IDAS form 1—Application details

(*Sustainable Planning Act 2009* version 4.1 effective 4 July 2014)

This form must be used for **ALL** development applications.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete this form (*IDAS form 1—Application details)*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application.

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in the *Sustainable Planning Act 2009* (SPA) or the Sustainable Planning Regulation 2009.

This form and any other IDAS form relevant to your application must be used for development applications relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994* and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*. Whenever a planning scheme is mentioned, take it to mean land use plan for the strategic port land, Brisbane core port land or airport land.

PLEASE NOTE: This form is not required to accompany requests for compliance assessment.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

Applicant details (Note: 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 all IDAS application forms is correct. Any development permit or preliminary approval that may be issued as a consequence of this application will be issued to the applicant.)

Name/s (individual or company name in full)	**Department of Aboriginal and Torres Strait Islander and Multicultural Affairs (Remote Indigenous Land and Infrastructure Program Office)**			
For companies, contact name	**c/- Black & More**			
Postal address	PO Box 999N			
	Suburb	North Cairns		
	State	QLD	Postcode	4870
	Country	Australia		
Contact phone number	07 4031 9944			
Mobile number (non-mandatory requirement)				

Fax number (non-mandatory requirement)	

Email address (non-mandatory requirement)	
	@
Applicant's reference number (non-mandatory requirement)	

1. What is the nature of the development proposed and what type of approval is being sought?

Table A—Aspect 1 of the application (If there are additional aspects to the application please list in Table B—Aspect 2.)

a) What is the nature of the development? (Please only tick one box.)

☐ Material change of use ☐ Reconfiguring a lot ☐ Building work ☒ Operational work

b) What is the approval type? (Please only tick one box.)

☐ Preliminary approval under s241 of SPA ☐ Preliminary approval under s241 and s242 of SPA ☒ Development permit

c) Provide a brief description of the proposal, including use definition and number of buildings or structures where applicable (e.g. six unit apartment building defined as a *multi-unit dwelling*, 30 lot residential subdivision etc.)

Upgrades to existing infrstructure

d) What is the level of assessment? (Please only tick one box.)

☐ Impact assessment ☒ Code assessment

Table B—Aspect 2 of the application (If there are additional aspects to the application please list in Table C—Additional aspects of the application.)

a) What is the nature of development? (Please only tick one box.)

☐ Material change of use ☐ Reconfiguring a lot ☐ Building work ☐ Operational work

b) What is the approval type? (Please only tick one box.)

☐ Preliminary approval under s241 of SPA ☐ Preliminary approval under s241 and s242 of SPA ☐ Development permit

c) Provide a brief description of the proposal, including use definition and number of buildings or structures where applicable (e.g. six unit apartment building defined as a *multi-unit dwelling*, 30 lot residential subdivision etc.)

d) What is the level of assessment?

☐ Impact assessment ☐ Code assessment

Table C—Additional aspects of the application (If there are additional aspects to the application please list in a separate table on an extra page and attach to this form.)

☐ Refer attached schedule ☐ Not required

2. Location of the premises (Complete Table D and/or Table E as applicable. Identify each lot in a separate row.)

Table D—Street address and lot on plan for the premises or street address and lot on plan for the land adjoining or adjacent to the premises (Note: this table is to be used for applications involving taking or interfering with water). (Attach a separate schedule if there is insufficient space in this table.)

☒ Street address **and** lot on plan (All lots must be listed.)

☐ Street address **and** lot on plan for the land adjoining or adjacent to the premises (Appropriate for development in water but adjoining or adjacent to land, e.g. jetty, pontoon. All lots must be listed.)

Street address					**Lot on plan description**		**Local government area** (e.g. Logan, Cairns)
Lot	Unit no.	Street no.	Street name and official suburb/ locality name	Post-code	Lot no.	Plan type and plan no.	
i)			Mossman Gorge Road, Mossman		100	RP911412	Douglas
ii)			Mossman Gorge Road, Mossman		152	SR832	Douglas
iii)							

Planning scheme details (If the premises involves multiple zones, clearly identify the relevant zone/s for each lot in a separate row in the below table. Non-mandatory)

Lot	Applicable zone / precinct	Applicable local plan / precinct	Applicable overlay/s
i)			
ii)			
iii)			

Table E—Premises coordinates (Appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay.) (Attach a separate schedule if there is insufficient space in this table.)

Coordinates (Note: place each set of coordinates in a separate row)				**Zone reference**	**Datum**	**Local government area (if applicable)**
Easting	Northing	Latitude	Longitude			
					☐ GDA94 ☐ WGS84 ☐ other	

3. Total area of the premises on which the development is proposed (indicate square metres)

~77,000m2

4. Current use/s of the premises (e.g. vacant land, house, apartment building, cane farm etc.)

Mossman Gorge Community (existing residential and community facilities, services and associated infrastructure)

5. Are there any current approvals (e.g. a preliminary approval) associated with this application? (Non-mandatory requirement)

☒ No ☐ Yes—provide details below

List of approval reference/s	Date approved (dd/mm/yy)	Date approval lapses (dd/mm/yy)

6. Is owner's consent required for this application? (Refer to notes at the end of this form for more information.)

☐ No

☒ Yes—complete either Table F, Table G or Table H as applicable

Table F	
Name of owner/s of the land	
I/We, the above-mentioned owner/s of the land, consent to the making of this application.	
Signature of owner/s of the land	
Date	

Table G	
Name of owner/s of the land	
☒ The owner's written consent is attached or will be provided separately to the assessment manager.	

Table H	
Name of owner/s of the land	
☐ By making this application, I, the applicant, declare that the owner has given written consent to the making of the application.	

7. Identify if any of the following apply to the premises (Tick applicable box/es.)

☒ Adjacent to a water body, watercourse or aquifer (e.g. creek, river, lake, canal)—complete Table I

☐ On strategic port land under the *Transport Infrastructure Act 1994*—complete Table J

☐ In a tidal water area—complete Table K

☐ On Brisbane core port land under the *Transport Infrastructure Act 1994* (No table requires completion.)

☐ On airport land under the *Airport Assets (Restructuring and Disposal) Act 2008* (no table requires completion)

☐ Listed on either the Contaminated Land Register (CLR) or the Environmental Management Register (EMR) under the *Environmental Protection Act 1994* (no table requires completion)

Table I
Name of water body, watercourse or aquifer
Mossman River

Table J	
Lot on plan description for strategic port land	Port authority for the lot

Table K	
Name of local government for the tidal area (if applicable)	Port authority for the tidal area (if applicable)

8. 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 dimension of each easement is included in the plans submitted

9. Does the proposal include new building work or operational work on the premises? (Including any services)

☐ No ☒ Yes—ensure the nature, location and dimension of proposed works are included in plans submitted

10. Is the payment of a portable long service leave levy applicable to this application? (Refer to notes at the end of this form for more information.)

☐ No—go to question 12 ☒ Yes

11. Has the portable long service leave levy been paid? (Refer to notes at the end of this form for more information.)

☒ No

☐ Yes—complete Table L and submit with this application the yellow local government/private certifier's copy of the receipted QLeave form

Table L		
Amount paid	Date paid (dd/mm/yy)	QLeave project number (6 digit number starting with A, B, E, L or P)

12. Has the local government agreed to apply a superseded planning scheme to this application under section 96 of the *Sustainable Planning Act 2009*?

☒ No

☐ Yes—please provide details below

Name of local government	Date of written notice given by local government (dd/mm/yy)	Reference number of written notice given by local government (if applicable)

13. List below all of the forms and supporting information that accompany this application (Include all IDAS forms, checklists, mandatory supporting information etc. that will be submitted as part of this application. Note: this question does not apply for applications made online using MyDAS)

Description of attachment or title of attachment	Method of lodgement to assessment manager
Engineering Drawings	Over the counter

14. Applicant's declaration

☒ By making this application, I declare that all information in this application is true and correct (Note: it is unlawful to provide false or misleading information)

Notes for completing this form

- Section 261 of the *Sustainable Planning Act 2009* prescribes when an application is a properly-made application. Note, the assessment manager has discretion to accept an application as properly made despite any non-compliance with the requirement to provide mandatory supporting information under section 260(1)(c) of the *Sustainable Planning Act 2009*

Applicant details

- Where the applicant is not a natural person, ensure the applicant entity is a real legal entity.

Question 1

- Schedule 3 of the Sustainable Planning Regulation 2009 identifies assessable development and the type of assessment. Where schedule 3 identifies assessable development as "various aspects of development" the applicant must identify each aspect of the development on Tables A, B and C respectively and as required.

Question 6

- Section 263 of the *Sustainable Planning Act 2009* sets out when the consent of the owner of the land is required for an application. Section 260(1)(e) of the *Sustainable Planning Act 2009* provides that if the owner's consent is required under section 263, then an application must contain, or be accompanied by, the written consent of the owner, or include a declaration by the applicant that the owner has given written consent to the making of the application. If a development application relates to a state resource, the application is not required to be supported by evidence of an allocation or entitlement to a state resource. However, where the state is the owner of the subject land, the written consent of the state, as landowner, may be required. Allocation or entitlement to the state resource is a separate process and will need to be obtained before development commences.

Question 7

- If the premises is listed on either the Contaminated Land Register (CLR) or the Environmental Management Register (EMR) under the *Environmental Protection Act 1994* it may be necessary to seek compliance assessment. Schedule 18 of the Sustainable Planning Regulation 2009 identifies where compliance assessment is required.

Question 11

- The *Building and Construction Industry (Portable Long Service Leave) Act 1991* prescribes when the portable long service leave levy is payable.
- The portable long service leave levy amount and other prescribed percentages and rates for calculating the levy are prescribed in the Building and Construction Industry (Portable Long Service Leave) Regulation 2002.

Question 12

- The portable long service leave levy need not be paid when the application is made, but the *Building and Construction Industry (Portable Long Service Leave) Act 1991* requires the levy to be paid before a development permit is issued.
- Building and construction industry notification and payment forms are available from any Queensland post 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 on 1800 803 481 or visit www.qleave.qld.gov.au.

Privacy—The information collected in this form will be used by the Department of State Development, Infrastructure and Planning (DSDIP), assessment manager, referral agency and/or building certifier in accordance with the processing and assessment of your application. Your personal details should not be disclosed for a purpose outside of the IDAS process or the provisions about public access to planning and development information in the *Sustainable Planning Act 2009*, except where required by legislation (including the *Right to Information Act 2009*) or as required by Parliament. This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002*.

OFFICE USE ONLY

Date received		Reference numbers	

NOTIFICATION OF ENGAGEMENT OF A 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 license 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

The *Sustainable Planning Act 2009* is administered by the Department of State Development, Infrastructure and Planning. This form and all other required application materials should be sent to your assessment manager and any referral agency.

Company owner's consent to the making of a development application under the *Sustainable Planning Act 2009*

I, _____
Director of the below mentioned company and
I, Acting Chairperson Matthew Gibson

of Bamanga Bubu Ngadimunku Inc

as owner of premises identified as follows:

Lot 100 on RP911412 (Mossman Gorge Community, Mossman Gorge Road, Mossman)

consent to the making of a development application under the *Sustainable Planning Act 2009* by

Department of Aboriginal and Torres Strait Islander and Multicultural Affairs (Remote Indigenous Land and Infrastructure Program Office)

on the premises described above for the purposes of

Reconfiguration of a Lot and Operational Works

x _____ *[signature of Director]*

signed on the Tuesday day of 27th 20 14

_____ *[signature of Director/company secretary]*

signed on the _____ day of _____ 20 _____

Company seal *[if used]*

BAMANGA BUBU NGADIMUNKU INC. THE COMMON SEAL OF

Trustee consent to the making of a development application under the *Sustainable Planning Act 2009*

I, GEOFFREY RICHARD YELL

of DEPARTMENT OF COMMUNITIES, CHILD SAFETY and DISABILITY SERVICES

as TRUSTEE of premises identified as follows:

Lot 152 on SR832, including Lease Areas A and B (Mossman Gorge Community, Mossman Gorge Road, Mossman)

consent to the making of a development application under the *Sustainable Planning Act 2009* by

Department of Aboriginal and Torres Strait Islander and Multicultural Affairs (Remote Indigenous Land and Infrastructure Program Office)

on the premises described above for the purposes of

Operational Works

[signature]

Geoff Yell
Director, Facilities Management

signed on the 15th day of May 2014

IDAS form 6—Building or operational work assessable against a planning scheme

(*Sustainable Planning Act 2009* version 3.0 effective 1 July 2013)

This form must be used for development applications for building work or operational work assessable against a planning scheme.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete *IDAS form 1—Application details*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application.

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in the *Sustainable Planning Act 2009* (SPA) or the Sustainable Planning Regulation 2009.

This form must be used for building work or operational work relating on strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994* and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008* that requires assessment against the land use plan for that land. Whenever a planning scheme is mentioned, take it to mean land use plan for the strategic port land, Brisbane core port land or airport land.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

1. What is the nature of the work that requires assessment against a planning scheme? (Tick all applicable boxes.)

☐ Building work—complete Table A ☑ Operational work—complete Table B

Table A

a) What is the nature of the building work (e.g. building, repairing, altering, underpinning, moving or demolishing a building)?

b) Are there any current approvals associated with this application? (e.g. material change of use.)

☐ No ☐ Yes— provide details below

List of approval reference/s	Date approved (dd/mm/yy)	Date approval lapses (dd/mm/yy)

Table B

a) What is the nature of the operational work? (Tick all applicable boxes.)

- [x] Road works
- [x] Stormwater
- [x] Water infrastructure
- [x] Drainage works
- [ ] Earthworks
- [x] Sewerage infrastructure
- [ ] Landscaping
- [ ] Signage
- [ ] Clearing vegetation under the planning scheme
- [ ] Other—provide details

b) Is the operational work necessary to facilitate the creation of new lots? (E.g. subdivision.)

- [ ] No
- [x] Yes—specify the number of lots being created: 19 Freehold Lots

c) Are there any current approvals associated with this application? (E.g. material change of use.)

- [x] No
- [ ] Yes—provide details below

List of approval reference/s	Date approved (dd/mm/yy)	Date approval lapses (dd/mm/yy)

2. What is the dollar value of the proposed building work? (Inc GST, materials and labour.)	**$**

3. What is the dollar value of the proposed operational work? (Inc GST, materials and labour.)	**$**

Mandatory supporting information

4. Confirm that the following mandatory supporting information accompanies this application

Mandatory supporting information	**Confirmation of lodgement**	**Method of lodgement**
All applications involving building work or operational work		
A site plan drawn to an appropriate scale (1:100, 1:200 or 1:500 are recommended scales) which shows the following: • the location and site area of the land to which the application relates (*relevant land*) • the north point • the boundaries of the relevant land • the allotment layout showing existing lots, any proposed lots (including the dimensions of those lots), existing or proposed road reserves, building envelopes and existing or proposed open space (note: numbering is required for all lots) • any existing or proposed easements on the relevant land and their function • any access limitation strips • all existing and proposed roads and access points on the relevant land.	☑ Confirmed	Over the counter

A statement about how the proposed development addresses the local government's planning schemes and any other planning documents relevant to the application.	☐ Confirmed	
A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP).	☐ Confirmed ☐ Not applicable	
Applications for building work (including extensions and demolition that is assessable development)		
Floor plans drawn to an appropriate scale (1:50, 1:100 or 1:200 are recommended scales) which show the following: • the north point • the intended use of each area on the floor plan (for commercial, industrial or mixed use developments only) • the room layout (for residential development only) with all rooms clearly labelled • the existing and the proposed built form (for extensions only) • the gross floor area of each proposed floor area.	☐ Confirmed ☑ Not applicable	
Elevations drawn to an appropriate scale (1:100, 1:200 or 1:500 are recommended scales) which show plans of all building elevations and facades, clearly labelled to identify orientation (e.g. north elevation).	☐ Confirmed ☑ Not applicable	
Plans showing the size, location, proposed site cover, proposed maximum number of storeys, and proposed maximum height above natural ground level of the proposed new building work.	☐ Confirmed ☑ Not applicable	
Plans showing the extent of any demolition that is assessable development.	☐ Confirmed ☑ Not applicable	
Applications for operational work involving earthworks (filling and excavating)		
Drawings showing: • existing and proposed contours • areas to be cut and filled • the location and level of any permanent survey marks or reference stations used as datum for the works • the location of any proposed retaining walls on the relevant land and their height • the defined flood level (if applicable) • the fill level (if applicable).	☐ Confirmed ☑ Not applicable	
Applications for operational work involving roadworks		
Drawings showing: • existing and proposed contours • the centreline or construction line showing chainages, bearings, offsets if the construction line is not the centreline of the road and all intersection points • information for each curve including tangent point chainages and offsets, curve radii, arc length, tangent length, superelevation (if applicable) and curve widening (if applicable) • kerb lines including kerb radii (where not parallel to centreline) and tangent point changes (where not parallel to centreline) • edge of pavement where kerb is not constructed • position and extent of channelisation • location and details of all traffic signs, guideposts, guardrail and other street furniture • pavement markings including details on raised pavement markers	☑ Confirmed ☐ Not applicable	Over the counter

• catchpit, manhole and pipeline locations • drainage details (if applicable) • cross road drainage culverts (if applicable) • concrete footpaths and cycle paths • location and details for access points, ramps and invert crossings • changes in surfacing material.		
Applications for operational work involving stormwater drainage		
Drawings showing: • existing and proposed contours • drainage locations, diameters and class of pipe, open drains and easements • manhole location, chainage and offset or coordinates and inlet and outlet invert levels • inlet pit locations, chainage and offset or coordinates and invert and kerb levels.	☑ Confirmed ☐ Not applicable	Over the counter
Applications for operational work involving water reticulation		
Drawings showing: • kerb lines or edge of pavement where kerb is not constructed • location and levels of other utility services where affected by water reticulation works • pipe diameter, type of pipe and pipe alignment • water main alignments • water supply pump station details (if applicable) • minor reservoir details (if applicable) • conduits • location of valves and fire hydrants • location of house connections (if applicable) • location of bench marks and reference pegs.	☑ Confirmed ☐ Not applicable	Over the counter
Applications for operational work involving sewerage reticulation		
Drawings showing: • location of all existing and proposed services • location of all existing and proposed sewer lines and manhole locations • location of all house connection branches • kerb lines or edge of pavement where kerb is not constructed • chainages • design sewer invert levels • design top of manhole levels • type of manhole and manhole cover • pipe diameter, type of pipe and pipe alignment • location of house connections (if applicable) • sewer pump station details (if applicable).	☑ Confirmed ☐ Not applicable	Over the counter
Applications for operational work involving street lighting		
Drawings showing: • location of all light poles and service conduits • location of all other cross road conduits • type of wattage and lighting • any traffic calming devices • additional plans for roundabouts and major roads (if applicable) • details of any variations to normal alignment	☑ Confirmed ☐ Not applicable	Over the counter

• details of lighting levels.		
Applications for operational work involving public utility services		
Drawings showing: • any existing light poles and power poles • any existing underground services • details of proposed services • alteration to existing services.	☑ Confirmed ☐ Not applicable	Over the counter
Applications for operational work involving landscaping works		
Drawings showing: • the location of proposed plant species • a plant schedule indicating common and botanical names, pot sizes and numbers of plants • planting bed preparation details including topsoil depth, subgrade preparation, mulch type and depth, type of turf, pebble, paving and garden edge • the location and type of any existing trees to be retained • construction details of planter boxes, retaining walls and fences • the proposed maintenance period • irrigation system details.	☐ Confirmed ☑ Not applicable	

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

OFFICE USE ONLY

Date received		Reference numbers	

The *Sustainable Planning Act 2009* is administered by the Department of State Development, Infrastructure and Planning. This form and all other required application materials should be sent to your assessment manager and any referral agency.

Department of State Development, Infrastructure and Planning
PO Box 15009 City East Qld 4002
tel 13 QGOV (13 74 68)
info@dsdip.qld.gov.au

www.dsdip.qld.gov.au

IDAS form 11—Clearing native vegetation

(*Sustainable Planning Act 2009* version 3.1 effective 23 September 2013)

This form must be used for development applications that involve the clearing of native vegetation.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete *IDAS form 1—Application details*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application
- include the relevant application fee, noting that referral agency fees (where applicable) are to be paid to the referral agency.

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in the *Sustainable Planning Act 2009* (SPA) or the Sustainable Planning Regulation 2009.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

1. What type of development is proposed?

- [x] Operational work for clearing vegetation made assessable under Schedule 3 of the Sustainable Planning Regulation 2009
- [ ] Material change of use of the premises
- [ ] Reconfiguring a lot

2. What type of approval is being sought?

- [x] Development permit
- [ ] Preliminary approval
- [ ] Both—provide details below

Mandatory supporting information

3. Confirm that the following mandatory supporting information accompanies this application

For ALL applications	Confirmation of lodgement	Method of lodgement
A property vegetation management plan including as defined under the Vegetation Management Act 1999 schedule. Note: A property vegetation management plan must show the matters prescribed in section 11 of the Vegetation Management Regulation 2012.	☑ Confirmed	Over the counter

For ALL applications	Confirmation of lodgement	Method of lodgement
A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP).	☑ Confirmed ☐ Not applicable	Over the counte
For an operational work application for which the assessment manager is the local government		
Written confirmation that the chief executive of the Department of Natural Resources and Mines is satisfied the proposed clearing is for a relevant purpose under the *Vegetation Management Act 1999*, section 22A.	☑ Confirmed ☐ Not applicable	Over the counter
For an operational work application where the assessment manager is the Department of State Development, Infrastructure and Planning		
Either of the following: • written confirmation that the chief executive of the Department of Natural Resources and Mines is satisfied the proposed clearing is for a relevant purpose under the *Vegetation Management Act 1999*, section 22A; or • information identifying the relevant purpose under the *Vegetation Management Act 1999*, section 22A and demonstrating how the proposed clearing is for that purpose.	☐ Confirmed ☑ Not applicable	
For applications for a material change of use or reconfiguring a lot		
The following additional detail to be included in the property vegetation management plan: • details of the location and extent of: – infrastructure, including buildings, fences, roads and electrical, telecommunication or sewerage services; and – firebreaks and fire management lines; and • details of the way the proposed clearing complies with the relevant part(s) of the SDAP.	☐ Confirmed ☑ Not applicable	

Notes for completing this form

- The Department of Natural Resource and Mines (DNRM) website contains a comprehensive range of information about the *Vegetation Management Act 1999.*
- Question 3 for operational work applications —Under the *Vegetation Management Act 1999*, the proposed vegetation clearing is only for a relevant purpose if the applicant satisfies the chief executive of the DNRM that the development applied for is one of the purposes listed in section 22A of that Act. If the assessment manager is the local government, the applicant must obtain confirmation from the chief executive of DNRM that the proposed clearing is for a relevant purpose and provide this with the application. However, if the Department of State Development, Infrastructure and Planning (DSDIP) is the assessment manager, the applicant has the choice of either obtaining this confirmation from DNRM before making the application, or providing adequate information for the decision to be made on whether the proposed clearing is for a relevant purpose at the time the application is made.

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

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Date received | Reference numbers

The *Sustainable Planning Act 2009* is administered by the Department of State Development, Infrastructure and Planning. This form and all other required application materials should be sent to your assessment manager and any referral agency.

Department of State Development, Infrastructure and Planning
PO Box 15009 City East Qld 4002
tel 13 QGOV (13 74 68)
info@dsdip.qld.gov.au

www.dsdip.qld.gov.au

Response column key:
☑ Achieved
P/S Performance solution

8.1 Queensland vegetation management state code

Table 8.1.3: General

Performance outcomes	Acceptable outcomes	Response	Comment
Clearing to avoid and minimise impacts			
PO1 Clearing only occurs where the applicant has demonstrated that the development has first avoided, and then minimised the impacts of development.	No acceptable outcome is prescribed.	P/S	The sites have been developed for community purposes over a period of over thirty (30) years. Development has largely remained in existing cleared areas of the site.
Clearing on land where compliance notice or enforcement notice, exchange area or offset exists			
PO2 Clearing in an area that is subject to any of the following: (1) a restoration notice, or (2) a compliance notice containing conditions about the restoration of vegetation, or (3) a Land Act notice, or (4) a trespass notice if the trespass related act under the *Land Act 1994* for the notice is the clearing of vegetation on the relevant land, or (5) an enforcement notice under the *Sustainable Planning Act 2009* issued for a vegetation clearing offence, or (6) exchange area, or (7) an environmental offset must not be inconsistent with the notice, or impact on the exchange	No acceptable outcome is prescribed.	N/A	Notices as identified are not applicable to the sites in question.

Performance outcomes	Acceptable outcomes	Response	Comment
area unless a better environmental outcome can be achieved, or inconsistent with the environmental offset or another agreement related to the environmental offset.			
No clearing of vegetation as a result of the material change of use or reconfiguration of a lot			
PO3 Clearing as a result of the material change of use or reconfiguration of a lot will not occur.	No acceptable outcome is prescribed.	☑	Additional clearing will not occur.
Clearing that could already be done under an exemption			
PO4 All clearing is limited to clearing that could be done under an exemption for the purpose of the development (as prescribed under Schedule 24, Parts 1 and 2 of the Sustainable Planning Regulation 2009) prior to the material change of use application being approved.	No acceptable outcome is prescribed.	☑	Existing exemptions for clearing for infrastructure will not be affected by development proposed.

Table 8.1.4: Public safety, relevant infrastructure and coordinated projects

Performance outcomes	Acceptable outcomes	Response	Comment
Limits to clearing			
PO1 Clearing is limited to the extent that is necessary: (1) for establishing a necessary fence, firebreak, road or vehicular track, or for constructing necessary built infrastructure, if there is no suitable alternative site for the	No acceptable outcome is prescribed.	☑	Infrastructure on site already exists.

Performance outcomes	Acceptable outcomes	Response	Comment
fence, firebreak, road, track or infrastructure (relevant infrastructure), or (2) as a natural and ordinary consequence of other assessable development for which a development approval as defined under the repealed *Integrated Planning Act 1997* was given, or a development application as defined under that Act was made, before 16 May 2003, or (3) to ensure public safety, or (4) for a coordinated project and any associated ancillary works—other than a coordinated project that involves high value agriculture clearing, or irrigated high value agriculture clearing.			
Wetlands			
PO2 Maintain the current extent of vegetation associated with any natural wetland to protect: (1) water quality by filtering sediments, nutrients and other pollutants (2) aquatic habitat	**AO2.1** Clearing does not occur in or within 100 metres of any natural wetland. OR	☑	Clearing will not occur within 100 metres of a wetland, above and beyond any existing clearing exemptions / opportunities that already exist.
	AO2.2 Clearing only occurs within 100 metres of any natural wetland where: (1) the clearing does not occur within 50 metres of the defining bank of any natural wetland, orthe widths stipulated by Table 1 are not exceeded.		

Performance outcomes	Acceptable outcomes	Response	Comment
(3) terrestrial habitat.	OR		
	AO2.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impacts from clearing of vegetation associated with a natural wetland. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Watercourses			
PO3 Maintain the current extent of vegetation associated with any watercourse to protect: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants (3) aquatic habitat (4) terrestrial habitat.	**AO3.1** Clearing does not occur: (1) in any watercourse, or (2) within the relevant distance stipulated by Table 2 of the defining bank of any watercourse. OR	N/A	Existing opportunities for exempt clearing will not be affected by development proposed.
	AO3.2 Clearing only occurs within any watercourse or within the relevant distance stipulated by Table 2 of the defining bank of any watercourse where: (1) the clearing does not occur within 5 metres of the defining bank, or (2) the widths stipulated by Table 1 is not exceeded OR		
	AO3.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact from clearing of vegetation associated with any watercourse. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		

Performance outcomes	Acceptable outcomes	Response	Comment
Connectivity (public safety and relevant infrastructure)			
PO4 In consideration of vegetation on the subject lot(s) and in the landscape adjacent to the subject lot(s), vegetation is retained that: (1) is of sufficient size and configured in a way that maintains ecosystem functioning (2) remains in the landscape despite threatening processes.	**AO4.1** Clearing occurs in accordance with Table 3.	P/S	Existing vegetation on the Reserve Lot is not proposed for clearing as part of these Applications.
Connectivity (coordinated projects)			
PO5 In consideration of vegetation on the subject lot(s) and in the landscape adjacent to the subject lot(s), vegetation is retained that: (1) is of sufficient size and configured in a way that maintains ecosystem functioning (2) remains in the landscape despite threatening processes or where this is not reasonably possible, maintain the current extent of vegetation.	**AO5.1** Clearing occurs in accordance with Table 3. OR	N/A	The project is not a coordinated project.
	AO5.2 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact from clearing of vegetation that forms a connectivity area. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Soil erosion			
PO6 Clearing does not result in: (1) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding (2) any associated loss of chemical,	**AO6.1** Clearing is undertaken in accordance with a sediment and erosion control plan which avoids and minimises land degradation. OR	P/S	Clearing is not currently proposed, above and beyond existing clearing exemptions applicable to the sites. Any clearing will be undertaken in an appropriate manner, having regard to soil erosion and associated issues.
	AO6.2 The application is a development application where a local government is the assessment		

Performance outcomes	Acceptable outcomes	Response	Comment
physical or biological fertility—including, but not limited to water holding capacity, soil structure, organic matter, soil biology, and nutrients within or outside the lot(s) that are the subject of the application.	manager.		
Salinity			
PO7 Clearing does not contribute to land degradation through: (1) waterlogging, or (2) the salinisation of groundwater, surface water or soil.	**AO7.1** Clearing does not occur in or within 200 metres of a discharge area or recharge area. OR	P/S	Clearing is not currently proposed, above and beyond existing exemptions in place.
	AO7.2 Clearing is less than: (1) 2 hectares, or (2) 10 metres wide.		
Conserving endangered and of concern regional ecosystems			
PO8 Maintain the current extent of endangered regional ecosystems and of concern regional ecosystems.	AO8.1 Clearing does not occur in: (1) an endangered regional ecosystem, or (2) an of concern regional ecosystem. OR	P/S	Clearing is not currently proposed, above and beyond existing exemptions in place.
	AO8.2 Clearing in an endangered regional ecosystem or an of concern regional ecosystem does not exceed the width or area prescribed in Table 1. OR		
	AO8.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact from clearing of endangered regional ecosystems and of concern regional ecosystems.		

Performance outcomes	Acceptable outcomes	Response	Comment
	Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant *Queensland Environmental Offsets Policy*.		
Essential habitat			
PO9 Maintain the current extent of essential habitat.	**AO9.1** Clearing does not occur in an area of essential habitat. OR	P/S	Clearing is not currently proposed, above and beyond existing exemptions in place.
	AO9.2 Clearing in essential habitat does not exceed the widths or areas prescribed in Table 1. OR		
	AO9.3 Clearing only occurs where an area of essential habitat is isolated and small in size and at risk from threatening processes, for the prescribed species. OR		
	AO9.4 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact from clearing of essential habitat. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Acid sulfate soils			
PO10 Clearing activities do not result in disturbance of acid sulfate soils or changes to the hydrology of the location that will either: (1) aerate horizons containing iron	**AO10.1** Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR	P/S	Clearing is not currently proposed, above and beyond existing exemptions in place.
	AO10.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the 5 metre Australian Height Datum only occurs where:		

Performance outcomes	Acceptable outcomes	Response	Comment
sulfides, or (2) mobilise acid or metals.	(1) it does not involve mechanical clearing (2) the acid sulfate soils are managed consistent with the *State Planning Policy,* Department of State Development infrastructure and Planning 2013, and with the Soil Management Guidelines in the *Queensland Acid Sulfate Soil Technical Manual*, Department of Natural Resources and Mines, 2002. OR		
	AO10.3 The application is a development application where a local government is the assessment manager.		

Table 8.1.5: Extractive industry

Performance outcomes	Acceptable outcomes	Response	Comment
Limits to clearing for an extractive industry			
PO1 Clearing is limited to the extent that is necessary for: (1) dredging material from the bed of any waters (2) extracting, from a pit or quarry, rock, sand, clay, gravel, loam or other material (3) screening, washing, grinding, milling, sizing or separating material extracted from a pit or quarry (4) carrying out work that is the natural and ordinary	No acceptable outcome is prescribed.	N/A	Extractive Industry is not proposed.

Performance outcomes	Acceptable outcomes	Response	Comment
consequence of carrying out work mentioned in subparagraphs (1), (2) and (3) above.			
Clearing is staged			
PO2 Clearing: (1) is staged in line with operational needs that restrict clearing to the current operational area (2) is limited to the area from which material will be extracted, and any reasonably associated infrastructure, within the term of the development approval (3) cannot occur until all required permits are obtained.	No acceptable outcome is prescribed.		
Wetlands			
PO3 Maintain the current extent of vegetation associated with any natural wetland to protect: (1) water quality by filtering sediments, nutrients and other pollutants (2) aquatic habitat (3) terrestrial habitat.	**AO3.1** Clearing does not occur in, or within 100 metres of, any natural wetland. OR		
	AO3.2 Clearing only occurs within 100 metres of any natural wetland where: (1) the clearing does not occur within 50 metres of the of the natural wetland, or (2) the widths stipulated by Table 1 are not exceeded. OR		
	AO3.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has		

Performance outcomes	Acceptable outcomes	Response	Comment
	been minimised, an environmental offset is provided for any significant residual impact from clearing of vegetation associated with a natural wetland. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Watercourses			
PO4 Maintain the current extent of vegetation associated with any watercourse to protect: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants (3) aquatic habitat (4) terrestrial habitat.	**AO4.1** Clearing does not occur: (1) in any watercourse (2) within the relevant distance stipulated in Table 2 of the defining bank of any watercourse. OR		
	AO4.2 Clearing only occurs within any watercourse or within the relevant distance stipulated by Table 2 of the defining bank of any watercourse where: (1) the clearing does not occur within 5 metres of the defining bank, or (2) the widths stipulated by Table 1 is not exceeded. OR		
	AO4.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impacts from clearing of vegetation associated with any watercourse. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Connectivity			

Performance outcomes	Acceptable outcomes	Response	Comment
PO5 In consideration of vegetation on the subject lot(s) and in the landscape adjacent to the subject lot(s), vegetation is retained that: (1) is of sufficient size and configured in a way that maintains ecosystem functioning (2) remains in the landscape despite threatening processes.	**AO5.1** Clearing occurs in accordance with Table 3.		
Salinity			
PO6 Clearing does not contribute to land degradation through: (1) waterlogging, or (2) the salinisation of groundwater, surface water or soil.	**AO6.1** Clearing does not occur in or within 200 metres of a discharge area or recharge area. OR		
	AO6.2 Clearing is less than: (1) 2 hectares, or (2) 10 metres wide.		
Conserving endangered and of concern regional ecosystems			
PO7 Maintain the current extent of endangered regional ecosystems and of concern regional ecosystems.	**AO7.1** Clearing does not occur in (1) an endangered regional ecosystem, or (2) an of concern regional ecosystem. OR		
	AO7.2 Clearing in an endangered regional ecosystem or an of concern regional ecosystem does not exceed the width or area prescribed in Table 1. OR		
	AO7.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided		

Performance outcomes	Acceptable outcomes	Response	Comment
	for any significant residual impact from the clearing of endangered regional ecosystems and of concern regional ecosystems. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Essential habitat			
PO8 Maintain the current extent of essential habitat.	**AO8.1** Clearing does not occur in an area of essential habitat. OR		
	AO8.2 Clearing in essential habitat does not exceed the width or area prescribed in Table 1. OR		
	AO8.3 Clearing only occurs where an area of essential habitat is isolated and small in size and at risk from threatening processes, for the prescribed species. OR		
	AO8.4 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact from the clearing of essential habitat. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Acid sulfate soils			
PO9 Clearing activities do not result in the disturbance of acid sulfate	**AO9.1** Clearing does not occur in land zone 1, land zone 2 or land zone 3.		

Performance outcomes	Acceptable outcomes	Response	Comment
soils or changes to the hydrology of the location that will either: (1) aerate horizons containing iron sulfides, or (2) mobilise acid or metals.	OR		
	AO9.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the 5 metre Australian Height Datum only occurs where: (1) it does not involve mechanical clearing (2) the acid sulfate soils are managed consistent with the *State Planning Policy*, and with the *Soil Management Guidelines in the Queensland Acid Sulfate Soil Technical Manual*, Department of Natural Resources and Mines, 2002. OR		
	AO9.3 The application is a development application where a local government is the assessment manager.		

Table 8.1.6: High value agriculture clearing and irrigated high value agriculture clearing

Performance outcomes	Acceptable outcomes	Response	Comment
High value and irrigated high value agriculture clearing			
PO1 Clearing is only for high value agriculture clearing or irrigated high value agriculture clearing where: (1) the land is suitable for agriculture having regard to topography, climate and soil attributes (2) there is no alternative site on the land for the clearing	**AO1.1** The chief executive administering the *Vegetation Management Act 1999* is satisfied the clearing meets the requirements of the *Vegetation Management Act 1999*, section 22A, for high value agriculture clearing or irrigated high value agriculture clearing, as evidenced through written confirmation from the chief executive. OR	N/A	High value agriculture clearing and irrigated high value agriculture clearing is not proposed.
(3) a business plan, for activities related to the clearing, demonstrates the viability of the	**AO1.2** Demonstrate that the clearing is for high value agriculture clearing or irrigated high value agriculture clearing. Editor's note: This can be demonstrated through		

Performance outcomes	Acceptable outcomes	Response	Comment
activities (4) where a regulation prescribes restrictions relevant to the clearing, these restrictions are complied with (5) if for irrigated high value agriculture clearing, demonstrate that the owner of the land is an eligible owner who has, or may have, access to enough water for establishing, cultivating and harvesting the crops to which the clearing relates. (1) Editor's note: Section 22DAB(3) provides for a regulation to prescribe restrictions for certain matters related to high value agriculture clearing or irrigated high value agriculture clearing.	preparing a development plan in accordance with the *Guidelines for determining high value and irrigated high value agriculture*, Department of Natural Resources and Mines, 2013.		
Wetlands			
PO2 Maintain the current extent of vegetation associated with any natural wetland to protect: (1) water quality by filtering sediments, nutrients and other pollutants (2) aquatic habitat (3) terrestrial habitat.	**AO2.1** Clearing does not occur in, or within 100 metres of, any natural wetland. OR		
	AO2.2 Clearing only occurs within 100 metres of any natural wetland where: (1) the clearing does not occur within 50 metres of the natural wetland, or (2) the widths stipulated by Table 1 are not exceeded. OR		
	AO2.3 Where it can be demonstrated that clearing		

Performance outcomes	Acceptable outcomes	Response	Comment
	cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact from the clearing of vegetation associated with a natural wetland. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Watercourses			
PO3 Maintain the current extent of vegetation associated with any watercourse to protect: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants (3) aquatic habitat (4) terrestrial habitat.	**AO3.1** Clearing does not occur: (1) in any watercourse (2) within the relevant distance stipulated in Table 2 of the defining bank of any watercourse. OR		
	AO3.2 Clearing only occurs within any watercourse or within the relevant distance stipulated by Table 2 of the defining bank of any watercourse where: (1) the clearing does not occur within 5 metres of the defining bank, or (2) the widths stipulated by Table 1 is not exceeded. OR		
	AO3.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact from clearing of vegetation associated with any watercourse. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy..		

Performance outcomes	Acceptable outcomes	Response	Comment
Connectivity area			
PO4 In consideration of vegetation on the subject lot(s) and in the landscape adjacent to the subject lot(s), vegetation is retained that: (1) is of sufficient size and configured in a way that maintains ecosystem functioning (2) remains in the landscape despite threatening processes.	**AO4.1** Clearing occurs in accordance with Table 3.		
Soil erosion			
PO5 Clearing: (1) does not result in soil erosion stemming from: (a) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding (b) any associated loss of chemical, physical or biological fertility—including, but not limited to water holding capacity, soil structure, organic matter, soil biology, and nutrients (2) maintains ecological processes, within or outside the lot(s) that are the subject of the application.	**AO5.1** Clearing is undertaken in accordance with a sediment and erosion control plan which avoids and minimises land degradation.		
Salinity			

Performance outcomes	Acceptable outcomes	Response	Comment
PO6 Clearing does not contribute to land degradation through: (1) waterlogging, or (2) the salinisation of groundwater, surface water or soil.	**AO6.1** Clearing of vegetation does not occur in, or within 200 metres of, a discharge area or recharge area. OR		
	AO6.2 Clearing of vegetation is less than: (1) 2 hectares, or (2) 10 metres wide.		
Conserving endangered and of concern regional ecosystems			
PO7 Maintain the current extent of endangered regional ecosystems and of concern regional ecosystems, or provide a significant beneficial outcome where the clearing cannot be avoided, and impacts minimised.	**AO7.1** Clearing does not occur in: (1) an endangered regional ecosystem, or (2) an of concern regional ecosystem. OR		
	AO7.2 Clearing in an endangered regional ecosystem, or an of concern regional ecosystem does not exceed the width or area prescribed in Table 1. OR		
	AO7.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact from the clearing of endangered regional ecosystem or of concern regional ecosystems, or a significant beneficial outcome is provided for the clearing of an endangered regional ecosystem or of concern regional ecosystems. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Essential habitat			

Performance outcomes	Acceptable outcomes	Response	Comment
PO8 Maintain the current extent of essential habitat.	**AO8.1** Clearing of vegetation does not occur in an area of essential habitat. OR		
	AO8.2 Clearing of vegetation in essential habitat does not exceed the width or area prescribed in Table 1. OR		
	AO8.3 Clearing only occurs where an area of essential habitat is isolated and small in size and at risk from threatening processes, for the prescribed species. OR		
	AO8.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact for the clearing of essential habitat. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Acid sulfate soils			
PO9 Clearing activities do not result in the disturbance of acid sulfate soils or changes to the hydrology of the location that will either: (1) aerate horizons containing iron sulfides, or (2) mobilise acid or metals.	**AO9.1** Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR		
	AO9.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the 5 metre Australian Height Datum only occurs where: (1) it does not involve mechanical clearing (2) the acid sulfate soils are managed consistent with the *State Planning Policy*, and with the *Soil*		

Performance outcomes	Acceptable outcomes	Response	Comment
	Management Guidelines in the Queensland Acid Sulfate Soil Technical Manual, Department of Natural Resources and Mines, 2002. (1) OR		
	AO9.3 The application is a development application where a local government is the assessment manager.		

8.1.7: Necessary environmental clearing

Performance outcomes	Acceptable outcomes	Response	Comment
Limits to clearing			
PO1 Clearing is avoided, or is limited to the extent that is necessary to: (1) restore the ecological and environmental condition of land, or (2) divert existing natural channels in a way that replicates the existing form of the natural channels, or (3) prepare for the likelihood of a natural disaster, or (4) remove contaminants from land.	No acceptable outcome is prescribed.	P/S	Clearing is not currently proposed, above and beyond existing exemptions in place.
Wetlands (land restoration, natural disaster preparation)			
PO2 Maintain vegetation associated with any natural wetland to protect: (1) water quality by filtering sediments, nutrients and other pollutants	**AO2.1** Clearing does not occur: (1) in any natural wetland, or (2) within 100 metres of any natural wetland. OR		
	AO2.2 Clearing only occurs within 100 metres of		

Performance outcomes	Acceptable outcomes	Response	Comment
(2) aquatic habitat (3) terrestrial habitat (3) or where this is not reasonably possible, rehabilitate.	any natural wetland where: (1) the clearing does not occur within 50 metres of the natural wetland, or (2) the widths stipulated by Table 1 are not exceeded. OR		
	AO2.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, the cleared area is rehabilitated in accordance with an environmental clearing management plan.		
Wetlands (natural channel diversion and contaminants removal)			
PO3 Maintain vegetation associated with any natural wetland to protect: (1) water quality by filtering sediments, nutrients and other pollutants (2) aquatic habitat (3) terrestrial habitat (4) or where this is not reasonably possible, rehabilitate or maintain the current extent.	**AO3.1** Clearing does not occur: (1) in any natural wetland, or (2) within 100 metres of any natural wetland. OR		
	AO3.2 Clearing only occurs within 100 metres of any natural wetland where: (1) the clearing does not occur within 50 metres of the natural wetland, or (2) the widths stipulated by Table 1 are not exceeded. OR		
	AO3.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, the cleared area is rehabilitated. OR		
	AO3.4 Where clearing is for natural channel diversion or contaminants removal, and it can be		

Performance outcomes	Acceptable outcomes	Response	Comment
	demonstrated that clearing cannot be avoided, and: (1) the extent of clearing has been minimised (2) the cleared area cannot be rehabilitated an environmental offset is provided for any significant residual impacts from clearing vegetation associated with a natural wetland. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Watercourses (land restoration and natural disaster preparation)			
PO4 Maintain vegetation associated with any watercourse to protect: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants (3) aquatic habitat (4) terrestrial habitat. (5) or where this is not reasonably possible, rehabilitate.	**AO4.1** Clearing does not occur: (1) Within any watercourse, or (2) Within the relevant distances stipulated in Table 2 from each defining bank of any watercourse. OR		
	AO4.2 Clearing only occurs within any watercourse or within the relevant distance stipulated by Table 2 of the defining bank of any watercourse where: (1) the clearing does not occur within 5 metres of the defining bank of any watercourse, or (2) the widths stipulated by Table 1 are not exceeded. OR		
	AO4.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, the cleared area is rehabilitated.		
Watercourses (natural channel diversion and contaminants removal)			

Performance outcomes	Acceptable outcomes	Response	Comment
PO5 Maintain vegetation associated with any watercourse to protect: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants (3) aquatic habitat (4) terrestrial habitat (6) or where this is not reasonably possible, rehabilitate or maintain the current extent.	**AO5.1** Clearing does not occur: (1) within any watercourse, or (2) within the relevant distances stipulated in Table 2 from each defining bank of any watercourse. OR		
	AO5.2 Clearing only occurs within any watercourse or within the relevant distance stipulated by Table 2 of the defining bank of any watercourse where: (1) the clearing does not occur within 5 metres of the defining bank of any watercourse, or (2) the widths stipulated by Table 1 are not exceeded. OR		
	AO5.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, the cleared area is rehabilitated. OR		
	AO5.4 Where it can be demonstrated that clearing cannot be avoided, and: (1) the extent of clearing has been minimised (2) the cleared area cannot be rehabilitated an environmental offset is provided for any significant residual impact from clearing of vegetation associated with a watercourse. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Connectivity (land restoration and natural disaster preparation)			

Performance outcomes	Acceptable outcomes	Response	Comment
PO6 In consideration of vegetation on the subject lot(s), and in the landscape adjacent to the subject lot(s), vegetation is retained that: (1) is of sufficient size and configured in a way that maintains ecosystem functioning (2) remains in the landscape despite threatening processes (7) or where this is not reasonably possible, rehabilitate.	**AO6.1** Clearing occurs in accordance with Table 3. OR		
	AO6.2 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, the cleared area is rehabilitated.		
Connectivity (natural channel diversion and contaminants removal)			
PO7 In consideration of vegetation mapped on the subject lot(s) and in the landscape adjacent to the subject lot(s), vegetation is retained that: (1) is of sufficient size and configured in a way that maintains ecosystem functioning (2) remains in the landscape despite threatening processes (8) or where this is not reasonably possible, rehabilitate, or maintain the current extent.	**AO7.1** Clearing occurs in accordance with Table 3. OR		
	AO7.2 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, the cleared area is rehabilitated. OR		
	AO7.3 Where it can be demonstrated that clearing cannot be avoided, and: (1) the extent of clearing has been minimised (2) the cleared area cannot be rehabilitated an environmental offset is provided for any significant residual impact from clearing vegetation that forms a connectivity area. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Soil erosion			

Performance outcomes	Acceptable outcomes	Response	Comment
PO8 Clearing does not result in or accelerate land degradation resulting from: (1) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding (2) any associated loss of chemical, physical or biological fertility—including, but not limited to water holding capacity, soil structure, organic matter, soil biology, and nutrients (9) within and outside the lot(s) that are the subject of the application.	**AO8.1** Clearing is undertaken in accordance with a sediment and erosion control plan which avoids and minimises land degradation.		
Salinity			
PO9 Clearing does not contribute to, or accelerate, land degradation through: (1) waterlogging, or (2) the salinisation of groundwater, surface water or soil.	**AO9.1** Clearing does not occur in, or within 200 metres of, a discharge area or recharge area. OR		
	AO9.2 Clearing is less than: (1) 2 hectares, or (2) 10 metres wide.		
Essential habitat (land restoration and natural disaster preparation)			
PO10 Clearing does not occur in essential habitat, or where this is not reasonably possible, rehabilitate where the clearing cannot be avoided and impacts minimised.	**AO10.1** Clearing does not occur in essential habitat. OR		
	AO10.2 Clearing in essential habitat does not exceed the widths or areas prescribed in Table 1. OR		
	AO10.3 Clearing only occurs where an area of		

Performance outcomes	Acceptable outcomes	Response	Comment
	essential habitat is isolated and small in size and at risk from threatening processes, for the prescribed species. OR		
	AO10.4 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, the cleared area is rehabilitated.		
Essential habitat (natural channel diversion and contaminants removal)			
PO11 Clearing does not occur in essential habitat, or where this cannot reasonably be avoided, rehabilitate or maintain the current extent of essential habitat.	**AO11.1** Clearing does not occur in essential habitat. OR		
	AO11.2 Clearing in essential habitat does not exceed the widths or areas prescribed in Table 1. OR		
	AO11.3 Clearing only occurs where an area of essential habitat is isolated and small in size and at risk from threatening processes, for the prescribed species. OR		
	AO11.4 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, the cleared area is rehabilitated. OR		
	AO11.5 Where it can be demonstrated that clearing cannot be avoided, and: (1) the extent of clearing has been minimised (2) the cleared area cannot be rehabilitated an environmental offset is provided for any significant residual impact from clearing of essential habitat. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland		

Performance outcomes	Acceptable outcomes	Response	Comment
	Environmental Offsets Policy.		
Clearing regional ecosystems (land restoration and natural disaster preparation)			
PO12 Clearing does not occur in endangered regional ecosystems, of concern regional ecosystems or least concern regional ecosystems, or where this is not reasonably possible, rehabilitate where the clearing cannot be avoided and impacts minimised.	**AO12.1** Clearing does not occur in: (1) an endangered regional ecosystem, or (2) an of concern regional ecosystem, or (3) a least concern regional ecosystem. OR		
	AO12.2 Clearing: (1) maintains the natural floristic composition and range of sizes across the application area, or (2) does not exceed the widths or areas prescribed in Table 1. OR		
	AO12.3 Where it can be demonstrated that clearing cannot be avoided, and the extent of clearing has been minimised, the cleared area is rehabilitated.		
Clearing regional ecosystems (natural channel diversion and contaminants removal)			
PO13 Clearing does not occur in endangered regional ecosystems, of concern regional ecosystems or least concern regional ecosystems, or where this cannot be reasonably be avoided, rehabilitate or maintain the current extent of endangered regional ecosystems and of concern regional ecosystems.	**AO13.1** Clearing does not occur in (1) an endangered regional ecosystem, or (2) an of concern regional ecosystem, or (3) a least concern regional ecosystem. OR		
	AO13.2 Clearing: (1) maintains the natural floristic composition and range of sizes across the application area, or (2) does not exceed the widths or areas prescribed		

Performance outcomes	Acceptable outcomes	Response	Comment
	in Table 1. OR		
	AO13.3 Where it can be demonstrated that clearing cannot be avoided and the extent of clearing has been minimised, endangered regional ecosystems and of concern regional ecosystems are rehabilitated. OR		
	AO13.4 Where clearing an endangered regional ecosystem or of concern regional ecosystem and it can be demonstrated that clearing cannot be avoided, minimised or rehabilitated, an environmental offset is provided for any significant residual impact from clearing an endangered regional ecosystem or of concern regional ecosystem. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Acid sulfate soils			
PO14 Clearing does not result in, or accelerate, the disturbance of acid sulfate soils or changes to the hydrology of the location that will either: (1) aerate horizons containing iron sulfides, or (2) mobilise acid or metals.	**AO14.1** Clearing vegetation does not occur in: (1) land zone 1, land zone 2 or land zone 3 (2) areas below the 5 metre Australian Height Datum where acid sulfate soils are present. OR		
	AO14.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the 5 metre Australian Height Datum only occurs where: (1) it does not involve mechanical clearing (2) the acid sulfate soils are managed consistent with the *State Planning Policy*, and with the Soil		

Performance outcomes	Acceptable outcomes	Response	Comment
	Management Guidelines in the *Queensland Acid Sulfate Soil Technical Manual,* Department of Natural Resources and Mines, 2002. OR		
	AO14.3 The application is a development application where a local government is the assessment manager.		

Table 8.1.8: Weed or pest management

Performance outcomes	Acceptable outcomes	Response	Comment
Limits to clearing for weed or pest management			
PO1 Clearing is limited to the extent necessary to: (1) control non-native plants or declared pests, or (2) provide access for control of non-native plants or declared pests if no alternative route exists.	No acceptable outcome is prescribed	P/S	Clearing is not currently proposed, above and beyond existing exemptions in place.
Wetlands			
PO2 Maintain vegetation associated with a natural wetland to protect: (1) water quality by filtering sediments, nutrients and other pollutants (2) aquatic habitat (3) terrestrial habitat.	**AO2.1** Mechanical clearing does not occur within 5 metres of a natural wetland. AND		
	AO2.2 Clearing only occurs: (1) within a 1.5 meter radius from the base of the stem of individual non-native or declared plants, or (2) to the extent necessary to provide access for the control of the non-native or declared plants.		

Performance outcomes	Acceptable outcomes	Response	Comment
	AND		
	AO2.3 Clearing for access tracks running parallel to a natural wetland is not to be located within 10 metres of the natural wetland.		
Watercourses			
PO3 Maintain vegetation associated with any watercourse to protect: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants (3) aquatic habitat (4) terrestrial habitat.	**AO3.1** Mechanical clearing does not occur within 20 metres of the defining bank of a watercourse. AND		
	AO3.2 Clearing only occurs: (1) within a 1.5 metre radius from the base of the stem of individual non-native or declared plants, or (2) to the extent necessary to provide access for the control of the non-native or declared plant. AND		
	AO3.3 Clearing for access tracks running parallel to a watercourse are not be located within 10 metres of the defining bank of the watercourse.		
Soil erosion			
PO4 Clearing does not result in: (1) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding (2) any associated loss of chemical, physical or biological fertility—including, but not limited to water holding capacity, soil structure, organic matter, soil biology and nutrients	**AO4.1** Mechanical clearing retains 50 per cent of the ground cover (dead or alive) in each 50 by 50 metre (0.25 hectare) area. AND		
	AO4.2 New access tracks, necessary to gain access to a weed infestation, do not: (1) exceed 5 metres in width (2) de-stabilise the banks of any watercourse as a result of crossing construction or use.		

Performance outcomes	Acceptable outcomes	Response	Comment
within or outside the lot(s) that are the subject of the application.			
Conserving remnant vegetation that are regional ecosystems			
PO5 Clearing activities: (1) maintain the natural floristic composition and range of sizes of each species of the regional ecosystem evenly spaced across the application area (2) do not remove mature trees.	**AO5.1** Mechanical clearing does not exceed the limitations defined in Table 4. AND		
	AO5.2 Soil absorbed broad spectrum herbicides are not: (1) applied via aerial application, or (2) ground applied on a broad acre basis, or (3) used inconsistently with the product directions.		
Requirements for dense regional ecosystems			
(10) **PO6** The removal of canopy vegetation does not occur in the regional ecosystems listed in Table	**AO6 1** Clearing and associated soil disturbance in regional ecosystems listed in Table 5 occurs only: (1) within a 1.5 metre radius from the base of the stem or individual non-native or declared plants, or (2) to the extent necessary to provide access for the control of the non-native or declared plant.		
Acid sulfate soils			
PO7 Clearing activities do not result in disturbance of acid sulfate soils or changes to the hydrology of the location that will either: (1) aerate horizons containing iron sulfides, or	**AO7.1** Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR		
	AO7.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the 5 metre Australian Height Datum only occurs where: (1) it does not involve mechanical clearing		

Performance outcomes	Acceptable outcomes	Response	Comment
(2) mobilise acid or metals.	(2) the acid sulfate soils are managed consistent with the *State Planning Policy*, and with the Soil Management Guidelines in the *Queensland Acid Sulfate Soil Technical Manual*, Department of Natural Resources and Mines, 2002. OR		
	(a) **AO7.3** The application is a development application where a local government is the assessment manager.		

Table 8.1.9: Thinning

Performance outcomes	Acceptable outcomes	Response	Comment
Clearing limited to specific regional ecosystems			
PO1 Clearing for the purpose of thinning does not occur in the regional ecosystems listed in Table 6, except where clearing is solely for removing native plants not naturally occurring within the regional ecosystem.	No acceptable outcome is prescribed.		
Retained vegetation density			
PO2 Clearing must retain a density of vegetation consistent with the natural floristic composition of the regional ecosystem.	**AO2.1** The vegetation density is consistent with a representative reference site of the same regional ecosystem. OR		
	AO2.2 The vegetation density is consistent with the natural floristic composition of the regional ecosystem as demonstrated by, biocondition benchmarks for regional ecosystem condition assessment, the Regional Ecosystem Description Database and supplementary data, or the Queensland Herbarium.		

Performance outcomes	Acceptable outcomes	Response	Comment
Wetlands			
PO3 Maintain vegetation associated with any natural wetland to protect: (1) water quality by filtering sediments, nutrients and other pollutants (2) aquatic habitat (3) terrestrial habitat.	**AO3.1** Mechanical clearing does not occur within 20 metres of a natural wetland.		
Watercourses			
PO4 Maintain vegetation associated with any watercourse to protect: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants (3) aquatic habitat (4) terrestrial habitat.	**AO4.1** Mechanical clearing does not occur within 20 metres from the defining bank of a watercourse.		
Soil erosion			
PO5 Clearing does not result in soil erosion stemming from: (1) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding (2) any associated loss of chemical, physical or biological fertility — including, but not limited to water	**AO5.1** Mechanical clearing must: (1) retain 50per cent of the ground cover (dead or alive) in each 50 by 50 metre (0.25 hectare) area (2) not occur on slopes in excess of 10 per cent.		

Performance outcomes	Acceptable outcomes	Response	Comment
holding capacity, soil structure, organic matter, soil biology, and nutrients within or outside the lot(s) that are the subject of the application.			
Conserving remnant vegetation that are regional ecosystems			
PO6 Clearing of vegetation: (1) maintains the natural floristic composition and range of sizes of each species of the regional ecosystem evenly spaced across the application area (2) does not remove habitat trees.	**AO6.1** Thinning must retain mature trees and habitat trees. AND		
	AO6.2 Thinning must retain immature trees to: (1) return the immature tree density to a more typical level (2) retain representatives of all the species that occur in the regional ecosystem in about the proportion to what would normally exist (3) retain the range of tree sizes that would normally occur (4) space immature trees as evenly as possible across the thinned area. AND		
	AO6.3 Thinning is not undertaken: (1) by ground application of soil absorbed broad spectrum herbicides, or (2) aerial application of any herbicides.		
Acid sulfate soils			
PO7 Clearing activities do not result in disturbance of acid sulfate soils or changes to the hydrology of the	**AO7.1** Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR		

Performance outcomes	Acceptable outcomes	Response	Comment
location that will either: (1) aerate horizons containing iron sulfides, or (2) mobilise acid or metals.	AO7.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the 5 metre Australian Height Datum only occurs where: (1) it does not involve mechanical clearing (2) the acid sulfate soils are managed consistent with the *State Planning Policy*, and with the Soil Management Guidelines in the *Queensland Acid Sulfate Soil Technical Manual* a, Department of Natural Resources and Mines 2002. OR		
	AO7.3 The application is a development application where a local government is the assessment manager.		

Table 8.1.10: Encroachment

Performance outcomes	Acceptable outcomes	Response	Comment
Clearing limited to specific regional ecosystems			
PO1 Clearing for the purpose of encroachment only occurs in the regional ecosystems listed in Table 7.	No acceptable outcome is prescribed.	N/A	Clearing for encroachment is not proposed / necessary.
Mature trees			
PO2 Clearing for the purpose of encroachment: (1) results in the restoration of the regional ecosystem	**AO2.1** Clearing of encroachment, based on ground assessment: (1) retains all mature trees, habitat trees and groves (2) retains representatives of all immature, non-		

Performance outcomes	Acceptable outcomes	Response	Comment
(2) does not remove habitat trees.	encroaching species (3) may remove non-native species and native species, that do not belong in that regional ecosystem, from the clearing area. OR		
	AO2.2 Clearing of encroachment is limited to: (1) those areas where encroachment was not visible on aerial photographs taken in the 1950 to present (2) retain habitat trees and mature trees of all non-encroaching species.		
Wetlands			
PO3 Maintain vegetation associated with a wetland to protect: (1) water quality by filtering sediments, nutrients and other pollutants (2) aquatic habitat (3) terrestrial habitat.	**AO3.1** Mechanical clearing does not occur within 20 metres of the defining bank of a natural wetland. AND		
	AO3.2 The application of soil absorbed broad spectrum herbicides does not occur within 50 metres of the defining bank of a natural wetland.		
Watercourses			
PO4 Clearing associated with a watercourse is protected in a manner that maintains: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants	**AO4.1** Mechanical clearing does not occur within 20 metres of the defining bank of a watercourse. AND		
	AO4.2 The application of soil absorbed broad spectrum herbicides does not occur within 50 metres of the defining bank of a watercourse.		

Performance outcomes	Acceptable outcomes	Response	Comment
(3) aquatic habitat (4) terrestrial habitat.			
Soil erosion			
PO5 Clearing does not result in: (1) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding (2) any associated loss of chemical, physical or biological fertility — including, but not limited to water holding capacity, soil structure, organic matter, soil biology and nutrients within or outside the lot(s) that are the subject of the application.	**AO5.1** Mechanical clearing: (1) is limited to slopes less than 5 per cent (2) retains 50 per cent of the ground cover (dead or alive) in each 50 by 50 metre (0.25 hectare) area.		
Acid sulfate soils			
PO6 Clearing activities do not result in disturbance of acid sulfate soils or changes to the hydrology of the location that will either: (1) aerate horizons containing iron sulfides, or (2) mobilise acid or metals	**AO6.1** Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR		
	AO6.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the 5 metre Australian Height Datum only occurs where: (1) it does not involve mechanical clearing (2) the acid sulfate soils are managed consistent with the *State Planning Policy*, and with the Soil Management Guidelines in the *Queensland Acid Sulfate Soil Technical Manual*, Department of Natural Resources and Mines, 2002.		

Performance outcomes	Acceptable outcomes	Response	Comment
	OR		
	AO6.3 The application is a development application where a local government is the assessment manager.		

Table 8.1.11: Fodder

Performance outcomes	Acceptable outcomes	Response	Comment
Limits to fodder harvesting			
PO1 Clearing for fodder harvesting: (1) occurs only in the following areas: (a) Balonne Shire Council (b) Barcaldine Shire Council (c) Barcoo Shire Council (d) Blackall Tambo Regional Council (e) Bulloo Shire Council (f) Diamantina Shire Council (g) Goondiwindi Regional Council (h) Longreach Regional Council (i) Maranoa Regional Council (j) Murweh Shire Council (k) Paroo Shire Council (l) Quilpie Shire Council (m) Western Downs Regional Council (n) Winton Shire Council (2) is limited to the extent necessary	No acceptable outcome is prescribed.	N/A	Clearing for fodder harvesting is not proposed.

Performance outcomes	Acceptable outcomes	Response	Comment
to provide fodder for stock.			
Conserving vegetation that contains endangered regional ecosystems and of concern regional ecosystems			
PO2 Clearing: (1) does not occur in vegetation that contains endangered regional ecosystems (2) is limited to vegetation that contains of concern regional ecosystems 6.5.3, 11.5.13, 6.5.5 and 4.7.3, and by selective harvesting where it does not remove more than 3 in 10 fodder trees.	No acceptable outcome is prescribed.		
Cleared vegetation			
PO3 Cleared vegetation is not moved from where it falls.	No acceptable outcome is prescribed.		
Conserving the fodder resource			
PO4 Fodder harvesting does not reduce the total extent of the fodder in the regional ecosystem listed in Tables 8 and 9 on a lot to below 50 per cent of its current extent within any 10 year period.	**AO4.1** Fodder harvesting is limited to the regional ecosystems and harvesting methods listed in Tables 8 and 9, and: (1) is limited to areas that have not been harvested in the past 10 years (2) retained vegetation is not harvested within 10 years of the harvesting of an adjacent area which has been subject to either strip harvesting or block harvesting.		
Wetlands			
PO5 Maintain vegetation associated	**AO5.1** Mechanical clearing does not occur within 20 metres of any natural wetland.		

Performance outcomes	Acceptable outcomes	Response	Comment
with any natural wetland to protect: (1) water quality by filtering sediments; nutrients and other pollutants (2) aquatic habitat (3) terrestrial habitat.	OR		
	AO5.2 Strip harvesting or block harvesting does not occur within 100 metres of any natural wetland.		
Watercourses			
PO6 Maintain vegetation associated with any watercourse to protect: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants (3) aquatic habitat (4) terrestrial habitat.	**AO6.1** Mechanical clearing does not occur within 20 metres from the defining bank of any watercourse. OR		
	AO6.2 Strip harvesting or block harvesting does not occur within 100 metres of the defining bank of any watercourse.		
Soil erosion			
PO7 Clearing does not result in: (1) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding (2) any associated loss of chemical, physical or biological fertility — including, but not limited to water holding capacity, soil structure, organic matter, soil biology and	**AO7.1** Strip harvesting or block harvesting: (1) does not occur on a slope that exceeds 5 per cent (2) is aligned across the slope. OR		
	AO7.2 Harvesting occurs using selective harvesting or breaker harvesting methods.		

Performance outcomes	Acceptable outcomes	Response	Comment
nutrients within or outside the lot(s) that are the subject of the application.			
Salinity			
PO8 Clearing does not contribute to land degradation through: (1) waterlogging, or (2) the salinisation of groundwater, surface water or soil	**AO8**.1 Clearing does not occur in or within 200 metres of a discharge area or recharge area, or salinity warning area. OR		
	AO8.2 Clearing is less than: (1) 2 hectares, or (2) 10 metres wide.		
Conserving vegetation			
PO9 Fodder harvesting activities: (1) retain at least: (a) 50 per cent of the predominant canopy cover of the vegetation over each 300 by 300 metre (9 hectare) area when selective harvesting or narrow strip harvesting (b) 55 per cent of the predominant canopy cover of the vegetation over each 300 by 300 metre (9 hectare) area when block harvesting or wide strip harvesting	**AO9.1** Selective harvesting does not: (1) harvest more than 5 in 10 individual fodder trees in any given area (2) remove non-fodder species beyond that needed to provide access for harvesting, or (3) involve mechanical clearing within 50 metres of a scarp or an area of instability, in the following regional ecosystems 6.7.1, 6.7.6, 6.7.14, 6.7.15, 6.7.16, 11.7.1, 11.7.2 and 11.7.5. OR		
	AO9.2 Strip harvesting or block harvesting only occurs in regional ecosystems listed in Table 8. AND		
	AO9.3 Block harvesting:		

Performance outcomes	Acceptable outcomes	Response	Comment
(2) maintain the range of species of the regional ecosystem at the locality.	(1) is limited to the harvesting area and width of retained vegetation listed in Table 10 (2) retains non-fodder species with height of 4 metres or more within the harvested area (3) does not occur in fodder regional ecosystems that are less than 10 hectares in area or 500 metres in width (4) tracks between blocks are limited to a width of 10 metres. OR		
	AO9.4 Wide strip harvesting: (1) occurs where the harvested strip is 70-135 metres in width (2) retains a minimum of 165 metres wide strip of retained vegetation on either side of the cleared strip (3) only occurs for a 800 metre length with the retention of a 200 metre wide patch of vegetation at the end of each length (4) does not occur in fodder regional ecosystems that are less than 10 hectares in area or 500 metres in width. OR		
	AO9.5 Narrow strip harvesting: (1) occurs where the harvested strip is 20 to 50 metres in width (2) retains vegetation on either side of the strip a width at least equal to the width of the harvested		

Performance outcomes	Acceptable outcomes	Response	Comment
	strip (3) does not occur in fodder regional ecosystems listed in Tables 8 and 9 that are less than 10 hectares in area or 500 metres in width.		
Essential habitat			
PO10 Maintain the current extent of essential habitat.	**AO10**.1 Fodder harvesting does not occur in essential habitat. OR		
	AO10.2 Clearing in essential habitat does not exceed the width or area prescribed in Table 1. OR		
	AO10.3 Where it can be demonstrated that the clearing cannot be avoided, and the extent of clearing has been minimised, an environmental offset is provided for any significant residual impact from clearing of essential habitat. Editor's note: Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard to the relevant Queensland Environmental Offsets Policy.		
Fodder species			
PO11 Fodder harvesting consists predominantly of fodder species.	**AO11.1** Fodder harvesting consists predominantly of fodder species and only occurs in the regional ecosystems listed in Tables 8 or 9.		

MOSSMAN GORGE

COMMUNITY INFRASTRUCTURE UPGRADES

for

DEPARTMENT OF ABORIGINAL AND TORRES STRAIT ISLANDER MULTICULTURAL AFFAIRS

LOCALITY PLAN
SCALE 1:20000

SCHEDULE OF PROJECT DRAWINGS

7019-001	COVER SHEET, DRAWING SCHEDULE, AND LOCALITY PLAN
7019-002	ROADWORKS PLAN - SHEET 1 OF 2
7019-003	ROADWORKS PLAN - SHEET 2 OF 2
7019-004	STORMWATER PLAN - SHEET 1 OF 2
7019-005	STORMWATER PLAN - SHEET 2 OF 2
7019-006	SEWERAGE PLAN - SHEET 1 OF 2
7019-007	SEWERAGE PLAN - SHEET 2 OF 2
7019-008	WATER RETICULATION PLAN - SHEET 1 OF 2
7019-009	WATER RETICULATION PLAN - SHEET 2 OF 2
7019-010	EXISTING SERVICES PLAN

Drawing Size	Scale (A1 size)	Drg No	Revision
A1	AS SHOWN	7019-001	A

Printed: 25 June 2014, 9:06 AM File: K:\C1207019 Mossman Gorge Community Infrastructure Upgrades\Drawings\7019-001.dwg

External References: DCDB Feb 2014.dwg

N

MOSSMAN RIVER

45
1.341ha

2
517 m²

44
178 m²

3
684 m²

4
819 m²

5
827 m²

6
1514 m²

23
924 m²

22
533 m²

21
539 m²

7
1390 m²

24
1342 m²

25
902 m²

29
1317 m²

27
914 m²

30
1486 m²

32
997 m²

35
1385 m²

33
849 m²

53
5026 m²

36
981 m²

37
618 m²

38
605 m²

39
2091 m²

40
2041 m²

41
1409 m²

LUND STREET

JANKAJI CLOSE

MANJAL CLOSE

WALKARR CLOSE

50
858 m²

1
786 m²

8
794 m²

16
576 m²

17
567 m²

18
571 m²

KANKARR STREET

JUNKURRJI STREET

54
327 m²

9
818 m²

10
1080 m²

42
7834 m²

REMOVE AND DISPOSE OF EXISTING BUS SHELTER. CONSTRUCT NEW CONCRETE SLAB AND SHELTER IN GENERAL ACCORDANCE WITH TRANSLINK BUS SHELTER DESIGN TYPE 4B

BAMABUBU STREET

MOSSMAN GORGE ROAD

15
1399 m²

14
902 m²

13
908 m²

12
797 m²

11
1248 m²

260 m²

PROPOSED OPENING OF ROAD RESERVE

48
393 m²

49
1283 m²

46
6359 m²

REFER TO DRAWING 7019-003 FOR INTERSECTION DETAILS

REFER TO DRAWING 7019-003 FOR INTERSECTION DETAILS

IMPORTANT NOTE:
LIVE SERVICES EXIST THROUGHOUT THE COMMUNITY. CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION AND ENSURE SERVICES TO THE COMMUNITY ARE MAINTAINED.

PLAN
SCALE 1:750

0 7.5 15 22.5 30 37.5m
SCALE 1:750 (A1 SIZE)

NOTES
1. REFER TO DRAWING 7019-003 FOR NOTES AND LEGEND.

File: K:\C1207019 Mossman Gorge Community Infrastructure Upgrades\Drawings\ 7019-002.dwg
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Revisions

No.	Description	Reviewed	Approved	Date
A	ISSUED FOR TENDER	SC		20/06/14

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93 Digger St Cairns North QLD 4870
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Client: DEPARTMENT OF ABORIGINAL AND TORRES STRAIT ISLANDER MULTICULTURAL AFFAIRS
Project: MOSSMAN GORGE INFRASTRUCTURE UPGRADES

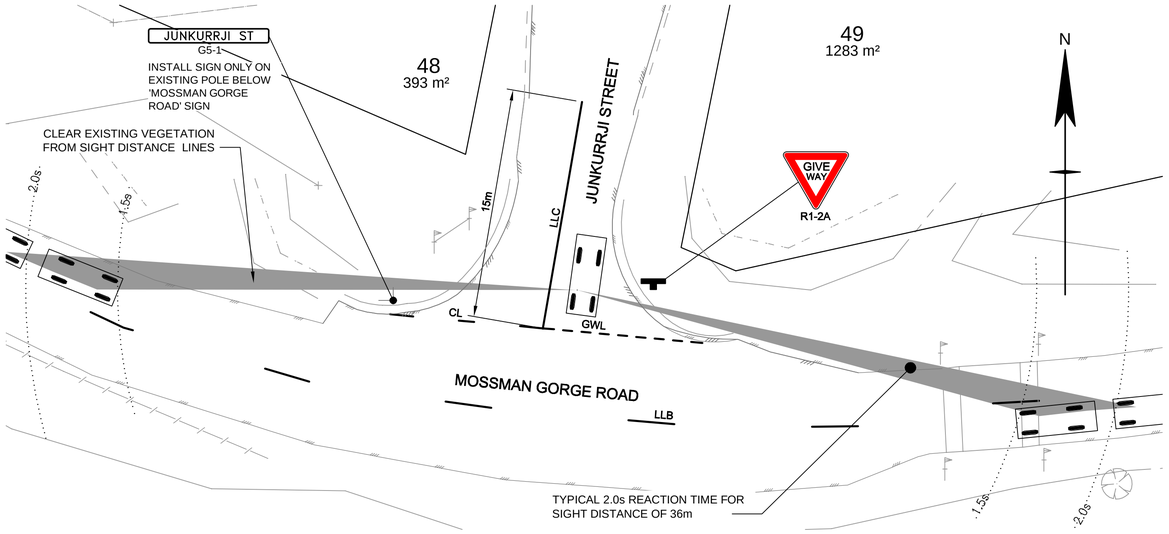
Drawn	NDC	Drawing Check	
Designed	GAS	Design Check	
Approved		Date	RPEQ

Drawing is not to be used for construction unless approved

Drawing Title: ROADWORKS PLAN SHEET 1 OF 2

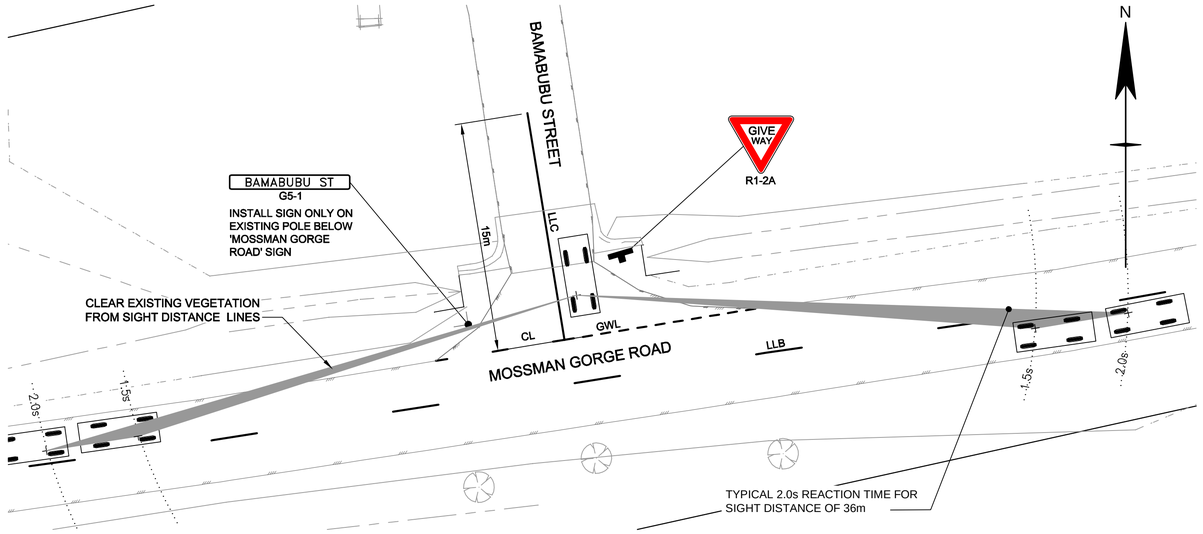
Drawing Size	Scale (A1 size)	Drg No	Revision
A1	1:750	7019-002	A

External References: B&M-TITLE-A1_e.dwg ; 7019-X-SURVEY.dwg ; 7019-X-DESIGN.dwg



MOSSMAN GORGE ROAD/JUNKURRJI STREET INTERSECTION - PAVEMENT MARKING AND SIGNAGE DETAILS

SCALE 1:200



MOSSMAN GORGE ROAD/BAMABUBU STREET INTERSECTION - PAVEMENT MARKING AND SIGNAGE DETAILS

SCALE 1:200

LEGEND

- ASPHALT SURFACING (30mm) TO ALL INTERNAL ROADS
- STREET SIGN
- TOP OF BATTER
- TOE OF BATTER
- NEW SIGN
- EDGE OF PAVEMENT
- 27 — PROPOSED LOT NUMBER
- 5062m² — PROPOSED LOT AREA
- EXISTING FENCE

NOTES

1. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
2. ALL DESIGN SURFACES ARE TO BE GRADED EVENLY BETWEEN SHOWN LEVELS UNLESS OTHERWISE SHOWN.
3. REFER TO FNQROC STANDARD DRAWINGS (IF APPLICABLE):
   - S1000 : CONCRETE KERB & CHANNEL
   - S1015 : ACCESS CROSSOVERS
   - S1016 : KERB RAMP
   - S1035 : PATHWAYS/BIKEWAYS
   - S1040 : STREET NAME SIGNS
4. LOCATION OF ALL EXISTING SERVICES TO BE CONFIRMED PRIOR TO CONSTRUCTION BY CONTRACTOR THROUGH LIAISON WITH RELEVANT AUTHORITIES.
5. NEW ROADWORKS AND KERBING TO JOIN SMOOTHLY TO EXISTING WORKS. PROVIDE CUT BACK TO EXISTING SEALED ROADS WHERE NECESSARY.
6. ALL LINEMARKING, GUIDE POSTS AND RAISED REFLECTIVE PAVEMENT MARKERS ARE TO BE IN ACCORDANCE WITH TMR MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
7. PRIOR TO THE RESEAL, EXISTING ROADS ARE TO BE SWEPT CLEAN OF LOOSE MATERIAL, POTHOLES FILLED AND COMPACTED WITH CBR 60 ROAD BASE GRAVEL. INSPECTION PRIOR TO RESEAL TO BE UNDERTAKEN BY THE COUNCIL AND SUPERINTENDENT.

LINEMARKING DIMENSIONS TABLE

TYPE	DESCRIPTION	LENGTH (mm)	GAP (mm)	WIDTH (mm)
CL	CONTINUITY LINE	1000	3000	200
LLB	LANE LINE BROKEN	3000	9000	100
LLC	LANE LINE CONTINUOUS	-	-	80
HL	HOLDING LINE	600	600	300
GWL	GIVEWAY LINE	600	600	300

IMPORTANT NOTE:
LIVE SERVICES EXIST THROUGHOUT THE COMMUNITY. CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION AND ENSURE SERVICES TO THE COMMUNITY ARE MAINTAINED.

0 2 4 6 8 10m
SCALE 1:200 (A1 SIZE)

Revisions

No.	Description	Reviewed	Approved	Date
A	ISSUED FOR TENDER	SC		20/06/14

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Client: DEPARTMENT OF ABORIGINAL AND TORRES STRAIT ISLANDER MULTICULTURAL AFFAIRS
Project: MOSSMAN GORGE INFRASTRUCTURE UPGRADES

Drawn	Drawing Check	Approved	Date
NDC		RPEQ	
Designed	Design Check	Drawing is not to be used for construction unless approved	
GAS			

Drawing Title: ROADWORKS PLAN SHEET 2 OF 2

Drawing Size	Scale (A1 size)	Drg No	Revision
A1	1:200	7019-003	A

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File: K:\C1207019 Mossman Gorge Community Infrastructure Upgrades\Drawings\ 7019-003.dwg

External References: B&M-TITLE-A1_e.dwg ; 7019-X-SURVEY.dwg ; 7019-X-DESIGN.dwg

NOTES

1. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
2. ENSURE EXISTING SUBSOIL DRAIN TAILS AND FLUSHOUT POINTS ARE CONNECTED TO NEW STORMWATER PITS IN ACCORDANCE WITH FNQROC STANDARD DRAWINGS.
3. FLUSHING POINTS FOR SUBSOIL DRAINAGE TO BE AT THE END OF EACH LINE AND AT MAX 50m SPACING. FLUSHING POINTS SHALL BE LOCATED WITHIN PITS. A SCREW CAP MUST BE PROVIDED TO EACH FLUSHING POINT.
4. REFER TO FNQROC STANDARD DRAWINGS:
   - S1002 - KERB AND CHANNEL DRAINAGE CONNECTOR
   - S1045 - EXCAVATION, BEDDING AND BACKFILLING OF PRE-CAST BOX CULVERTS
   - S1050 - GRATED KERB INLET PIT - PIPE DIAMETER < 600mm
   - S1060 - KERB INLET GRATE AND FRAME S1070 - FIELD INLET PIT
   - S1075 - RC PIPE HEADWALL - DIA. 375 TO 675mm
   - S1095 - SUBSURFACE FLUSHING POINTS
5. CONTRACTOR TO CONFIRM ALL OUTLET LEVELS PRIOR TO COMMENCEMENT OF WORKS.

N

MOSSMAN RIVER

45 1.341ha

EXIST. CONC. SPOON DRAIN

2 517 m² | 44 178 m² | 3 684 m² | 4 819 m² | 5 827 m² | 6 1514 m² | 23 924 m² | 24 1342 m² | 29 1317 m² | 53 5026 m²

CONSTRUCT 300mm HIGH EARTH BUND ADJACENT TO CONCRETE DRAIN (TO PROVIDE IMMUNITY TO LOT 21)

7 1390 m² | 22 533 m² | 30 1486 m² | 35 1385 m² | 36 981 m² | 39 2091 m² | 40 2041 m²

EXIST. CONC. SPOON DRAIN

LUND STREET

EXIST 300 x 300 RCBC

JANKAJI CLOSE | MANJAL CLOSE | WALKARR CLOSE

EXIST. CONC. SPOON DRAIN

21 539 m² | 25 902 m² | 27 914 m² | 32 997 m² | 33 849 m² | 37 618 m² | 41 1409 m²

EXIST 300RCP | EXIST 375RCP | EXIST 300RCP | EXIST 300RCP

50 858 m² | 1 786 m² | 8 794 m² | 16 576 m² | 17 567 m² | 18 571 m² | 54 327 m² | 9 818 m² | 10 1080 m² | 38 605 m²

KANKARR STREET | JUNKURRJI STREET

EXIST. 450 x 300 RCBC | EXIST 300RCP | EXIST 300RCP

INSET A
REFER DRAWING 7019-005

42 7834 m²

REGRADE EXISTING OPEN CHANNEL TO ACCOMMODATE NEW CONCRETE INVERT AND 1:4 BATTERS.

INSET B
REFER DRAWING 7019-005

BAMABUBU STREET

1800 x 750 RCBC

CLEAN OUT DEBRIS FROM EXISTING CULVERT

15 1399 m² | 14 902 m² | 13 908 m² | 48 393 m² | 49 1283 m²

260 m²

REMOVE EXISTING VEGETATION BLOCKING INLET. CLEAN OUT VEGETATION, DEBRIS, AND SILT FROM EXISTING CULVERTS. CONSTRUCT NEW CONCRETE APRON AND WINGWALLS. ENSURE AREA IS FREE DRAINING TO CULVERT INLET.

3 x 1200 x 450 RCBC's

2 x 600 RCP's

CONSTRUCT NEW HANDRAIL (TYPE 2) TO EACH CULVERT END IN ACCORDANCE WITH FNQROC STANDARD DRAWING S1025

MOSSMAN GORGE ROAD

PROPOSED OPENING OF ROAD RESERVE

46 6359 m²

Very Rocky in this Area! Not really useable land

Proposed Shed Arts Centre Expansion

Hunter

Hunter

Art Gallery

Very Large Tree

Tool Shed

Office

Training Centre

Council Office

Car Park

Church

Medical Office

Medical Centre

Opp. Hub

Cable loop

Wellbeing Centre

LEGEND

- STORMWATER LINE AND KERB INLET PIT
- STORMWATER LINE AND HEADWALL
- SW SW EXISTING STORMWATER
- EARTH BUND

IMPORTANT NOTE:
LIVE SERVICES EXIST THROUGHOUT THE COMMUNITY. CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION AND ENSURE SERVICES TO THE COMMUNITY ARE MAINTAINED.

0 7.5 15 22.5 30 37.5m
SCALE 1:750 (A1 SIZE)

File: K:\C1207019 Mossman Gorge Community Infrastructure Upgrades\Drawings\ 7019-004.dwg
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Revisions				
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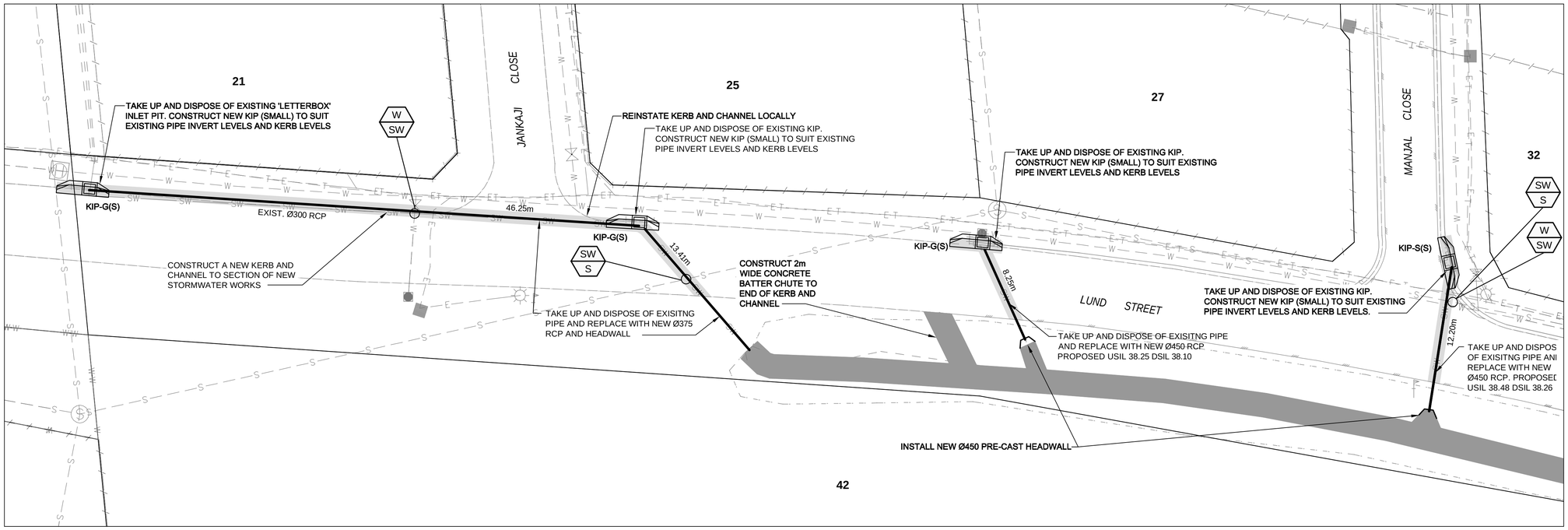
Client: DEPARTMENT OF ABORIGINAL AND TORRES STRAIT ISLANDER MULTICULTURAL AFFAIRS
Project: MOSSMAN GORGE INFRASTRUCTURE UPGRADES

Drawn	Drawing Check	Approved	Date
NDC		RPEQ	
Designed	Design Check	Drawing is not to be used for construction unless approved	
GAS			

Drawing Title: STORMWATER PLAN SHEET 1 OF 2

Drawing Size	Scale (A1 size)	Drg No	Revision
A1	1:750	7019-004	A

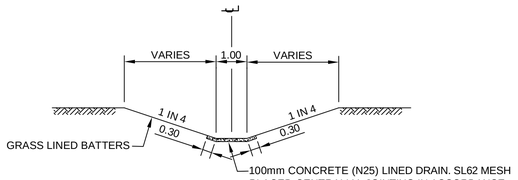
External References: B&M-TITLE-A1_e.dwg ; 7019-X-SURVEY.dwg ; 7019-X-DESIGN.dwg



INSET A

SCALE 1:200

N

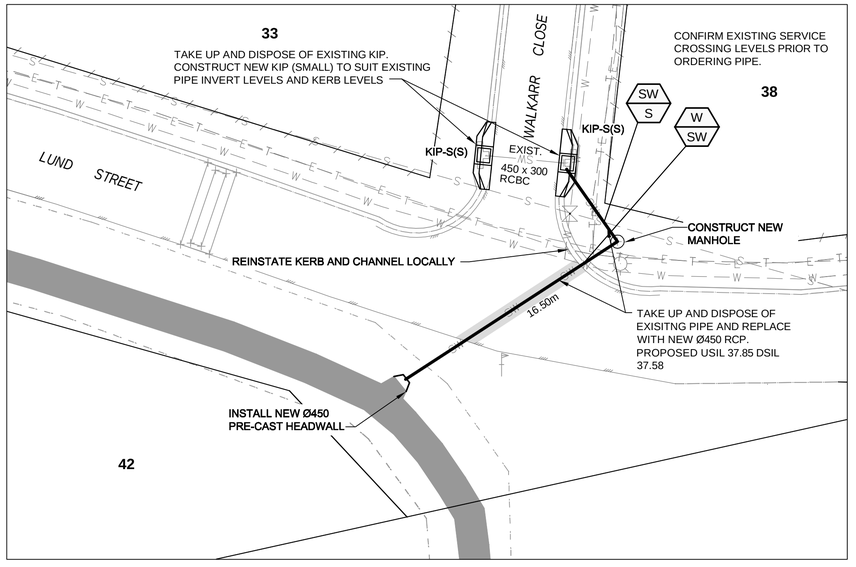


TYPICAL CONCRETE INVERT DRAIN

NOT TO SCALE

LEGEND

- STORMWATER LINE AND KERB INLET PIT
- STORMWATER LINE AND HEADWALL
- 22.35m — PIPE LENGTH
- 2/6 — LINE No. / STRUCTURE No.
- KIP-G(S) — KERB INLET PIT ON GRADE (WITH SMALL EXTENSIONS)
- KIP-S(S) — KERB INLET PIT ON SAG (WITH SMALL EXTENSIONS)
- MH — MANHOLE
- EXISTING ELECTRICAL CABLE (ABOVE GROUND), AND ELECTRICAL POLE.
- EXISTING ELECTRICAL CABLE (UNDER GROUND)
- EXISTING WATER MAIN, HYDRANT, AND STOP VALVE
- EXISTING TELSTRA CABLE (UNDER GROUND)
- IL 4.95 S Ø150 IL 4.90 — EXISTING SEWER LINE, MANHOLES, PIPE DIAMETER AND INVERT LEVELS
- SW — EXISTING STORMWATER
- PAVEMENT REINSTATEMENT 200mm CBR 60 ROAD BASE (PRIOR TO ASPHALT OVERLAY)
- CONCRETE INVERT DRAIN
- EXISTING FENCE LINE
- EXISTING STREET LIGHT
- EXISTING STREET SIGN



INSET B

SCALE 1:200

NOTES

1. REFER TO DRAWING 7019-004 FOR NOTES.

IMPORTANT NOTE:

LIVE SERVICES EXIST THROUGHOUT THE COMMUNITY. CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION AND ENSURE SERVICES TO THE COMMUNITY ARE MAINTAINED.

0 2 4 6 8 10m

SCALE 1:200 (A1 SIZE)

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GAS			

Drawing Title: STORMWATER PLAN SHEET 2 OF 2

Drawing Size	Scale (A1 size)	Drg No	Revision
A1	1:200	7019-005	A

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External References: B&M-TITLE-A1_e.dwg ; 7019-X-SURVEY.dwg ; 7019-X-DESIGN.dwg

NOTES

1. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
2. SEWER PIPES SHOWN ARE Ø150 uPVC (CLASS SN8) UNLESS NOTED OTHERWISE ON PLAN.
3. HOUSE CONNECTIONS (HCB'S) FOR SINGLE ALLOTMENTS TO BE Ø100 CONNECTION.
4. LOCATION OF ALL SEWER MANHOLES TO BE 1.5m OFFSET FROM FRONT PROPERTY BOUNDARY, AND 0.8m OFFSET FROM SIDE AND REAR PROPERTY BOUNDARIES, UNLESS DIMENSIONED OTHERWISE ON PLAN.
5. REFER TO FNQROC STANDARD DRAWINGS:
   S3000 SEWERAGE MANHOLES
   S3005 HOUSE CONNECTION BRANCHES
   S3015 SEWER BEDDING - TRENCH DETAILS
6. FINISHED LID LEVELS OF SEWER MANHOLES TO STAND 50mm PROUD OF FINISHED SURFACE LEVEL (AFTER TOPSOILING IS COMPLETED).
7. CONTRACTOR TO CONFIRM EXACT LOCATIONS AND LEVELS OF EXISTING SEWER MANHOLES AND CONNECTING PIPES ON SITE PRIOR TO CONSTRUCTION.

N

MOSSMAN RIVER

45
1.341ha

REFER TO DRAWING 7019-007 FOR DETAILS OF SEWERAGE EXTENSION

2 517 m²
44 178 m²
3 684 m²
4 819 m²
5 827 m²
6 1514 m²
23 924 m²
24 1342 m²
29 1317 m²
53 5026 m²
30 1486 m²
35 1385 m²
36 981 m²
40 2041 m²
39 2091 m²
22 533 m²
7 1390 m²
21 539 m²
25 902 m²
27 914 m²
32 997 m²
37 618 m²
41 1409 m²
33 849 m²
38 605 m²
50 858 m²
8 794 m²
16 576 m²
1 786 m²
17 567 m²
18 571 m²
54 327 m²
9 818 m²
10 1080 m²
42 7834 m²
15 1399 m²
14 902 m²
13 908 m²
12 797 m²
11 1248 m²
48 393 m²
49 1283 m²
260 m²
46 6359 m²

LUND STREET
JANKAJI CLOSE
MANJAL CLOSE
WALKARR CLOSE
KANKARR STREET
JUNKURRJI STREET
BAMABABA STREET
MOSSMAN GORGE ROAD

3/1 END
E1
4.08m
15.66m
2/1
19.55m
2.03m
1/1

300 x 225 RCBC
300RCP
375RCP
2 x 300RCP
EXIST 450 x 300 RCBC
EXIST 300RCP
EXIST 375RCP
1800 x 750 RCBC
3 x 1200 x 450 RCBC's
2 x 600 RCP's

P.S.

PROPOSED OPENING OF ROAD RESERVE

REFER TO DRAWING 7019-007 FOR PUMP STATION DETAILS

IMPORTANT NOTE:
LIVE SERVICES EXIST THROUGHOUT THE COMMUNITY. CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION AND ENSURE SERVICES TO THE COMMUNITY ARE MAINTAINED.

LEGEND

56.23m	SEWER PIPE, LENGTH AND MANHOLE
	SEWER ENDCAP
E1	HOUSE CONNECTION BRANCH (HCB) AND TYPE
5/3	MANHOLE NUMBER / LINE NUMBER
FLL 10.54	FINISHED LID LEVEL OF MANHOLE
NSL 10.54	EXISTING SURFACE LEVEL
FSL 3.700	FINISHED SURFACE LEVEL
	SEWER PUMP STATION
IL 4.95 Ø150 IL 4.90	EXISTING SEWER LINE, MANHOLES, PIPE DIAMETER AND INVERT LEVELS

0 7.5 15 22.5 30 37.5m
SCALE 1:750 (A1 SIZE)

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Drawn	Drawing Check	Approved	Date
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Designed	Design Check		
GAS			

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Drawing Title: SEWERAGE PLAN SHEET 1 OF 2

Drawing Size	Scale (A1 size)	Drg No	Revision
A1	1:750	7019-006	A

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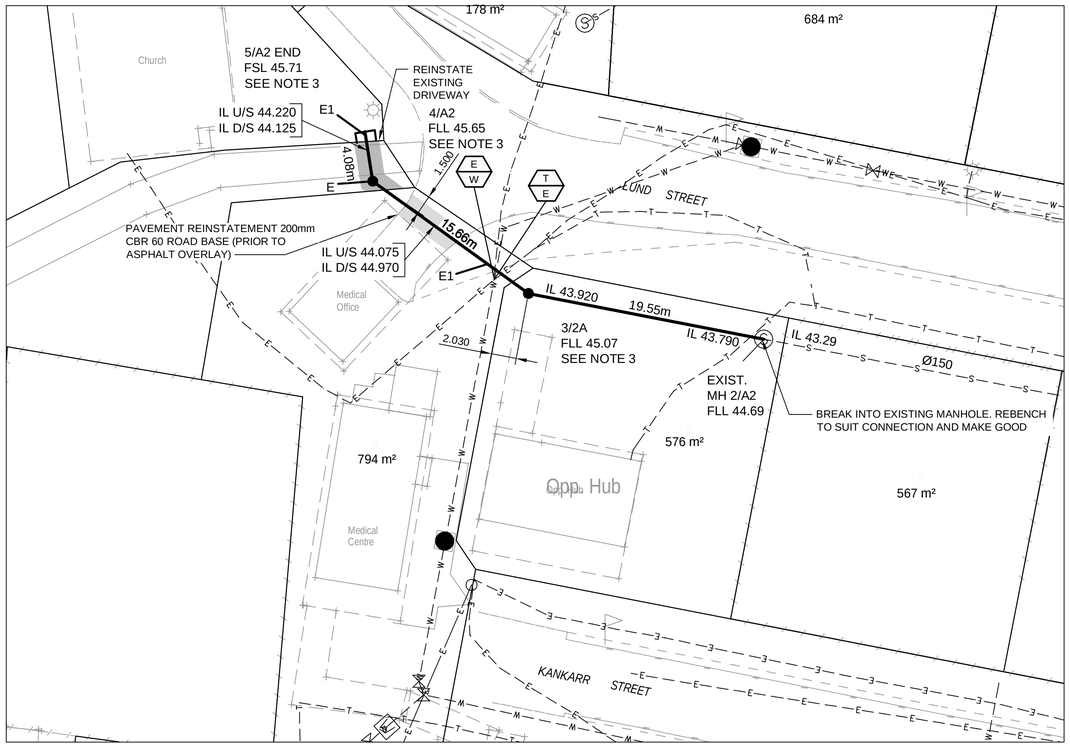
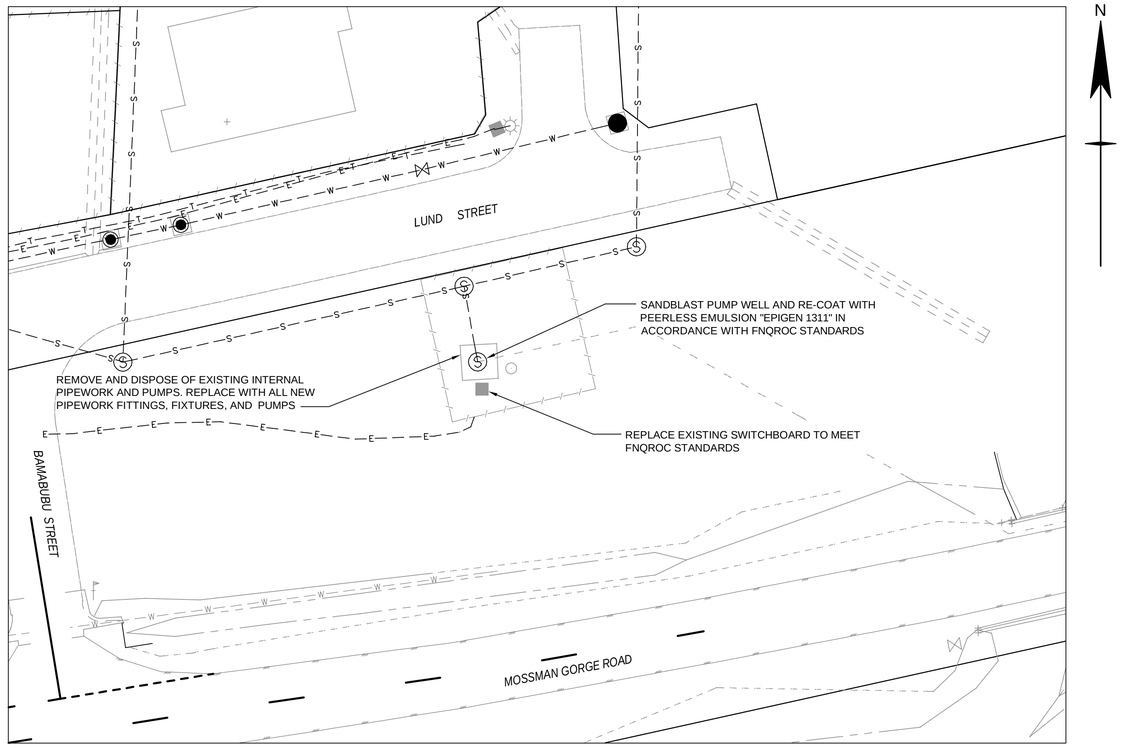


LUND STREET (WEST) - DETAILED SEWERAGE EXTENSION

SCALE 1:250



PUMP STATION DETAILS

SCALE 1:250

NOTES

1. CONTRACTOR IS TO LOCATE EXISTING SEWER HOUSE CONNECTIONS AND CONSTRUCT NEW HOUSE DRAINS IN THEIR INDIVIDUAL LOTS AND CONNECT TO THE NEW SEWER.
2. CONTRACTOR IS TO PROVIDE A WORK METHOD STATEMENT FOR COUNCIL APPROVAL FOR WITH THE PUMP STATION UPGRADE. WORK METHOD STATEMENT SHALL GIVE CONSIDERATION TO DECOMMISSIONING OF EXISTING PUMP STATION AND MINIMISING DISRUPTION TO EXISTING SERVICES.
3. CONTRACTOR IS TO CONFIRM THE FINISHED SURFACE LEVEL OF ALL NEW MANHOLES AND END OF LINES, AND CONFIRM LOTS WILL BE CONTROLLED PRIOR TO CONSTRUCTION.

LEGEND

56.23m	SEWER PIPE, LENGTH AND MANHOLE
	SEWER ENDCAP
E1	HOUSE CONNECTION BRANCH (HCB) AND TYPE
5/3	MANHOLE NUMBER / LINE NUMBER
FLL 10.54	FINISHED LID LEVEL OF MANHOLE
NSL 10.54	EXISTING SURFACE LEVEL
FSL 3.700	FINISHED SURFACE LEVEL
	SEWER PUMP STATION
SW / S	INDICATES SEWER (S) CROSSING OTHER SERVICES eg. (SW) STORMWATER

E E	EXISTING ELECTRICAL CABLE (ABOVE GROUND), AND ELECTRICAL POLE.
E E	EXISTING ELECTRICAL CABLE (UNDER GROUND)
W W	EXISTING WATER MAIN, HYDRANT, AND STOP VALVE
T T	EXISTING TELSTRA CABLE (UNDER GROUND)
IL 4.95 S Ø150 S IL 4.90	EXISTING SEWER LINE, MANHOLES, PIPE DIAMETER AND INVERT LEVELS
SW	EXISTING STORMWATER
	PAVEMENT REINSTATEMENT 200mm CBR 60 ROAD BASE (PRIOR TO ASPHALT OVERLAY)
	2m WIDE CONCRETE INVERT
	EXISTING FENCE LINE
☼	EXISTING STREET LIGHT
f	EXISTING STREET SIGN

IMPORTANT NOTE:

LIVE SERVICES EXIST THROUGHOUT THE COMMUNITY. CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION AND ENSURE SERVICES TO THE COMMUNITY ARE MAINTAINED.

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Drawn	Drawing Check	Approved	Date
NDC		RPEQ	
Designed	Design Check		
GAS			

Drawing is not to be used for construction unless approved

Drawing Title: SEWERAGE PLAN SHEET 2 OF 2

Drawing Size	Scale (A1 size)	Drg No	Revision
A1	AS SHOWN	7019-007	A

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External References: B&M-TITLE-A1_e.dwg ; 7019-X-SURVEY.dwg ; 7019-X-DESIGN.dwg

NOTES

1. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
2. REFER TO FNQROC STANDARD DRAWINGS:
   S2000 : VALVE BOX INSTALLATION
   S2005 : HYDRANT BOX INSTALLATION
   S2010 : KERB AND ROAD MARKERS
   S2015 : THRUST BLOCK DETAILS
   S2016 : WATER RETICULATION BEDDING DETAILS
   S2020 : MAIN CONNECTION DETAILS
3. HYDRANTS AND SLUICE VALVES TO BE NOMINALLY LOCATED OPPOSITE PROPERTY BOUNDARY TRUNCATIONS AND CORNERS UNLESS SHOWN OTHERWISE ON PLAN.
4. WHERE HYDRANTS AND STREET LIGHTING LOCATION COINCIDE, HYDRANT TO BE PLACED 1.0m (MIN.) AWAY FROM LIGHT.
5. LOCATION OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE BY CONTRACTOR AND SUPERINTENDENT PRIOR TO CONSTRUCTION. THIS IS INCLUSIVE OF EXISTING SERVICES SHOWN ON PLAN.
6. VALVES ON LINES Ø100 OR GREATER TO BE ANCHORED AS PER FNQROC STD. DWG S2015. ENDCAPS ARE TO BE AT LEAST 9m PAST VALVE.
7. CONTRACTOR IS TO INSPECT, CLEAN , AND RESET EXISTING VALVE AND HYDRANT SURROUNDS.
8. EACH PROPERTY SHALL HAVE A NEW WATER METER INSTALLED IN ACCORDANCE WITH COUNCIL REQUIREMENTS AND WATER SERVICE RECONNECTED TO EACH PROPERTY.
9. PRIOR TO HANDOVER OF WATER INFRASTRUCTURE TO COUNCIL, THE CONTRACTOR SHALL DISINFECT AND EXISTING RETICULATION NETWORK FLUSH.

N

MOSSMAN RIVER

45 1.341ha

INCREASE SIZE OF LOOP MAIN TO Ø63mm OD MDPE. RETAIN EXISTING ALIGNMENT

2 517 m² | 44 178 m² | 3 684 m² | 4 819 m² | 5 827 m² | 6 1514 m² | 23 924 m² | 24 1342 m² | 29 1317 m² | 53 5026 m²

7 1390 m² | 22 533 m² | 21 539 m² | 25 902 m² | 27 914 m² | 30 1486 m² | 35 1385 m² | 36 981 m² | 39 2091 m² | 40 2041 m²

LUND STREET | JANKAJI CLOSE | MANJAL CLOSE | WALKARR CLOSE

50 858 m² | 1 786 m² | 8 794 m² | 16 576 m² | 17 567 m² | 18 571 m² | 54 327 m² | 9 818 m² | 32 997 m² | 33 849 m² | 37 618 m² | 38 605 m² | 41 1409 m²

REFER DRAWING 7014-009 FOR DETAILS

KANKARR STREET | JUNKURRJI STREET

10 1080 m² | 42 7834 m²

INCREASE SIZE OF LOOP MAIN TO Ø63mm OD MDPE. RETAIN EXISTING ALIGNMENT.

15 1399 m² | 14 902 m² | 13 908 m² | 12 797 m² | 11 1248 m² | 48 393 m² | 49 1283 m²

REFER DRAWING 7014-009 FOR DETAILS

BAMABUBU STREET | Ø150 | FLOW METER

MOSSMAN GORGE ROAD

REFER DRAWING 7014-009 FOR DETAILS

CONNECT TO EXISTING MAIN. CONTRACTOR TO CONFIRM LOCATION ON SITE PRIOR TO CONSTRUCTION. EXISTING WATERMAINS EXIST IN MOSSMAN GORGE ROAD. THROUGH CONSULTATION WITH COUNCIL CONTRACTOR IS TO CONFIRM WHICH MAIN IS TO BE CONNECTED TO COMMUNITY.

46 6359 m²

MOSSMAN GORGE ROAD

IMPORTANT NOTE:
LIVE SERVICES EXIST THROUGHOUT THE COMMUNITY. CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION AND ENSURE SERVICES TO THE COMMUNITY ARE MAINTAINED.

LEGEND

- Ø63mm OD WATER MAIN (PE PIPE CLASS 16)
- Ø150 WATER MAIN (uPVC PIPE CLASS 16 RUBBER RING JOINT)
- HYDRANT, VALVE AND ENDCAP
- W — WATER SERVICE CONNECTION (INSTALLATION BY COUNCIL)
- W — WATER SERVICE INSTALLATION WITH CONDUIT UNDER CONCRETE FOOTPATH (REFER NOTE 9)
- Ø100 — EXISTING WATER MAIN, DIAMETER, HYDRANT, STOP VALVE AND ENDCAP
- PAVEMENT REINSTATEMENT 200mm CBR 60 ROAD BASE (PRIOR TO ASPHALT OVERLAY)

0 7.5 15 22.5 30 37.5m
SCALE 1:750 (A1 SIZE)

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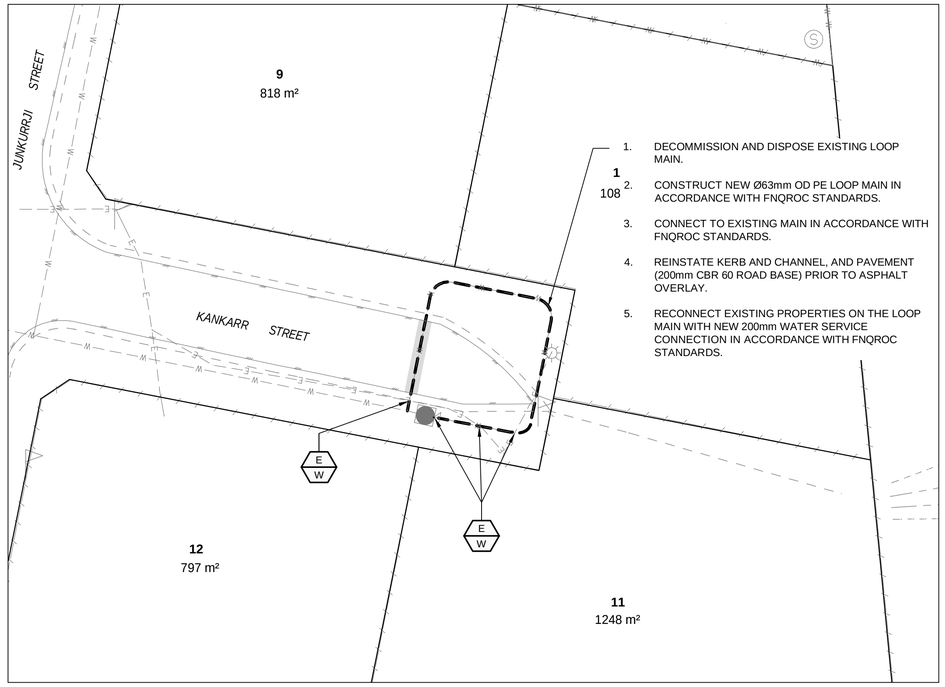
Drawn	NDC	Drawing Check		Approved	Date
Designed	GAS	Design Check			RPEQ

Drawing is not to be used for construction unless approved

Drawing Title: WATER RETICULATION PLAN SHEET 1 OF 2

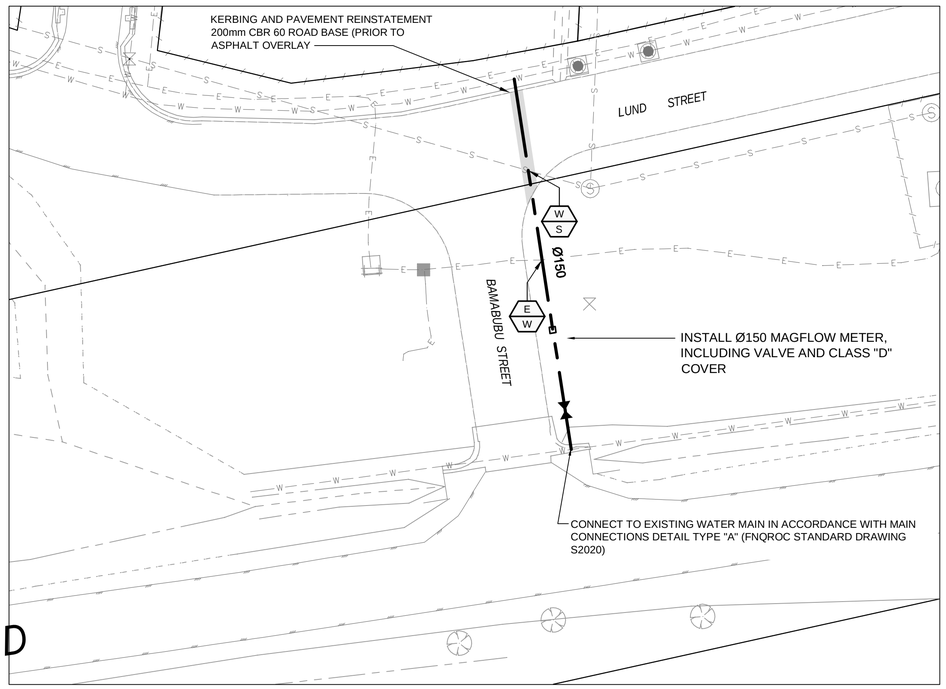
Drawing Size	Scale (A1 size)	Drg No	Revision
A1	1:750	7019-008	A

External References: B&M-TITLE-A1_e.dwg ; 7019-X-SURVEY.dwg



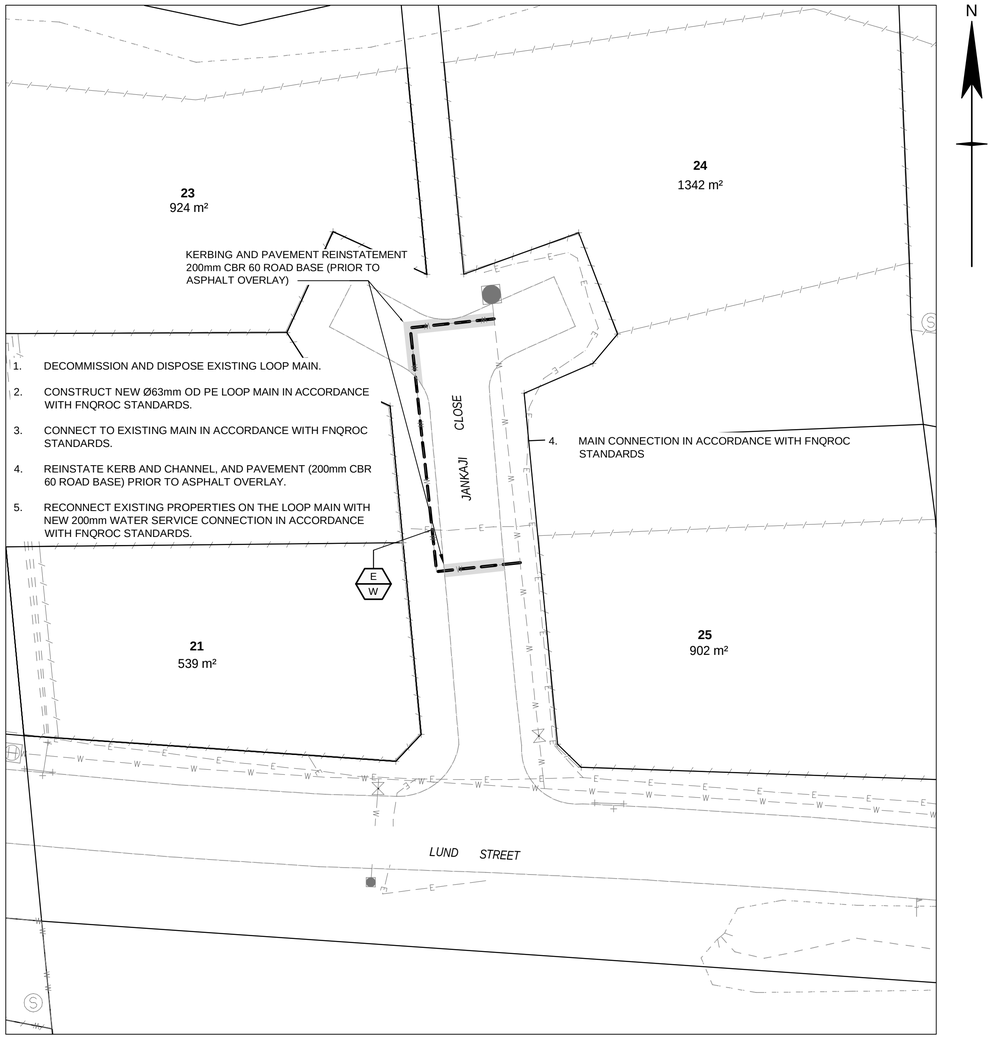
KANKARR STREET (EAST) - LOOP MAIN DETAIL

SCALE 1:250



BAMABUBU STREET - LOOP MAIN DETAIL

SCALE 1:250



JANKAJI CLOSE - LOOP MAIN DETAIL

SCALE 1:250

IMPORTANT NOTE:

LIVE SERVICES EXIST THROUGHOUT THE COMMUNITY. CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION AND ENSURE SERVICES TO THE COMMUNITY ARE MAINTAINED.

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Drawn	Drawing Check	Approved	Date
NDC		RPEQ	
Designed	Design Check		
GAS			

Drawing is not to be used for construction unless approved

Drawing Title: WATER RETICULATION PLAN SHEET 2 OF 2

Drawing Size	Scale (A1 size)	Drg No	Revision
A1	AS SHOWN	7019-009	A

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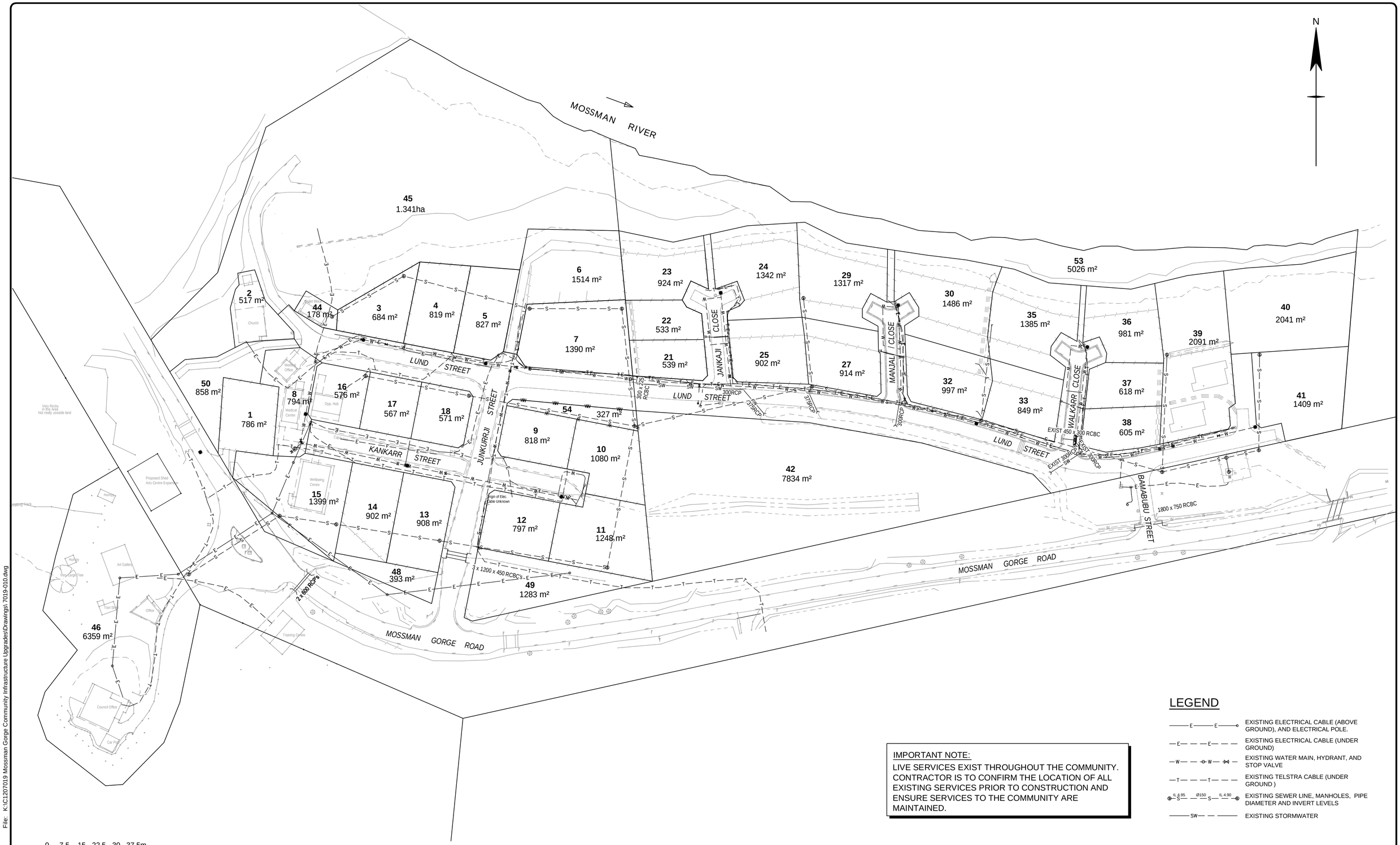

LEGEND

- EXISTING ELECTRICAL CABLE (ABOVE GROUND), AND ELECTRICAL POLE.
- EXISTING ELECTRICAL CABLE (UNDER GROUND)
- EXISTING WATER MAIN, HYDRANT, AND STOP VALVE
- EXISTING TELSTRA CABLE (UNDER GROUND)
- EXISTING SEWER LINE, MANHOLES, PIPE DIAMETER AND INVERT LEVELS
- EXISTING STORMWATER

IMPORTANT NOTE:

LIVE SERVICES EXIST THROUGHOUT THE COMMUNITY. CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION AND ENSURE SERVICES TO THE COMMUNITY ARE MAINTAINED.

Printed: 25 June 2014, 9:07 AM
File: K:\IC1207019 Mossman Gorge Community Infrastructure Upgrades\Drawings\ 7019-010.dwg

Revisions				
No.	Description	Reviewed	Approved	Date
A	ISSUED FOR TENDER	SC		20/06/14

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ABN 24 845 447 493
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PO Box 999N Cairns North QLD 4870
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Client: DEPARTMENT OF ABORIGINAL AND TORRES STRAIT ISLANDER MULTICULTURAL AFFAIRS
Project: MOSSMAN GORGE INFRASTRUCTURE UPGRADES

Drawn	Drawing Check	Approved	Date
NDC		RPEQ	
Designed	Design Check		
GAS			

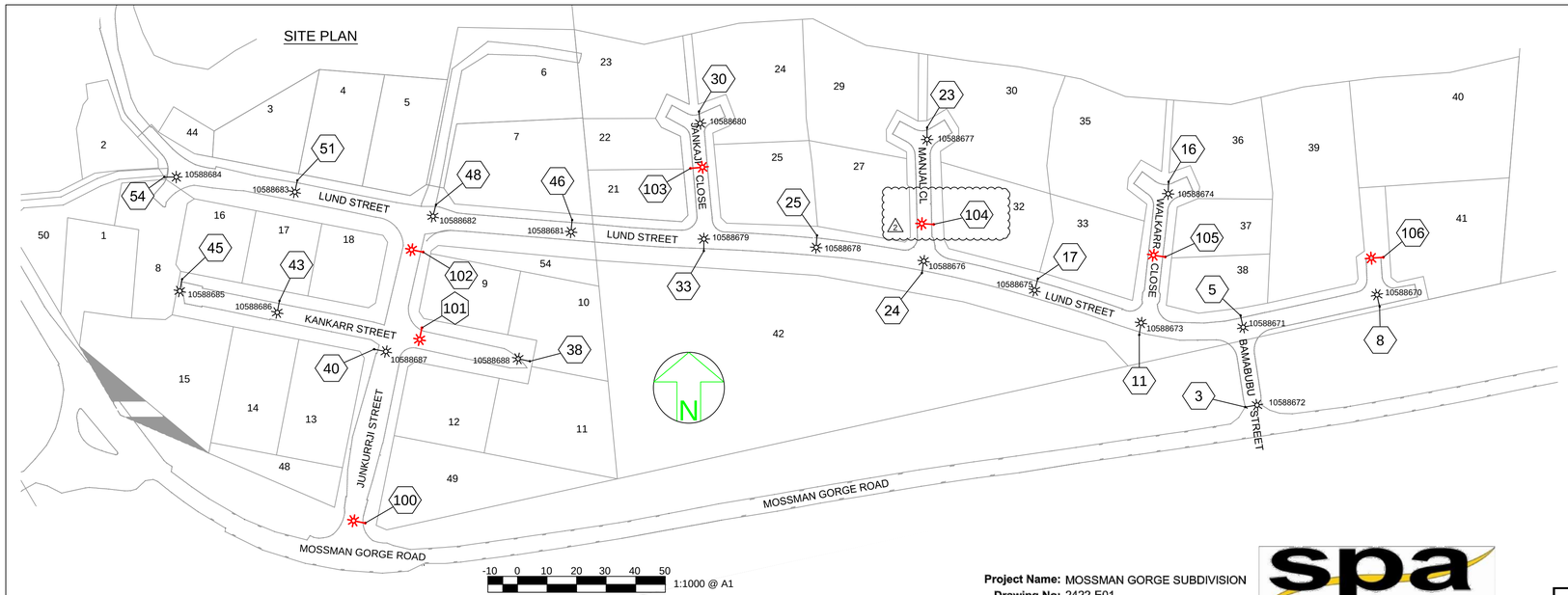
Drawing is not to be used for construction unless approved

Drawing Title: EXISTING SERVICES PLAN

Drawing Size	Scale (A1 size)	Drg No	Revision
A1	1:750	7019-010	A

External References: B&M-TITLE-A1_e.dwg ; 7019-X-SURVEY.dwg

SITE PLAN



WORKPLAN NOTES

1. STREETLIGHT POLE FOOTINGS SHALL BE LOCATED PERPENDICULAR TO THE KERB AND SQUARE FROM THE FRONT BOUNDARY PEG ENSURING NO CONFLICT WITH FUTURE DRIVEWAYS, UNLESS DETAILED OTHERWISE. WHERE DIMENSIONS ARE SHOWN, THEY TAKE PRECEDENCE OVER GRID COORDINATES.
2. THERE ARE 26x32W CFL MAXI URBAN MINOR ROAD STREETLIGHTS ON RATE 2.
3. STREETLIGHT DESIGN TO AS1158 CATEGORY P4 FOR ALL ROAD.
4. MINOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 1200mm FOR MINOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-6-4-1 & 2. FOR ALL FOOTPATHS, CENTRELINE OF STREETLIGHT SHALL BE 0.82m FROM THE INVERT OF KERB AND CHANNEL.
5. THE LIGHTING DESIGN INCLUDES AN ALLOWANCE FOR CONSTRUCTION TOLERANCE OF LIGHT POLES SUCH THAT ANY STREETLIGHT CAN BE POSITIONED UP TO A MAXIMUM OF ±350mm LONGITUDINALLY FROM THE POSITION SHOWN AND UP TO 100mm MAXIMUM FURTHER AWAY FROM KERB EDGE, INCLUDING POLES WITH GRID COORDINATES, AND STILL MAINTAIN COMPLIANCE.

Project Name: MOSSMAN GORGE SUBDIVISION
Drawing No: 2422-E01
Council: Douglas Shire Council

spa consulting engineers (QLD)

I certify this design meets the compliance requirements of AS/NZS 1158.3.1:2005
Jane Errey RPEQ 6863

PUBLIC LIGHTING SCHEDULE

Rev Date 04-04-14							
STN NO	SITE LABEL	ACTION	CONSTRUCTION CODE	RATE	TARIFF OWNER	MOUNTING HEIGHT (m)	REMARKS
3	10588672	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
5	10588671	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
8	10588670	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
11	10588673	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
16	10588674	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
17	10588675	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
23	10588677	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
24	10588676	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
25	10588678	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
30	10588680	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
33	10588679	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
38	10588688	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
40	10588687	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
43	10588686	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
45	10588685	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
46	10588681	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
48	10588682	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
51	10588683	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
54	10588684	INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LIGHT DESIGNED BY ERGON ENERGY REFER TO ERGON DRAWING 769605
100		INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	
101		INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	
102		INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	
103		INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	
104		INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	LOCATE LIGHT AS CLOSE AS PRACTICABLE TO NORTHERN SIDE OF DRIVEWAY LOT 32 ⚠2
105		INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	
106		INSTALL	SL CFL 0003	RATE 2	DOUGLAS SHIRE COUNCIL	7.5	

LUMINAIRE / POLE / PHOTOMETRIC INFORMATION TABLE

Category	P4	Road Surface / Luminaire Type	R3 / IV
Luminaire Type	Urban - Singl	Luminaire Wattage	CF32
Pole Height (m)	5.5	Luminaire Outreach (m)	0.3
Foundation Depth (mm)	1200	Outreach (m)	Standard 1.5m
Upcast	5	Uplift (m)	2
Mounting Height (m)	7.5	Cleaning / Replacement	36 Months
Lamp	SUB 32CFL PEC LYNX	Pollution Level	Medium
Photometric File	206243.cie	IP Rating	IP6x
Lamp Type	Compact Fluorescent	LLMF	0.82
Lumens	2400	MF	0.71

LIMITING LTPs

Min Av E_H	0.85	Min E_H Maint	0.14
Lamp Type	4	U_p Maint	10

HAS COMPLIANCE WITH THE FOLLOWING ELEMENTS BEEN MET?

Is compliance with the maximum permissible spacing achieved on all straights and curves?	YES
For curved sections, does a straight line joining successive luminaries lie within the road reserve or is at least one luminaire located within the hatched area, as shown in figure 3.1?	YES
Has a luminaire associated with one of the intersecting roads been located within the hatched area shown in figure 3.1, and where differing levels of Category P lighting are provided, the luminaire is a type that complies with the higher lighting category?	YES
For Tee-intersections, has the first luminaire in the joining road been located no more than 50% of the maximum spacing detailed in clause 3.2.1 from the limits of the junction defined by the prolongation of the property lines?	YES
Where pedestrian refuges are located on roads requiring category P lighting, is the maintained horizontal illuminance over the surface of the refuge, within the design area shown in figure 3.3, not less than 3.5 Lux?	N/A
Do maximum spacing for luminaries in cul-de-sacs comply with Clause 3.2.1.and are the provisions of Clauses 3.2.5.2, 3.2.5.3 or 3.2.5.4 met?	N/A

Lighting design compliance is conditional on all lights being operational.

Is the maintained horizontal illuminance over the surface not be less than 3.5 lux for the design areas defined below:				Modelling Software Used:
Roundabouts	N/A	LATMDs	N/A	PlePcat

ROAD INFORMATION TABLE / RESULTS TABLE / ELEMENTS FOR THIS ROAD

Road Name	Road Reserve Width (m)	Distance to Kerb (m)	Offset (m)	Spacing Value from PlePal S	Min Av E_H	Min E_H Maint	U_p Maint	Straights Single Sided	Straights Staggered	Curves (Straights or Staggered)	T-Inter sections	Pedestrian Refuges	LATMDs	Cul-de-sacs	Round abouts
LUND STREET (STN 51)	15	3.27	4.27	64.9	0.85	0.14	5	☑	☐	☐	☐	☐	☐	☑	☐
LUND STREET (STN 51)	15	3.27	4.27	64.9	0.85	0.14	5	☐	☑	☐	☐	☐	☐	☑	☐
LUND STREET (STN 11)	15	10.13	11.13	53.8	0.85	0.15	5	☐	☑	☐	☐	☐	☐	☐	☐
LUND STREET (STN 33)	15	7.55	8.55	61.5	0.85	0.16	5	☐	☑	☐	☐	☐	☐	☐	☐
LUND STREET (STN 24)	15	6.76	7.76	63.2	0.85	0.15	5	☐	☑	☐	☐	☐	☐	☐	☐
JUNKURRJI STREET (STN 100)	15	4.58	5.58	65.2	0.85	0.14	5	☑	☐	☐	☐	☐	☐	☐	☐
JUNKURRJI STREET (STN 102)	15	3.42	4.42	65	0.85	0.15	5	☐	☑	☐	☐	☐	☐	☐	☐
KINKARR STREET	15	4.28	5.28	63.7	0.87	0.14	5	☑	☐	☐	☐	☐	☐	☑	☐
JANKAJ CLOSE	11	3.17	4.17	65.1	0.98	0.14	4	☑	☐	☐	☐	☐	☐	☑	☐
MANJAL CLOSE	11.72	3.71	4.71	59.4	0.93	0.14	4	☑	☐	☐	☐	☐	☐	☑	☐
WALKARR CLOSE	11.14	3.03	4.03	65.3	0.97	0.14	4	☑	☐	☐	☐	☐	☐	☑	☐

Code	Date	Description	Revised	Code	Date	Description	Approved
2	22/04/14	LIGHT 104 MOVED PAST DRIVEWAY	JE				
1	16/04/14	FOR APPROVAL	HL				

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LEGEND

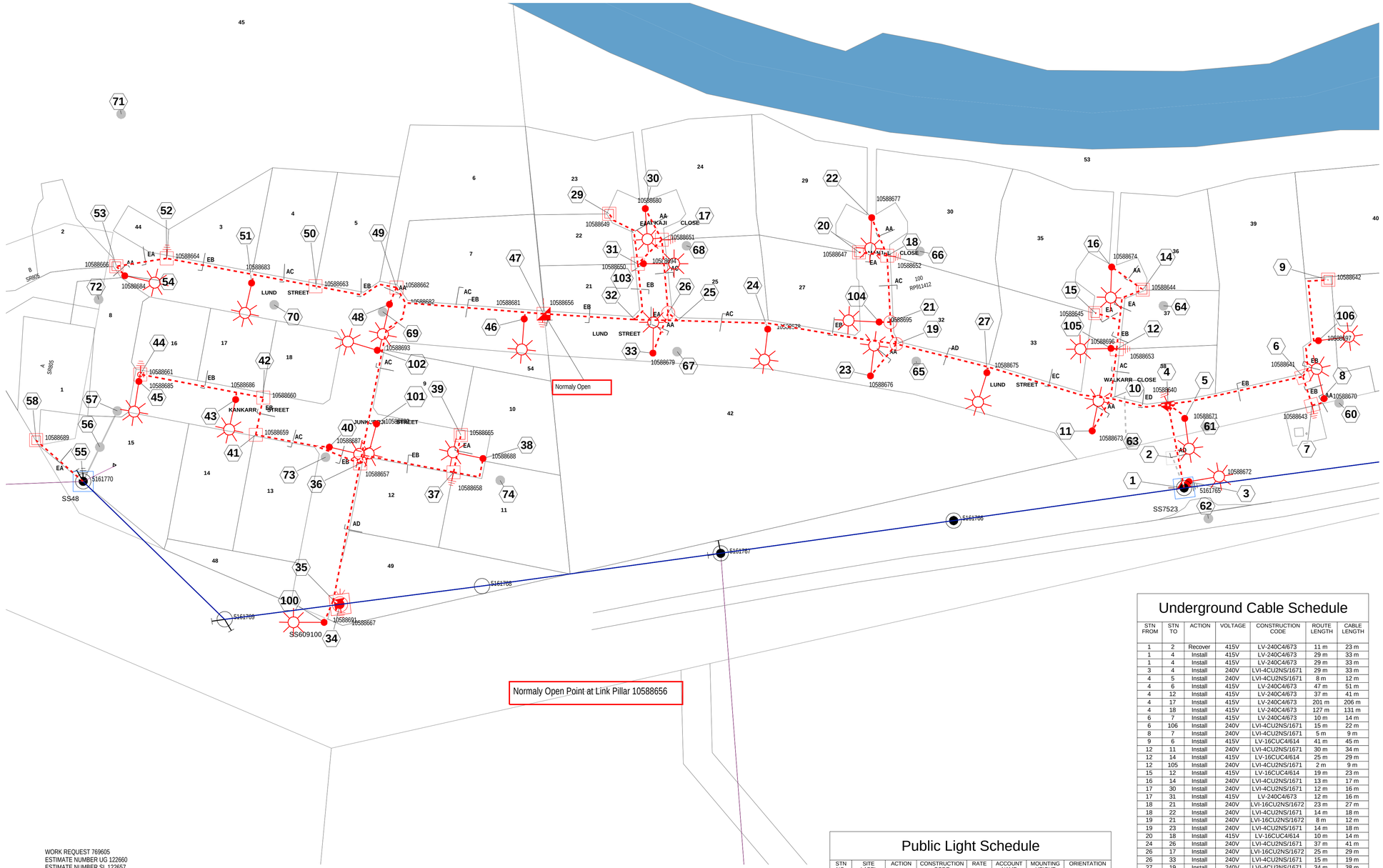
- HV DUCT
- LV DUCT
- LIGHTING DUCT
- 35mm sq ANNEALED BARE COPPER EARTH
- CABLE EXISTING
- CABLE PLANNED
- CABLE RECOVER
- EQUIPMENT EXISTING
- EQUIPMENT RECOVER
- EQUIPMENT PLANNED
- SUBSTATION
- HV ISOLATING DEVICE
- LV ISOLATING DEVICE
- NORMAL PILLAR
- CROSS ROAD PILLAR
- LINKING PILLAR
- COMMERCIAL/ INDUSTRIAL PILLAR
- DISTRIBUTION CABINET
- STREETLIGHT
- EARTH
- POLE

Drawing Title
MOSSMAN GORGE SUBDIVISION
LIGHTING DESIGN
SITE PLAN & SCHEDULE
NOTES & CERTIFICATE

Project Description
MOSSMAN GORGE COMMUNITY
MOSSMAN GORGE ROAD, MOSSMAN

Date	APRIL, 2014
Scale	1:1000 @ 1A
Drawn	HL
Approved	JE
Sheet	1 OF 1

ERGON Project Number	SPA Drawing Number	Revision
769605	2422-E01	2



WORK REQUEST 769605
ESTIMATE NUMBER UG 122660
ESTIMATE NUMBER SL 122657
SYSTEM DIAGRAM NUMBER 969142-02
FEEDER 2MOS
DOUGLAS REGIONAL COUNCIL
PARISH OF VICTORY
COUNTY OF SOLANDER

Civil Constructor Notes

Works will involve the replacement of all cables & conduits as per the Ergon specifications.
Developer is responsible for the installation of Conduit, St Light bases & Pits
Existing live cables will need to be located & precautions taken to avoid damage during the installation of the conduit etc.
Council & Ergon authority to be obtained before any conduits are to be installed outside the standard alignment.

Constructor Notes

1. Conduit Depths, Alignments and Trenching details refer Underground Construction Manual Trenching Drawing 5162. Provide polymeric Cable Cover in accordance with Construction Practices Drawing 5124.
2. Developers to supply & install conduits, lighting foundations & pits, markers and site finish.
3. Civil contractor to contact Ergon Energy liaison person to arrange a pre-start meeting prior to the commencement of works and site audits in accordance with RSC07.
4. Street Light Design meets the compliance requirementsof AS/NZS1158.3.1:2005 Cat P4 Refer SPA Drawing 249605-E01
5. Alteration to Design – Ergon Energy must be contacted before proceeding.
6. Low Voltage supply cables 2 x 4C 240 to be parallel Connect both cables to the same fuse / link at each end)

Specifications

This works plan is to be read in conjunction with the following ERGON ENERGY manuals and specifications.
-RSC06 URD Main Specification.
-RSC07 URD Civil Works
-RSC09 Tunnel Boring
-U/G Construction Manual.
-Lighting Manual
Consumer's instillation shall comply with AS3000 2000 – SAA Wiring Rules.

Public Light Schedule

STN NO.	SITE LABEL	ACTION	CONSTRUCTION CODE	RATE	ACCOUNT NAME	MOUNTING HEIGHT	ORIENTATION
3	10588672	Install	SLCFL0003	Rate2	Douglas	7.500	81
5	10588671	Install	SLCFL0003	Rate2	Douglas	7.500	172
8	10588670	Install	SLCFL0003	Rate2	Douglas	7.500	346
11	10588673	Install	SLCFL0003	Rate2	Douglas	7.500	12
16	10588674	Install	SLCFL0003	Rate2	Douglas	7.500	182
22	10588677	Install	SLCFL0003	Rate2	Douglas	7.500	183
23	10588676	Install	SLCFL0003	Rate2	Douglas	7.500	7
24	10588678	Install	SLCFL0003	Rate2	Douglas	7.500	186
27	10588675	Install	SLCFL0003	Rate2	Douglas	7.500	197
30	10588680	Install	SLCFL0003	Rate2	Douglas	7.500	176
33	10588679	Install	SLCFL0003	Rate2	Douglas	7.500	1
38	10588688	Install	SLCFL0003	Rate2	Douglas	7.500	282
40	10588687	Install	SLCFL0003	Rate2	Douglas	7.500	103
43	10588686	Install	SLCFL0003	Rate2	Douglas	7.500	192
45	10588685	Install	SLCFL0003	Rate2	Douglas	7.500	189
46	10588681	Install	SLCFL0003	Rate2	Douglas	7.500	185
48	10588682	Install	SLCFL0003	Rate2	Douglas	7.500	193
51	10588683	Install	SLCFL0003	Rate2	Douglas	7.500	193
54	10588684	Install	SLCFL0003	Rate2	Douglas	7.500	103
100	10588691	Install	SLCFL0003	Rate2	Douglas	7.500	270
101	10588692	Install	SLCFL0003	Rate2	Douglas	7.500	195
102	10588693	Install	SLCFL0003	Rate2	Douglas	7.500	286
103	10588694	Install	SLCFL0003	Rate2	Douglas	7.500	90
104	10588695	Install	SLCFL0003	Rate2	Douglas	7.500	273
105	10588696	Install	SLCFL0003	Rate2	Douglas	7.500	269
106	10588697	Install	SLCFL0003	Rate2	Douglas	7.500	83

Underground Cable Schedule

STN FROM	STN TO	ACTION	VOLTAGE	CONSTRUCTION CODE	ROUTE LENGTH	CABLE LENGTH
1	2	Recover	415V	LV-240C4/673	11 m	23 m
1	4	Install	415V	LV-240C4/673	29 m	33 m
1	4	Install	415V	LV-240C4/673	29 m	33 m
3	4	Install	240V	LVI-4CU2NS/1671	29 m	33 m
4	5	Install	240V	LVI-4CU2NS/1671	8 m	12 m
4	6	Install	415V	LV-240C4/673	47 m	51 m
4	12	Install	415V	LV-240C4/673	37 m	41 m
4	17	Install	415V	LV-240C4/673	201 m	206 m
4	18	Install	415V	LV-240C4/673	127 m	131 m
6	7	Install	415V	LV-240C4/673	10 m	14 m
6	106	Install	240V	LVI-4CU2NS/1671	15 m	22 m
8	7	Install	240V	LVI-4CU2NS/1671	5 m	9 m
9	6	Install	415V	LV-16CUC4/614	41 m	45 m
12	11	Install	240V	LVI-4CU2NS/1671	30 m	34 m
12	14	Install	415V	LV-16CUC4/614	25 m	29 m
12	105	Install	240V	LVI-4CU2NS/1671	2 m	9 m
15	12	Install	415V	LV-16CUC4/614	19 m	23 m
16	14	Install	240V	LVI-4CU2NS/1671	13 m	17 m
17	30	Install	240V	LVI-4CU2NS/1671	12 m	16 m
17	31	Install	415V	LV-240C4/673	12 m	16 m
18	21	Install	240V	LVI-16CU2NS/1672	23 m	27 m
18	22	Install	240V	LVI-4CU2NS/1671	14 m	18 m
19	21	Install	240V	LVI-16CU2NS/1672	8 m	12 m
19	23	Install	240V	LVI-4CU2NS/1671	14 m	18 m
20	18	Install	415V	LV-16CUC4/614	10 m	14 m
24	26	Install	240V	LVI-4CU2NS/1671	37 m	41 m
26	17	Install	240V	LVI-16CU2NS/1672	25 m	29 m
26	33	Install	240V	LVI-4CU2NS/1671	15 m	19 m
27	19	Install	240V	LVI-4CU2NS/1671	34 m	38 m
31	29	Install	415V	LV-16CUC4/614	22 m	26 m
31	103	Install	240V	LVI-4CU2NS/1671	2 m	9 m
34	36	Install	415V	LV-240C4/673	50 m	62 m
34	49	Install	415V	LV-240C4/673	115 m	127 m
36	37	Install	415V	LV-240C4/673	33 m	37 m
36	41	Install	415V	LV-240C4/673	37 m	41 m
36	100	Install	240V	LVI-4CU2NS/1671	56 m	63 m
36	101	Install	240V	LVI-4CU2NS/1671	18 m	25 m
37	38	Install	240V	LVI-4CU2NS/1671	15 m	19 m
37	39	Install	415V	LV-16CUC4/614	13 m	17 m
40	41	Install	240V	LVI-4CU2NS/1671	26 m	30 m
41	42	Install	415V	LV-240C4/673	13 m	17 m
42	43	Install	240V	LVI-4CU2NS/1671	12 m	16 m
42	44	Install	415V	LV-240C4/673	43 m	47 m
44	45	Install	240V	LVI-4CU2NS/1671	2 m	6 m
47	31	Install	415V	LV-240C4/673	51 m	55 m
47	46	Install	240V	LVI-4CU2NS/1671	9 m	13 m
47	49	Install	415V	LV-240C4/673	54 m	58 m
48	49	Install	240V	LVI-4CU2NS/1671	6 m	10 m
49	50	Install	415V	LV-240C4/673	29 m	33 m
49	102	Install	240V	LVI-4CU2NS/1671	27 m	34 m
50	52	Install	415V	LV-240C4/673	52 m	56 m
51	50	Install	240V	LVI-4CU2NS/1671	25 m	29 m
52	53	Install	415V	LV-16CUC4/614	17 m	21 m
53	54	Install	240V	LVI-4CU2NS/1671	4 m	8 m
55	58	Install	415V	LV-16CUC4/614	21 m	33 m
104	21	Install	240V	LVI-4CU2NS/1671	4 m	11 m

Construction Schedule

STN NO	SITE LABEL	POLE SETTING DEPTH	ACTION	CONSTRUCTION CLASS	CONSTRUCTION CODE	DRAWING NUMBER	POSITION ON POLE
1	5161765		Install	LV Cable Termination	LVCTP/240/P/AL	5056	3
1	5161765		Install	LV Isolating Device	LVSWP/4/OW	5056	4
1	5161765		Install	LV Cable Termination	LVCTP/240/P/AL	5056	5
1	5161765		Install	LV Isolating Device	LVSWP/4/OW	5056	6
2	4002		Recover	Pillar	LVPN1/3/240/N	5025	
3	10588672		Install	Pole	SLBPM/75/115CI	1-6-4-2	
4	10588640		Install	Pillar	LVDC6/14/PC	5136	
4	10588640		Install	LV Cable Termination	LVCTDC/240	5087	
4	10588640		Install	LV Cable Termination	LVCTDC/240	5087	
4	10588640		Install	LV Cable Termination	LVCTDC/240	5087	
4	10588640		Install	LV Cable Termination	LVCTDC/240	5087	
4	10588640		Install	LV Cable Termination	LVCTDC/240	5087	
4	10588640		Install	LV Cable Termination	LVCTDC/240	5087	
4	10588640		Install	Earth	EMEN/DC	5085	
5	10588671		Install	Pole	SLBPM/75/115CI	1-6-4-2	
6	10588641		Install	Pillar	LVPN2/6S/240/N	5026	
7	10588643		Install	Pillar	LVPN1/6S/240/N	5025	
7	10588643		Install	Earth	EMEN/PIL	5085	
8	10588670		Install	Pole	SLBPM/75/115CI	1-6-4-2	
9	10588642		Install	Pillar	LVPX/6S/16CU/N	5041	
11	10588673		Install	Pole	SLBPM/75/115CI	1-6-4-2	
12	10588653		Install	Pillar	LVPN1/6S/240/N	5025	
12	10588653		Install	Earth	EMEN/PIL	5085	
14	10588644		Install	Pillar	LVPX/6S/16CU/N	5041	
15	10588645		Install	Pillar	LVPX/6S/16CU/N	5041	
16	10588674		Install	Pole	SLBPM/75/115CI	1-6-4-2	
17	10588651		Install	Pillar	LVPN2/6S/240/N	5026	
17	10588651		Install	Earth	EMEN/PIL	5085	
18	10588652		Install	Pillar	LVPN1/6S/240/N	5025	
18	10588652		Install	Earth	EMEN/PIL	5085	
19			Install	Pit	SUGSLL/PIT2	1-4-9-1	
20	10588647		Install	Pillar	LVPX/6S/16CU/N	5041	
21			Install	Pit	SUGSLL/PIT2	1-4-9-1	
22	10588677		Install	Pole	SLBPM/75/115CI	1-6-4-2	
23	10588676		Install	Pole	SLBPM/75/115CI	1-6-4-2	
24	10588678		Install	Pole	SLBPM/75/115CI	1-6-4-2	
26			Install	Pit	SUGSLL/PIT2	1-4-9-1	
27	10588675		Install	Pole	SLBPM/75/115CI	1-6-4-2	
29	10588649		Install	Pillar	LVPX/6S/16CU/N	5041	
30	10588680		Install	Pole	SLBPM/75/115CI	1-6-4-2	
31	10588650		Install	Pillar	LVPN2/6S/240/N	5026	
33	10588679		Install	Pole	SLBPM/75/115CI	1-6-4-2	
34	10588667	2.150	Install	Pole	WP14/12S/SB	1091	
34	10588667		Install	Pole Equipment	22DP3/5/FLU/R	1039	1
34	SS609100		Install	Substation	SS22/3/200ABC	1408	2
34	10588667		Install	Transformer	PT22/3/200NF	Unknown	3
34	SS609100		Install	Earth	EPTS/DD	1304	7
34	10588667		Install	LV Cable Termination	LVCTP/240/P/ABC	5056	8
34	10588667		Install	LV Cable Termination	LVCTP/240/P/ABC	5056	10
36	10588657		Install	Pillar	LVPN3/6S/240/N	5027	
37	10588658		Install	Pillar	LVPN1/6S/240/N	5025	
37	10588658		Install	Earth	EMEN/PIL	5085	
38	10588688		Install	Pole	SLBPM/75/115CI	1-6-4-2	
39	10588665		Install	Pillar	LVPX/6S/16CU/N	5041	
40	10588687		Install	Pole	SLBPM/75/115CI	1-6-4-2	
41	10588659		Install	Pillar	LVPN2/6S/240/N	5026	
42	10588660		Install	Pillar	LVPN2/6S/240/N	5026	
43	10588686		Install	Pole	SLBPM/75/115CI	1-6-4-2	
44	10588661		Install	Pillar	LVPCIA1/3S/240/N	5102	
44	10588661		Install	Earth	EMEN/PIL	5085	
45	10588685		Install	Pole	SLBPM/75/115CI	1-6-4-2	
46	10588681		Install	Pole	SLBPM/75/115CI	1-6-4-2	
47	10588656		Install	Pillar	LVPL2/6S/240/N	5042	
47	10588656		Install	Earth	EMEN/PIL	5085	
48	10588682		Install	Pole	SLBPM/75/115CI	1-6-4-2	
49	10588662		Install	Pillar	LVPN3/6S/240/N	5027	
50	10588663		Install	Pillar	LVPN2/6S/240/N	5026	
51	10588683		Install	Pole	SLBPM/75/115CI	1-6-4-2	
52	10588664		Install	Pillar	LVPN1/6S/240/N	5025	
52	10588664		Install	Earth	EMEN/PIL	5085	
53	10588666		Install	Pillar	LVPX/6S/16CU/N	5041	
54	10588684		Install	Pole	SLBPM/75/115CI	1-6-4-2	
56			Recover	Pole Equipment	LVBI/495	1012	1
56	5161771		Recover	Pole	WP9/8D/NE	1091	
57			Recover	Pole Equipment	LVBT/495	1014	1
57	5161771A		Recover	Pole	POLE	Unknown	
58	10588689		Install	Pillar	LVPX/6S/16CU/N	5041	
60			Recover	Pole	POLE	Unknown	
61			Recover	Pole	POLE	Unknown	
62			Recover	Pole	POLE	Unknown	
63			Recover	Pole	POLE	Unknown	
64			Recover	Pole	POLE	Unknown	
65			Recover	Pole	POLE	Unknown	
66			Recover	Pole	POLE	Unknown	
67			Recover	Pole	POLE	Unknown	
68			Recover	Pole	POLE	Unknown	
69			Recover	Pole	POLE	Unknown	
70			Recover	Pole	POLE	Unknown	
71			Recover	Pole	POLE	Unknown	
72			Recover	Pole	POLE	Unknown	
73			Recover	Pole	POLE	Unknown	
74			Recover	Pole	POLE	Unknown	
100	10588691		Install	Pole	SLBPM/75/115CI	1-6-4-2	
101	10588692		Install	Pole	SLBPM/75/115CI	1-6-4-2	
102	10588693		Install	Pole	SLBPM/75/115CI	1-6-4-2	
103	10588694		Install	Pole	SLBPM/75/115CI	1-6-4-2	
104	10588695		Install	Pole	SLBPM/75/115CI	1-6-4-2	
105	10588696		Install	Pole	SLBPM/75/115CI	1-6-4-2	
106	10588697		Install	Pole	SLBPM/75/115CI	1-6-4-2	

LEGEND

Electricity
- Connection Point - LV Connection Point
- Connection Point - LV Connection Point (To Be Removed)
- Duct - removed
- Duct - planned
- Duct (To Be Removed)
- Earth - as constructed
- Earth - planned
- Pillar - Link Pillar Planned
- Pillar - Cross Road Pillar Planned
- Pillar - Commercial/Industrial Planned
- Pillar - Normal Pillar
- Pillar - Distribution Cabinet Planned
- Pillar - Normal Pillar Planned
- Pillar - Link Pillar (To Be Removed)
- Pillar - Cross Road Pillar (To Be Removed)
- Pillar - Commercial/Industrial (To Be Removed)
- Pillar - Distribution Cabinet (To Be Removed)
- Pillar - Normal Pillar (To Be Removed)
- PE - planned
- Pole - HV
- Pole - HV/LV Planned
- Pole - SL Planned
- Pole - HV/LV
- Pole - LV
- Pole - SL (To Be Removed)
- Pole - HV (To Be Removed)
- Pole - HV/LV (To Be Removed)
- Pole - LV (To Be Removed)
- Stay - as constructed
- Streetlight - Planned
- Substation - Planned
- Substation - Pole

Low Voltage
- LV Cable - removed (240v)
- LV Cable - planned (240v)
- LV Cable - removed (415v)
- LV Cable - planned (415v)
- LV Cable (To Be Removed)
- LV Cable Termination - planned (415v)
- LV Line - as constructed (415v)
- LV Line - removed (415v)
- LV Line (To Be Removed)
- LV Isolating Device - as constructed (415v)
- LV Isolating Device - planned (415v)
- LV Isolating Device - removed (415v)
- LV Isolating Device - as constructed (To Be Removed)
- LV Isolating Device - planned (To Be Removed)
- LV Isolating Device - removed (To Be Removed)

High Voltage
- HV Line - as constructed (22kv)
- Hv Isolating Device - planned (22kv)

Drafting
- construction (trial)

RCMA
Land Parcel
- Land Parcel (Area Geom)

Strata Parcel
- Strata Parcel (Area Geom)

Water Coverage
- Water Coverage (Area Geom)

Unregistered Plan
URP Feature
- URP Feature (Geometry)

URP Lot
- URP Lot (Geometry)

REFERENCE DRAWINGS

AMENDMENTS
OA ORIGINAL ISSUE

ERGON ENERGY CORPORATION LTD
ABN 50 087 646 062

Created Date/Time: 02/01/2014 13:53:44
Created By: Brian Haire-Tel: (07) 40804324
Checked Date: 23/05/2014 14:10:50
Checked By: Shaun Daly-Tel: 07 40804421
Approved Date: 23/05/2014 14:16:00
Approved By: Geoff Wilson-Tel: ??

301 Gorge Rd Mossman
Conversion of Body Corporate Development to Individual Lots
Mossman Gorge Community

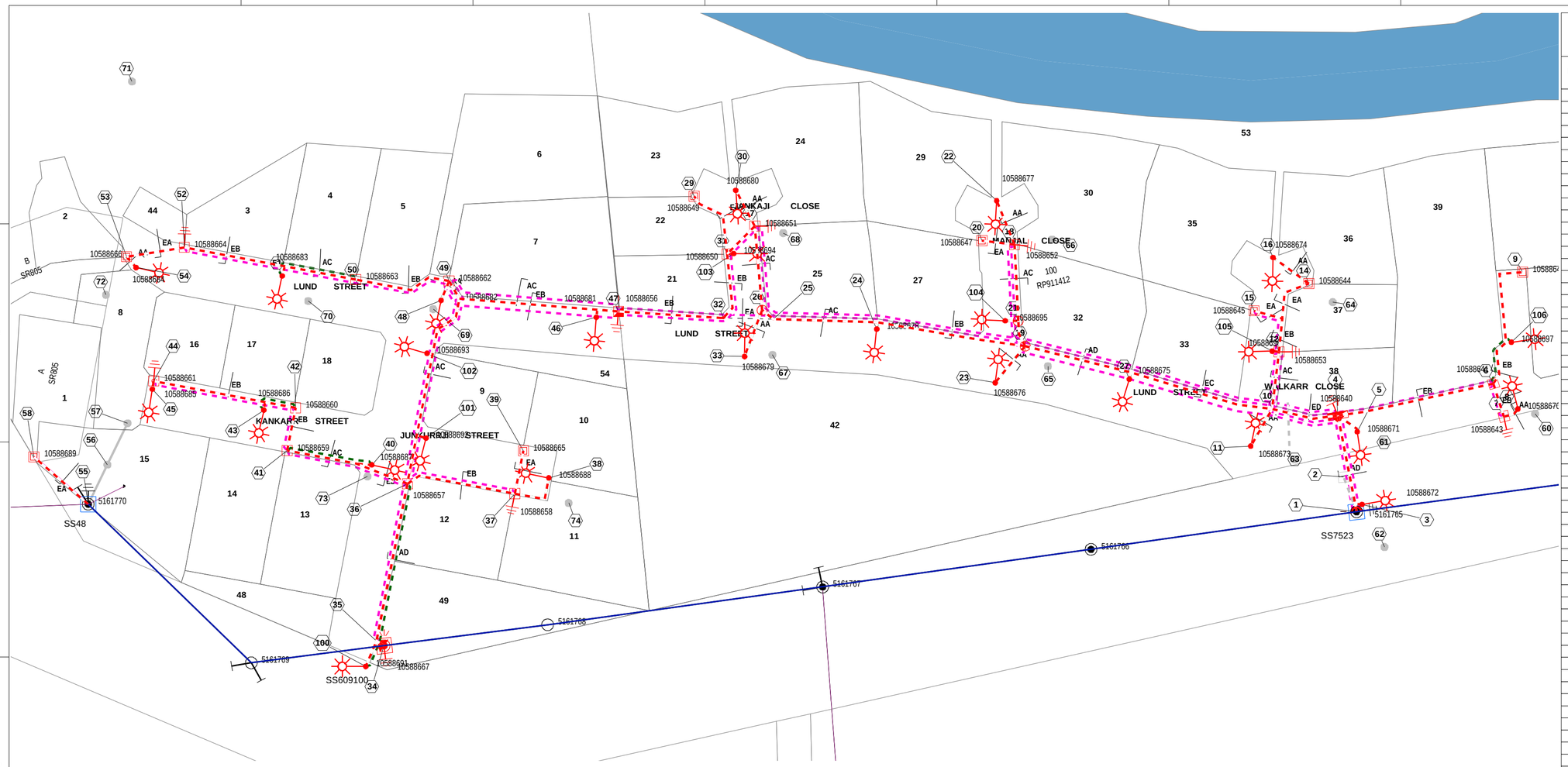
Project Number:
Drawing Status: Approved
Contract / Quote Number
Business Approved Date
Name:

A1 | 769605 | NEXT SHEET

SCALE - 1:750 | ISSUE D

UNLESS OTHERWISE STATED
ALL DIMENSIONS IN MILLIMETRES

841 X 594



Conduit Ducting Schedule

STN FROM	STN TO	ACTION	CONSTRUCTION CODE	LENGTH (m)	REMARKS
1	4	Install	C100L	29 m	
1	4	Install	C100L	29 m	
1	4	Install	C100L	29 m	Spare
3	4	Install	C40H	29 m	
4	5	Install	C40H	8 m	
4	6	Install	C100L	47 m	
4	6	Install	C100L	47 m	Spare
4	12	Install	C100L	37 m	
4	17	Install	C100L	201 m	
4	18	Install	C100L	127 m	
4	47	Install	C100L	218 m	Spare
6	7	Install	C100L	10 m	
6	7	Install	C100L	10 m	Spare
6	9	Install	C100L	41 m	
6	106	Install	C40H	15 m	
7	8	Install	C40H	5 m	
10	12	Install	C100L	17 m	Spare
11	12	Install	C40H	30 m	
12	14	Install	C100L	25 m	
12	15	Install	C100L	19 m	
12	105	Install	C40H	2 m	
14	16	Install	C40H	13 m	
17	25	Install	C100L	29 m	Spare
17	26	Install	C40H	25 m	
17	30	Install	C40H	12 m	
17	31	Install	C100L	12 m	
17	31	Install	C100L	12 m	Spare
18	19	Install	C100L	31 m	Spare
18	20	Install	C100L	10 m	
18	21	Install	C40H	23 m	
18	22	Install	C40H	14 m	
19	21	Install	C40H	8 m	
19	23	Install	C40H	14 m	
19	27	Install	C40H	34 m	
21	104	Install	C40H	4 m	
24	26	Install	C40H	37 m	
26	33	Install	C40H	15 m	
29	31	Install	C100L	22 m	
31	47	Install	C100L	51 m	
31	47	Install	C100L	51 m	Spare
31	103	Install	C40H	2 m	
35	36	Install	C100L	48 m	
35	49	Install	C100L	113 m	
35	49	Install	C100L	113 m	Spare
36	37	Install	C100L	33 m	
36	37	Install	C100L	33 m	Spare
36	41	Install	C100L	37 m	
36	41	Install	C100L	37 m	Spare
36	100	Install	C40H	56 m	
36	101	Install	C40H	18 m	Spare
37	38	Install	C40H	15 m	
37	39	Install	C100L	13 m	
40	41	Install	C40H	26 m	
41	42	Install	C100L	13 m	
41	42	Install	C100L	13 m	Spare
42	43	Install	C40H	12 m	
42	44	Install	C100L	43 m	
42	44	Install	C100L	43 m	Spare
44	45	Install	C40H	2 m	
46	47	Install	C40H	9 m	
47	49	Install	C100L	54 m	spare
47	49	Install	C100L	54 m	
48	49	Install	C40H	6 m	
49	50	Install	C100L	29 m	
49	52	Install	C100L	81 m	Spare
49	102	Install	C40H	27 m	
50	51	Install	C40H	25 m	
50	52	Install	C100L	52 m	
52	53	Install	C100L	17 m	
53	54	Install	C40H	4 m	
55	58	Install	C100L	21 m	

Constructor Notes

1. Conduit Depths, Alignments and Trenching details refer Underground Construction Manual Trenching Drawing 5162. Provide polymeric Cable Cover in accordance with Construction Practices Drawing 5124.
2. Developers to supply & install conduits, lighting foundations & pits, markers and site finish.
3. Civil contractor to contact Ergon Energy liaison person to arrange a pre-start meeting prior to the commencement of works and site audits in accordance with RSC07.
4. Street Light Design meets the compliance requirementsof AS/NZS1158.3.1:2005 Cat P4 Refer SPA Drawing 249605-E01
5. Alteration to Design – Ergon Energy must be contacted before proceeding.

Specifications

This works plan is to be read in conjunction with the following ERGON ENERGY manuals and specifications.
-RSC06 URD Main Specification.
-RSC07 URD Civil Works
-RSC09 Tunnel Boring
-U/G Construction Manual.
-Lighting Manual
Consumer's instillation shall comply with AS3000 2000 – SAA Wiring Rules.

Civil Constructor Notes

Works will involve the replacement of all cables & conduits as per the Ergon specifications.
Developer is responsible for the Supply & Instilation of Conduit, St Light bases & Pits
Works will involve the replacement of all cables & conduits as per the Ergon specifications.
Developer is responsible for the instillation of Conduit, St Light bases & Pits
Existing live cables will need to be located & precautions taken to avoid damage during the instillation of the conduit etc.
Council & Ergon authority to be obtained before any conduits are to be installed outside the standard alignment.

0m 20m 40m 60m 80m

SCALE 1:1000

AMENDMENTS: ORIGINAL ISSUE OA.

LEGEND

Electricity
Connection Point - LV Connection Point
Connection Point - LV Connection Point (To Be Removed)
Duct (To Be Removed)
Duct - 100mm/110mm
Duct - 40mm
Duct - Unknown
Earth - as constructed
Earth - planned
Pillar - Link Pillar Planned
Pillar - Cross Road Pillar Planned
Pillar - Commercial/Industrial Planned
Pillar - Normal Pillar
Pillar - Distribution Cabinet Planned
Pillar - Normal Pillar Planned
Pillar - Link Pillar (To Be Removed)
Pillar - Cross Road Pillar (To Be Removed)
Pillar - Commercial/Industrial (To Be Removed)
Pillar - Distribution Cabinet (To Be Removed)
Pillar - Normal Pillar (To Be Removed)
Pit - planned
Pole - HV
Pole - HVLV Planned
Pole - SL Planned
Pole - HVLV
Pole - LV
Pole - SL (To Be Removed)
Pole - HV (To Be Removed)
Pole - HVLV (To Be Removed)
Pole - LV (To Be Removed)
Stay - as constructed
Streetlight - Planned
Substation - Planned
Substation - Pole
Low Voltage
LV Cable - removed (240v)
LV Cable - planned (240v)
LV Cable - removed (415v)
LV Cable - planned (415v)
LV Cable (To Be Removed)
LV Cable Termination - planned (415v)
LV Line - as constructed (415v)
LV Line - removed (415v)
LV Line (To Be Removed)
LV Isolating Device - as constructed (415v)
LV Isolating Device - planned (415v)
LV Isolating Device - removed (415v)
LV Isolating Device - as constructed (To Be Removed)
LV Isolating Device - planned (To Be Removed)
LV Isolating Device - removed (To Be Removed)
High Voltage
HV Line - as constructed (22kv)
Hv Isolating Device - planned (22kv)
Drafting
construction (trail)
DCDB
Land Parcel
Land Parcel (Area Geom)
Strata Parcel
Strata Parcel (Area Geom)
Water Coverage
Water Coverage (Area Geom)
Unregistered Plan
UNP Lot
UNP Lot (Geometry)

REFERENCE DRAWINGS

ERGON ENERGY

ERGON ENERGY CORPORATION LTD
ABN 50 087 646 062

Created Date/Time: 02/01/2014 13:53:44
Created By: Brian Haire-Tel: (07) 40804324
Checked Date: 23/05/2014 14:10:50
Checked By: Shaun Daly-Tel: 07 40804421
Approved Date: 23/05/2014 14:16:00
Approved By: Geoff Wilson-Tel: ??

301 Gorge Rd Mossman
Conversion of Body Corporate Development to Individual Lots
Mossman Gorge Community

Project Number
Drawing Status: Under Construction
Contract / Quote Number
Business Approved Date
Name:

A2 | 769605 | NEXT SHEET

SCALE - 1:1000 | ISSUE | D

UNLESS OTHERWISE STATED
ALL DIMENSIONS IN MILLIMETRES

594 X 420

16 May 2012

Our ref: Mossman Gorge Subdivision
File ref: 6960
Matt.dimaggio@blackm.com
www.blackm.com

Cairns Regional Council
PO Box 359
Cairns QLD 4870

Attention: Ms Kelly Reaston

Dear Kelly

MOSSMAN GORGE COMMUNITY
STAGE 1B AND 1C INFRASTRUCTURE CONDITION ASSESSMENT AND COSTING OUTCOMES

Please find attached the deliverables from the Stage 1B and 1C commission, comprising;

ATTACHMENT NUMBER	DESCRIPTION	DRAWING/FIGURE NUMBER
	STAGE 1C – COSTING STAGE	
1	Costs Schedule of required infrastructure works	-
2	Plans showing required infrastructure works	SKETCH 6990-7
	STAGE 1B – CONDITION STAGE	
3	Summary Report on Audit findings	-
4	Council Officer's input and comments on infrastructure works required.	-
5	Water Infrastructure condition assessment results	-
6	Sewerage Infrastructure condition assessment results	-
7	Roads and Infrastructure condition assessment results	-
8	Drainage Infrastructure condition assessment results	-
9	Council Officer's input and comments on conditional assessment tests required	-
10	Telstra and Ergon input and comments	-
	STAGE 1A – COLLATION AND CAPACITY PHASE OUTCOMES	
11	Copy of Stage 1 outcomes originally issued to Council 30 March 2012)	-

The attachments for Stage 1B commission comprise of inspection reports, field notes and photographs from onsite conditional assessment testing of infrastructure.

Based on conditional assessment results and outcomes agreed between Council and other stakeholders, the scoping of infrastructure upgrades required and costing has been determined. Accordingly a schedule of quantities, rates and costs for the purpose of budgeting has been developed an included in this submission as **Attachment 1**. Additionally a summary of the scope of upgrades required is included as **Attachment 2**.

Black & More
93 Digger Street, Cairns North
PO Box 999N, Cairns QLD 4870
ABN 24845 447 493
www.blackm.com
Telephone 07 4031 9944
Facsimile 07 40319914

Where possible, cost rates used in the schedule are those advised by Council (for Council to undertake the required work scope). Where not available, other rates have been obtained from cost estimates from private contractors in the Cairns Region. Accordingly a contingency of 15% of capital cost has been included and is recommended. Council Infrastructure Officers have requested that Project Management, Supervision and Commissioning of infrastructure upgrades also be included. Accordingly Project Management Costs of 10% have been included.

Other infrastructure stakeholders, in particular Ergon and Telstra have advised their position informally but unfortunately have not confirmed our understanding in writing. Accordingly the cost estimates provided in the work scope schedule for these items are provisional allowances only.

The required infrastructure work scope in Stage 1C was determined on the basis that the information received in Stage 1B was sufficient for this purpose. However it is noted that key stakeholder advice from Ergon and Telstra has not been provided within the timeframe of this commission.

We understand that Ergon's position is that a new reticulated power and lighting network is required to provide infrastructure typical to a conventional subdivision. It is recommended that further discussions with ERGON are required to accurately determine the cost achieving this level of service.

Based on our discussions with Telstra, we understand that no works to existing services are envisaged unless realignments (for other infrastructure works) are required.

For infrastructure that will not be upgraded or replaced, Council Infrastructure Officers have requested that depreciation costs are required to compensate for future replacement costs. The value of this depreciation (as advised by Council) is included in the schedule. Further discussions with the relevant Council Officers in regards to this item may be required.

We understand that the provision of this document concludes Black & More's commission in relation to the project.

Please do not hesitate to contact the undersigned on 4031 9944 or via email to matt.dimaggio@blackm.com should you have any queries or require further information.

Yours sincerely
BLACK & MORE

Matthew Di Maggio
Project Engineer

Encl:

Attachment 1

Costs Schedule of required infrastructure works

Project: **Mossman Gorge Community Infrastructure Audit** **Project No. 6990**

Client: **Cairns Regional Council**

Required Works Schedule of Costs

Revision No. 2

Note: All Rates and Amounts are Exclusive of GST

	Description		Amount $
SUMMARY OF UPGRADE COSTS			
1	ROADS AND INTERSECTIONS	$	310,500.00
2	SEWER RETICULATION	$	90,000.00
3	WATER RETICULATION	$	138,250.00
4	STORMWATER DRAINAGE	$	310,250.00
	Project Management, Supervision and Commissioning @10%	*$*	*84,900.00*
	Contingency @15%	*$*	*127,350.00*
SUMMARY OF DEPRECIATION COSTS			
	FOR INFRASTRUCTURE THAT WILL NOT BE UPGRADED	$	331,241.00
	(As directed by Cairns Regional Council. Refer attached Depreciation Schedule)		
5	ELECTRICITY AND LIGHTING	$	565,300.00
6	TELECOMMUNICATIONS	$	10,000.00
TOTAL VALUE OF WORK (Excluding GST)		**$**	**1,967,791.00**
GST		**$**	**196,779.10**
TOTAL VALUE OF WORK (Including GST)		**$**	**2,164,570.10**

Project: **Mossman Gorge Community Infrastructure Audit**

Project No. 6990

Client: **Cairns Regional Council**

Required Works Schedule of Costs

Revision No. 2

Note: All Rates and Amounts are Exclusive of GST

Item	Description	Qty	Unit	Rate $	Amount $
1.00	**ROADS AND INTERSECTIONS**				
1.01	Clear vegetation surrounding Bama Bubu and Junkurrji St intersections to provide sight distance requirements	1.00	Item	10,000.00	10,000.00
1.02	Install traffic barriers (tubular handrail) to entrance culverts	50.00	m	100.00	5,000.00
1.03	Replace all existing pavement surfaces with 30mm AC	1.00	Item	120,000.00	120,000.00
1.04	Remove structures encroaching on Lund and Kankarr Streets	1.00	Item	10,000.00	10,000.00
1.05	Supply and install new off Street pedestrian infrastructure including;				
	(a) Footpath along Lund St, connecting eastern end of community to public/community use area.	500.00	m	200.00	100,000.00
	(b) Fenced concrete pathway connecting Jankaji and Walkarr Close	150.00	m	290.00	43,500.00
	(c) Works/Replacement of Junkurrji St Bus Shelter to achieve road safety regulation compliance	1.00	Item	20,000.00	20,000.00
1.06	Road Edge Guide Posts (provisional quantity)	20.00	Item	100.00	2,000.00
	ROADS AND INTERSECTIONS TOTAL				**$ 310,500.00**

Project: **Mossman Gorge Community Infrastructure Audit** **Project No. 6990**

Client: **Cairns Regional Council**

Required Works Schedule of Costs

Revision No. 2

Note: All Rates and Amounts are Exclusive of GST

Item	Description	Qty	Unit	Rate $	Amount $
2.00	**SEWER RETICULATION**				
2.01	Works to existing pump station located on Mossman Gorge Rd including;				
	(a) Replace existing pumps (includes disposal of existing, supply and install of new)	1.00	Item	10,000.00	10,000.00
	(b) Replace existing switchboard (including emergency power connection)	1.00	Item	50,000.00	50,000.00
	(c) Apply new well lining	1.00	Item	5,000.00	5,000.00
	(d) Replace pump well pipe work	1.00	Item	5,000.00	
2.02	Extend Sewer line across Lund St. Includes construction of new sewer and 4 connections and Reinstatement of existing surface.	45.00	m	500.00	22,500.00
2.03	AS CONS to current Council standards	1.00	Item	2,500.00	2,500.00
	SEWER RETICULATION TOTAL				**$ 90,000.00**

Project: **Mossman Gorge Community Infrastructure Audit** **Project No. 6990**

Client: **Cairns Regional Council**

Required Works Schedule of Costs

Revision No. 2

Note: All Rates and Amounts are Exclusive of GST

Item	Description	Qty	Unit	Rate $	Amount $
3.00	**WATER RETICULATION**				
3.01	Connect water reticulation at eastern end of community to supply main along Mossman Gorge Road. Includes reinstatement of existing surface	1.00	Item	6000.00	6,000.00
3.02	Increase size of "end of street" loop mains to 50mm diameter MDPE. Includes excavation, supply and install of new main and reinstatement of existing surface for;				
	(a) Eastern end of Kankarr St	40.00	m	200.00	8,000.00
	(b) Jankaji St	40.00	m	200.00	8,000.00
3.03	Installation of new valves	4.00	No	750.00	3,000.00
3.04	Cleaning and resetting of all valves and hydrant surrounds	1.00	Item	5000.00	5,000.00
3.05	Lot connections, including;				
	(a) Locating existing house connections	45.00	No	750.00	33,750.00
	(b) Supply and install of 20mm connection. Includes water meters	45.00	No	1500.00	67,500.00
3.06	Location of existing water mains. includes mains located	1.00	Item	3500.00	3,500.00
3.07	High pressure cleaning and disinfection of mains	1.00	Item	1000.00	1,000.00
3.08	AS CONS to current Council standards	1.00	Item	2,500.00	2,500.00
	WATER RETICULATION TOTAL				**$ 138,250.00**

Project: **Mossman Gorge Community Infrastructure Audit**

Project No. 6990

Client: **Cairns Regional Council**

Required Works Schedule of Costs

Revision No. 2

Note: All Rates and Amounts are Exclusive of GST

Item	Description	Qty	Unit	Rate $	Amount $
4.00	**STORMWATER DRAINAGE**				
4.01	Replace existing underground drainage structures. Includes removal and disposal of existing and supply and install of new:				
	(a) 450 RCP	110.00	m	350.00	38,500.00
	(b) Kerb Inlet Pit/Access Manholes	5.00	No	4,000.00	20,000.00
4.02	Clean and regrade existing earth drains. Includes clear and grub of vegetation and topsoil. Spoil to be respread on site	420.00	m	50.00	21,000.00
4.03	Install 2m wide concrete lining to all drain inverts	420.00	m	300.00	126,000.00
4.04	Formalise inlet to Junkurrji St Culverts including removal of vegetation and construction of concrete inlet basin	1.00	Item	15,000.00	15,000.00
4.05	Extend pipes and move headwalls away from Lund St (in addition to item 4.01)	1.00	Item	3,500.00	3,500.00
4.06	Scour protection on Lund St at end of kerb	1.00	Item	2,000.00	2,000.00
4.07	Interallotment Drainage issues. Imported fill (supply and place) to ensure lot fall to road or future easement (Provisional Quantity)	1,800.00	m^3	20.00	36,000.00
4.08	Supply and Installation of 'in line' Gross Pollutant Trap	1.00	No	40,000.00	40,000.00
4.09	Supply and installation of grates to inlets of underground system	1.00	No	750.00	750.00
4.10	Construct earth bund to Lot 21 boundary	1.00	Item	2,500.00	2,500.00
4.11	Set out and survey of proposed drainage easements	1.00	Item	2,500.00	2,500.00
4.12	AS CONS to current Council standards	1.00	Item	2,500.00	2,500.00
	STORMWATER DRAINAGE TOTAL				**$ 310,250.00**

Project: **Mossman Gorge Community Infrastructure Audit** **Project No. 6990**

Client: **Cairns Regional Council**

Required Works Schedule of Costs

Revision No. 2

Note: All Rates and Amounts are Exclusive of GST

Item	Description	Qty	Unit	Rate $	Amount $
5.00	**ELECTRICITY AND LIGHTING**				
5.01	Locate existing underground reticulated network	1.00	Item	5,000.00	5,000.00
5.02	Remove existing electricity and lighting (excavate/remove and dispose);				
	(a) Underground conduit and wiring. Includes reinstatement of existing surface	800	m	70.00	56,000.00
	(b) Light poles	14	No	200.00	2,800.00
	(c) Existing supply point	2.00	No	2,000.00	4,000.00
5.03	install new power and electricity network including:				
	(a) Reticulated power and lighting. includes trenching, conduits and installation of ERGON wiring. Also includes property connections	45	Lot	10,000.00	450,000.00
	(c) Ensure that existing buildings are suitable for connection	45	Lots	1,000.00	45,000.00
5.04	AS CONS to current Council standards	1.00	Item	2,500.00	2,500.00
	ELECTRICITY AND LIGHTING TOTAL				**$ 565,300.00**

Project: **Mossman Gorge Community Infrastructure Audit**

Project No. 6990

Client: **Cairns Regional Council**

Required Works Schedule of Costs

Revision No. 2

Note: All Rates and Amounts are Exclusive of GST

Item	Description	Qty	Unit	Rate $	Amount $
6.00	**TELECOMMUNICATIONS**				
6.01	Locate existing underground Telstra services	1	Item	5,000.00	5,000.00
6.02	Relocation of existing Telstra Services:				
	(a) Where existing services are located in proposed allotments		m	1,000.00	As required
	(b) For works to other infrastructure (water, sewer etc.)		m	1,000.00	As required
6.03	AS CONS to current Council standards	1.00	Item	2,500.00	5,000.00
	TELECOMMUNICATIONS TOTAL				**$ 10,000.00**

Project: Mossman Gorge Community Infrastructure Audit

Replacement Costs / Depreciation based on straight line depreciation
Note: All Rates and Amounts are Exclusive of GST

Description	Qty	Unit	Unit Rate for Replacement Cost	Life (Yrs)	Replacement Cost	Annual Depreciation Expense	Life Consumed (Yrs)	Depreciation Cost
SEWER RETICULATION								
150mm dia. uPVC Gravity Sewer (less than 3m deep)	1150	m	$ 210	70	$ 241,500	$ 3,450	0	$ -
Manholes	22	No.	$ 3,236	80	$ 71,192	$ 890	0	$ -
Pump Station (Excl. Pumps and Switch board)	1	No.	$ 160,000	80	$ 160,000	$ 2,000	15	$ 30,000
Pump Station - Pumps and Switchboard	1	No.	$ 70,000	20	$ 70,000	$ 3,500	0	$ -
House Connection Branches	45	No.	$ 2,500	70	$ 112,500	$ 1,607	0	$ -
Sub Total					**$ 655,192**	**$ 11,447**		**$ 30,000**
WATER RETICULATION								
150mm dia. uPVC water main	220	m	$ 204	60	$ 44,880	$ 748	15	$ 11,220
100mm dia. uPVC water main	520	m	$ 155	60	$ 80,600	$ 1,343	15	$ 20,150
50mm dia. MDPE water main (and smaller dia.)	75	m	$ 107	60	$ 8,025	$ 134	0	$ -
Hydrants	12	No.	$ 1,300	60	$ 15,600	$ 260	15	$ 3,900
Valves	12	No.	$ 1,157	60	$ 13,884	$ 231	15	$ 3,471
Fittings (tees, bends etc.)	8	No.	$ 300	60	$ 2,400	$ 40	15	$ 600
House Connections	45	No.	$ 1,044	60	$ 46,980	$ 783	0	$ -
Sub Total					**$ 212,369**	**$ 3,539**		**$ 39,341**
ROADS AND INTERSECTION INFRASTRUCTURE								
Pavement Surface (AC)	5000	m^2	$ 24	20	$ 120,000	$ 6,000	0	$ -
Granular Pavement	1000	m^3	$ 250	20	$ 250,000	$ 12,500	15	$ 187,500
Road Kerbing and Edging	1800	m	$ 60	50	$ 108,000	$ 2,160	15	$ 32,400
Road Furniture (Signage, Road Markings etc.)		Item	$ 10,000	10	$ 5,000	$ 500	15	$ 7,500
Sub Total					**$ 5,000**	**$ 21,160**		**$ 227,400**
DRAINAGE INFRASTRUCTURE								
1.2m wide concrete inverts	220	m	$ 300	50	$ 15,000	$ 300	15	$ 4,500
Reinforced Box Culvert Crossings	60	m	$ 2,000	100	$ 200,000	$ 2,000	15	$ 30,000
Underground Drainage Structures - Pipes	110	m	$ 300	100	$ 30,000	$ 300	0	$ -
Underground Drainage Structures - Kerb Inlet Pits and Access Manholes	5	No	$ 3,500	80	$ 280,000	$ 3,500	0	$ -
Underground Drainage Structures - Inlets and Outlets	5	No	$ 1,000	80	$ 80,000	$ 1,000	0	$ -
Sub Total					**$ 215,000**	**$ 2,300**		**$ 34,500**
TOTAL					**$ 1,087,561**	**$ 38,447**		**$ 331,241**

Attachment 2

Plans showing required infrastructure works

LEGEND

REPLACE ALL PAVEMENT SURFACES WITH 30mm A.C.

CLEAN AND REGRADE EXISTING EARTH DRAINS AND INSTALL 2m WIDE CONCRETE LINING

INSTALL NEW WATER VALVES

CLEAN AND RESET VALVES AND HYDRANT SURROUNDS
LOCATE EXISTING PROPERTY CONNECTIONS AND INSTALL WATER METER

ELECTRICAL:
- PROVIDE NEW SUBSTATION ON LUND STREET
- REMOVE AND REPLACE EXISTING ELECTRICAL AND LIGHTING SERVICES

N

Mossman River

CONSTRUCT EARTH BUND IN LOT 7 TO PROTECT LOT 21

EXTEND KERB AND CHANNEL AND PROVIDE CONCRETE BATTER CHUTE

CONSTRUCT CONCRETE FOOTPATH ALONG LUND STREET CONNECTING COMMUNITY USE AREA WITH EASTERN END OF COMMUNITY

RECONSTRUCT JUNKURRJI ST BUS SHELTER TO COMPLY WITH CURRENT SAFETY REGULATIONS

PROVIDE 1 on 4 BATTER SLOPES TO LUND STREET VERGE.

INCREASE LOOP MAIN TO 50mm dia

EXTEND SEWER LINE ACROSS LUND STREET TO LOT 2

FLATS

REMOVE STRUCTURES

TO MOSSMAN GORGE

LUND STREET

JANKAJI CLOSE

MANUAL CLOSE

WALKARR CLOSE

KANKARR STREET

JUNKURRJI STREET

BAMA BUBU STREET

PUMP STATION

TO MOSSMAN

PUMP STATION:
- REPLACE EXISTING PUMPS
- REPLACE EXISTING SWITCHBOARD
- RELINE EXISTING WELL
- REPLACE PIPEWORK IN PUMP WELL

PROVIDE GRATES TO ALL UNDERGROUND STORMWATER INLETS

CONNECT EXISTING WATER TO SUPPLY MAIN

INCREASE LOOP MAIN TO 50mm dia

CLEAR EXISTING VEGETATION FROM SIGHT DISTANCE LINES AND INSTALL HANDRAILS AT CULVERT CROSSING.

REPLACE EX.300/375 RCPs WITH 450 RCPs, EXTEND PIPES TO PROVIDE CLEARANCE BETWEEN HEADWALLS AND LUND ST

MOSSMAN GORGE ROAD

REMOVE AND REPLACE APPROXIMATELY 30m OF EXISTING CONCRETE INVERT

REMOVE VEGETATION AND CONSTRUCT CONCRETE INLET BASIN

CLEAR EXISTING VEGETATION FROM SIGHT DISTANCE LINES AND INSTALL HANDRAILS AT CULVERTS

PRELIMINARY ONLY

0 10 20 30 40 50m
SCALE 1:1000 (A1 SIZE)

Black & More
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93 Digger St Cairns North QLD 4870
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Telephone (07) 4031 9944
Fax (07) 4031 9914
Email black.more@blackm.com
Internet www.blackm.com

CAIRNS REGIONAL COUNCIL
MOSSMAN GORGE SUBDIVISION

REQUIRED WORKS

SKETCH 6990-7

Date	Project Number
MAY 2012	6990

Drawing Size	Scale (A1 size)	Revision
A1	1:1000	A

Printed: 08 May 2012, 9:23 AM
File: K:\C1206990 Mossman Gorge Subdivison\Drawings\ SKETCH 6990-007(A).dwg

External References: B&M-TITLE-SKETCH-A1_e.dwg

Attachment 3

Summary Report on Audit findings

SUMMARY OF CONDITION OUTCOMES AND PROPOSED UPGRADES

1. Roads

The road pavement is thinner than normal Council roads (assessed as two layers of 75mm pavement). Testing found the pavement structure was in reasonable condition reflecting the very light traffic loads. No upgrade to the pavement is proposed.

The pavement seal condition has deteriorated and on review Council Officers have recommended that reseal occur as part of a hand over.

Some line marking at intersections is proposed, (giveaway lines, hold lines etc). In addition review all signage and upgrade to current standards is recommended.

Definition of the culvert extents at the main entrance (Jankurrji St) is required. The installation of tubular hand rails is proposed.

The non-standard turning heads are not proposed to be upgraded as they are functioning now without significant issues for the community.

There are some structures that have been constructed at the western ends of Lund St and Kankarr Street, (includes kit type garage/carport on Lund St tee head). These structures impact on the normal operation of the road system and the need for these should be assessed. It is recommended that they be removed.

Council Officers also noted the absence of footpaths within the community. The Jankurrji, Lund, Bama Bubu loop would classify as an access street and would normally warrant a footpath on one side of the road. With reference to the Draft Community Plan, a fenced concrete pathway is desired to connect Jankaji and Walkarr Close. The cost schedule includes these items.

2. Sewerage

2.1. Reticulation

Council undertook CCTV inspections, visual inspections and smoke testing of the lines. The sewage reticulation was found to be in sound condition.

There are some sewers that are flatter than the recommended minimum grade. There're also some sewers that have partial obstructions (in the form of pipe depressions).

Notwithstanding this; no upgrade to the gravity reticulation is proposed.

The smoke testing did detect some defects within the properties drains. These internal property drains will not be the responsibility of Council. Council does, however, recommend that these works are undertaken at the time of the handover.

The comparison of wet weather flow rates with dry weather flow rates does indicate some water ingress. This could be reflected in the defects indicated by the smoke testing.

To facilitate the creation of lots at the western end of town (including the church) there is a need to extend the sewerage system to provide a connection for each lot.

Easements are likely to be required as a condition of development for those sewers on non-standard alignments.

2.2. Sewage Pump Station

The sewage pump station pumps, pipework and switchboard are all recommended for replacement. This reflects that these assets have a much shorter operational life and are nearing the end of their asset life.

It also reflects that they are not to current Council standards. The pipework in the pump station needs to be replaced with stainless steel. The switchboard will need to be replaced and the new switchboard will include connection for a portable generator for managing system shutdowns and overflow management.

It is considered that the existing SCADA will be able to be utilised.

It is recommended that the pump well is cleaned and recoated prior to handover.

3. Water

The water reticulation was found to be in sound condition and generally Council Officers advised that there are only minor upgrades required.

Council does require a second connection on the eastern end of town. This reflects that the hydrant flow test did find pressure drops across the system. It is also prudent network management and is made possible as each lot will be individually metered.

Also there are some handover tasks required for the water, (including scouring and disinfection of the system).

There are some additional valves proposed to enable management of the system.

Individual meters and new connections to each property are required. There will be a need to locate each connection point at the main and replace to the property boundary to bring these to Council's standards.

Replacement of the 25 mm loop remains with 50 mm loop mains is required.

It is required to accurately locate all existing mains in Mossman Gorge road to ensure the new boundaries are created reflecting existing services constraints and ensuring reliability of ongoing supply.

4. Storm Water

Stormwater drainage improvements on the eastern end of town are recommended. This includes resolving the poor drainage in the area at the eastern end of the sports oval. It is recommended that a formal invert be created to the inlet of the culverts under Bama Bubu Street.

In association with the installation of the invert, it is also recommended that minor filling occur to minimise ponding in this area.

The headwall adjacent Lund Street needs to be relocated further from the road carriageway.

Council Officers have advised that the 300 mm diameter pipes should be replaced with larger diameter pipes to avoid blockages. This was supported by the condition assessment which identified that these existing underground structures need replacing.

Bunding to the small park adjacent lot 21 is recommended to minimise overflows.

Removal of the large fig tree near the inlet to the culvert on the main entrance is required. The community will need to be consulted to determine the significance of this tree.

The limited underground reticulation makes the installation of a proprietary gross pollutant trap unfeasible.

Easements will be required as a condition of development for those drain passing though allotments (for example at the eastern end of Kankarr St.

5. Power Reticulation

Initial comments from Ergon Officers indicated that full replacement of the internal power reticulation was a potential.

Ergon officers are yet to formally confirm the requirements. This advice has been sought on a number of occasions.

Connections to the individual houses may also need significant upgrade. This includes new switchboards and metering to each house. As this is not a municipal infrastructure item, these individual household items (switchboards) are not included in the schedule of works.

6. Telstra

Telstra offices indicated that there may not be any upgrades required provided the existing services were fully contained within the road research.

Telstra is yet to respond formally on this matter. Telstra has been contacted on a number of occasions to finalise their position.

Attachment 4

Council Officer’s input and comments on infrastructure works required

MINUTES

MOSSMAN GORGE COMMUNITY INFRASTRUCTURE AUDIT					*Meeting #:*	2
Meeting Purpose:	Water Conditional Assessment Requirements	***Meeting Time:***	10:30 to 11:30	am	***Meeting Date:***	27 March 2012
Attendees:	Jon Turner (CRC W&W) Denny Phillips (CRC W&W) Paul Steele (BM) Matt Di Maggio (BM)					
Circulation:	All					
Apologies:	Nil					

#	Agenda / Issues:	Decisions / Action:	Action By:
1	General	▪ B&M provided some background to the project and to the very tight timeframe. As discussed the links to potential funding availability is a key driver. ▪ Community Residents have previously reported "Dirty" water to Council. Exact details of the compliant and source of problem (if any) is unknown. ▪ Council officers raised that at 14 years in-service the assets have a lesser service life than normal donated assets. ▪ It was agreed that the condition assessment would further inform on the further service life of the assets. ▪ BM to confirm future additional connections and individual land use envisaged by the community.	Nil BM
2	Field work and Visual Inspections	▪ Council has the capacity to rearrange its crews to undertake fieldwork for the water reticulation. ▪ Items considered in field testing are to be those required for Council to make a decision on acceptance of existing infrastructure. ▪ From AS-CONs it appears that field testing/visual inspections required are; - Leak detection & installation of a "Flow Logger" to record peak and off-peak demands - Visual inspection of valves and hydrants for general condition. Removal of valve & hydrants to determine internal condition (for a select number as a random audit). - Testing of service pressures and hydrant flows. - Location of mains using radar penetration. ▪ Council desires that a detailed survey be undertaken to accurately determine the location of existing mains relative to other infrastructure ▪ It is desired that a BM representative attend field work and visual inspections.	CRC CRC CRC CRC BM
3	Works required	▪ From AS-CONs it appears that prior to handover, works required to existing infrastructure are; - Increasing size of "end of street loop mains" to 50mm dia. - Installation of water meters to individual lots - High pressure cleaning and disinfection of mains.	CRC
3	Testing Schedule and Program	▪ Council advised that waste water infrastructure testing by CRC was to commence as early as week beginning 2nd April (weather permitting) and will take approximately 1 week to complete.	CRC

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93 Digger Street, CAIRNS
ABN 24 845 447 493
Email: black.more@blackm.com
PO Box 999N North Cairns QLD 4870
Tel: (07) 4031 9944 Fax: (07) 4031 9914

		▪ It is preferred that fieldwork testing and inspection of water infrastructure is conducted at the same time. CRC noted this was achievable ▪ CRC to confirm this proposed program and expected duration. ▪ Further condition/system operating investigations may include operation of valves and hydrants, etc.	**CRC** **CRC** **CRC**
4	**Site Access**	▪ Prior to commencing the field work, permission to enter the community will be coordinated with the government community liaison officer (Mr Damien Blunden). ▪ BM will also seek advice from the Community Representative for any conditions relating to the entry onto properties. ▪ Council indicated that its officers would liaise with BM who will liaise with the relevant community contacts to confirm a suitable site start date and program.	**BM** **BM** **CRC/BM**
5	**Results of Condition Testing**	▪ Results of condition testing (phase 1B) will be used to update the data collated in the initial phase of the Audit. ▪ Ultimately the Audit seeks to develop a potential works list (including capital works and handover tasks) and these would need to be agreed between Council and the funding bodies. ▪ BM to develop a “working list” for the potential capital and handover works cost schedule. The agreed works scope will be costed for the purposes of seeking funding. ▪ CRC Officers confirm the unit prices for the potential works items discussed above. This will assist in preparing a potential works cost schedule.	**BM** **BM** **BM** **CRC/BM**

MINUTES

MOSSMAN GORGE COMMUNITY INFRASTRUCTURE AUDIT					Meeting #:	1
Meeting Purpose:	Waste Water Conditional Assessment Requirements	Meeting Time:	8:00 to 9:00	am	Meeting Date:	26 March 2012
Attendees:	Jon Turner (CRC W&W) Grahame Dunstan (CRC W&W) Paul Steele (BM) Matt Di Maggio (BM)					
Circulation:	All					
Apologies:	Nil					

#	Agenda / Issues:	Decisions / Action:	Action By:
1	General	▪ B&M provided some background to the project and to the very tight timeframe. As discussed the links to potential funding availability is a key driver. ▪ Pump Station and D/S rising main are not shown on Council's Asset Register. Council is unclear at this stage as to ownership of this infrastructure. ▪ With respect to the condition assessment phase, Council typically allocates a "Condition Rating" to determine the remaining service life of infrastructure. ▪ Council officers raised that at 14 years in-service the assets have a lesser service life than normal donated assets. ▪ It was agreed that the condition assessment would further inform on the further service life of the assets.	Nil
2	CCTV, field work and Visual Inspections	▪ Council has the capacity to rearrange its crews to undertake the CCTV fieldwork for the sewerage system. ▪ Items considered in field testing are to be those required for Council to make a decision on acceptance of existing infrastructure. ▪ From AS-CONs it appears that field testing/visual inspections required are; <u>Gravity Sewer within Community</u> - Sewer "Flush Out" and CCTV - Visual inspection of Manhole for general condition and ground water ingress. - Visual Inspection of HCB levels, (for potential inundation risk) and internal condition (separate camera type for select number as a random audit). <u>Pump Station and Rising Main</u> - Visual Inspection of pump well for general condition and ground water ingress. - Visual Inspection of Mechanical and Electrical components of Pump Station - Applying test pressure to rising main (if possible) - Determine if Pump run data available. Measure of pumped flow (if possible)	CRC CRC CRC
3	Testing Schedule and Program	▪ Notwithstanding the "desired' timeframe, it was discussed that current weather conditions would impact the ability to mobilise crews to commence the fieldwork.	CRC

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		▪ Council advised that testing by CRC can commence as early as week beginning 2nd April (weather permitting) and will take approximately 1 week to complete. ▪ For a commencement date of 2nd April, it is estimated that reporting of results can be provided by following Friday (13th April). ▪ CRC to confirm this proposed program and expected duration. ▪ There may be water infrastructure testing occurring in parallel with the sewer investigations. ▪ Further condition/system operating investigations may include draw down test of pump station, operation of valves and hydrants, etc.	**CRC** **CRC** **CRC** **CRC**
4	**Site Access**	▪ Prior to commencing the field work, permission to enter the community will be coordinated with the government community liaison officer (Mr Damien Blunden). ▪ Black & More will also seek advice from the Community Representative for any conditions relating to the entry onto properties. ▪ Council indicated that its officers would liaise with Black & More who will liaise with the relevant community contacts to confirm a suitable site start date and program.	**BM** **BM** **CRC/BM**
5	**Results of Condition Testing**	▪ Results of condition testing (phase 1B) will be used to update the data collated in the initial phase of the Audit. ▪ Ultimately the Audit seeks to develop a potential works list (including capital works and handover tasks) and these would need to be agreed between Council and the funding bodies. The agreed works scope will be costed for the purposes of seeking funding.	**BM**

Attachment 5

Water Infrastructure condition assessment results

Matt DiMaggio

From: Paul Steele
Sent: Monday, 23 April 2012 12:15 PM
To: Matt DiMaggio
Subject: FW: Mossman Gorge Community Condition Assessment
Attachments: 20120420134642221.pdf

Kind Regards

Paul Steele
Partner

Black & More

93 Digger Street, Cairns North QLD 4870
ABN: 24 845 447 493
T: 61 7 4031 9944
M: 0400 535 416
F: 61 7 4031 9914
Paul.Steele@blackm.com
www.blackm.com

From: Meade Wendy [mailto:w.meade@cairns.qld.gov.au]
Sent: Friday, 20 April 2012 1:52 PM
To: Paul Steele
Cc: Phillips Denney; Reaston Kelly
Subject: Mossman Gorge Community Condition Assessment

Paul

Findings that will need to be addressed from the assessment:

- All existing services will require renewal to meet CRC standard service assemblies from mains to property connections
- Estimate of costs per connection - 20mm connection is $1100, 25mm connection $1500, 40mm connection $3500, 50mm connection $4500
- Estimate of costs for locating & painting SV's & Hydrants - $5000

Please find attached, hydrant test & photos showing hydrants & mains in good condition & services tapped directly to the water main with no ferrule cock for turning service off.

Sent to you on behalf of **Denney Phillips** by

Wendy Meade | Administrative Officer
Operations **|** Cairns Regional Council
Phone: +61740589527 | **Fax:** +61740581178
Email: w.meade@cairns.qld.gov.au | **URL:** cairns.qld.gov.au
Mail: PO Box 359, Cairns Q 4870 | **Office:** 119-145 Spence St, Cairns Q 4870

Cairns Regional COUNCIL
Water and Waste

Hydrant Test for Pressure & Flow Rate

Requested By	
Company	
Postal Address	
Phone	
Fax	
Email	

Address of Test			
Suburb	Mossman Gorge Community		
Date of Test/Time of Test	18-April-2012	10:00am	
Name of Tester	Chris Clifford	**Assisted By**	Jeremy Neve

Note: 1page per Hydrant tested

Static Pressure in Main KPA	**Hyd 550 KPA**		

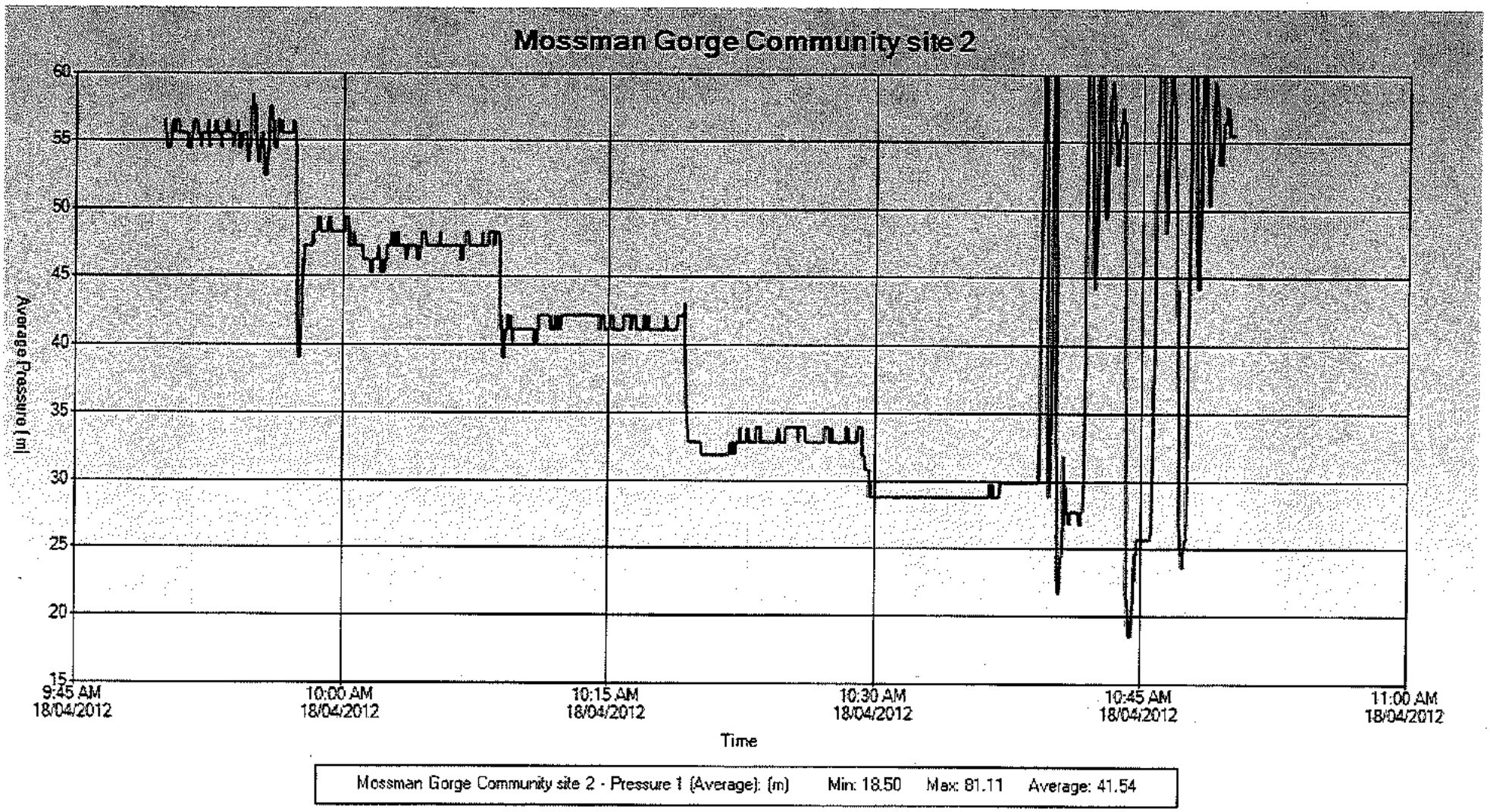
The following lists the amount of water through the standpipe measured in Litres / Second and the pressure in the water main at the above time.
Location of Test hydrant and Main pressure test points as per attached drawing.

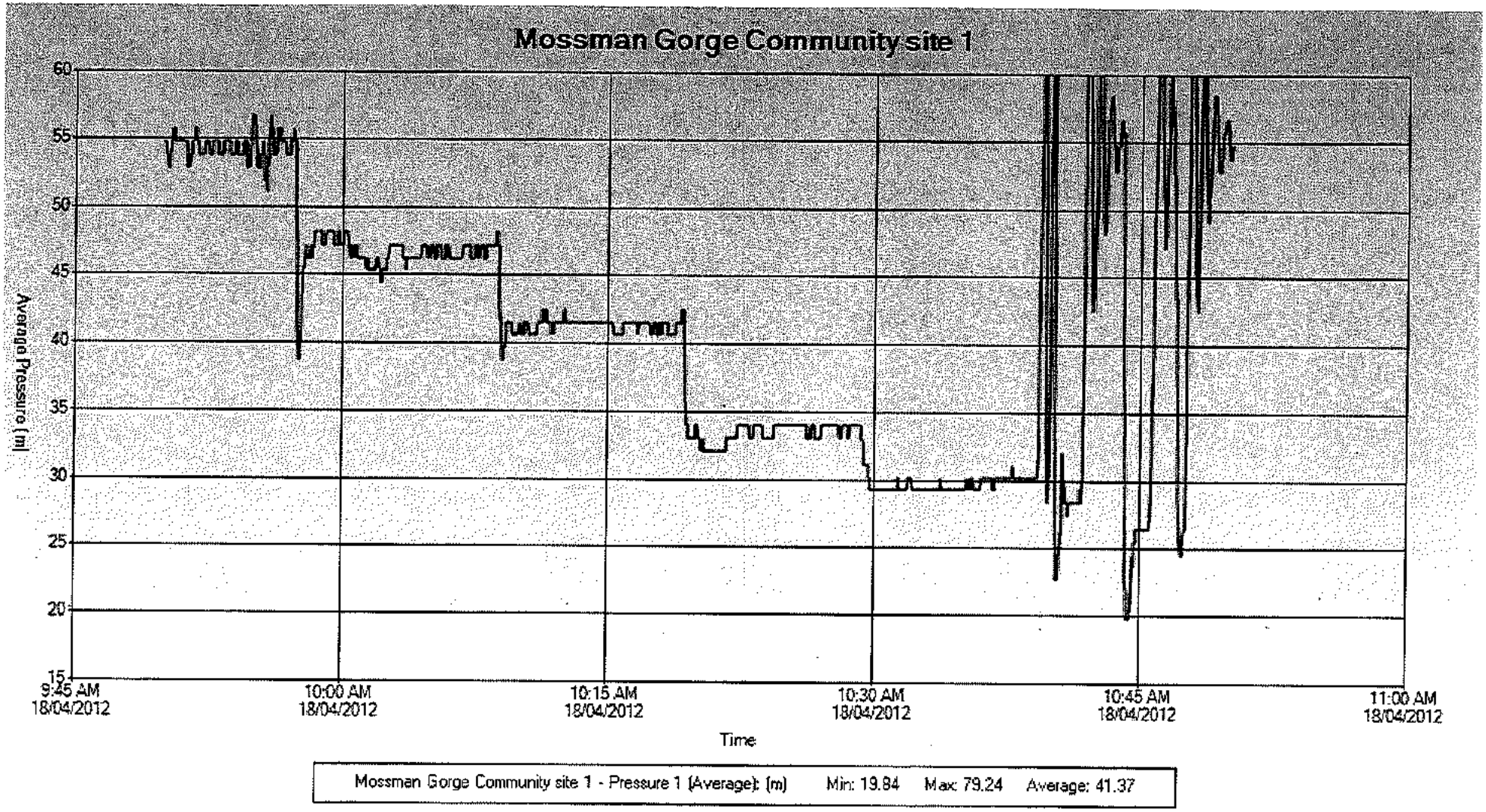
	Flow Rate L/sec	**Pressure KPA**	**Time**	
		Hyd	**Start**	**Stop**
Slow Rate ↓ ↓ ↓ ↓ ↓ ↓ ↓ **Fast Rate**	5	390	10:00	10:10
	7.5	225	10:10	10:20
	10	75	10:20	10:30
	15			
	20			
	25			
Full Flow →	11.5 L/sec	**0**	10:30	10:40
ALTITUDE _____ **M**				

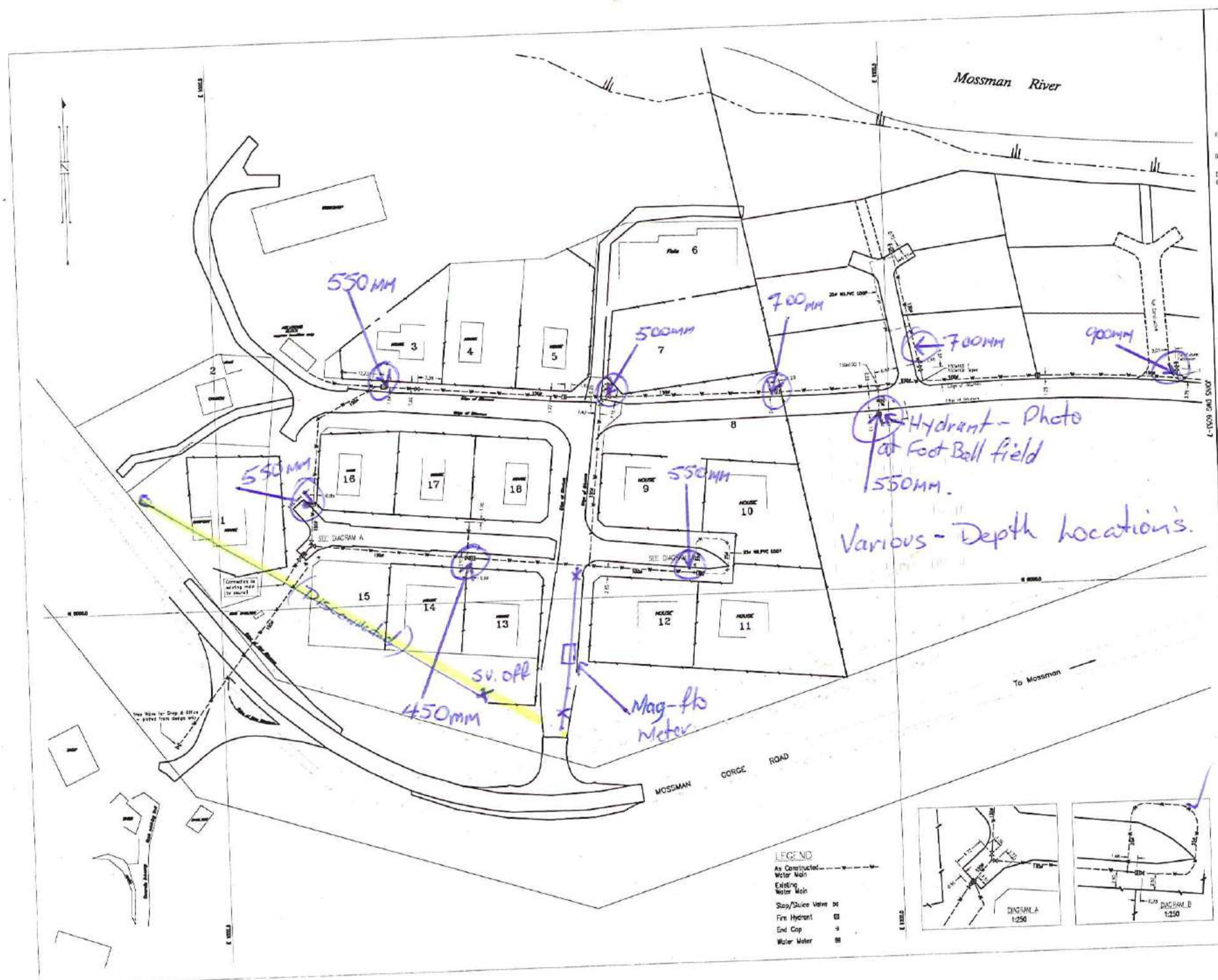
PLEASE FORWARD THE COMPLETED APPLICATION FORM TO WATER OPERATIONS, MAGAZINE ST, STRATFORD

Cairns Regional Council – Information Privacy Statement
Your personal information has been collected for the purpose of processing your application for Hydrant Test for Pressure Flow & Rate. You are providing personal information which will be used for the purpose of delivering services and carrying out Council business. Your personal information is handled in accordance with the *Information Privacy Act 2009* and will be accessed by persons who have been authorised to do so. Your information will not be given to any other person or agency unless you have given Council permission or the disclosure is required by law.

Fee:	$	Date Paid:		Receipt No.:	
T87 / CAT 5 / A/C #:				CSO Name:	
Approved By:		Date Approved:		Work Order #:	


Mossman Gorge Community site 2
Average Pressure [m]
60
55
50
45
40
35
30
25
20
15
9:45 AM 18/04/2012
10:00 AM 18/04/2012
10:15 AM 18/04/2012
10:30 AM 18/04/2012
10:45 AM 18/04/2012
11:00 AM 18/04/2012
Time
Mossman Gorge Community site 2 - Pressure 1 (Average): (m) Min: 18.50 Max: 81.11 Average: 41.54


Mossman Gorge Community site 1
Average Pressure (m)
60
55
50
45
40
35
30
25
20
15
9:45 AM 18/04/2012
10:00 AM 18/04/2012
10:15 AM 18/04/2012
10:30 AM 18/04/2012
10:45 AM 18/04/2012
11:00 AM 18/04/2012
Time
Mossman Gorge Community site 1 - Pressure 1 (Average): (m) Min: 19.84 Max: 79.24 Average: 41.37



CERTIFICATION

DISCLAIMER

NOTES

Level Datum: AHD-0

Origin of Levels: OPM 102980 RL 9.392

Meridian: VIDE SR805

Origin of Coordinates: OPM 91867 E 1000 N 5000

- Some positions of services have been exaggerated for drawing clarity.
- Therefore it is recommended to use dimensions shown for position. (do not scale)

All horizontal & vertical control and datum information has been taken from engineering drawing 9714/1 – Revision A.

Apart from As Constructed Water Reticulation details, all information shown on this plan (including real property boundaries) has been taken from digital design data provided by McIntyre & Associates Consulting Engineers.

SCALE 1:500 IS APPLICABLE ONLY TO THE ORIGINAL SHEET SIZE (A1)

AMENDMENT A: AMK 2/9/98
NEWDGE VALVES ADD AIRVALVES BLOCK STOP VALVE FOR SHOWJETTICE & LINK TO LOTS 17 & 18

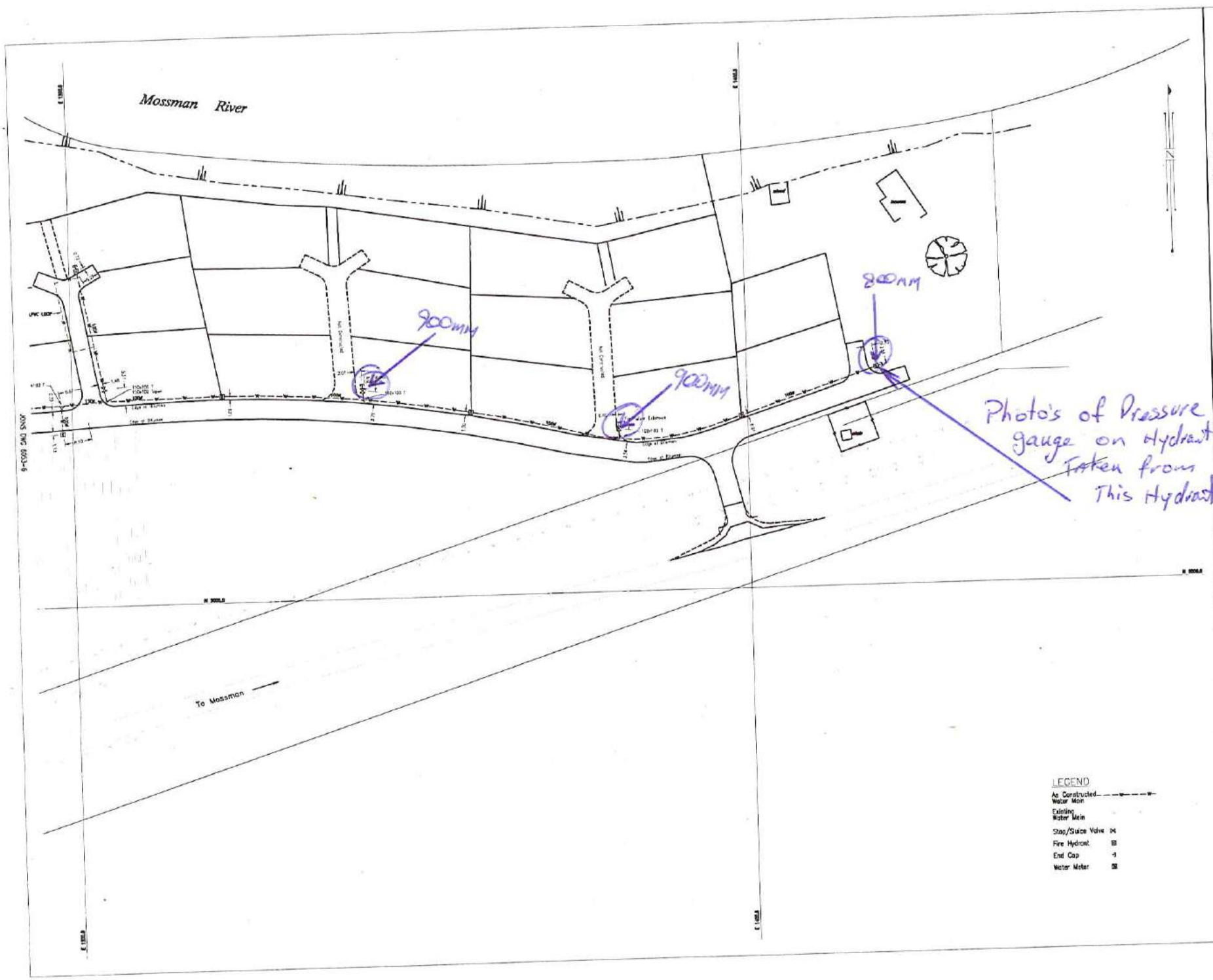
C&B CONSULTING GROUP
DEVELOPMENT CONSULTANTS
ENVIRONMENTAL SERVICES
TOWN PLANNERS
SURVEYORS

PROJECT MANAGER/SURVEYOR A. Solomon	CHECKED
DESIGNED	SURVEYED MF 6/5/98
DRAWN AMK 8/5/98	DRAWING CHECKED

KENFROST PTY LTD

TITLE
MOSSMAN GORGE INFRASTRUCTURE
AS CONSTRUCTED SURVEY
WATER RETICULATION

JOB 6053-6A.DWG 6053DS & DTPTS/STR	SCALE 1:500
	LEVEL DATUM AHD-0
	FIELD BK 352 / 443
SHEET 1 OF SHEETS 2	SHEET SIZE A1
DRAWING NO 6053-6	AMENDED 5/9/98 ISSUE A



CERTIFICATION

We C&B Consultants Pty Ltd certify that the locations of the Water reticulation have been surveyed and are accurate

_____ Licensed Surveyor
_____ Director
_____ Director
_____ Date

DISCLAIMER

(i) This plan has been prepared for the purposes of recording the infrastructure for Kenfrost Pty Ltd and should not be used for any other purposes. This data should be verified before any design or construction is undertaken.

(ii) Every effort is made to ensure the accuracy and completeness of this plan however it should be verified by checking against the bar scale.

(iii) This plan may not be photocopied unless this note is included.

(iv) Water valves, hydrants and other water surface infrastructure have been located by survey. Other information has been obtained from design and construction information and should be checked before use.

NOTES

Level Datum: AHD-0

Origin of Levels: OPM 100980
RL 9.302

Meridian: MDE SR803

Origin of Coordinates: OPM 81687
E 1000
N 5000

- Some positions of services have been exaggerated for drawing clarity.
- Therefore it is recommended to use dimensions shown for position.
(do not scale)

All horizontal & vertical control and datum information has been taken from engineering drawing 9714/1 – Revision A.

Apart from As Constructed Water Reticulation details, all information shown on this plan (including real property boundaries) has been taken from digital design data provided by McIntyre & Associates Consulting Engineers.

0 5 10 15 20 25
METRES

SCALE 1:500 IS APPLICABLE ONLY TO THE ORIGINAL SHEET SIZE (A1)

AMENDMENT A
HYMOVE MAIN
AMK 5/8/98

C&B CONSULTING GROUP
DEVELOPMENT CONSULTANTS
ENVIRONMENTAL SERVICES
TOWN PLANNERS
SURVEYORS

PO BOX 1241
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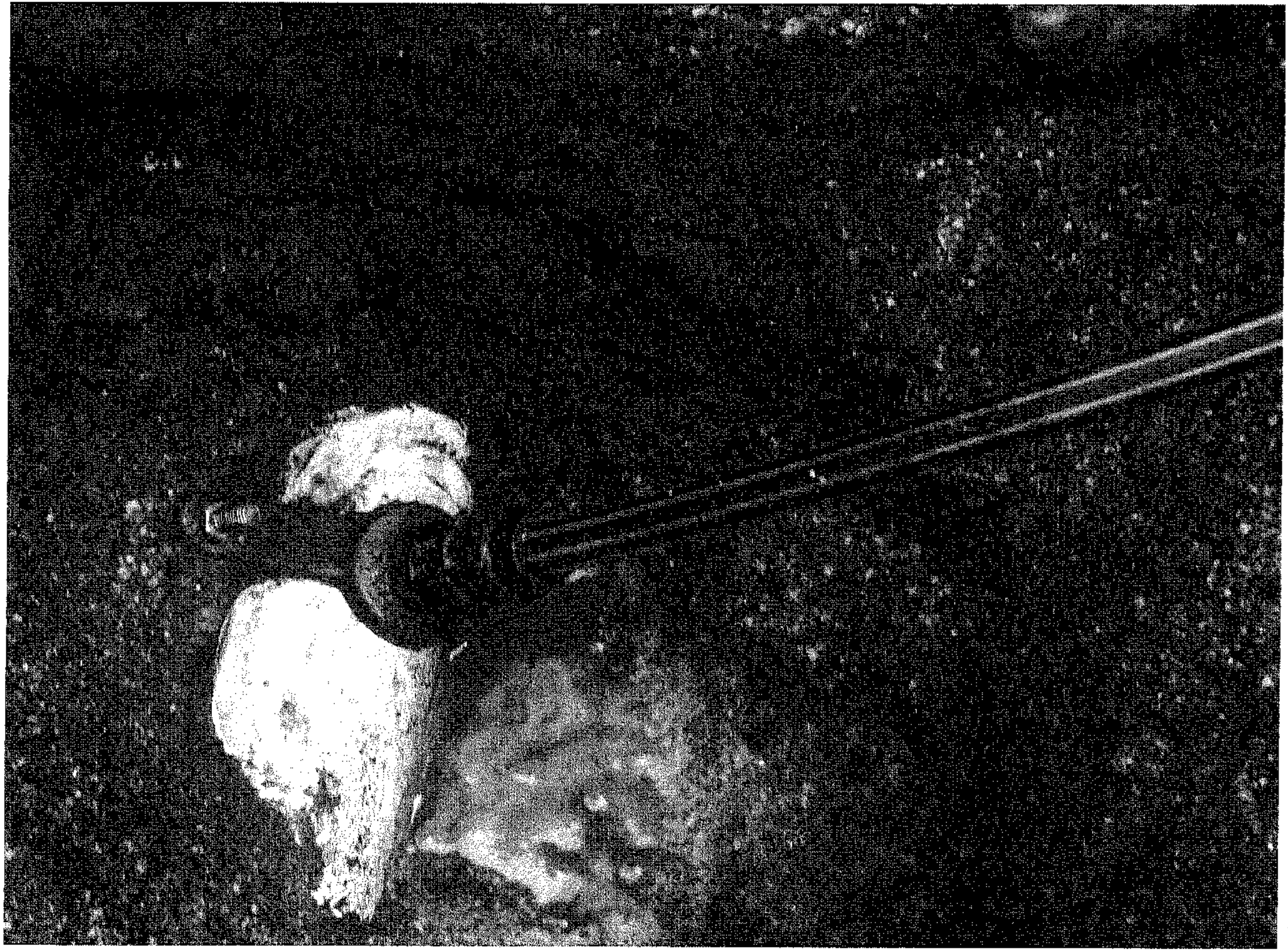
C & B CONSULTANTS PTY LTD ACN 055 92 196

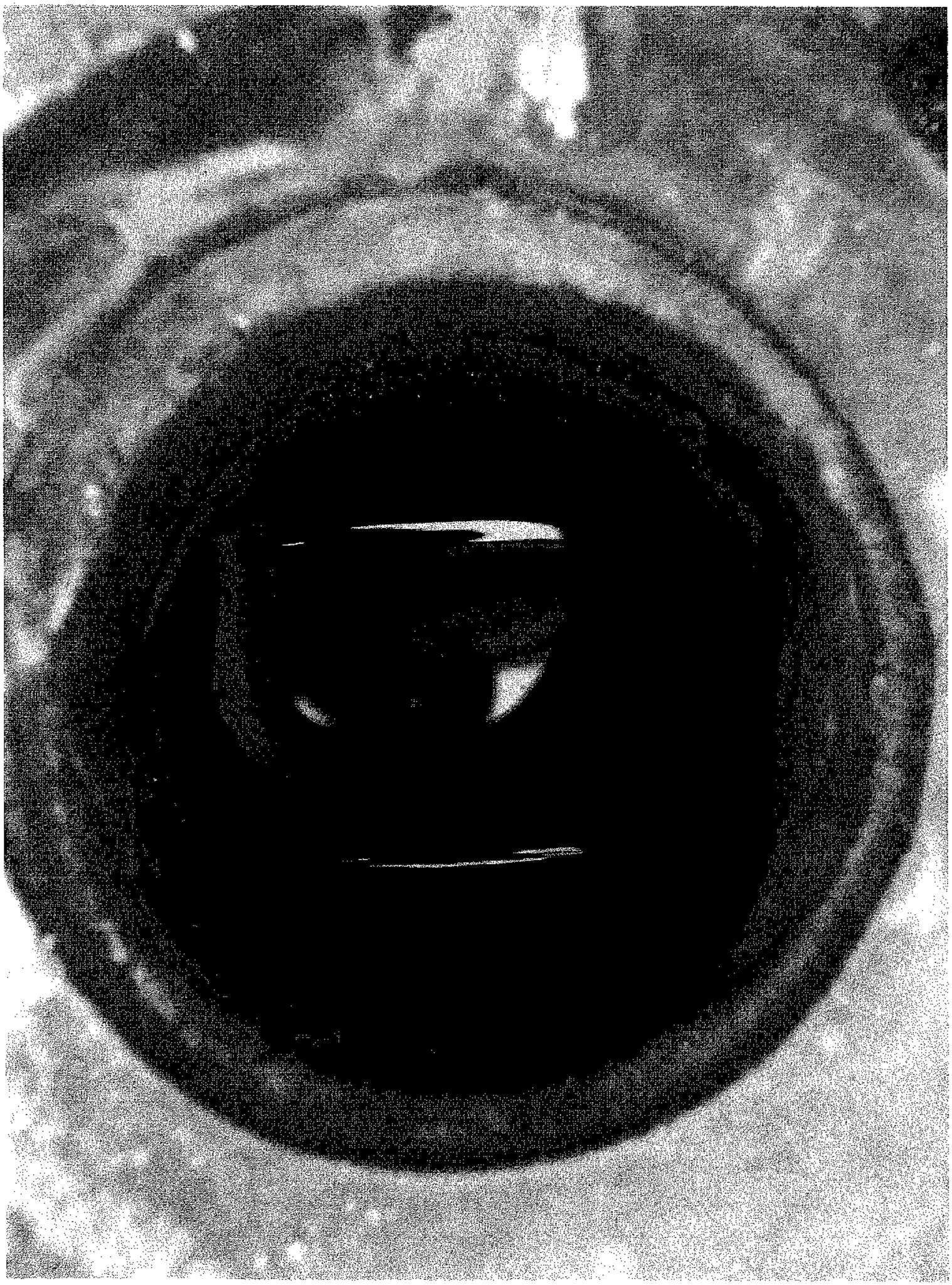
PROJECT MANAGER/SUPERVISOR: A. Solomon	DRAWN
DESIGNED	SURVEYED MF 6/5/98
DRAWN AMK 8/5/98	DRAFTING CHECKED

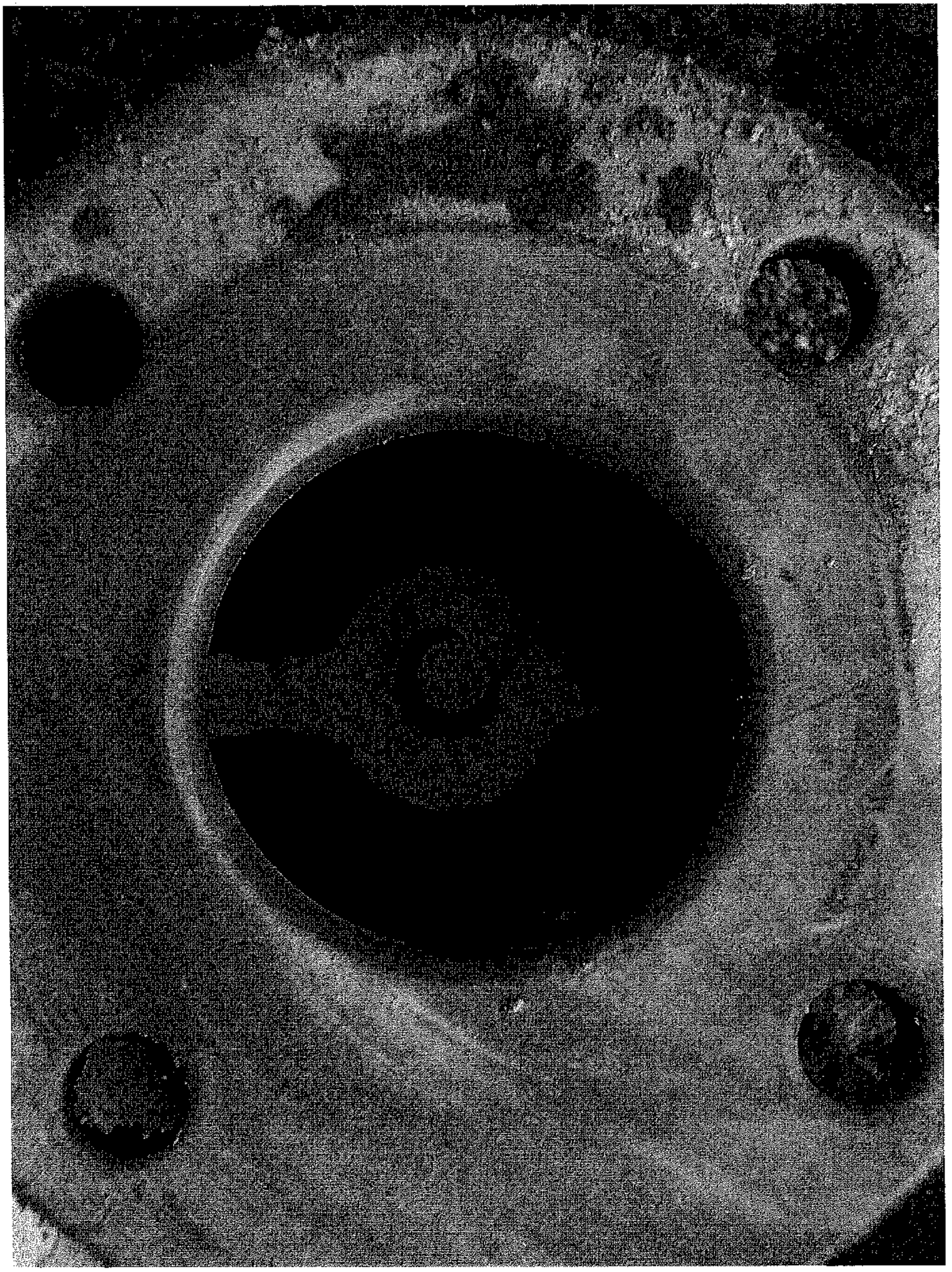
KENFROST PTY LTD

TITLE
MOSSMAN GORGE INFRASTRUCTURE
AS CONSTRUCTED SURVEY
WATER RETICULATION

CAD 6053-6A3.DWG 6053DG & D2PTS/STR	SCALE 1:500 (ORIG. SCALE WAS)
SHEET 2 OF SHEETS 2	LEVEL DATUM AHD-0
	FIELD INF. 752 / 443
	SHEET SIZE A1
DRAWING NO. 6053-7	ISSUED 5/8/98
	ISSUE A







Attachment 6

Sewerage Infrastructure condition assessment results

Matt DiMaggio

From: Dunstan Grahame <g.dunstan@cairns.qld.gov.au>
Sent: Friday, 13 April 2012 8:29 AM
To: Matt DiMaggio
Cc: Paul Steele; Turner Jon
Subject: RE: Mossman Gorge Community Investigations

Hi Matt
In reply to your request for SCADA pump station performance data:
I have selected a typical dry weather day versus a recent wet weather day to give you some indication of the operational patterns.
The pumps at this station alternate duty cycles throughout the day.

Dry Day 11/01/2012 –
Total Pump Starts – 16
Hours run #1 pump – 1.75 hours
Hours run #2 pump – 1.35 hours
Total hours – 3.1

Wet Day 23/03/2012 -
Total Pump Starts - 17
Hours run #1 pump – 2.75 hours
Hours run #2 pump – 1.96 hours
Total hours – 4.71

As can be seen from the operational data the system is affected by infiltration and this could be attributed to the several defects found during the asset condition evaluation.

Regards

Grahame Dunstan | Wastewater Services Coordinator
Operations **|** Cairns Regional Council
Phone: +61740448372 | **Fax:** +61740448377 | **Mobile:** +61419715769
Email: g.dunstan@cairns.qld.gov.au | **URL:** cairns.qld.gov.au
Mail: PO Box 359, Cairns Q 4870 | **Office:** 119-145 Spence St, Cairns Q 4870

From: Matt DiMaggio [mailto:Matt.DiMaggio@blackm.com]
Sent: Wednesday, 11 April 2012 3:59 PM
To: Dunstan Grahame
Subject: FW: Mossman Gorge Community Investigations

Hi Grahame,

Following your correspondance with Paul Steele last week, I understand that condition inspection of gravity sewer (CCTV, infiltration inspections etc) have been completed.

Did these condition inspections include the pump station located outside the Community on Mossman Gorge Road. From our meeting (26th March) it was envisaged that condition assesment requirements for the pump station were:

- Visual inspection of pump well for general condition and ground water ingress
- Visual inspection of mechanical and electrical components
- Test pressure applied to rising main

Can you clarify these inpesctions/testing have been undertaken.

Additionally are you aware of any recent pump run data or pump draw down tests available. This information will be usefull to assist the condition assesment phase of the Audit.

Matt DiMaggio

From: Dunstan Grahame <g.dunstan@cairns.qld.gov.au>
Sent: Thursday, 12 April 2012 7:08 AM
To: Matt DiMaggio
Subject: RE: Mossman Gorge Community Investigations

Hi Matthew
Please see comments to your queries below:

Regards

Grahame Dunstan | Wastewater Services Coordinator
Operations **|** Cairns Regional Council
Phone: +61740448372 | **Fax:** +61740448377 | **Mobile:** +61419715769
Email: g.dunstan@cairns.qld.gov.au | **URL:** cairns.qld.gov.au
Mail: PO Box 359, Cairns Q 4870 | **Office:** 119-145 Spence St, Cairns Q 4870

From: Matt DiMaggio [mailto:Matt.DiMaggio@blackm.com]
Sent: Wednesday, 11 April 2012 3:59 PM
To: Dunstan Grahame
Subject: FW: Mossman Gorge Community Investigations

Hi Grahame,

Following your correspondance with Paul Steele last week, I understand that condition inspection of gravity sewer (CCTV, infiltration inspections etc) have been completed. (Correct – Reports in PDF format are being prepared for forwarding to Paul Steele – These should be sent today)

Did these condition inspections include the pump station located outside the Community on Mossman Gorge Road. From our meeting (26th March) it was envisaged that condition assesment requirements for the pump station were:

- Visual inspection of pump well for general condition and ground water ingress (Completed – no water ingress – civil structures in good condition)
- Visual inspection of mechanical and electrical components – (Visually the pumps, internal pipework, and switchboard are in good condition)
- Test pressure applied to rising main – (Unable to perform pressure test to rising main. There is no history of any breaks on this main).

Can you clarify these inpesctions/testing have been undertaken.

Additionally are you aware of any recent pump run data or pump draw down tests available. This information will be usefull to assist the condition assesment phase of the Audit. (SCADA pump run data is available and I'll arrange this information through our SCADA technicians. Draw down tests are yet to be done.

Assistance greatly appreciated.

Kind Regards

Matthew Di Maggio
Project Engineer

Black & More

93 Digger Street, Cairns North QLD 4870
ABN: 24 845 447 493
T: 61 7 4031 9944
F: 61 7 4031 9914
matt.dimaggio@blackm.com
www.blackm.com

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

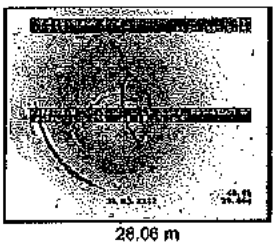
Date:	Asset owner's job ref.:	Project Name:	Operator:	Section number:	Pipe Asset Id:
3/30/2012			Shane Overlack	8	1308382
Method of Inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		8053-4		1.6

Town/suburb:	MOSSMAN	Catchment:		US MH.:	2/A2
Location:	LUND ST.	Asset Owner:		DS MH.:	1/A2
Location type:		Job No.:		Section length :	44.63 m
		Flow control		Survey Dir :	upstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:360	Position	Observation
1/A2	0.00	Start node, maintenance hole, Nodename: 1/A2
	0.00	Water level, clear flow (the invert is visible), depth 0%
	28.06	Defective junction, OPEN JOINT, magnitude of obstruction <5% , at 10 o'clock
2/A2	44.63	Finish node, maintenance hole, Nodename: 2/A2



28.06 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

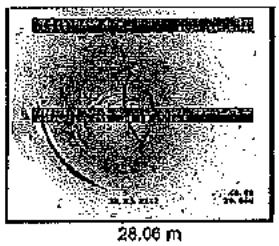
Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Shane Overlack	8	1308382
Method of Inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6063-4		1.6

Town/suburb:	MOSSMAN	Catchment:		US MH.:	2/A2
Location:	LUND ST.	Asset Owner:		DS MH.:	1/A2
Location type:		Job No.:		Section length :	44.63 m
		Flow control		Survey Dir :	upstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:360	Position	Observation
1/A2	0.00	Start node, maintenance hole, Nodename: 1/A2
	0.00	Water level, clear flow (the invert is visible), depth 0%
	28.06	Defective junction, OPEN JOINT, magnitude of obstruction <5% , at 10 o'clock
2/A2	44.63	Finish node, maintenance hole, Nodename: 2/A2


28.06 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date: 3/30/2012	Asset owner's job ref.:	Project Name:	Operator : Shane Overlack	Section number: 10	Pipe Asset Id: 1308383
Method of Inspection:	Cleaning: cleaned	Criticality:	Drawing Number 6053-4	Reline Material	MH Depth 2.1

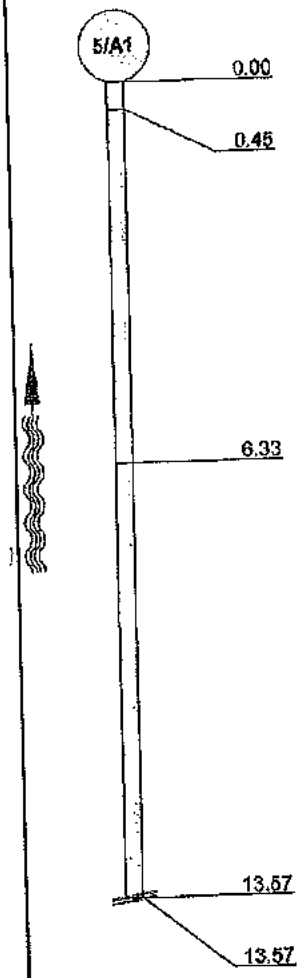
Town/suburb: mossman	Catchment:	US MH.: 1/A2	
Location: LUND ST.	Asset Owner:	DS MH.: 5/A1	
Location type:	Job No.:	Section length : 72.99 m	
	Flow control	Survey Dir : upstream	

Purpose of Inspection : Structural exam		Shape :	
Use of sewer: Sewage		Dia/Height: 160 mm	
Land ownership: Private Land		Width:	
Type of sewer: Gravity sewer		Pipe Material: PVC-Plasticlined	

Remarks :

1:120 Position Observation


13.57 m



0.00 Start node, maintenance hole, Nodename: 5/A1

0.45 Vertical deformation , change in diameter 5-10%, length of deformation 200mm , at 12 o'clock

6.33 Junction open, good workmanship, diameter 100mm , at 10 o'clock

13.57 Horizontal deformation , change in diameter 21-25%, length of deformation 300mm , at 3 o'clock

13.57 Inspection (survey) abandoned, HORIZONTAL DEFOMATION

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	165	14.36	195	5	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

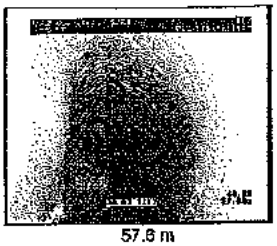
Date:	Asset owner's job ref.:	Project Name:	Operator:	Section number:	Pipe Asset Id:
3/30/2012			Shane Overlack	9	1308383
Method of Inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		1.6

Town/suburb:	MOSSMAN	Catchment:		US MH.:	1/A2
Location:	LUND ST.	Asset Owner:		DS MH.:	5/A1
Location type:		Job No.:		Section length :	72.99 m
		Flow control		Survey Dir :	downstream

Purpose of Inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:465	Position	Observation
1/A2	0.00	Start node, maintenance hole, Nodename: 1/A2
	0.00	Water level, clear flow (the invert is visible), depth 5%
	31.64	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	57.60	Horizontal deformation , change in diameter 21-25%, length of deformation 300mm , at 9 o'clock
	57.60	Inspection (survey) abandoned, HORIZONTAL DEFORMATION


57.6 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	185	2.86	185	5	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
4/2/2012			Frank Grainer	24	3081742
Method of inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	not cleaned		6053-5		2.4

Town/suburb: MOSSMAN	Catchment:	US MH.:	MH 1/A1
Location: LUND ST	Asset Owner:	DS MH.:	PS
Location type:	Job No.:	Section length :	4.77 m
	Flow control	Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	160 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:50	Position	Observation
MH 1/A1	0.00	Start node, maintenance hole, Nodename: MH 1/A1
	0.00	Water level, turbid or discoloured flow, depth 0%
	1.19	Water level, turbid or discoloured flow, depth 10%
	2.60	Water level, turbid or discoloured flow, depth 15%
	4.77	Water level, turbid or discoloured flow, depth 5%
PS	4.77	Finish node, maintenance hole, Nodename: PS , THIS CONDUIT MAY BE AN OVERFLOW

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
4/2/2012			Frank Grafner	23	1308384
Method of inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	cleaned		6053-5		1.8

Town/suburb: MOSSMAN	Catchment:	US MH.:	MH 1/A4
Location: LUND ST	Asset Owner:	DS MH.:	MH 1/A1
Location type:	Job No.:	Section length :	12.80 m
	Flow control	Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:105	Position	Observation
MH 1/A4	0.00	Start node, maintenance hole, Nodename: MH 1/A4
	0.00	Water level, turbid or discoloured flow, depth 0%
	12.80	Finish node, maintenance hole, Nodename: MH 1/A1
MH 1/A1		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

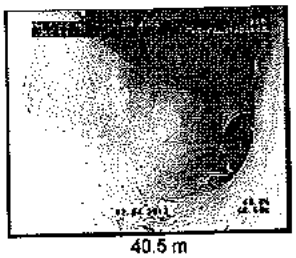
Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
4/2/2012			Frank Grainer	22	1308387
Method of inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	cleaned		6053-5		1.8

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 2/A4
Location:	LUND ST	Asset Owner:		DS MH.:	MH 1/A4
Location type:		Job No.:		Section length :	40.53 m
		Flow control		Survey Dir :	upstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:330 **Position** **Observation**


40.5 m

MH 1/A4

0.00 Start node, maintenance hole, Nodename: MH 1/A4

0.00 Water level, turbid or discoloured flow, depth 0%

10.56 Junction closed, good workmanship, diameter 100mm , at 2 o'clock

40.50 Rat(s) in the conduit , Numbers: A few creatures I.e. 2-5

40.53 Finish node, maintenance hole, Nodename: MH 2/A4

MH 2/A4

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	1	20	0.49	20	3

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
4/2/2012			Frank Grainer	21	1308385
Method of Inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-5		1.9

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 2/A1
Location:	LUND ST	Asset Owner:		DS MH.:	MH 1/A1
Location type:		Job No.:		Section length :	27.02 m
		Flow control		Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:225	Position	Observation
MH 2/A1	0.00	Start node, maintenance hole, Nodename: MH 2/A1
	0.00	Water level, turbid or discoloured flow, depth 5%
	27.02	Finish node, maintenance hole, Nodename: MH 1/A1
MH 1/A1		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
4/2/2012			Frank Grainer	20	1308386
Method of inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-5		1.9

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 2A/A1
Location:	LUND ST	Asset Owner:		DS MH.:	MH 2/A1
Location type:		Job No.:		Section length :	50.06 m
		Flow control		Survey Dir :	upstream

Purpose of Inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:405	Position	Observation
MH 2/A1		
	0.00	Start node, maintenance hole, Nodename: MH 2/A1
	0.00	Water level, turbid or discoloured flow, depth 5%
	10.24	Junction open, good workmanship, diameter 100mm , at 10 o'clock
	11.33	Junction closed, good workmanship, diameter 100mm , at 2 o'clock
	12.31	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	29.10	Junction open, good workmanship, diameter 100mm , at 10 o'clock
	30.23	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	40.72	Water level, turbid or discoloured flow, depth 0%
	48.58	Junction open, good workmanship, diameter 100mm , at 10 o'clock
	50.06	Finish node, maintenance hole, Nodename: MH 2A/A1
MH 2A/A1		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Shane Overlack	19	?
Method of inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	not cleaned		6053-5		1.8

Town/suburb:	MOSSMAN	Catchment:		US MH.:	3A/A1
Location:	LUND ST.	Asset Owner:		DS MH.:	3/A1
Location type:		Job No.:		Section length :	40.54 m
		Flow control		Survey Dir :	upstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	160 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:330	Position	Observation
3/A1	0.00	Start node, maintenance hole, Nodename: 3/A1
	0.00	Water level, turbid or discoloured flow, depth 5%
	1.08	Junction open, good workmanship, diameter 100mm , at 10 o'clock
	3.52	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	18.15	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	19.22	Junction open, good workmanship, diameter 100mm , at 10 o'clock
	40.54	Finish node, maintenance hole, Nodename: 3A/A1
3A/A1		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

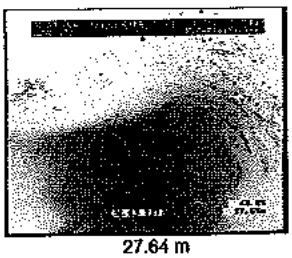
Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Shane Overlack	18	1308389
Method of inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		1.8

Town/suburb:	MOSSMAN	Catchment:		US MH.:	4A/A1
Location:	LUND ST.	Asset Owner:		DS MH.:	4/1A
Location type:		Job No.:		Section length :	38.57 m
		Flow control		Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:225	Position	Observation
4A/A1	0.00	Start node, maintenance hole, Nodename: 4A/A1
	0.00	Water level, clear flow (the invert is visible), depth 5%
	19.16	Junction closed, good workmanship, diameter 100mm , at 10 o'clock
	20.47	Junction closed, good workmanship, diameter 100mm , at 2 o'clock
	27.64	Vertical deformation , change in diameter 16-20%, length of deformation 400mm , at 12 o'clock
	27.64	Inspection (survey) abandoned, VERTICAL DEFORMATION


27.64 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	125	4.62	125	6	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

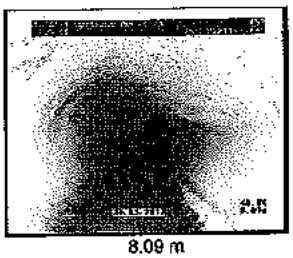
Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Frank Grainer	17	1308389
Method of inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		1.7

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 4A/A1
Location:	LUND ST	Asset Owner:		DS MH.:	MH 4/A1
Location type:		Job No.:		Section length :	38.57 m
		Flow control		Survey Dir :	upstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	160 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:75	Position	Observation
MH 4/A1	0.00	Start node, maintenance hole, Nodename: MH 4/A1
	0.00	Water level, turbid or discoloured flow, depth 5%
	1.00	Junction open, good workmanship, diameter 100mm , at 10 o'clock
	1.75	Water level, turbid or discoloured flow, depth 10%
	4.65	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	4.65	Water level, turbid or discoloured flow, depth 5%
	8.09	Vertical deformation , change in diameter 16-20%, length of deformation 400mm , at 1 o'clock
	8.09	Inspection (survey) abandoned, obstruction , VERTICAL DEFORMATION


8.09 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	125	15.45	125	5	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Frank Grainer	16	1308388
Method of inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	cleaned		6053-4		1.7

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 3/A1
Location:	LUND ST	Asset Owner:		DS MH.:	MH 2/A1
Location type:		Job No.:		Section length :	80.98 m
		Flow control		Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:645	Position	Observation
MH 3/A1	0.00	Start node, maintenance hole, Nodename: MH 3/A1
	0.00	Water level, turbid or discoloured flow, depth 10%
	80.98	Finish node, maintenance hole, Nodename: MH 2/A1
MH 2/A1		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Frank Grainer	15	1308390
Method of inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	cleaned		6053-4		1.7

Town/suburb:	MOSSMAN	Catchment:	US MH.: MH 4/A1
Location:	LUND ST	Asset Owner:	DS MH.: MH 3/A1
Location type:		Job No.:	Section length : 73.67 m
		Flow control	Survey Dir : downstream

Purpose of Inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:585	Position	Observation
MH 4/A1	0.00	Start node, maintenance hole, Nodename: MH 4/a1
	0.00	Water level, turbid or discoloured flow, depth 10%
	73.67	Finish node, maintenance hole, Nodename: MH 3/A1
MH 3/A1		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

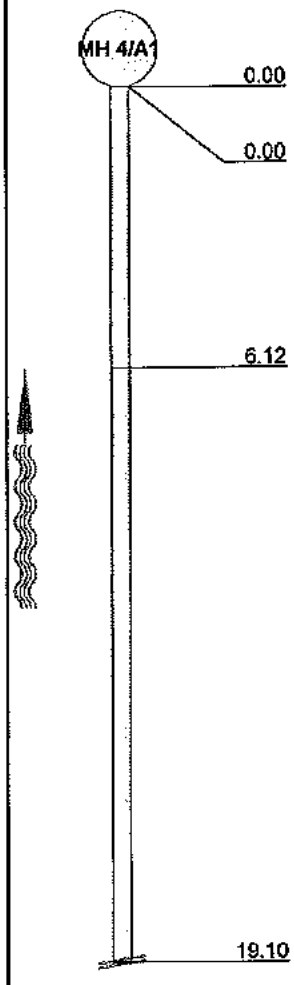
Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Frank Grainer	14	1308391
Method of inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		1.7

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 6/A1
Location:	LUND ST	Asset Owner:		DS MH.:	MH 4/A1
Location type:		Job No.:		Section length :	78.85 m
		Flow control		Survey Dir :	upstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:165 **Position** **Observation**

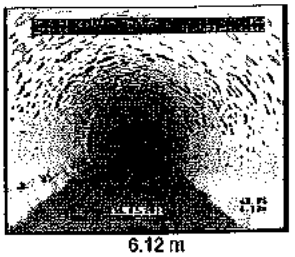


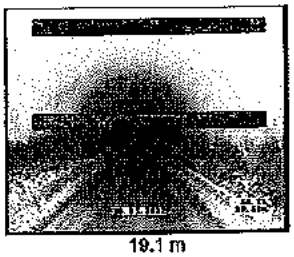
0.00 Start node, maintenance hole, Nodename: MH 4/A1

0.00 Water level, turbid or discoloured flow, depth 5%

6.12 Vertical deformation, at joint, change in diameter 5-10%, length of deformation >1000mm , at 12 o'clock

19.10 Inspection (survey) abandoned, VERTICAL DEFORMATION 15%


6.12 m


19.1 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	30	1.57	30	3	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

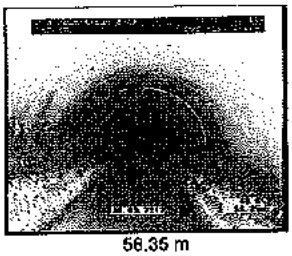
Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Shane Overlack	13	1308391
Method of Inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	cleaned		6053-4		2.1

Town/suburb:	MOSSMAN	Catchment:		US MH.:	5/A1
Location:	LUND ST.	Asset Owner:		DS MH.:	4/A1
Location type:		Job No.:		Section length :	78.85 m
		Flow control		Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:465	Position	Observation
5/A1	0.00	Start node, maintenance hole, Nodename: 5/A1
	0.00	Water level, clear flow (the invert is visible), depth 5%
	58.35	Vertical deformation , change in diameter 11-15%, length of deformation 800mm , at 12 o'clock
	58.35	Inspection (survey) abandoned, VERTICAL DEFORMATION


58.35 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	90	1.64	90	5	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Shane Overlack	12	1308395
Method of Inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		2.1

Town/suburb:	MOSSMAN	Catchment:		US MH.:	1/A3
Location:	LUND ST.	Asset Owner:		DS MH.:	5/A1
Location type:		Job No.:		Section length :	50.34 m
		Flow control		Survey Dir :	upstream

Purpose of Inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:405

Position	Observation
5/A1	
0.00	Start node, maintenance hole, Nodename: 5/A1
0.00	Water level, clear flow (the invert is visible), depth 5%
28.99	Junction closed, good workmanship, diameter 100mm , at 10 o'clock
32.21	Junction open, good workmanship, diameter 100mm , at 2 o'clock
47.53	Junction open, good workmanship, diameter 100mm , at 2 o'clock
50.34	Finish node, maintenance hole, Nodename: 1/A3
1/A3	

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Inspection report / Inspection: 1

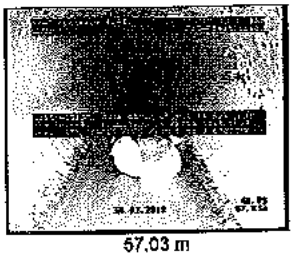
Date:	Asset owner's job ref.:	Project Name:	Operator:	Section number:	Pipe Asset Id:
3/30/2012			Shane Overlack	11	1308396
Method of Inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		2.1

Town/suburb: MOSSMAN	Catchment:	US MH.:	6/A1
Location: LUND ST.	Asset Owner:	DS MH.:	5/A1
Location type:	Job No.:	Section length :	61.59 m
	Flow control	Survey Dir :	upstream

Purpose of Inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:495 **Position** **Observation**



57.03 m

5/A1

0.00 Start node, maintenance hole, Nodename: 5/A!

32.70 Water level, turbid or discoloured flow, depth 15%

33.56 Water level, turbid or discoloured flow, depth 40%

35.94 Water level, turbid or discoloured flow, depth 5%

55.55 Junction open, good workmanship, diameter 100mm , at 2 o'clock

57.03 S1 Obstruction, some other object is lying in the invert , reduction in cross sectional area: <5%, PAPER CUP, from 5 to 7 o'clock

61.59 Finish node, maintenance hole, Nodename: 6/A1

6/A1

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

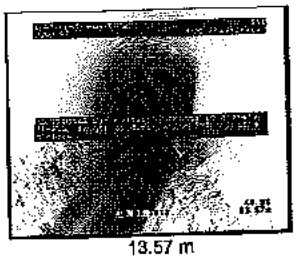
Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/30/2012			Shane Overlack	10	1308383
Method of inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	cleaned		6053-4		2.1

Town/suburb:	mossman	Catchment:	US MH.: 1/A2
Location:	LUND ST.	Asset Owner:	DS MH.: 5/A1
Location type:		Job No.:	Section length : 72.99 m
		Flow control	Survey Dir : upstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	160 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:120	Position	Observation
5/A1	0.00	Start node, maintenance hole, Nodename: 5/A1
	0.45	Vertical deformation , change in diameter 5-10%, length of deformation 200mm , at 12 o'clock
	6.33	Junction open, good workmanship, diameter 100mm , at 10 o'clock
	13.57	Horizontal deformation , change in diameter 21-25%, length of deformation 300mm , at 3 o'clock
	13.57	Inspection (survey) abandoned, HORIZONTAL DEFOMATION


13.57 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	165	14.36	195	5	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/29/2012			Frank Grainer	7	1308394
Method of inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		1.3

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 2 /A3
Location:	LUND ST	Asset Owner:		DS MH.:	MH 1/A3
Location type:		Job No.:		Section length :	39.77 m
		Flow control		Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:315	Position	Observation
MH 2 /A3		
	0.00	Start node, maintenance hole, Nodename: MH 2 /A3
	0.00	Water level, turbid or discoloured flow, depth 5%
	39.77	Finish node, maintenance hole, Nodename: MH 1/A3
MH 1/A3		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/29/2012			Frank Grainer	6	1308393
Method of Inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		1.3

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 3 /A3
Location:	LUND ST	Asset Owner:		DS MH.:	MH 2 / A3
Location type:		Job No.:		Section length :	55.61 m
		Flow control		Survey Dir :	downstream

Purpose of Inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:450	Position	Observation
MH 3 /A3		
	0.00	Start node, maintenance hole, Nodename: MH 3 /A3
	0.00	Water level, turbid or discoloured flow, depth 5%
	16.29	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	40.98	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	55.61	Finish node, maintenance hole, Nodename: MH 2 / A3
MH 2 / A3		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/29/2012			Frank Grainer	6	1308393
Method of inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		1.3

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 3 /A3
Location:	LUND ST	Asset Owner:		DS MH.:	MH 2 / A3
Location type:		Job No.:		Section length :	55.61 m
		Flow control		Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:450	Position	Observation
MH 3 /A3	0.00	Start node, maintenance hole, Nodename: MH 3 /A3
	0.00	Water level, turbid or discoloured flow, depth 5%
	16.29	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	40.98	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	55.61	Finish node, maintenance hole, Nodename: MH 2 / A3
MH 2 / A3		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/29/2012			Frank Grainer	5	1308392
Method of inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		1.3

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 4 /A3
Location:	LUND ST	Asset Owner:		DS MH.:	MH 3/A3
Location type:		Job No.:		Section length :	34.74 m
		Flow control		Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:285	Position	Observation
MH 4 /A3	0.00	Start node, maintenance hole, Nodename: 4 /A3
	0.00	Water level, turbid or discoloured flow, depth 5%
	26.39	Junction open, good workmanship, diameter 100mm , at 2 o'clock
	34.74	Finish node, maintenance hole, Nodename: 3 /A3
MH 3/A3		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/29/2012			Frank Grainer	4	1308397
Method of inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	cleaned		6053-4		2.1

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 7/A1
Location:	JUNKURRJI ST	Asset Owner:		DS MH.:	MH 6/A1
Location type:		Job No.:		Section length :	73.11 m
		Flow control		Survey Dir :	downstream

Purpose of Inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:585	Position	Observation
MH 7/A1	0.00	Start node, maintenance hole, Nodename: MH 7/A1
	0.00	Water level, turbid or discoloured flow, depth 5%
	43.09	Defective junction, roots are growing into and/or down the connecting conduit, magnitude of obstruction >75% , at 10 o'clock
	73.11	Finish node, maintenance hole, Nodename: MH 6/A1
MH 6/A1		

43.09 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	1	60	0.82	60	5

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator:	Section number:	Pipe Asset Id:
3/29/2012			Frank Grainer	3	1308398
Method of Inspection:	**Cleaning:**	**Criticality:**	**Drawing Number**	**Reline Material**	**MH Depth**
	cleaned		6053-4		2.1

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 7A/A1
Location:	JUNKURRJI ST	Asset Owner:		DS MH.:	MH 7/A1
Location type:		Job No.:		Section length :	45.24 m
		Flow control		Survey Dir :	downstream

Purpose of Inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:360	Position	Observation
MH 7A/A1	0.00	Start node, maintenance hole, Nodename: MH 7A/A1
	0.05	Water level, turbid or discoloured flow, depth 5%
	22.31	Junction open, good workmanship, diameter 100mm , at 10 o'clock
	32.94	Junction open, good workmanship, diameter 100mm , at 10 o'clock
	45.24	Finish node, maintenance hole, Nodename: MH 7/A1
MH 7/A1		

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/29/2012			Frank Grainer	2	1308399
Method of inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	cleaned		6053-4		2.1

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 8/A1
Location:	MOSSMAN GORGE ROAD	Asset Owner:		DS MH.:	MH 7A/A1
Location type:		Job No.:		Section length :	24.00 m
		Flow control		Survey Dir :	downstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:195	Position	Observation
MH 8/A1	0.00	Start node, maintenance hole, Nodename: MH 8/A1
	0.00	Water level, turbid or discoloured flow, depth 5%
	22.47	Junction open, good workmanship, diameter 100mm , at 10 o'clock
MH 7A/A1	24.00	Finish node, maintenance hole, Nodename: MH 7/A1

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Cairns Regional Council
Water and Waste

Inspection report / Inspection: 1

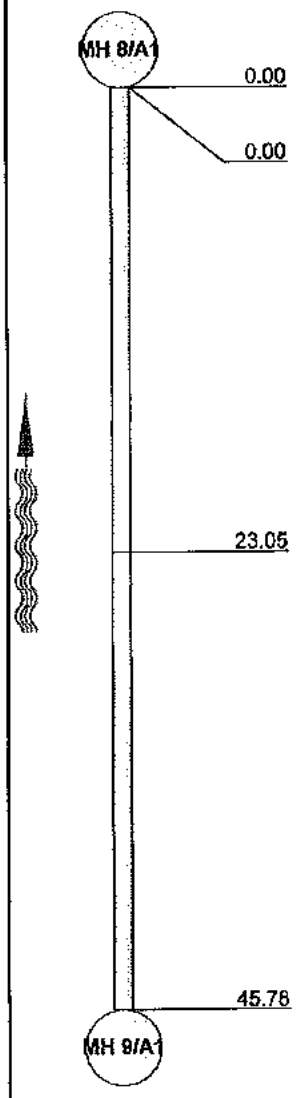
Date:	Asset owner's job ref.:	Project Name:	Operator :	Section number:	Pipe Asset Id:
3/29/2012			Frank Grainer	1	1308400
Method of inspection:	Cleaning:	Criticality:	Drawing Number	Reline Material	MH Depth
	cleaned		6053-4		2.1

Town/suburb:	MOSSMAN	Catchment:		US MH.:	MH 9/A1
Location:	MOSSMAN GORGE ROAD	Asset Owner:		DS MH.:	MH 8/A1
Location type:		Job No.:		Section length :	45.78 m
		Flow control		Survey Dir :	upstream

Purpose of inspection :	Structural exam	Shape :	
Use of sewer:	Sewage	Dia/Height:	150 mm
Land ownership:	Private Land	Width:	
Type of sewer:	Gravity sewer	Pipe Material:	PVC-Plasticised

Remarks :

1:375 **Position** **Observation**



Position	Observation
0.00	Water level, turbid or discoloured flow, depth 0%
0.00	Start node, maintenance hole, Nodename: MH 8/A1
23.05	Junction closed, good workmanship, diameter 100mm , at 2 o'clock
45.78	Finish node, maintenance hole, Nodename: MH 9/A1

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Attachment 7

Roads and Intersections Infrastructure condition assessment results

Purkiss David

From: Lees Brian
Sent: Tuesday, 24 April 2012 7:54 AM
To: Purkiss David
Subject: Mossman gorge community

Hi David

On the 12th of April I conducted a site inspection of road and drainage assets at the Mossman gorge community.
Bitumen surfacing on both Munjanita Cl and Lund St are oxidised and in need of repair , in some areas grass is beginning to come through the seal. Both these streets require resealing.
Surface Drains on Munjanita Cl are blocked by a large fig tree and the box culverts under the road require root removal and cleaning.
The underground drainage in Lund St are only 300 mm and most side entry pits are blocked and require retro fitting of GPT`s .Shoulder widening is required along the Western edge of Lund St and remedial drainage done in the open drain system.

Regards Brian

Brian Lees
Supervisor Cairns Works
Mossman Depot
Ph: 07 4099 9450
Fax: 07 4098 2006
Mobile: 0447 713 764
Cairns Regional Council

Matt DiMaggio

From: Steele Paul <P.Steele@cairns.qld.gov.au>
Sent: Tuesday, 17 April 2012 1:58 PM
To: Paul Steele
Subject: FW: Mossman Gorge Road Community FWD/GPR Testing
Attachments: Mossman Report -Lund.docx; Mossman Report -Manjal.docx; Mossman Report - Sth Entrance.docx; Mossman Report -Walkarr.docx

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From: Purkiss David
Sent: Thursday, 12 April 2012 2:31 PM
To: Steele Paul
Subject: FW: Mossman Gorge Road Community FWD/GPR Testing

Hi Paul,
The reports for the Mossman Gorge Road Community FWD/GPR testing are attached.

It appears the pavement is not built to current standards but the overall condition is reasonable for the extremely low traffic volume. Domestic waste collection is the heaviest vehicle using the roads on a regular basis. I can't foresee any changes in traffic volume in the future.
I want to inspect the road surface when convenient for you. The existing seal may be oxidised and the whole network may require resealing.

Please keep me updated

Regards David

David Purkiss I Technical Officer
Infrastructure Services | Cairns Regional Council
P: 07 4044 3247 | **F:** 07 4044 3838
E: d.purkiss@cairns.qld.gov.au | **W:** cairns.qld.gov.au
Mail: PO Box 359, Cairns Q 4870 | **Office:** 119-145 Spence Street, Cairns

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GEO | investigate

Our Reference

David Purkiss
Infrastructure Services
Cairns Regional Council
119 145 Spence St
CAIRNS QLD 4870

FWD AND GPR TESTING
MOSSMAN GORGE PAVEMENT TESTING and DATA COLLECTION

Dear David,

Please find attached individual reports for the streets within the Mossman Gorge Community. The following notes are applicable to the reports:

- The sequence of each report is Project Overview, Satellite Overlay, Layer Profile, Relative Strength, and Strength Graph of all drops in Micrometres.
- All streets are very narrow but two FWD/GPR runs were done on each road except the northern extension of Junkurrji Street, which services three townhouses and is at best a single lane.
- Streets were tested as far as physically possible but some of the shorter streets only allowed limited access.
- With respect to deviation under test, the following standard should apply.
    - Less than 400 micrometres = Sound
    - Between 400 and 750 micrometres = Warning
    - Greater than 750 micrometres = Severe
- Tests were done with a fall weight of 40kN at 25 metre intervals.

Overall Assessment

Of all pavements tested, less than 5% could be categorised at Sound with the remaining 95+% falling into the Warning or Severe category. The interesting anomaly is that the structural profiles shown for the GPR returns indicate very consistent and structured layers. It would appear the pavements were not designed and built for normal carrying capacities and current testing criteria. e.g. 40kN drop test weight. However, due to the uniqueness of this community, the roads appear to only have occasional and light vehicular usage. This would account for the profiles maintaining structure whilst being below normal pavement strength

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14 Danbulan St | PO Box 808
Smithfield Qld 4878
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ABN: 33 153 657 740
www.geo-investigate.com.au

standards. It would be reasonable to conclude that these roads have had very little heavy vehicle (trucks and buses etc) usage.

Any proposed maintenance activities on these pavements should consider all future loading requirements to ensure 'future proofing'. Based on a limited visual inspection of the pavement surfaces there was no significant deterioration. This is consistent with the GPR profiles. There is grass ingress in road surfaces close to curbs and this should be addressed.

Consolidated reports are attached and individual data files in .dat and .xls are also available.

Yours sincerely

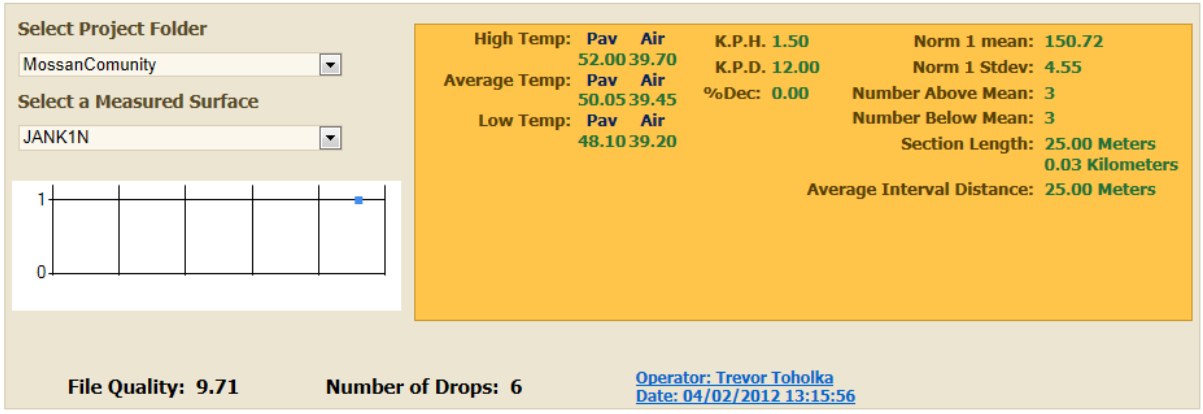
Steve Ford

Engineering Geologist
0421569969

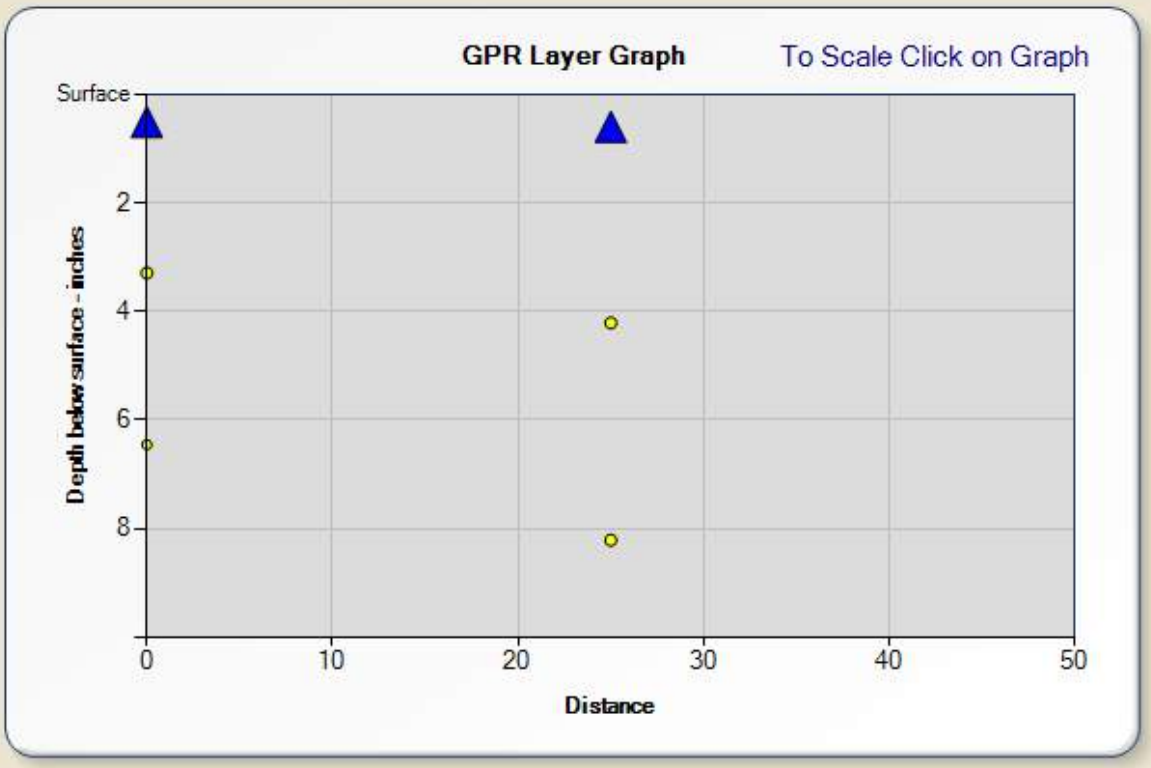
Attachments:
Mossman Report – Jankjia
Mossman Report - Junkurrji
Mossman Report - Kankarr
Mossman Report - Lund
Mossman Report - Manjal
Mossman Report – Sth Entrance
Mossman Report - Walkarr

Jankjia St

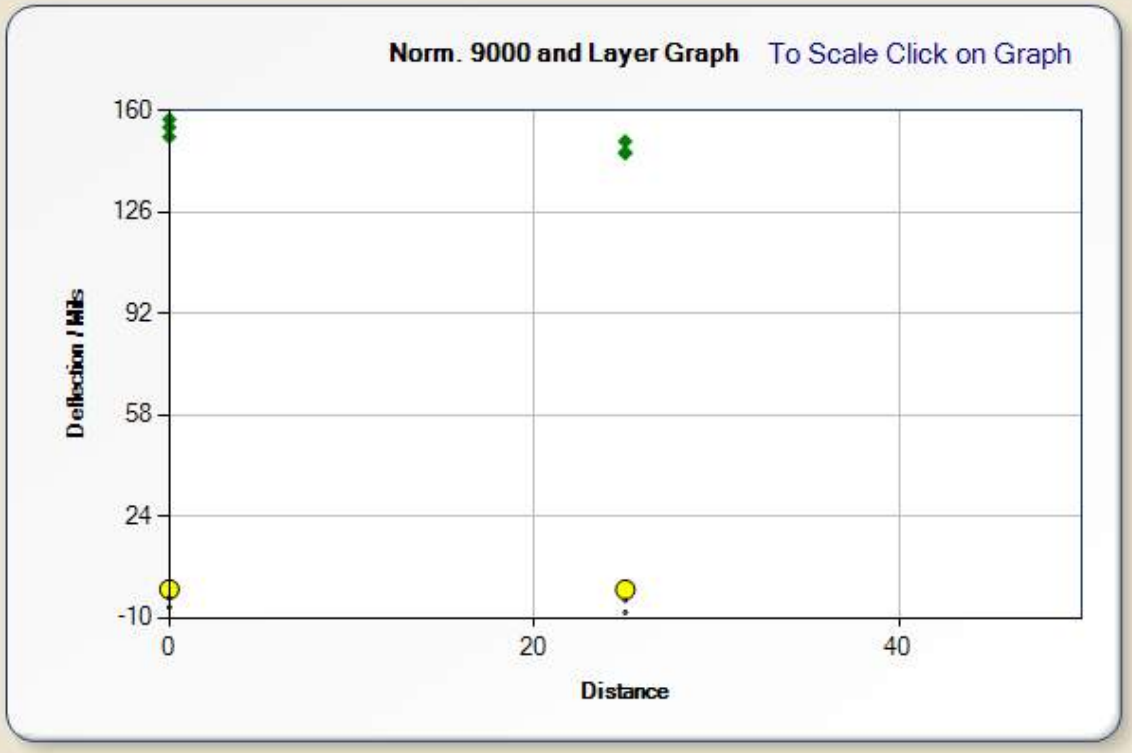
Track 1N



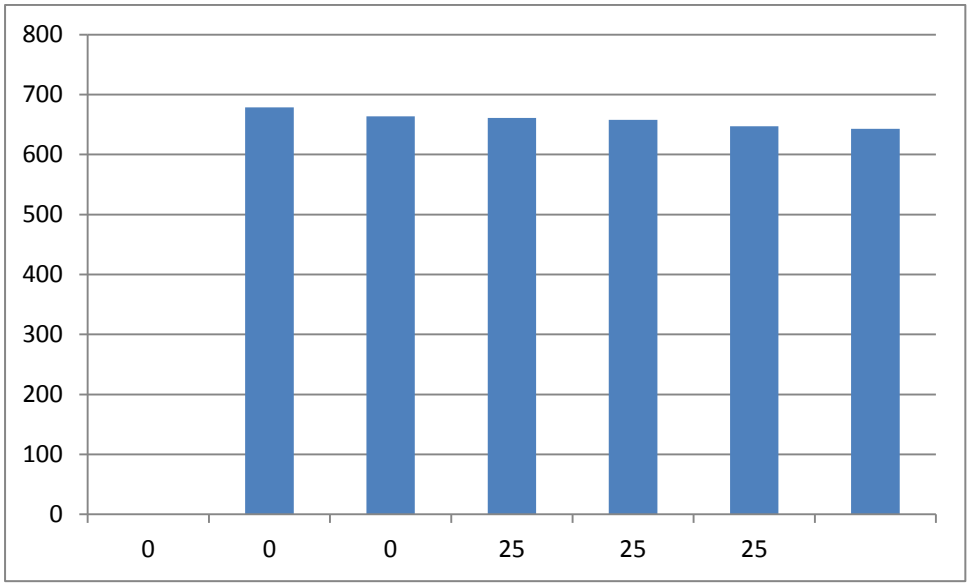
Satellite Overlay | Layer Data Graph | Relative Strength



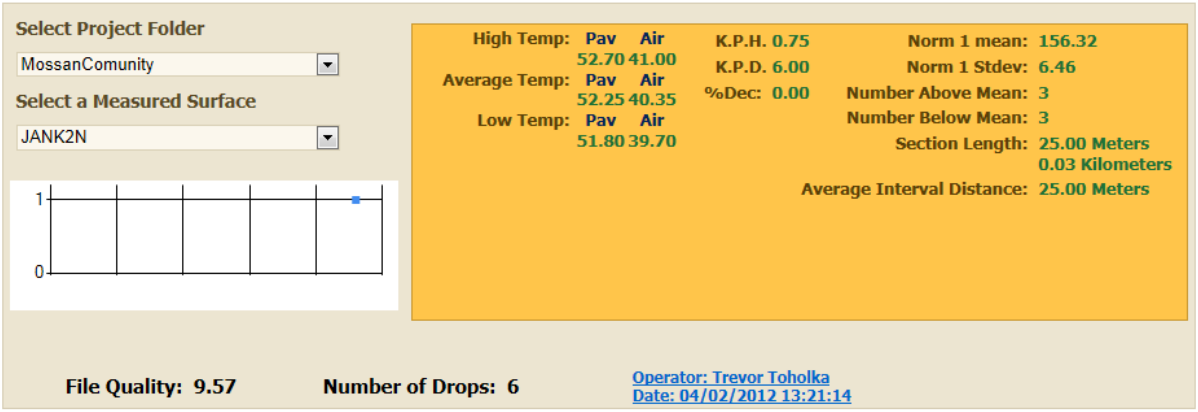
Satellite Overlay | Layer Data Graph | Relative Strength



Deflection Graph

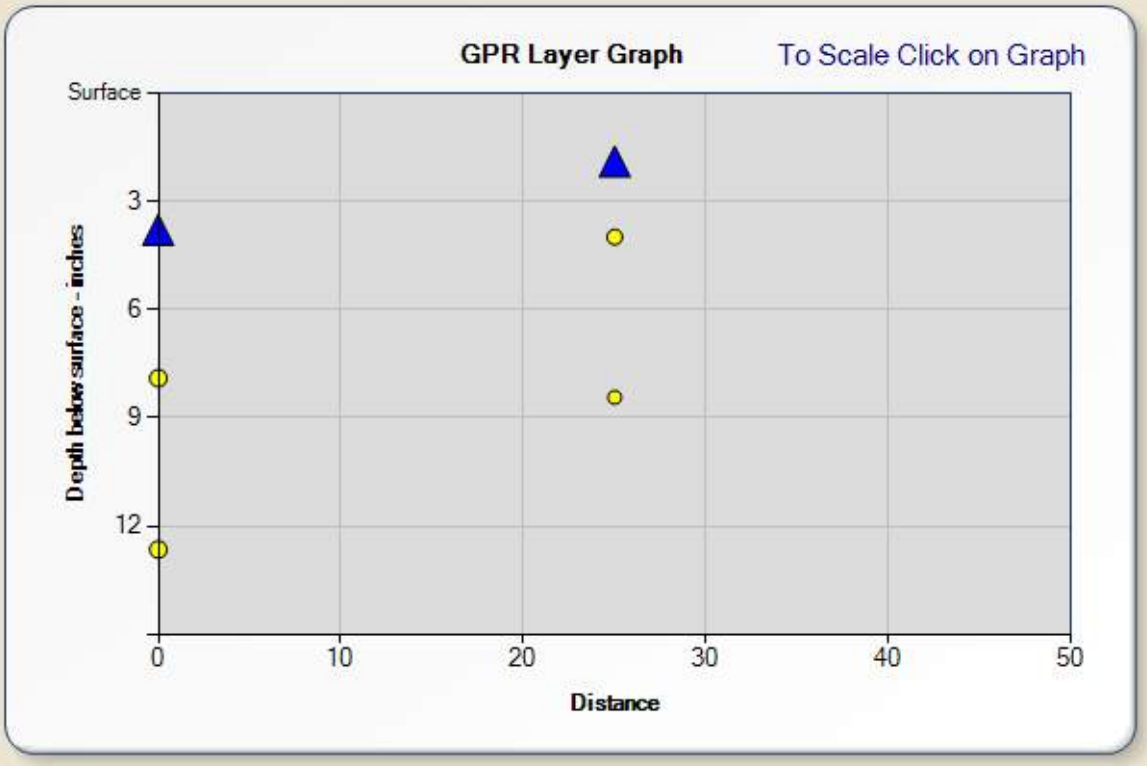


Track 2N

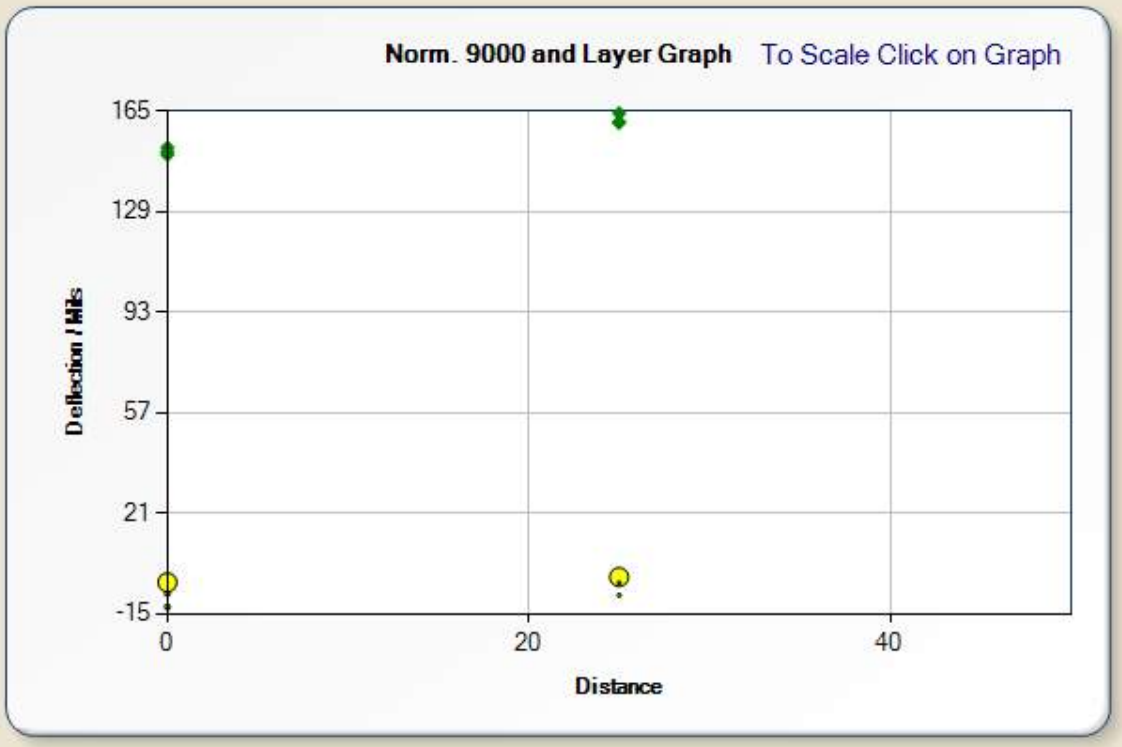


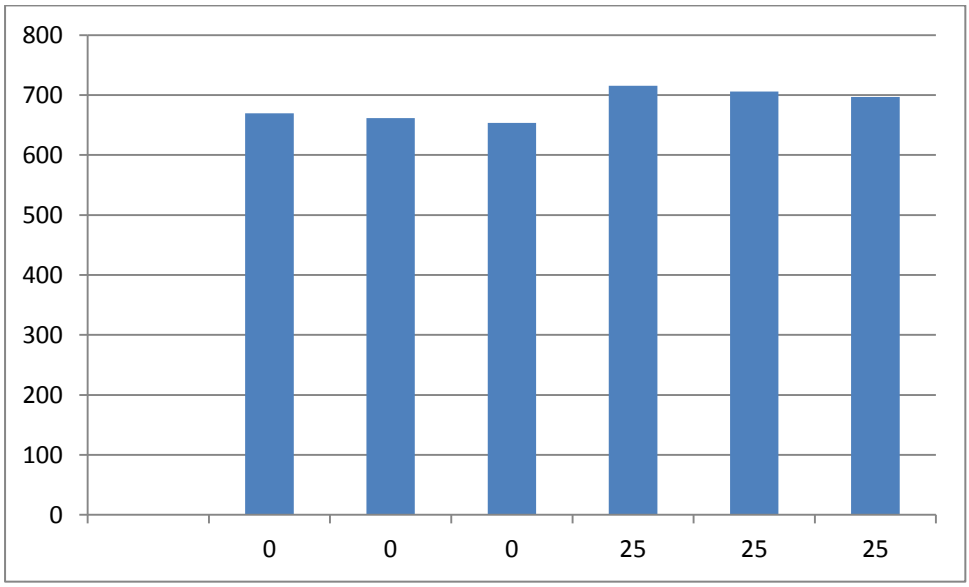
Satellite Overlay | Layer Data Graph | Relative Strength

Satellite Overlay | Layer Data Graph | Relative Strength



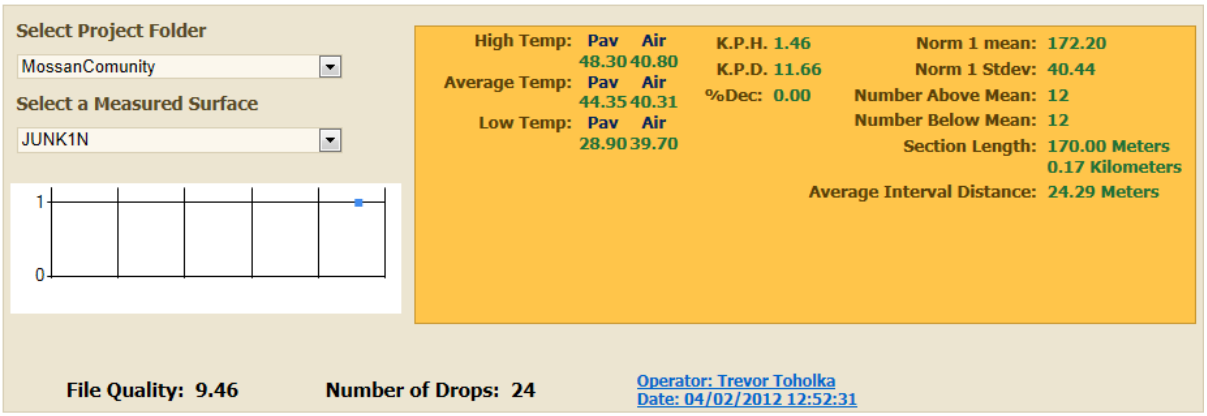
Satellite Overlay | Layer Data Graph | Relative Strength



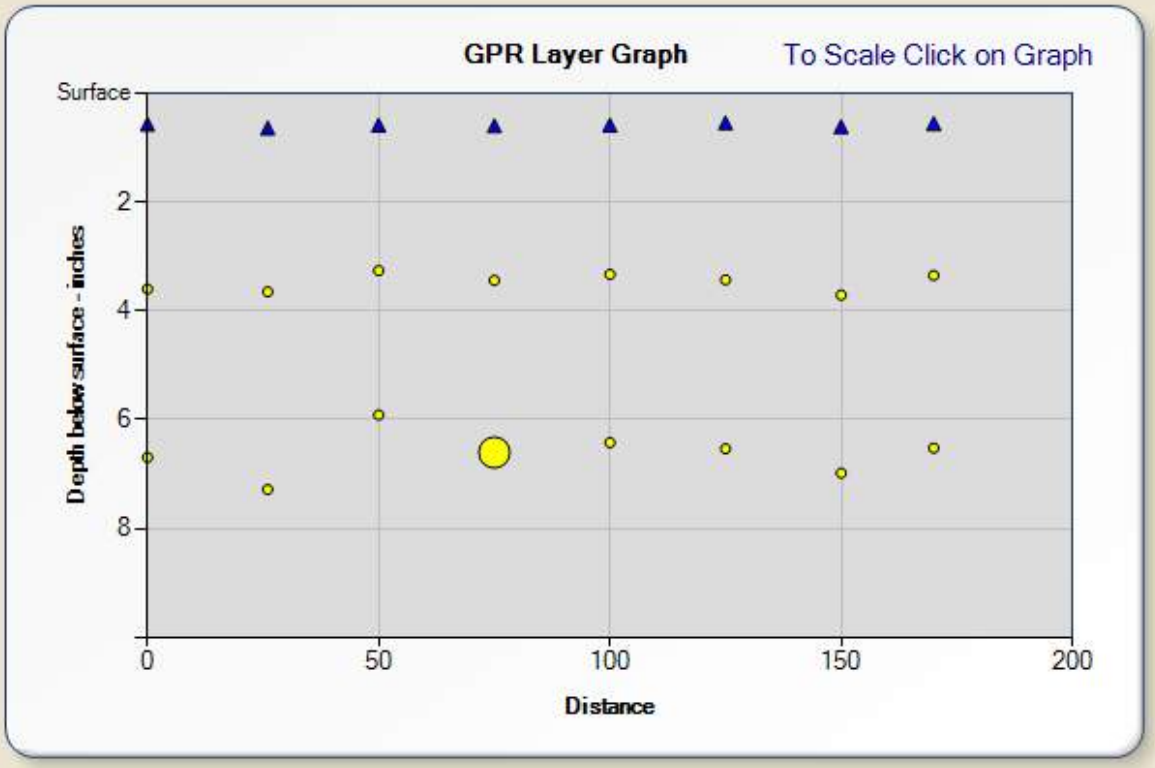


Junkurrji – Including northern lane to three townhouses

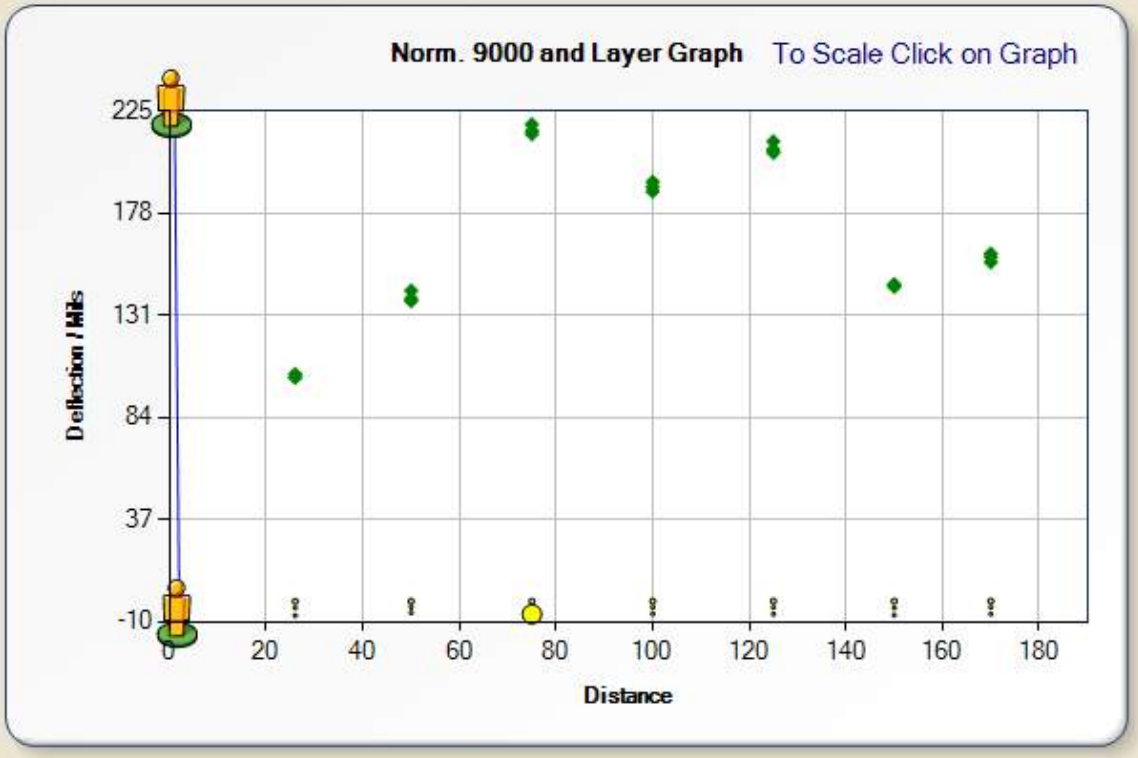
Track 1N



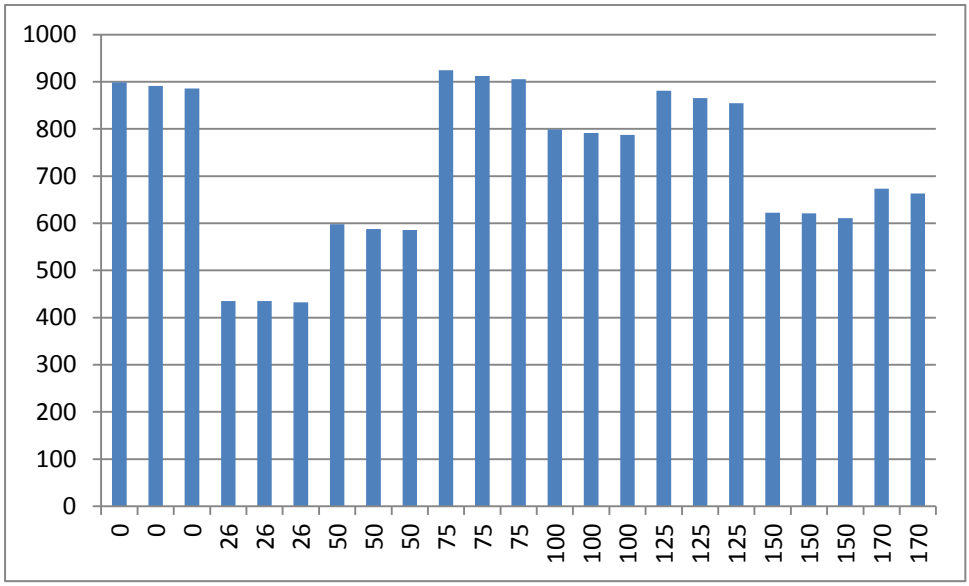
Satellite Overlay | Layer Data Graph | Relative Strength



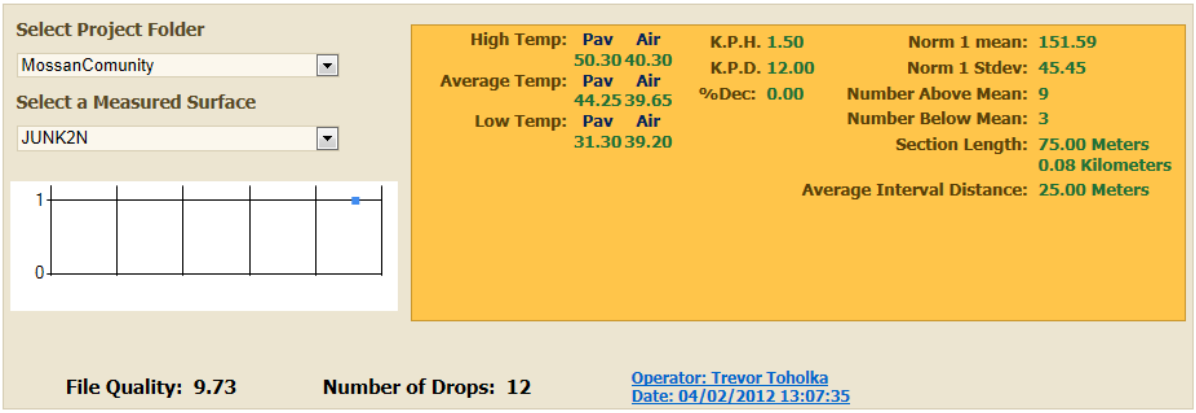
Satellite Overlay | Layer Data Graph | Relative Strength



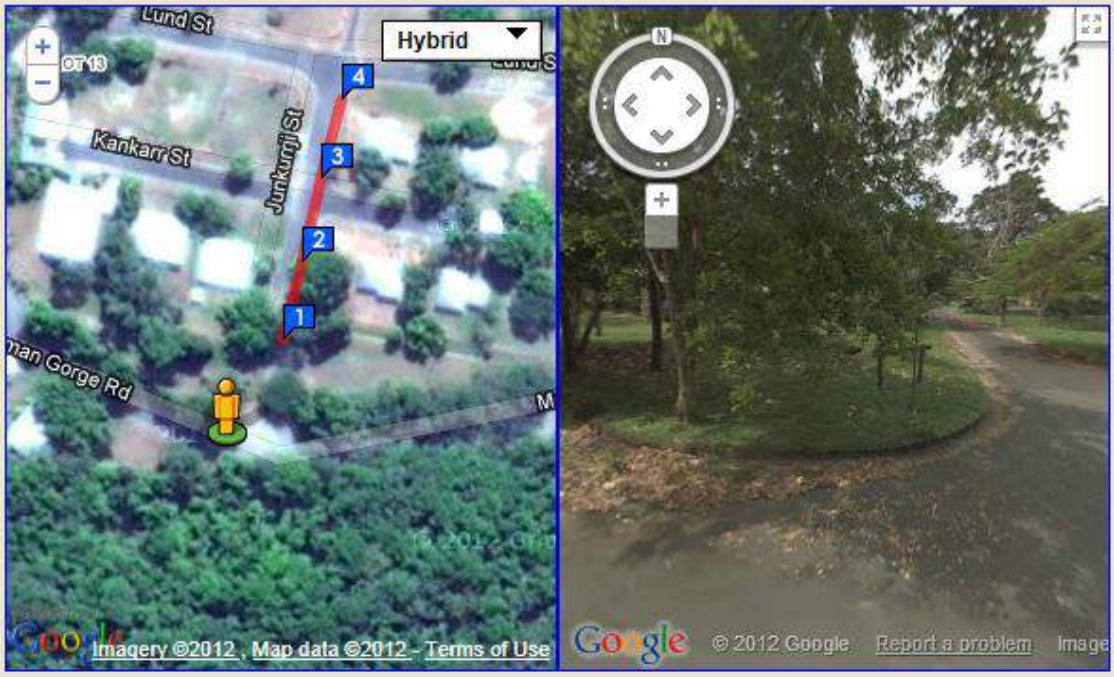
Deflection Graph



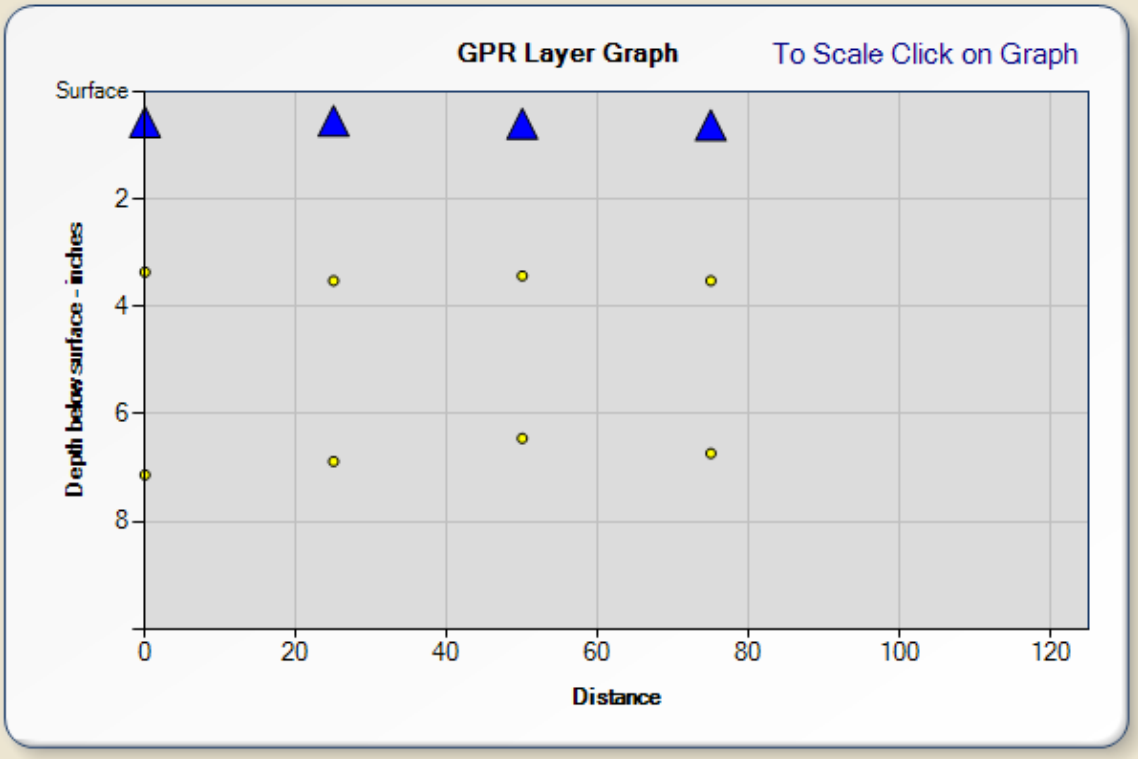
2N – No northern lane

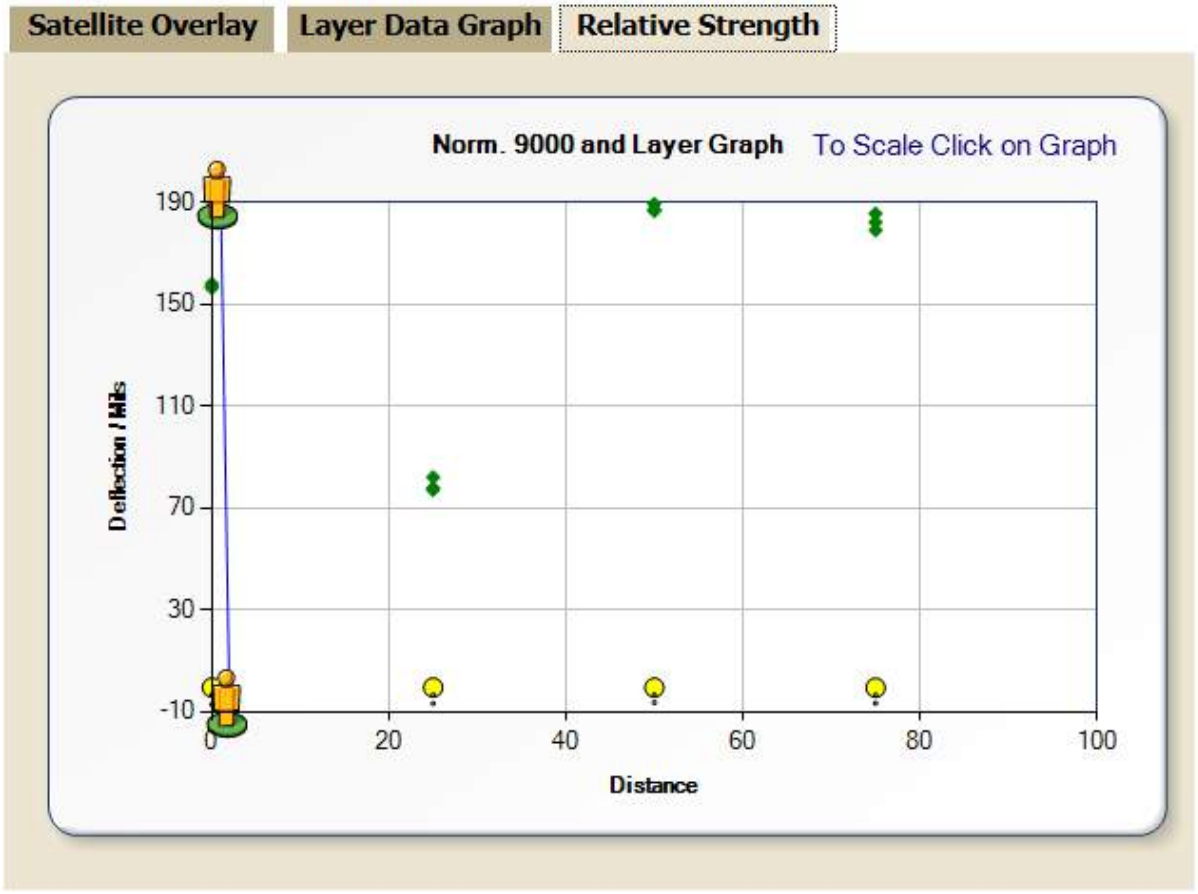


Satellite Overlay | Layer Data Graph | Relative Strength

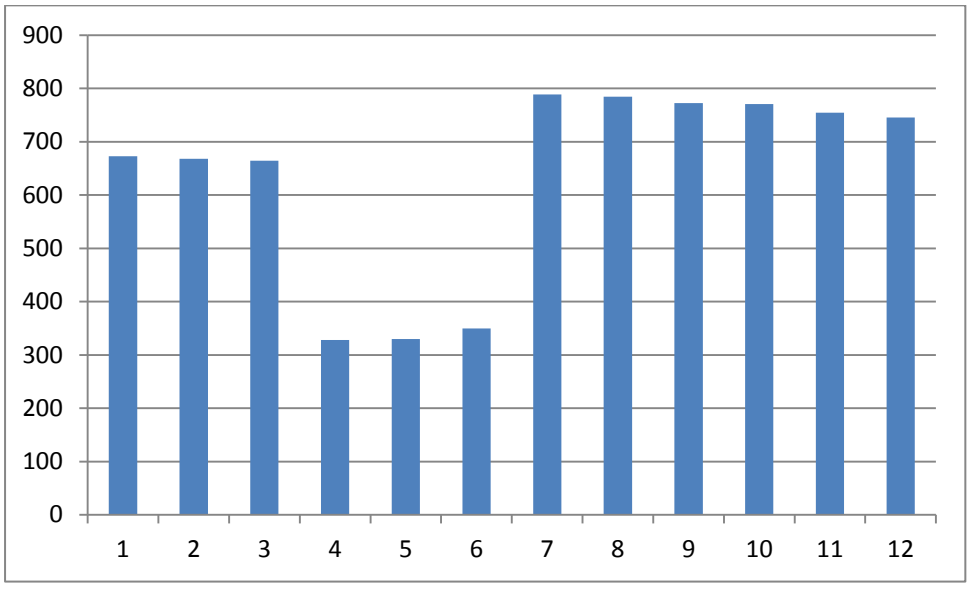


Satellite Overlay | Layer Data Graph | Relative Strength



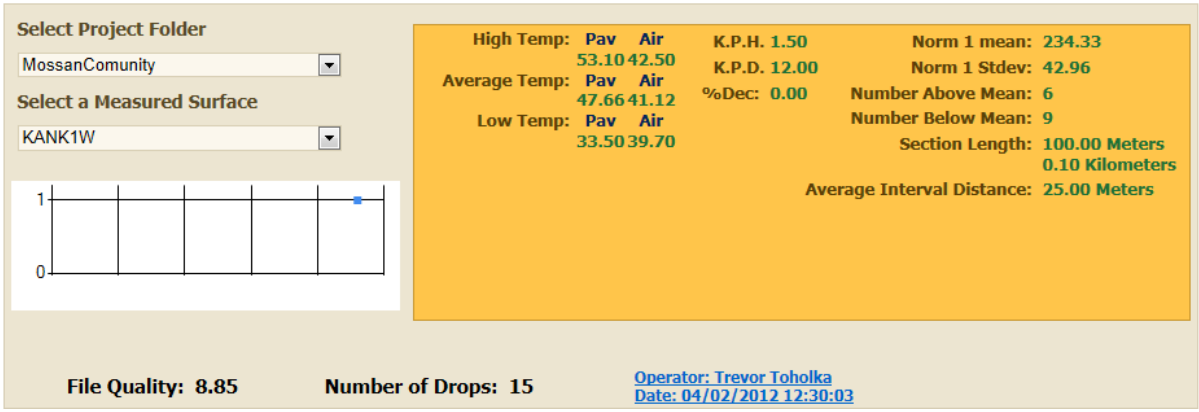


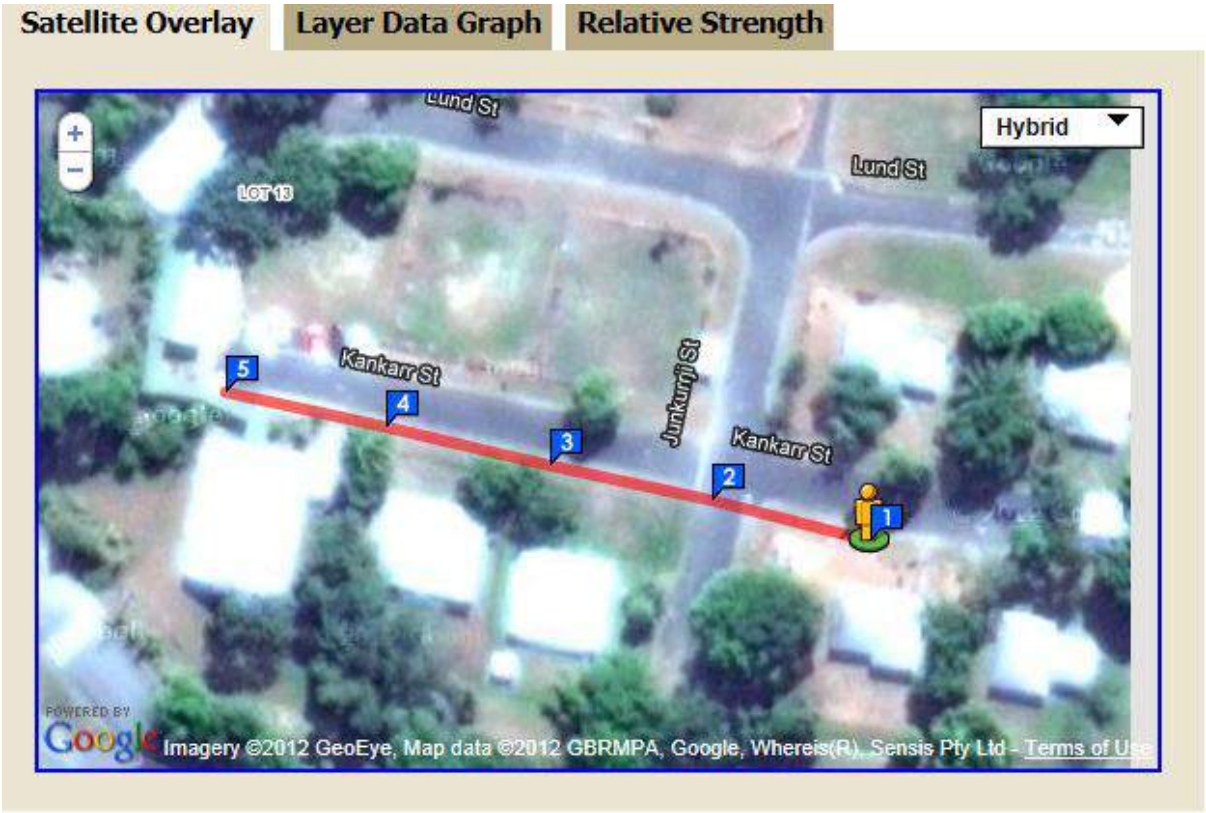
Deflection Graph



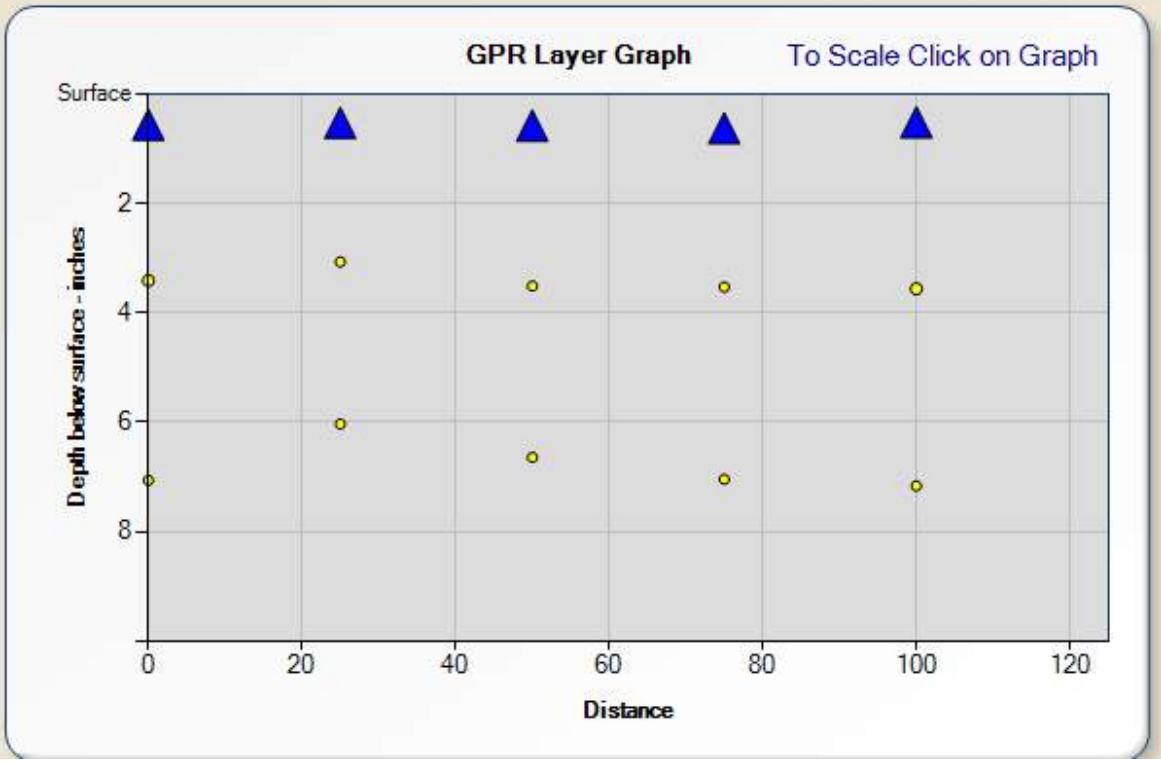
Kankarr

Track 1W

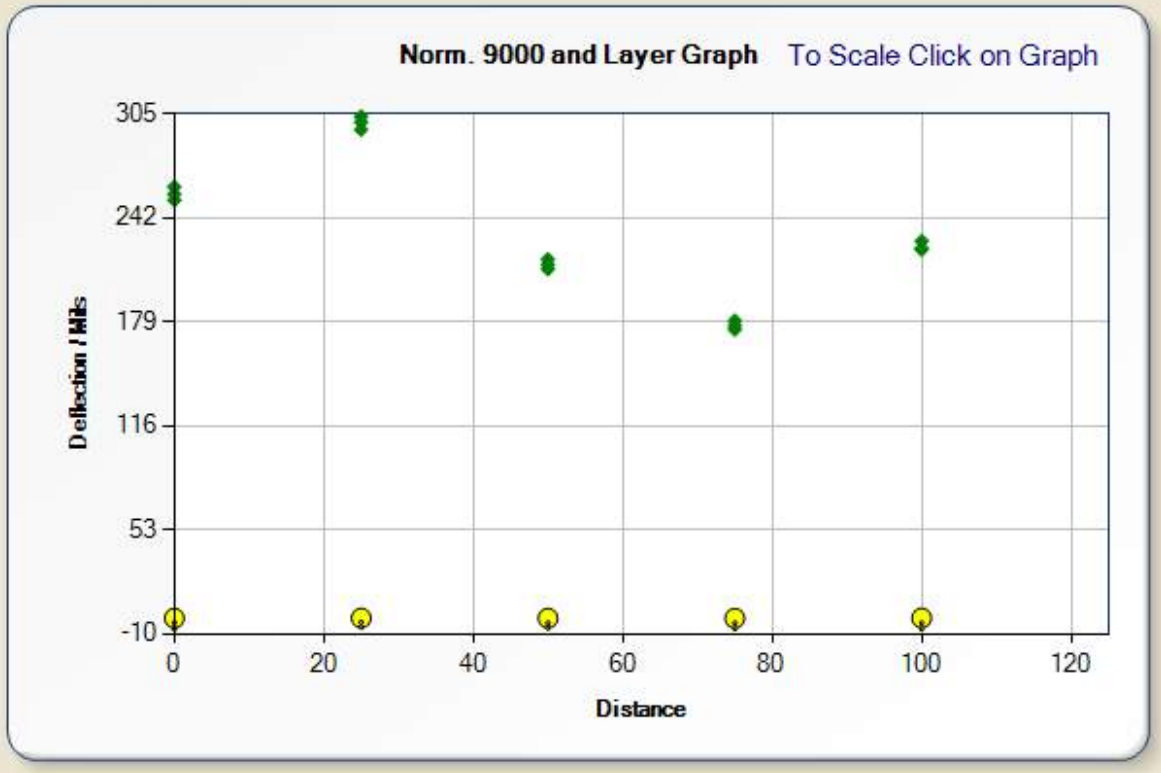




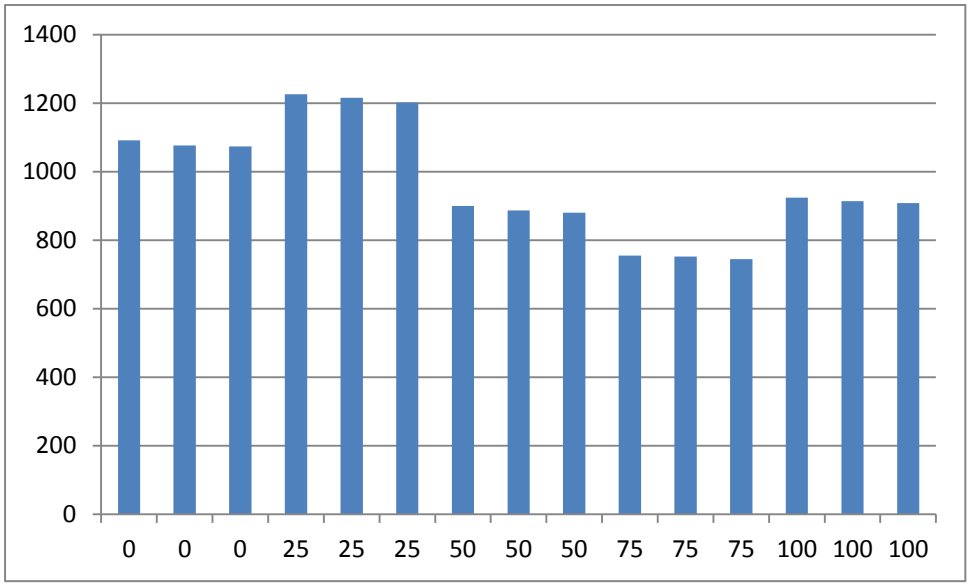
Satellite Overlay | Layer Data Graph | Relative Strength



Satellite Overlay | Layer Data Graph | Relative Strength



Deflection Graph



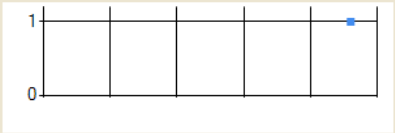
Track 2W

Select Project Folder

MossanComunity

Select a Measured Surface

KANK2W



	Pav	Air
High Temp:	49.40	42.00
Average Temp:	43.78	41.62
Low Temp:	31.50	40.80

K.P.H. 1.50
K.P.D. 12.00
%Dec: 0.00

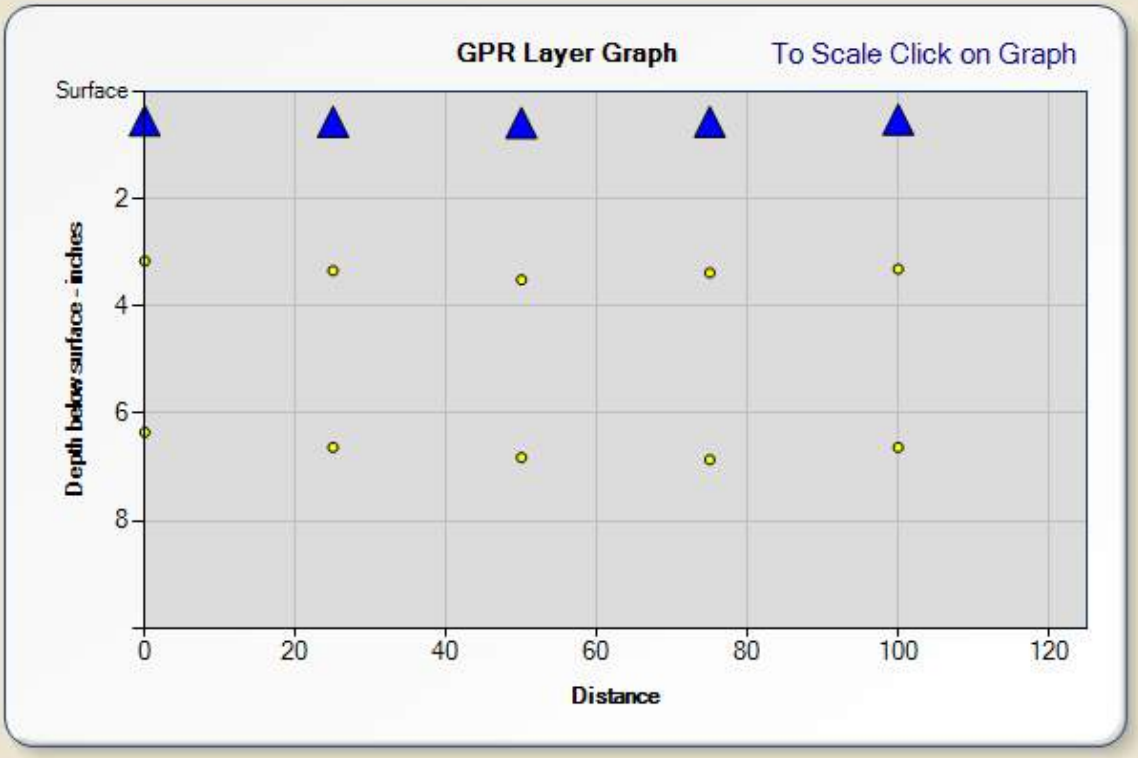
Norm 1 mean: 192.15
Norm 1 Stdev: 35.33
Number Above Mean: 9
Number Below Mean: 6
Section Length: 100.00 Meters
0.10 Kilometers
Average Interval Distance: 25.00 Meters

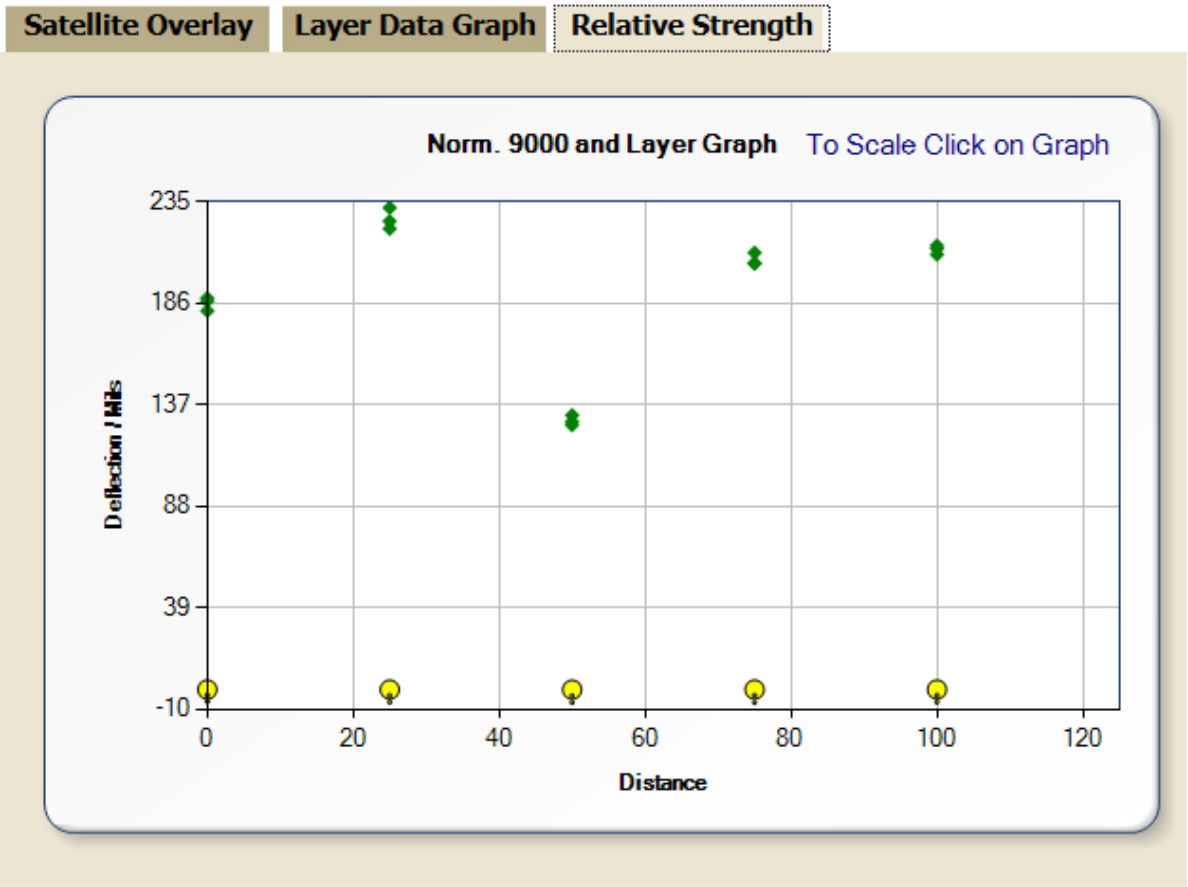
File Quality: 9.61 **Number of Drops: 15**

Operator: Trevor Toholka
Date: 04/02/2012 12:38:59

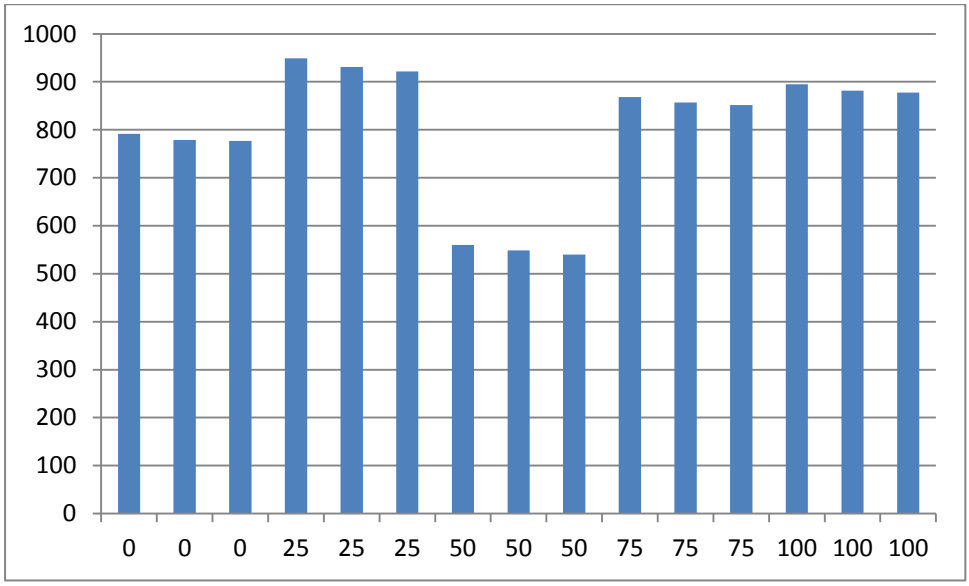
Satellite Overlay | Layer Data Graph | Relative Strength

Satellite Overlay | Layer Data Graph | Relative Strength



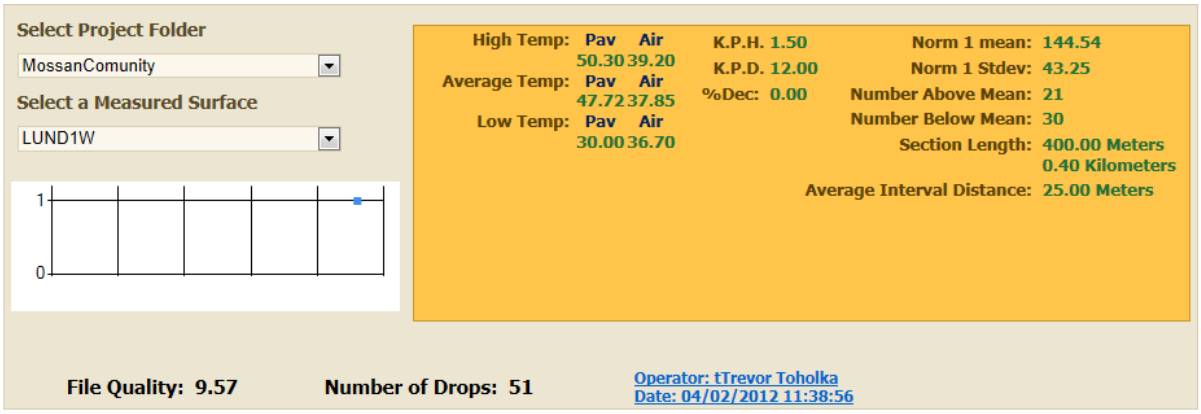


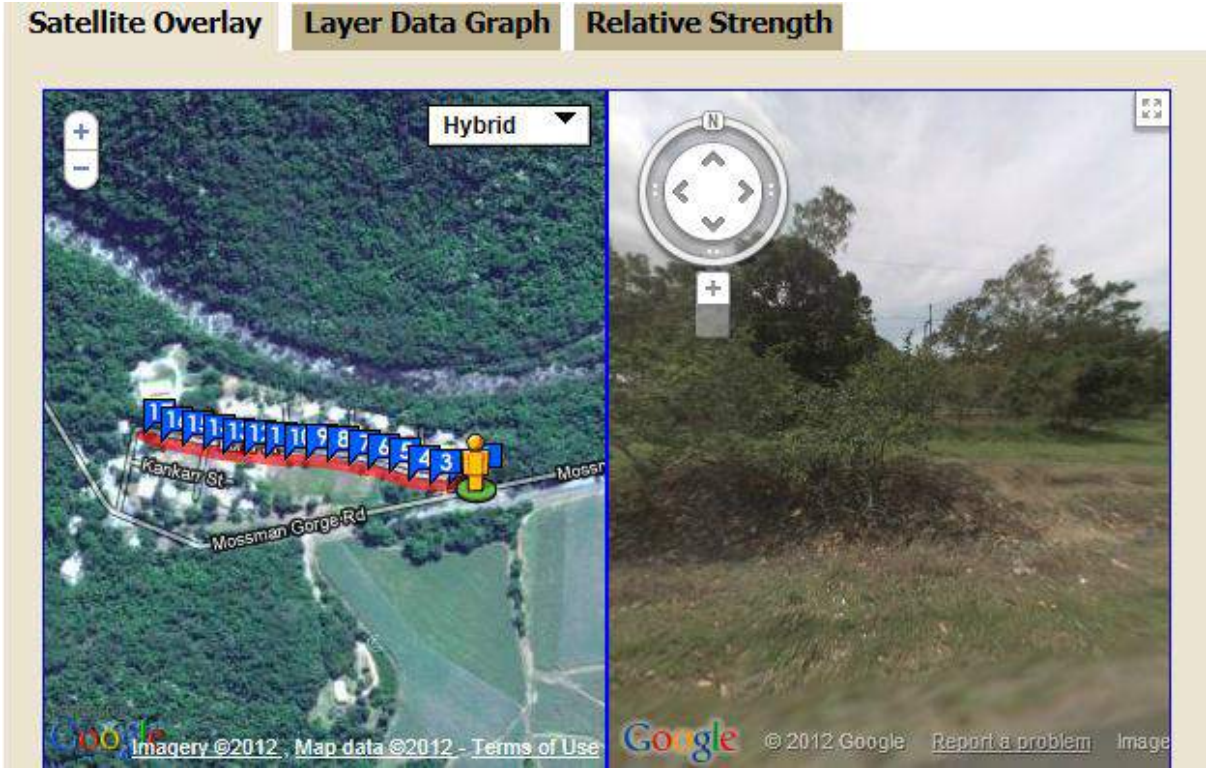
Deflection Graph



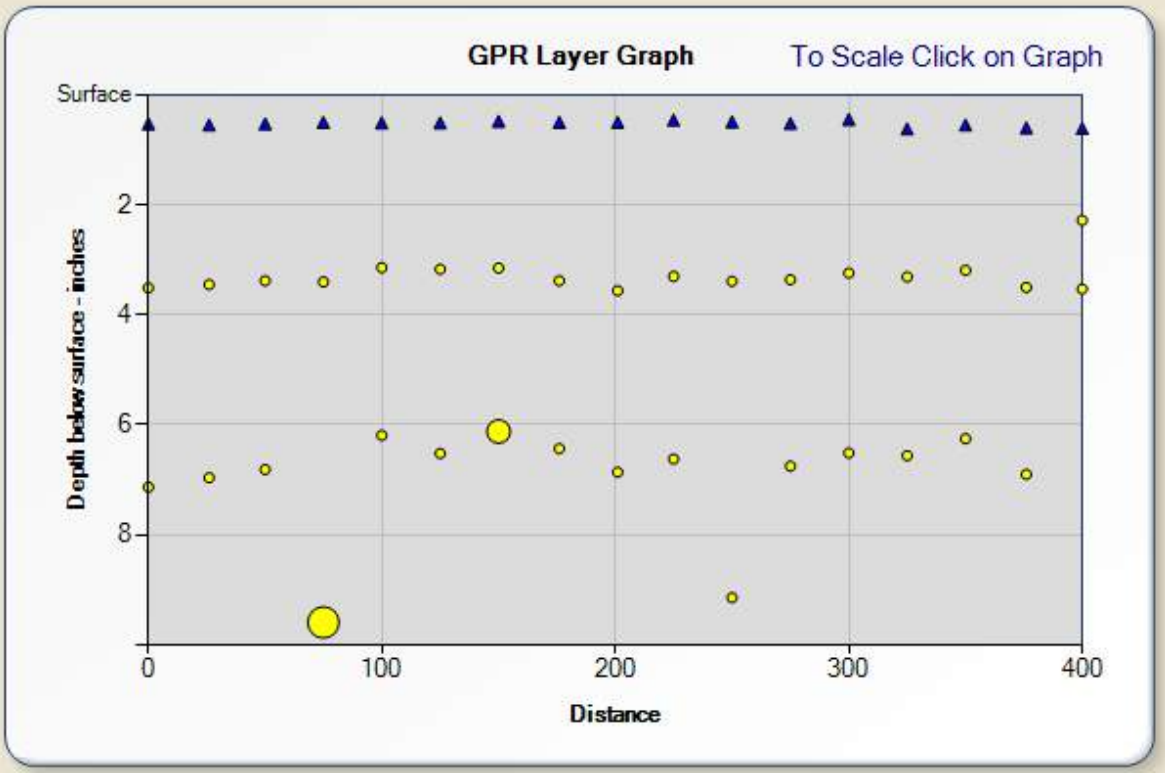
Lund St

Track 1W

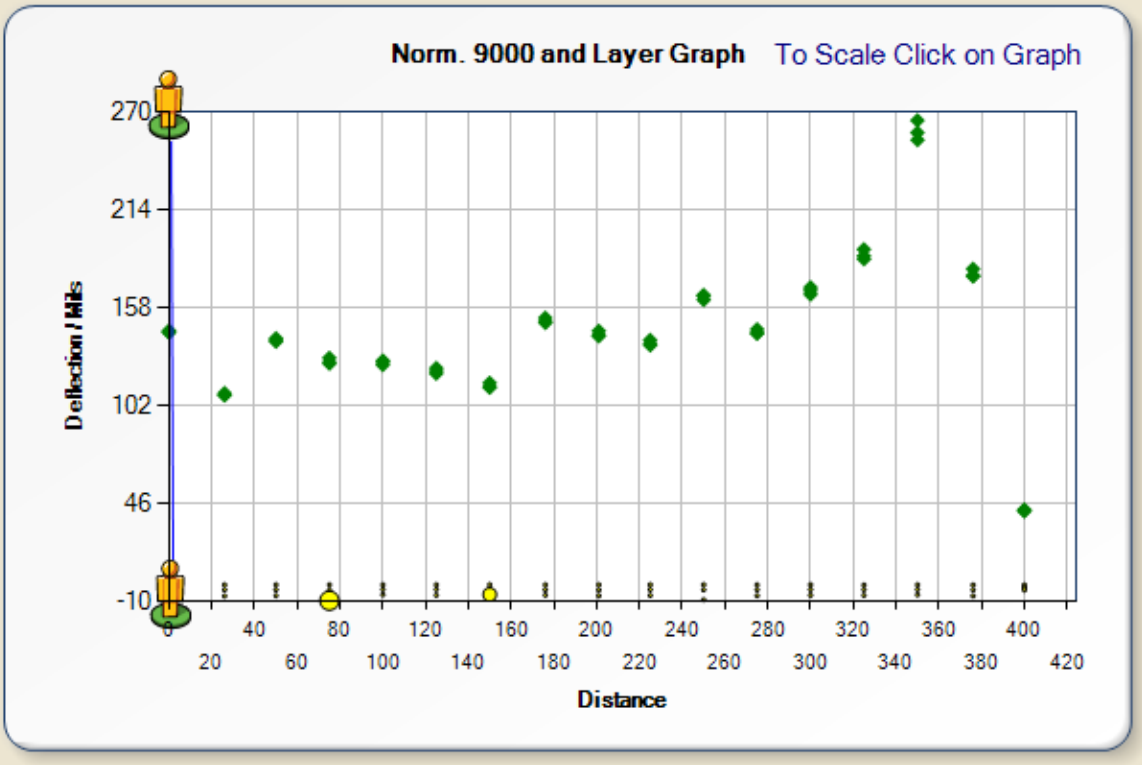




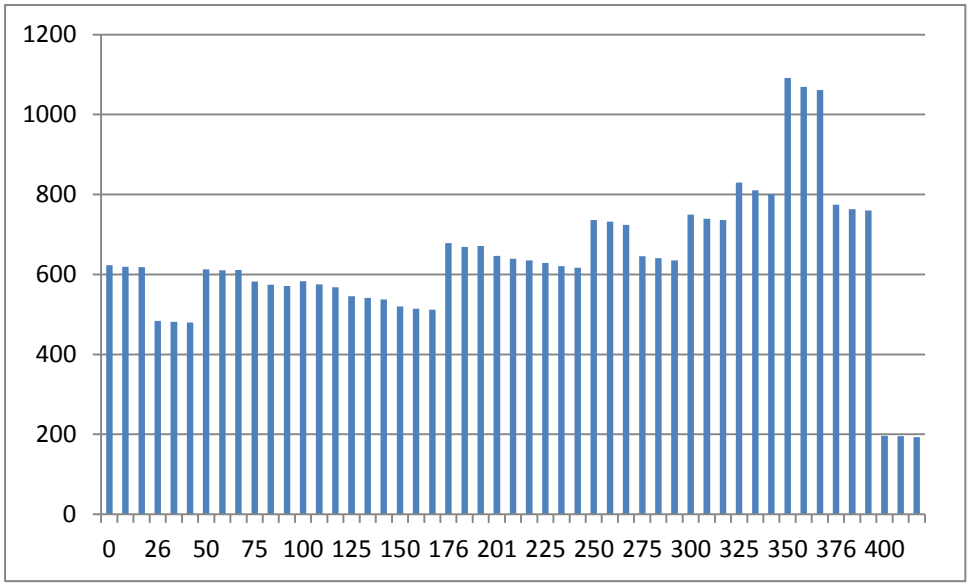
Satellite Overlay | Layer Data Graph | Relative Strength



Satellite Overlay | Layer Data Graph | Relative Strength



Deflection Graph



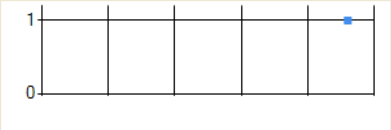
Track 2W

Select Project Folder

MossanComunity

Select a Measured Surface

LUND2W



	Pav	Air
High Temp:	50.90	42.50
Average Temp:	47.57	40.91
Low Temp:	35.00	39.20

K.P.H. 1.41
K.P.D. 11.29
%Dec: 0.00

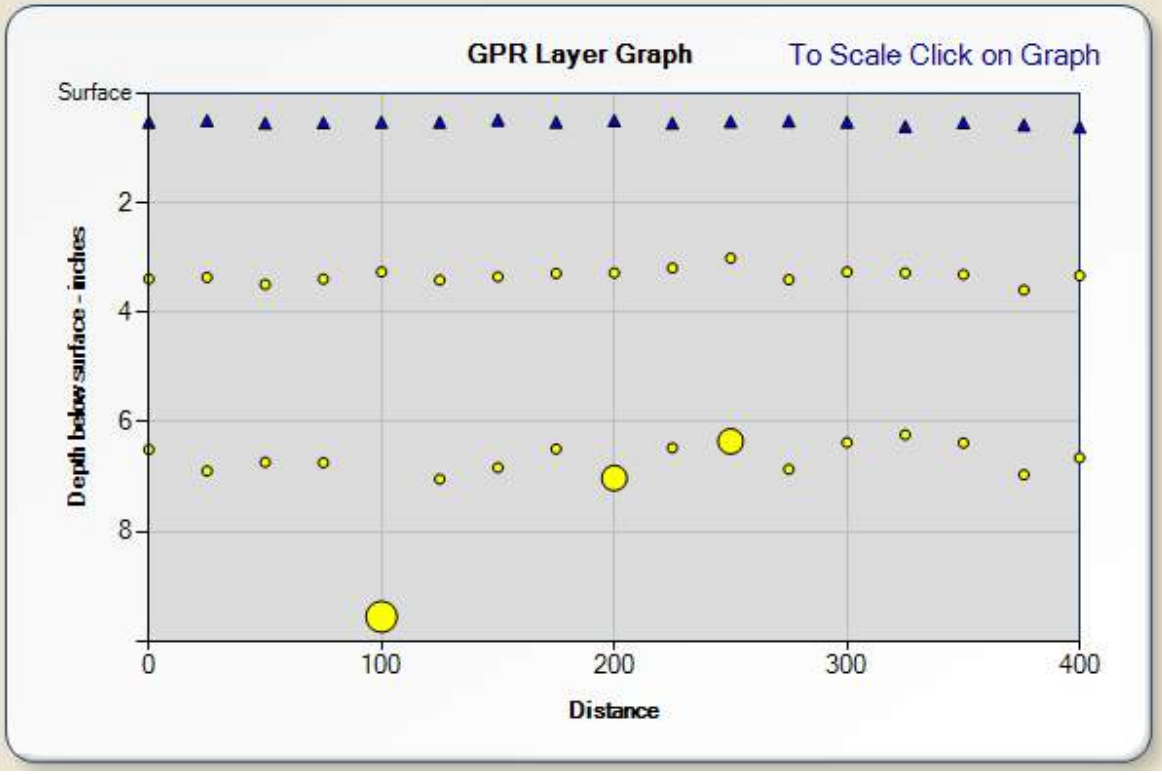
Norm 1 mean: 164.12
Norm 1 Stdev: 41.64
Number Above Mean: 24
Number Below Mean: 27
Section Length: 400.00 Meters
0.40 Kilometers
Average Interval Distance: 25.00 Meters

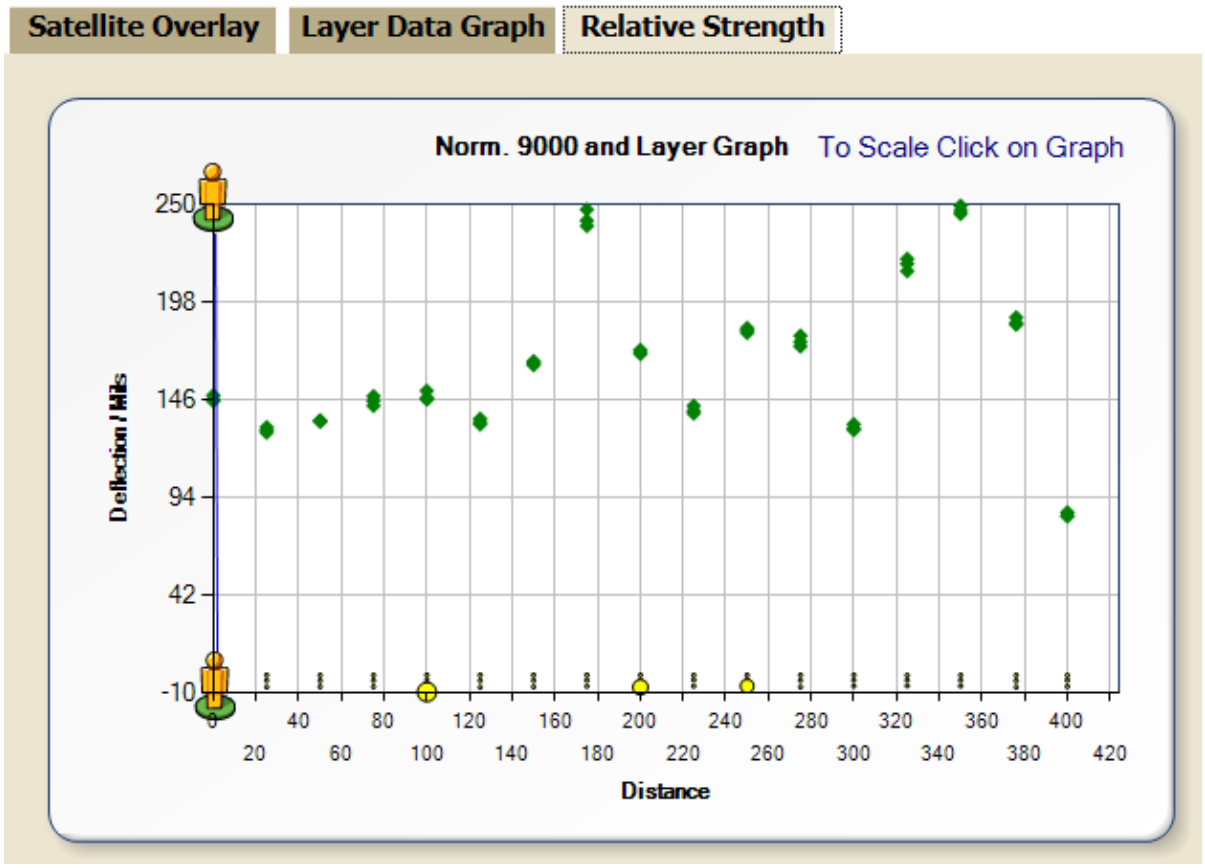
File Quality: 9.82 **Number of Drops: 51**

Operator: Trevor Toholka
Date: 04/02/2012 12:06:01

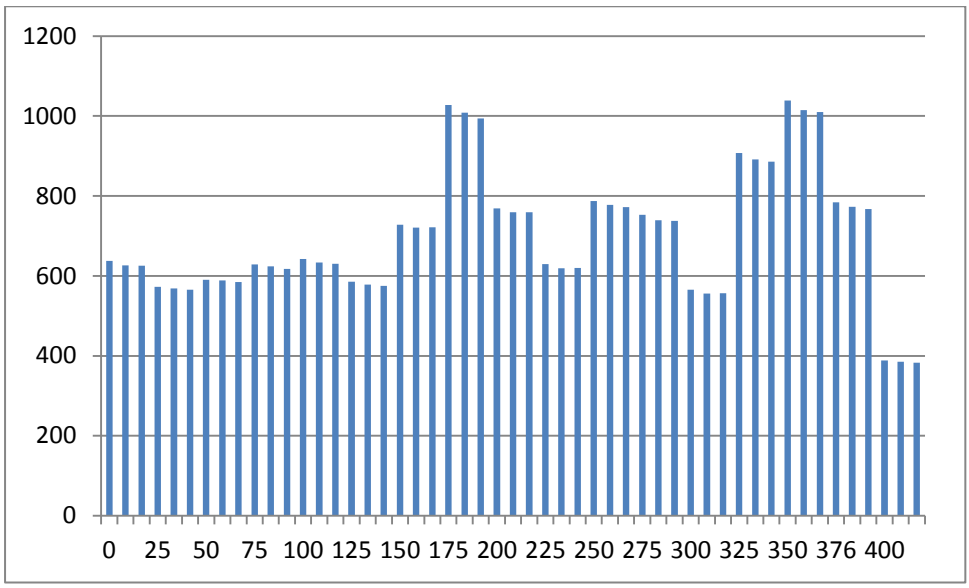
Satellite Overlay | Layer Data Graph | Relative Strength

Satellite Overlay | Layer Data Graph | Relative Strength



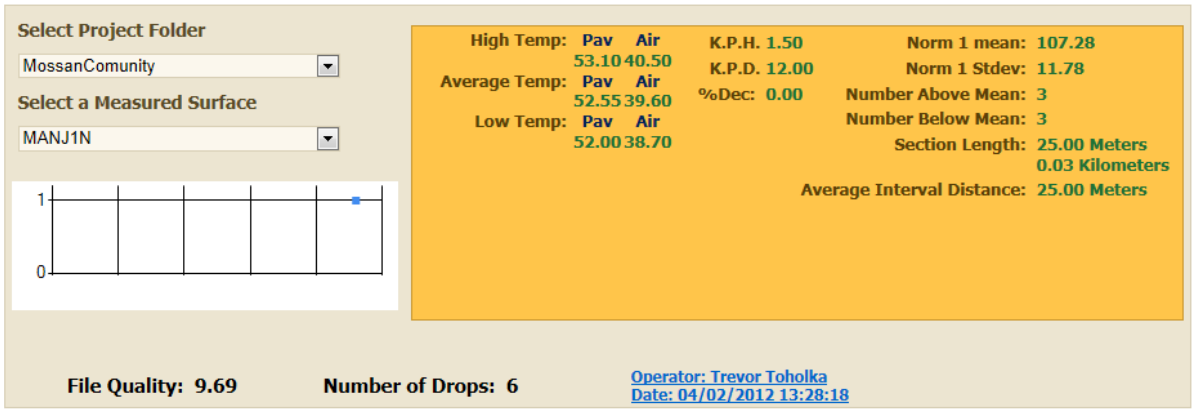


Deflection Graph

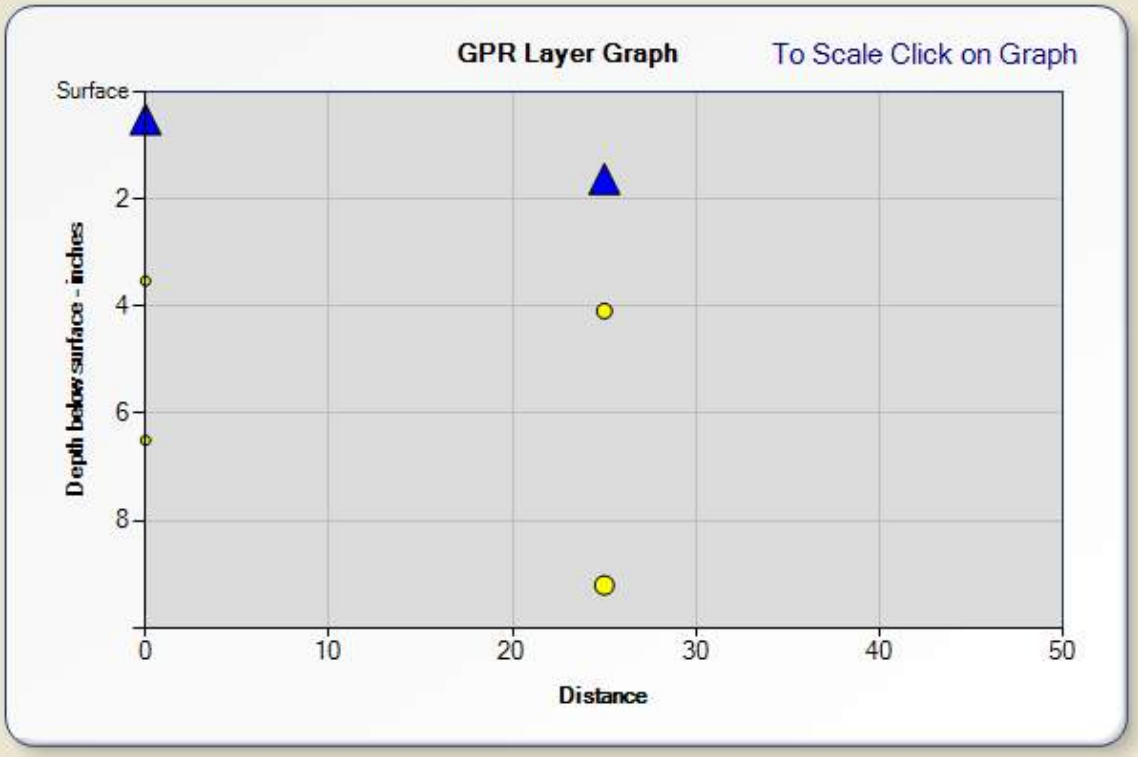


Manjal St

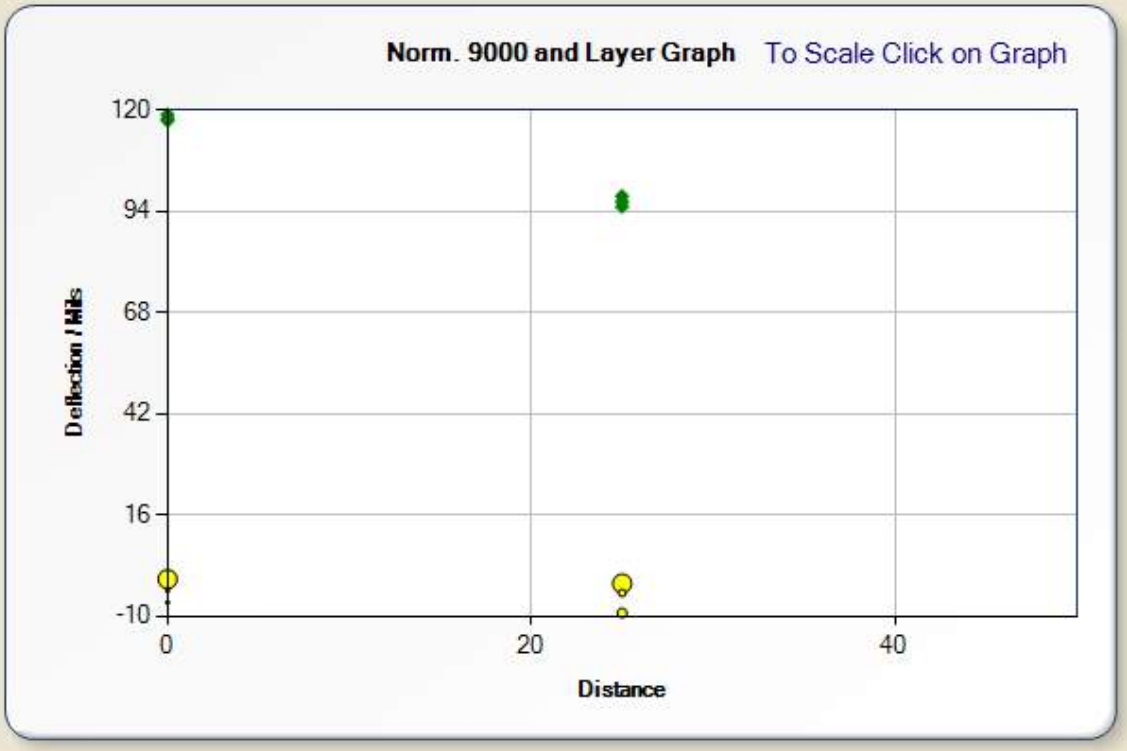
Track 1N



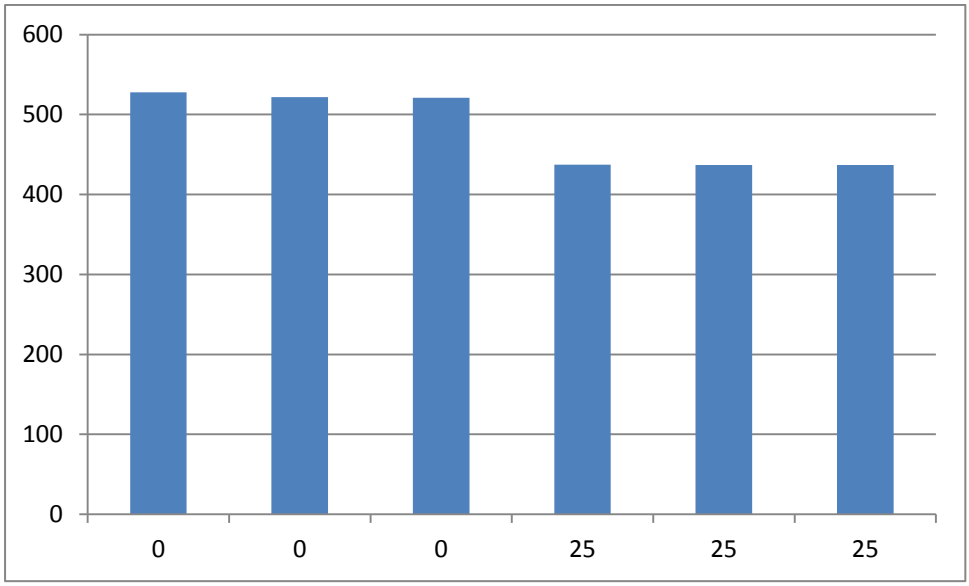
Satellite Overlay | Layer Data Graph | Relative Strength



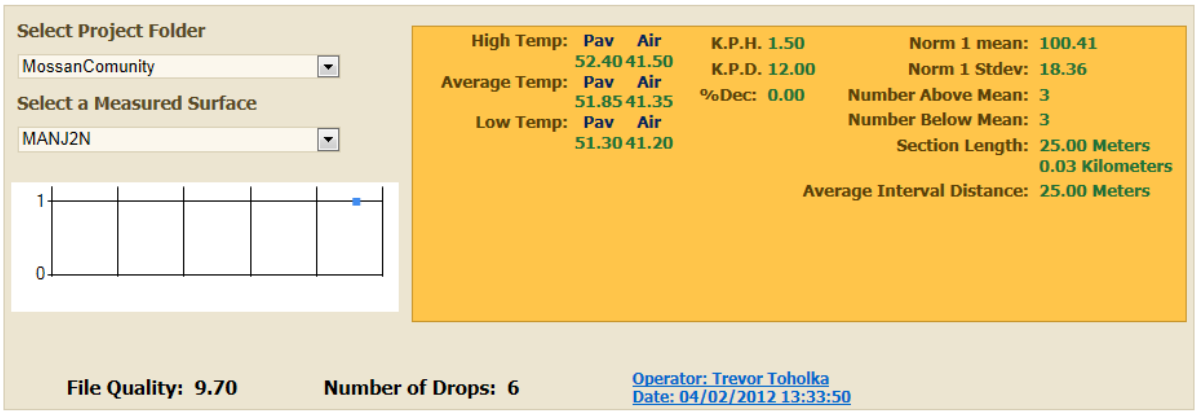
Satellite Overlay | Layer Data Graph | Relative Strength



Deflection Graph

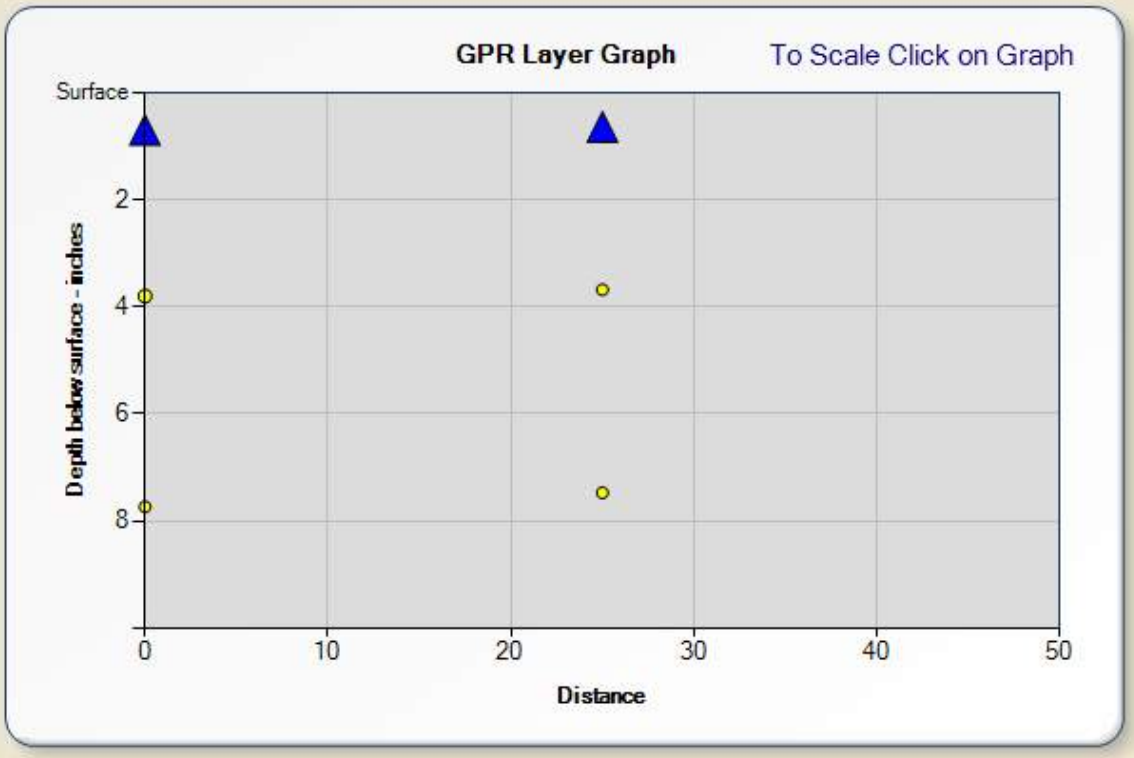


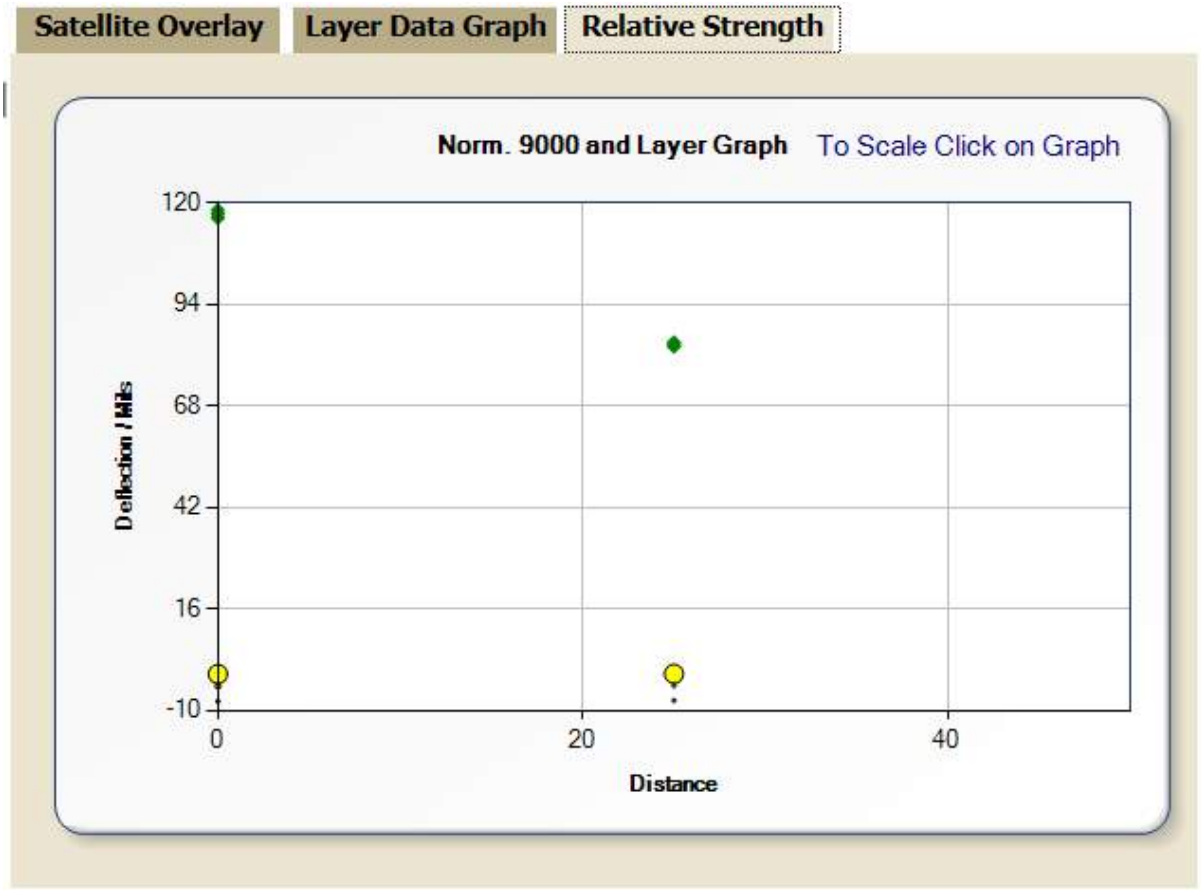
Track 2N



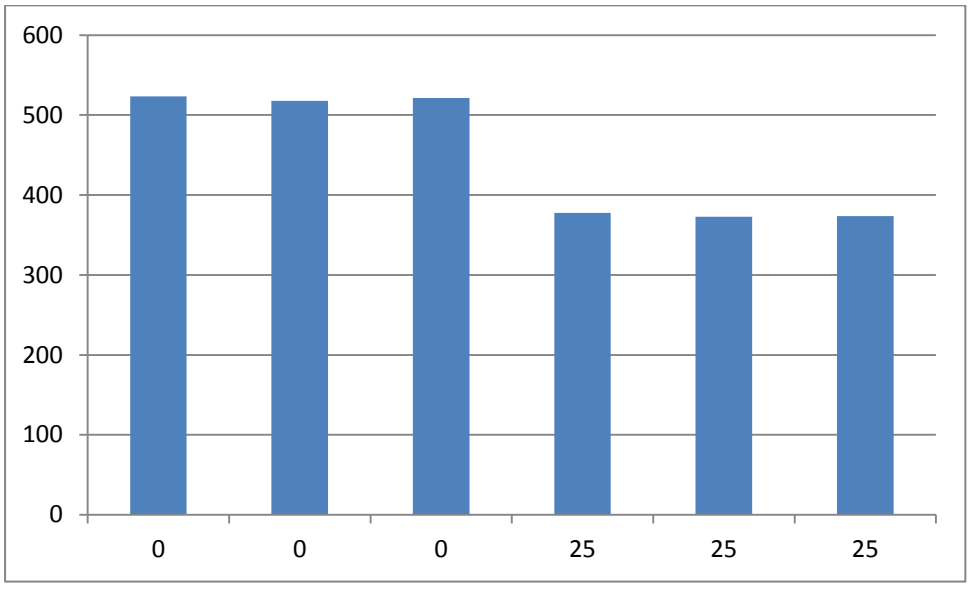
Satellite Overlay | Layer Data Graph | Relative Strength

Satellite Overlay | Layer Data Graph | Relative Strength



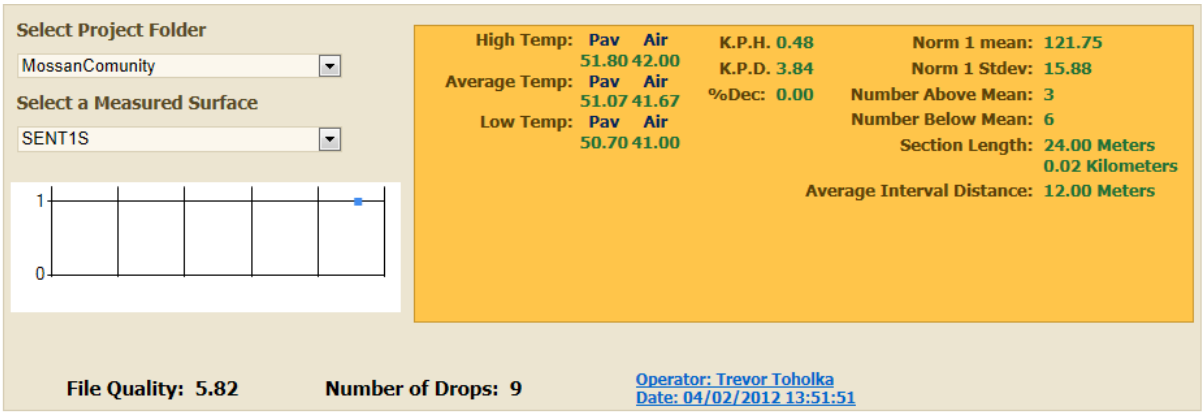


Deflection Graph

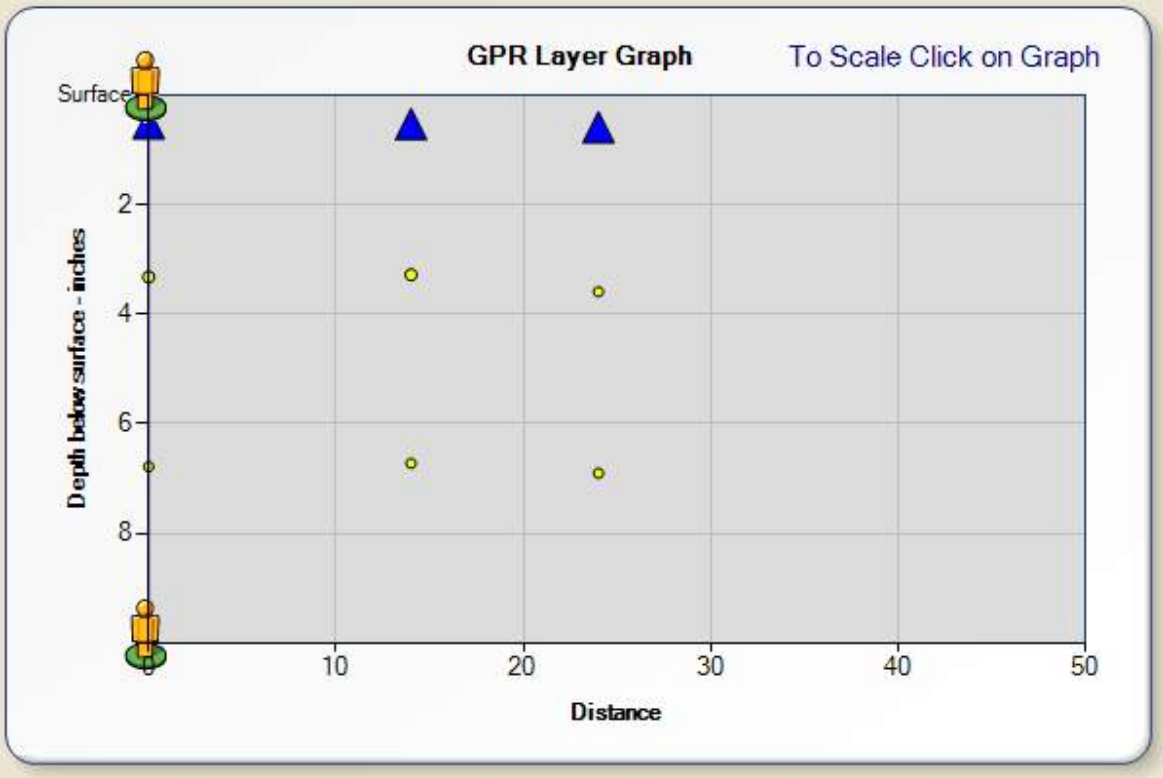


Sth Entrance

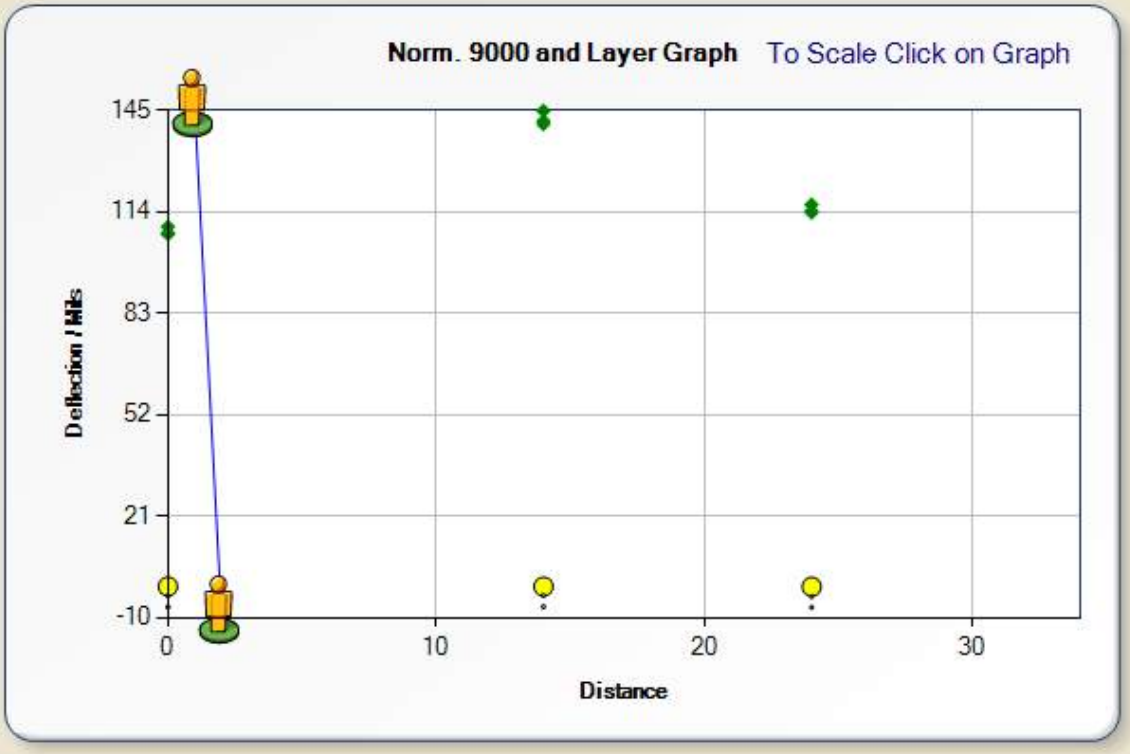
Track 1S



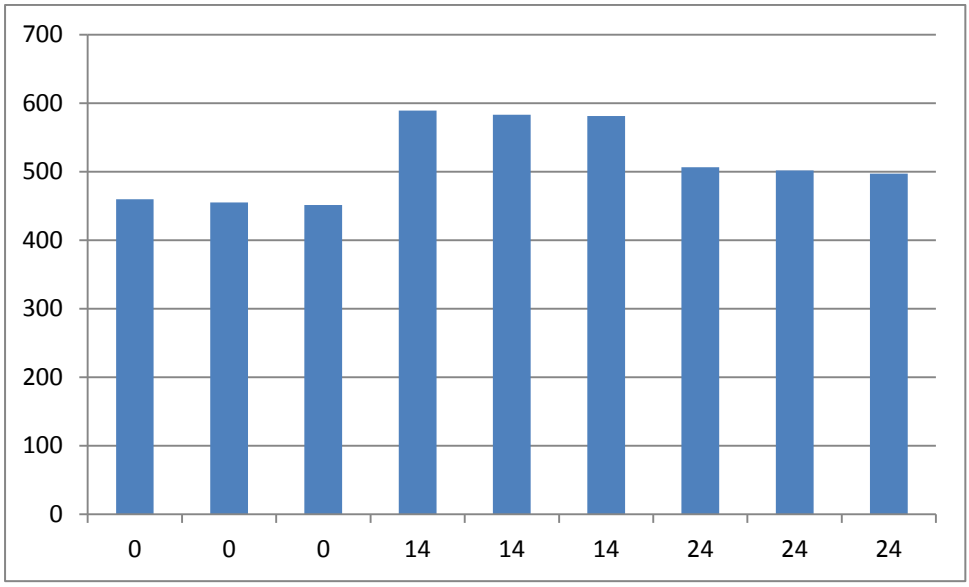
Satellite Overlay | Layer Data Graph | Relative Strength



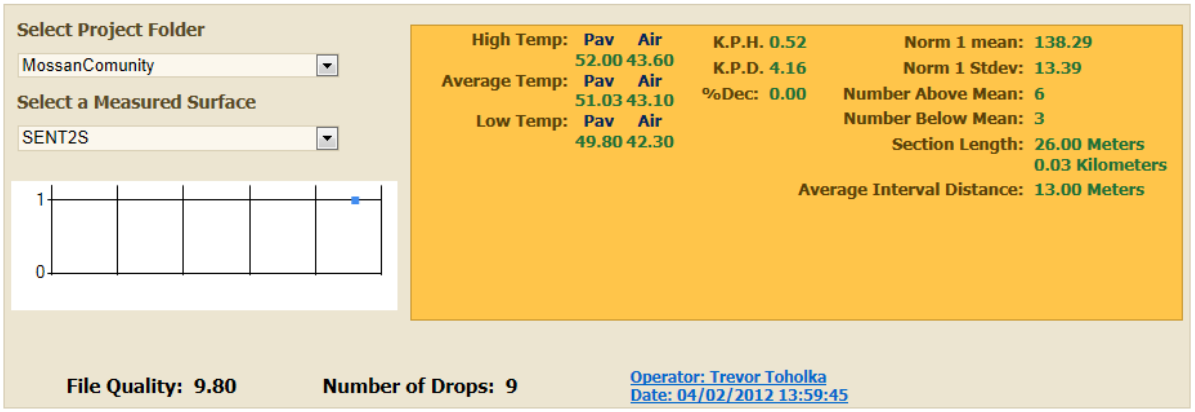
Satellite Overlay | Layer Data Graph | Relative Strength



Deflection Graph

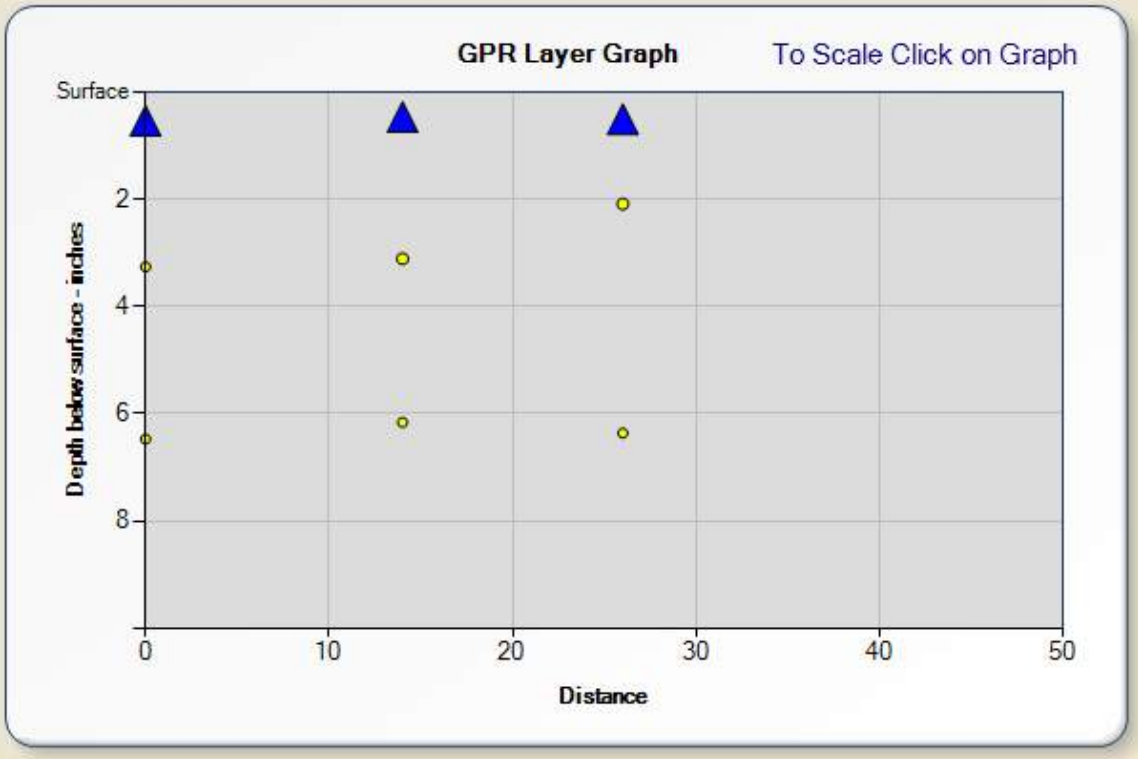


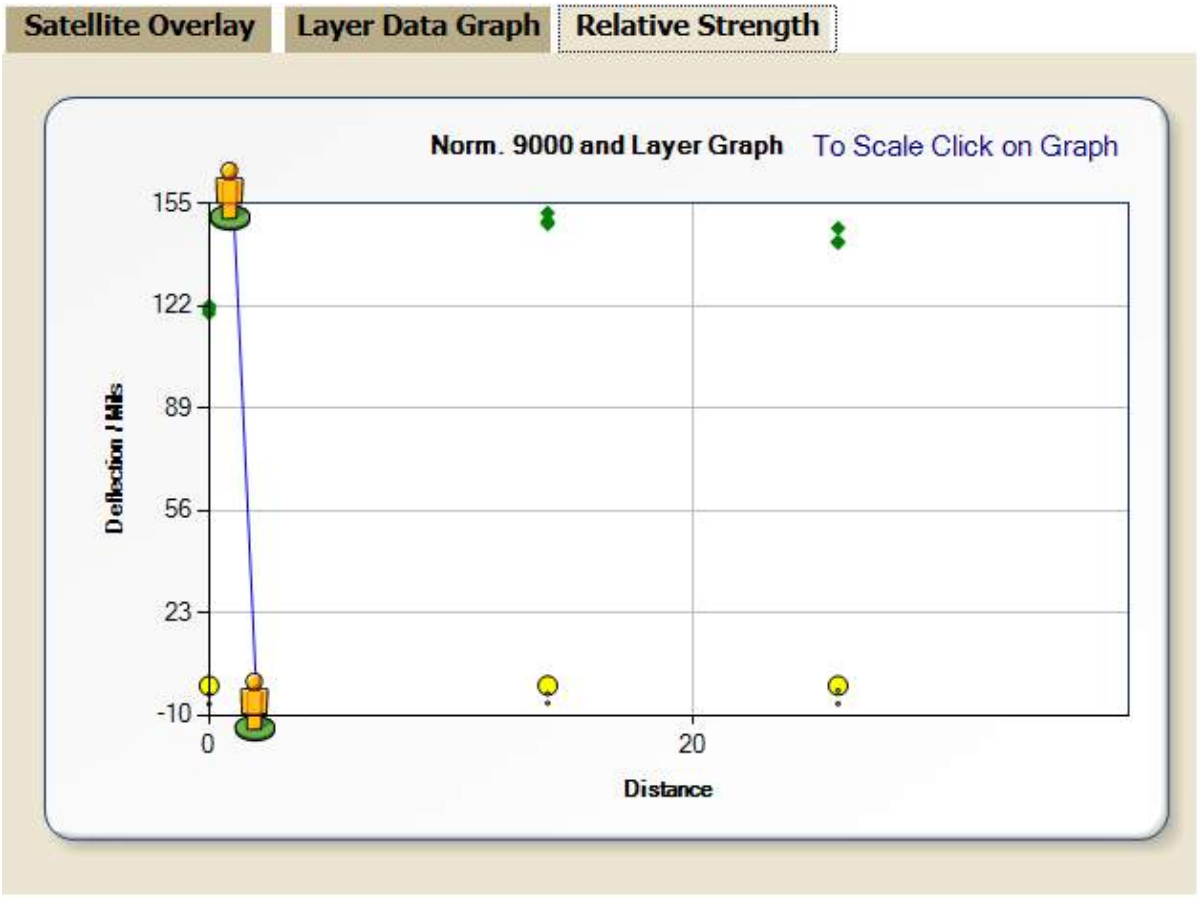
Track 2S



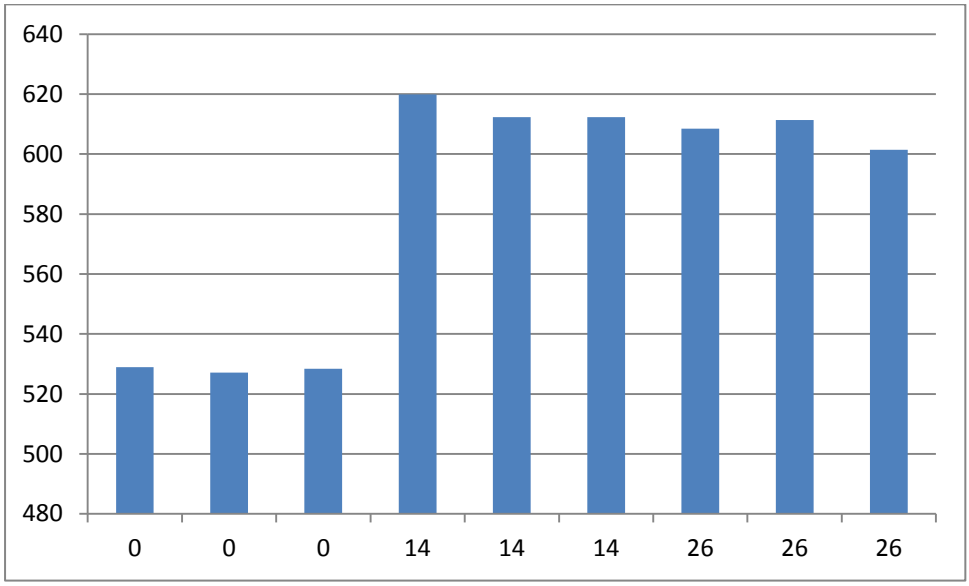
Satellite Overlay | Layer Data Graph | Relative Strength

Satellite Overlay | Layer Data Graph | Relative Strength



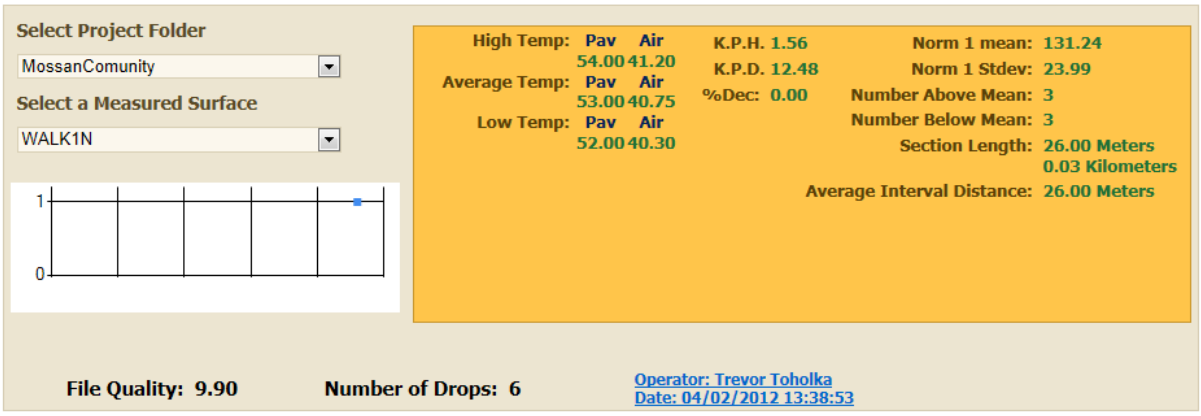


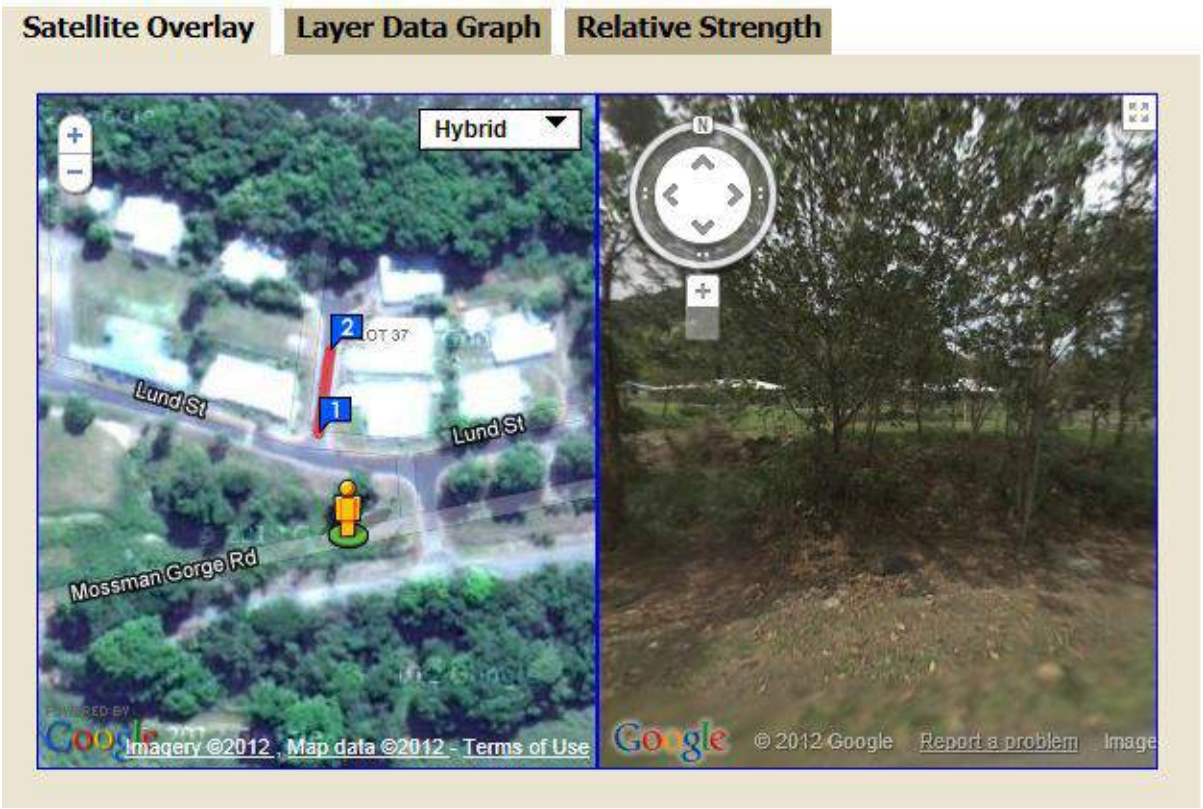
Deflection Graph



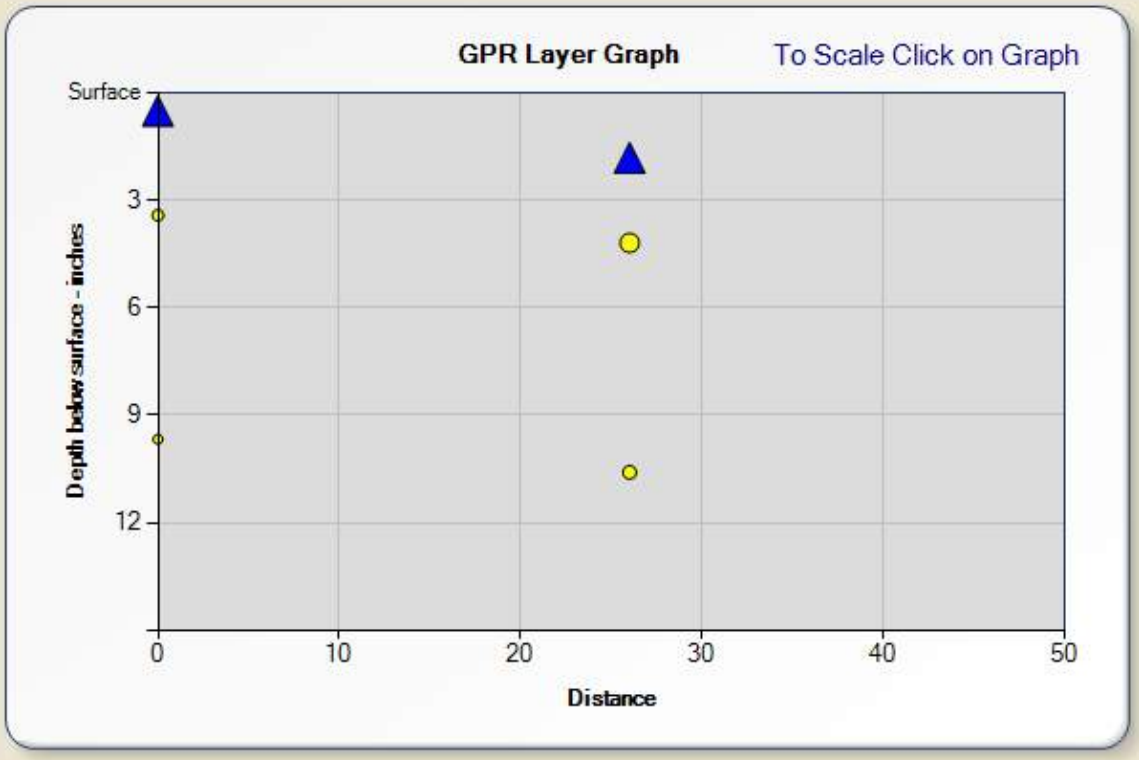
Walkarr St

Track 1N

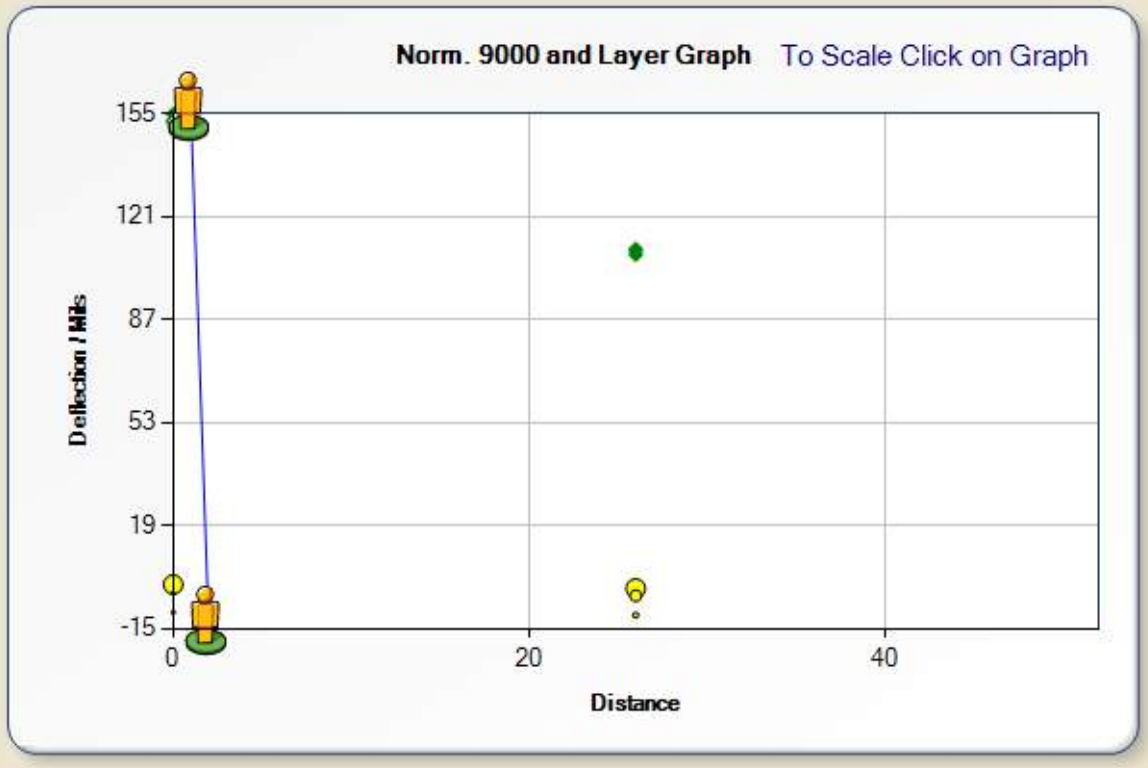




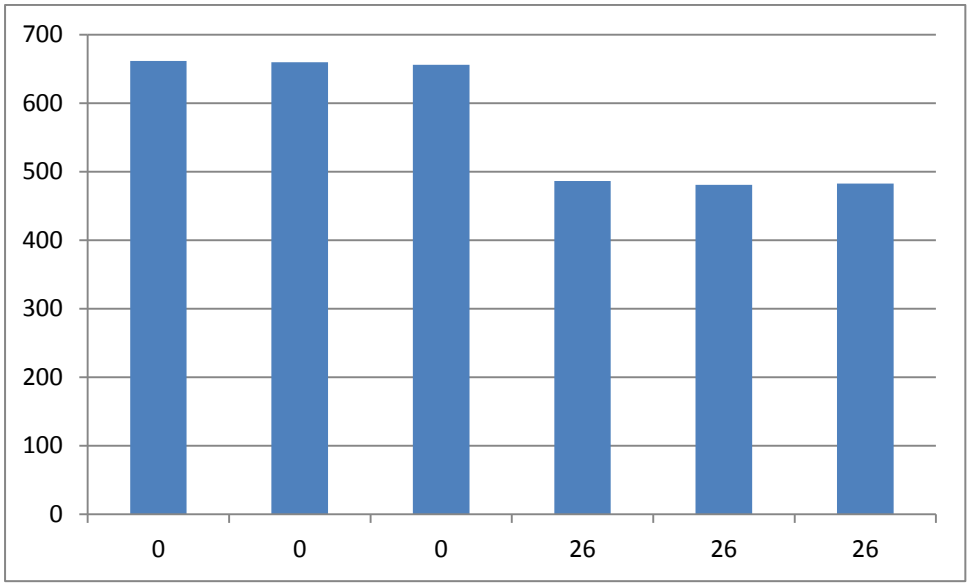
Satellite Overlay | Layer Data Graph | Relative Strength



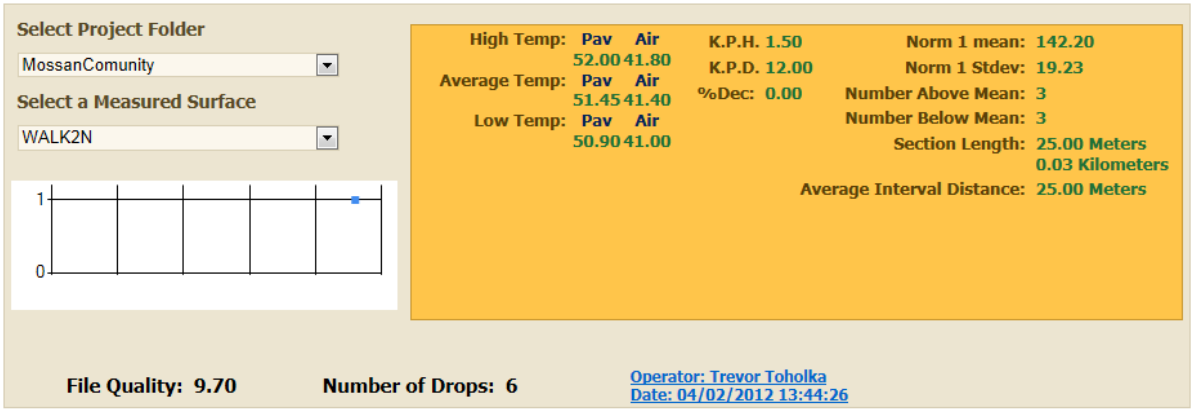
Satellite Overlay | Layer Data Graph | Relative Strength



Deflection Graph

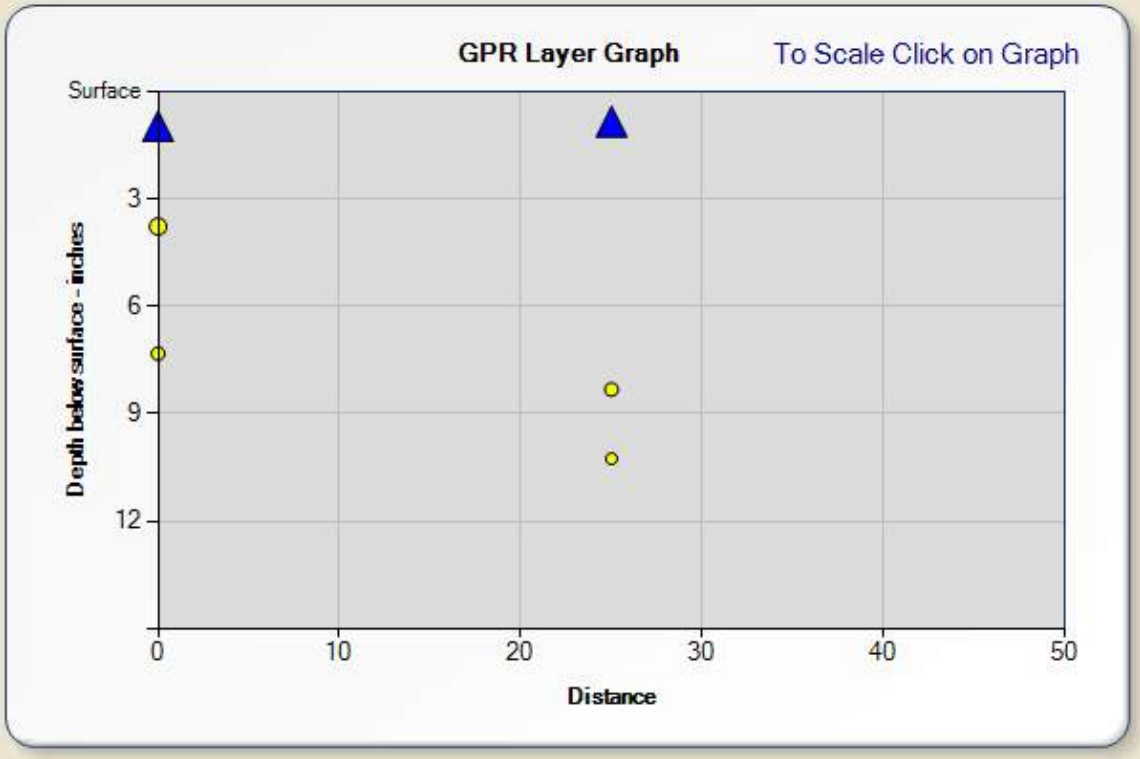


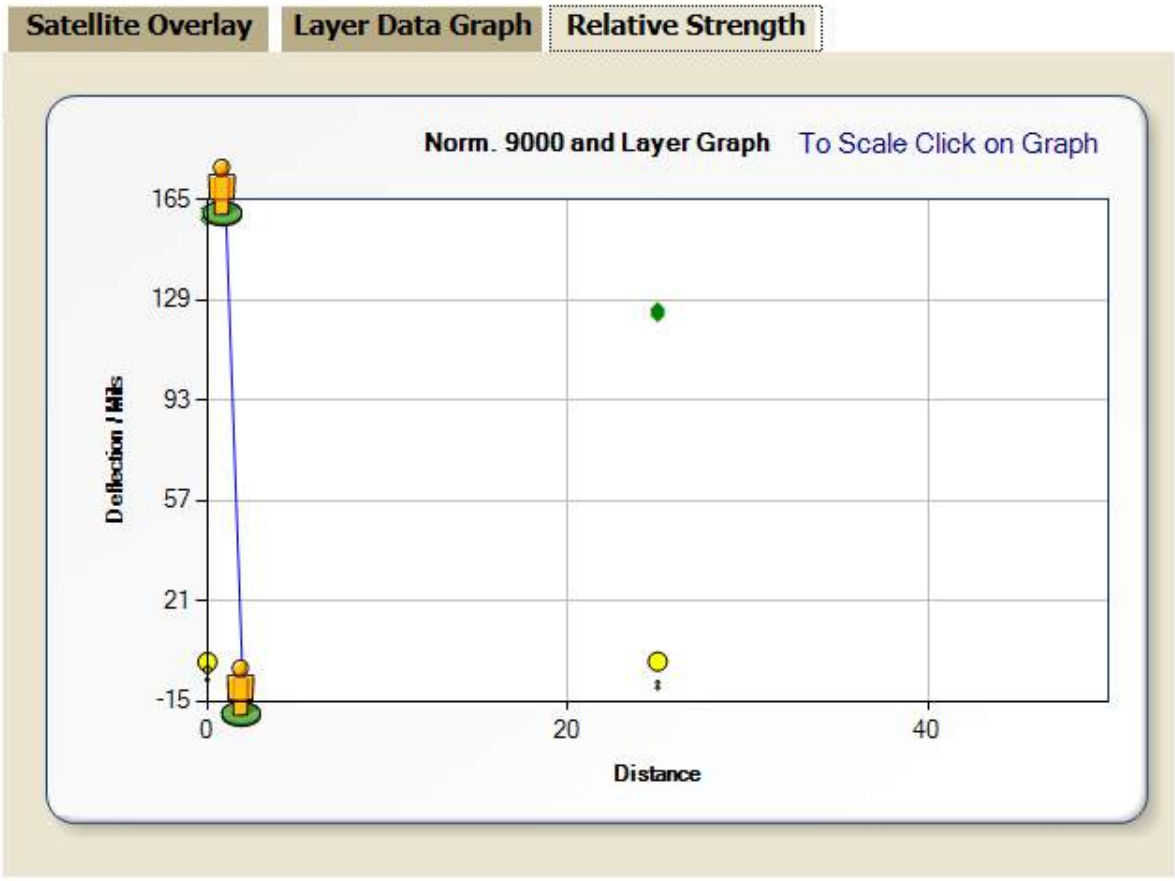
Track 2N



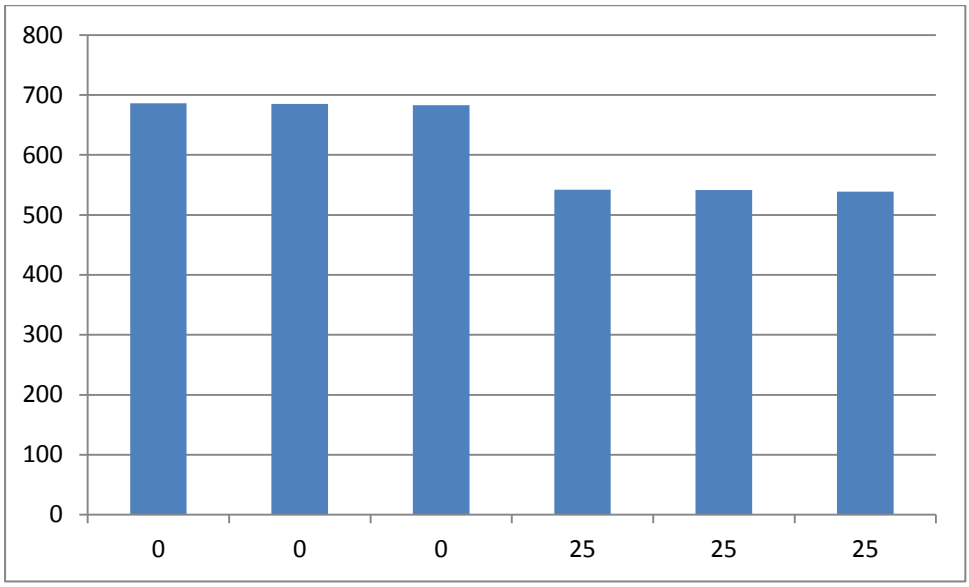
Satellite Overlay | Layer Data Graph | Relative Strength

Satellite Overlay | Layer Data Graph | Relative Strength





Deflection Graph



Attachment 8

Drainage Infrastructure condition assessment results

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**1**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**not cleaned**				

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**West Entrance**
Location:	**Culvert 1**	Asset Owner:		Downstream MH.:	**East Entrance**
Location type:		Tape No.:		Section length :	**7.75 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Rectangular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**2000 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:75	Position	Observation
East Entrance	0.00	Start node, outfall, Nodename: East Entrance
	0.00	Water level, clear flow (the invert is visible), depth 0%
	4.69	Spalling of the conduit fabric, bricks, localized chipping of one or more of each , Obstruction: <5% , at 12 o'clock
	7.75	Inspection (survey) abandoned, obstruction , Large Rocks

4.69 m

7.75 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Tel:
Fax:
Email:

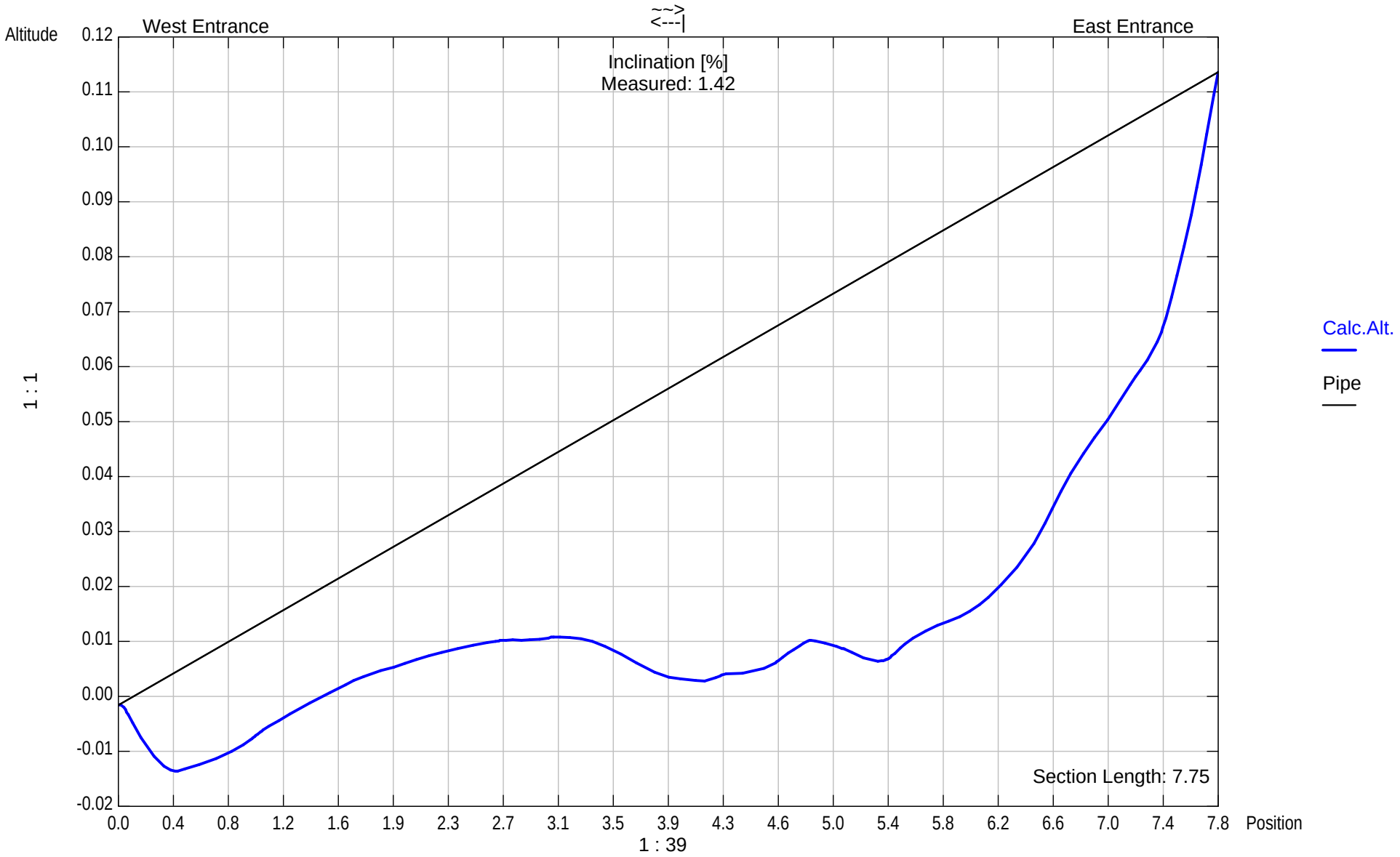
Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Culvert 1	**Mossman Community**	**26/04/2012**	**1**	

Photo: 1_1_4_A.JPG
4.69m, Spalling of the conduit fabric, bricks, localized chipping of one or more of each , Obstruction: <5% , at 12 o'clock

Photo: 1_1_5_A.JPG
7.75m, Inspection (survey) abandoned, obstruction , Large Rocks

Location: **C.R.C.** Street: **Mossman Gorge Road** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Rectangular** Pipe height: **0.00** Pipe width: **2000.00**

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

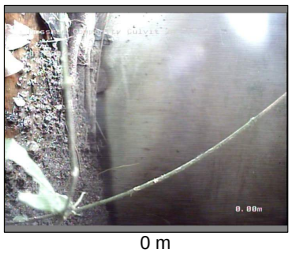
Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**2**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**cleaned**				

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**West Entrance**
Location:	**Culvert 2A**	Asset Owner:		Downstream MH.:	**East Entrance**
Location type:		Tape No.:		Section length :	**0.44 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Rectangular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**1000 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:50	Position	Observation
East Entrance	0.00	Start node, outfall, Nodename: East Entrance
	0.00	Water level, clear flow (the invert is visible), depth 0%
	0.00	Tap roots, reduction in cross sectional area , Obstruction: 5-20% , at 8 o'clock
	0.44	Inspection (survey) abandoned, roots, mass of large Roots


0 m


0.44 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**10**	**22.73**	**10**	**5**

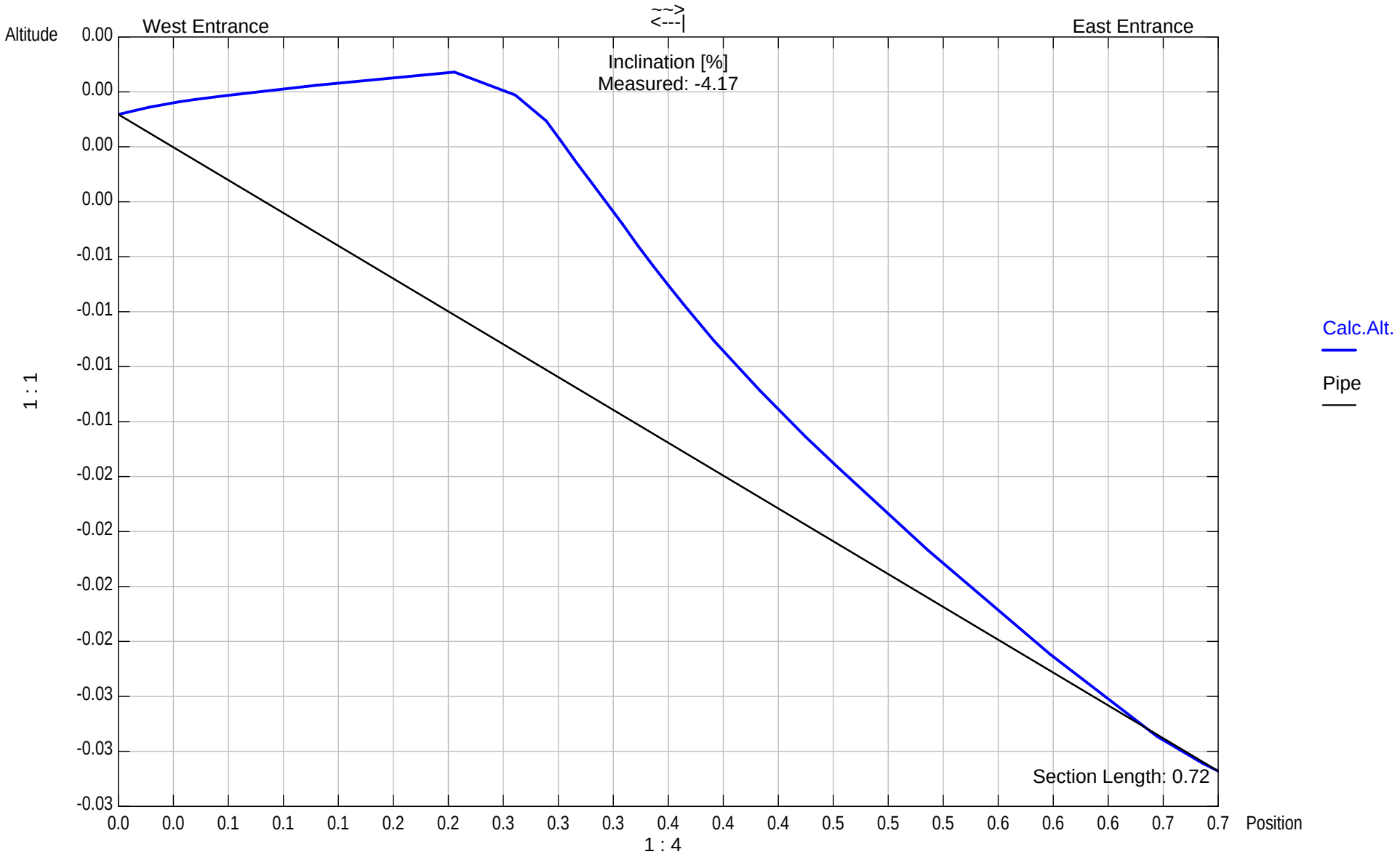
Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Culvert 2A	**Mossman Community**	**26/04/2012**	**2**	

Photo: 2_3_8_A.JPG
0m, Tap roots, reduction in cross sectional area , Obstruction: 5-20% , at 8 o'clock

Photo: 2_3_9_A.JPG
0.44m, Inspection (survey) abandoned, roots, mass of large Roots

Location: **C.R.C.** Street: **Culvit 2A** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Rectangular** Pipe height: **0.00** Pipe width: **1000.00**

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**3**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**cleaned**				

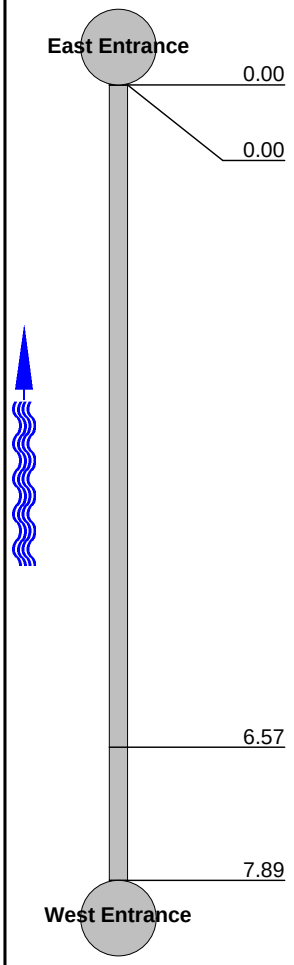
Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**West Entrance**
Location:	**Culvert 2B**	Asset Owner:		Downstream MH.:	**East Entrance**
Location type:		Tape No.:		Section length :	**7.89 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Rectangular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**1000 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:75 **Position** **Observation**


6.57 m



0.00 Start node, outfall, Nodename: East Entrance

0.00 Water level, clear flow (the invert is visible), depth 5%

6.57 Joint displaced radially, radial displacement 10-20mm , at 12 o'clock

7.89 Finish node, outfall or culvert headwall, Nodename: West Entrance

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

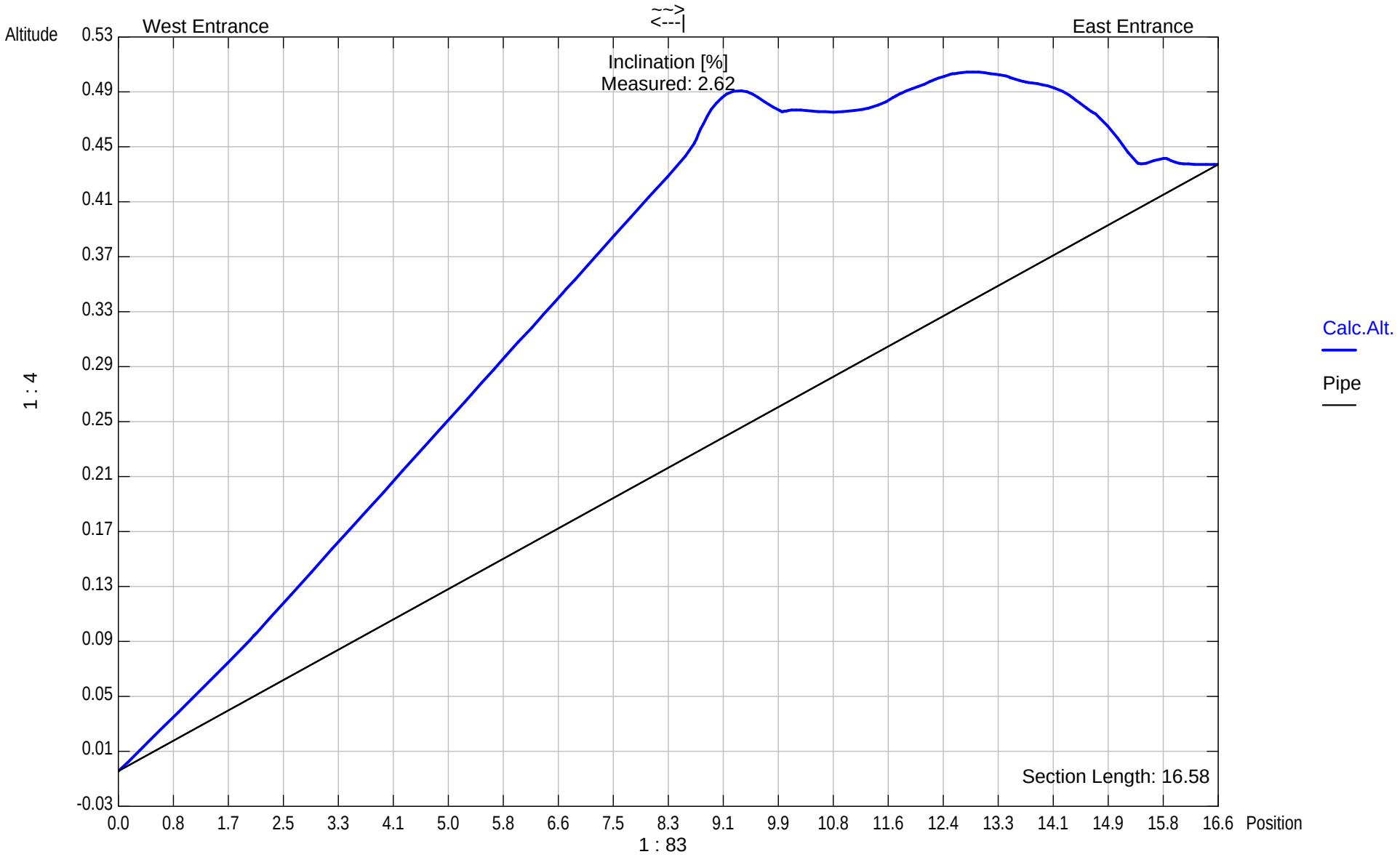
Tel:
Fax:
Email:

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Culvert 2B	**Mossman Community**	**26/04/2012**	**3**	

Photo: 3_4_12_A.JPG
6.57m, Joint displaced radially, radial displacement 10-20mm , at 12 o'clock

Location: **C.R.C.** Street: **Culvit 2B** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Rectangular** Pipe height: **0.00** Pipe width: **1000.00**

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**4**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**cleaned**				

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**West Entrance**
Location:	**Culvert 2C**	Asset Owner:		Downstream MH.:	**East Entrance**
Location type:		Tape No.:		Section length :	**0.43 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Rectangular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**1000 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:50	Position	Observation
East Entrance	0.00	Start node, outfall, Nodename: East Entrance
	0.00	Water level, clear flow (the invert is visible), depth 0%
	0.43	Tap roots, reduction in cross sectional area , Obstruction: 5-20% , from 3 to 9 o'clock
	0.43	Inspection (survey) abandoned, obstruction , Mass Large Roots

0.43 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**10**	**23.26**	**10**	**5**

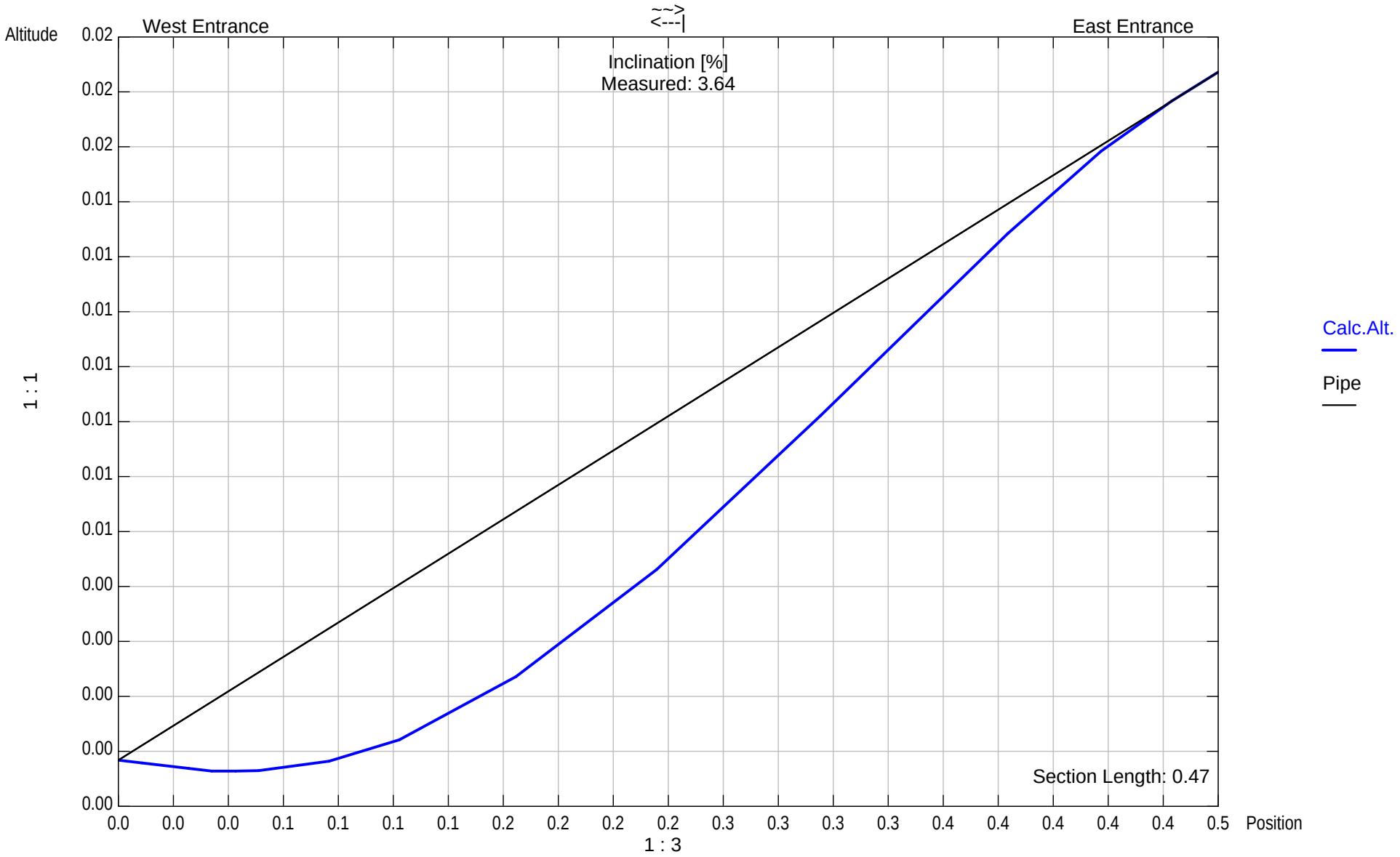
Tel:
Fax:
Email:

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Culvert 2C	**Mossman Community**	**26/04/2012**	**4**	

Photo: 4_5_17_A.JPG
0.43m, Inspection (survey) abandoned, obstruction , Mass Large Roots

Location: **C.R.C.** Street: **Culvit 2C** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Rectangular** Pipe height: **0.00** Pipe width: **1000.00**

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**7**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**cleaned**				

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**MH 1**
Location:	**Line 1**	Asset Owner:		Downstream MH.:	**Outfall**
Location type:		Tape No.:		Section length :	**15.80 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Circular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**375 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:135	Position		Observation
Outfall	0.00		Start node, outfall, Nodename: Outfall
	0.00		Water level, clear flow (the invert is visible), depth 0%
	0.45		Joint displaced longitudinaly, longitudinal displacement 10-20mm
	3.51	**S1**	Some coarse aggregate is visible , Obstruction: <5% , from 12 to 12 o'clock
	12.44		Joint displaced angular, angular displacement 5° , at 12 o'clock
	15.80	**E1**	Some coarse aggregate is visible , Obstruction: <5% , from 12 to 12 o'clock
MH 1	15.80		Finish node, maintenance hole, Nodename: MH 1

0.45 m

3.51 m

12.44 m

15.8 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	**2**	**0.16**	**2.5**	**1**	**0**	**0**	**0**	**0**	**1**

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 1	**Mossman Community**	**26/04/2012**	**7**	

Photo: 7_8_28_A.JPG
0.45m, Joint displaced longitudinaly, longitudinal displacement 10-20mm

Photo: 7_8_29_A.JPG
3.51m, Some coarse aggregate is visible , Obstruction: <5% , from 12 to 12 o'clock

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 1	**Mossman Community**	**26/04/2012**	**7**	

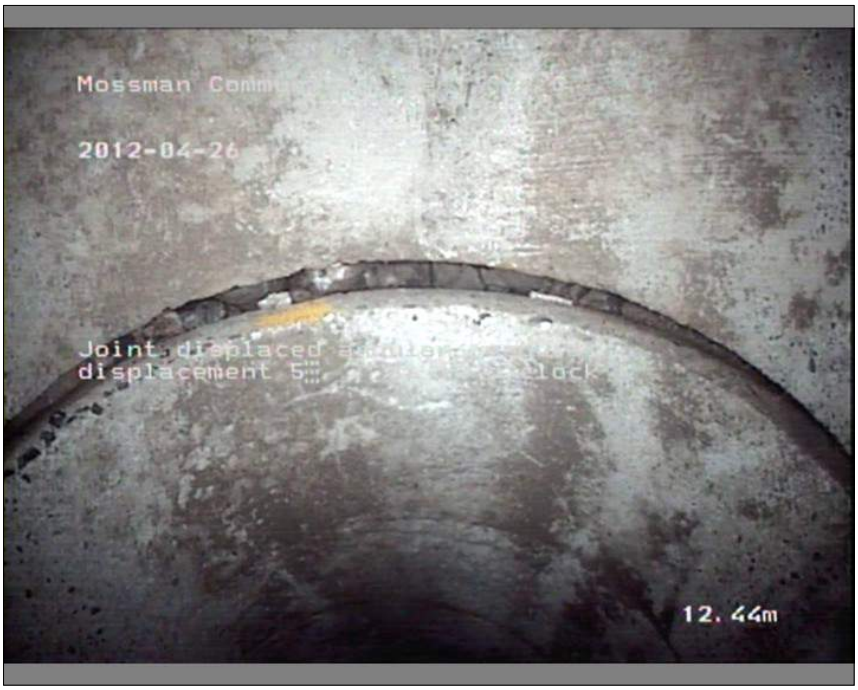
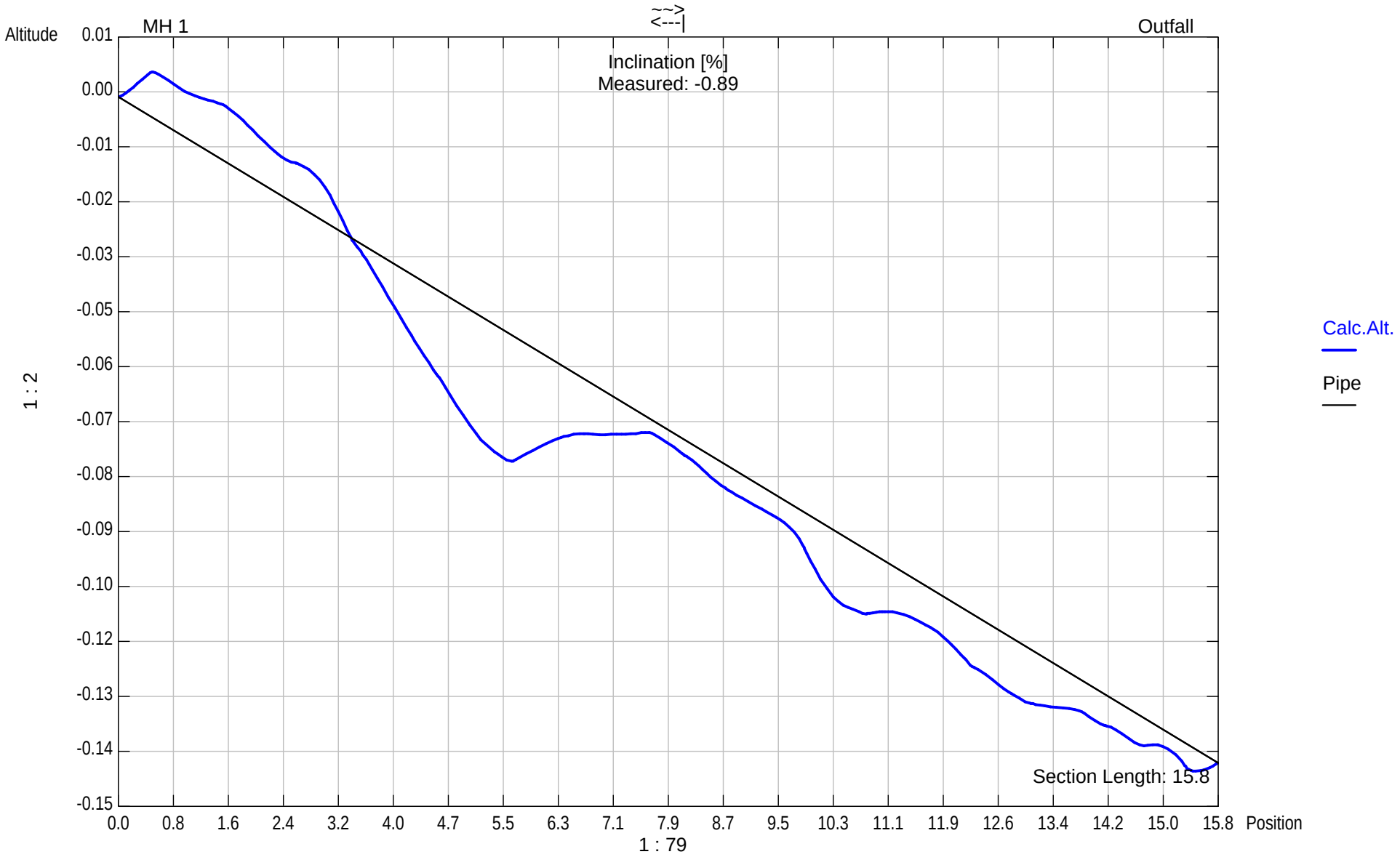


Photo: 7_8_30_A.JPG
12.44m, Joint displaced angular, angular displacement 5° , at 12 o'clock

Photo: 7_8_32_A.JPG
15.8m, Finish node, maintenance hole, Nodename: MH 1

Location: **C.R.C.** Street: **Line 1** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Circular** Pipe height: **0.00** Pipe width: **375.00**

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

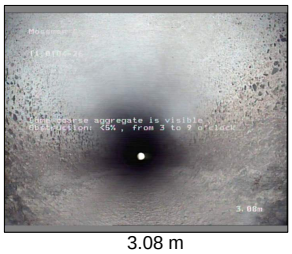
Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**8**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**cleaned**				

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**G.I.P. 1**
Location:	**Line 2**	Asset Owner:		Downstream MH.:	**Outfall**
Location type:		Tape No.:		Section length :	**11.79 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Circular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**375 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:105	Position	Observation
Outfall	0.00	Start node, outfall, Nodename: Outfall
	0.00	Water level, clear flow (the invert is visible), depth 0%
	3.08	Some coarse aggregate is visible , Obstruction: <5% , from 3 to 9 o'clock
	8.99	Joint displaced radially, radial displacement 10-20mm , at 12 o'clock
	11.79	Finish node, grated inlet pit, Nodename: G.I.P. 1
G.I.P. 1		



3.08 m

8.99 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	**2**	**0.34**	**4**	**1**	**0**	**0**	**0**	**0**	**1**

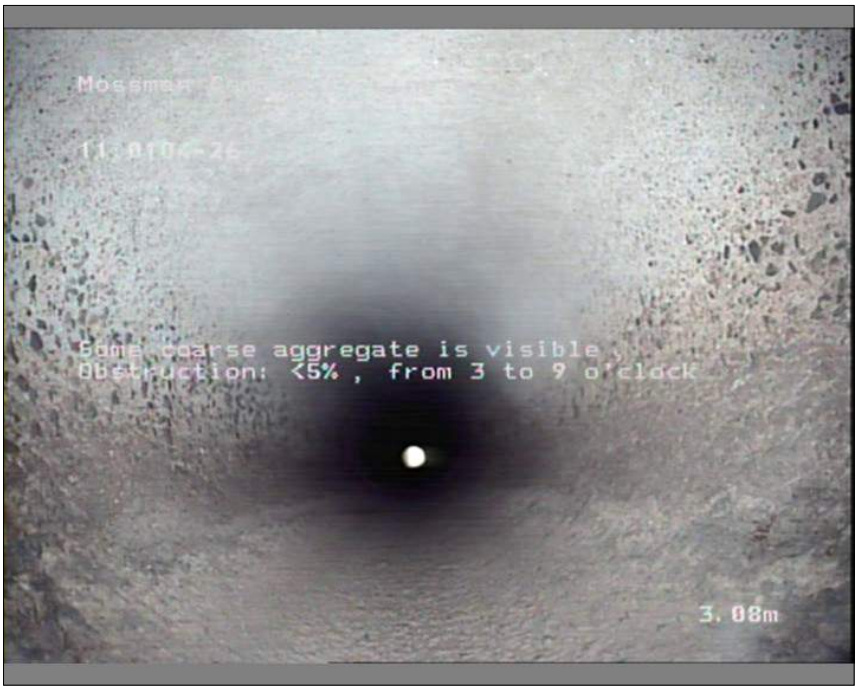
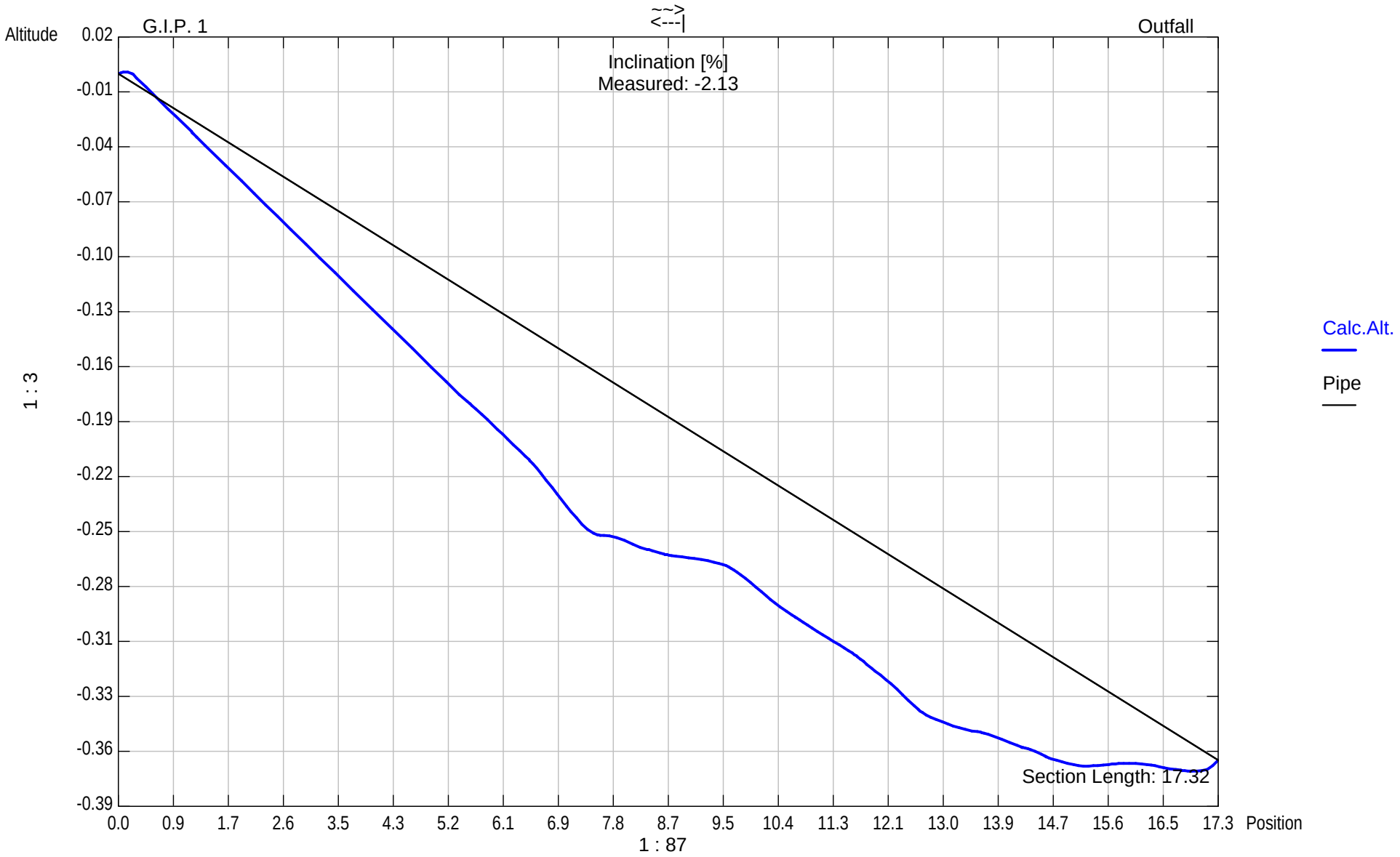


Photo: 8_9_35_A.JPG
3.08m, Some coarse aggregate is visible , Obstruction: <5% , from 3 to 9 o'clock

Photo: 8_9_36_A.JPG
8.99m, Joint displaced radially, radial displacement 10-20mm , at 12 o'clock

Location: **C.R.C.** Street: **Line 2** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Circular** Pipe height: **0.00** Pipe width: **375.00**

Street :
Tel:
Fax:
Email:

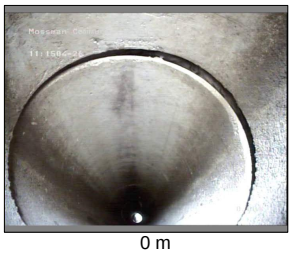
Inspection report / Inspection: Stormwater Inspection

Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**9**	
Method of inspection: **Television Camera**	Cleaning: **cleaned**	Criticality:			

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**G.I.P. 1**
Location:	**Line 3**	Asset Owner:		Downstream MH.:	**Outfall**
Location type:		Tape No.:		Section length :	**7.02 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Circular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**450 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:60	Position	Observation	
Outfall	0.00	Start node, outfall, Nodename: Outfall	 0 m
	0.00	Water level, clear flow (the invert is visible), depth 0%	
	0.00	Joint displaced angular, angular displacement 10° , at 2 o'clock	 2.23 m
	2.23	Breaking, some pieces are missing, length of break 200 , from 11 to 3 o'clock	 4.96 m
	4.96	Breaking, some pieces are missing, length of break 200 , from 11 to 2 o'clock	 6.93 m
	6.93	Point repair, localised lining , length: 500mm , from 12 to 6 o'clock	 7.02 m
G.I.P. 1	7.02	Finish node, grated inlet pit, Nodename: G.I.P. 1	

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	**60**	**17.09**	**120**	**5**	**0**	**0**	**0**	**0**	**1**

Photo: 9_10_40_A.JPG
0m, Joint displaced angular, angular displacement 10° , at 2 o'clock

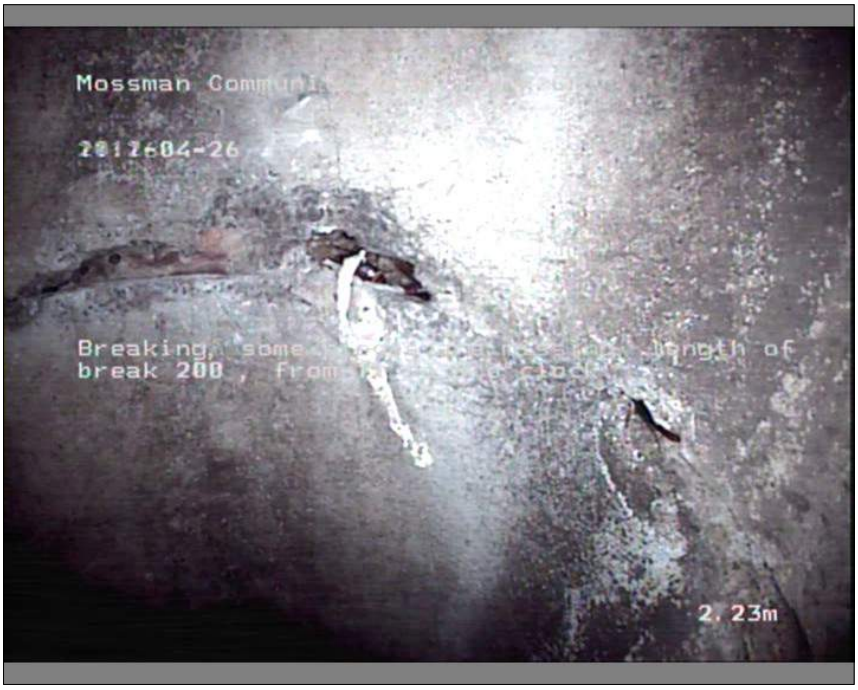


Photo: 9_10_41_A.JPG
2.23m, Breaking, some pieces are missing, length of break 200 , from 11 to 3 o'clock

Photo: 9_10_42_A.JPG
4.96m, Breaking, some pieces are missing, length of break 200 , from 11 to 2 o'clock

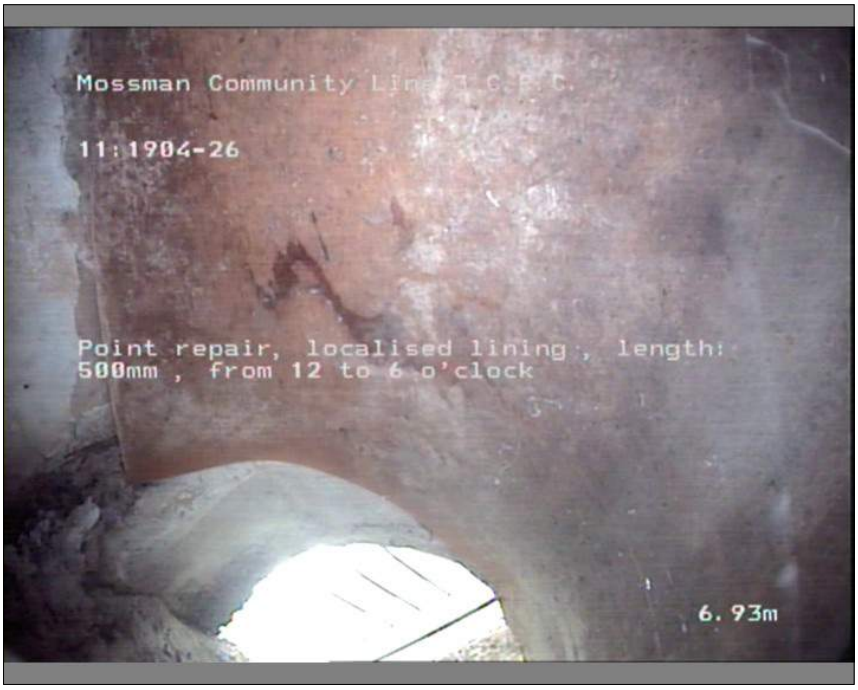


Photo: 9_10_43_A.JPG
6.93m, Point repair, localised lining , length: 500mm , from 12 to 6 o'clock

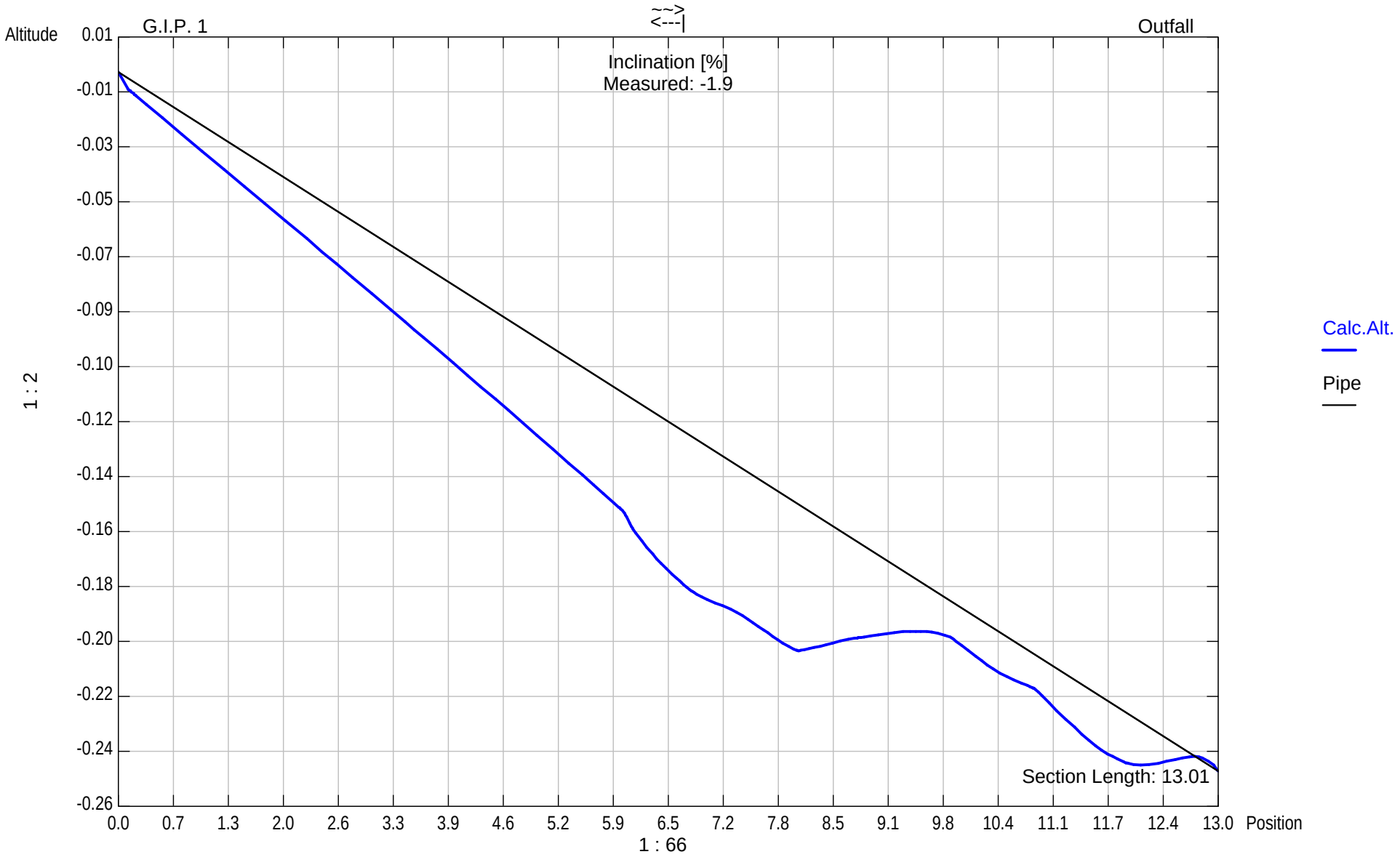
Tel:
Fax:
Email:

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 3	**Mossman Community**	**26/04/2012**	**9**	

Photo: 9_10_44_A.JPG
7.02m, Finish node, grated inlet pit, Nodename: G.I.P. 1

Location: **C.R.C.** Street: **Line 3** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Circular** Pipe height: **0.00** Pipe width: **450.00**

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

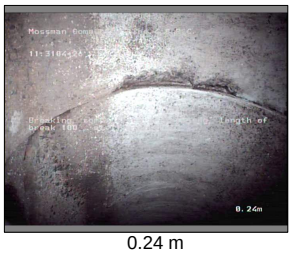
Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**10**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**cleaned**				

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**G.I.P. 1**
Location:	**Line 4**	Asset Owner:		Downstream MH.:	**Outfall**
Location type:		Tape No.:		Section length :	**9.76 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Circular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**375 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:90	Position	Observation
G.I.P. 1	0.00	Start node, grated inlet pit, Nodename: G.I.P. 1
	0.00	Water level, clear flow (the invert is visible), depth 0%
	0.24	Breaking, some pieces are missing, length of break 100 , at 11 o'clock
	2.70	Breaking, some pieces are missing, length of break 100 , at 12 o'clock
	9.76	Finish node, outfall or culvert headwall, Nodename: Outfall
Outfall		


0.24 m


2.7 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	**60**	**12.3**	**120**	**5**	**0**	**0**	**0**	**0**	**1**

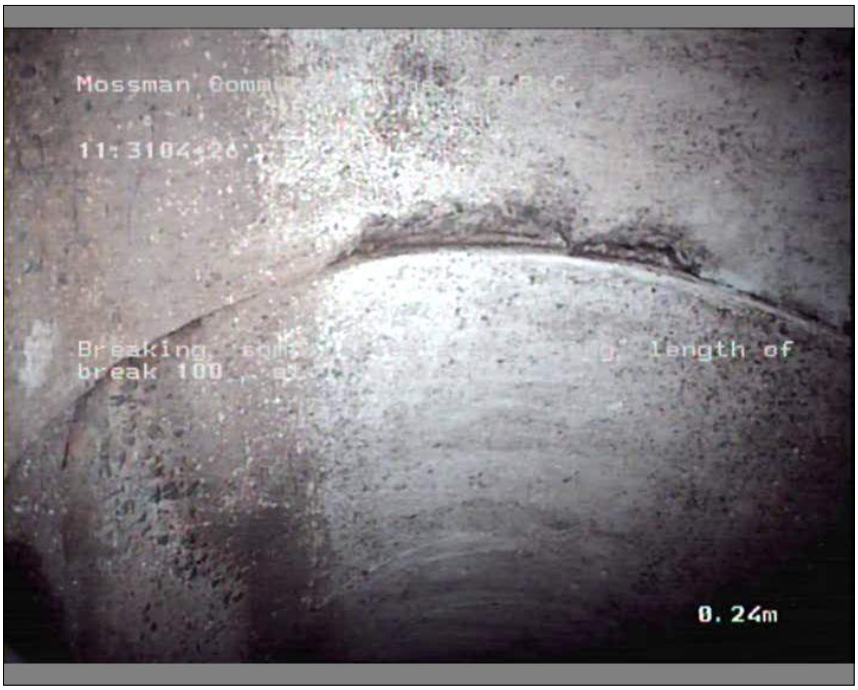
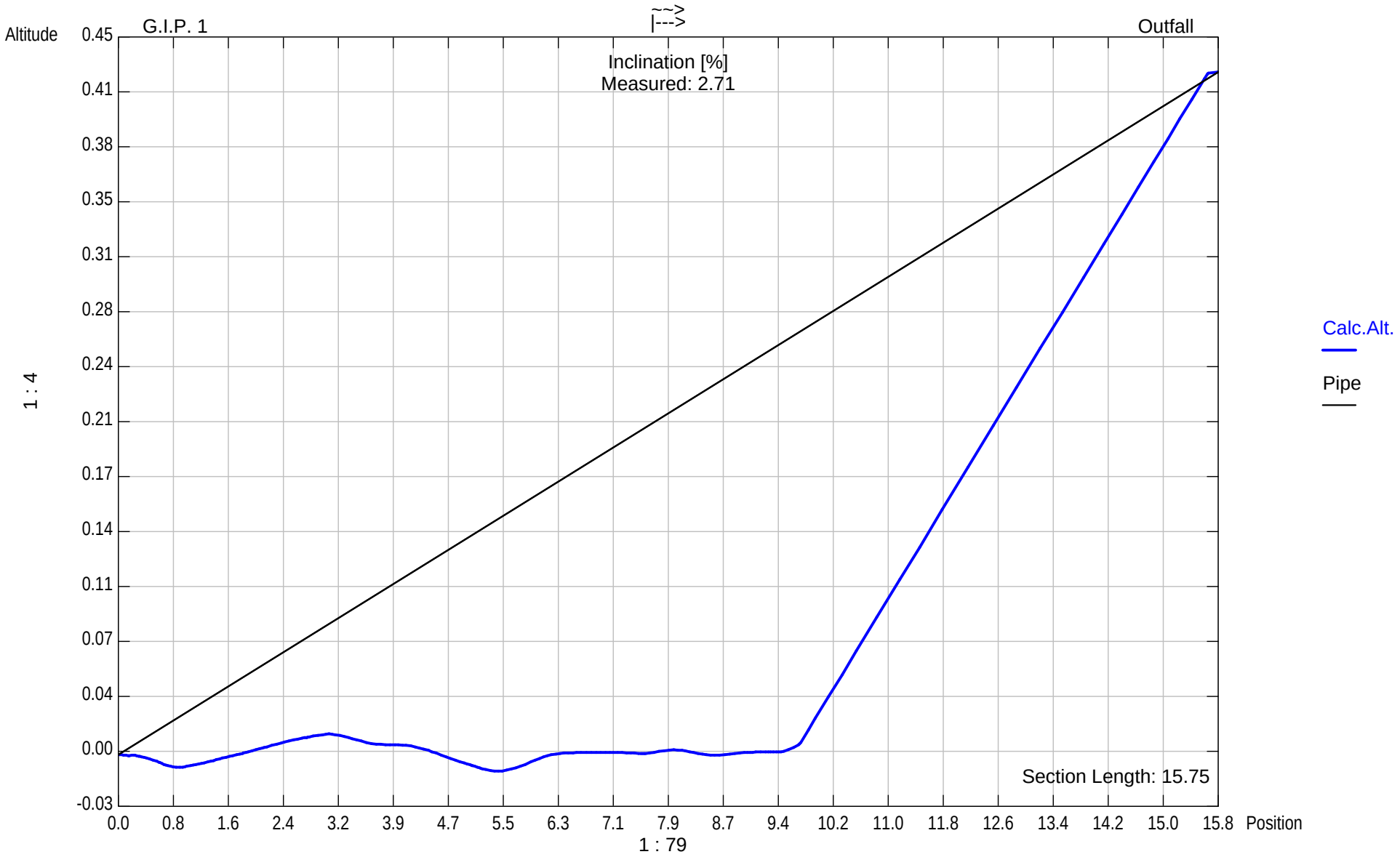


Photo: 10_11_47_A.JPG
0.24m, Breaking, some pieces are missing, length of break 100 , at 11 o'clock

Photo: 10_11_48_A.JPG
2.7m, Breaking, some pieces are missing, length of break 100 , at 12 o'clock

Location: **C.R.C.** Street: **Line 4** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Circular** Pipe height: **0.00** Pipe width: **375.00**

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

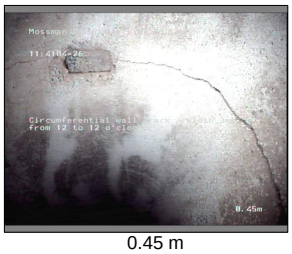
Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**11**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**cleaned**				

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**G.I.P. 2**
Location:	**Line 4 G2 - G1**	Asset Owner:		Downstream MH.:	**G.I.P. 1**
Location type:		Tape No.:		Section length :	**45.27 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Circular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**375 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:306 Position	Observation
0.00	Start node, grated inlet pit, Nodename: G.I.P. 1
G.I.P. 1 0.00	Water level, clear flow (the invert is visible), depth 0%
0.45	Circumferential wall crack , width 3mm , from 12 to 12 o'clock
1.76	Some coarse aggregate is visible , Obstruction: <5% , from 3 to 9 o'clock
6.66	Joint displaced longitudinaly, longitudinal displacement <10mm
14.04	Joint displaced longitudinaly, longitudinal displacement <10mm
16.44	Breaking, some pieces are missing, length of break 200 , at 12 o'clock
19.07	Joint displaced radially, radial displacement 10-20mm , at 6 o'clock
21.37	Joint displaced radially, radial displacement 10-20mm , at 4 o'clock
26.29	Joint displaced radially, radial displacement 21-30mm , at 12 o'clock
27.40	Circumferential wall crack , width 5mm , from 12 to 12 o'clock
28.90	Joint displaced angular, angular displacement 10° , at 12 o'clock
31.27	Breaking, all pieces are present but some of them are visibly displaced from position, length of break 200 , at 12 o'clock
33.79	Joint displaced angular, angular displacement 10° , at 10 o'clock
38.74	Breaking, some pieces are missing, length of break 100 , at 12 o'clock


0.45 m


1.76 m


6.66 m

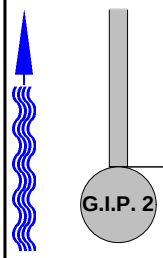

14.04 m


16.44 m

City :
Tel:
Fax:
Email:

Inspection Report / Inspection: Stormwater Inspection

Date :	Job number :	Weather : **No**	Operator : **Alan Nicholson**	Counter : **11**	Section name :
Present :	Vehicle :	Camera :	Preset :	Cleaned : **cleaned**	Rate :

1:306	Position	Observation
	45.27	Finish node, grated inlet pit, Nodename: G.I.P. 2

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
9	**60**	**4.04**	**183**	**5**	**0**	**0**	**0**	**0**	**1**

Photo: 11_12_52_A.JPG
0.45m, Circumferential wall crack , width 3mm , from 12 to 12 o'clock

Photo: 11_12_53_A.JPG
1.76m, Some coarse aggregate is visible , Obstruction: <5% , from 3 to 9 o'clock

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 4 G2 - G1	**Mossman Community**	**26/04/2012**	**11**	

Photo: 11_12_54_A.JPG
6.66m, Joint displaced longitudinaly, longitudinal displacement <10mm

Photo: 11_12_55_A.JPG
14.04m, Joint displaced longitudinaly, longitudinal displacement <10mm

Tel:
Fax:
Email:

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 4 G2 - G1	**Mossman Community**	**26/04/2012**	**11**	

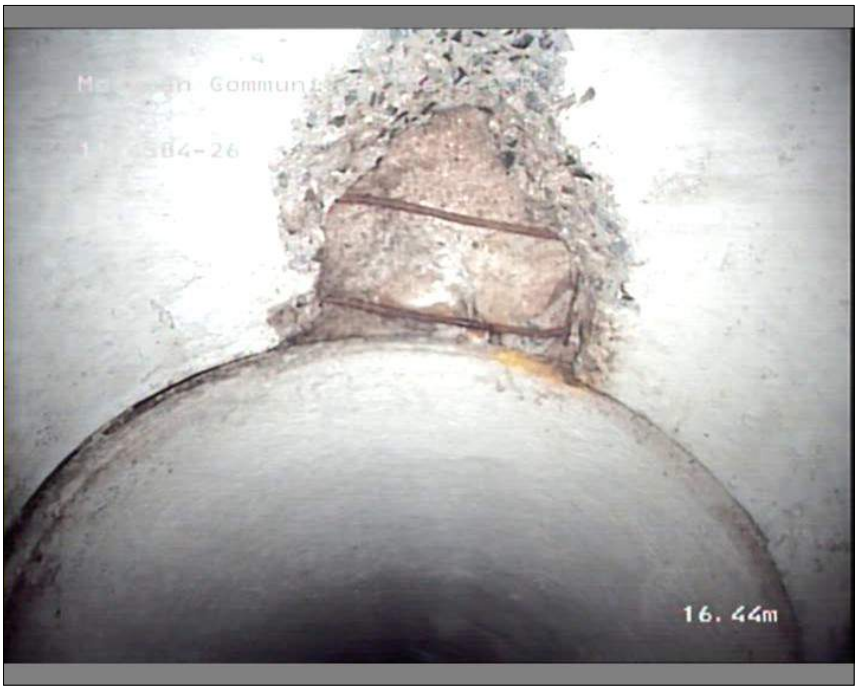


Photo: 11_12_56_A.JPG
16.44m, Breaking, some pieces are missing, length of break 200 , at 12 o'clock

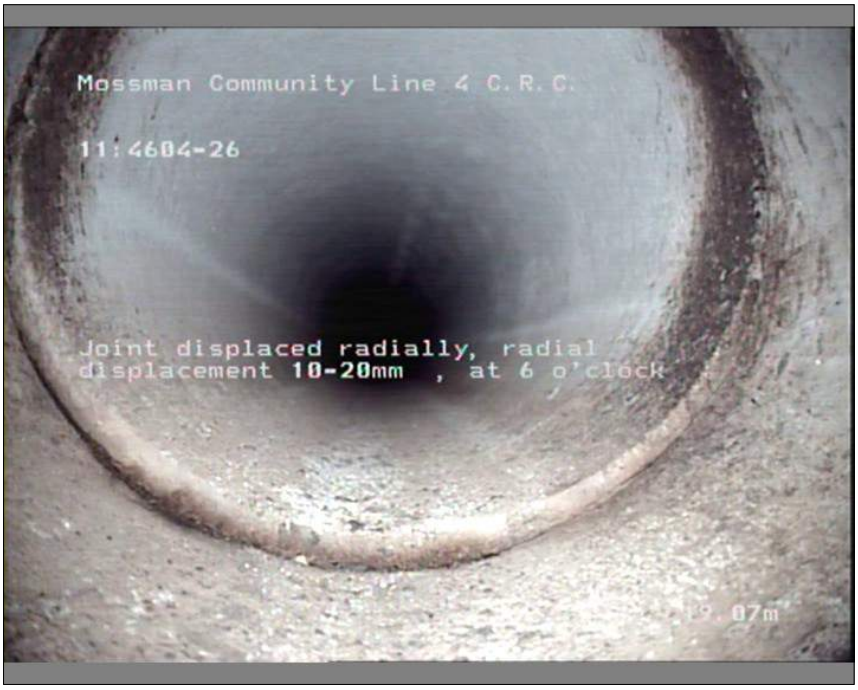


Photo: 11_12_57_A.JPG
19.07m, Joint displaced radially, radial displacement 10-20mm , at 6 o'clock

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 4 G2 - G1	**Mossman Community**	**26/04/2012**	**11**	

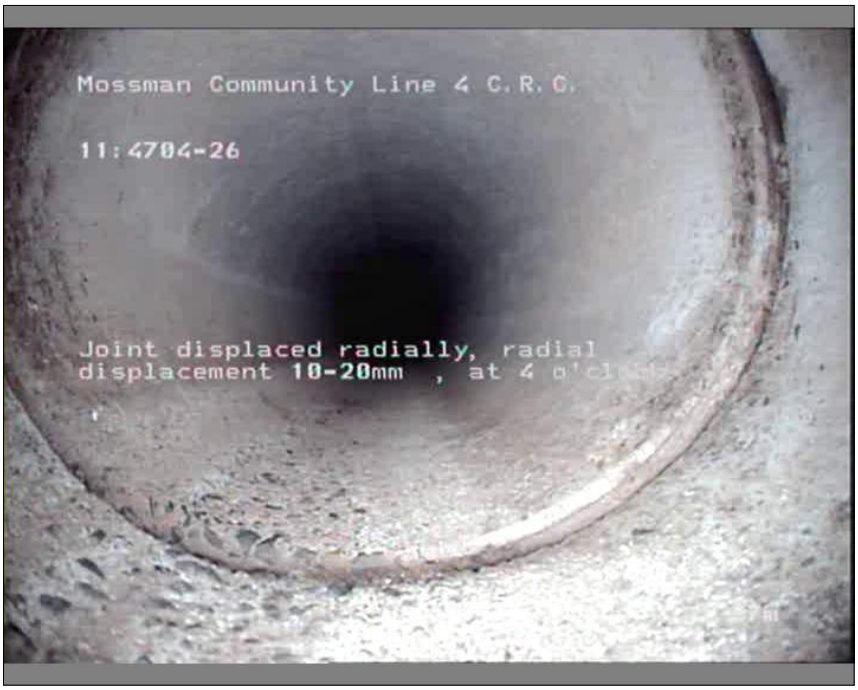


Photo: 11_12_58_A.JPG
21.37m, Joint displaced radially, radial displacement 10-20mm , at 4 o'clock

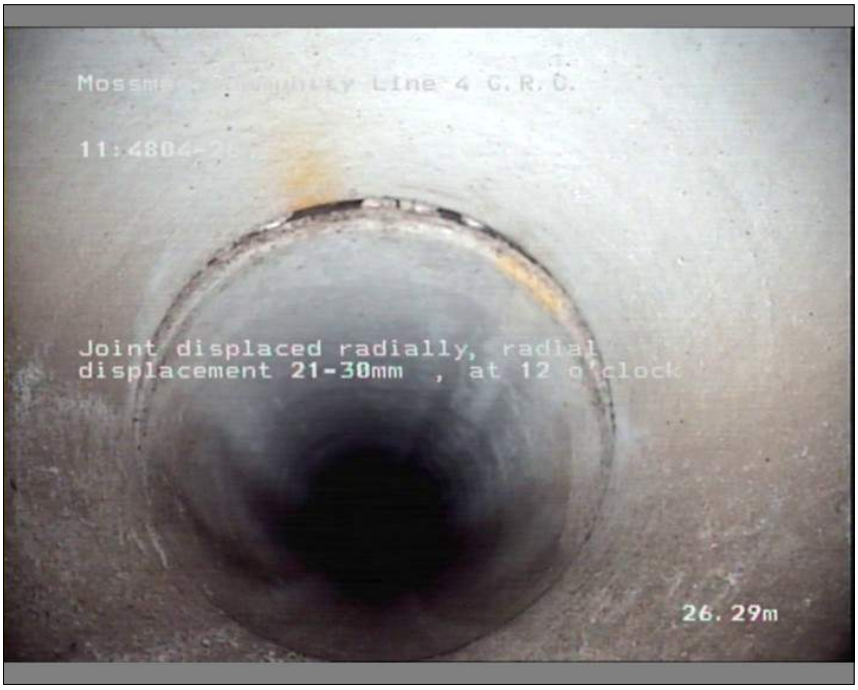


Photo: 11_12_59_A.JPG
26.29m, Joint displaced radially, radial displacement 21-30mm , at 12 o'clock

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 4 G2 - G1	**Mossman Community**	**26/04/2012**	**11**	

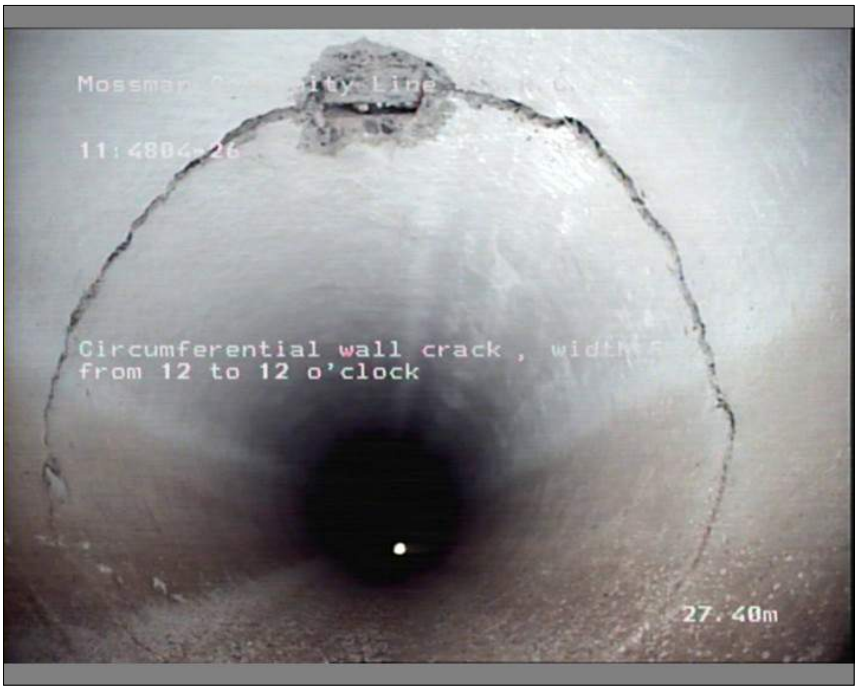


Photo: 11_12_60_A.JPG
27.4m, Circumferential wall crack , width 5mm , from 12 to 12 o'clock

Photo: 11_12_61_A.JPG
28.9m, Joint displaced angular, angular displacement 10° , at 12 o'clock

Tel:
Fax:
Email:

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 4 G2 - G1	**Mossman Community**	**26/04/2012**	**11**	

Photo: 11_12_62_A.JPG
31.27m, Breaking, all pieces are present but some of them are visibly displaced from position, length of break 200 , at 12 o'clock

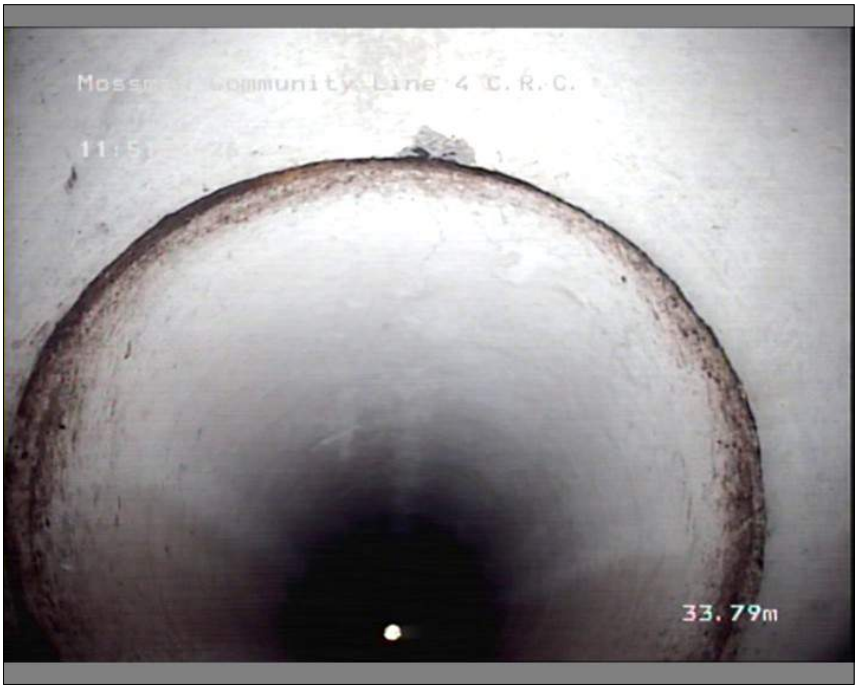


Photo: 11_12_63_A.JPG
33.79m, Joint displaced angular, angular displacement 10° , at 10 o'clock

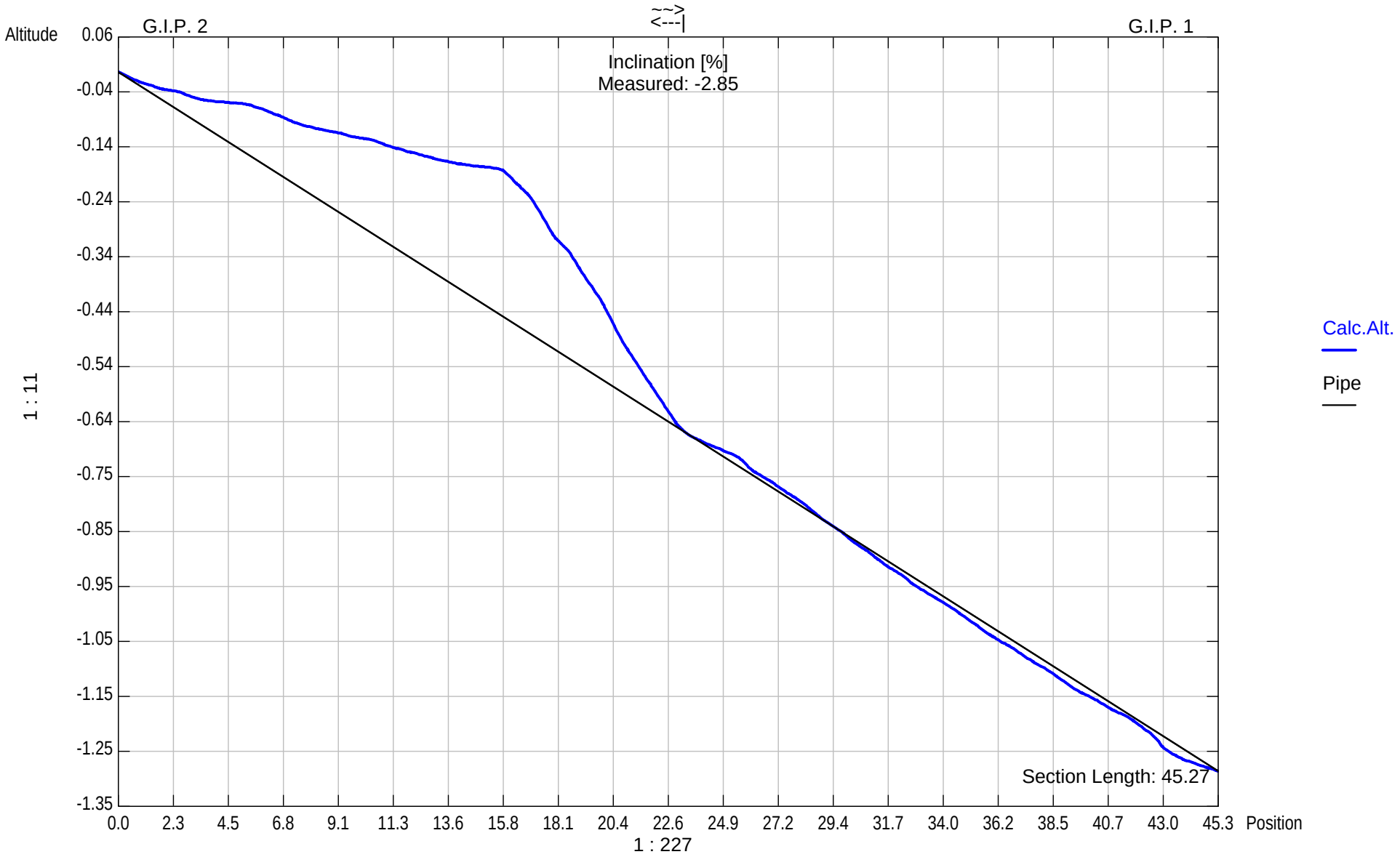
Tel:
Fax:
Email:

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 4 G2 - G1	**Mossman Community**	**26/04/2012**	**11**	

Photo: 11_12_64_A.JPG
38.74m, Breaking, some pieces are missing, length of break 100 , at 12 o'clock

Location: **C.R.C.** Street: **Line 4** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Rectangular** Pipe height: **0.00** Pipe width: **375.00**

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**6**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**cleaned**				

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**West Headwall**
Location:	**Line 5A**	Asset Owner:		Downstream MH.:	**East Headwall**
Location type:		Tape No.:		Section length :	**4.56 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Circular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**600 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:50	Position	Observation
West Headwall		
	0.00	Start node, outfall, Nodename: West Headwall
	0.00	Water level, clear flow (the invert is visible), depth 5%
	4.56	Inspection (survey) abandoned, obstruction , Large rocks

4.56 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

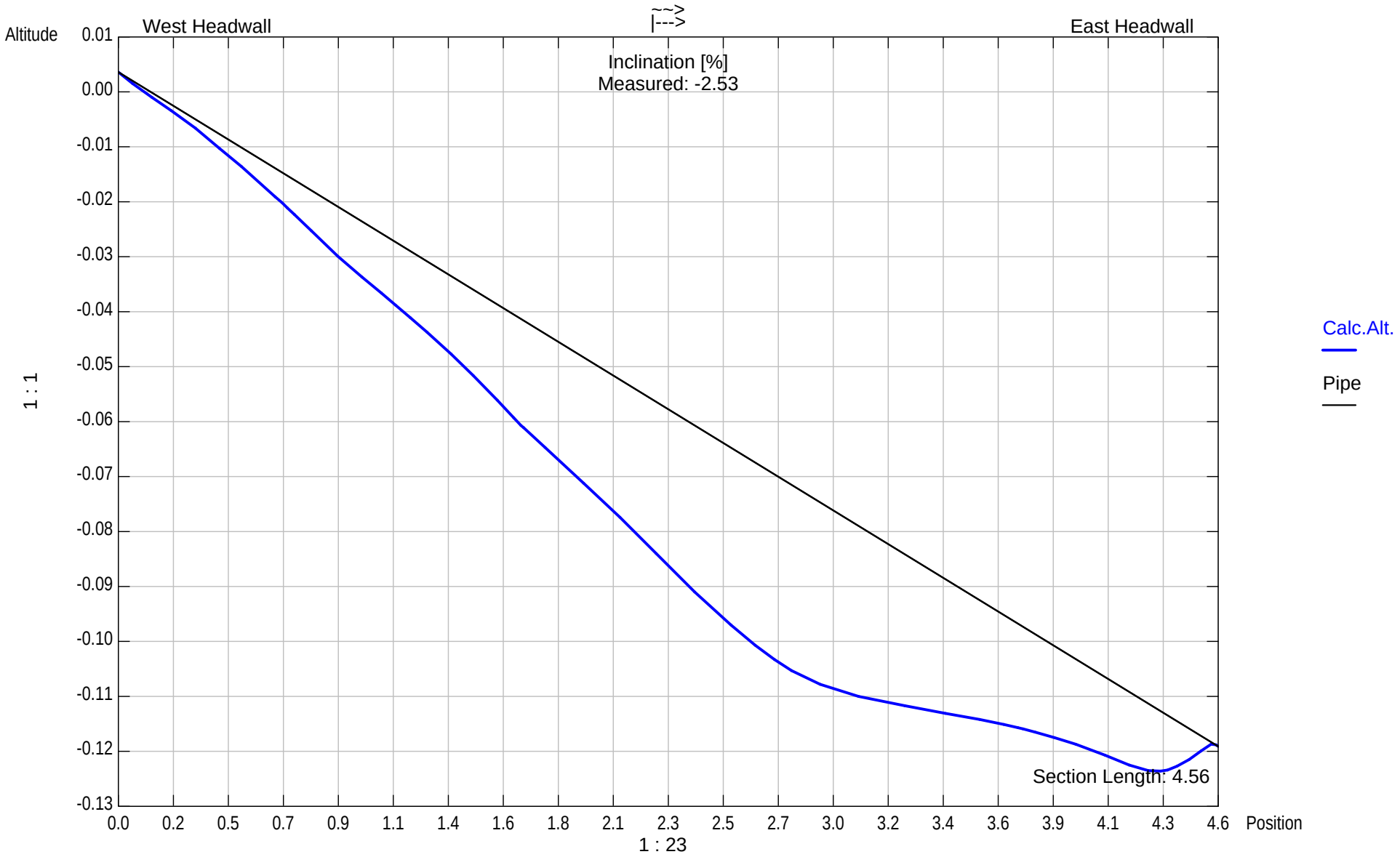
Tel:
Fax:
Email:

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 5A	**Mossman Community**	**26/04/2012**	**6**	

Photo: 6_7_25_A.JPG
4.56m, Inspection (survey) abandoned, obstruction , Large rocks

Location: **C.R.C.** Street: **Line 5A** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Circular** Pipe height: **0.00** Pipe width: **600.00**

Street :
Tel:
Fax:
Email:

Inspection report / Inspection: Stormwater Inspection

Date:	Asset owner's job ref.:	Precipitation:	Operator :	Section number:	Sewer reference :
26/04/2012		**No**	**Alan Nicholson**	**5**	
Method of inspection:	Cleaning:	Criticality:			
Television Camera	**cleaned**				

Town/suburb:	**Mossman Community**	Sewername:		Upstream MH.:	**West Headwall**
Location:	**Line 5B**	Asset Owner:		Downstream MH.:	**East Headwall**
Location type:		Tape No.:		Section length :	**9.17 m**
		Flow control	**No measures**	Pipe length :	

Purpose of inspection :	**Operational exam**	Shape :	**Circular**
Use of sewer:	**Drain**	Dia/Height:	
Land ownership:		Width:	**600 mm**
Type of sewer:	**Gravity sewer**	Lining Material:	

Remarks :

1:75	Position	Observation
West Headwall		
	0.00	Start node, outfall, Nodename: West Headwall
	0.00	Water level, clear flow (the invert is visible), depth 5%
	4.36	Breaking, some pieces are missing, length of break 100 , at 12 o'clock
	4.36	Soil visible through defect
	9.17	Finish node, outfall or culvert headwall, Nodename: East Headwall
East Headwall		


4.36 m


9.17 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	**120**	**13.09**	**120**	**5**	**0**	**0**	**0**	**0**	**1**

Inspection Pictures / Inspection: Stormwater Inspection

Location/Street	Town or suburb:	Date :	Section number:	Sewer Ref.:
Line 5B	**Mossman Community**	**26/04/2012**	**5**	

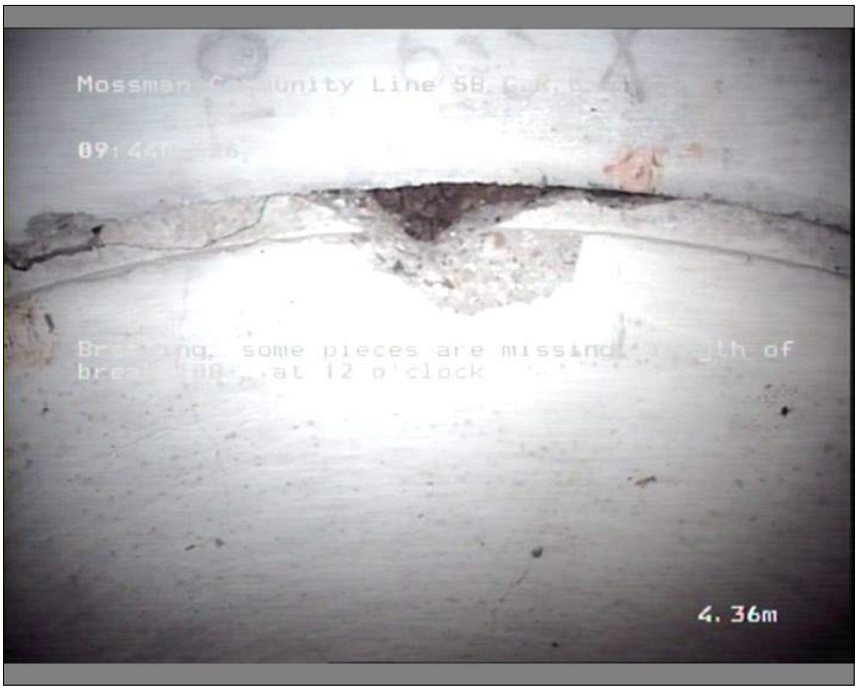
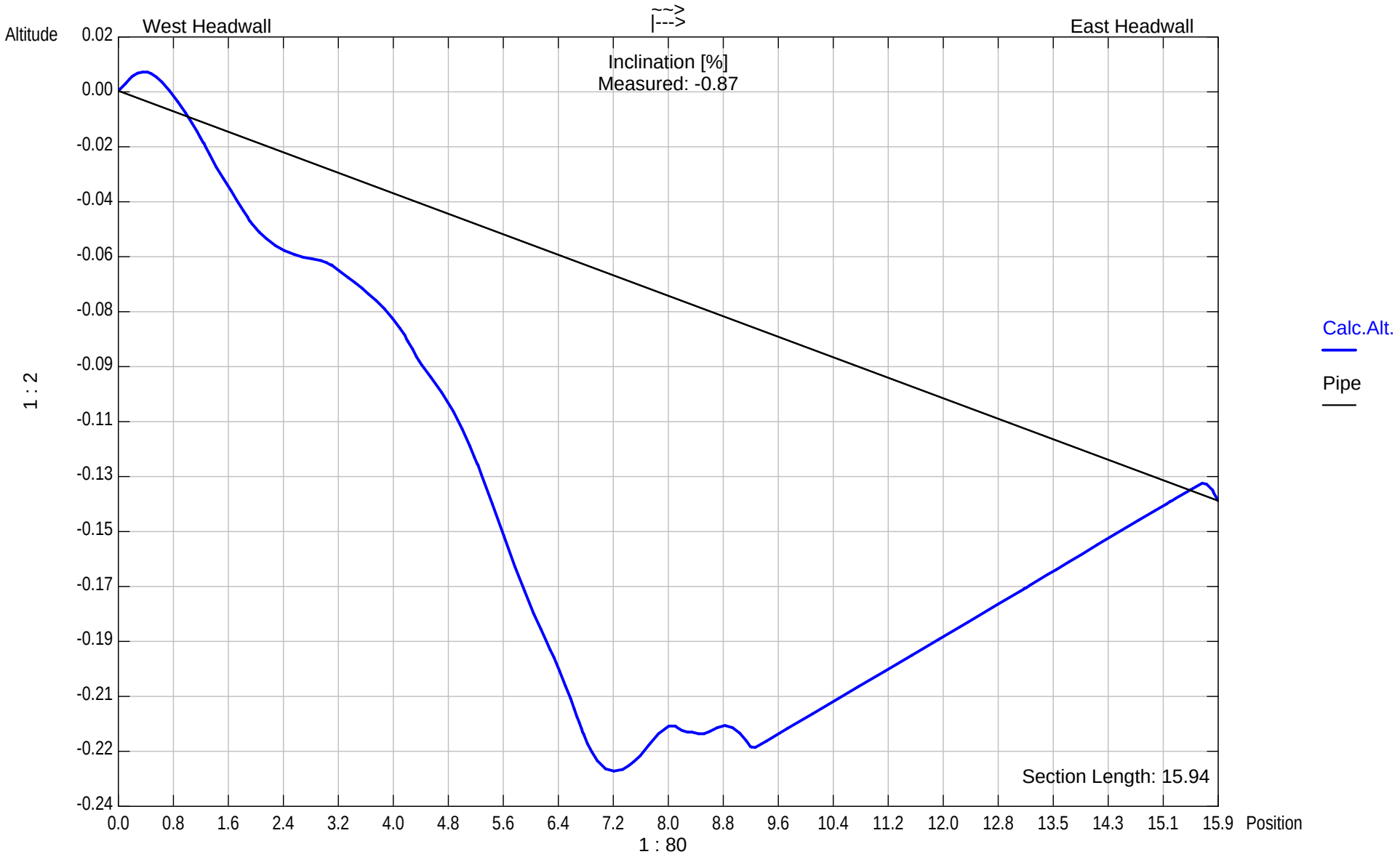


Photo: 5_6_20_A.JPG
4.36m, Breaking, some pieces are missing, length of break 100 , at 12 o'clock

Photo: 5_6_22_A.JPG
9.17m, Finish node, outfall or culvert headwall, Nodename: East Headwall

Location: **C.R.C.** Street: **Line 5B** Date: **26/04/2012** Visa: **Alan Nicholson**



Pipe shape: **Circular** Pipe height: **0.00** Pipe width: **600.00**

Attachment 9

Council Officer’s input and comments on conditional assessment tests required

MINUTES

MOSSMAN GORGE COMMUNITY INFRASTRUCTURE AUDIT					Meeting #:	5
Meeting Purpose:	Water & Sewer Infrastructure Work Scope	**Meeting Time:**	12.00 – 1.00	pm	**Meeting Date:**	26 April 2012
Attendees:	Jon Turner (CRC W&W) Denny Phillips (CRC W&W) Grahame Dunstan (CRC W&W) Ricky Hewitt (CRC W&W) Paul Steele (BM) Matt Di Maggio (BM)					
Circulation:	All					
Apologies:	Nil					

#	Agenda / Issues:	Decisions / Action:	Action By:
1	**Water**	1. Individual metering of each of residency is required. This includes location of existing connections and ensuring that existing connections are suitable for installation of water meters; 2. Council confirmed that 25mm diameter loop mains are to be increased in size. 40mm diameter loops mains are considered acceptable and do not have to be replaced; 3. Scouring and swabbing of water mains is required prior to hand over; 4. Council requires that all valve/hydrant surrounds are reset and cleaned prior to hand over; 5. Council confirm additional valves identified in capacity phase are required for network operation/management; 6. Additional connection in Bama Bubu Street (eastern end of community) is required to unsure reliability of supply to the community. This connection will include a water meter; 7. Location of mains in Mossman Gorge Road (particularly at western end of community) is to be determined to ensure that Council has the appropriate land tenure; 8. It is noted that the conditional assessment identified that a number of residencies have water connections which are not to CRC standards. These will require works which are not included in this scope of works. 9. As-cons to be transferred to current standards.	
2	**Sewer**	1. Council is willing to accept gravity sewers flatter than 1:150; 2. Council advised that the gravity sewer efficiencies identified (in the CCTV) are not detrimental to the sewers operation. Therefore the cost of rectification is not justified; 3. Council confirm the extension of sewer (on Lund St) to connect with un-sewered properties (church and health clinic) is appropriate; 4. It is noted that the conditional assessment revealed that a number residencies have sewer connections that have defects. These will require works which are not included in this scope of works; 5. As-cons to be transferred to current standards. 6. Sewers on non standard alignments will require easements;	
3	**Sewage Pump Station**	1. Pumps are in reasonable condition but are approaching the end of their design life. New pumps are therefore required; 2. Switchboard is in reasonable condition but is not to CRC standards and do not have provisions for emergency power. New switchboards are required;	

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		3. SCADA is considered acceptable and can be re-used 4. Structural integrity of pump well appears to be in good condition but requires lining;	

MINUTES

MOSSMAN GORGE COMMUNITY INFRASTRUCTURE AUDIT					Meeting #:	4
Meeting Purpose:	Roads, Intersections & Drainage Work Scope	**Meeting Time:**	10.30 -12.30	am-pm	**Meeting Date:**	24 April 2012
Attendees:	Steve Tyter (CRC) Murray Langdale (CRC) Michael Ringer (CRC) David Purkiss (CRC) Paul Steele (BM) Matt Di Maggio (BM)					
Circulation:	All					
Apologies:	Nil					

#	Agenda / Issues:	Decisions / Action:	Action By:
1	Roads	1. Council directed that the pavement surface on all roads have oxidised and require resealing. The use of AC rather than 2 coat seal is preferred. Costs for both AC and 2 coat seal were provided by Council; 2. Line marking at selected intersections is required; 3. Signage is required in accordance with regulations; 4. Pavement and seal widening at intersections at Lund Street loop and Mossman Gorge Road is not required; 5. Council desires that Barrier (tubular hand rail), line marking and tree removal is required at Junkurrji St culvert crossing. Provisions for pedestrians at this culvert crossing are also required; 6. Clearing of vegetation is required to provide adequate sight distance at the intersection of Junkurrji and Mossman Gorge Rd; 7. Council instructed that structures encroaching on turning heads (Kankarr and Lund Streets) need to be removed to return these intersections to their original function; 8. The northern extent of Junkurrji St (between Lund St and eastern side of flats) is to be road reserve to enable public access to Mossman River. The remainder of the access (in front of flats) is to be contained within future Lot 6; 9. As-cons are required to be transferred to current standards; 10. Off street pedestrian infrastructure is required including installation of new footpaths and ensuring the existing bus shelter is compliant with the relevant safety guidelines; 11. Provision to replace existing infrastructure, depreciation compensation will be required.	
2	Drainage	1. Tree removal at inlet to culvert (Jankurji Street) is required. Liaison with the community regarding tree significance will be required. It may not be cost effective to leave the tree as is; 2. Scour protection on Lund Street at end of kerb is required. Concrete lining to the Lund St drain is also proposed; 3. Replacement of open drain with pipes along Lund Street is not desired by Council for maintenance reasons. A concrete invert lining is proposed to formalise this flow path; 4. Replacement of undersized pipes across Lund Street is required. The preferred minimum diameter of replaced pipes is 450mm; 5. Pipes which outlet along Lund St are to be extended and headwall to be moved away from Lund St for vehicle safety reasons; 6. A concrete lined invert along Lund St Drain is required to formalise the drain invert; 7. The Bama Bubu Street culvert crossing requires cleaning;	

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		8. Filling of low points/re-profiling of drains is required for drains adjacent Lund Street and Mossman Gorge Road (southern side of football field) to minimise ponding; 9. Formalisation of inlet to Junkurrji St culvert crossing is required; 10. B&M to discuss lot layout with community regarding inter-allotment drainage for western end community and lots in the Closes. All lots to drain to either road reserve or drainage easement; 11. As-cons to be transferred to current standards; 12. Inlet screening is desired to reduce pipe blockage from debris; 13. Planning process to determine if gross pollutant trap is required. Installing a gross pollutant trap may not be cost effective.	

Attachment 10

Telstra and Ergon input and comments

Matt DiMaggio

From: Matt DiMaggio
Sent: Tuesday, 15 May 2012 12:00 PM
To: Chris Souter (Ergon); Graham Lynes (graham.lynes@ergon.com)
Subject: FW: Mossman Gorge Community - Electrical Infrastructure

Categories: SYNERGISED

Gents,

Further to our discussions, Black & More need to report back to the various levels of government on the implications of normalising the municipal services for the Mossman Gorge community

As discussed, the conversion to individual metered power to each residence and a conventional retic system is required.

We urgently need Ergon's advice on the implications of this including upgrades (if any) to enable funding to be sourced

Kind Regards

Matthew Di Maggio
Project Engineer

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From: Matt DiMaggio
Sent: Monday, 23 April 2012 5:27 PM
To: Chris Souter (Ergon)
Cc: CAMPBELL Graeme (FN)
Subject: FW: Mossman Gorge Community - Electrical Infrastructure

Hi Graham and Chris,

Further to our discussions regarding electrical infrastructure in the Mossman Gorge Community, we wish to confirm that our instructions from the client is for the infrastructure audit to advise of electrical upgrades necessary to provide infrastructure typical to conventional subdivision.

The key outcome sought in the review is to understand what the implication is from an infrastructure perspective) for the move to conventional serviced land.
Ultimately the creation of individual title and conventional servicing is about the move to home ownership.

Another key element raised by the community was the need individual metering to each residency/tenancy.

Accordingly can you confirm the implication for servicing the community with reticulated power consistent with normal municipal supply.

Kind Regards

Matthew Di Maggio
Project Engineer

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From: Matt DiMaggio
Sent: Thursday, 19 April 2012 4:25 PM
To: Chris Souter (Ergon)
Cc: CAMPBELL Graeme (FN)
Subject: FW: Mossman Gorge Community - Electrical Infrastructure

Hi Chris,

With reference to earlier discussion and the email below, could you please confirm Black & More's understanding of ERGON's position.

I wish to advise Council and other stakeholders of ERGON's position in regards to accepting the existing electrical infrastrucutre within Mossman Gorge Community.

Assistance greatly appreciated.

Kind Regards

Matthew Di Maggio
Project Engineer

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From: Matt DiMaggio
Sent: Tuesday, 10 April 2012 3:40 PM
To: Chris Souter (Ergon)
Cc: CAMPBELL Graeme (FN); Paul Steele
Subject: Mossman Gorge Community - Electrical Infrastructure

Hi Chris and Graeme,

As discussed in our meeting on 28th March we understand that Ergon has concern with the residual useability of electrical infrastructure within the Mossman Gorge Community. There is particular concern with existing infrastructure located in the "older" section of the community. Noting this, Ergon officers advised that Ergon's

position is likely to be to require replacement of the existing infrastructure (both the electricity reticulation and the lighting).

We understand that the works required to achieve a “normal” standard of electrical supply are likely to include:

1. Installation of new electrical reticulation;
2. Property connections; and
3. Ensuring that wiring within properties are suitable for connection.

Can you please confirm this understanding is correct

Additionally could you advise on ERGON’s position on accepting electrical networks in Body Corporate type developments.

As discussed, ultimately we wish to determine what upgrades (if any) are required to move to conventional electrical reticulation system and the costs for these upgrades. We understand one alternative may be for Ergon to consider a "Green field" type application .

Your assistance with this infrastructure assessment is appreciated.

Kind Regards

Matthew Di Maggio
Project Engineer

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Matt DiMaggio

From: Matt DiMaggio
Sent: Tuesday, 10 April 2012 5:35 PM
To: Wayne Keevers (Wayne.C.Keevers@team.telstra.com)
Subject: FW: Mossman Gorge Community
Attachments: Mossman Gorge Aerial Photo.pdf; 24595410.dwf; Mossman Gorge DBYD Search.pdf

Hi Wayne,

I'm seeking to confirm my understanding of your earlier advice (below) in order to provide preliminary advice to my client on Telstra's Position regarding this matter.

Assistance greatly appreciated.

Kind Regards

Matthew Di Maggio
Project Engineer

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From: Matt DiMaggio
Sent: Friday, 23 March 2012 12:08 PM
To: Wayne Keevers (Wayne.C.Keevers@team.telstra.com)
Cc: Paul Steele
Subject: Mossman Gorge Community

Hi Wayne,

As discussed in our phone call yesterday,

Black & More have been engaged to undertake an audit of the existing services and provide advice on possible upgrades. The key infrastructure stakeholders are Telstra, Ergon and Council.

Background
The Mossman Gorge community consists of two separate parcels of land and is described as a body corporate property within the local government area.
Over thirty houses and approximately 150 people live at the Mossman Gorge Community. *Refer Aerial Photo attached*

Council has been approached to support proposed new arrangements for the Mossman Gorge Community and to discuss a process to move towards normalised municipal service delivery in that area.
It is understood that Council has indicated in-principle support to deliver municipal services at Mossman Gorge subject to:-

1. Subdivision of the community land into individual lots;

2. The existing municipal infrastructure being handed over in a condition that is acceptable to Council. By association, this also includes acceptance by Telstra and Ergon.

As part of item 3, Black & More have identified that existing infrastructure within the community includes a telecommunications network. From a site visit it appears that the majority of Telstra services for the community are located within the verge of existing roadways. Although, these services may not be located on a "typical" alignment (from proposed property boundaries).

Based on our discussion, we understand that Telstra's position is that any Telstra services located outside of the proposed road reserve will need to be relocated (to a reserve) at cost to the developer. In Addition, existing Telstra services located within the proposed road reserve can remain on their current alignment provided:

- There are no capacity issues with the existing service; and
- There are no "clashes" with the construction of other infrastructure.

Can you confirm our understanding is correct.

For your reference a DBYD search is attached. However we note that no detailed cable location has been performed to date.

Telstra's assistance as a key infrastructure provider is greatly appreciated.

Kind Regards

Matthew Di Maggio
Project Engineer

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Attachment 11

Copy of **Stage 1A Collation and Capacity Phase outcomes** (originally submitted to Council 30 March 2012)

March 2012

Our ref: Mossman Gorge Subdivision
File ref: 6960
Paul.steele@blackm.com
www.blackm.com

Cairns Regional Council
PO Box 359
Cairns QLD 4870

Attention: Ms Kelly Reaston

Dear Kelly

MOSSMAN GORGE COMMUNITY
STAGE 1A COLLATION AND CAPACITY PHASE OUTCOMES

Please find attached the deliverables from the Stage 1A commission, comprising;

ATTACHMENT NUMBER	DESCRIPTION	DRAWING NUMBER
1	Commentary on each service/infrastructure element	-
2	Infrastructure Audit Summary	-
3	Tabulated Identification of Roads and Intersections Assets and Audit findings	SKETCH 6990-3a Roads and Intersections Audit SKETCH 6990-3b Mossman Gorge Road & Junkurrji St Sight Distance Check SKETCH 6990-3c Turning Path Analysis
4	Tabulated Identification of Sewerage Infrastructure and Audit findings	SKETCH 6990-4 Sewer Audit
5	Tabulated Identification of Water Assets and Audit findings	SKETCH 6990-5 Water Audit
6	Tabulated Identification of Underground and Overland Drainage Assets and Audit findings	SKETCH 6990-6 Stormwater Audit
7	Identification of Telecommunication Assets	-
8	Identification of Electricity/Lighting Assets	-

Please be advised that the deliverables attached are to be considered working documents and will continue to be updated throughout the audit as additional condition and operational data becomes available.

This initial asset identification and infrastructure audit has been performed by collation of information from site inspections, discussions with Council Officers and additional sources.

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It is recommended that Stage 1B will include condition assessments of the infrastructure and more detailed investigations of operational matters. Meetings with Council, including key infrastructure officers, to re-confirm Stage 1B works have determined the following proposed investigations:

- Further as-constructed information;
- CCTV inspections of underground stormwater drainage;
- Operational data for water and sewerage infrastructure.

Sewer Condition - Water & Waste requirements

- CCTV for sewers;
- Fieldwork to review the sewer system, pump station, rising main;
- Pump run data and pump information ;

Water Condition - Water & Waste requirements

- Water leak detection for water supply network;
- Water main locations and survey pick up;
- Field crew to inspect the hydrants and valves, hydrant flow and flow pressure test;
- Flow logger and meter readings.

Road pavement condition – IM requirements

- Falling Weight Deflectometer (FWD) Test of pavement integrity (non-destructive testing);
- Ground Penetrating Radar of pavement depth;
- Site inspection by CRC maintenance/IM staff.

These investigations are proposed for the two weeks from the 2nd April to 13th April.

The community representatives have been advised of this proposed field work timeframe and have indicated approval for the timing.

Stage 1B reporting will be completed following the field work, notionally in the week 16th April to 20th April.

Costs for the further investigations (by the specialist sub-contractors) are being confirmed with the service providers and will be advised prior to works commencing.

Please do not hesitate to contact the undersigned on 4031 9944 or via email to paul.steele@blackm.com should you have any queries or require further information.

Yours sincerely
BLACK & MORE

Paul Steele
Partner

Encl:

Attachment 1

Commentary on Each Service/infrastructure Element

Attachment 1

Commentary on Each Service/Infrastructure Elements

An audit of existing infrastructure was previously undertaken by the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA). That audit, Titled "National Audit of Municipal and Essential Services" has been made available to Council.

This new audit adopts the same general subject headings for reporting purposes; however, the numbering has been rearranged into two general categories, (Infrastructure/Services).

This reflects that the audited elements can be generally categorised into physical infrastructure (roads, pipes, drains) and municipal services to be provided, (regular waste service, animal control, maintenance and operation).

For the physical infrastructure it is possible to review against industry standards. The service elements will be generally proposed levels of service advised by Council in accordance with its operational practices.

This desk top review has primarily focussed on the physical infrastructure elements and the various attachments include tables of assets, advice on current standard industry guidelines and plans/sketches of the investigated elements.

The Stage 1a audit outcomes are provided in the tables and sketches attached. A general commentary is provided for each service or infrastructure element per the sections below. **Attachment 2** provides a very brief summary of all the elements with more detailed tables in the later attachments.

Municipal Infrastructure

1. Roads and Intersections

Capacity, alignments and general compliance of the infrastructure for the roads and intersections within the community have been assessed with the results presented in **Attachment 3.** The results include tabulated audit findings and sketches of key elements assessed.

Civil infrastructure for the roads and intersections was audited to assess consistency with the standards set out in the current FNQROC guidelines.

In order to do this the following considerations were taken into account:

- Mossman Gorge Road level of service is intended to be reduced to a Local Traffic Only road and as such may not warrant an upgrade of the intersection entry/egress roads to the Mossman Gorge community as these warrants are usually based on traffic volumes and design speed;
- Intersections with Mossman Gorge Road are signed as 40km/hr, however, despite being a low speed environment the intersections currently have no line marking, limited signage, sub-standard or no lighting and do not provide the desired sight distance requirements on at least one of the intersections;
- Lund Street has speed control devices (speed humps) along its length. The remainder of the streets in the community are relatively short and hence traffic speeds are limited by road geometry. Within the community is a low speed environment so it is expected that the departures from standard geometry parameters may not have an adverse effect on traffic movements;
- Garbage pick-up currently occurs on the Junkurrji-Lund-Bama Bubu-Mossman Gorge Road loop. Consequently it is desirable for this road to comply with design vehicle requirements as set out in the FNQROC Development Manual;
- There are six turning heads on the community road network, all of which do not meet the normal geometry requirements. It is noted that these turning heads have been in place for some time and the community is accustomed to the current level of service. The turning heads do not readily facilitate larger vehicles. Cairns Regional Council will be required to review their acceptance of this layout;

Each intersection and road section was reviewed independently and assessed based on the minimum criteria set out in Table D1.1 for an Access Place. The results were tabulated and a number of recommendations listed for Council's consideration.

With a design vehicle adopted as a 12.5m Single Unit Truck, generally the roads and intersections do not meet the criteria set out in the FNQROC Development Manual.

However, applying a smaller design vehicle (the B99 vehicle) shows the majority of streets will generally accommodate the turning movements. Note the B99 vehicle is the 99.8th percentile vehicle for sales of sedans, station wagons and utilities. Example given in the Australian Standards includes the Ford Falcon and the Toyota Landcruiser 100 series.

Given that the larger vehicle (12.5m truck) is likely to only be regularly traversing the Junkurrji-Lund-Mossman Gorge Road loop, the existing roads are acceptable for their level of service. Should Council decide that these roads need to comply with the required standard the resulting construction works would have a significant impact on the community.

On-road drainage structures and cross drainage were also considered and images taken from a site visit show most road drainage, although not to standard, is working adequately, with some areas requiring minor earthworks to improve drainage paths or flows, or kerb and channel work to improve alignment.

Despite the shortfalls in geometry the community road network generally provides a level of service that is acceptable to the community. The following recommendations have been made taking into account all the considerations above:

a) Both intersections on Mossman Gorge Road should be upgraded to comply with the standards. Specifically the kerb returns require enlarging, line marking and signage, clearing of vegetation within the sight distance clear zones and installation of lighting of the intersections. Consideration for an Auxiliary Right Turn Layout may also be appropriate.
b) Minor earthworks to realign open lined drain on LHS of Junkurrji St into the inlet of the cross culvert to prevent ponding at the existing Fig Tree. Additionally, consideration must be given to immediate removal of the Fig Tree based on future damage to the road pavement, kerb and channel and the integrity of the cross culvert.
c) Intersection upgrades of all intersections on the Junkurrji-Lund-Mossman Gorge to cater for the 12.5m garbage truck along this section of the network. The design vehicle for the balance of the road network has been assumed to be a car. It should be noted that the garbage pick-up service currently uses this route even though the geometry is substandard. The consequence is that trucks will be currently be utilising the majority of the intersection to negotiate the turns. It will ultimately be up to Council to decide on level of service and/or potential conflicts with current operating conditions at intersections.
d) all road sections require line marking and signage to the current standards;
e) Street lighting will need to be assessed to determine if it meets pedestrian safety requirements;
f) Road reserves to be clearly delineated on proposed town plan layouts. Site inspection has indicated that Lund Street generally has a 3m verge width between fence and invert of kerb.
g) Easements to be established over drainage (and other services) that traverse across lots. In this instance, the concrete lined drains through Lots 11, 21, 22 & 23.

2. Sewerage

Capacity, alignments and general compliance of the infrastructure for the Sewerage Reticulation system within the community has been assessed. **Attachment 4** presents the tabulated audit findings and provides the sketch of the layout and key elements assessed.

Sewerage infrastructure generally follows the alignment of existing fence lines. This is consistent with "back-log' sewerage systems undertaken to accommodate the existing house layout and constraints with the existing surface at the time of construction.

Council will need to consider if any easements will be required for sewers on non-standard alignments.

The other items for consideration are branch lines connecting to manholes at an acute angle, property connection branches that connect into manholes (not at the end of lines) and flat sections of sewer.

The condition assessment phase proposes further investigations on the condition of the sewers. This includes CCTV footage and assessment of the system.

3. Water

Assessment of the Water supply reticulation system within the community included reviews of capacity, alignment and general compliance of the supply network.
Attachment 5 presents the tabulated audit findings and provides the sketch of the layout and key elements assessed.

The desktop review of the as-constructed data reveals that the water reticulation network is generally in accordance with FNQROC Development manual guidelines. Locations of mains generally follow the existing roads and are offset from the road carriageway. This reflects the absence of formal property boundaries.
Location of valves and hydrants appear to be generally consistent with the design guidelines. However, there may be some additional valves considered to improve the operation and maintenance of the Network. By constructing new valves at the locations shown will allow for sections of pipe to be isolated more sufficiently.
Council should also consider a second connection to the system at the eastern end of the community, (currently the need for metering has a single point of supply to the community). The proposed new 100mm diameter eastern connection in Bama Bubu Street has been shown to allow for a loop main.

4. Drainage

The community is serviced with minor underground drainage and a large extent of overland drainage. The overland drainage consists of natural drain lines, on road drainage, kerb and channel, and man-made roadside table drains.

Assessment of the drainage infrastructure considered capacity, catchment serviced, alignment and general compliance of the infrastructure. The results are presented in **Attachment 6.**

The drainage appeared to generally be performing well, although there was no rain during the inspection. Community members advised that the level of operation had improved significantly with the recent drain cleaning works.

The community representatives were of the opinion that the operation was of a good standard.

It was noted that the large Fig tree adjacent the upstream headwall to Jankurrji Street culvert was preventing the culvert from operating as designed. The stormwater flows were ponding upstream from the Fig tree and flows were directed onto the roadway.
There are concerns of the impact of this regular inundation on the pavement and seal.

The system had recently experienced and rainfall. There was no evidence of major capacity constraints on the system (other than the issues at the Fig tree as noted above).

There does appear to be excessive ponding adjacent Mossman Gorge Road. The ponding appears to be generally within the current Mossman Gorge Road Reserve.

It may be that additional drainage improvement works particular, maintenance, is required within the road reserve. Levels at the culverts under the downstream Bama Bubu Road crossing were confirmed from As-constructed records. From the levels, it does appear that the drainage at the eastern end of the community is constrained by limited fall.
The drainage at this point will need further investigation to determine if it impacts on the operation and drainage of the community.

5. Telecommunications

The site inspection confirmed the presence of a number of Telstra pits located along the road verges within the community.

The services plans provided through the Dial Before You Dig service confirm the location for the Telstra Network within the community. The plans are included in the Stage 1a findings as **Attachment 7.**

It is understood that access to the Telstra network is available to the residents as individual customers of Telstra. This is consistent with the proposal to create normalised services to the individual properties.

The presence of existing reticulation throughout the community suggests that there may not be the need for significant improvements.

It is understood that Telstra recently did major improvements to its network to increase capacity in the Mossman Gorge Community to facilitate connection of the BBN infrastructure within the reserve lot. Given these recent system upgrades it may be that Telstra has limited requirements for further improvements. It was also noted that access to the mobile phone network has significantly reduced the demand for land line services.

Based on initial discussions with Telstra's Network integrity division, Telstra's position is likely to be as follows:

Any existing Telstra services located outside the future road reserves will need to be relocated (to within the reserve) at no cost to Telstra. Existing Telstra services located within the proposed road corridors can remain on their current alignment provided:

1. There are no capacity issues with the existing service; and
2. There are no "clashes" with the construction of other infrastructure.

Given the Telstra services were observed to be within the verges between existing property fences and the road carriageway, it appears likely that the services will be contained within the future proposed road reserve.

There will be a need to further assess alignments if upgrades to other services (most notably electrical reticulation) are required.

Discussions with Telstra are ongoing and formal advice is being sought from this service provider. Further confirmation of Telstra's requirements will be provided in later phases of the Audit.

6. Power/Electricity

The community is serviced with reticulated power.

The services plans provided through the Dial before you Dig service confirm the points of Supply from the external Ergon Energy electricity network. The plans are included in the Stage 1a findings as **Attachment 8.**

Currently the community is serviced from metered points of supply (one for each lot) and the body corporate is responsible for all costs for power. The body corporate then has to separately recover these costs from the tenants.

The body corporate see the opportunity for this situation to be resolved as a significant positive step with customers being directly responsible for their power use. Electricity meters have also been difficult to source and the body corporate has been constricted in its ability to measure and recover costs according to usage.

Costs for community power usage (including street lighting) are currently met by the body corporate.

A pad mount sub-station and switchboard are located near the eastern access to the community, (Bama Bubu Street). A second point of supply is provided from a pole mounted transformer to the west from the Well Being Centre.

Ergon Energy Officers advised that the alignment of this western most supply point will need to be considered in the future lot layout. It was recommended that a corridor be preserved to facilitate this supply route.

The current private power reticulation elements within the community will need to be assessed by Ergon energy to determine existing services condition and future use. Preliminary discussions with Ergon Officers indicate that the infrastructure in the original reserve lot is considered to have significant capacity constraints and will almost certainly require full replacement.

Services in the newer areas are expected to be in better condition and to more recent standards; however concern was expressed with the costs to investigate and assess acceptability of the infrastructure. Ergon officers advised that problems had been experienced in other privately installed systems at palm Cove. It was likely that Ergon would require full replacement of the system within the road reserves.

Ergon officers also advised that the upgrading of the electricity would not necessarily stop at the proposed property boundaries. Other communities that Ergon has been involved with have required major upgrades to the individual houses. This has included new switchboards with appropriate safety switches and upgrades to supply to these switchboards.

In reviewing other services under this audit potential services clashes in the event an upgraded power reticulation network have been considered. It would appear that individual services corridors have generally been adopted within the notional verge areas.

Any upgrades would need to consider how the existing services would be maintained until the new services were made operational.

Formal confirmation of Ergon's requirements will be provided in later phases of the audit once more detailed advice is available.

7. Lighting

The community is currently served with a street lighting system.

The services plans provided through the Dial before you Dig service confirm the location of poles with the community, (Ergon Officers confirmed that these poles shown on the plans are the streetlights). The plans are included in the Stage 1a findings as **Attachment 8** (on the electrical plans)

From initial inspection the system appears to use poles and luminaires that are not the current Council/Ergon preferred standard. The current preference is for 7.5m high galvanised steel poles.

Street lighting will need to be provided in accordance with the road lighting standards, (AS/NZS 1158). Typically street lighting is required at intersections, road ends/cul-de-sacs, and at regular spacing along the road (generally of the order of 40 to 50m).

Council and its service provider (Ergon) will need to determine the acceptability or otherwise of the existing infrastructure for street lighting. This will be a key outcome from the Stage 1b audit investigations now underway.

Current tariff arrangements for lighting will also need to be reviewed.

Municipal Services

1. Animal Management

During the site visit it was advised that the community has a two pet policy in place and this has been having a positive effect on animal management. It was also advised that the community has arrangements for a local vet to come and visit the community and educate residents on animal ownership.

The Mossman Gorge community is within the Cairns Regional Council local government area and accordingly Council's local laws and policies are applicable to the community in regards to animal control.

With the greater emphasis on the Council services to the community, animal management will be by Council in accordance with Council's local laws and policies. It is noted that ongoing education of Council's local laws and policies will be beneficial.

Council offciers for the Mossman area indicated that Council is supoortive of continued eductaion and encourages management initiatives including desexing/recording of pets through microchipping and other management measures.

2. Community Centres and Facilities

There are a number of community centres and facilities within the Mossman Gorge community. These include health services, state and federal government facilities, the church, and BBN run offices. There is also the workshop facility.

The indicative town plan has made provision for these "community use" areas to be reflected in the land use designations proposed for the community. With the imminent opening of the new Gateway Tourism Centre the community will have additional community facilities accommodated in the new purpose-built centre.

Cairns Regional Council is not responsible for running these facilities and will provide normal municipal services only.

3. Environmental Health Services

Environmental Health services to the Mossman Gorge community are not well defined. This is partly attributed to the broad scope that can come under the banner of Environmental Health and hence lack of clarity from service providers for this item. The previous audit also reflected similar findings.

In the context of municipal environmental health, Council Officers for the Mossman area advised that they typically get involved in environmental health services to the community on an as required basis. This includes such activities as vector control for mosquitos.

The provision of effective municipal services is a key environmental health outcome and the community is generally well serviced in this respect. The provision of reticulated sewerage, sealed roads and drainage, reticulated potable water and waste disposal services are all key elements in environmental health from a municipal perspective.

The condition phase (Stage 1b) of this audit proposes to further review the operation of the drainage system at the eastern end of town where some ponding was evident during the initial site visit. The reviews will include Officers from Council's maintenance team for this area.

Expectations for environmental health services (by the community and Council) are to be confirmed to ensure that there is an understanding of the levels of services proposed.

4. Landscaping and Dust Control

The community is well landscaped and has recently had significant landscaping improvements through a landscaping program. At the time of the site visit dust control was not a significant issue.

Generally the Mossman Gorge area receives regular rainfall and is in a wet Tropics area. Accordingly the community remains well vegetated from regular rain and is lush and verdant.

Dust control is therefore not a significant issue within the Mossman Gorge community.

Under the current arrangements, the community has a regular maintenance program including mowing and landscaping. The state of the community witnessed during the site visit suggests significant investment of energies within the community to maintain a high standard of presentation.

It is understood that the community will seek to determine how the current high standard of care for the landscaping would be maintained under a Council serviced arrangement. This may include opportunities for local employment for this service.

5. Management of infrastructure and municipal services

Current management of infrastructure and municipal services is generally provided by the body corporate through government funding.

For those services that the community manages a schedule of works has been provided to Black & More as part of this audit. Based on that schedule the management of the services can be determined. The standard of presentation observed during the site visits suggests a degree of effort in community management.

Discussions with Council Officers have revealed that Council operated water and sewer systems are subject to establishment and meeting of customer service levels.

Council will need to determine these levels of service and implement the appropriate systems to underpin these within its current operations.

Other services are already provided, most notably waste disposal, and these operations will be essentially unchanged.

Council Field Officers from each of the key disciplines have been invited to attend the site investigation work during the condition assessment phase of the audit (Stage 1b) to enable input into the future management of the infrastructure and municipal services.

6. Waste

Council currently operates waste services within the Mossman Gorge community. Community representatives advised that the residents take the bins down to Lund Street for collection. The garbage pickup does not enter the smaller cul-de-sac streets.

The route for the refuse collection vehicle is understood to be as shown on SKETCH 6990-8 Turning Path Analysis, (refer path shown on lower half of plan).

This was confirmed in subsequent discussions with Council Officers. It was advised that the current waste collection schedule for the Mossman Gorge Community is that all refuse (general waste) is collected once weekly. There is currently no recycling schedule as contamination has been an issue. Other than the recycling contamination, there are no other reported servicing issues.

Council will need to consider what additional public infrastructure is proposed to service the Park and public use areas.

7. Air & Sea Infrastructure

There is no Sea infrastructure provided specific to the Mossman Gorge community. Port Douglas is some 15 minutes drive away with infrastructure for marine purposes. It is understood that this is sufficient the needs of the surrounding area inclusive of the Mossman community.

There is no air infrastructure provided specific to Mossman Gorge community. There are open spaces within the community that could facilitate access via helicopter if needed on an ad-hoc basis for emergencies. It is not known whether the emergency services have a particular area that they prefer.

The major airport for the region is the Cairns International Airport located in North Cairns.

8. Cemeteries

There is a private cemetery to the east of the community. Access to the cemetery in times of high rainfall is problematic.

The land use for the plot of land containing the cemetery has not been formalised for this use. A key outcome of Council formalising municipal services and the town plan will include formalising the tenure of the private cemetery.

A draft survey plan was prepared some time ago proposing the bounds of the cemetery. It is not known whether that plan had regard to flooding, growth to the cemetery or other issues.

It is understood Council would need some further detail to formalise its position. It is also understood that due to practicalities of the limited size the private cemetery may need to be managed to limit those eligble for burial at this site.

The Mossman Town Cemetery provides an alternative to the private cemetery.

9. Town Planning

This audit of the municipal infrastructure will inform the subsequent town planning process; In particular, with regards to potential constraints on the layout.

Examples include provision for drainage easements where outlets are through future lots. Similarly preservation of corridors for power services has been identified as a desirable outcome.

It is understood that the attached town plan document **Attachment 9** has been prepared for discussion with the community. Whilst it is acknowledged that the layout is not finalised, the general intent has been considered in providing advice on infrastructure with the community.

Road Reserves
The current verge widths and therefore overall road reserve widths are generally less than the current guidelines propose. A key outcome that reserve widths seek to achive is the accommodation of the various services within an achievable corridor. This applies both at a construction level and at an ongoing maintenance/accessability level.

The current verges along Lund Street are defined by existing fences and the road kerbing. The verges are 3m wide and this is considered the minimum practical. In the lesser Streets (the three Closes) verge widths vary and are as low as 2.25m between existing fence and invert of kerb.

Drainage Reserves
The proposed layout has generally reflected the existing drainage paths. This is reflected in the proposed reserves adjacent the Mossman Gorge Road and the layout for the lots to the South from the Mossman Gorge Road.

Easements
The need for easements may need consideration as part of the formalisation of the Town plan. This could include for some assets on non-standard alignments. It is not critical at this stage and will continue to be informed by the audit outcomes.

Provision of Services
Theaudit results have confirmed that the majority of the proposed lots have access to all services. There has been a small number of lots identified that are not currently connected to sewer. This will be something that the lot layout needs to consider as it will be a performance criterion that Council will assess against.

Other elements of town planning including lot sizes and shapes have not been considered as part of this audit.

Attachment 2

Infrastructure Audit Summary

MOSSMAN GORGE COMMUNITY

INFRASTRUCTURE AUDIT SUMMARY

This page is a summary of some of the key elements of the infrastructure assessment. Refer to individual audit sheets for detailed audit information.

SEWERAGE

Pipe Type/Size	Grade	Depth	Manhole Spacing	Manhole Type (Drop)	Comments
FNQROC Requirements					
PVC 150mm	1:100 at ends	450mm minimum under lots	80	Std Drg 3000	
	1:150 everywhere else	700mm minimum under roads			
Existing Infrastructure					
PVC 150mm	Generally Compliant	All compliant	Compliant	Compliant	Two pipes in Lines A1 and A4 too flat
					No Trunk Sewers
					Catchment of 40 lots

WATER

Pipe types/sizes	Alignment (from boundary)	Hydrant Spacing	Locale valves, tees and meters	Minimum & Maximum Pressure	Comments
FNQROC Requirements					
50mm MDPE loop	2.8	80	No more than 20 houses to be inconvenienced	22m minimum	
100mm uPVC elsewhere			Located opposite property boundaries	60m maximum	
Existing Infrastructure					
Ø25 loop	Offsets to kerbs not property Boundaries	N/A	Mostly compliant	To Be Determined	Additional valves recommended to allow adequate servicing
Ø100 main		Generally compliant	Mostly compliant	To Be Determined	of mains;
Ø150 main		Generally compliant	Mostly compliant	To Be Determined	Additional Ø100 main to improve service level.

ROADS AND INTERSECTIONS

Description	Reserve Width	Verge Width	Seal Width	Footpath	Design Speed	Catchment Size
FNQROC Requirements from Table D1.1						
Access Place	14.5	4.5	5.5	None	30	0 - 19 dwellings
Access Street	15.5	4.5	6.5	One side	30	20 - 74
Existing Infrastructure						
No Through Roads/Closes	15	2.2 to 3	6	None	30	Under 10
Junkurrji St-Lund St-Bama Bubu St Loop	15	3	6	None	30	40

INFRASTRUCTURE AUDIT SUMMARY

This page is a summary of some of the key elements of the infrastructure assessment. Refer to individual audit sheets for detailed audit information.

STORMWATER DRAINAGE - UNDERGROUND

Pipe/Box Culvert Description	Size	Grade	Pipe Cover	Pipe Velocities (m/s)	Comments
FNQROC and QUDM Requirements					
Reinforced Concrete Pipes	Ø375 minimum	0.2% - 7.5%	400mm minimum under lots	0.7 - 6.0	
Box Culverts	450x300 minimum	0.1% - 20%	N/A	0.7 - 3.0	
Existing Infrastructure					
Reinforced Concrete Pipes	3 pipes below min. size	Compliant	Compliant	Compliant	Insufficient detail on headwalls in as con data
Box Culverts	1 culvert undersize	Generally compliant	Less than minimum	Compliant	

STORMWATER DRAINAGE - OVERLAND

Drain Description	Grade	Minor Storm Event	Major Storm Event	Comments
FNQROC and QUDM Requirements				
Open Channels	0.5% minimum	10 ARI	50 or 100 ARI	
Minor Road Surface Drainage		10 ARI	50 or 100 ARI	
Minor Road Cross Culverts		50 ARI	50 or 100 ARI	
Existing Infrastructure				
Earth Drain	Generally compliant	**	**	**Insufficient information to determine capture and conveyance of minor and major events.
Concrete Spoon Drain	Compliant	**	**	**Proximity of drain to road edge of Lund st to be considered
Road Drainage	Compliant	**	**	**Unlined drains potential conveyance issues

Attachment 3

Tabulated Identification of Roads and Intersections Assets and Audit Findings
SKETCH 6990-3a Roads and Intersections Audit
SKETCH 6990-3b Mossman Gorge Road & Junkurrji St Sight Distance Check
SKETCH 6990-3c Turning Path Analysis

ROADS AND INTERSECTIONS INFRASTRUCTURE AUDIT

Description	Reserve Width (m)	Verge Width (m)	Seal Width (m)	Kerb Returns (m)	Linemarking / Signage	Geometry	Sight Distance	Drainage	Notes	Recommendation	References
Intersection No.1 (Mossman Gorge Road & Junkurrji St)	40	-	5.5m - MGR 7m Junkurrji St	7	None; Minimal signage	2m widening with 16m tapers	Requires 30-36m; intersection non-compliant due to vegetation	Layback K&C back to culvert on Junkurrji St	Verges heavily vegetated impacting sight distance;	Consider: Upgrading intersection to AUR or CHR(S) Increase kerb returns to R10 Provision of lighting over intersection; Clear vegetation as minimum so sight distance complies.	Austroads Pt 4A: Pg 40; Pt 3: Pg106
Road Section No.1 (Junkurrji St)	15	1.5 - 3.5	7 - 10	-	None	Alignment not central to reserve	-	Poor drainage at cross culvert due to existing fig tree and poorly aligned open drain	Verge widths constrained for service alignments	Minor earthworks to realign open drain on LHS to drain to inlet of culvert;	FNQROC Table D1.1 Std Dwg S1005
Intersection No.2 (Junkurrji St & Kankarr St)	15	4.3 - 4.5	6 - 8	5 & 8	None	4 Way Intersection	Acceptable (Intersection Clear)	Longitudinal Concrete Spoon Drains		Consider: Linemarking at the intersection; Upgrade kerb returns; Signage upgrade	
Road Section No.2 (Kankarr St)	15	4.2 - 4.5	5.5 - 6	-	None	-	-	Longitudinal Concrete Spoon Drains			
Intersection No.4 (Kankarr St West T-Head)	No Reserve Defined	-	7m on Kankarr St Left leg: 4m Right leg: 4m	RHS: 10 Between turning legs: 3	None	Leg lengths 4.5 - 6.3	Acceptable (Intersection Clear)				QLD STS Figure.2.12.M
Road Section No.3 (Kankarr St East)	15	4.3 - 4.5	6	-	None	Alignment not central to reserve	-	Open drain traverses Lot 11	Road verge at street end not consistent	Consider: Realigning open drain; Signage for dead end street; Linemarking	
Road Section No.4 (Junkurrji St)	15	4.5 - 3.8	6	-	None	Alignment not central to reserve	-	Open lined drain		Consider: Linemarking & signage	
Intersection No.3 (Junkurrji St & Lund St)	LHS: 15 RHS: unclear (varies from 18-29)	Left Leg: 3.1-5.5 Right Leg: 3m; varies	Left Leg: 6 Right Leg: 6 Access: 3.3	10	None	T-intersection; Alignments converge at angles	Acceptable (Intersection Clear)	Left Leg: Concrete spoon drain; Right Leg: Kerb and Channel	Private driveway to the north	Consider: Clearly defined road reserve; Linemarking & signage; Upgrade kerb returns to design vehicle.	
Road Section No.5 (Lund St West)	15	LHS = 5.7 RHS = 3.0	6	-	None	Alignment not central to reserve	-	Concrete spoon drain			
Intersection No.5 (Lund St West T-Head)	No Reserve Defined	-	6 - 4	8.6 - 22	None	Generally complies with QLD Streets	-	Barrier Kerb and Channel	Existing T-Head intersection.	Consider: Signage for dead end street; Linemarking	QLD STS Figure.2.12.M
Intersection No.6 & Road Section No.6 (Private Access & Turning Head)	No Reserve Defined	-	Varies but generally complies with 3m minimum	-	-	Acceptable	-	-			
Road Section No.7 (Private Access)	No Reserve Defined	5.6	1.3	3	-	-	-	-	Bitumen private access	Consider: Community have requested this to be a public laneway	
Road Section No.8 (Lund St)	18 - 29	Varies	6	-	None	Alignment not central to reserve	-	-	-	Consider: Clearly defined road reserve; Linemarking & signage; Streetlighting	
Road Section No.9 (Lund St)	No Reserve Defined	-	5.8	-	None	-	-	Layback Kerb and Channel	-	Consider: Clearly defined road reserve; Linemarking & signage; Streetlighting	
Intersection No.7 & Intersection No.8 & Road Section No.10 (Kanjaji Cl)	No Reserve Defined	-	5	5	None	T-Head dimensions acceptable	-	Layback Kerb and Channel	Why an easement to the North?	Consider: Linemarking at the intersection; Lighting at the intersection; Clearly defined road reserve	QLD STS Figure.2.12.M
Road Section No.11 & Road Section No.12 (Lund St)	No Reserve Defined	-	6	-	None	-	-	Layback Kerb and Channel on road; Open drain adjacent road	Why an easement to the North?	Consider: Linemarking at the intersection; Lighting at the intersection; Clearly defined road reserve; Impact of table drain proximity to carriageway and if barrier is required	
Intersection No.9 & Intersection No.10 & Road Section No.14 (Manjal Cl)	No Reserve Defined	-	6	5	None	T-Head dimensions acceptable	-	Drainage outlets to 300Ø RCP into open drain.	Why an easement to the North?	Consider: Linemarking at the intersection; Lighting at the intersection; Clearly defined road reserve;	

ROADS AND INTERSECTIONS INFRASTRUCTURE AUDIT

Description	Reserve Width (m)	Verge Width (m)	Seal Width (m)	Kerb Returns (m)	Linemarking / Signage	Geometry	Sight Distance	Drainage	Notes	Recommendation	References
Intersection No.11 & T-Head No.12 & Road Section No.15 (Walkarr St)	No Reserve Defined	-	6	5	None	T-Head dimensions acceptable	-	Drainage outlets to 300Ø RCP into open drain.	Why an easement to the North?	Consider: Linemarking at the intersection; Lighting at the intersection; Clearly defined road reserve;	
Intersection No.14 (Lund St & Bama Bubu St)	No Reserve Defined	-	6	7	None	-	-			Consider: Linemarking at the intersection; Lighting at the intersection; Clearly defined road reserve; Upgrade kerb returns to design vehicle	
Intersection No.15 & Road Section No.16 (Mossman Gorge Rd & Bama Bubu St)	40	-	6	6.5	None		Acceptable (Intersection Clear)	Cross drainage culvert at intersection	Why is concrete slab behind culvert? Scour issues?	Consider: Linemarking at the intersection; Lighting at the intersection; Clearly defined road reserve; Culvert capacity and possible upgrade requirement Upgrade kerb returns to design vehicle.	
Intersection No.13 & Road Section No.13 (Lund St)	No Reserve Defined	-	6	4	None	Geometry generally complies	-	Drainage outlet via concrete spoon drain to open drain.		Consider: Easement over concrete spoon drain on Western side	

Considerations:

Mossman Gorge Road

Design speed 40km/hr;
Future use reduced to Local Traffic Only therefore traffic load may not warrant intersection upgrade;
Consider lighting intersections on Mossman Gorge Raod and upgrading lighting, linemarking and signage;
Are coaches going to use this road or only shuttles?

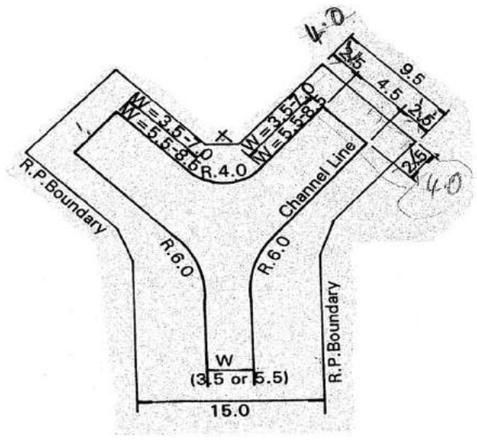
Community

Low speed environment so non-compliant geometry won't have a huge impact;
Garbage pick-up will be from the loop road Junkurrji-Lund-Mossman Gorge Road, therefore these streets should comply with 12.5m single unit truck design vehicle criteria as a minimum. FNQROC says no turning heads -> CRC to decide to accept or upgrade (if upgrading then suggest kerb and channel be constructed rather than open lined drains)
Coucil to consider pedestrian traffic and option of footpaths to provide connectivity

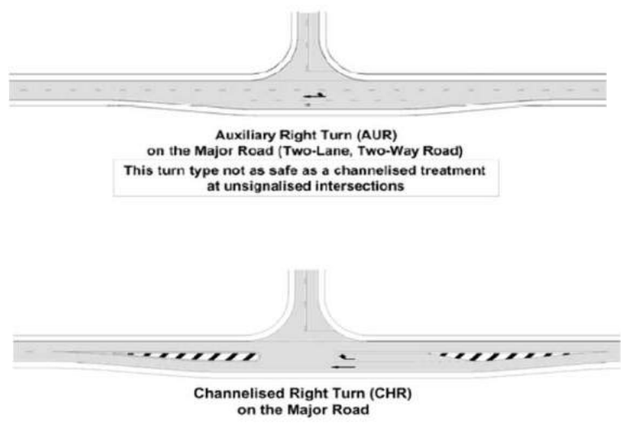
Requirements:
D1.1
Access Place
Reserve Width - 14.5m Seal Width - 5.5m
Verge Width - 4.5m Design Speed - 30km/h
Lighting P4
Min R9.0 on Kerb Returns
Design Vehicle - Single Unit/Truck

T - Heads not permitted under FNQROC
Provision for on street parking in turning head

QLD ST's FIGURE 2.12m



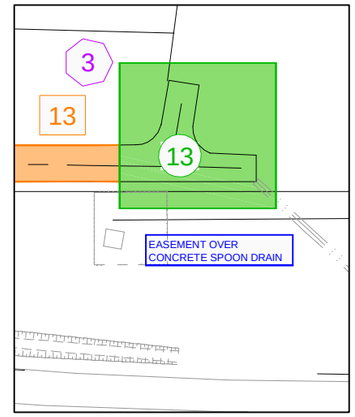
AUSTROADS INTERSECTION LAYOUTS



N

LEGEND

- 6 — NUMBER OF LOTS SERVICED
- 9 — INTERSECTION NUMBER
- 10 — ROAD SECTION NUMBER
- 1. REALIGN OPEN DRAIN 2. SIGNAGE FOR DEAD END STREET 3. LINEMARK STREET — RECOMMENDATION



INSET

LUND STREET

KANKARR STREET

JUNKURRJI STREET

JANKAJI CLOSE

MANJAL CLOSE

WALKARR CLOSE

BAMA BUBU STREET

MOSSMAN GORGE ROAD

1. COMMUNITY REQUEST FOR THIS TO BE A PUBLIC LANEWAY

1. SIGNAGE FOR DEAD END STREET 2. LINEMARKING

1. CLEARLY DEFINE ROAD RESERVE 2. LINEMARKING & SIGNAGE 3. UPGRADE KERB RETURNS TO 9m MIN.

LINEMARKING

1. CLEARLY DEFINE ROAD RESERVE 2. LINEMARKING & SIGNAGE AT THE INTERSECTION 3. STREETLIGHTING

1. CLEARLY DEFINE ROAD RESERVE 2. LINEMARKING & SIGNAGE AT THE INTERSECTION 3. STREETLIGHTING

1. LINEMARK THE INTERSECTION 2. UPGRADE KERB RETURNS TO MIN. 9m 3. UPGRADE SIGNAGE

1. REALIGN OPEN DRAIN 2. SIGNAGE FOR DEAD END STREET 3. LINEMARK STREET

REALIGN OPEN DRAIN TO INLET OF CULVERT

1. CLEARLY DEFINE ROAD RESERVE 2. LINEMARKING & SIGNAGE AT THE INTERSECTION 3. STREETLIGHTING 4. PROXIMITY OF TABLE DRAIN TO ROAD - BARRIER REQUIRED

1. CLEARLY DEFINE ROAD RESERVE 2. LINEMARKING & SIGNAGE AT THE INTERSECTION 3. STREETLIGHTING 4. UPGRADE KERB RETURNS TO 9m MIN.

1. UPGRADE INTERSECTION TO AUR OR CHR(S) INTERSECTION LAYOUT (REFER AUSTROADS, PART 4A) 2. PROVIDE LIGHTING OVER INTERSECTION 3. CLEAR VEGETATION FROM ENCROACHING INTO SIGHT DISTANCE AREAS

1. LINEMARKING & SIGNAGE AT THE INTERSECTION 2. LIGHTING AT THE INTERSECTION 3. CLEARLY DEFINE ROAD RESERVE 4. UPGRADE KERB RETURNS TO 9m MIN. 5. CONFIRM CULVERT CAPACITY-POSSIBLY

To Mossman Gorge

To Mossmar

REFER TO INSET

0 10 20 30 40 50m

SCALE 1:1000 (A1 SIZE)

PRELIMINARY ONLY

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CAIRNS REGIONAL COUNCIL
MOSSMAN GORGE SUBDIVISION

ROADS AND INTERSECTIONS AUDIT

SKETCH 6990-3a

Date	Project Number
MARCH 2012	6990
Drawing Size	Scale (A1 size)	Revision
A1	1:1000	A

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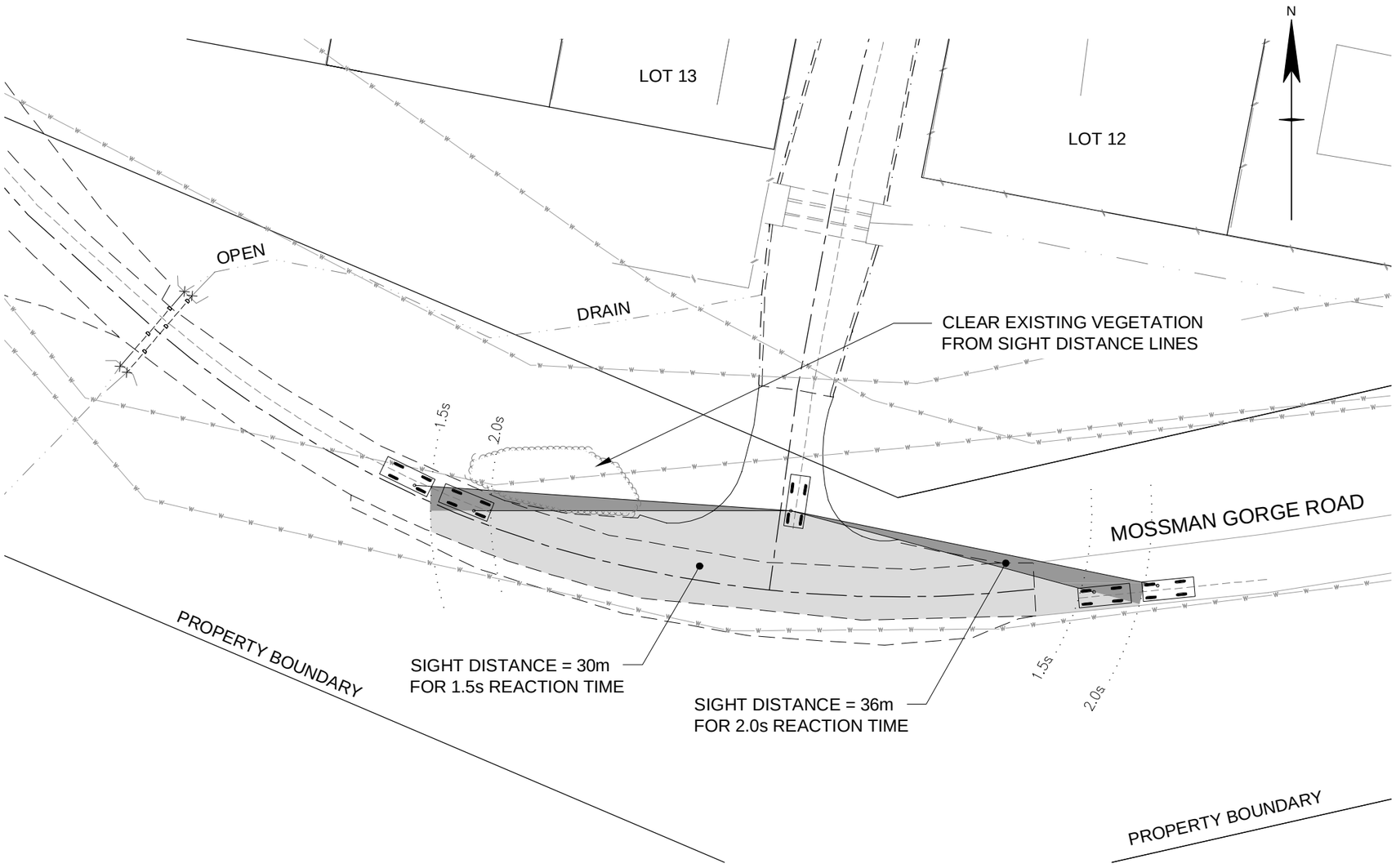
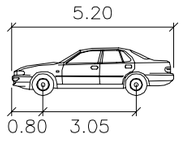


PLAN
SCALE 1:500

MOSSMAN GORGE ROAD LOOKING EAST

MOSSMAN GORGE ROAD LOOKING WEST

FROM MOSSMAN GORGE ROAD LOOKING ONTO JUNKURRJI STREET



B99 Car	meters
Width	: 1.94
Track	: 1.55
Lock to Lock Time	: 6.0
Steering Angle	: 29.0

0 5 10 15 20m
SCALE 1:500 (A3 SIZE)

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CAIRNS REGIONAL COUNCIL
MOSSMAN GORGE COMMUNITY

INTERSECTION MOSSMAN GORGE ROAD & JUNKURRJI ST
SIGHT DISTANCE CHECK

SKETCH 6990-3b

Date	Project Number
MAR 2012	6990
Drawing Size	Scale (A3 size)	Revision
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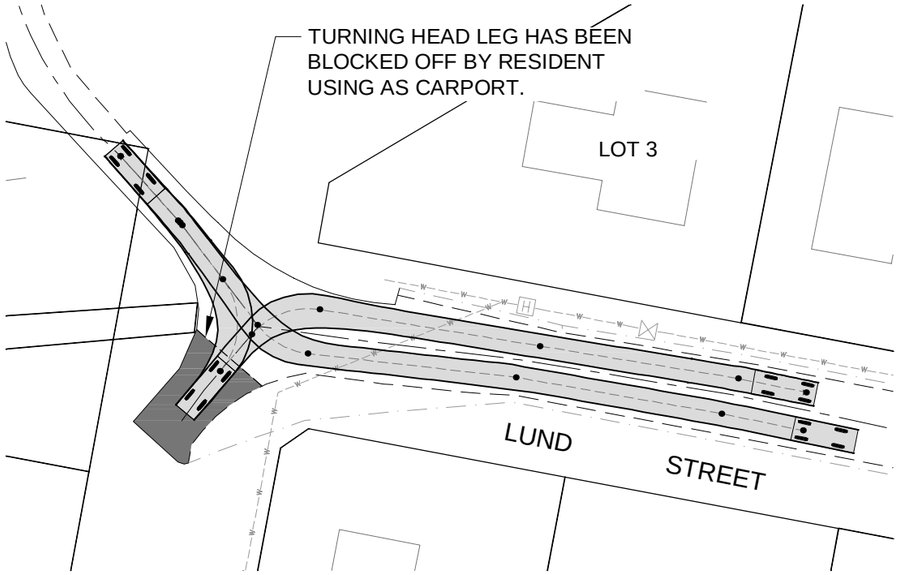
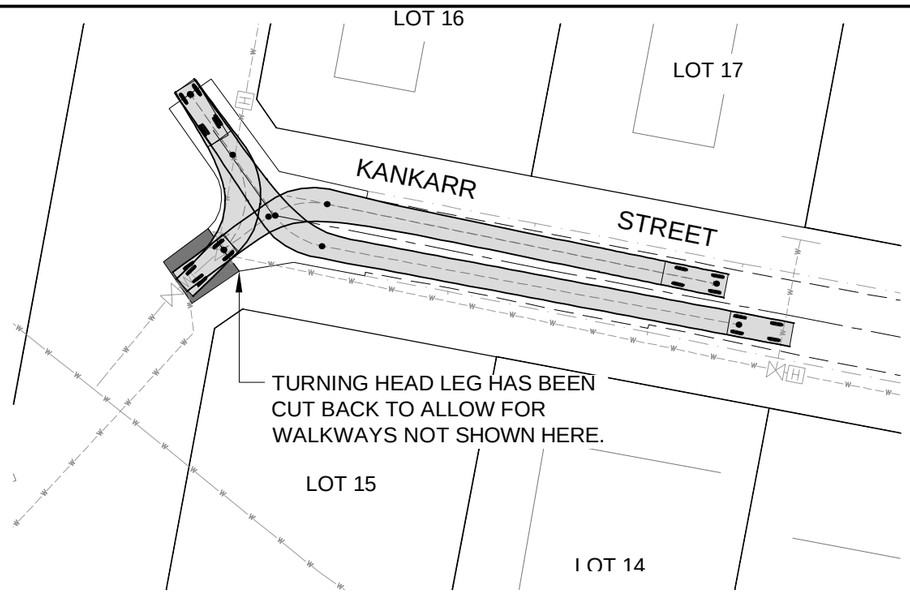
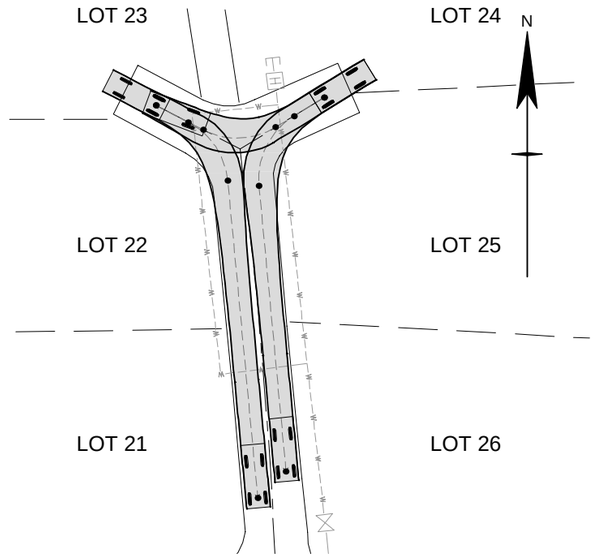


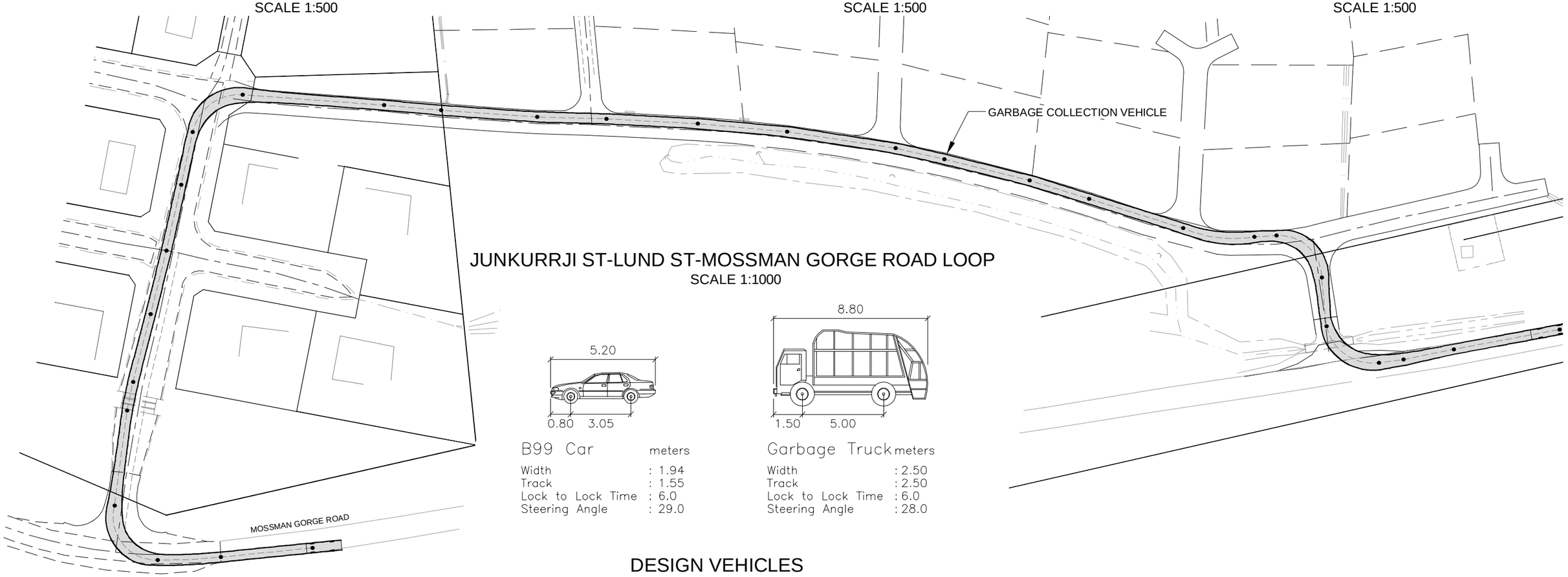
LUND ST TURNING HEAD
SCALE 1:500



KANKARR ST TURNING HEAD
SCALE 1:500



JANKAJI CL TURNING HEAD
SCALE 1:500



JUNKURRJI ST-LUND ST-MOSSMAN GORGE ROAD LOOP
SCALE 1:1000

B99 Car	meters
Width	: 1.94
Track	: 1.55
Lock to Lock Time	: 6.0
Steering Angle	: 29.0

Garbage Truck	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 28.0

DESIGN VEHICLES

0 5 10 15 20m
SCALE 1:500 (A3 SIZE)

0 10 20 30 40m
SCALE 1:1000 (A3 SIZE)

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CAIRNS REGIONAL COUNCIL
MOSSMAN GORGE COMMUNITY

TURNING PATH ANALYSIS

SKETCH 6990-3c

Date	Project Number
MAR 2012	6990
Drawing Size	Scale (A3 size)	Revision
A3	AS NOTED	A

File: G:\Synergy\Projects\C1206990 Mossman Gorge Subdivison\Drawings\ SKETCH 6990-003c.dwg
Printed: 30 March 2012, 10:40 AM
External References: B&M-TITLE-SKETCH-A3_e.dwg

Attachment 4

Tabulated Identification of Sewerage Infrastructure and Audit Findings

SKETCH 6990-4 Sewer Audit

SEWERAGE INFRASTRUCTURE AUDIT

Line Name	Manhole numbers	Manhole Alignment 1.5m from front boundary and 0.8m from side/rear boundary		Grade Minimum grade is 1:100 for start of lines and 1:150 elsewhere		Pipe Type/Size Pipe type to be PVC pipe size to be 150mm dia.	Manhole Drop Types per FNQROC Std drawing S3000		HCB Location per FNQROC manual 0.5m to 1.5m from property boundary		HCB Type per FNQROC std drgs S3005		Depth per WSA 02-2002-2.3 Min. cover 450mm under lots & other, Min. cover 700mm under roads	
		Finding	Recommendation	Finding	Recommendation	Finding	Finding	Recommendation	Finding	Recommendation	Finding	Recommendation	Finding	Recommendation
A1	MH 9/A1 to MH 8/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 8/A1 to MH 7A/A1	non-standard, offsets from fences	easement	1:178 inadequate	ask for any system failures within this vicinity	yes	adequate	nil	non-standard	nil	MH 8/A1 has HCB connecting in (non-standard)	Review of CCTV footage to determine if there's any infiltration	✓	nil
	MH 7A/A1 to MH 7/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	MH 7/A1 has HCB connecting in (non-standard)	Review of CCTV footage to determine if there's any infiltration	✓	nil
	MH 7/A1 to MH 6/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 6/A1 to MH 5/A1	non-standard, offsets from fences	easement	adequate	nil	yes	MH 5/A1 branch greater than 90° has drop of 44mm - less than standard. MH 5/A1 branch with acute angle has drop of 80mm.	Review of CCTV footage to determine if benching in manhole is sufficient.	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 5/A1 to MH 4/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 4/A1 to MH 3/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 3/A1 to MH 2/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 2/A1 to MH 1/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
A1 STUB	MH 4a/A1 to MH 4/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 2a/A1 to MH 2/A1	non-standard, offsets from fences	easement	adequate	nil	yes	MH 2/A1 has branch with acute angle and drop of 30mm - less than standard.	Review of CCTV footage to determine if benching in manhole is sufficient.	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
A2	MH 2/A2 to MH 1/A2	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 1/A2 to MH 5/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	MH 1/A2 has HCB connecting in (non-standard)	Review of CCTV footage to determine if there's any infiltration	✓	nil
A3	MH 4/A3 to MH 3/A3	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 3/A3 to MH 2/A3	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 2/A3 to MH 1/A3	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	MH 1/A3 has HCB connecting in (non-standard)	Review of CCTV footage to determine if there's any infiltration	✓	nil
	MH 1/A3 to MH 5/A1	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	unidentifiable	nil	✓	nil
A4	MH 2/A4 to MH 1/A4	non-standard, offsets from fences	easement	adequate	nil	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable	nil	✓	nil
	MH 1/A4 to MH 1/A1	non-standard, offsets from fences	easement	1:171 inadequate	pt	yes	adequate	nil	non-standard	nil	not shown on as-con data, unidentifiable		✓	nil

Pump Station	
Finding	Recommendation
located in Mossman Gorge Road reserve, infrastructure already owned by CRC.	none required unless advised otherwise by CRC

LEGEND

- EDGE OF SEALED ROAD
- SEWER PIPE
- SEWER PIPE & HCB
- OPEN LINED DRAIN
- TOP OF BANK
- TOE OF BANK
- SEWER MANHOLE

N

Mossman River

REQUIRES ON SITE INFRASTRUCTURE (PUMPING) TO CONNECT TO SEWER

WORKSHOP

MH 3/A3
RL TOP 44.66

MH 4/A3
RL TOP 45.39

MH 2/A3
RL TOP 42.84

MH 1/A3
RL TOP 41.43

MH 4a/A1
RL TOP 41.56

MH 4/A1
RL TOP 39.93

MH 3/A1
RL TOP 39.67

MH 1/A1
SEE DIAGRAM
RL TOP 38.44

MH 2a/A1
RL TOP 38.81

MH 2/A4
RL TOP 38.29

MH 1/A4
RL TOP 38.37

MH 2/A2
RL TOP 44.69

MH 1/A2
RL TOP 43.41

MH 5/A1
RL TOP 41.75

MH 2/A1
RL TOP 38.63

PUMP STATION
RL TOP 38.47

MH 8/A1
RL TOP 45.55

MH 7A/A1
RL TOP 43.90

MH 7/A1
RL TOP 42.58

MH 6/A1
RL TOP 41.45

MH 9/A1
RL TOP 46.01

TO MOSSMAN GORGE

SUITABLE FOR CONNECTION TO SEWER

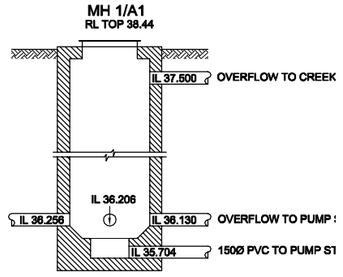
TO MOSSMAN

CHURCH
SHED
SHOP
SHED
SHELTER
HOUSE
FLATS

LUND
STREET
KANKARR
STREET
JUNKURRJI
STREET
JANKAJI CLOSE
MANUAL CLOSE
WALKARR CLOSE
LUND
STREET
BAMA BUBU STREET

Connection for future toilets CH 34.2 IL 43.62

MOSSMAN GORGE ROAD



SEWER MANHOLE
SCALE 1:500

0 10 20 30 40 50m
SCALE 1:1000 (A1 SIZE)

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CAIRNS REGIONAL COUNCIL
MOSSMAN GORGE SUBDIVISION

SEWER AUDIT

SKETCH 6990-4

Date	Project Number
MARCH 2012	6990
Drawing Size: A1	Scale (A1 size): 1:1000
	Revision: A

Printed: 30 March 2012, 10:43 AM File: G:\Synergy\Projects\C1206990 Mossman Gorge Subdivison\Drawings\ SKETCH 6990-004.dwg
External References: B&M-TITLE-SKETCH-A1_e.dwg ; X-BASEPLAN.dwg

Attachment 5

Tabulated Identification of Water Assets and Audit Findings
SKETCH 6990-5 Water Audit

WATER INFRASTRUCTURE AUDIT

Location	Pipe types/sizes as per FNQROC manual (PVC)		Alignment in accordance with FNQROC manual 2.8m from Property Boundary		Hydrant Spacing to be 80m max. per FNQROC manual		Location of valves, tees & meters as per FNQROC manual. No greater than 20 houses should be inconvenienced for maintenance	
	Finding	Recommendation	Finding	Recommendation	Finding	Recommendation	Finding	Recommendation
Mossman Gorge Rd main	Ø100 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	adequate	nil
Kankarr St (west)	Ø100 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	adequate	nil
	Ø100 road crossing type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		nil	nil	adequate	nil
Kankarr St (east)	Ø100 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	adequate		adequate	nil	adequate	nil
	Ø25 PVC loop	assumed pipe type would be PVC based on age of infrastructure.	not specified		adequate	nil	adequate	nil
Junkurrji St (north)	Ø100 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		nil	nil	adequate	nil
Junkurrji St (south)	Ø150 type PVC(not shown on as-con). Based on information from B&M previous project knowledge.	pot hole to confirm exact location.	not specified			nil	adequate	nil
Lund St (west)	Ø150 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	inadequate	additional valve to be installed at tee on Ø150 main so Lund St (east) can be serviced.
Lund St (east)	Ø100 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	inadequate	new Ø100 main connected to existing to allow for more sufficient system
Lund St (a)	Ø150 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	inadequate	additional valve to be installed at tee on Ø150 main so Lund St (a) can be isolated.
	Ø100 road crossing type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	adequate	nil
Lund St (b)	Ø100 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	inadequate	additional valve to be installed at tee on Ø150 main so Lund St (b) can be isolated.
Lund St (c)	Ø100 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	inadequate	additional valve to be installed at tee on Ø150 main so Lund St (c) can be isolated.
Road stub 1	Ø100 type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	adequate	nil
	Ø25 PVC loop	assumed pipe type would be PVC based on age of infrastructure.	non-standard		adequate	nil	adequate	nil
Road stub 2	Ø100 stub for future connection type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		nil	nil	nil	nil
Road stub 3	Ø100 stub for future connection type unspecified	assumed pipe type would be PVC based on age of infrastructure.	non-standard		nil	nil	nil	nil

N

Mossman River

TO MOSSMAN GORGE

DECOMMISSIONED MAIN

SEE DIAGRAM A

STOP VALVE FOR SHOP & OFFICE, PLOTTED FROM DESIGN ONLY

LUND STREET

KANKARR STREET

JUNKURRJI STREET

JANKAJI CLOSE

MANJAL CLOSE

WALKARR CLOSE

BAMA BUBU STREET

MOSSMAN GORGE ROAD

TO MOSSMAN

PROPOSED VALVE

25Ø NB.PVC LOOP

SEE DIAGRAM B

150x100 TEE

150x100 TAPER

FUTURE 100x100 TEE

PROPOSED 100Ø WATER MAIN

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

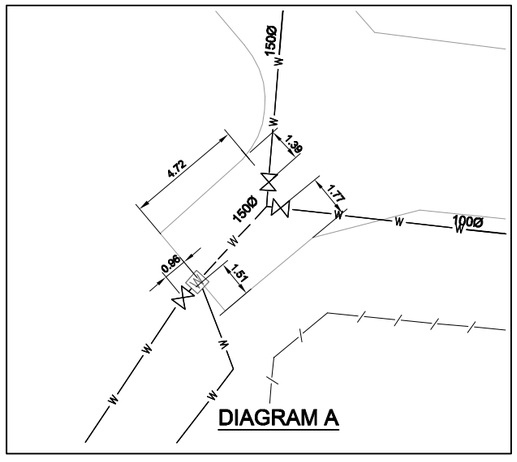

DIAGRAM A

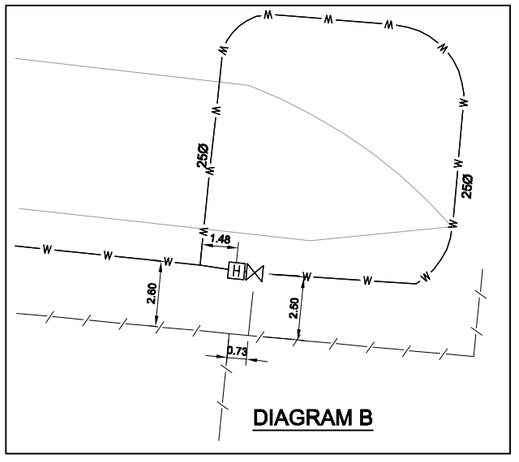

DIAGRAM B

LEGEND

- PROPOSED WATER MAIN
- EXISTING WATER MAIN AND PROPOSED VALVE
- EXISTING WATER MAIN AND DIAMETER
- DECOMMISSIONED WATER MAIN
- TOE OF BATTER
- TOP OF BATTER
- DECOMMISSIONED WATER MAIN
- JUNKURRJI ST (NORTH)
- JUNKURRJI ST (SOUTH)
- KANKARR ST (EAST)
- KANKARR ST (WEST)
- LUND ST (A)
- LUND ST (B)
- LUND ST (C)
- LUND ST (EAST)
- LUND ST (WEST)
- MOSSMAN GORGE RD MAIN
- ROAD STUB 1
- ROAD STUB 2
- ROAD STUB 3

0 10 20 30 40 50m

SCALE 1:1000 (A1 SIZE)

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CAIRNS REGIONAL COUNCIL
MOSSMAN GORGE SUBDIVISION

WATER AUDIT

SKETCH 6990-5

Date	Project Number
MARCH 2012	6990
Drawing Size	Scale (A1 size)	Revision
A1	1:1000	A

File: G:\Synergy\Projects\C1206990 Mossman Gorge Subdivison\Drawings\ SKETCH 6990-005.dwg

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External References: B&M-TITLE-SKETCH-A1_e.dwg ; X-BASEPLAN.dwg

Attachment 6

Tabulated Identification of Underground and Overland Drainage Assets and Audit Findings

SKETCH 6990-6 Stormwater Audit

STORMWATER INFRASTRUCTURE AUDIT - UNDERGROUND DRAINAGE

Line Name	Structure Name/no.	Pipe/Box Culvert Size per FNQROC Section D4.09		Grade per QUDM Pipe Grade Limits Section 7.12		Kerb Inlets and Manholes per FNQROC Section D4.08		Pipe Cover per QUDM minimum limits Section 7.10		Pipe Velocities per QUDM Section 7.11		Headwalls per FNQROC D4.16	
		Finding	Recommendation	Finding	Recommendation	Finding	Recommendation	Finding	Recommendation	Finding	Recommendation	Finding	Recommendation
	Junkurrji St culverts	3/1200 X 450 RCBC	NIL	0.47% less than allowable	NIL	Structures shown on as-con are consistent with what's on site	NIL	no cover, causeway road crossing		Self cleansing provided for 1 in 1 year ARI storm event. Maximum allowable velocities not exceeded for 1 in 100 year ARI storm event	NIL	insufficient details on as-con, site visit confirmed precast units	NIL
1	HW 1/1 to KIP 1/2	375mm RCP	NIL	0.59%	NIL	Structures shown on as-con are consistent with what's on site KIP 1/2 = on grade	NIL	KIP 1/2 = Approx. 665m HW 1/1 = Approx. 275mm		Self cleansing provided for 1 in 1 year ARI storm event. Maximum allowable velocities not exceeded for 1 in 100 year ARI storm event	NIL	insufficient details on as-con, site visit confirmed precast units	NIL
1	KIP 1/2 to KIP 1/3	300mm RCP less than allowable size per FNQROC manual	NIL	3.00%	NIL	Structures shown on as-con are consistent with what's on site KIP 1/3 = on grade	NIL	KIP 1/3 = approx. 800mm		self cleansing provided for 1 in 1 year ARI storm event. Maximum allowable velocities not exceeded for 1 in 100 year ARI storm event	NIL	insufficient details on as-con, site visit confirmed precast units	NIL
1	KIP 1/3 to HW 1/4	300 X 225 RCBC less than allowable size per FNQROC manual	NIL	1.60%	NIL	Structures shown on as-con are consistent with what's on site	NIL	HW 1/4 = approx. 165mm		Self cleansing provided for 1 in 1 year ARI storm event. Maximum allowable velocities not exceeded for 1 in 100 year ARI storm event	NIL	insufficient details on as-con, site visit confirmed precast units	NIL
2	HW 2/1 to KIP 2/2	375mm RCP	NIL	1.82%	NIL	Structures shown on as-con are consistent with what's on site KIP 2/2 = on grade	NIL	HW 2/1 = Approx. 285mm KIP 2/2 = Approx. 325mm (reduced cover)		Self cleansing provided for 1 in 1 year ARI storm event. Maximum allowable velocities not exceeded for 1 in 100 year ARI storm event	NIL	insufficient details on as-con, site visit confirmed precast units	NIL
3	HW 3/1	300mm RCP less than allowable size per FNQROC manual	NIL	insufficient details on as-con	-	insufficient details on as-con	NIL	HW 3/1 = Approx. 270mm		Self cleansing provided for 1 in 1 year ARI storm event. Maximum allowable velocities not exceeded for 1 in 100 year ARI storm event	NIL	insufficient details on as-con, site visit confirmed precast units	NIL
4	HW 4/1	300mm RCP less than allowable size per FNQROC manual	NIL	insufficient details on as-con	-	insufficient details on as-con	NIL	HW 4/1 = Approx. 270mm		Self cleansing provided for 1 in 1 year ARI storm event. Maximum allowable velocities not exceeded for 1 in 100 year ARI storm event	NIL	insufficient details on as-con, site visit confirmed precast units	NIL
	Mossman Gorge Rd culvert	2/600 RCP's	NIL	2.80%	NIL	Structures shown on as-con are consistent with what's on site	NIL	US = approx. 500mm DS = approx. 270mm		Self cleansing provided for 1 in 1 year ARI storm event. Maximum allowable velocities not exceeded for 1 in 100 year ARI storm event	NIL	insufficient details on as-con, site visit confirmed non-standard headwall	NIL
	Bama Bubu Rd culvert	1800 X 750 RCBC	NIL	0.72%	NIL	Structures shown on as-con are consistent with what's on site	NIL	US = approx. 440mm DS = approx. 430mm		Self cleansing provided for 1 in 1 year ARI storm event. Maximum allowable velocities not exceeded for 1 in 100 year ARI storm event	NIL	insufficient details on as-con, site visit confirmed non-standard headwall	NIL

7.12 Pipe grade limits

To conform with the requirements of Section 7.11, and construction limitations the following maximum and minimum grades are recommended for design purposes:

Table 7.12.1 Acceptable pipe grades for pipes flowing full

Pipe Diameter (mm)	Maximum Grade (%)	Minimum Grade (%)
300	20.0	0.50
375	15.0	0.40
450	11.0	0.30
525	9.0	0.25
600	7.5	0.20
675	6.5	0.18
750	5.5	0.15
900	4.5	0.12
1050	3.5	0.10
1200	3.0	0.10
1350	2.5	0.10
1500	2.2	0.10
1650	2.0	0.10
1800	1.7	0.10
1950	1.5	0.10
2100	1.4	0.10
2250	1.3	0.10
2400	1.2	0.10

Notes:

1. Based on maximum velocity for pipe flowing full of 6.0m/s.
2. Based on minimum velocity for pipe flowing full of 1.0m/s except where Note 4 is applicable.
3. Manning's $n = 0.013$ for all cases (concrete pipes).
4. The minimum grade of 0.10% (1:1000) is based on construction tolerance requirements.
5. The **Maximum Grade** requirement applies to both the pipe grade and the hydraulic grade.
6. The **Minimum Grades** apply to the pipe grade only.
7. Where a pipe is flowing less than half full for the design flow being considered, it is permissible to exceed the above maximum grades provided that the velocity limits specified in Table 7.11.1 are not exceeded.

7.10 Minimum cover over pipes

The minimum cover over pipes to be adopted for pipe grading purposes should be:

Table 7.10.1 Recommended minimum cover over pipes

Location	Minimum Cover (mm)	
	Rigid Type Pipes e.g. Concrete, F.R.C.	Flexible Type Pipes e.g. Plastic or Thin Metal
Residential private property, and parks not subject to traffic	300	450
Private property and parks subject to occasional traffic	450	450
Footpaths	450	600
Road pavements and under kerb and channel	600	600

Notes:

1. For special cases, and with the agreement of the local authority, cover can be reduced by using a higher-class pipe, special bedding, concrete protection or a combination of these.
2. Where pipes are to be laid under the footpath consideration should be given to the possibility of future road widening, both in respect of the reduced cover that might result from the widening and vehicle loading.

7.11 Flow velocity limits

The velocity of stormwater in pipes and box sections should be maintained within acceptable limits to ensure that:

(i) self cleaning of the pipe or box section is maintained;

(ii) scouring and erosion of the conduit, (particularly the invert) does not occur.

The range of acceptable flow velocities are as detailed in Table 7.11.1.

Table 7.11.1 Acceptable flow velocities for pipes and box sections

Flow Condition	Absolute Minimum [1] (m/s)	Desirable Minimum [1] (m/s)	Desirable Maximum [2] (m/s)	Absolute Maximum [2] (m/s)
Partially full	0.7	1.2	4.7	7.0
Full	0.6	1.0	4.0	6.0

Notes:

[1] Minimum flow velocities apply to 1 in 1 year ARI design storm, and apply to all pipe materials.

[2] Maximum flow velocities apply to concrete pipes. For other pipe materials, refer to manufacturer's advice.

Part-full flow characteristics of pipes may be determined from the appropriate Design Chart contained in Volume 2.

In steep terrain the velocity of flow should not be greater than the absolute maximum velocity of 6.0 m/s under "pipe full" conditions. To achieve this requirement, it may be necessary to construct access chambers with drops to dissipate some of the kinetic energy of the flow, or to limit the pipe diameter.

Reference should be made to Tables 9.05.1 and 9.05.3 for details of velocity limits for vegetated and grassed/unlined channels.

Notwithstanding the above suggested velocity limits, hydraulic considerations may require the velocity be controlled to well below the "Desirable Maximum" and/or the pipe size increased to minimise structure losses and the slope of the hydraulic grade line.

D4.09 PIPES / BOX CULVERTS

1. Stormwater drainage pipes and boxes shall be generally be of reinforced concrete (including FRC) construction and in accordance with the following:
   - Minimum pipe size 375mm dia, minimum box culvert size 450mm x 300mm.
   - Minimum clear cover shall be 600mm in general or in accordance with manufacturers specification, otherwise approved by the Council.
   - The minimum vertical and horizontal clearances between a stormwater pipe and any other pipe or service conduit shall be 150mm.
   - In areas of high water table, the designer must consider buoyancy uplift in relation to pipe/culvert joints.
   - In aggressive environments or where any part of the pipe / box culvert is below the Highest Astronomical Tide (RL 1.80m AHD), pipes / box culverts will have cover to reinforcement in accordance with the exposure classification requirements of AS 3600.

STORMWATER INFRASTRUCTURE AUDIT - OVERLAND DRAINAGE

Drain Name	Open Channel Type, Profile, Safety per FNQROC Section D4.12		Grade Minimum 0.5% fall		Minor Storm Event per QUDM Section 7.02		Major Storm Event per QUDM Section 7.02	
	Finding	Recommendation	Finding	Recommendation	Finding	Recommendation	Finding	Recommendation
Drain 1	earth drain (unlined) sides of drain vary 1 in 4 is average.	NIL	120m @ 2.44%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of minor event	
Drain 2 (A)	earth drain (unlined), slopes vary but are approx. 1 in 5 most places	Partially fill drain and install low flow pipe.	177m @ 1.11%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Drain 2 (B)	earth drain (unlined), sides are rock lined and approx. 1 in 1	NIL	45m @ 0%	Re-grade to ensure free draining	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Drain 3 (A)	earth drain (unlined) shallow & mowable sides, insufficient details to determine slope of sides	NIL	31m @ 2.38%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Drain 3 (B)	earth drain (unlined) shallow & mowable sides, insufficient details to determine slope of sides	NIL	70m @ 1.90%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Drain 3 (C)	earth drain (unlined) shallow & mowable sides, insufficient details to determine slope of sides	NIL	61m @ 1.80%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Drain 4	concrete spoon drain (lined) non-standard kerb used approx. 1m wide	NIL	38m @ 0.63%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Drain 5	concrete spoon drain (lined) non-standard kerb used approx. 1m wide	NIL	37m @ 1.2%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Drain 6	concrete spoon drain (lined) non-standard kerb used approx. 2m wide	NIL	40m @ 0.75%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Drain 7	concrete spoon drain (lined) non-standard kerb used approx. 2m wide	NIL	25m @ 3.32%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Lund Street	Road drainage provided by road crown and kerb & Channel or concrete spon drains.	NIL	Free draining, 0.5%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	
Kankarr, Junkurrji, Jankaji, Manjal, Walkarr, Bama Bubu Street	Road drainage provided by road crown and kerb & Channel or concrete spon drains.	NIL	Free draining, 0.5%	NIL	More detailed information required to assess capture and conveyance of minor event		More detailed information required to assess capture and conveyance of major event	

D4.12 OPEN CHANNELS

1. Generally, open channels will only be permitted where they form part of the trunk drainage system and shall be designed to have smooth transitions with adequate access provisions for maintenance and cleaning. Where Council permits the use of an open channel to convey flows from a development site to the receiving water, such a channel shall be designed in accordance with QUDM.

2. Maximum side slopes on grass lined open channels shall be 1 in 4, with a preference given to 1 in 6 side slopes, channel inverts shall generally have minimum cross slopes of 1 in 10.

3. Low flow provisions in open channels to prevent scouring from trickle flows shall be provided to all grass lined channels. Trickle flow protection shall be contained within a pipe or hard lined channel and shall be designed to cater for the 3 month ARI storm event (60 per cent of the 1 Year ARI storm event flow).

4. Subsurface drainage shall be provided in grass-lined channels to prevent waterlogging of the channel bed.

5. Profiles of all grass lined channels shall such that mowing may be undertaken by a tractor and slasher to the satisfaction of Council.

6. Where the flow velocity and / or depth within an open channel pose a safety hazard, barrier fencing and / or appropriate hazard warning signs shall be provided to discourage access to the channel. The extent of precautions should be determined following consultation with Council.

7. The depth velocity product and the gutter flow widths are to be included in the submitted drainage calculations

Table 7.02.1 Recommended design average recurrence intervals

(i) MAJOR SYSTEM DESIGN ARI (years)		50 or 100 [1]
(ii) MINOR SYSTEM DESIGN ARI (years)		
Development Category		
Central Business and Commercial		10
Industrial		2
Urban Residential High Density – greater than 20 dwelling units/ha		10
Urban Residential High Density – greater than 5 & up to 20 dwelling units/ha		2
Rural Residential – 2 to 5 dwelling units/ha		2
Open Space – Parks, etc.		1
Major Road	Kerb & Channel Flow	10 [2]
	Cross Drainage (Culverts)	50 [3]
Minor Road	Kerb & Channel Flow	Refer to relevant development category
	Cross Drainage (Culverts)	10 [3]

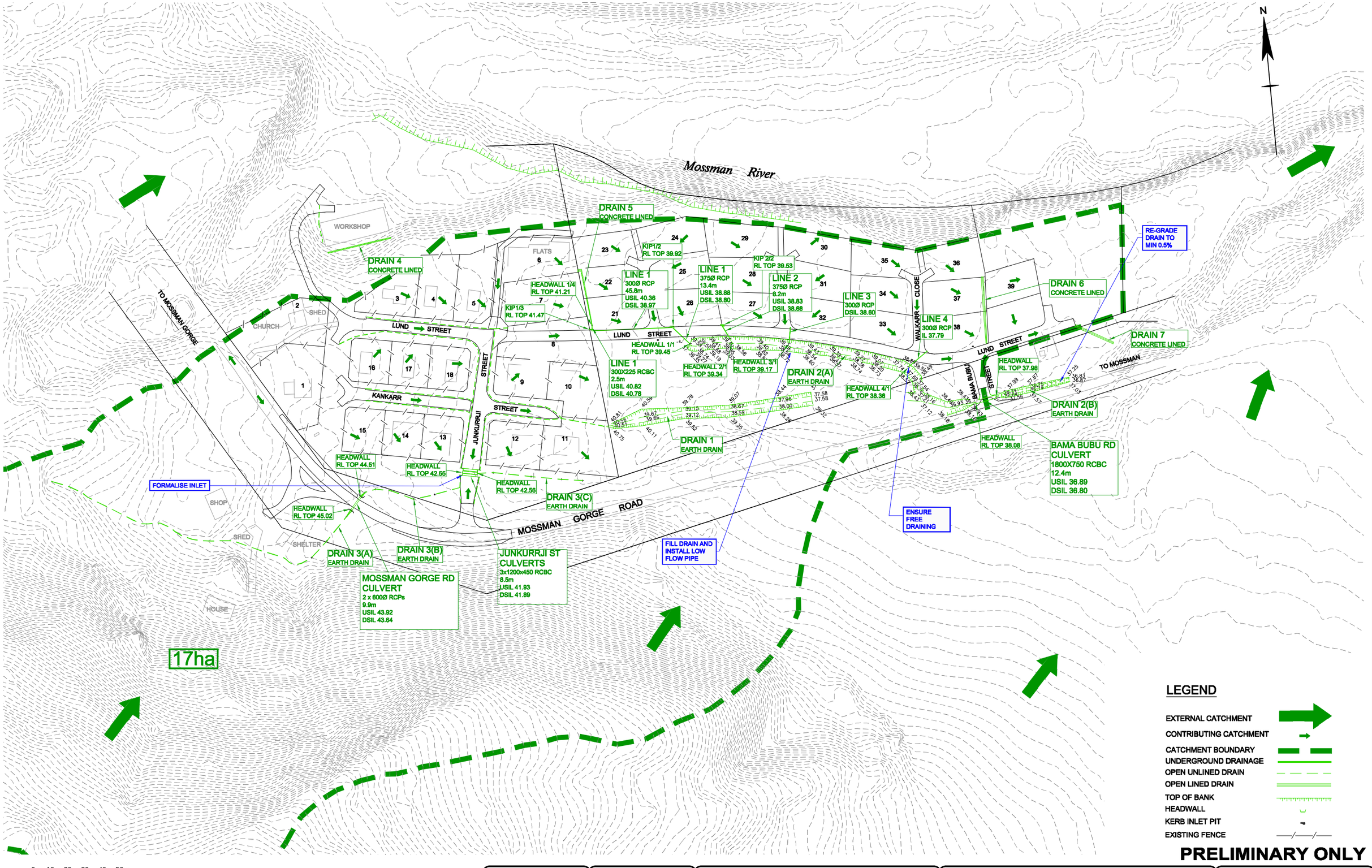
Notes:

[1] Refer to relevant local authority for confirmation of required Design Storm ARI. The 50 year ARI is adopted by some local governments for drainage paths where there is expected to be good control of surface roughness (e.g. roadways and well-maintained grass channels). The 100 year ARI is commonly adopted for the design of major waterways and drainage paths where it is difficult to predict actual flow conditions (e.g. channels subject to complicated 3D hydraulics, or drainage paths likely to be subject to significant physical change) or where the surface roughness can be highly variable (e.g. vegetated channels). *State Planning Policy 1/03* recommends adoption of the 100 year ARI flood frequency for waterway flood management planning.

[2] The design ARI for the minor drainage system in a major road shall be that indicated for the major road, not that for the Development Category of the adjacent area.

[3] Culverts under roads should be designed to accept the full flow for the minor system ARI shown. In addition the designer must ensure adequate public safety controls (e.g. d*V product) exist and that the nominated Major Storm flow does not cause unacceptable damage to adjacent properties, or adversely affect the use of the land. If upstream properties are at a relatively low elevation, it may be necessary to install culverts of capacity greater than that for the minor system ARI design storm to ensure unacceptable flooding of upstream properties does not occur. In addition, the downstream face of causeway embankments may need protection where overtopping is likely to occur.

[4] The terms used in this table are described in the Glossary and Table 7.02.2.



LEGEND

- EXTERNAL CATCHMENT
- CONTRIBUTING CATCHMENT
- CATCHMENT BOUNDARY
- UNDERGROUND DRAINAGE
- OPEN UNLINED DRAIN
- OPEN LINED DRAIN
- TOP OF BANK
- HEADWALL
- KERB INLET PIT
- EXISTING FENCE

PRELIMINARY ONLY

0 10 20 30 40 50m
SCALE 1:1000 (A1 SIZE)

Black & More
ABN 24 845 447 493
93 Digger St Cairns North QLD 4870
PO Box 999N Cairns North QLD 4870
Telephone (07) 4031 9944
Fax (07) 4031 9914
Email black.more@blackm.com
Internet www.blackm.com

CAIRNS REGIONAL COUNCIL
MOSSMAN GORGE SUBDIVISION

STORMWATER AUDIT

SKETCH 6990-6

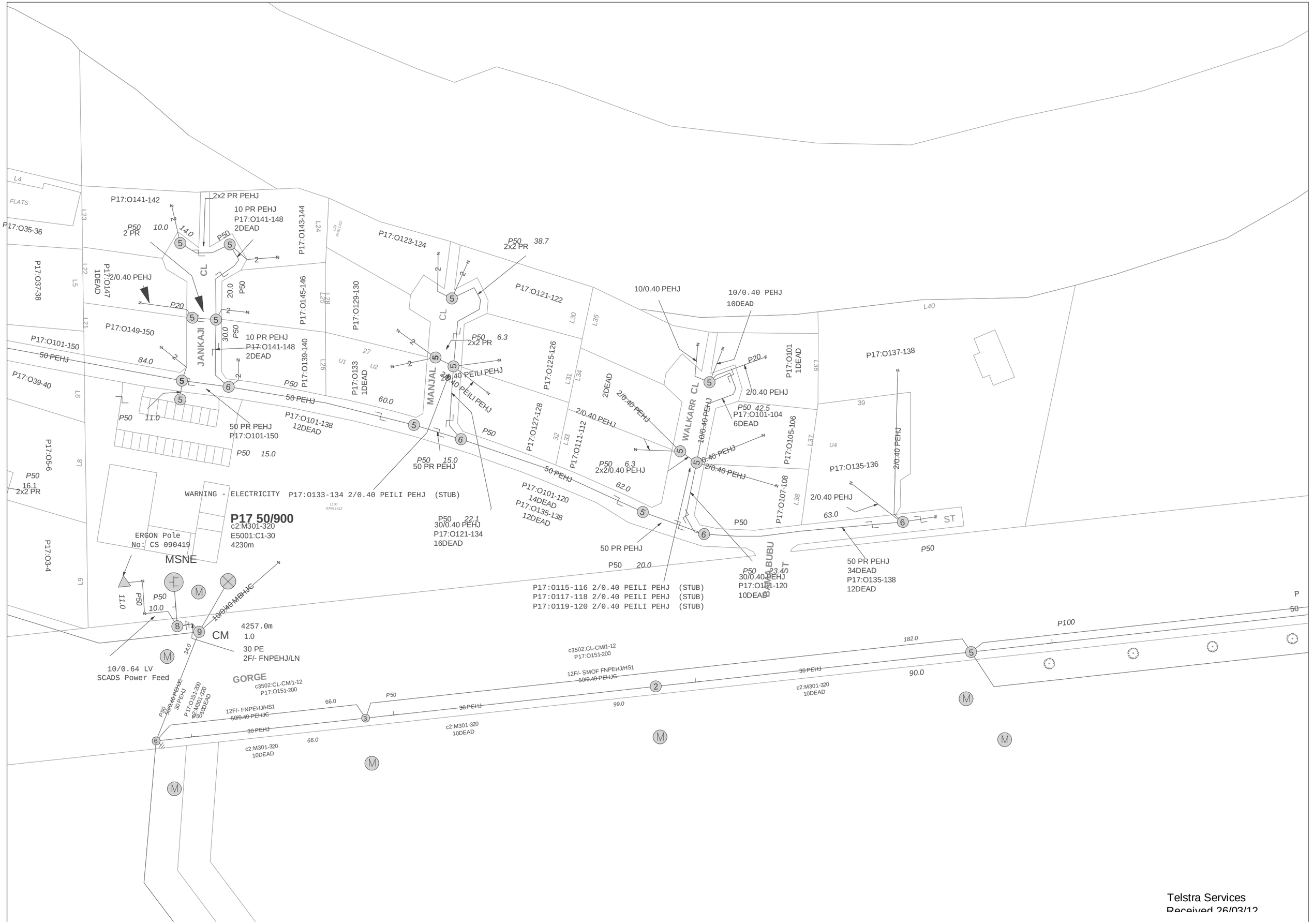
Date	Project Number
MARCH 2012	6990
Drawing Size	Scale (A1 size)	Revision
A1	1:1000	A

File: G:\Synergy\Projects\C1206990 Mossman Gorge Subdivison\Drawings\ SKETCH 6990-006.dwg
Printed: 30 March 2012, 10:53 AM
External References: B&M-TITLE-SKETCH-A1_e.dwg ; X-BASEPLAN.dwg

Attachment 7

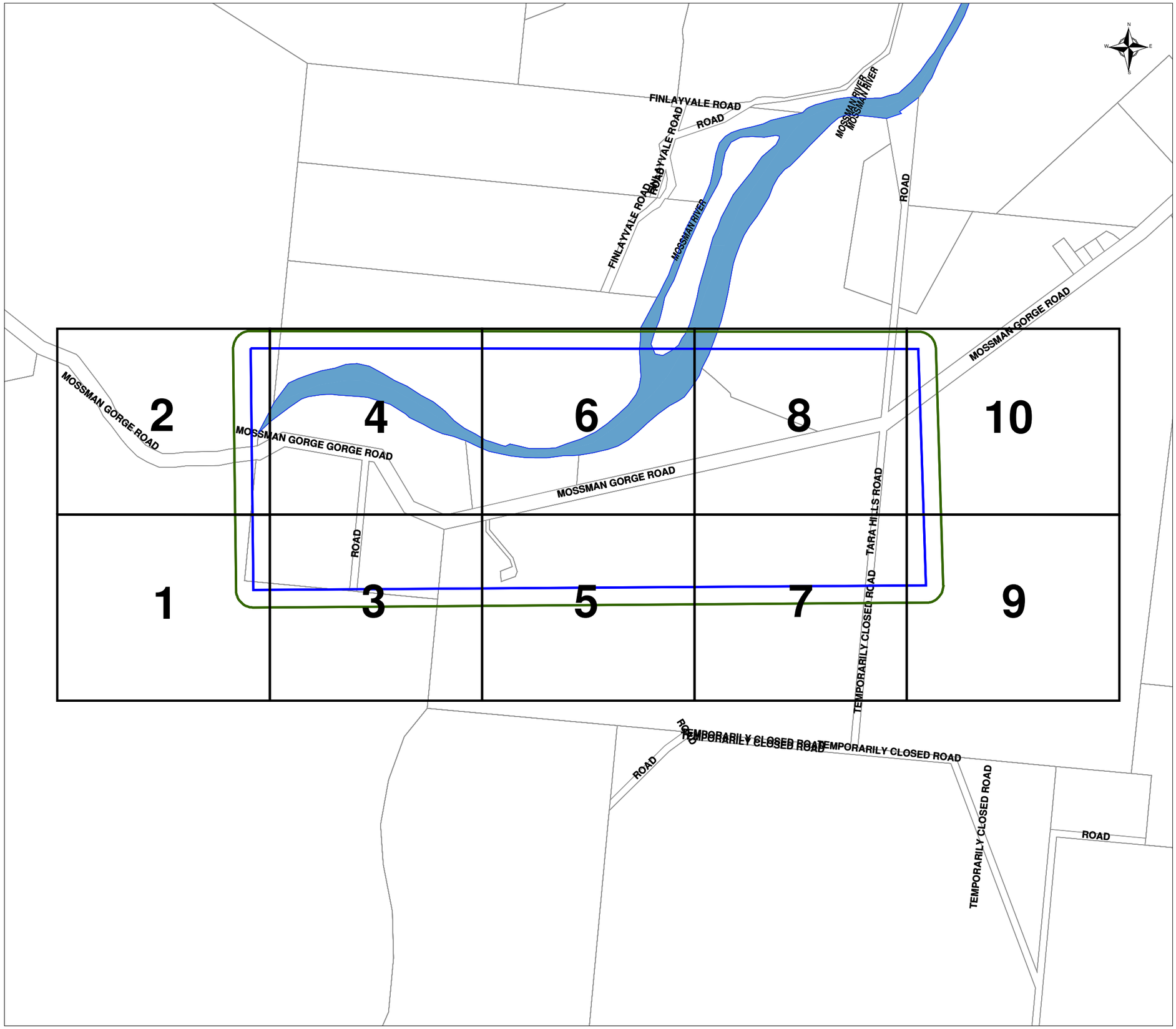
Identification of Telecommunication Assets

RD
WORKSHOP
CHURCH
L17
L1
L2
L3
L4
FLATS
CL
MUJANJA
P17:O29-30
P17:O31-32
P17:O33-34
P17:O35-36
P17:O37-38
P17:O80
1DEAD
LUND
30 PEHJ
P17:O21-50
30/0.40 PE
2x2 PR
52.1
30/0.40 PEHJ
4x2 PR
P50
29.9
L13
L12
L11
P17:O41-50
P17:O25-26
P17:O27-28
ST
60.5
7x2
30 PEHJ
50 PEHJ
P17:O39-40
L7
L6
L5
P17:O7-8
P17:O21-50
P17:O101-150
P17:O141-142
2x2 PR PEHJ
10 PR PEHJ
P17:O141-148
2DEAD
P17:O143-144
P17:O147
1DEAD
2/0.40 PEHJ
P17:O149-150
P17:O101-150
50 PEHJ
84.0
JANKAJI
L23
L22
L21
L24
L25
L26
L28
P17:O145-146
P17:O139-140
P17:O129-130
P17:O133
1DEAD
10 PR PEHJ
P17:O141-148
2DEAD
50 PEHJ
60.0
50 PR PEHJ
P17:O101-150
P17:O101-138
12DEAD
11.0
15.0
KANKARR
65.2
2 PEHJ
P17:O41-60
P17:O67-70
P17:O81-85
1DEAD
WARNING
UNDERGROUND ELECTRICITY
2/0.40 PE
30/0.40 PEHJC
P17:O75-76
10 MBHJC
10.0
P20
JUNKURRJI
P17:O1-10
10 PEHJ
34.8
16.1
2x2 PR
P17:O5-6
L15
L14
L10
L9
L8
P17:O1-2
P17:O3-4
P50 21.8
50 PEHJ
100 PEHJ
P17:O1-100
P100
100 PEHJ
50 PEHJ
P17:O1-100
P17:O101-150
115.0
WARNING - ELECTRICITY P17:O133-134 2/0.40 PEILI
P17 50/900
c2:M301-320
E5001:C1-30
4230m
ERGON Pole
No: CS 090419
MSNE
11.0
10/0.40 MBHJC
4257.0m
1.0
30 PE
2F/- FNPEHJ/LN
CM
10/0.64 LV
SCADS Power Feed
GORGE
c3502:CL-CM/1-12
P17:O151-200
P17:O151-200
P17:M301-320
10DEAD
12F/- FNPEHJ/HS1
50/0.40 PEHJC
30 PEHJ
c2:M301-320
10DEAD
66.0
BG1
ART CENTRE & KIOSK
10/0.40 MBHJC
P20 10.0
10/0.40 MBHJC
BG2
LOCAL PROGRAMME OFFICE
20.7
27.5
60.0
6DEAD
P17:O67-69
1DEAD
10/0.40 MBHJC
P50 36.4
30/0.40 PEHJC
P17:O41-60
P17:O81-85
5DEAD
P50 65.6
30/0.40 PEHJC
30 PEHJ
2x2 PR
P17:O41-60
P17:O67-70
P17:O81-85
1DEAD
10DEAD
P17:O61-66
4DEAD
P17:O71-80
P50 36.2
30/0.40 PEHJC
30 PEHJ
P17:O41-60
P17:O67-70
P17:O81-85
1DEAD
10DEAD
P17:O61-66
4DEAD
P17:O71-80
P20 4.6
2x10/0.40 PEHJC
10DEAD
10DEAD
67.0
P35
30/0.40 PEHJC
10
10DEAD
P17:O51-53
2DEAD
P17:O66-60
P17:O81-85
5DEAD
1DEAD
10DEAD
Telstra Services
Received 26/03/12


P17:O141-142
2x2 PR PEHJ
10 PR PEHJ
P17:O141-148
2DEAD
P17:O143-144
P17:O123-124
P17:O35-36
P50
2 PR
10.0
14.0
P50
2/0.40 PEHJ
P17:O147
1DEAD
CL
20.0
P50
P17:O145-146
P17:O129-130
P17:O121-122
P50
2x2 PR
38.7
10/0.40 PEHJ
10/0.40 PEHJ
10DEAD
P17:O37-38
P20
P17:O149-150
30.0
P50
10 PR PEHJ
P17:O141-148
2DEAD
P17:O139-140
P17:O133
1DEAD
JANKAJI
P50
6.3
2x2 PR
P17:O125-126
P17:O101-150
50 PEHJ
84.0
P17:O39-40
P50
50 PEHJ
P17:O101-138
12DEAD
60.0
MANJAL
2/0.40 PEILI PEHJ
2/0.40 PEILI PEHJ
P17:O127-128
2DEAD
2/0.40 PEHJ
2/0.40 PEHJ
WALKARR
CL
10/0.40 PEHJ
P50 42.5
P17:O101-104
6DEAD
2/0.40 PEHJ
P17:O101
1DEAD
P17:O137-138
P17:O5-6
P50
16.1
2x2 PR
P50
11.0
50 PR PEHJ
P17:O101-150
P50
15.0
P50
15.0
50 PR PEHJ
P17:O111-112
P50
6.3
2x2/0.40 PEHJ
50 PEHJ
62.0
P17:O101-120
14DEAD
P17:O135-138
12DEAD
P17:O105-106
P17:O135-136
2/0.40 PEHJ
P17:O107-108
2/0.40 PEHJ
63.0
2/0.40 PEHJ
WARNING - ELECTRICITY P17:O133-134 2/0.40 PEILI PEHJ (STUB)
P17 50/900
c2:M301-320
E5001:C1-30
4230m
ERGON Pole
No: CS 090419
MSNE
P50
22.1
30/0.40 PEHJ
P17:O121-134
16DEAD
50 PR PEHJ
P50
20.0
P17:O115-116 2/0.40 PEILI PEHJ (STUB)
P17:O117-118 2/0.40 PEILI PEHJ (STUB)
P17:O119-120 2/0.40 PEILI PEHJ (STUB)
P50
63.4
30/0.40 PEHJ
P17:O121-120
10DEAD
50 PR PEHJ
34DEAD
P17:O135-138
12DEAD
P50
ST
BABUBU
ST
P50
11.0
P50
10.0
10/0.40 MBHJC
4257.0m
CM
1.0
30 PE
2F/- FNPEHJ/LN
10/0.64 LV
SCADS Power Feed
34.0
GORGE
c3502:CL-CM/1-12
P17:O151-200
c3502:CL-CM/1-12
P17:O151-200
12F/- SMOF FNPEHJ/HS1
50/0.40 PEHJC
182.0
P100
30 PEHJ
90.0
c2:M301-320
10DEAD
P50
50/0.40 PEHJC
30 PEHJ
P17:O151-200
c2:M301-320
10DEAD
12F/- FNPEHJ/HS1
50/0.40 PEHJC
66.0
P50
30 PEHJ
99.0
c2:M301-320
10DEAD
30 PEHJ
c2:M301-320
10DEAD
66.0
P
50
Telstra Services
Received 26/03/12

Attachment 8

Identification of Electricity/Lighting Assets



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LEGEND

DBYD

DBYD Request

- DBYD Request (Area)
- DBYD Request (Ergon Search Area)

DCDB

Land Parcel

- Land Parcel (Area Geom)

Land Parcel Large

- Land Parcel Large (Area Geom)

Land Parcel Medium

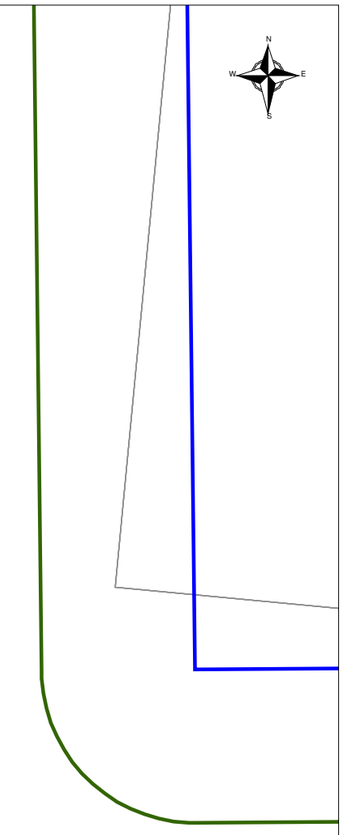
- Land Parcel Medium (Area Geom)

Water Boundary

- Water Boundary (Line Geom)

Water Coverage

- Water Coverage (Area Geom)



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LEGEND

DBYD

DBYD Request

DBYD Request (Area)

DBYD Request (Ergon Search Area)

DCDB

Land Parcel

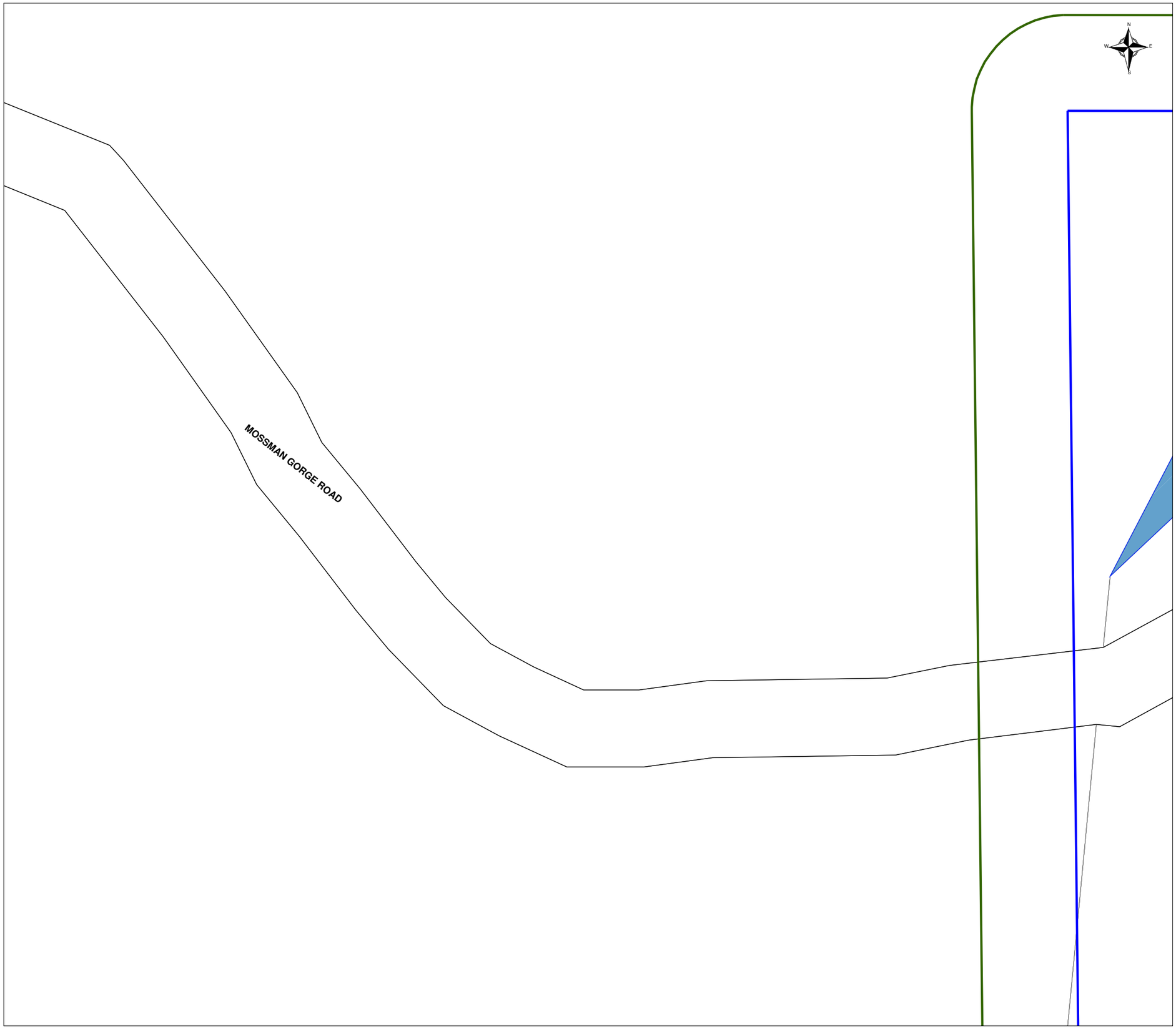
Land Parcel (Area Geom)

Land Parcel Large

Land Parcel Large (Area Geom)

Land Parcel Medium

Land Parcel Medium (Area Geom)



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LEGEND

DBYD

DBYD Request

- DBYD Request (Area)
- DBYD Request (Ergon Search Area)

DCDB

Land Parcel

- Land Parcel (Area Geom)

Land Parcel Large

- Land Parcel Large (Area Geom)

Land Parcel Medium

- Land Parcel Medium (Area Geom)

Road Boundary

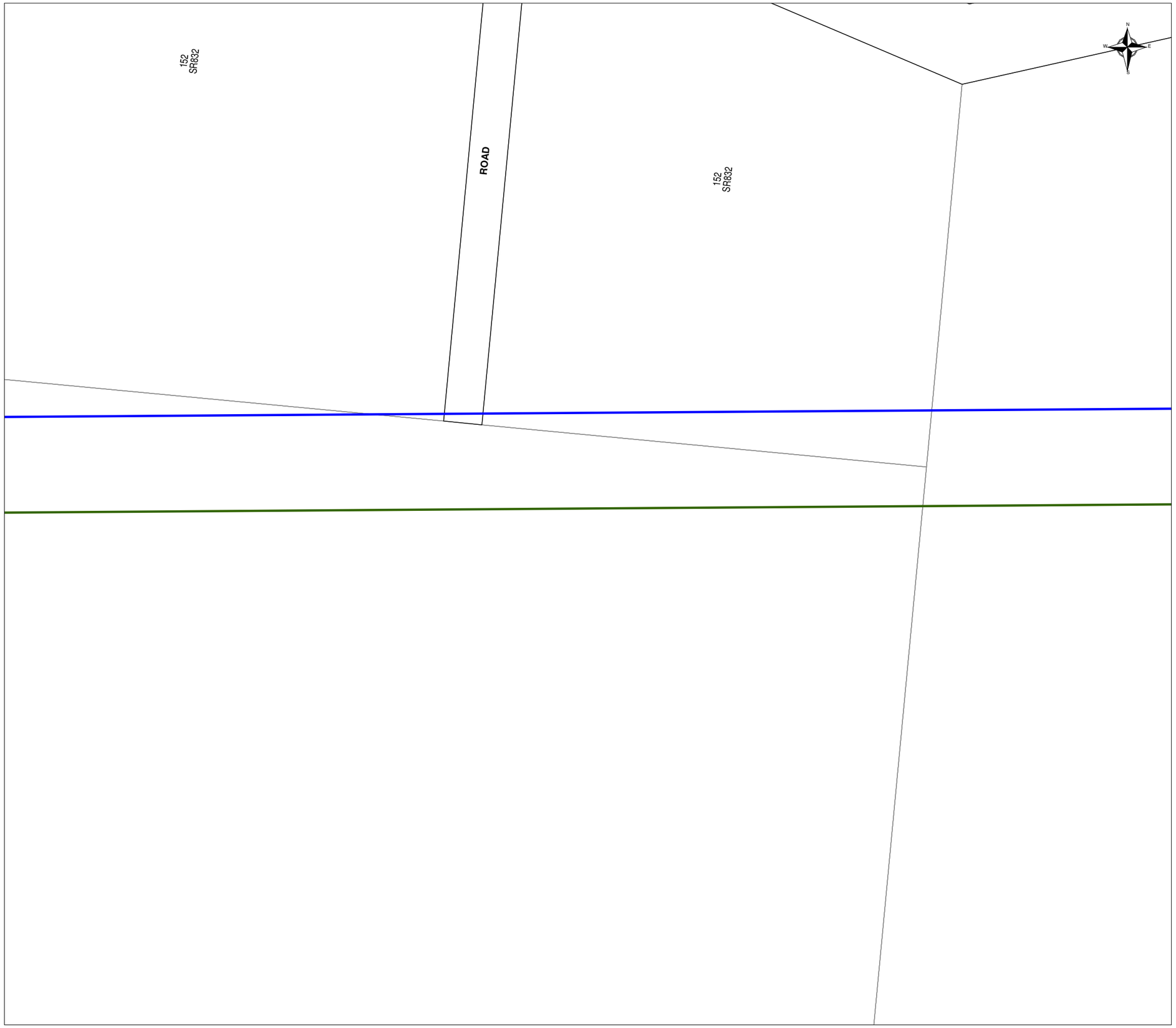
- Road Boundary (Line Geom)

Water Boundary

- Water Boundary (Line Geom)

Water Coverage

- Water Coverage (Area Geom)



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LEGEND

DBYD

DBYD Request

DBYD Request (Area)

DBYD Request (Ergon Search Area)

DCDB

Land Parcel

Land Parcel (Area Geom)

Land Parcel Large

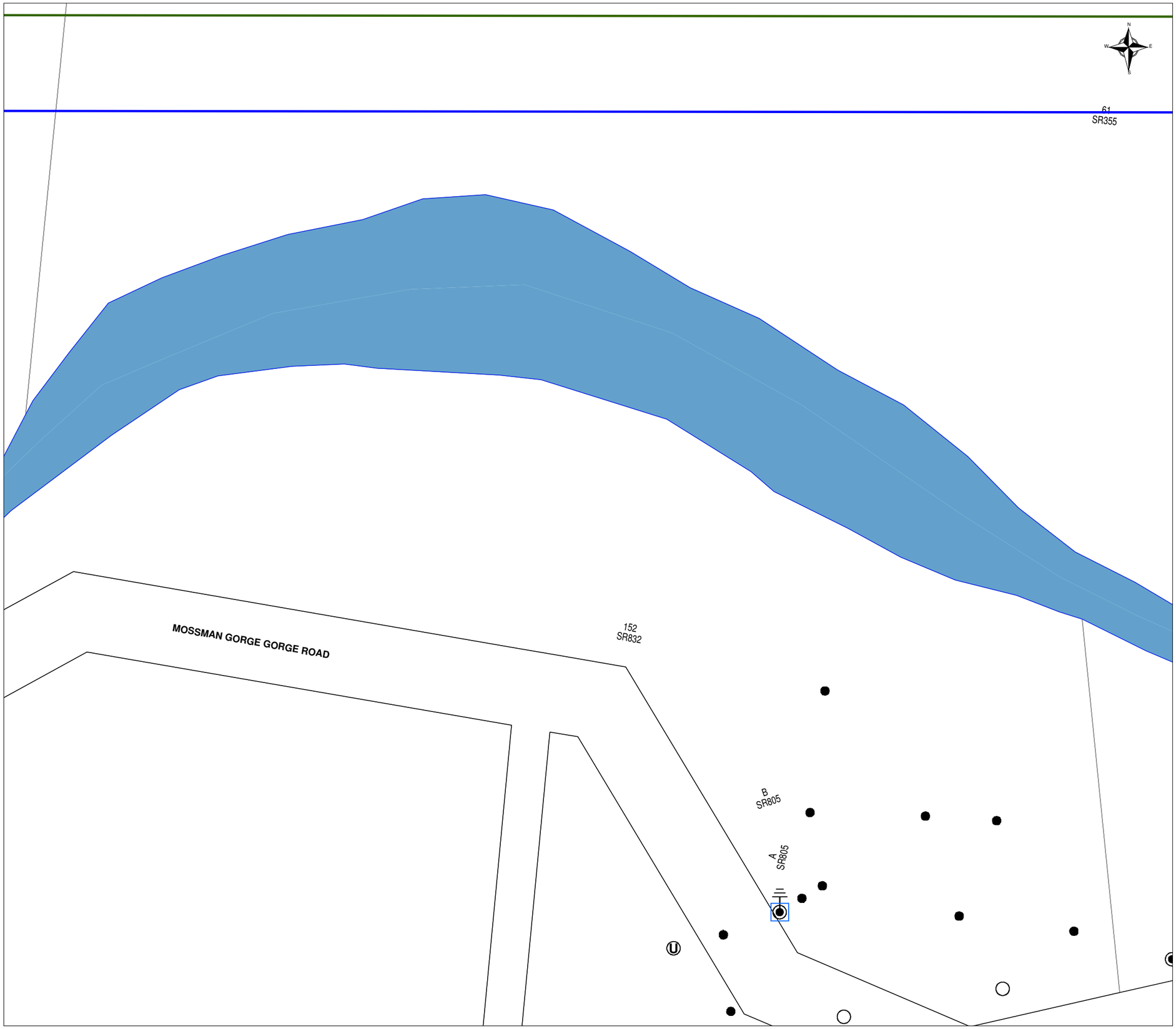
Land Parcel Large (Area Geom)

Land Parcel Medium

Land Parcel Medium (Area Geom)

Road Boundary

Road Boundary (Line Geom)



ERGON ENERGY

24595408–5351631

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LEGEND

Electricity

Earth – as constructed

Pole – HV

Pole – Unknown

Pole – HV/LV

Pole – LV

Substation – Pole

DBYD

DBYD Request

DBYD Request (Area)

DBYD Request (Ergon Search Area)

DCDB

Land Parcel

Land Parcel (Area Geom)

Land Parcel Large

Land Parcel Large (Area Geom)

Land Parcel Medium

Land Parcel Medium (Area Geom)

Road Boundary

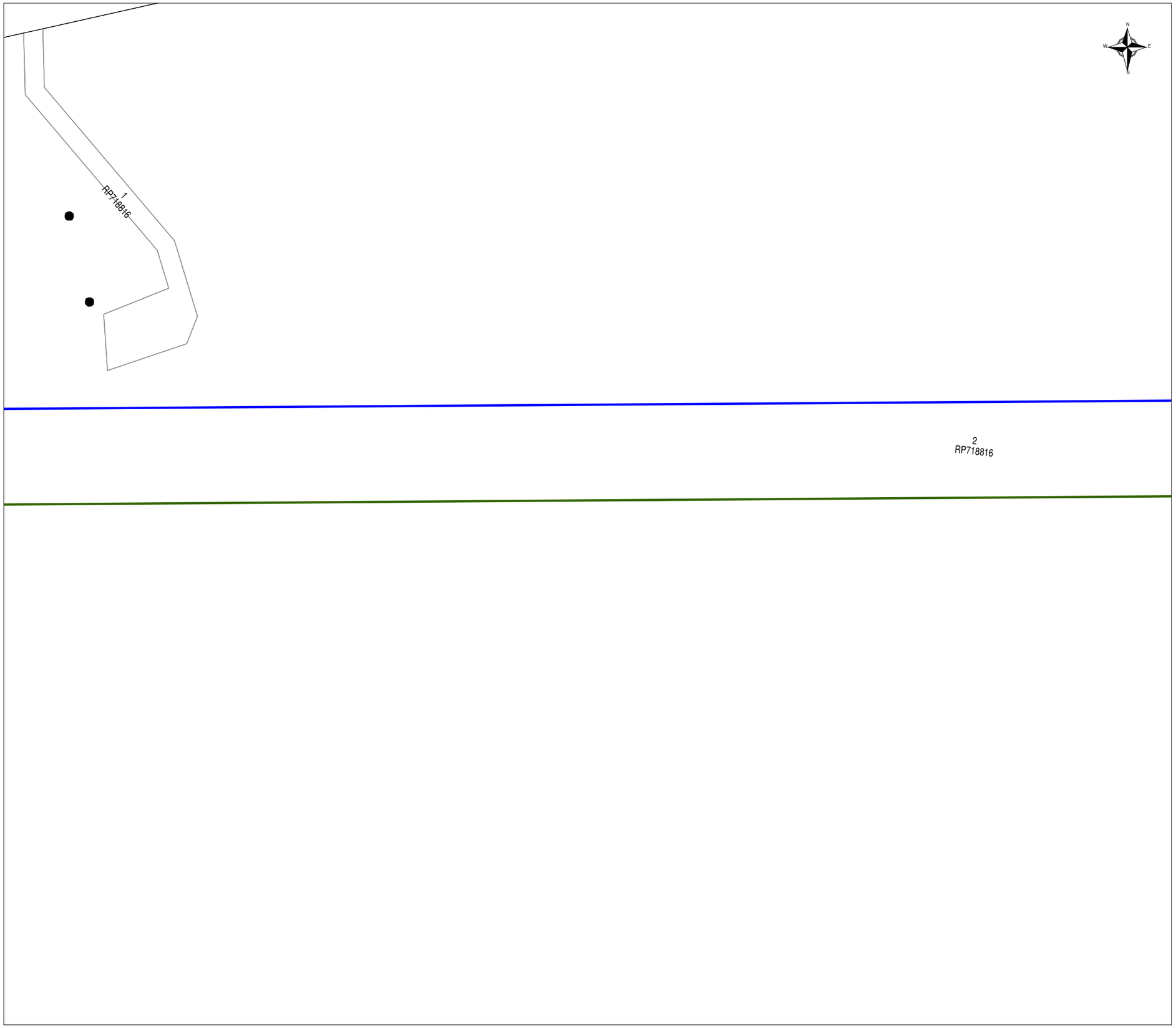
Road Boundary (Line Geom)

Water Boundary

Water Boundary (Line Geom)

Water Coverage

Water Coverage (Area Geom)



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LEGEND

Electricity

Pole – LV

DBYD

DBYD Request

DBYD Request (Area)

DBYD Request (Ergon Search Area)

DCDB

Land Parcel

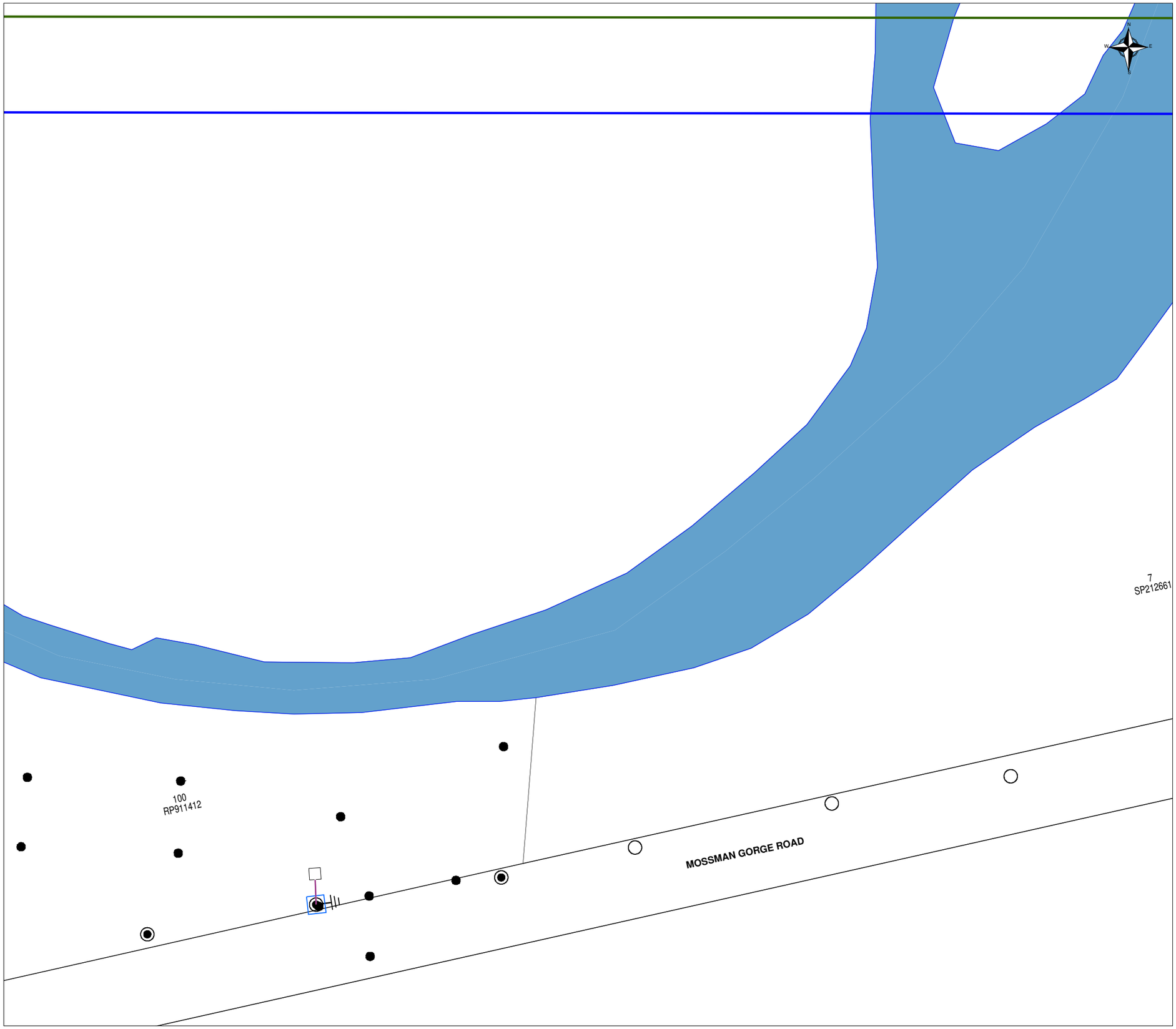
Land Parcel (Area Geom)

Land Parcel Large

Land Parcel Large (Area Geom)

Road Boundary

Road Boundary (Line Geom)



24595408–5351631

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LEGEND

Electricity

- Duct – as constructed
- Earth – as constructed
- Pillar – Normal Pillar
- Pole – HV
- Pole – HV/LV
- Pole – LV
- Substation – Pole

Low Voltage

- LV Cable – as constructed (415v)

DBYD

DBYD Request

- DBYD Request (Area)
- DBYD Request (Ergon Search Area)

DCDB

Land Parcel

- Land Parcel (Area Geom)

Land Parcel Large

- Land Parcel Large (Area Geom)

Land Parcel Medium

- Land Parcel Medium (Area Geom)

Road Boundary

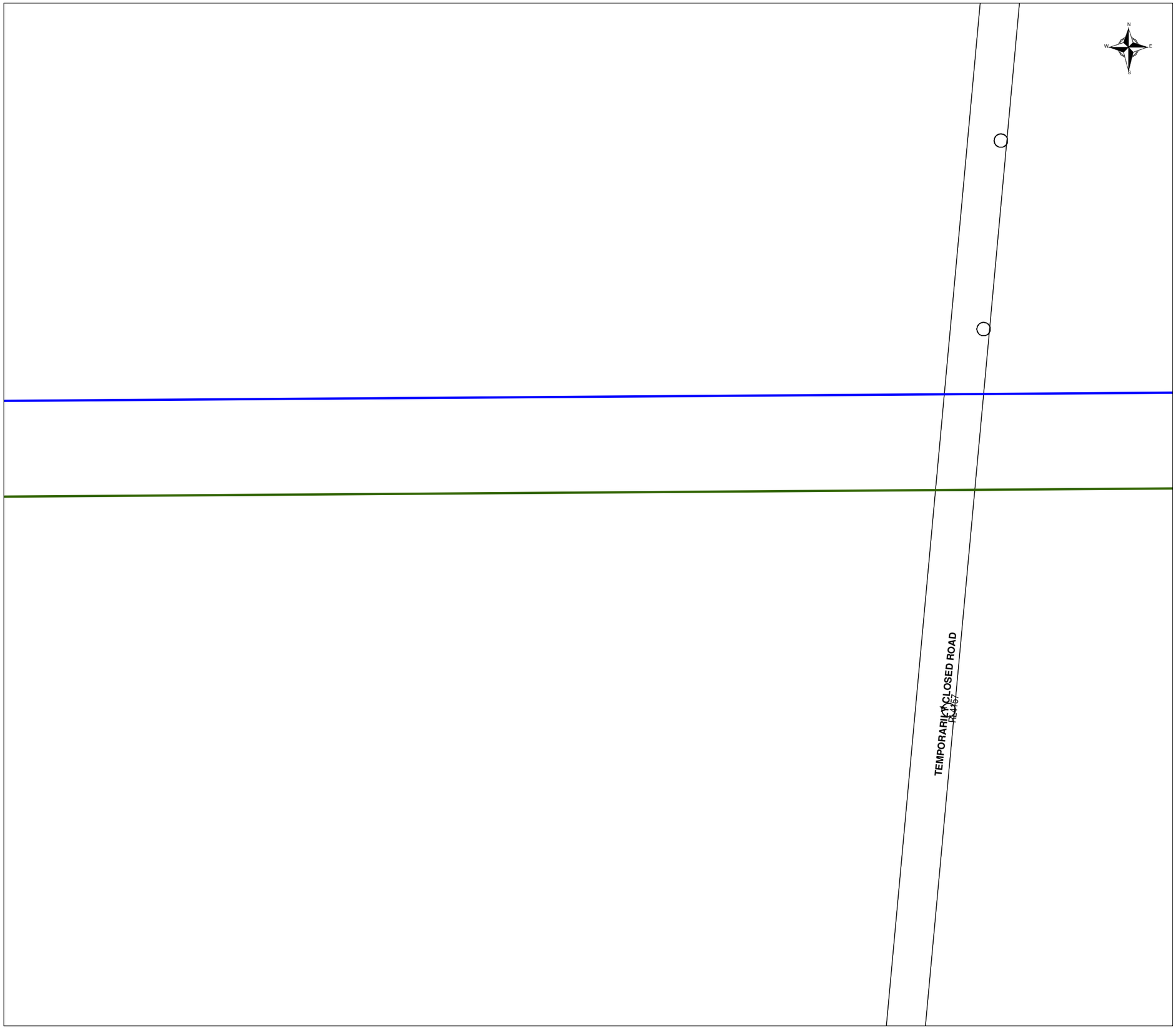
- Road Boundary (Line Geom)

Water Boundary

- Water Boundary (Line Geom)

Water Coverage

- Water Coverage (Area Geom)



24595408–5351631

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LEGEND

Electricity

Pole – HV

DBYD

DBYD Request

DBYD Request (Area)

DBYD Request (Ergon Search Area)

DCDB

Land Parcel

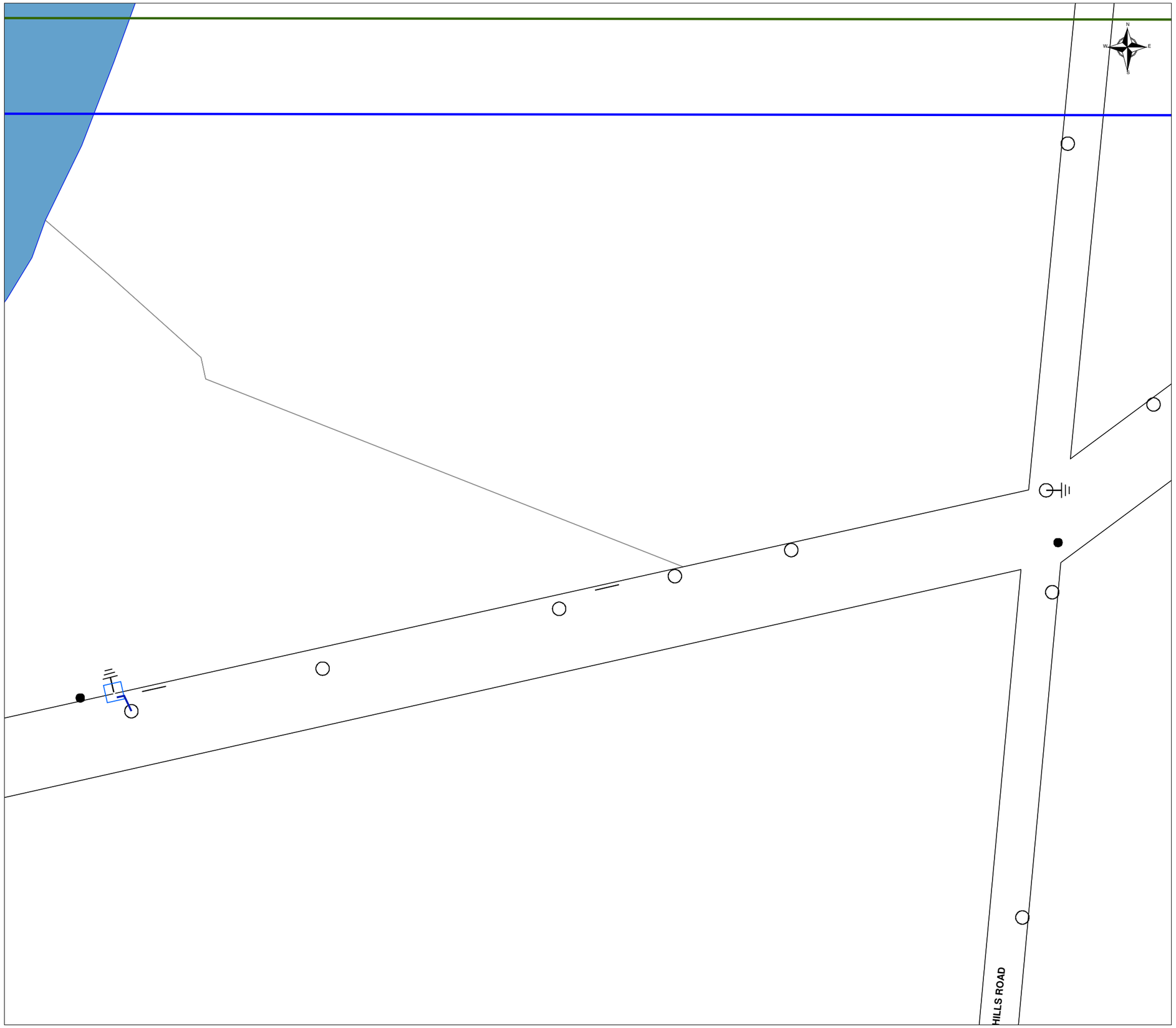
Land Parcel (Area Geom)

Land Parcel Large

Land Parcel Large (Area Geom)

Road Boundary

Road Boundary (Line Geom)



24595408–5351631

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LEGEND

Electricity

Duct – as constructed

Earth – as constructed

Pole – HV

Pole – LV

Substation –

High Voltage

HV Cable – as constructed (22kv)

DBYD

DBYD Request

DBYD Request (Area)

DBYD Request (Ergon Search Area)

DCDB

Land Parcel

Land Parcel (Area Geom)

Land Parcel Large

Land Parcel Large (Area Geom)

Land Parcel Medium

Land Parcel Medium (Area Geom)

Road Boundary

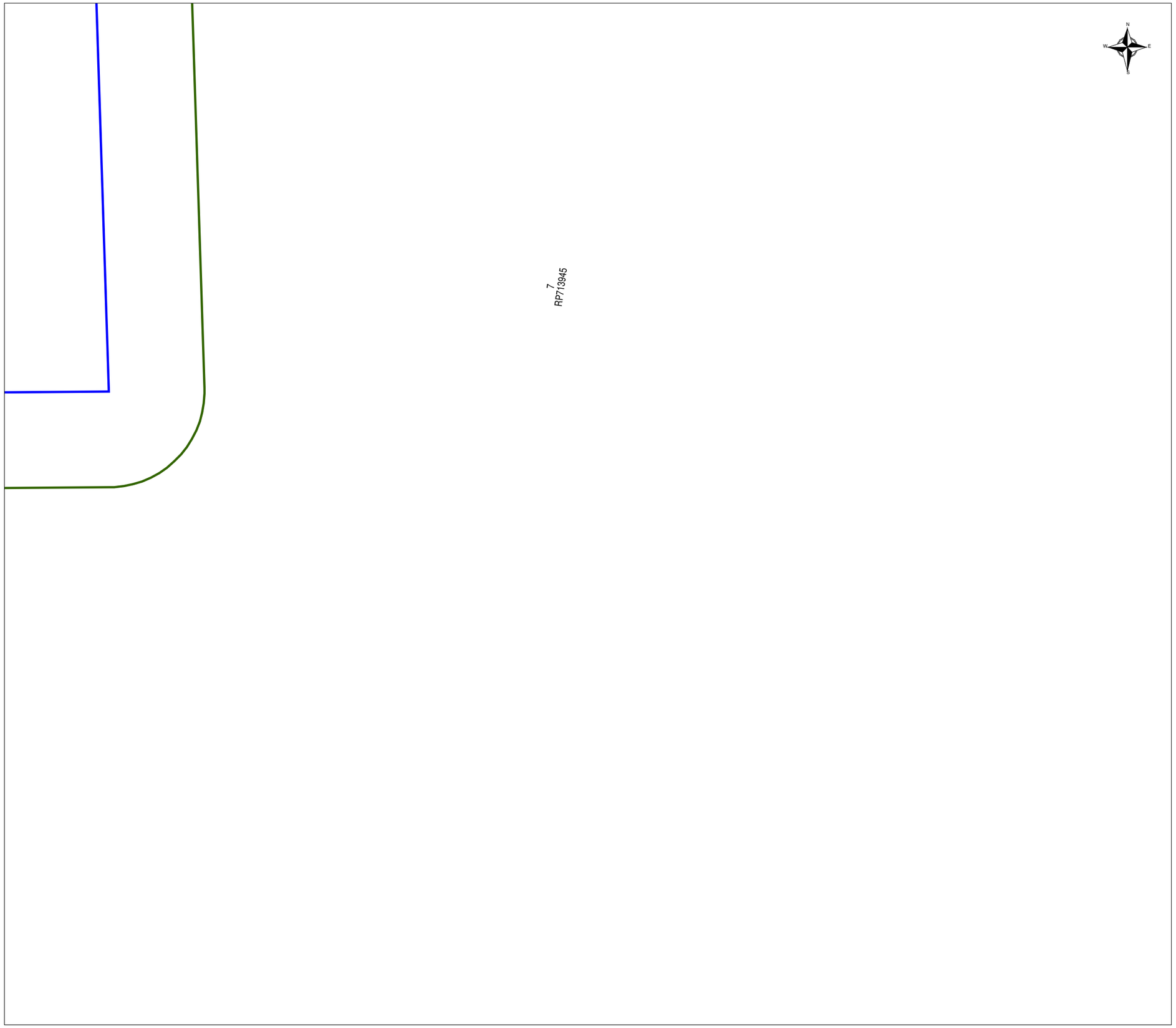
Road Boundary (Line Geom)

Water Boundary

Water Boundary (Line Geom)

Water Coverage

Water Coverage (Area Geom)



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LEGEND

DBYD

DBYD Request

DBYD Request (Area)

DBYD Request (Ergon Search Area)

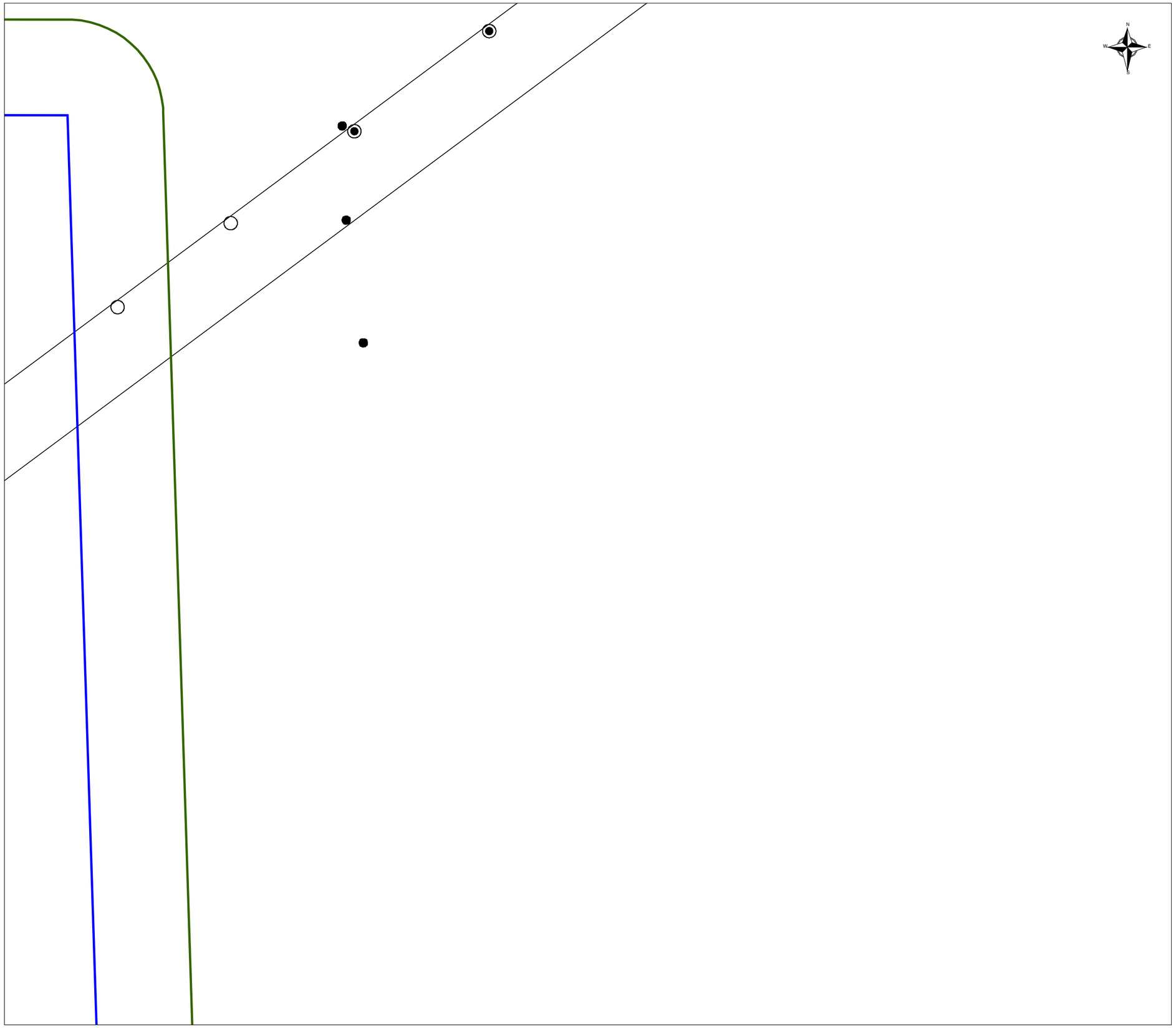
DCDB

Land Parcel

Land Parcel (Area Geom)

Land Parcel Large

Land Parcel Large (Area Geom)



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LEGEND

Electricity

- Pole – HV
- Pole – HV/LV
- Pole – LV

DBYD

DBYD Request

- DBYD Request (Area)
- DBYD Request (Ergon Search Area)

DCDB

Land Parcel

- Land Parcel (Area Geom)

Land Parcel Large

- Land Parcel Large (Area Geom)

Land Parcel Medium

- Land Parcel Medium (Area Geom)

Road Boundary

- Road Boundary (Line Geom)

Attachment 9

Indicative Community Layout

LAND USE MAP 30/3/2012