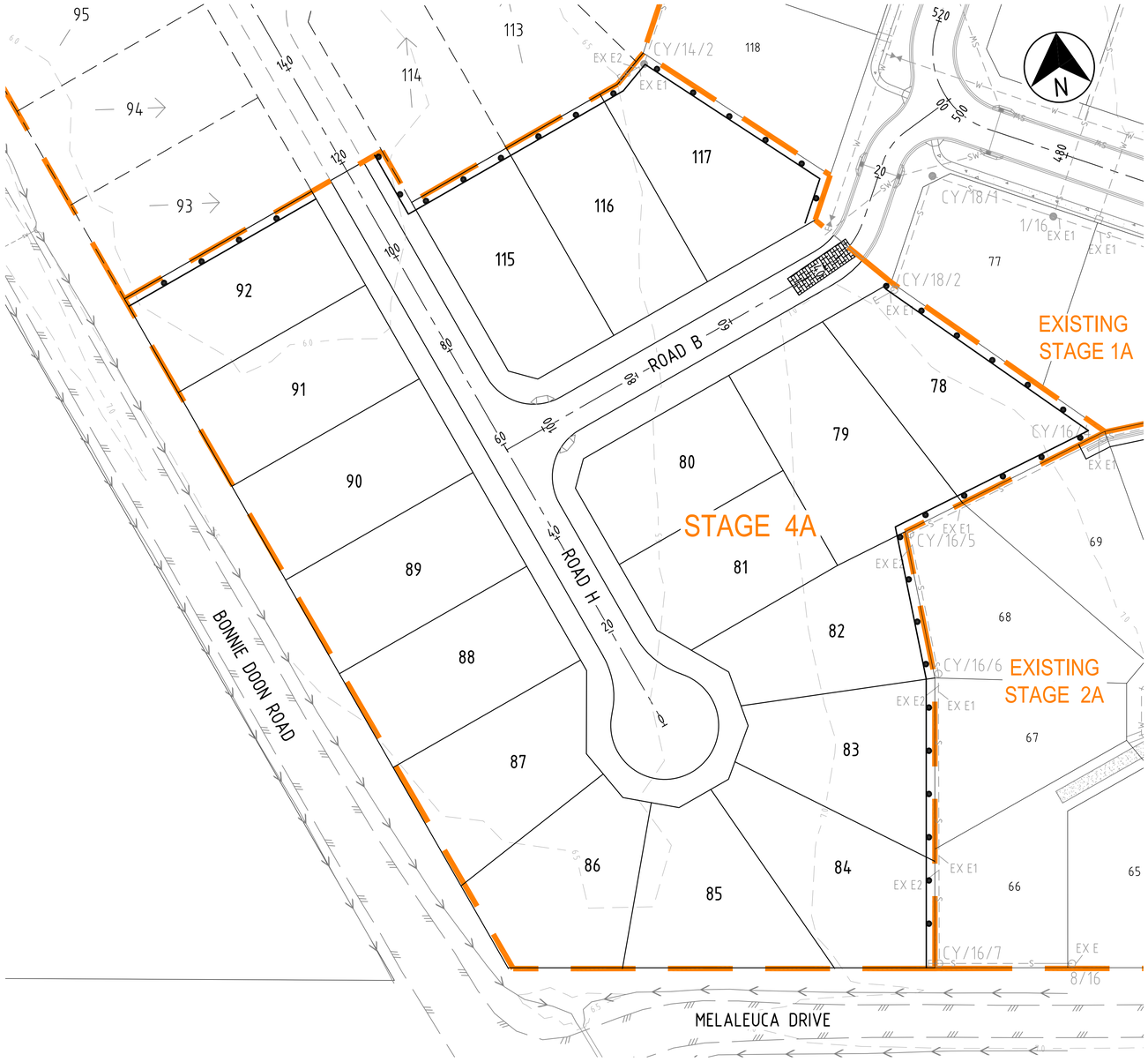
SKM
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
2 James Street
Cairns QLD 4870 Australia
Telephone (07) 4031 4599
Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: WATER RETICULATION

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-11	A



NOTES

1. SEQUENCING OF CONTROL MEASURES
   a) INSTALL STABLE POINT OF ENTRY
   b) INSTALL SILT FENCES
   c) PROTECT TOPSOIL STOCKPILES
   d) INSTALL STORMWATER PIPES
   e) CONSTRUCT TEMPORARY SEDIMENT BASINS
   f) IMPLEMENT PROTECTION MEASURES TO STORMWATER PITS
   g) REVEGETATE BARE AREAS UPON COMPLETION OF EARTHWORKS
   h) THE SEDIMENT CONTROL STRUCTURES ARE TO BE CLEANED & MAINTAINED AFTER EVERY STORM EVENT. ERODED SOILS SHALL BE STOCKPILED AS DIRECTED.
2. THE AMOUNT OF DISTURBANCE TO EXISTING VEGETATION BE KEPT TO A MINIMUM.
3. EXACT LOCATION OF SEDIMENT CONTROL STRUCTURES TO BE DETERMINED ON SITE BY COUNCIL & SUPERINTENDENT.
4. STOCKPILE LOCATIONS TO BE AGREED WITH COUNCIL & THE SUPERINTENDENT. STOCKPILES TO BE PROTECTED VIA DIVERSION DRAIN ON THE UPSLOPE & SILT FENCE ON THE DOWNSLOPE.
5. STORMWATER PIPES TO HAVE PIT PROTECTION MEASURES AS DETAILED IN FNQROC DEVELOPMENT MANUAL.
6. ALL SEDIMENT CONTROL MEASURES TO BE IN ACCORDANCE WITH FNQROC STD. DWGS. S5000 - S5015 INCLUSIVE AND THE ENGINEER CERTIFIED CONTRACTORS ESC PLAN.
7. THE FOLLOWING REVEGETATION MEASURES ARE TO BE UNDERTAKEN IMMEDIATELY UPON COMPLETION OF EARTHWORKS.
   a) CUT & FILL BATTERS TO BE HYDROMULCHED.
   b) VERGES & ALLOTMENTS TO BE GRASS SEEDED.
   c) PLACE TURF STRIPS BEHIND ALL KERB LINES.
8. REVEGETATION IS TO BE WATERED & MAINTAINED UNTIL GROWTH IS ESTABLISHED.
9. SEDIMENT BASIN
   a) INLET PROTECTION TO MINIMISE SCOUR & EVENLY DISTRIBUTE FLOW THROUGH BASIN.
   b) A MARKER PEG SHOULD BE INSTALLED TO SHOW THE STORAGE DEPTH. SEDIMENT SHALL BE REMOVED FROM BASIN WHEN 30% STORAGE DEPTH IS ENCROACHED & APPROPRIATELY DISPOSED ON SITE BY RESPREADING IN AREAS OF NON-EROSIVE FLOWS.
10. WATER QUALITY MONITORING SHOULD BE UNDERTAKEN DURING SIGNIFICANT RAINFALL EVENTS (I.E. > 10mm). MONITORING SHOULD INVOLVE MEASUREMENT OF TURBIDITY. TURBIDITY AT A POINT 50m BELOW THE LAST SITE DISCHARGE LOCATION SHOULD BE NO MORE THAN 10% ABOVE THAT AT A POINT IMMEDIATELY ABOVE THE SITE, AS MEASURED BY A TURBIDITY METER OR TURBIDITY TUBE. IF THIS IS EXCEEDED A SAMPLE AT EACH LOCATION SHOULD BE TAKEN AND ANALYSED FOR TOTAL SUSPENDED SOLIDS (TSS). DOWNSTREAM TSS SHOULD NOT EXCEED UPSTREAM TSS PLUS 10%.
11. DESIGN CRITERIA FOR CONTRACTOR'S EROSION & SEDIMENT CONTROL PLAN TO BE IN ACCORDANCE WITH THE FNQROC DEVELOPMENT MANUAL.

LEGEND

- SEDIMENT BASIN
- SHAKER GRID
- SILT FENCE
- PIT PROTECTION MEASURES
- TEMPORARY CUT OFF DRAIN
- STORMWATER DRAINAGE PIPE
- KERB INLET PIT
- HEADWALL
- FALL OF LOTS
- BATTER
- STAGE BOUNDARY
- DESIGN SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING SURFACE CONTOURS (0.5m INTERVAL)
- EXISTING STORMWATER
- EXISTING SEWER
- CONCRETE DRIVEWAY (2.5m WIDE U.N.O.)
- TURF STRIPS
- ROCK CHECK DAM
- TEMPORARY CUT-OFF DRAIN

1:600 — 0 12 24 36 48 60m — 12 6 — FULL SIZE ON A1

DATE: 07.12.2009@13:58:28 LOGIN NAME: sbest
XREF: X-22504-DESIGN
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C12-C14.dwg

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Facsimile (07) 4031 3967

CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

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SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: EROSION AND SEDIMENT CONTROL STRATEGY
PHASE 1 - TOPSOIL STRIPPING

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-12	A

SEDIMENT BASIN CALCS

EXPECTED LIFE OF EROSION CONTROL MEASURES 0-6 MONTHS.

DESIGN ARI = 10 YEAR, 6 HOUR STORM

SEDIMENT BASIN

AREA = 1.80ha

I = 33.96mm/hr

C = 0.7
Q = 0.12m3/s

TARGET PARTICLE SIZE = 0.05mm

SETTLING VELOCITY = 0.0019m/s

THEREFORE, BASIN AREA = 635m2/m3/s

BASIN AREA = 75.48m2

LENGTH:WIDTH RATIO = 3:1

15.05m LONG X 5.02m WIDE X 0.80m DEEP

NOTE

1. FOR NOTES AND LEGEND REFER DWG. CB22504-C-12.

1:600 0 12 24 36 48 60m
12 6 FULL SIZE ON A1

DATE: 07.12.2009@13:58:31 LOGIN NAME: sbest
XREF: X-22504-DESIGN
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C12-C14.dwg

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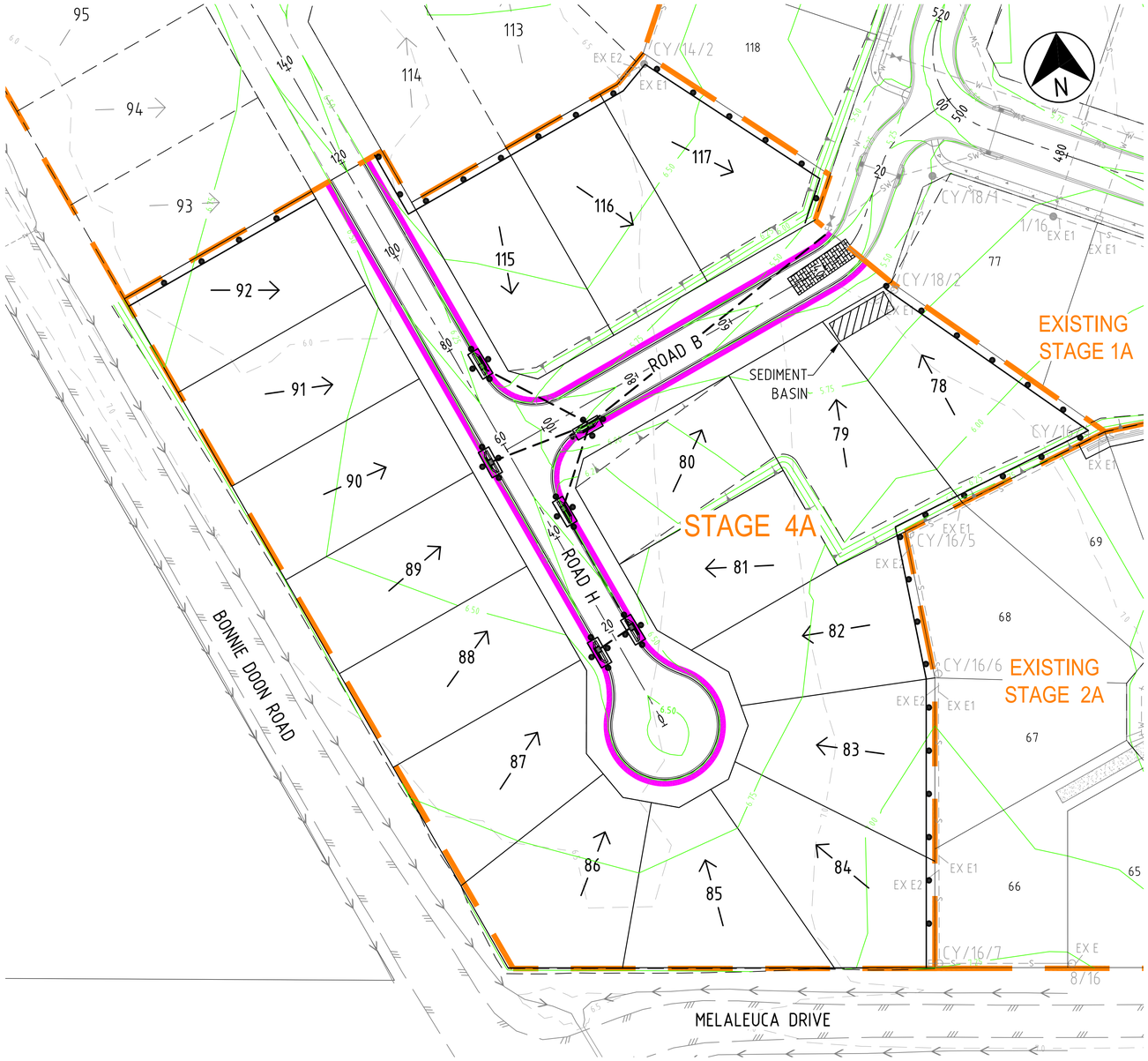
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: EROSION AND SEDIMENT CONTROL STRATEGY PHASE 2 - EARTHWORKS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:500 (A1)	CB22504	CB22504-C-13	A



NOTE

1. FOR NOTES AND LEGEND REFER DWG. CB22504-C-12.

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No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
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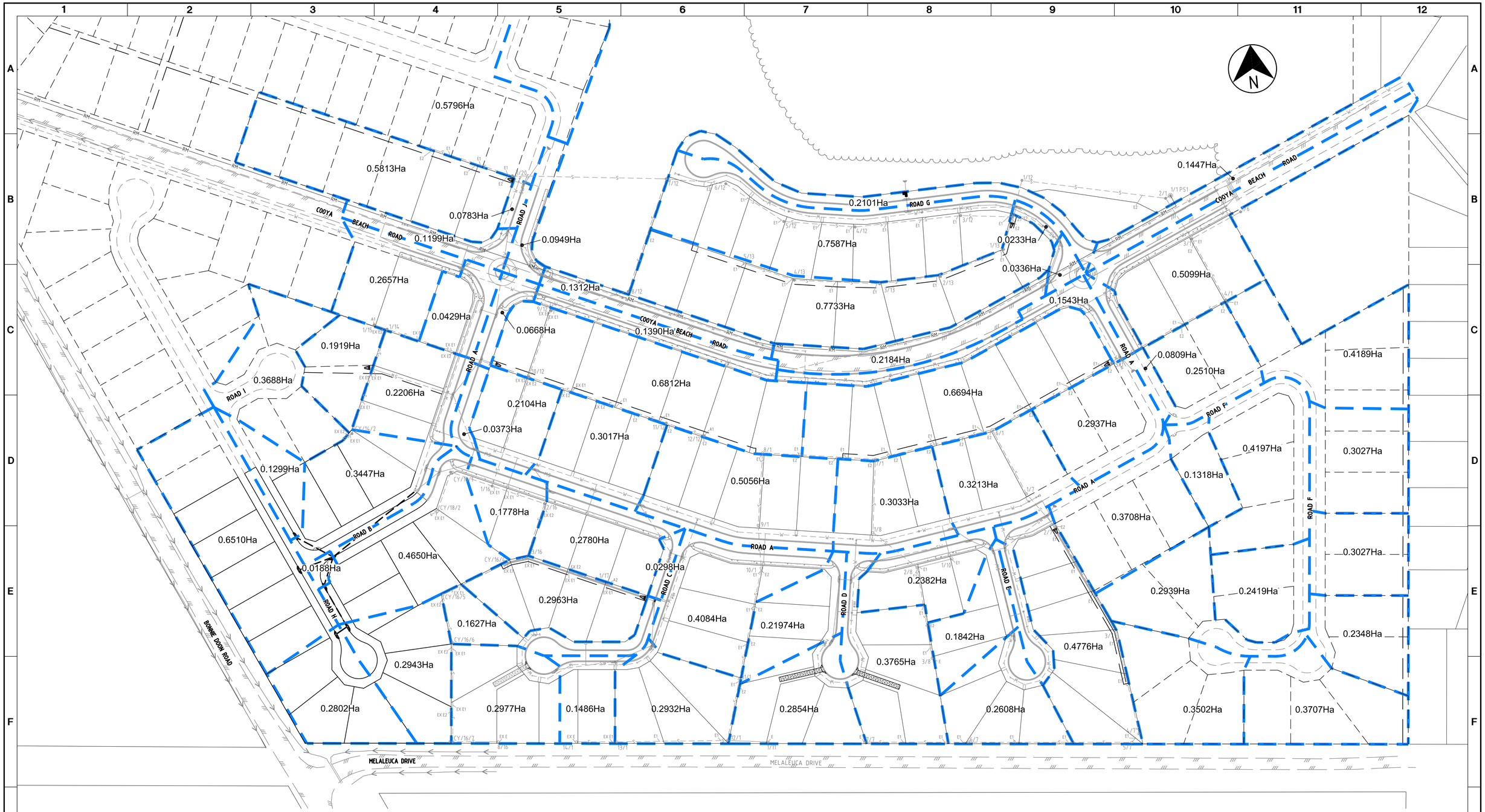
CLIENT: SALSON PTY LTD
PROJECT: COOYA BEACH SUBDIVISION - STAGE 4A

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: EROSION AND SEDIMENT CONTROL STRATEGY
PHASE 3 - ROAD WORKS

SCALE	SKM PROJECT No.	DRAWING No.	AMDT
1:500 (A1)	CB22504	CB22504-C-14	A



LEGEND

0.23Ha	CATCHMENT AREA
	CATCHMENT BOUNDARY
	STORMWATER DRAINAGE PIPE
SW	EXISTING STORMWATER
S	EXISTING SEWER
W	EXISTING WATER

1:1000 — 0 20 40 60 80 100m — 20 10 — FULL SIZE ON A1

DATE: 07.12.2009@13:58:41 LOGIN NAME: sbest
XREF: X-22504-DESIGN
LOCATION: I:\CBIF\Projects\CB22504\Deliverables\Drawings\Civil\Dwg\CB22504-C15.dwg

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
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DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: STORMWATER CATCHMENT AREAS

SCALE	SKM PROJECT No	DRAWING No	AMDT
1:1000 (A1)	CB22504	CB22504-C-15	A

LOCATION				TIME	SUB-CATCHMENT RUNOFF							INLET DESIGN									DRAIN DESIGN										HEADLOSSES									PART FULL		DESIGN LEVELS						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34 - 35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
				tc	I	C	A	(CxA)	+(CxA)	Q				Wf		dg	Vg		Qg		tc	I	+(CxA)	Qt	Qm	Qs	Qo	L	S		V	T		V2/2g	Ku	hu	Kl	hl	Kw	hw	Sf	hf		Vp						
DESIGN A.R.I.	STRUCTURE NO.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	SUB-CATCHMENT TIME OF CONCENTRATION	RAINFALL INTENSITY	COEFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF CONTRIBUTING EQUIVALENT AREAS	SUB-CATCHMENT DISCHARGE	FLOW PAST PREVIOUS GULLIES	FLOW IN K&C (INCLUDING BYPASS)	ROAD GRADE AT INLET	FLOW WIDTH	BYPASS WIDTH PAST PIT	FLOW DEPTH AT INVERT	GUTTER FLOW VELOCITY	dg x Vg	FLOW INTO INLET	BYPASS FLOW	CRITICAL TIME OF CONCENTRATION	RAINFALL INTENSITY	TOTAL CONTRIBUTING EQUIVALENT AREA	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	FLOW IN PIPE	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCTURE HEADLOSS	LATERAL HEADLOSS COEFFICIENT	LATERAL PIPE STRUCTURE HEADLOSS	W.S.E COEFFICIENT	CHANGE IN W.S.E	FRICTION SLOPE	PIPE FRICTION HEADLOSS	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	U/S H.G.L	WATER LEVEL IN STRUCTURE (W.S.E.)	SURFACE OR K&C INVERT LEVEL	FREEBOARD	STRUCTURE No.
					From intensity Chart			9 x 10	sum 11	(8x12)/360	sum 25	13 + 14						28 x 19	From Charts	15 - 24		From Intensity Chart	sum of U/S 12								32/Area of Sect	33/ (36x60)	FROM Q.U.D.M. CHARTS VOLUME 2	36x36/2g	From Q.U.D.M. Volume 2	40 x 41	From Q.U.D.M. Volume 2		From Q.U.D.M. Volume 2	From Sect. 14.5.7 A.R.R. Vol. 1 1987	47 x 337/ 100			U/S RL D/S RL	U/S RL D/S RL					
years				min	mm/h		ha	ha	ha	cumec	cumec	cumec	%	m	m	m	m/sec	m2/s	cumec	cumec	min	mm/h	ha	cumec	cumec	cumec	cumec	m	%	mm	m/sec	min		m		m		m		%	m	m	m/sec	m	m	m	m	m	m	
5 100	5/12	5/12 to 5A/12	5/12	15.00 15.00	139 221	0.76 0.96	0.280 0.280	0.213 0.269	0.213 0.269	0.082 0.165	0.000	0.082	0.50	2.473	1.276	0.094	0.65	0.06	0.062	0.020 1/15	15.00 15.00	139 221	0.213 0.269	0.165	0.917	0.103 (Pipe flow= Grate flow)	0.062	7.023	0.61	375(2)	0.56 (1.24)	0.12		0.016	5.10	0.081			5.10	0.081	0.13	0.009			5.351 5.308	5.827 5.818	5.908	5.908	6.286	0.378	5/12
5 100	5A/12	5A/12 to 4/12	5/12;5A/12	15.00 15.00	139 221	0.76 0.96	0.294 0.294	0.224 0.283	0.224 0.283	0.086 0.173	0.000	0.086	0.50	2.525	1.308	0.096	0.66	0.06	0.065	0.021 4/12	15.12 15.12	138 220	0.437 0.552	0.337	0.917	0.211 (Pipe flow= Sum upstr atten flows)	0.126	25.285	0.35	450(2)	0.79 (1.06)	0.42		0.032	1.90	0.060			1.90	0.060	0.20	0.050			5.308 5.220	5.758 5.708	5.818	5.818	6.250	0.432	5A/12
5 100	4/12	4/12 to 3/12	5/12;5A/12;4/12	15.00 15.00	139 221	0.76 0.96	0.083 0.083	0.063 0.079	0.063 0.079	0.024 0.049	0.021	0.045	0.50	1.890	0.821	0.077	0.57	0.04	0.036	0.009 3/12	15.54 15.54	137 217	0.500 0.631	0.380	0.917	0.220 (Pipe flow= Sum upstr atten flows)	0.161	16.563	1.58	450(2)	1.01 (2.25)	0.27		0.052	1.70	0.088			1.70	0.088	0.32	0.053			5.200 4.938	5.620 5.567	5.708	5.708	6.162	0.454	4/12
5 100	1/14	1/14 to 3/12	1/14	15.00 15.00	139 221	0.76 0.96	0.130 0.130	0.099 0.125	0.099 0.125	0.038 0.077	0.000	0.038	0.51	1.739	0.760	0.072	0.55	0.04	0.030	0.008 1/13	15.00 15.00	139 221	0.099 0.125	0.077	0.925	0.047 (Pipe flow= Grate flow)	0.030	22.734	0.60	375(2)	0.27 (1.23)	0.38		0.004	4.10	0.015			4.10	0.015	0.03	0.007			5.075 4.938	5.574 5.567	5.589	5.589	6.163	0.574	1/14
5 100	1/15	1/15 to 3/12	1/15	15.00 15.00	139 221	0.76 0.96	0.651 0.651	0.495 0.625	0.495 0.625	0.191 0.384	0.020	0.211	0.00	3.183		0.116			0.211	0.000	15.00 15.00	139 221	0.495 0.625	0.384		0.211 (Pipe flow= Grate flow)		19.424	0.25	525(2)	0.94 (1.00)	0.32		0.045	3.60	0.162			3.60	0.162	0.22	0.043			4.930 4.882	5.610 5.567	5.772	5.772	6.104	0.332	1/15
5 100	3/12	3/12 to 2/12	5/12;5A/12;6/12;1/14;1/15;3/12	15.00 15.00	139 221	0.76 0.96	0.019 0.019	0.014 0.018	0.014 0.018	0.005 0.011	0.009	0.014	0.64	0.988	0.330	0.050	0.49	0.02	0.011	0.003 2/12	15.81 15.81	136 216	1.108 1.399	0.839	1.110	0.433 (Pipe flow= Sum upstr atten flows)	0.406	76.958	0.40	600(2)	1.39 (1.39)	0.92		0.098	1.08	0.106			1.08	0.106	0.40	0.309			4.938 4.629	5.461 5.152	5.563	5.563	5.713	0.150	3/12
5 100	1/13	1/13 to 2/12	1/13	15.00 15.00	139 221	0.76 0.96	0.345 0.345	0.262 0.331	0.262 0.331	0.101 0.203	0.008	0.109	0.00	1.567		0.067			0.109	0.000	15.00 15.00	139 221	0.262 0.331	0.203	1.626	0.094 (Pipe flow= Grate flow)	0.109	6.987	0.10	1050(2)	0.12 (1.01)	0.12		0.001	4.40	0.003			4.40	0.003	0.00	0.000			4.656 4.649	5.152 5.152	5.155	5.155	5.247	0.092	1/13
5 100	2/12	2/12 to 1/12	5/12 to 3/12;1/13;2/12	15.00 15.00	139 221	0.76 0.96	0.375 0.375	0.285 0.360	0.285 0.360	0.110 0.221	0.011	0.121	0.00	1.767		0.073			0.121	0.000	16.73 16.73	133 211	1.655 2.090	1.225	1.626	0.608 (Pipe flow= Sum upstr atten flows)	0.617	15.043	0.10	1050(2)	0.69 (1.01)	0.25		0.024	0.90	0.022			0.90	0.022	0.05	0.007			4.629 4.614	5.130 5.123	5.101	5.101	5.251	0.150	2/12

DATE: 07.12.2009@13:58:43 LOGIN NAME: sbest
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SAB	RJB	C.J.CAPLICK	R.J.CARMAN
DESIGNED	DESIGN REVIEW		RPEQ No.
PAM	RJB		

TITLE: STORMWATER CALCULATION TABLES

SCALE	SKM PROJECT No	DRAWING No	AMDT
N.T.S.	CB22504	CB22504-C-16	A

DEVELOPMENT ASSESSMENT IDAS RECEIPT SHEET

DEVELOPMENT ASSESSMENT

Date received 7/12/2009

APPLICATION ASSIGNED TO: Peter Deroma (to allocate).

SITE DETAILS	APPLICATION DETAILS
Site Address: Julaji Close Cooya.	**Applicant:** Salson Pty Ltd (Receivers and Managers Appointed)
RPD: Lot 905 on SP210324	**Postal Details:** C/o Sinclair Knight Merz
Planning Scheme: CairnsPlan 2005, Cairns Plan 2009, Douglas Shire Planning Scheme 2006, Douglas Shire Planning Scheme 2008.	**Parcel No.** 149243 **Assessment No.** 939264 **Proposal:** Operational Works (18 lot Subdivision).
Planning District/Locality: Cairns Beaches, Barron Smithfield, Redlynch Valley, Freshwater Stratford Aeroglen, CBD North Cairns, Portsmith Woree Industrial, Inner Suburbs, White Rock Edmonton, Gordonvale Goldsborough, Babinda, The Islands, Rural Lands, World Heritage Areas, Settlement Areas North of the Daintree, Mossman, Port Douglas, Coastal Suburbs, Villages & Townships, Rural Areas and Rural Settlements	
Iconic Places Area Yes **Planning Area:** Residential 1.	**Skids Number/s:** CA46
Division: Division 1 Cr Gregory, Division 2 Cr Lansky, Division 3 Cr Pyne, Division 4 Cr Lesina, Division 5 Cr Blake, Division 6 Cr Cooper, Division 7 Cr Forsyth, Division 8 Cr Cochrane, Division 9 Cr Bonneau, Division 10 Cr Leu	**Our Reference:** [document reference] 8/10144

* Need to be referred to the DSC Iconic Panel !

DEVELOPMENT ASSESSMENT IDAS RECEIPT SHEET

PROPERLY MADE: **YES** **NO**

If No : What requires attention ?

.....

TYPE OF DEVELOPMENT (PRELIMINARY APPROVAL OR DEVELOPMENT PERMIT)

~~Material Change of Use (PA or DP)~~

~~Reconfiguring a Lot (PA or DP)~~

~~Building Work Assessable Against the Planning Scheme (PA or~~ DP)

✓ Operational Work (PA or DP)

~~Other (Specify)~~

.....

ASSESSMENT DETAILS

Development Application (Superseded Planning Scheme): Yes No

~~Impact Assessment~~

✓ Code Assessment

~~Negotiated Decision Request~~

~~Change Conditions~~

~~Change Approved Plan~~

~~Other (Specify)~~

.....

INTERNAL REFERRALS

Environmental Officer (Natural Environment)	
Public Health (Restaurants, Short Term Acc etc)	
EPU – Internal comment only e.g basement car parking	
EPU – As Concurrence Agency (ERA's devolved to Council)	
Development Engineer	
Infrastructure Management	
General Manager Community & Cultural Services	
Planning Strategies	
Water and Waste (Including Plumbing & Trade Waste)	✓
Community Services	
Building Services	

CAIRNS REGIONAL COUNCIL

DEVELOPMENT ASSESSMENT – RECEIPT SHEET –2009/2010

APPLICATION NO: _____ **DATE:** 7/12/09 **RECEIPT NO:** 4259889

APPLICANT: SKM **CHEQUE NO:** _____

ADDRESS OF APPLICANT: PO Box 1062 CAIRNS QLD 4870

SITE LOCATION: COOYA BEACH STAGE 4

RECEIPT CODE	TYPE OF APPLICATION	AMOUNT PAID
133	• Planning and Development Certificates	
134	• Consideration of Alternative Acceptable Measure / Report to Council • Prelodgement Enquiry / Report to Council / Compliance Check for Self Assessable Development	
314	• Application for Material Change of Use and Preliminary Approvals for Building Work – Code and Impact. • Extension of Currency Period / Reconsider Lapsed Approval for Material Change of Use • Request for Superseded Scheme application • Signage under DSC Scheme (Op Works)	
130	• Application for Reconfiguring a Lot • Extension of Currency Period / Reconsider Lapsed Approval for Reconfiguring a Lot	
314/130	Combined application (Split fee: Code: 314 for MCU and Code: 130 for ROL)	
135	Modification or Cancellation of Application or Consent Order	
395	Landscape Plan Assessments	
492	• Vegetation Protection (Local Law 24 former CCC) • Permit to Damage Protected Vegetation (Local Law former DSC)	
141	Applications for Operational Works/Re-assessment (Excludes Signage – DSC Scheme)	3553
302	Applications for Other Engineering Assessment (eg- for On Street, Local Law 22 approvals)	
142	Construction Monitoring Fee, Works/Final Works Inspections, Re-inspections	
513	Bonds for Outstanding Works, Construction Security, Defects Liability, EPS	
138	Endorsement of Survey Plans	
491	Extractive Industry Permits/ Renewal	
355	Tonnage charge	
	SALES	
129	Public Notification Signs	
125	Sale of Planning Documents (Including Hard Copies of CairnsPlan / Douglas Shire Planning Scheme)	
419	• CDs of Cairns Plan / Douglas Shire Planning Scheme and superseded schemes • CDs - copy of application • C-Data Manipulation	
314	Photocopying.	

Records
- 8 DEC 2009
File No.
CAIRNS REGIONAL COUNCIL

RECEIVED
07 DEC 2009
BY:

CSO NAME AM DATE 7/12/09