

DELEGATED REPORT**TO:** SENIOR PLANNER**FROM:** Planning Officer**FILE:** OPW/20/0005**DATE:** 8 December 2020

APPLICATION DETAILS

APPLICATION		PREMISES	
FILE NO:	OPW/20/0005	ADDRESS:	19 Kullaroo Close, Kuranda
APPLICANT:	G Owen & C Retter	RPD:	Lot 2 on RP734383
LODGED BY:	KFB Engineers	AREA:	2.878 ha
DATE LODGED:	27 November 2020	OWNER:	G Owen & C Retter
TYPE OF APPROVAL:	Development Permit		
PROPOSED DEVELOPMENT:	Operational Works (Roadworks, Stormwater Works, Water & Sewer Infrastructure, Drainage and Earthworks) for Development Permit RAL/19/0016		
PLANNING SCHEME:	Mareeba Shire Council Planning Scheme 2016		
ZONE:	Low density residential		
LEVEL OF ASSESSMENT:	Code Assessment		
SUBMISSIONS:	n/a - code assessment only		

ATTACHMENTS: 1. Approved Plan/s

PREVIOUS APPLICATIONS & APPROVALS

RAL/19/0016 - Development Permit for Reconfiguring a Lot - Subdivision (1 into 6 lots and access easements) in 3 stages

DESCRIPTION OF PROPOSED DEVELOPMENT

Operational Works (Roadworks, Stormwater, Water & Sewer Infrastructure, Drainage and Earthworks) for Development Permit RAL/19/0016.

ASSESSMENT**State Planning Policy**

Separate assessment against the State Planning Policy (SPP) is not required because the Mareeba Shire Council Planning Scheme appropriately integrates all relevant aspects of the SPP.

Relevant Development Codes

The following Development Codes are considered to be applicable to the assessment of the application:

- 6.2.6 Low density residential zone code
- 9.4.4 Reconfiguring a lot code
- 9.4.5 Works, services and infrastructure code

The application did not include a planning report and assessment against the planning scheme. An officer assessment has found that the application satisfies the relevant acceptable solutions (or probable solutions/performance criteria where no acceptable solution applies) of the relevant codes set out below.

Relevant Codes	Comments
Low density residential zone code	The application can be conditioned to comply with the relevant acceptable outcomes contained within the code.
Reconfiguring a lot code	The application can be conditioned to comply with the relevant acceptable outcomes contained within the code.
Works, services and infrastructure code	The application can be conditioned to comply with the relevant acceptable outcomes contained within the code.

Compliance with conditions of earlier related approval

RAL/19/0016 - Development Permit for Reconfiguring a Lot - Subdivision (1 into 6 Lots and Access Easements) in 3 Stages

1. Development must be carried out generally in accordance with the approved plans and the facts and circumstances of the use as submitted with the application, subject to any alterations:
 - found necessary by Council's delegated officer at the time of examination of the engineering plans or during construction of the development because of particular engineering requirements; and
 - to ensure compliance with the following conditions of approval.
2. Timing of Effect
 - 2.1 The conditions of the development permit must be complied with to the satisfaction of Council's delegated officer prior to the endorsement of the plan of survey for each stage, except where specified otherwise in these conditions of approval.
3. General
 - 3.1 The development approval would not have been issued if not for the conditions requiring the construction of infrastructure or the payment of infrastructure charges within the conditions of approval or the Adopted Infrastructure Charges Notice.
 - 3.2 The applicant/developer is responsible for the cost of necessary alterations to existing public utility mains, services or installations required by works in relation to the proposed development or any works required by condition(s) of this approval.

- 3.3 All payments or bonds required to be made to the Council pursuant to any condition of this approval must be made prior the endorsement of the plan of survey and at the rate applicable at the time of payment.
- 3.4 The developer must relocate (in accordance with FNQROC standards) any services such as water, sewer, drainage, telecommunications and electricity that are not wholly located within the lots that are being created/serviced where required by the relevant authority, unless approved by Council's delegated officer.
- 3.5 Where utilities (such as sewers on non-standard alignments) traverse lots to service another lot, easements must be created in favour of Council for access and maintenance purposes. The developer is to pay all costs (including Council's legal expenses) to prepare and register the easement documents.
- 3.6 Where approved existing buildings and structures are to be retained, setbacks to any new property boundaries are to be in accordance with Planning Scheme requirements for the relevant structure and/or Queensland Development Code. A plan demonstrating compliance of any existing buildings or structures that are in close proximity to any new property boundary must be submitted prior to endorsement of the plan of survey.
- 3.7 All development works must be designed, constructed and carried out in accordance with FNQROC Development Manual requirements and to the satisfaction of Council's delegated officer.
- 3.8 A suitable kerbside mobile garbage bin placement/collection area is to be provided on Kullaroo Close to the satisfaction of Council's delegated officer.
- 3.9 Environmental Covenant

The applicant shall be responsible for the preparation and registration of a statutory covenant/s with Council pursuant to S97A of the Land Title Act for the purposes of preserving native animals, plants and their habitat.

The covenant will be of a form that is acceptable to the Registrar of Titles and Council's delegated officer.

The covenant area shall comprise those parts of proposed lots identified as Cov A to D on the approved plans. The covenant area may strictly exclude any areas where vegetation clearing is necessary for stormwater retention purposes only, to the satisfaction of Council's delegated officer.

The covenant shall stipulate that the covenant area must be protected, preserved and conserved, including by strictly adhering to the following non-exhaustive conditions (which may be varied by written agreement between the parties):-

- (a) no existing living vegetation or hereafter existing in the covenant area, may be cut down, damaged or destroyed;
- (b) no buildings or fences may be erected in the covenant area;
- (c) no native animals within the covenant area shall be killed or interfered with;

- (d) no other acts may be carried out on or in respect of the covenant area which, in the opinion of the Council, acting reasonably may have a detrimental impact on the covenant area;

Notwithstanding clause (a) to (d), if any living or dead vegetation on the covenant area poses a risk to human safety:-

- (e) The vegetation may be cut down or trimmed with the prior written consent of the Council, not to be unreasonably withheld, so as to remove the risk;

Notwithstanding clause (a) to (e), if any native or indigenous animal on the covenant area poses a risk to human safety the native or indigenous animal may be removed with the prior written consent of the Council and any other approvals which might be required by law.

The covenant agreement shall be signed by the registered owner prior to Council endorsement of the survey plan for each stage containing any of the proposed covenant area, and the signed covenant shall be jointly lodged for registration with the survey plan, in the Department of Natural Resources, Mines and Energy.

The covenant document shall be to the satisfaction of Council's delegated officer, and the applicant shall be responsible for the cost of preparation and registration of the covenant.

3.10 Charges

All outstanding rates, charges and expenses pertaining to the land are to be paid in full prior to the endorsement of a plan of survey.

4. Infrastructure Services and Standards

4.1 Access

4.1.1 An access crossover must be constructed or upgraded from the edge of the Kullaroo Close road pavement to the proposed access driveway in accordance with the FNQROC Development Manual, to the satisfaction of Council's delegated officer.

4.1.2 A bitumen, asphalt or concrete access driveway shall be constructed within the easement servicing Lots 3, 4, 5 and 6 for the respective stage of the development to the satisfaction of Council's delegated officer. The driveway will:

- have a minimum formation width of:
 - 4 metres within Easement A (Stage 1); and
 - 3 metres within Easements C and D (Stage 3);
- be constructed for the full length of the easement;
- be formed with one-way crossfall to cater for stormwater drainage such that any stormwater is contained within the easement;
- include service and utility conduits to be provided for the full length of the concrete or bitumen sealed driveway.

- 4.1.3 Prior to works commencing, plans for the works described above must be approved as part of a subsequent application for operational works.

4.2 Access/Services/Drainage Easement

To provide for the shared access driveway mentioned in Condition 4.1, an easement/s must be established for the purposes of access, drainage, maintenance and servicing for Lots 3, 4, 5 and 6.

The registered easement/s must be maintained in perpetuity to ensure Lots 3, 4, 5 and 6 do not become land locked.

The approved easement documents must be submitted at the same time the applicant/developer seeks endorsement of the plan of survey for the respective stage of the development and must be lodged and registered in the Department of Natural Resources, Mines and Energy in conjunction with the plan of survey.

4.3 Stormwater Drainage/Water Quality

- (a) The applicant/developer must take all necessary steps to ensure a non-worsening effect on surrounding land as a consequence of the development.
- (b) Prior to works commencing the applicant must submit a Stormwater Management Plan and Report prepared and certified by a suitably qualified design engineer (RPEQ) that meets or exceeds the standards of design and construction set out in the Queensland Urban Drainage Manual (QUDM) and the FNQROC Development Manual to the satisfaction of Council's delegated officer.

The Stormwater Management Plan and Report must include the design for the completed development and must also demonstrate how this stormwater infrastructure will be staged across the three (3) stages.

- (c) The Stormwater Quality Management Plan must include an Erosion and Sediment Control Plan that meets or exceeds the Soil Erosion and Sedimentation Control Guidelines (Institute of Engineers Australia) to the satisfaction of Council's delegated officer.
- (d) The applicant/developer must construct the stormwater drainage infrastructure in accordance with the approved Stormwater Management Plan and/or Stormwater Quality Management Plan and Report.
- (e) Temporary drainage is to be provided and maintained during the construction phase of the development, discharged to a lawful point and not onto the construction site.
- (f) All stormwater channels through private property must be registered, with the easement for drainage purposes in favour of Council. All documentation leading to the registration of the easement must be completed at no cost to Council.
- (g) All stormwater drainage from the site must be discharged to an approved legal point of discharge.

4.4 Water Supply

- (a) Where the existing reticulated water supply does not currently service the site or is not at an adequate capacity, the developer is required to extend or upgrade the reticulated water supply infrastructure to connect the site to Council's existing infrastructure at a point that has sufficient capacity to service the development in accordance with FNQROC Development Manual standards (as amended).
- (b) A water service connection must be provided to each proposed allotment in accordance with FNQROC Development Manual standards (as amended) to the satisfaction of Council's delegated officer.
- (c) Fire hydrants are to be located in accessways or private roads at a maximum spacing of 120 metres; and at all intersections of accessways or private roads.

4.5 Sewerage Connection

- 4.5.1 The developer must provide a connection for each proposed allotment to Council's reticulated sewerage system in accordance with FNQROC Development Manual standards (as amended) to the satisfaction of Council's delegated officer.
- 4.5.2 Where sewerage connections are not available to the site, or where existing connections are not satisfactory for the proposed development, the developer is required to extend or upgrade the reticulated sewerage infrastructure to connect the site to Council's existing infrastructure at a point that has sufficient capacity to service the development in accordance with FNQROC Development Manual standards (as amended).

4.6 Electricity Provision/Supply

The applicant/developer must ensure that an appropriate level of electricity supply is provided to each allotment in accordance with FNQROC Development Manual standards (as amended), to the satisfaction of Council's delegated officer.

Written advice from an Electricity Service Provider is to be provided to Council indicating that an agreement has been made for the provision of power reticulation to each lot.

4.7 Telecommunications

The applicant/developer must demonstrate that a connection to the national broadband network is available for each allotment, or alternatively, enter into an agreement with a telecommunication carrier to provide telecommunication services to each lot and arrange provision of necessary conduits and enveloping pipes.

FNQROC Regional Development Manual

The submitted plans have been checked for compliance against the FNQROC Development Manual and the conditions of the reconfiguring a lot approval.

REFERRALS

The application did not require referral to any Referral Agency.

Internal Consultation

Technical Services, Water & Waste

OFFICER'S RECOMMENDATION

- That in relation to this operational works development application:

APPLICATION		PREMISES	
APPLICANT:	G Owen & C Retter	ADDRESS:	19 Kullaroo Close, Kuranda
DATE LODGED	27 November 2020	RPD:	Lot 2 on RP734383
TYPE OF APPROVAL	Development Permit		
PROPOSED DEVELOPMENT	Operational Works (Roadworks, Stormwater, Water & Sewerage Infrastructure, Drainage and Earthworks) for Development Permit RAL/19/0016		

and in accordance with the Planning Act 2016, as amended, the applicant be notified that the application for operational works is:

Approved subject to the following assessment manager conditions:

- APPROVED DEVELOPMENT:** Operational Works (Roadworks, Stormwater, Water & Sewerage Infrastructure, Drainage and Earthworks) for Development Permit RAL/19/0016
- APPROVED PLANS:**

Plan/Document Number	Plan/Document Title	Prepared by	Dated
K-6633 Sheet C01	General Arrangement	KFB Engineers	05/10/20
K-6633 Sheet C02	Setout	KFB Engineers	05/10/20
K-6633 Sheet C03	Typical Sections	KFB Engineers	05/10/20
K-6633 Sheet C04	Typical Sections and Details	KFB Engineers	05/10/20
K-6633 Sheet C05	Stormwater Details	KFB Engineers	05/10/20
K-6633 Sheet C06	Longitudinal Section Along Stormwater Line A & C	KFB Engineers	05/10/20
K-6633 Sheet C07	Longitudinal Section Along Driveway	KFB Engineers	05/10/20
K-6633 Sheet C08	Cross Sections Along Driveway CHGE 10 - 100	KFB Engineers	05/10/20
K-6633 Sheet C09	Cross Sections Along Driveway CHGE 110 - 149.150	KFB Engineers	05/10/20
K-6633 Sheet C10	Water and Sewer Reticulation	KFB Engineers	05/10/20

K-6633 Sheet C11	Stormwater Calculations	KFB Engineers	05/10/20
------------------	-------------------------	---------------	----------

(C) ASSESSMENT MANAGER'S CONDITIONS (COUNCIL)

1. General

- (i) All operational works must be designed and constructed in accordance with the procedures as set out in the FNQROC Development Manual.
- (ii) Development must be carried out substantially in accordance with the approved plans and the facts and circumstances of the use as submitted with the application, and subject to any alterations:
 - found necessary by the Council's Delegated Officer at the time of examination of the engineering plans or during construction of the development because of particular engineering requirements;
 - to ensure the works comply in all respects with the requirements and procedures of the FNQROC Development Manual and good engineering practice; and
 - to ensure compliance with the following conditions of approval.
- (iii) Council's examination of the documents should not be taken to mean that the documents have been checked in detail and Council takes no responsibility for their accuracy. If during construction, inadequacies of the design are discovered, it is the responsibility of the Principal Consulting Engineer to resubmit amended plans to Council for approval and rectify works accordingly.

2. Batters

Any batters steeper than 1 in 2 and higher than 1.5m must be certified as stable by a Geotechnical Engineer.

3. Water Service Infrastructure

Prior to the pre-start meeting occurring, Council's Water and Waste Department should be contacted, and agreements set in place in relation to the proposed water reticulation network (house connections and for fire hydrants).

It is Council's preference that all internal water supply infrastructure beyond the water main connection point/s and meters remain private (not Council's asset) and that separate water meters for each allotment be provided just within the property boundary at the commencement of the shared driveway. This will generally require individual water pipes to be trenching to service each allotment.

Individual water meters will be installed by Council at the request and expense of the developer/landowner as per Council's standard water meter installation procedures. Water meters are not required to be installed as part of the operational works.

Note: The applicant/developer should ensure that water hydrants are suitably located to service all lots during an emergency.

4. Sewer Infrastructure

Council is not responsible for any private sewerage infrastructure beyond the existing sewer main/s and the proposed house connection branches that are to be installed by and at the expense of the developer/landowner.

That section of the existing sewer rising main situated under the proposed shared driveway must be replaced with ductile iron piping to protect the infrastructure and its function. Should an alternate outcome be provided for protecting the existing rising main infrastructure, it must be approved by Council's Water and Waste Department prior to the pre-start meeting occurring.

5. Pre-start Meeting

In addition to the requirements of Clause CP1.07 and CP1.08 of the FNQROC Development Manual; after documentation has been approved by Council, a pre-start meeting is to be held on site prior to the commencement of work. Part 1 of the **attached** pre-start meeting pro-forma is to be completed and returned prior to the meeting including clause 1.u 'Request for Meeting' together with the prescribed Construction Monitoring Fee as set out in Council's Schedule of Fees.

6. Inspections

Inspections are to be carried out as detailed in the FNQROC Manual unless advised otherwise at the pre-start meeting.

7. Construction Security Bond and Defects Liability Bond

- (i) In addition to Clauses CP1.06 and CP1.20 of the FNQROC Development Manual; the Construction Security Bond and Defects Liability Bond shall each be a minimum of \$1000 and Bank Guarantees shall have no termination date.
- (ii) During the Defects Liability period, it is the responsibility of the developer to rectify any works found to be defective due to design faults and or found to exhibit faults attributed to the performance of the construction activities in terms of quality and conformance with design and specifications. The bond will be returned on satisfactory correction of any defective work and after expiration of the maintenance period. Failure to comply with a Council issued instruction to correct defective work may result in the call up of the bond to have the work completed.

9. Hours of Work

- (i) Work involving the operation of construction plant and equipment of any description, shall only be carried out on site during the following times:
 - 7.00am to 6.00pm, Monday to Friday;
 - 7.00am to 1.00pm Saturdays;
 - No work is permitted on Sundays or Public Holidays.
- (ii) No variation to the above working hours is allowed unless otherwise agreed in writing by Council.

10. Transportation of Soil

All soil transported to or from the site must be covered to prevent dust or spillage during transport. If soil is tracked or spilt onto the road pavement from works on the subject land, it must be removed no later than at the end of each working day. Sediment must not enter Council's stormwater drainage network.

(D) RELEVANT PERIOD

When approval lapses if development not started (s.85)

- Two (2) years (starting the day the approval takes effect).

(E) OTHER NECESSARY DEVELOPMENT PERMITS AND/OR COMPLIANCE PERMITS

- Nil

DECISION BY DELEGATE

DECISION

Having considered the Planning Officer's report detailed above, I approve, as delegate of Council, the application subject to the conditions listed in the report.

Dated the 8TH day of DECEMBER 2020



BRIAN MILLARD
SENIOR PLANNER

MAREEBA SHIRE
AS DELEGATE OF THE COUNCIL

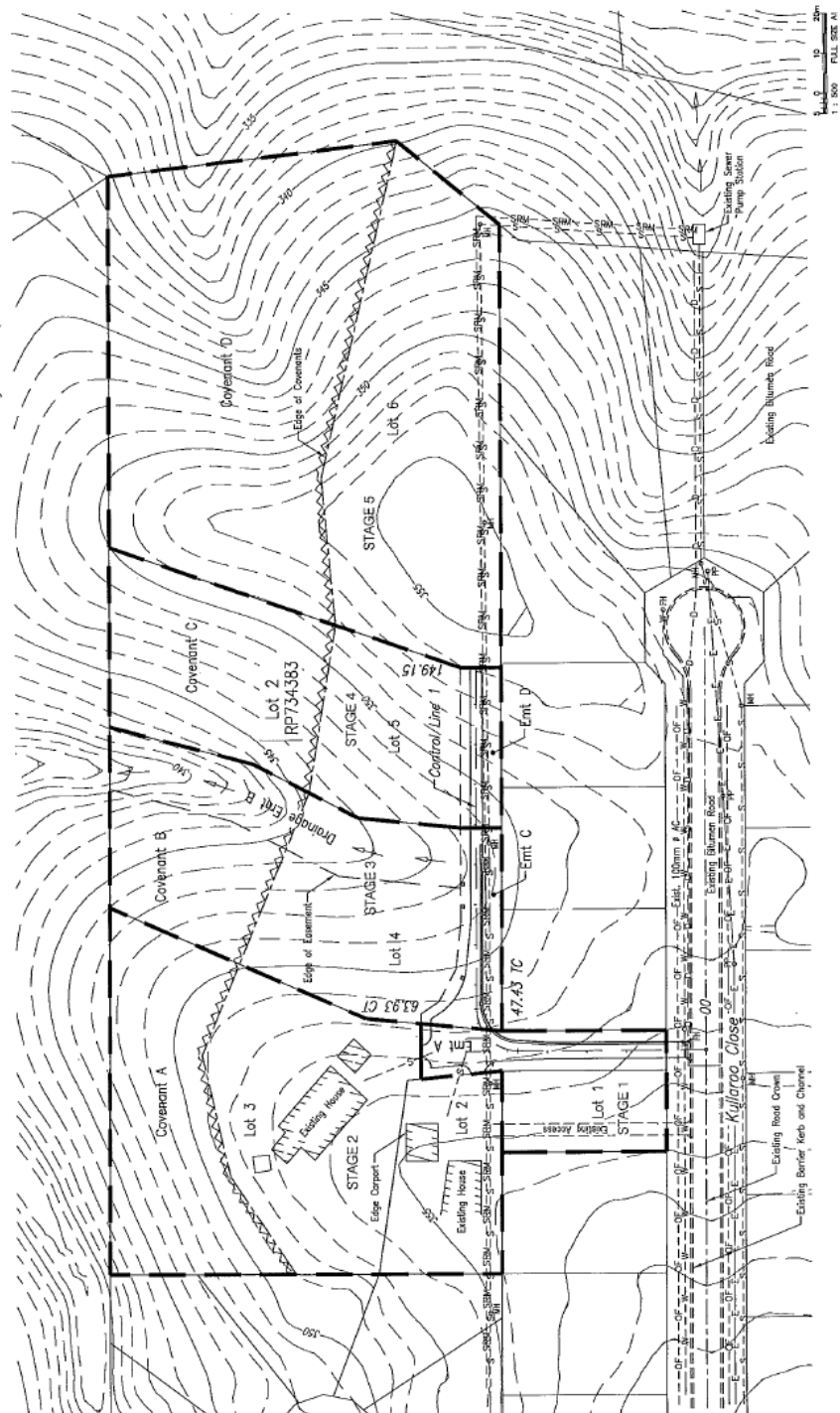
LEGEND	
---355---	Existing Litter Surface Contours (m AHD)
---	Existing Sewer Main
---	Existing Rising Sewer Main
---	Existing Water Main
---	Existing Above Ground Electricity Line
---	Existing Stormwater Pipe
---	Existing Sewer Manhole
---	Existing Fire Hydrant
---	Existing Power Pole
---	Existing Open Drain/Culvert

KFB Engineers Civil & Structural
 20 Scott St | PO Box 927 Cairns Q 4870
 P 07 4052 1703 | F 07 4052 1634 | E: email@kfbeng.com.au

Date: 26/11/20 Signed: *[Signature]*
 Job No: K-6633 RPEQ No: 00991

NOTES

- The Location of Services Shown are Given for Guidance Only. Locations May Not be Accurately Represented and Users are Advised to Verify the Location of all Services on Site.
- Existing Electrical and Telecommunications Services to be Relocated to Lot 2 and 3 to be Relocated into Driveway Easement.



1:1500 FULL SIZE A1

JOB NO:	K-6633
SHEET:	C01 A
SCALE:	1:500

Civil & Structural
 20 Scott St, Cairns | PO Box 927, Cairns Q 4870
 P 07 4052 1703 | F 07 4052 1634 | E: email@kfbeng.com.au

KFB ENGINEERS
 APR 23 09:39 AM

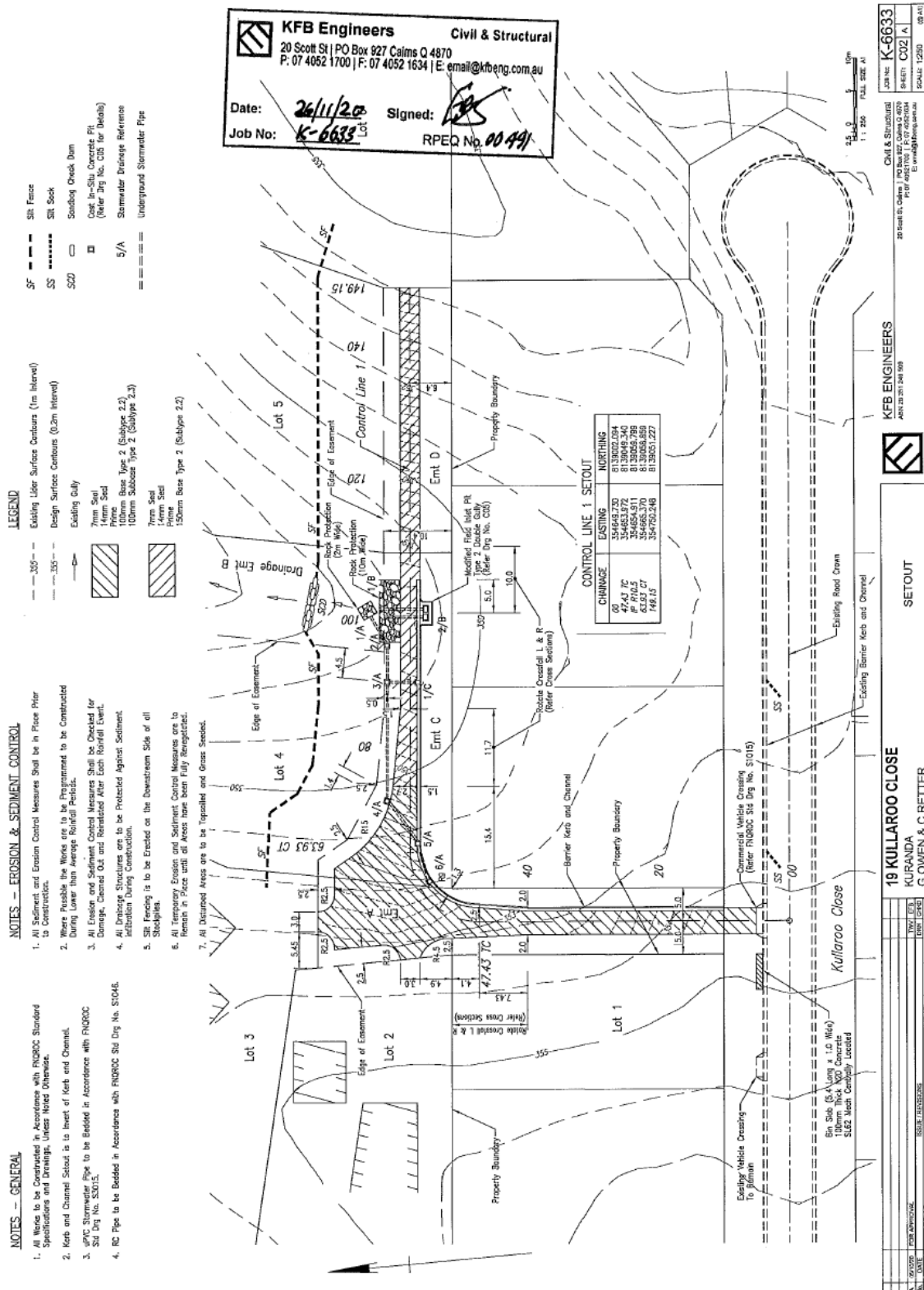


GENERAL ARRANGEMENT

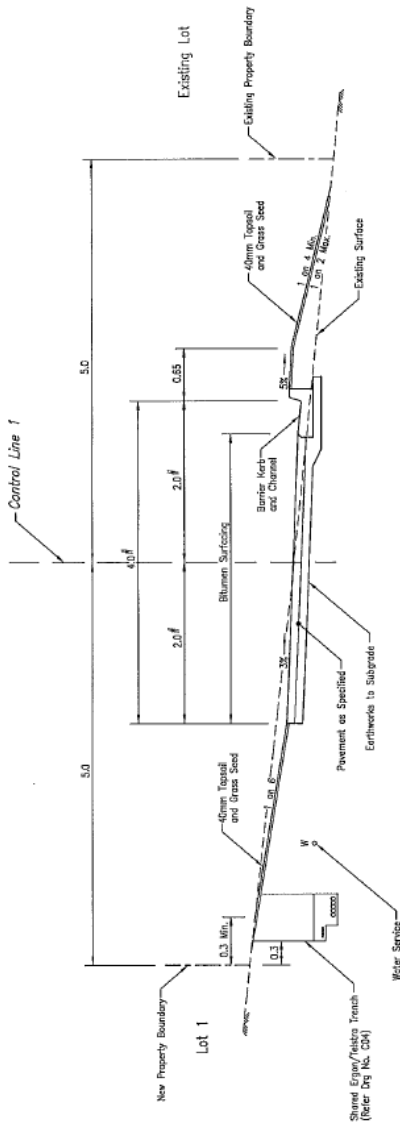
19 KULLAROO CLOSE
 KURANDA
 G OWEN & C RETTER

NO.	DATE	BY	CHK
1	26/11/20	GP	GP
2	26/11/20	GP	GP
3	26/11/20	GP	GP
4	26/11/20	GP	GP
5	26/11/20	GP	GP
6	26/11/20	GP	GP
7	26/11/20	GP	GP
8	26/11/20	GP	GP
9	26/11/20	GP	GP
10	26/11/20	GP	GP

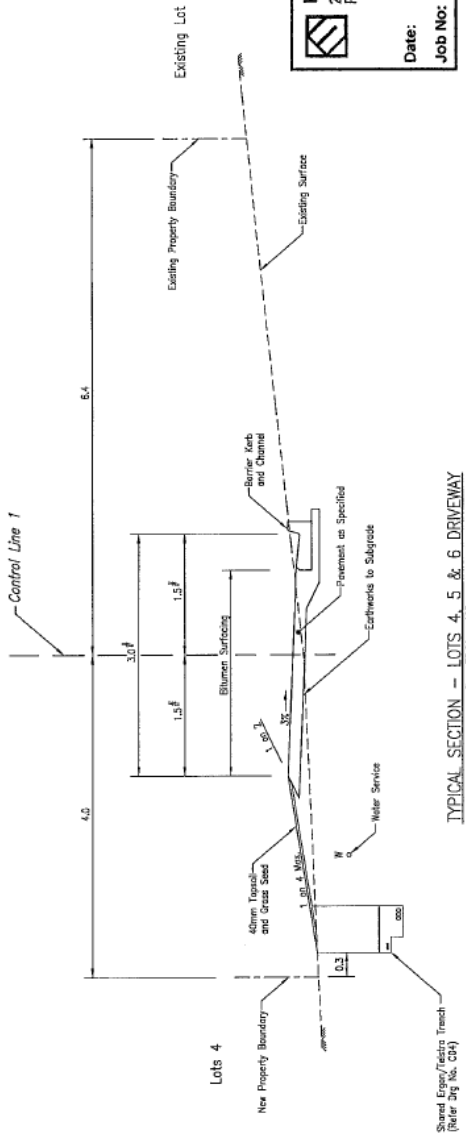
Document Set ID: 3894679
 Version: 1, Version Date: 26/11/2020



NOTES
1. Kerb and Channel to be Constructed in Accordance with FRODC Std
Dg No. 51000.




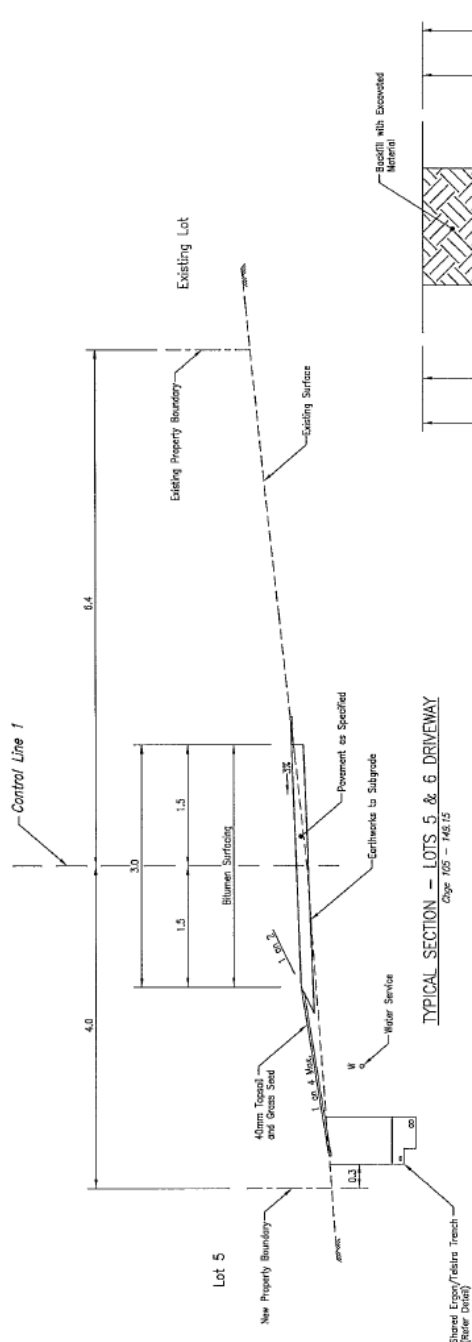
Refer Dg No. 022 for Width Changes



KFB Engineers Civil & Structural
20 South St | PO Box 927 Cairns Q 4870
P: 07 4052 1700 | F: 07 4052 1634 | E: email@kfbeng.com.au

Date: 26/11/20 Signed: [Signature] RPEQ No. 00441
Job No: K-6633

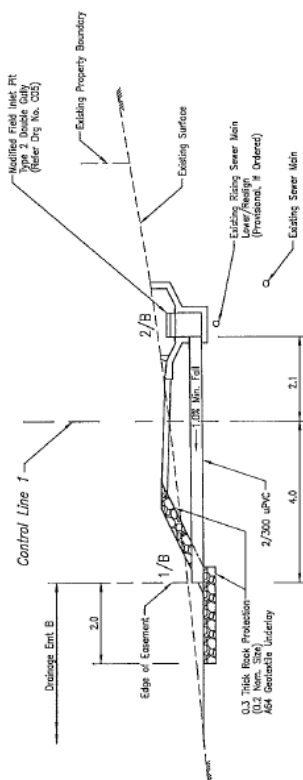
		KFB ENGINEERS		Civil & Structural		K-6633	
		20 South St, Cairns, QLD 4870 P.O. Box 927, Cairns, QLD 4870 E: info@kfbengineers.com.au				SHEET: C03 A	
		JOB NO: 201-001-001				SCALE: N.T.S. (9:AT)	
19 KULLAROO CLOSE							
TYPICAL SECTIONS							
KURANDA							
GOWEN & C REITER							
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS		TYPICAL SECTIONS	
KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS		KFB ENGINEERS	
KURANDA		KURANDA		KURANDA		KURANDA	
GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER		GOWEN & C REITER	
19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE		19 KULLAROO CLOSE	
TYPICAL SECTIONS							



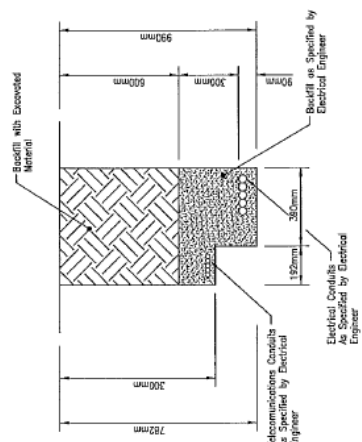
TYPICAL SECTION - LOTS 5 & 6 DRIVEWAY

Page 105 - 148.15

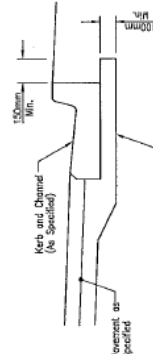
KFB Engineers
 Civil & Structural
 20 Scott St | PO Box 927 Cairns Q 4870
 P: 07 4052 1700 | F: 07 4052 1634 | E: email@kfbeng.com.au
 Job No: K-6633
 Date: 26/11/20
 Signed: [Signature]
 RPEQ No: 00491



CULVERT CROSS SECTION - 2/300 uPVC (Chge 100)



SHARED EGO/TELSTRA TRENCH



KERB AND CHANNEL DETAIL

Job No: K-6633
 SHEET: 004 A
 SCALE: N.T.S.

Civil & Structural
 20 Scott St | PO Box 927 Cairns Q 4870
 P: 07 4052 1700 | F: 07 4052 1634
 E: email@kfbeng.com.au

KFB ENGINEERS
 A/NZ 28 351 240 934

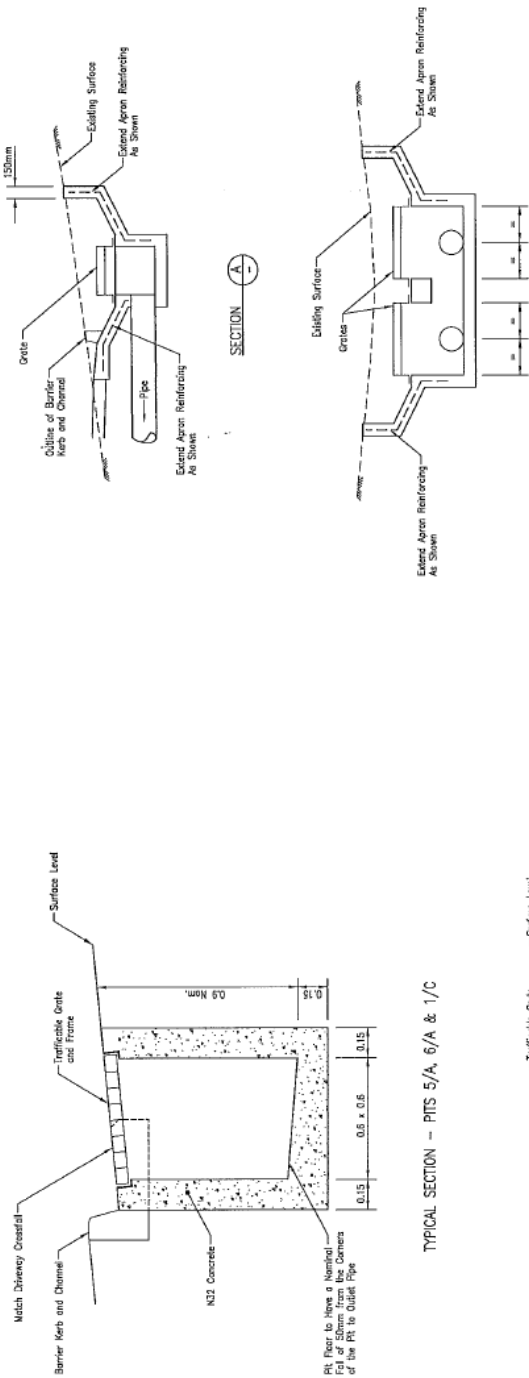


TYPICAL SECTION AND DETAILS

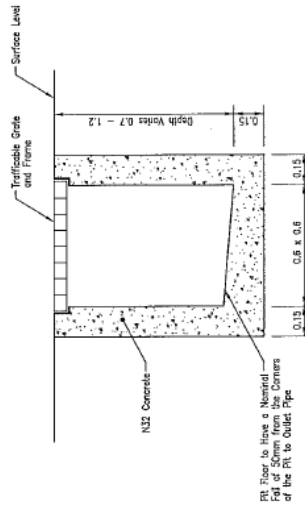
19 KULLAROO CLOSE
 KURANDA
 G OWEN & C RETTER

NO.	DATE	FOR APPROVAL	BY	DATE
1	26/11/20	FOR APPROVAL	BY	DATE
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				
54				
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70				
71				
72				
73				
74				
75				
76				
77				
78				
79				
80				
81				
82				
83				
84				
85				
86				
87				
88				
89				
90				
91				
92				
93				
94				
95				
96				
97				
98				
99				
100				

Document Set ID: 3894679



TYPICAL SECTION - PITS 5/A, 6/A & 1/C




TYPICAL SECTION - PITS 2/A, 3/A & 4/A

CAST IN-SITU CONCRETE PIT

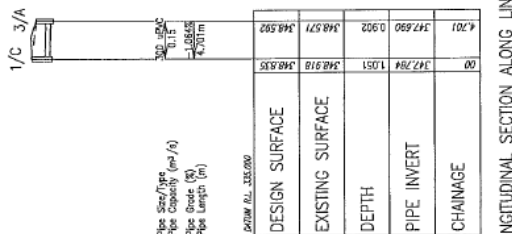
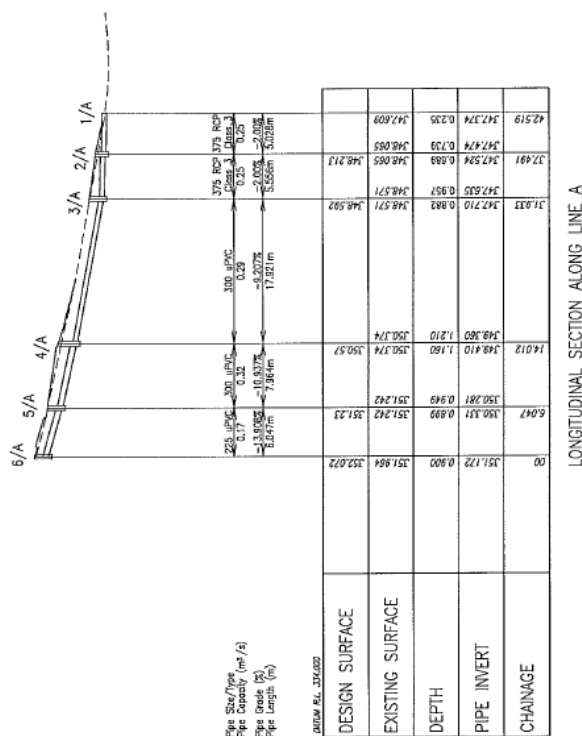
KFB Engineers Civil & Structural
20 Scott St | PO Box 927 Cairns Q 4870
P: 07 4652 1700 | F: 07 4652 1634 | E: email@kfbeng.com.au
Date: 26/11/20 Signed: *[Signature]*
Job No: K-6633 RPEQ No. 00491

MODIFIED FIELD INLET PIT (TYPE 2)
Field Inlet Pit to be Constructed in Accordance with DMR
Std. Dig No. 1310, Unless Amended by the Drawings

FOR APPROVAL		FOR APPROVAL	
A. 1. 07/05/20	FOR APPROVAL	A. 1. 07/05/20	FOR APPROVAL
APPROVED		APPROVED	
DATE / FILE		DATE / FILE	
19 KULLAROO CLOSE		19 KULLAROO CLOSE	
KURANDA		KURANDA	
G OWEN & C RETTER		G OWEN & C RETTER	
STORMWATER DETAILS		STORMWATER DETAILS	
KFB ENGINEERS		KFB ENGINEERS	
20 Scott St Cairns PO Box 927 Cairns Q 4870		20 Scott St Cairns PO Box 927 Cairns Q 4870	
P: 07 4652 1700 F: 07 4652 1634 E: email@kfbeng.com.au		P: 07 4652 1700 F: 07 4652 1634 E: email@kfbeng.com.au	
APR 20 2019 248 008		APR 20 2019 248 008	
Civil & Structural		Civil & Structural	
JOB No: K-6633		JOB No: K-6633	
SHEET: C05 A		SHEET: C05 A	
TOTALS: 1 X 25, 1 X 25, 1 X 25		TOTALS: 1 X 25, 1 X 25, 1 X 25	

 **KFB Engineers** **Civil & Structural**
20 Spout St | PO Box 997 Cairns, Q 4870
P: 07 4052 1760 | F: 07 4052 1834 | E: enr@kfbeng.com.au

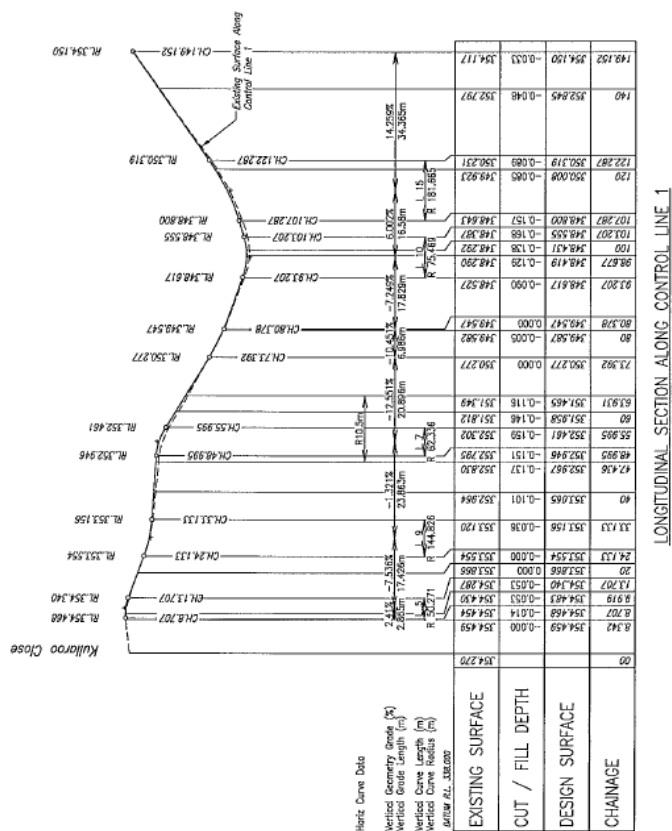
Date: 26/11/20 Signed: [Signature] RREQ No. 00491
Job No: K-6633




LONGITUDINAL SECTION ALONG LINE C

LONGITUDINAL SECTION ALONG LINE A

[illegible]



 **KFB Engineers** Civil & Structural
20 Scott St PO Box 927 Cairns Q 4870
P. 07 4052 1700 | F. 07 4052 1634 | E. email@kfbeng.com.au

Date: 26/11/20 Signed: [Signature]
Job No: K-6633 RPEC No. 00494



JOB NO.	K-6633	
SHEETS	C07	A
SCALE	1/4"=1'-0"	

Civil & Structural
 2000 Bex 927, Colima Q 4070
 21703 | P: 01 40527634
 E: email@bexing.com.au

KFB ENGINEERS
603 762 1922 FAX
ADN 26 351 240 5209

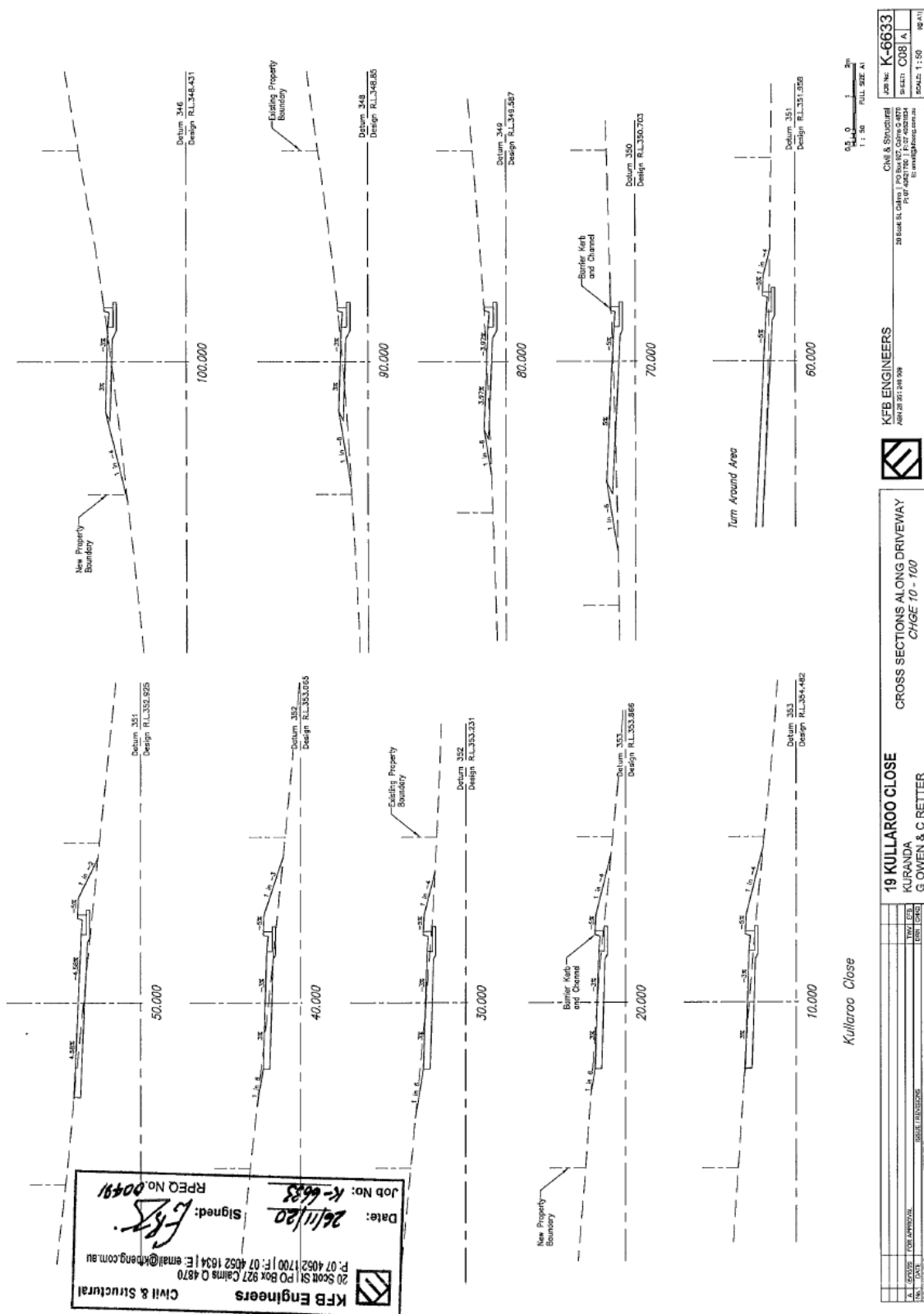


LONGITUDINAL SECTION ALONG DRIVEWAY

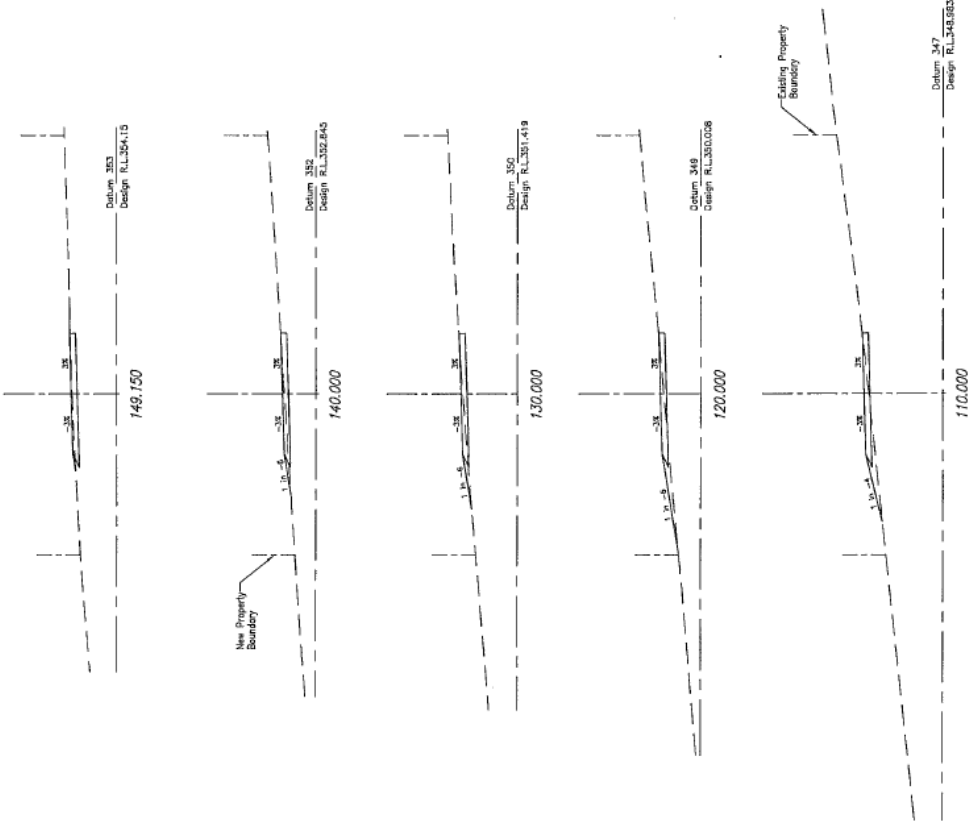
19 KULLAROO CLOSE
KURANDA
G OWEN & C RETTER

NO.	DATE	FOR APPROVAL	ISSUE / REVISIONS	DATE	CHKD
A	12/10/00				
<div style="text-align: right;"> TYPED DATE </div>					

Document Set ID: 3894679



Document Set ID: 3894679



KFB Engineers Civil & Structural
20 Scott St | PO Box 927 Cairns Q. 4870
P: 07 4052 1700 | F: 07 4052 1634 | E: email@kfbeng.com.au

Date: 26/11/20 Signed: [Signature]
Job No: K-6633 RPEQ No: 00491



KFB ENGINEERS Civil & Structural
20 Scott St Cairns Q. 4870
P: 07 4052 1700 | F: 07 4052 1634
R: email@kfbeng.com.au

JOB No: **K-6633**
SHEET: **C09** A
SCALE: **1:150** (B1 A1)

19 KULLAROO CLOSE
KURANDA
G OWEN & C RETTER

CROSS SECTIONS ALONG DRIVEWAY
CHGE 110 - 149.150

NO.	DATE	FOR APPROVAL	TYPE	FILE
1	10/11/20	G O W E N & C R E T T E R	DESIGN	110.000

DRAWN BY: [Name]

LEGEND

--- 350 --- Existing Litter Surface Contours
(1m Interval)

--- Existing Stormwater Pipe

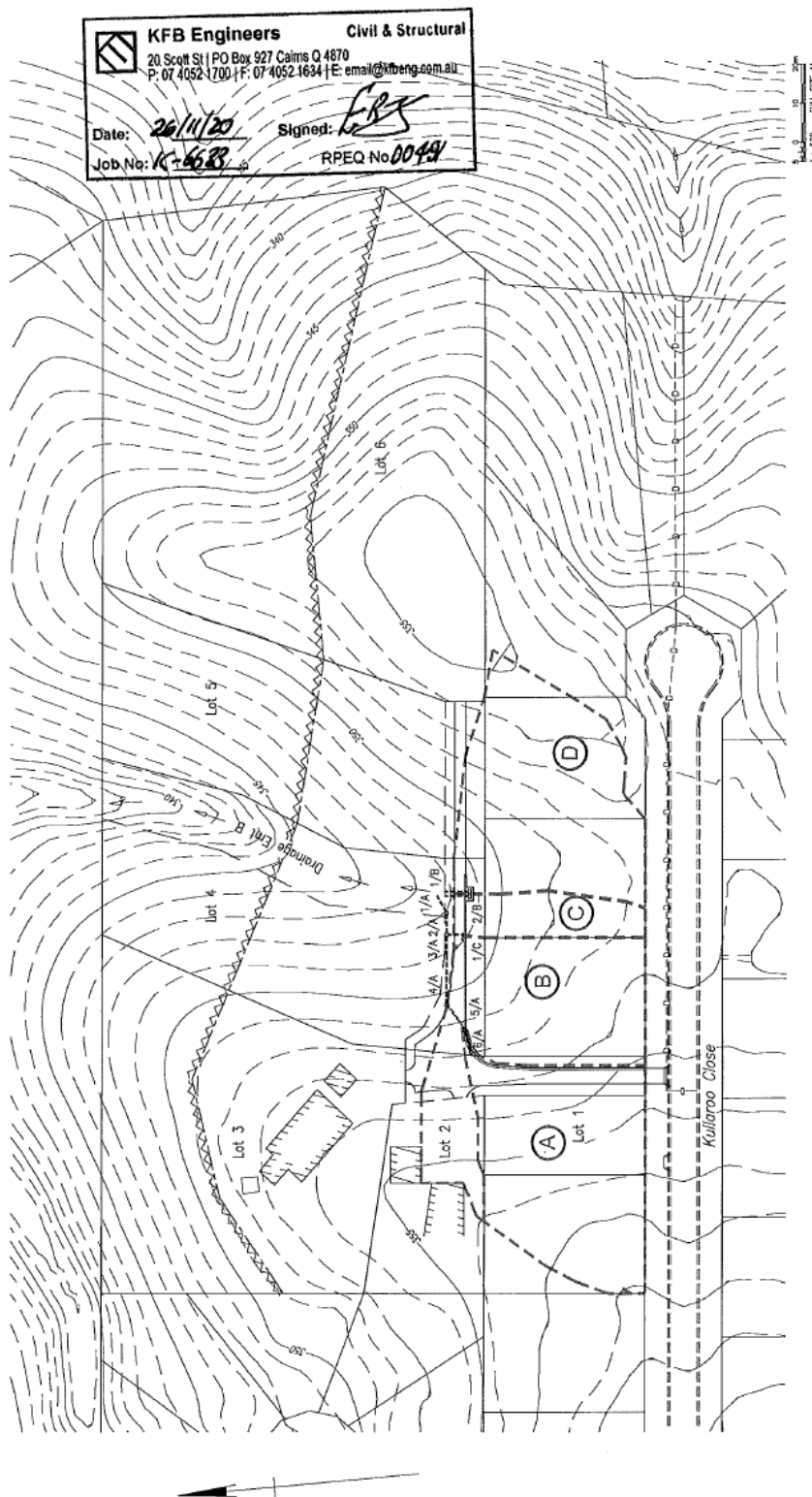
--- Catchment Boundary

1/A Structure Number

(A) Catchment Number

CATCHMENT CALCULATIONS

REFERENCE POINT	CATCHMENT NUMBER	CATCHMENT AREA (ha)	TIME OF CONCENTRATION (Min)	RUNOFF COEFFICIENT (C _r)	RAINFALL INTENSITY (L/s, mm/hr)	FLOW (Q _s , m ³ /s)	RUNOFF COEFFICIENT (C _r)	RAINFALL INTENSITY (L/s, mm/hr)	FLOW (Q _s , m ³ /s)
5/A	A	0.23	5	0.8	191.46	0.09	1.0	324.73	0.21
1/C	B	0.21	5	0.8	191.46	0.09	1.0	324.73	0.19
2/B	C	0.05	5	0.8	191.46	0.02	1.0	324.73	0.05
2/B	D	0.23	5	0.8	191.46	0.10	1.0	324.73	0.21



KFB Engineers Civil & Structural
20 Scott St | PO Box 927 Cairns Q 4870
P: 07 4052 1700 | F: 07 4052 1634 | E: email@kfbeng.com.au

Date: 26/11/20
Job No: K-6633
Signed: [Signature]
RPEQ No 0044

1:1 500 FULL SIZE A1

PROJ No: K-6633
SHEET: SK1 A
SCALE: 1:500

Civil & Structural
20 Scott St Cairns Q 4870
P: 07 4052 1700 | F: 07 4052 1634
E: email@kfbeng.com.au

KFB ENGINEERS
KFB ENGINEERS
KFB ENGINEERS



19 KULLAROO CLOSE
KULLAROO
G OWEN & C RETTER

STORMWATER CALCULATIONS

NO.	DATE	FOR APPROVAL	FOR FILE
1	26/11/20	FOR APPROVAL	FOR FILE
2	26/11/20	FOR APPROVAL	FOR FILE
3	26/11/20	FOR APPROVAL	FOR FILE
4	26/11/20	FOR APPROVAL	FOR FILE
5	26/11/20	FOR APPROVAL	FOR FILE
6	26/11/20	FOR APPROVAL	FOR FILE
7	26/11/20	FOR APPROVAL	FOR FILE
8	26/11/20	FOR APPROVAL	FOR FILE
9	26/11/20	FOR APPROVAL	FOR FILE
10	26/11/20	FOR APPROVAL	FOR FILE
11	26/11/20	FOR APPROVAL	FOR FILE
12	26/11/20	FOR APPROVAL	FOR FILE
13	26/11/20	FOR APPROVAL	FOR FILE
14	26/11/20	FOR APPROVAL	FOR FILE
15	26/11/20	FOR APPROVAL	FOR FILE
16	26/11/20	FOR APPROVAL	FOR FILE
17	26/11/20	FOR APPROVAL	FOR FILE
18	26/11/20	FOR APPROVAL	FOR FILE
19	26/11/20	FOR APPROVAL	FOR FILE
20	26/11/20	FOR APPROVAL	FOR FILE
21	26/11/20	FOR APPROVAL	FOR FILE
22	26/11/20	FOR APPROVAL	FOR FILE
23	26/11/20	FOR APPROVAL	FOR FILE
24	26/11/20	FOR APPROVAL	FOR FILE
25	26/11/20	FOR APPROVAL	FOR FILE
26	26/11/20	FOR APPROVAL	FOR FILE
27	26/11/20	FOR APPROVAL	FOR FILE
28	26/11/20	FOR APPROVAL	FOR FILE
29	26/11/20	FOR APPROVAL	FOR FILE
30	26/11/20	FOR APPROVAL	FOR FILE
31	26/11/20	FOR APPROVAL	FOR FILE
32	26/11/20	FOR APPROVAL	FOR FILE
33	26/11/20	FOR APPROVAL	FOR FILE
34	26/11/20	FOR APPROVAL	FOR FILE
35	26/11/20	FOR APPROVAL	FOR FILE
36	26/11/20	FOR APPROVAL	FOR FILE
37	26/11/20	FOR APPROVAL	FOR FILE
38	26/11/20	FOR APPROVAL	FOR FILE
39	26/11/20	FOR APPROVAL	FOR FILE
40	26/11/20	FOR APPROVAL	FOR FILE
41	26/11/20	FOR APPROVAL	FOR FILE
42	26/11/20	FOR APPROVAL	FOR FILE
43	26/11/20	FOR APPROVAL	FOR FILE
44	26/11/20	FOR APPROVAL	FOR FILE
45	26/11/20	FOR APPROVAL	FOR FILE
46	26/11/20	FOR APPROVAL	FOR FILE
47	26/11/20	FOR APPROVAL	FOR FILE
48	26/11/20	FOR APPROVAL	FOR FILE
49	26/11/20	FOR APPROVAL	FOR FILE
50	26/11/20	FOR APPROVAL	FOR FILE
51	26/11/20	FOR APPROVAL	FOR FILE
52	26/11/20	FOR APPROVAL	FOR FILE
53	26/11/20	FOR APPROVAL	FOR FILE
54	26/11/20	FOR APPROVAL	FOR FILE
55	26/11/20	FOR APPROVAL	FOR FILE
56	26/11/20	FOR APPROVAL	FOR FILE
57	26/11/20	FOR APPROVAL	FOR FILE
58	26/11/20	FOR APPROVAL	FOR FILE
59	26/11/20	FOR APPROVAL	FOR FILE
60	26/11/20	FOR APPROVAL	FOR FILE
61	26/11/20	FOR APPROVAL	FOR FILE
62	26/11/20	FOR APPROVAL	FOR FILE
63	26/11/20	FOR APPROVAL	FOR FILE
64	26/11/20	FOR APPROVAL	FOR FILE
65	26/11/20	FOR APPROVAL	FOR FILE
66	26/11/20	FOR APPROVAL	FOR FILE
67	26/11/20	FOR APPROVAL	FOR FILE
68	26/11/20	FOR APPROVAL	FOR FILE
69	26/11/20	FOR APPROVAL	FOR FILE
70	26/11/20	FOR APPROVAL	FOR FILE
71	26/11/20	FOR APPROVAL	FOR FILE
72	26/11/20	FOR APPROVAL	FOR FILE
73	26/11/20	FOR APPROVAL	FOR FILE
74	26/11/20	FOR APPROVAL	FOR FILE
75	26/11/20	FOR APPROVAL	FOR FILE
76	26/11/20	FOR APPROVAL	FOR FILE
77	26/11/20	FOR APPROVAL	FOR FILE
78	26/11/20	FOR APPROVAL	FOR FILE
79	26/11/20	FOR APPROVAL	FOR FILE
80	26/11/20	FOR APPROVAL	FOR FILE
81	26/11/20	FOR APPROVAL	FOR FILE
82	26/11/20	FOR APPROVAL	FOR FILE
83	26/11/20	FOR APPROVAL	FOR FILE
84	26/11/20	FOR APPROVAL	FOR FILE
85	26/11/20	FOR APPROVAL	FOR FILE
86	26/11/20	FOR APPROVAL	FOR FILE
87	26/11/20	FOR APPROVAL	FOR FILE
88	26/11/20	FOR APPROVAL	FOR FILE
89	26/11/20	FOR APPROVAL	FOR FILE
90	26/11/20	FOR APPROVAL	FOR FILE
91	26/11/20	FOR APPROVAL	FOR FILE
92	26/11/20	FOR APPROVAL	FOR FILE
93	26/11/20	FOR APPROVAL	FOR FILE
94	26/11/20	FOR APPROVAL	FOR FILE
95	26/11/20	FOR APPROVAL	FOR FILE
96	26/11/20	FOR APPROVAL	FOR FILE
97	26/11/20	FOR APPROVAL	FOR FILE
98	26/11/20	FOR APPROVAL	FOR FILE
99	26/11/20	FOR APPROVAL	FOR FILE
100	26/11/20	FOR APPROVAL	FOR FILE

Document Set ID: 3894679
Version: 1, Version Date: 26/11/2020