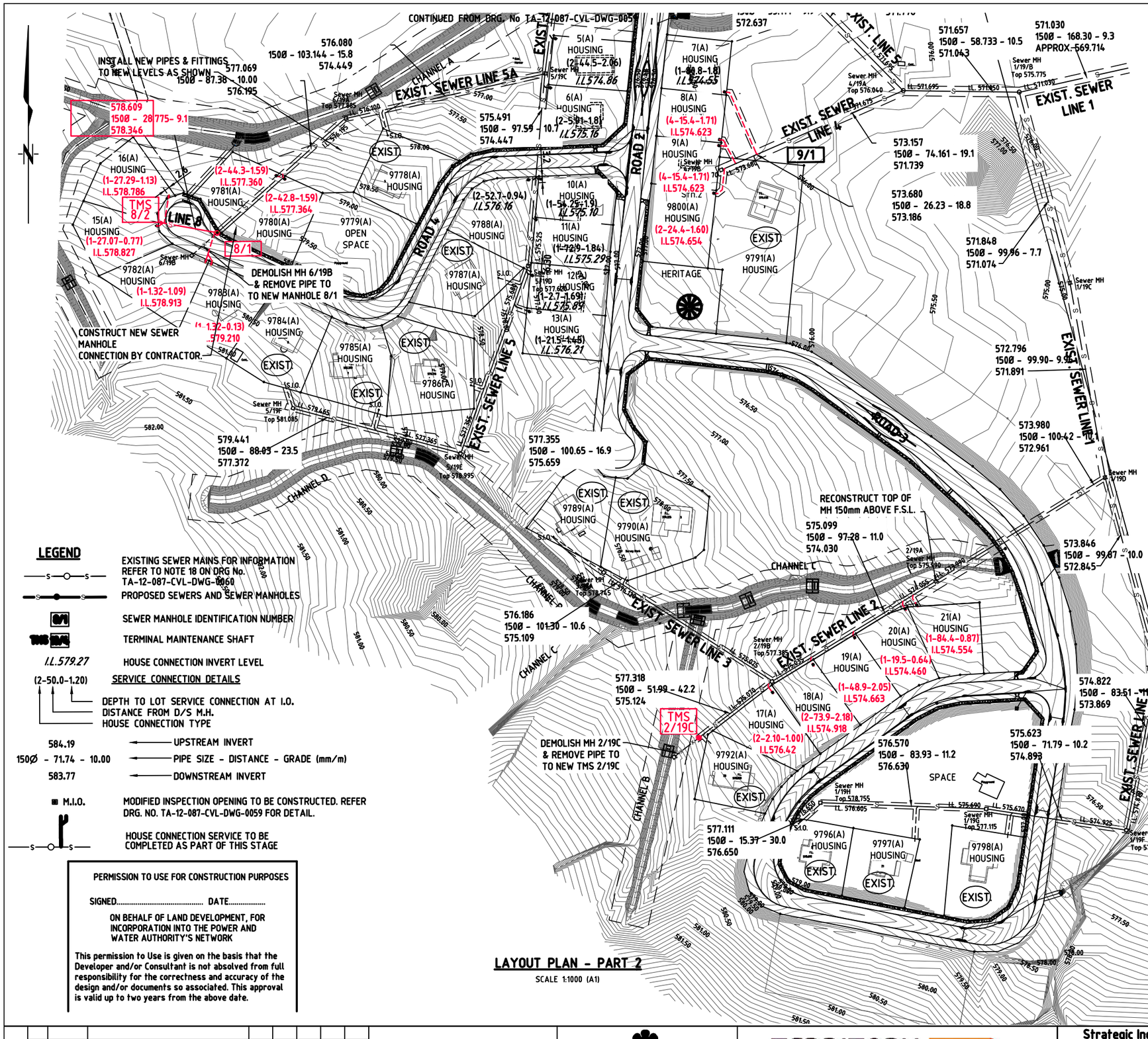


LEGEND

- EXISTING SEWER MAINS FOR INFORMATION REFER TO NOTE 18 ON DRG No. TA-12-087-CVL-DWG-0060
- PROPOSED SEWERS AND SEWER MANHOLES
- SEWER MANHOLE IDENTIFICATION NUMBER
- TERMINAL MAINTENANCE SHAFT
- I.L.579.27 — HOUSE CONNECTION INVERT LEVEL
- (2-50.0-1.20) — SERVICE CONNECTION DETAILS
  - DEPTH TO LOT SERVICE CONNECTION AT I.O.
  - DISTANCE FROM D/S M.H.
  - HOUSE CONNECTION TYPE
- 584.19 — UPSTREAM INVERT
- 150Ø - 71.74 - 10.00 — PIPE SIZE - DISTANCE - GRADE (mm/m)
- 583.77 — DOWNSTREAM INVERT
- M.I.O. — MODIFIED INSPECTION OPENING TO BE CONSTRUCTED. REFER DRG. NO. TA-12-087-CVL-DWG-0059 FOR DETAIL.
- HOUSE CONNECTION SERVICE TO BE COMPLETED AS PART OF THIS STAGE

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SIGNED..... DATE.....

ON BEHALF OF LAND DEVELOPMENT, FOR INCORPORATION INTO THE POWER AND WATER AUTHORITY'S NETWORK

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SEWER

1. ALL GRAVITY SEWER PIPES SHALL BE PVC CLASS SN8 WITH STYRENE-BUTADIENE RUBBER RING JOINTS (SBR) UNLESS OTHERWISE NOTED.
2. SEWER CENTRELINE SHALL BE OFFSET FROM PROPERTY BOUNDARIES 1.6M IN ROAD RESERVES AND 1.5M IN PRIVATE PROPERTY EXCEPT WHERE OTHERWISE NOTED.
3. MAINTENANCE HOLE/SHAFT COVERS AND SLABS SHALL FINISH AT: FINISHED SURFACE LEVEL (FSL) IN ROAD RESERVES AND FOOTPATHS AND MATCH CROSS FALL TO A MAXIMUM OF 2 DEGREES 42MM ACROSS THE DIAMETER OF A 1200MM MH COVER. 150MM ABOVE SURFACE LEVEL IN PRIVATE PROPERTY AND OPEN SPACE. (BACKFILL TO BE GRADED AT 1:10 FROM THE MH TO THE SURROUNDING FSL).
4. ENSURE THERE ARE NO LOW POINTS CREATED AROUND MANHOLES BY GRADING OF SURROUNDING FINISHED SURFACE LEVEL.
5. ADJUST ALL EXISTING MANHOLE LID LEVELS TO COMPLY WITH REQUIREMENTS ABOVE.
6. FOR EXISTING MANHOLES REPLACE ALL CRACKED, DAMAGED, AND CIRCULAR LIDS AND TAPERS WITH NEW RECTANGULAR LIDS.
7. MINIMUM CONCRETE STRENGTH FOR ALL SEWER MAINTENANCE HOLES AND STRUCTURES SHALL BE N50.
8. ALL LOT SERVICE CONNECTIONS NEW AND EXISTING MUST BE DN 150. A NEW INSPECTION OPENING IN ACCORDANCE WITH THE STANDARD DETAIL IS TO BE PROVIDED FOR EVERY LOT WHETHER THE SERVICE IS NEW OR EXISTING. ENSURE LEVEL AND LOCATION AT THE IO ARE PICKED UP BY THE REGISTERED SURVEYOR FOR EVERY LOT SERVICE.
9. EXISTING LOT SANITARY DRAINS ARE ONLY TO BE CONNECTED UPSTREAM OF THE NEW IO.
10. INSCRIBE THE COVER OF THE MAINTENANCE HOLE/SHAFT COVER WITH THE IDENTIFYING NUMBER AS SHOWN ON THE DRAWINGS.
11. USE HEAVY DUTY INSPECTION OPENING OPTION FOR DRAWING NO'S W2-1-05,W2-1-06 & W2-2-07
12. FOR MANHOLE COATING USE ELASTON W80 SPRAY POLYURETHANE ELASTOMER OR PWC APPROVED EQUIVALENT. APPLY IN 2 COATS EACH OF 2MM THICKNESS IN CONTRASTING COLOURS. SPRAY IN A CONTINUOUS APPLICATION WITH NO DRY JOINTS.
13. SELF CERTIFYING PLUMBER TO CERTIFY THAT ALL LOT SANITARY DRAINAGE RUNS THROUGH THE NEW SEWER CONNECTION IO, THAT THERE ARE NO CROSS BOUNDARY CONNECTIONS. THE CERTIFIER TOGETHER WITH THE SURVEYOR AND PLUMBER ARE TO CERTIFY THAT THE SEWER SERVICE DOES NOT RUN THROUGH ADJACENT LOTS EXCEPT WHERE THE APPROVED DESIGN SPECIFICALLY SHOWS THIS.
14. AS CONSTRUCTED' DRAWINGS FOR SEWER ARE TO SHOW POSITION (CO-ORDINATES TO MGA 94 LEVELS TO AHD) FOR ALL ACCESS CHAMBERS, ACCESS SHAFTS, INSPECTION OPENINGS, SERVICE JUNCTIONS, SEPARATION DISTANCES AND LEVELS FOR INTERSECTING SERVICES. SHOW ALL OTHER VALUES REQUIRED TO CERTIFY COMPLIANCE OF THE WORKS. SHOW FINISHED SURFACE LEVELS AT LOT CORNERS TO VERIFY SEWER LOT COVERAGE. PROVIDE MANUFACTURER AND MODEL DETAILS FOR ALL MAIN COMPONENTS OF THE SEWER SYSTEM.
15. CERTIFICATION DOCUMENTATION MUST INCLUDE AS CONSTRUCTED DRAWINGS, HYDROSTATIC TEST RESULTS, PROVER TEST RESULTS, CCTV REPORTS, COMPACTION TEST RESULTS, BEDDING GRADING CURVES, CONCRETE REPORTS & TEST RESULTS, OTHER INSPECTION REPORTS AND PHOTOGRAPHS, SURVEY DATA FOR LOT CONNECTIONS AS WELL AS THE OVERALL CERTIFICATION ITSELF. CHECKS CONFIRMING COMPLIANCE OF SEWER GRADIENTS WITH DESIGN, CONFIRMING LOT SERVICE LEVELS WITH DESIGN AND THAT THE LOT CONNECTION LEVEL WITH LOT FINISHED SURFACE LEVELS PROVIDE COVER, LOT COVERAGE, AND FIXTURE CONTROL.
16. CONNECTIONS TO EXISTING SEWER MAINS WILL ONLY BE CARRIED OUT WHEN ALL WORKS AND TESTING ARE COMPLETE IN ACCORDANCE WITH THE APPROVED DESIGN DRAWING AND HAVE PASSED THE FINAL HANDOVER INSPECTION.
17. PROPOSED OPEN CHANNELS CROSSING NEW SEWER PIPES SHALL HAVE BASE AND BATTER 5% CEMENT STABILIZED.
18. REDUNDANT SEWERAGE INFRASTRUCTURE
    IF SEWERAGE INFRASTRUCTURE IS TO BE ABANDONED:
    - PUMP STATIONS AND ASSOCIATED EQUIPMENT TO BE REMOVED;
    - MANHOLES AND INSPECTION OPENINGS;

    REMOVE LIDS AND PITS 1M BELOW NATURAL SURFACE
    DISINFECT AND FILL WITH GRAVEL OR SAND
    - CAP AND SEAL ALL CONNECTIONS TO BE RETAINED INFRASTRUCTURE;
    - REMOVE ASBESTOS MAINS IF THEY ARE WITHIN 1M OF THE FINISHED SURFACE LEVEL, OTHERWISE ABANDON;
    - OTHER MAINS CAN BE ABANDONED.

NOTES:

REFER TO DRG NO. TA-12-087-CVL-DWG-0054 AND TA-12-087-CVL-DWG-0064 FOR GENERAL PROJECT NOTES.

FOR SEWER NOTES REFER TO THIS DRAWING

REFER TO DRG NO. TA-12-087-CVL-DWG-0059 FOR LOT CONNECTION INSPECTION OPENING DETAIL

FOR SURVEY CONTROL STATION REFER DRG NO, TA-12-087-CVL-DWG-0005

SEWER EASEMENT 3.0m WIDE UNLESS OTHERWISE NOTED

ALL EXISTING HOUSE CONNECTIONS TO BE VERIFIED AND RELOCATED. (NOT IN TERRITORY ALLIANCE SCOPE OF WORK)

FOR MANHOLE SET OUT TABLE, REFER TO DRG. No TA-12-087-CVL-DWG-0058

REFER TO TA-12-087-CVL-DWG-0006 TO 0007 FOR LOCATION OF SITE OF SIGNIFICANCE.

10 0 10 20 30 40 50m
Scale 1 : 1000 @ A1

'AS CONSTRUCTED'

LAYOUT PLAN - PART 2

SCALE 1:1000 (A1)

REV	DATE	REVISION DESCRIPTION	ORIG	CKD	ENG	QA	APPD
-	06-06-13	AS-CONSTRUCTED INFORMATION	CT	GM	TP		

SHEET: A1 SCALE: AS SHOWN

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Strategic Indigenous Housing and Infrastructure Program

ACONEX NO: TA-12-087-CVL-DWG-0060

DPI NO: R11-3135

ALICE SPRINGS PACKAGE 12 (LARAPINTA VALLEY - 087)
PROPOSED SUBDIVISION OF LOT 5195 - BLAIN STREET

SEWERAGE COMPILATION PLAN
SHEET 2 OF 2

DRAWING NO: TA-12-087-CVL-DWG-0060 REV: -

SEWER MAINTENANCE HOLE No.	5/19A	7/2	7/3	7/4	8/1	8/2	9/1	9/2	1 NEW MH L6\B1	101	102	10/2	10/3	L6/A	11/1	L6/D1	12/1	12/2	12/3	12/4
CHAMBER SHAPE COVER & DUTY	EXIST.	CRD	CRD	CRD	CRD	TMS	CRB	CRB	EXIST	EXIST	EXIST	CRD	TMS	EXIST	TMS	EXIST	CRB	CRB	CRD	TMS
CHAMBER DROP TYPE	1	1	1	1	1	300 DIA	4	-	1		1	1	300 DIA	1	300 DIA	1	4	1	1	300 DIA.

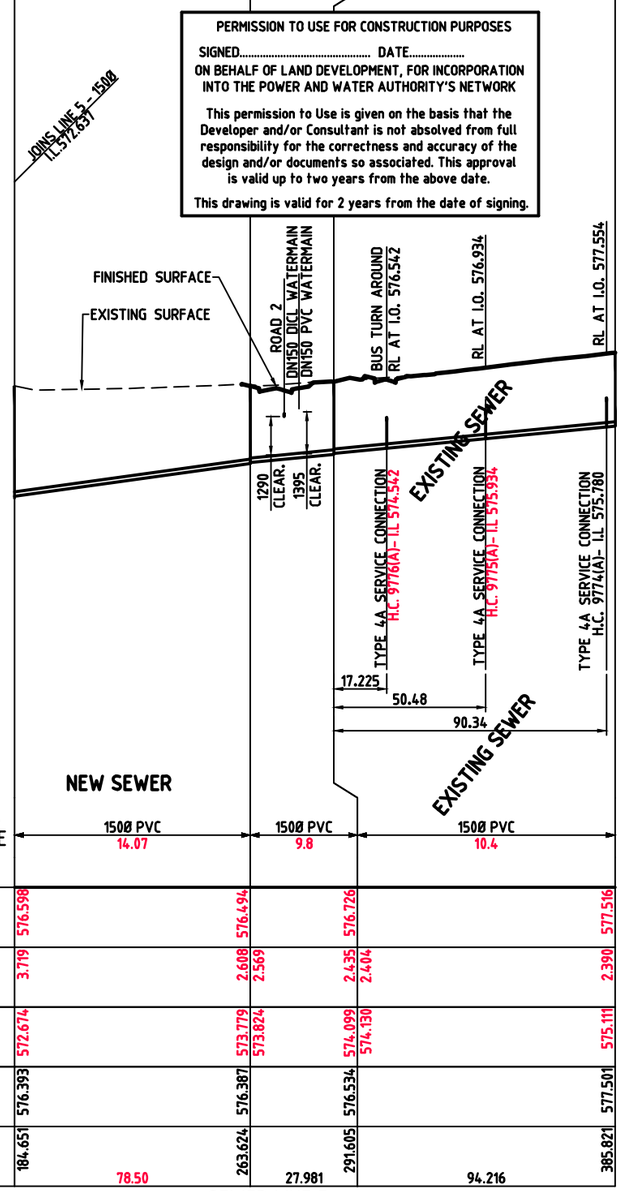
PERMISSION TO USE FOR CONSTRUCTION PURPOSES

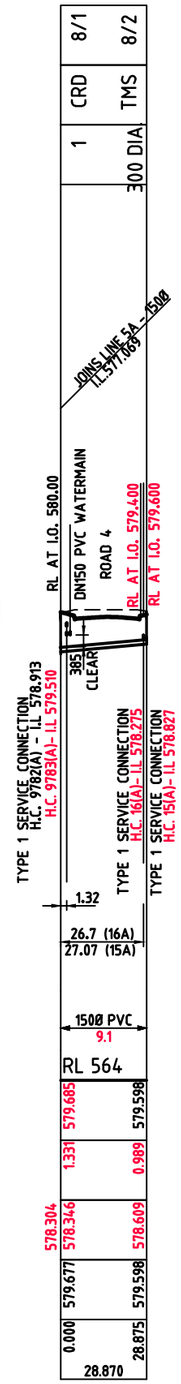
SIGNED..... DATE.....

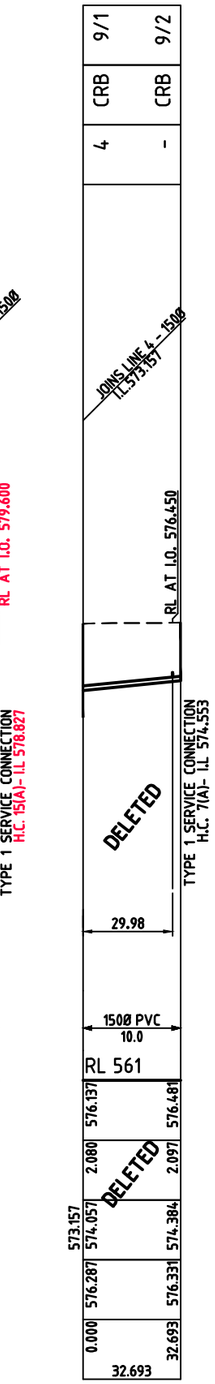
ON BEHALF OF LAND DEVELOPMENT, FOR INCORPORATION INTO THE POWER AND WATER AUTHORITY'S NETWORK

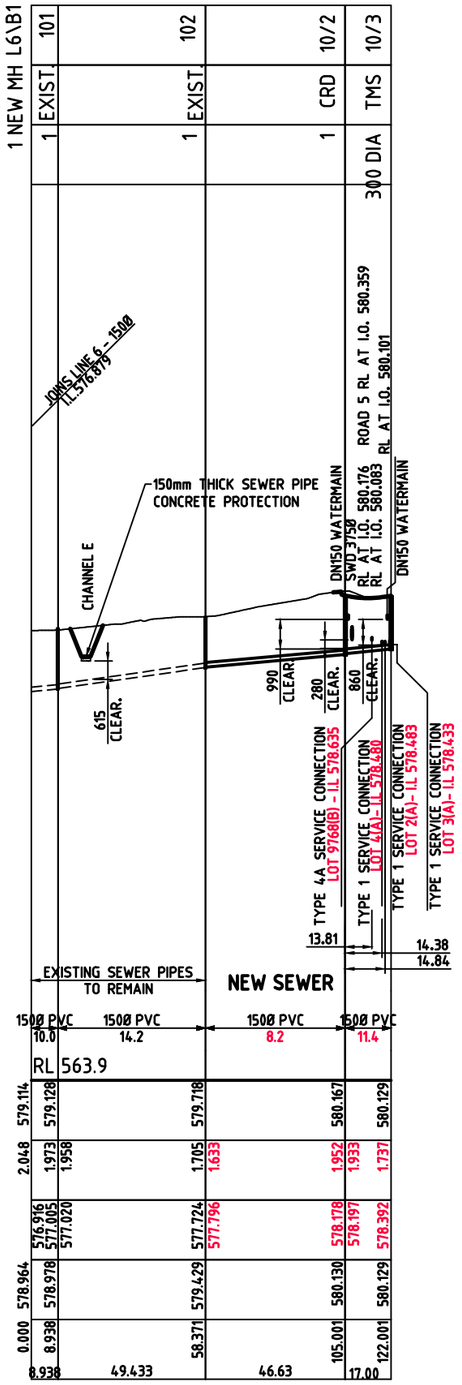
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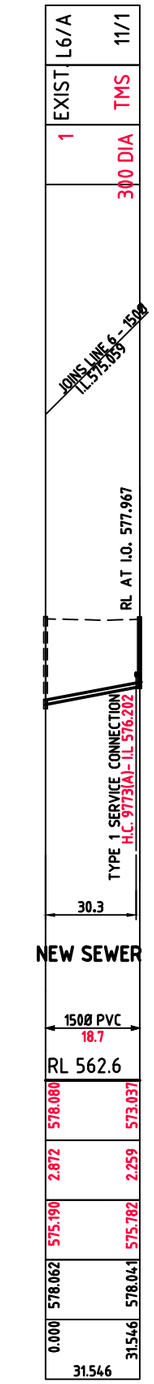
This drawing is valid for 2 years from the date of signing.

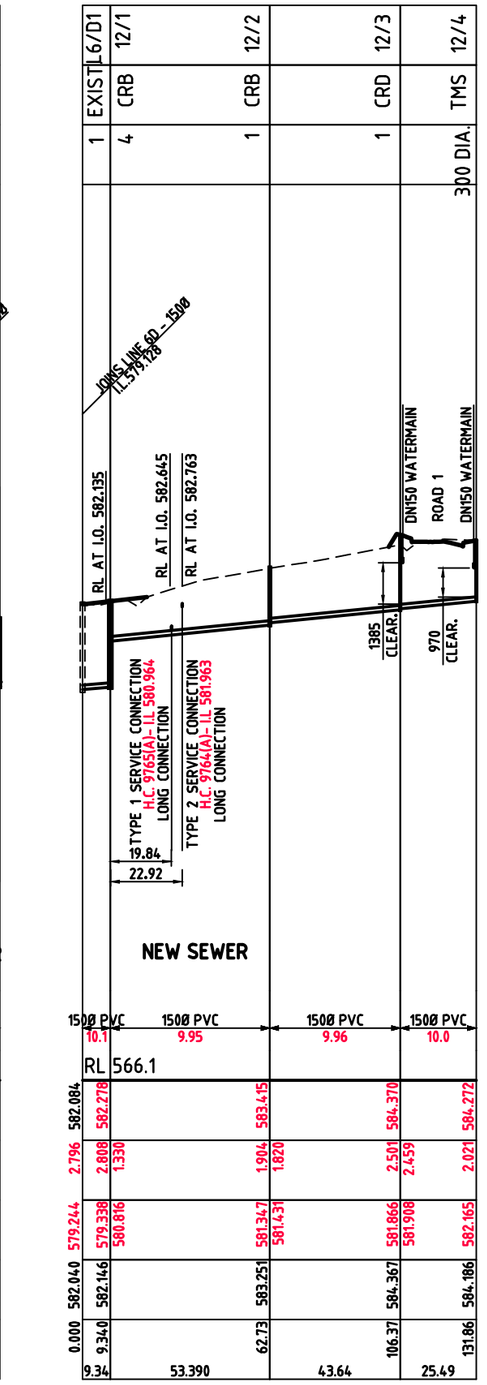












PIPE DETAILS SLOPE/GRADE	1500 PVC 14.07	1500 PVC 9.8	1500 PVC 10.4	1500 PVC 9.1	DELETED	1 NEW MH L6\B1	1500 PVC 10.0	1500 PVC 14.2	1500 PVC 8.2	1500 PVC 11.4	1500 PVC 18.7	1500 PVC 10.1	1500 PVC 9.95	1500 PVC 9.96	1500 PVC 10.0
DATUM RL 559.6				RL 564	RL 561		RL 563.9				RL 562.6	RL 566.1			
RIM TOP LEVEL	576.598	576.494	576.726	579.685	576.137		579.114	579.128	579.718	580.167	578.080	582.084	582.278	583.415	584.370	584.272
DEPTH TO INVERT	3.719	2.608	2.569	2.435	1.331	2.080	DELETED	2.048	1.973	1.958	1.705	1.633	1.952	1.933	1.737	2.872	2.259	2.796	2.808	1.330	1.904	1.820	2.501	2.459	2.021
INVERT LEVEL	572.674	573.779	573.824	574.099	574.130	578.304	578.346	574.057	574.097	577.020	577.724	577.796	578.178	578.197	578.392	575.190	575.782	579.244	579.338	580.816	581.347	581.431	581.866	581.908	582.165
FINISHED SURFACE	576.393	576.387	576.534	579.677	579.598	576.287	576.331	578.964	578.978	579.429	580.130	580.129	578.062	578.041	582.040	582.146	583.251	584.367	584.186
CHAINAGE	184.651	263.624	291.605	385.821	0.000	28.875	28.870	0.000	32.693	32.693	0.000	8.938	58.371	105.001	122.001	0.000	31.546	31.546	0.000	9.340	62.73	106.37	131.86
	78.50	27.981	94.216				8.938	49.433	46.63	17.00		9.34	53.390	43.64	25.49	
	SEWER LINE 7			SEWER LINE 8	SEWER LINE 9		SEWER LINE 10				SEWER LINE 11	SEWER LINE 12			

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FOR GENERAL NOTES, REFER TO DRG. No TA-12-087-CVL-DWG-0064

AS CONSTRUCTED DRAWING

10 0 10 20 30 40 50 m
Hor. Scale 1 : 1000 @ A1
1 0 1 2 3 4 5 m
Vert. Scale 1 : 100 @ A1

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REV	DATE	REVISION DESCRIPTION	ORIG	CKD	ENG	QA	APPD
-	06-06-13	AS-CONSTRUCTED INFORMATION	CT	GM	TP		

SHEET: A1 SCALE: AS SHOWN

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Strategic Indigenous Housing and Infrastructure Program

ACONEX NO: TA-12-087-CVL-DWG-0061

DPI NO: R11-3136

ALICE SPRINGS PACKAGE 12 (LARAPINTA VALLEY - 087)
PROPOSED SUBDIVISION OF H.C. 5195 - BLAIN STREET

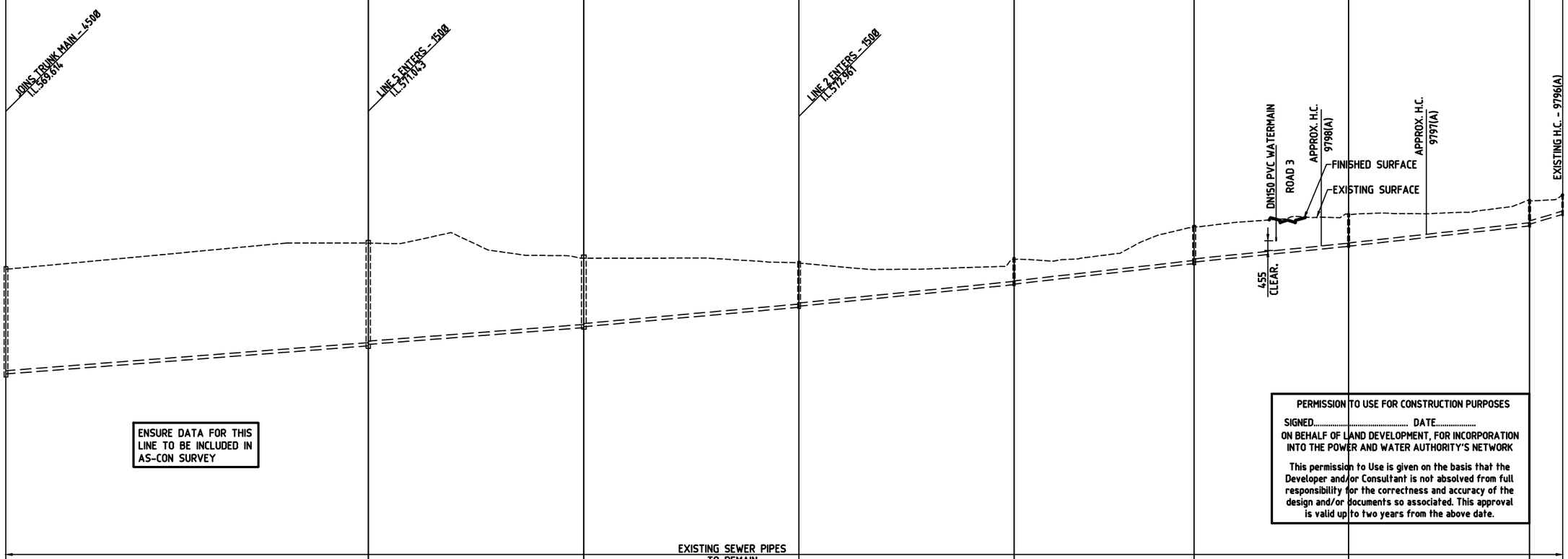
SEWERAGE LONGITUDINAL SECTIONS

DRAWING NO: TA-12-087-CVL-DWG-0061

REV: -

6275

SEWER MAINTENANCE HOLE No.	MH1-19	1/19B	1/19C	1/19D	1/19E	1/19F	1/19G	1/19H	S.I.O. 1
CHAMBER SHAPE COVER & DUTY	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.
CHAMBER DROP TYPE	1	1	1	1	1	1	1	1	-



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PIPE DETAILS SLOPE/GRADE (mm/m) DATUM RL 557.6		150Ø PVC 7.7		150Ø PVC 7.7		150Ø PVC 9.96		150Ø PVC 10.0		150Ø PVC 11.4		150Ø PVC 10.2		150Ø PVC 11.2		150Ø PVC 30.0	
RIM TOP LEVEL	574.715		575.923		575.224		574.997		575.171		576.682		577.233		577.902		578.154
DEPTH TO INVERT	4.860		4.919	4.849	3.376	3.333	2.201	2.152	1.325	1.302	1.860	1.789	1.610	1.603	1.332	1.252	1.043
INVERT LEVEL	569.614 APPROX. 569.700		571.004	571.074	571.848	571.891	572.796	572.845	573.846	573.869	574.822	574.893	575.623	575.630	576.570	576.650	577.111
FINISHED SURFACE	APPROX. 574.560		575.773		575.074		574.847		575.021		576.532		577.083		577.752		578.004
CHAINAGE	0.000	168.300		99.957	268.257	99.904	368.161	99.872	468.033	83.506	551.539	71.789	623.328	83.929	707.257	15.374	722.631

EX. SEWER LINE 1 - MH1/19G TO MH1/19F LOW POINT AT APPROX. 3m FROM MH1/19G. LOW POINT AT APPROX. 67m TO 71m FROM MH1/19G. REGRADE/RELAY SECTION. (LEVELS TO BE CONFIRMED FROM POT-HOLING TO ENGINEER APPROVAL BY PWC OF EXTENT OF RELAYING/GRADING. NOT IN TERRITORY ALLIANCE SCOPE OF WORKS.)

EX. SEWER LINE 1 - MH1/19D TO MH1/19C PIPE DEFORMATION APPROX. 83m FROM MH1/19D. REGRADE/RELAY SECTION. (LEVELS TO BE CONFIRMED FROM POT-HOLING TO ENGINEER APPROVAL BY PWC OF EXTENT OF RELAYING/GRADING. NOT IN TERRITORY ALLIANCE SCOPE OF WORKS.)

LONGITUDINAL SECTION
EXISTING SEWER LINE 1

NOTE: ALL EXISTING HOUSE CONNECTIONS TO BE VERIFIED AND RELOCATED. (NOT IN TERRITORY ALLIANCE SCOPE OF WORK)

FOR GENERAL NOTES, REFER TO DRG. No TA-12-087-CVL-DWG-0064

Hor. Scale 1 : 1000 @ A1
Vert. Scale 1 : 100 @ A1

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REV	DATE	REVISION DESCRIPTION	ORIG	CKD	ENG	QA	APPD
~~-~~	~~06-06-13~~	~~AS-CONSTRUCTED INFORMATION~~	~~CT~~	~~GM~~	~~TP~~		

SHEET: A1 SCALE: AS SHOWN

Northern Territory Government
Department of Planning and Infrastructure
territory housing

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Strategic Indigenous Housing and Infrastructure Program

ACONEX NO: TA-12-087-CVL-DWG-0062

DPI NO: R11-3137

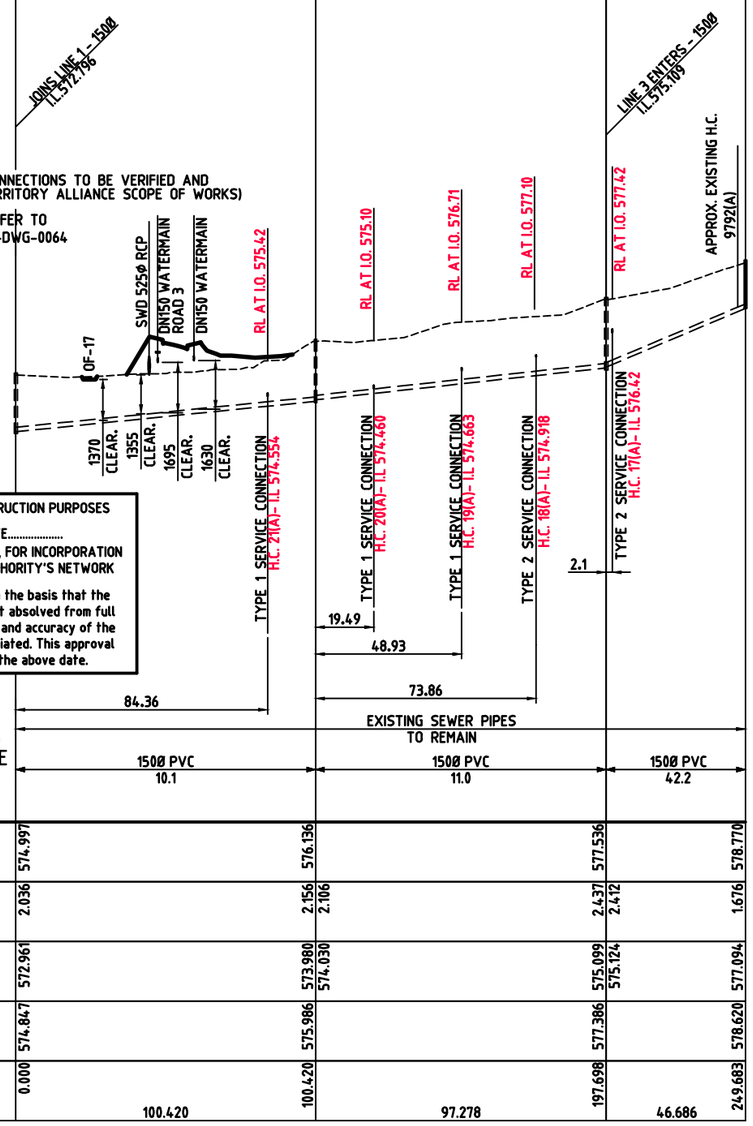
ALICE SPRINGS PACKAGE 12 (LARAPINTA VALLEY - 087)
PROPOSED SUBDIVISION OF H.C. 5195 - BLAIN STREET

EXISTING SEWERAGE LONGITUDINAL SECTIONS
SHEET 1 OF 3

DRAWING NO: TA-12-087-CVL-DWG-0062

REV: -

SEWER MAINTENANCE HOLE No.	1/19D	2/19A	2/19B	2/19C
CHAMBER SHAPE COVER & DUTY	EXIST.	EXIST.	EXIST.	TMS
CHAMBER DROP TYPE	1	1	1	300 DIA.



NOTE: ALL EXISTING HOUSE CONNECTIONS TO BE VERIFIED AND RELOCATED. (NOT IN TERRITORY ALLIANCE SCOPE OF WORKS)

FOR GENERAL NOTES, REFER TO DRG. No TA-12-087-CVL-DWG-0064

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SIGNED..... DATE.....

ON BEHALF OF LAND DEVELOPMENT, FOR INCORPORATION INTO THE POWER AND WATER AUTHORITY'S NETWORK

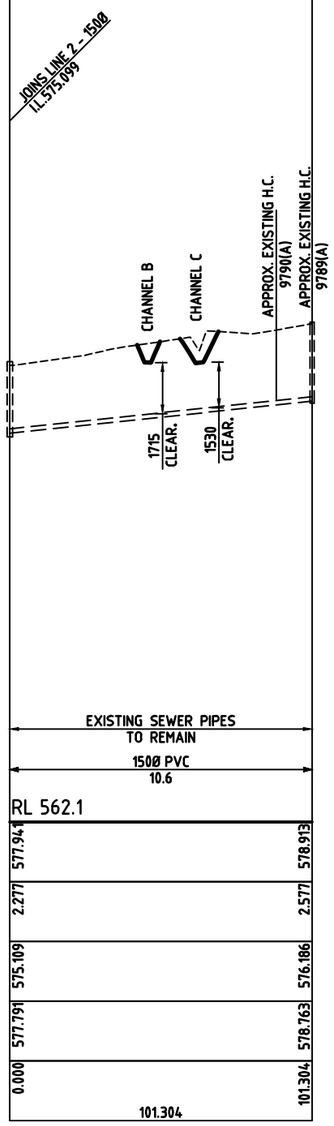
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EXISTING SEWER PIPES TO REMAIN

PIPE DETAILS SLOPE/GRADE (mm/m)	1500Ø PVC 10.1	1500Ø PVC 11.0	1500Ø PVC 42.2
DATUM RL 559.9			
RIM TOP LEVEL	574.997 / 576.136	577.536	578.770
DEPTH TO INVERT	2.036 / 2.156	2.106 / 2.437	2.412 / 1.676
INVERT LEVEL	572.961 / 573.980	574.030 / 575.099	575.124 / 577.094
FINISHED SURFACE	574.847 / 575.986	577.386	578.620
CHAINAGE	0.000 / 100.420	197.698	249.683

LONGITUDINAL SECTION
EXISTING SEWER LINE 2

SEWER MAINTENANCE HOLE No.	2/19B	3/19A
CHAMBER SHAPE COVER & DUTY	EXIST.	EXIST.
CHAMBER DROP TYPE	1	1

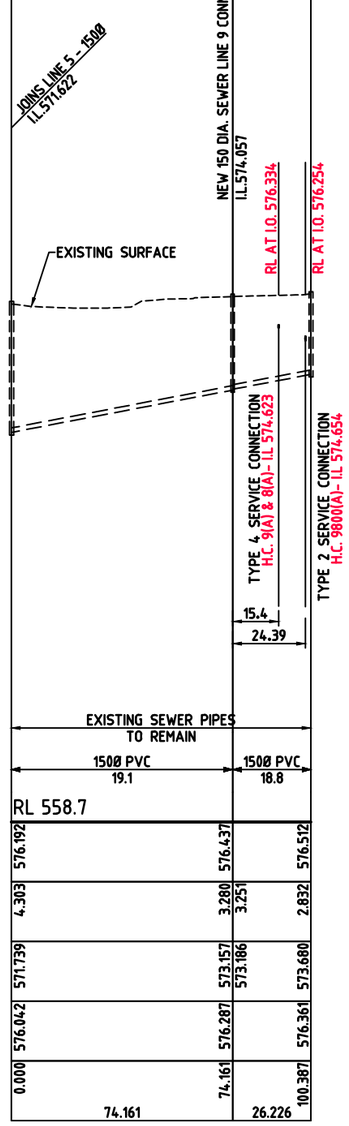


EXISTING SEWER PIPES TO REMAIN

	1500Ø PVC 10.6
RL 562.1	
	577.941 / 578.913
	2.277 / 2.577
	575.109 / 576.186
	577.791 / 578.763
	0.000 / 101.304

LONGITUDINAL SECTION
EXISTING SEWER LINE 3

SEWER MAINTENANCE HOLE No.	4/19A	9/1	4/19B
CHAMBER SHAPE COVER & DUTY	EXIST.	CRB	EXIST.
CHAMBER DROP TYPE	1	1,4	1

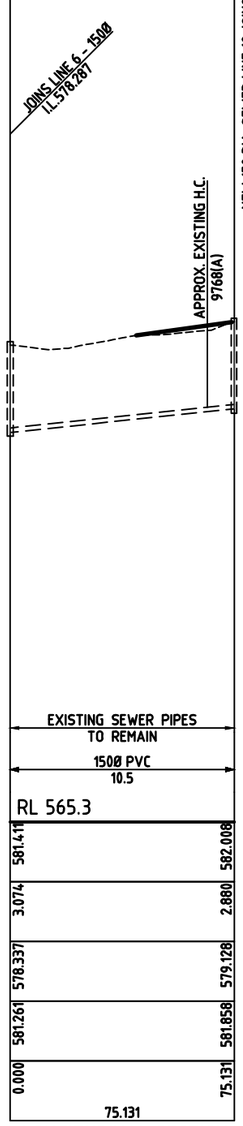


EXISTING SEWER PIPES TO REMAIN

	1500Ø PVC 19.1	1500Ø PVC 18.8
RL 558.7		
	576.192 / 576.437	576.512
	4.303 / 3.280	3.251 / 2.832
	571.739 / 573.157	573.186 / 573.680
	576.042 / 576.287	576.361
	0.000 / 74.161	100.387

LONGITUDINAL SECTION
EXISTING SEWER LINE 4

SEWER MAINTENANCE HOLE No.	6/D	6/D1
CHAMBER SHAPE COVER & DUTY	EXIST.	EXIST.
CHAMBER DROP TYPE	1	1



EXISTING SEWER PIPES TO REMAIN

	1500Ø PVC 10.5
RL 565.3	
	581.411 / 582.008
	3.074 / 2.880
	578.337 / 579.128
	581.261 / 581.858
	0.000 / 75.131

LONGITUDINAL SECTION
EXISTING SEWER LINE 6D

EX. SEWER LINE 3 - MH3/19A TO MH2/19B APPROX. 68m TO 102m FROM MH3/19A. TO BE RE-CHECKED BEFORE REGRADE/RELAY SECTION. (LEVELS TO BE CONFIRMED FROM POT-HOLING TO ENGINEER APPROVAL BY PWC OF EXTENT OF RELAYING/GRADING. NOT IN TERRITORY ALLIANCE SCOPE OF WORKS.)

EX. SEWER LINE 4 - MH1/19B TO MH4/19A APPROX. 78m FROM MH4/19B. TO BE RE-CHECKED TO CONFIRM ANY WORKS REQUIRED. (LEVELS TO BE CONFIRMED FROM POT-HOLING TO ENGINEER APPROVAL BY PWC OF EXTENT OF RELAYING/GRADING. NOT IN TERRITORY ALLIANCE SCOPE OF WORKS.)

Hor. Scale 1 : 1000 @ A1
Vert. Scale 1 : 100 @ A1

'AS CONSTRUCTED'

REV	DATE	REVISION DESCRIPTION	ORIG	CKD	ENG	QA	APPD
-	06-06-13	AS-CONSTRUCTED INFORMATION	CT	GM	TP		

SHEET: A1 SCALE: AS SHOWN

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Strategic Indigenous Housing and Infrastructure Program

ACONEX NO: TA-12-087-CVL-DWG-0063

DPI NO: R11-3138

ALICE SPRINGS PACKAGE 12 (LARAPINTA VALLEY - 087)
PROPOSED SUBDIVISION OF H.C. 5195 - BLAIN STREET

EXISTING SEWERAGE LONGITUDINAL SECTIONS
SHEET 2 OF 4

DRAWING NO: TA-12-087-CVL-DWG-0063

REV: -

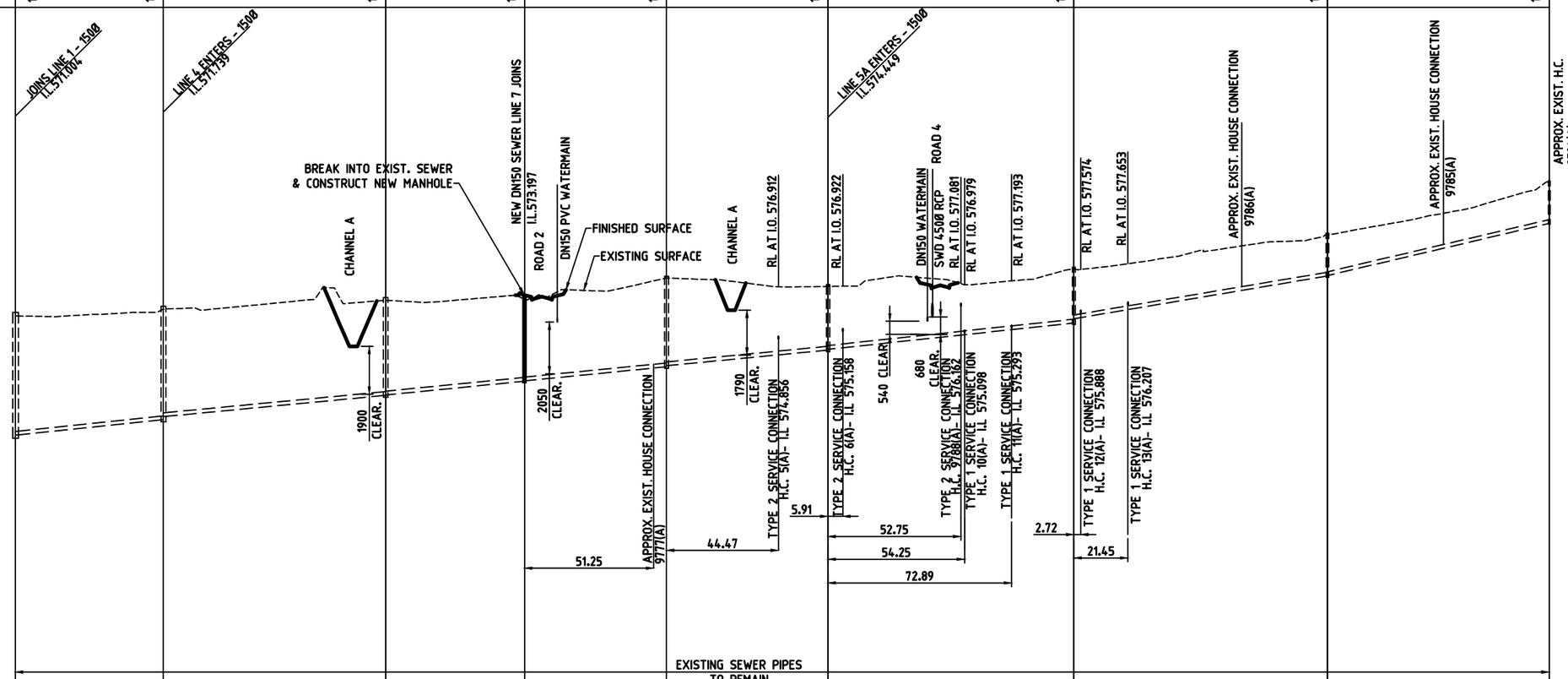
SEWER MAINTENANCE HOLE No.	1/19B	4/19A	5/19A	7/1	5/19B	5/19C	5/19D	5/19E	5/19F
CHAMBER SHAPE COVER & DUTY	EXIST.	EXIST.	CRD	CRD	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.
CHAMBER DROP TYPE	1	1	1	1	1	1	1	1	1

NOTE:
ALL MANHOLE CHAMBERS TO BE PRECAST AND 1200 DIA.
AS PER STD. DRG. W2-2-02/3

WATERMAIN COVER 750mm MIN IN ROAD RESERVE AND
600mm MIN IN NON-TRAFFICABLE AREA

FOR WATERMAIN CLASHING WITH SWD PIPES REFER
TA-12-087-CVL-DWG-0076 FOR DETAILS

ALL EXISTING HOUSE CONNECTIONS TO BE VERIFIED AND
RELOCATED. (NOT IN TERRITORY ALLIANCE SCOPE OF WORKS)



PIPE DETAILS SLOPE/GRADE (mm/m) DATUM RL 558	150Ø PVC 10.5	150Ø PVC 9.6	150Ø PVC 9.9	150Ø PVC 9.9	150Ø PVC 9.7	150Ø PVC 10.7	150Ø PVC 16.9	150Ø PVC 23.5
RIM TOP LEVEL	575.923 / 576.807	576.543	576.598	577.424	577.096	577.777	579.148	581.234
DEPTH TO INVERT	4.880 / 5.150	5.029 / 3.921	3.906 / 3.414	3.393 / 3.669	3.627 / 2.678	2.649 / 2.286	2.118 / 1.793	1.776 / 1.793
INVERT LEVEL	571.043 / 571.657	571.778 / 572.622	572.637 / 573.184	573.196 / 573.755	573.797 / 574.418	574.447 / 575.491	575.659 / 577.355	577.372 / 579.441
FINISHED SURFACE	575.773 / 576.042	576.393	576.598	577.214	576.946	577.627	578.998	581.084
CHAINAGE	0.000 / 58.733	58.733 / 88.273	147.006 / 202.120	258.421 / 56.301	322.537 / 64.116	420.130 / 97.593	520.780 / 100.650	608.812 / 88.032

EX. SEWER LINE 5 - MH5/19D TO MH5/19C LOW POINT AT APPROX. 51m TO 55m FROM MH5/19D.
RUBBER RING PROTRUDING APPROX. 30m FROM MH5/19C. REGRADE/RELAY SECTION.
APPROX. 72m FROM MH5/19D TO BE RE-CHECKED TO CONFIRM ANY WORKS REQUIRED.
(LEVELS TO BE CONFIRMED FROM POT-HOLING TO ENGINEER APPROVAL BY PWC OF EXTENT OF RELAYING/GRADING. NOT IN TERRITORY ALLIANCE SCOPE OF WORKS.)

MH5/19A TO MH4/19A LOW POINT AT APPROX. 6m FROM MH4/19A.
PIPE DEFORMED APPROX. 20m FROM MH4/19A. REGRADE/RELAY SECTION.
(LEVELS TO BE CONFIRMED FROM POT-HOLING TO ENGINEER APPROVAL BY PWC OF EXTENT OF RELAYING/GRADING. NOT IN TERRITORY ALLIANCE SCOPE OF WORKS.)

LONGITUDINAL SECTION
EXISTING SEWER LINE 5

Hor. Scale 1 : 1000 @ A1
Vert. Scale 1 : 100 @ A1

PERMISSION TO USE FOR CONSTRUCTION PURPOSES

SIGNED..... DATE.....
ON BEHALF OF LAND DEVELOPMENT, FOR INCORPORATION INTO THE POWER AND WATER AUTHORITY'S NETWORK

This permission to Use is given on the basis that the Developer and/or Consultant is not absolved from full responsibility for the correctness and accuracy of the design and/or documents so associated. This approval is valid up to two years from the above date.

'AS CONSTRUCTED'

Copyright © TERRITORY ALLIANCE

REV	DATE	REVISION DESCRIPTION	ORIG	CKD	ENG	QA	APPD
-	~~06-06-13~~	~~AS-CONSTRUCTED INFORMATION~~	~~CT~~	~~GM~~	~~TP~~		

SHEET: A1 SCALE: AS SHOWN

Northern Territory Government
Department of Planning and Infrastructure
territory housing

TERRITORY ALLIANCE
building together

Strategic Indigenous Housing and Infrastructure Program

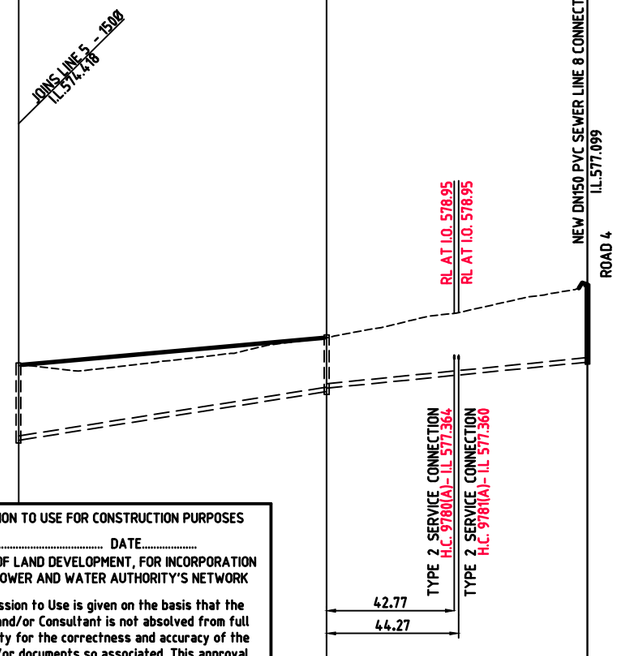
ACONEX NO: TA-12-087-CVL-DWG-0064
DPI NO: R11-3139

ALICE SPRINGS PACKAGE 12 (LARAPINTA VALLEY - 087)
PROPOSED SUBDIVISION OF H.C. 5195 - BLAIN STREET

EXISTING SEWERAGE LONGITUDINAL SECTIONS
SHEET 3 OF 4

DRAWING NO: TA-12-087-CVL-DWG-0064 REV: -

SEWER MAINTENANCE HOLE No.	5/19C	6/19A	8/1
CHAMBER SHAPE COVER & DUTY	EXIST.	EXIST.	CRD
CHAMBER DROP TYPE	1	1	1



PERMISSION TO USE FOR CONSTRUCTION PURPOSES

SIGNED..... DATE.....

ON BEHALF OF LAND DEVELOPMENT, FOR INCORPORATION INTO THE POWER AND WATER AUTHORITY'S NETWORK

This permission to Use is given on the basis that the Developer and/or Consultant is not absolved from full responsibility for the correctness and accuracy of the design and/or documents so associated. This approval is valid up to two years from the above date.

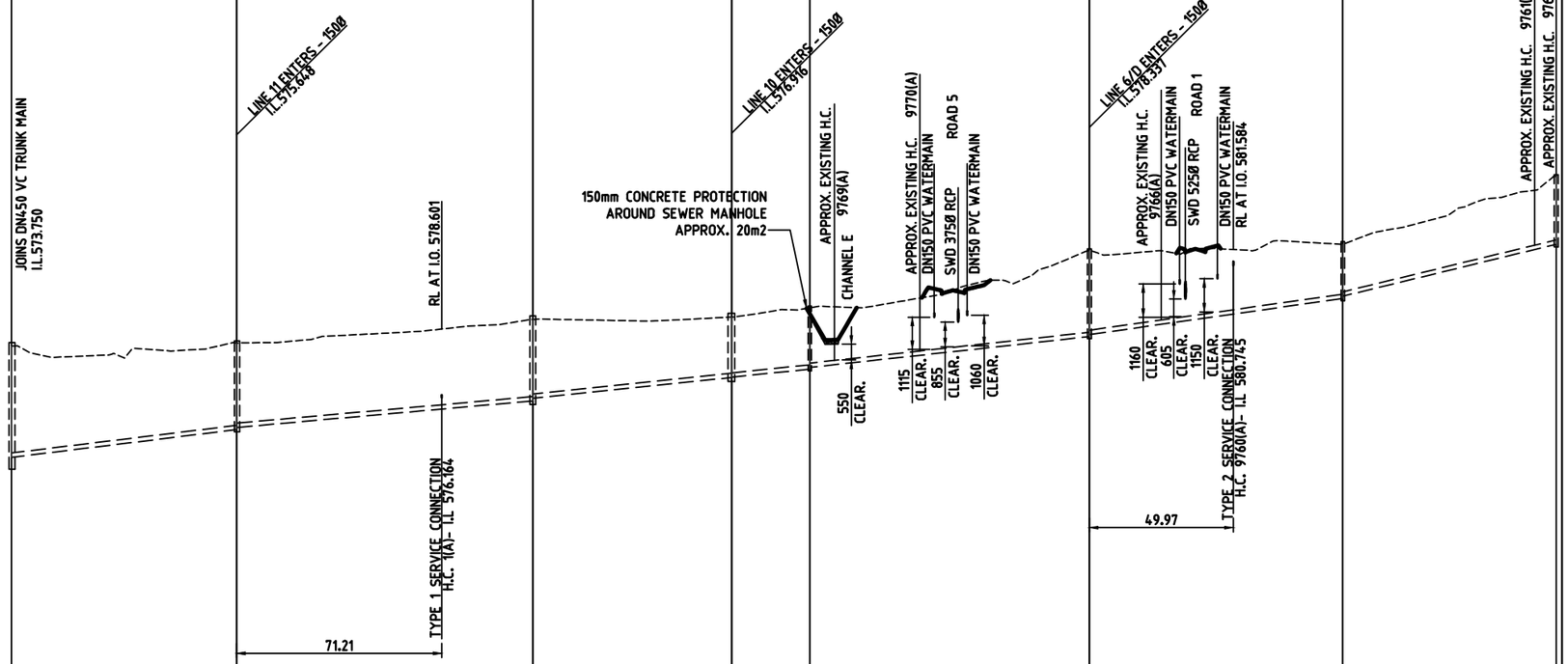
PIPE DETAILS SLOPE/GRADE (mm/m)	EXISTING SEWER PIPES	
	150Ø PVC	150Ø PVC
	15.8	10.0
	RL 561.4	
RIM TOP LEVEL	577.096 / 578.042	579.827
DEPTH TO INVERT	2.647 / 1.962 / 1.847	2.758
INVERT LEVEL	574.449 / 576.080 / 576.195	577.069
FINISHED SURFACE	576.946 / 577.892	579.677
CHAINAGE	0.000 / 103.144	103.144 / 190.521
	103.144	87.377

LONGITUDINAL SECTION
EXISTING SEWER LINE 5A

EX. SEWER LINE 5A - MH6/19A TO MH5/19C REPLACE JUNCTION AT APPROX. 22m FROM MH6/19A. (LEVELS TO BE CONFIRMED FROM POT-HOLING TO ENGINEER APPROVAL BY PWC OF EXTENT OF RELAYING/GRADING. NOT IN TERRITORY ALLIANCE SCOPE OF WORKS.)

'AS CONSTRUCTED'

L6	L6/A	L6/B	L6\B1	L6/C	L6/D	L6/E	L6/F
EXIST.	EXIST.	EXIST.	NEW MH	EXIST.	EXIST.	EXIST.	EXIST.
1	1	1	1	1	1	1	1



PIPE DETAILS SLOPE/GRADE (mm/m)	EXISTING SEWER PIPES TO REMAIN					
	150Ø PVC	150Ø PVC	150Ø PVC	150Ø PVC	150Ø PVC	150Ø PVC
	12.3	9.0	10.5	11.0	14.2	24.3
	RL 561.1					
RIM TOP LEVEL	578.104 / 578.212	579.030	579.114 / 579.045	581.411	581.636	583.996
DEPTH TO INVERT	4.004 / 3.153 / 3.077	2.973 / 2.883	2.097 / 1.886 / 1.827	3.124 / 3.053	2.027 / 1.949	2.506
INVERT LEVEL	574.100 / 575.059 / 575.135	576.057 / 576.147	576.867 / 577.159 / 577.218	578.287 / 578.358	579.609 / 579.687	581.490
FINISHED SURFACE	577.954 / 578.062	578.880	578.964 / 579.045	581.261	581.486	583.846
CHAINAGE	0.000 / 78.145	78.145 / 180.982	249.956 / 277.111	374.120	462.028	536.155
	78.145	102.837	68.974 / 27.155	97.009	87.908	74.127

LONGITUDINAL SECTION
EXISTING SEWER LINE 6

EX. SEWER LINE 6 - MHL6/F TO MHL6/E RUBBER RING PROTRUDING AT APPROX. 65m TO 71m FROM MHL6/F. REGRADE/RELAY SECTION.
MHL6/D TO MHL6/C HOUSE CONNECTION BLOCKED AT APPROX. 77m. VACUUM HOUSE CONNECTION.

MHL6/B TO MHL6/A LOW POINT AT APPROX. 3m TO 12m FROM MHL6/A.
MHL6/B TO MHL6/A RUBBER RING PROTRUDING AT APPROX. 12m FROM MHL6/A.
MHL6/B TO MHL6/A LOW POINT AT APPROX. 75m TO 86m FROM MHL6/A. REGRADE/RELAY SECTION.
(LEVELS TO BE CONFIRMED FROM POT-HOLING TO ENGINEER APPROVAL BY PWC OF EXTENT OF RELAYING/GRADING. NOT IN TERRITORY ALLIANCE SCOPE OF WORKS.)

NOTE: ALL EXISTING HOUSE CONNECTIONS TO BE VERIFIED AND RELOCATED. (NOT IN TERRITORY ALLIANCE SCOPE OF WORKS)

FOR GENERAL NOTES, REFER TO DRG. No TA-12-087-CVL-DWG-0064

Hor. Scale 1 : 1000 @ A1

Vert. Scale 1 : 100 @ A1

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REV	DATE	REVISION DESCRIPTION	ORIG	CKD	ENG	QA	APPD
-	06-06-13	AS-CONSTRUCTED INFORMATION	CT	GM	TP		

SHEET: A1 SCALE: AS SHOWN

Northern Territory Government
Department of Planning and Infrastructure
territory housing

TERRITORY ALLIANCE
building together

Strategic Indigenous Housing and Infrastructure Program

ACONEX NO: TA-12-087-CVL-DWG-0065

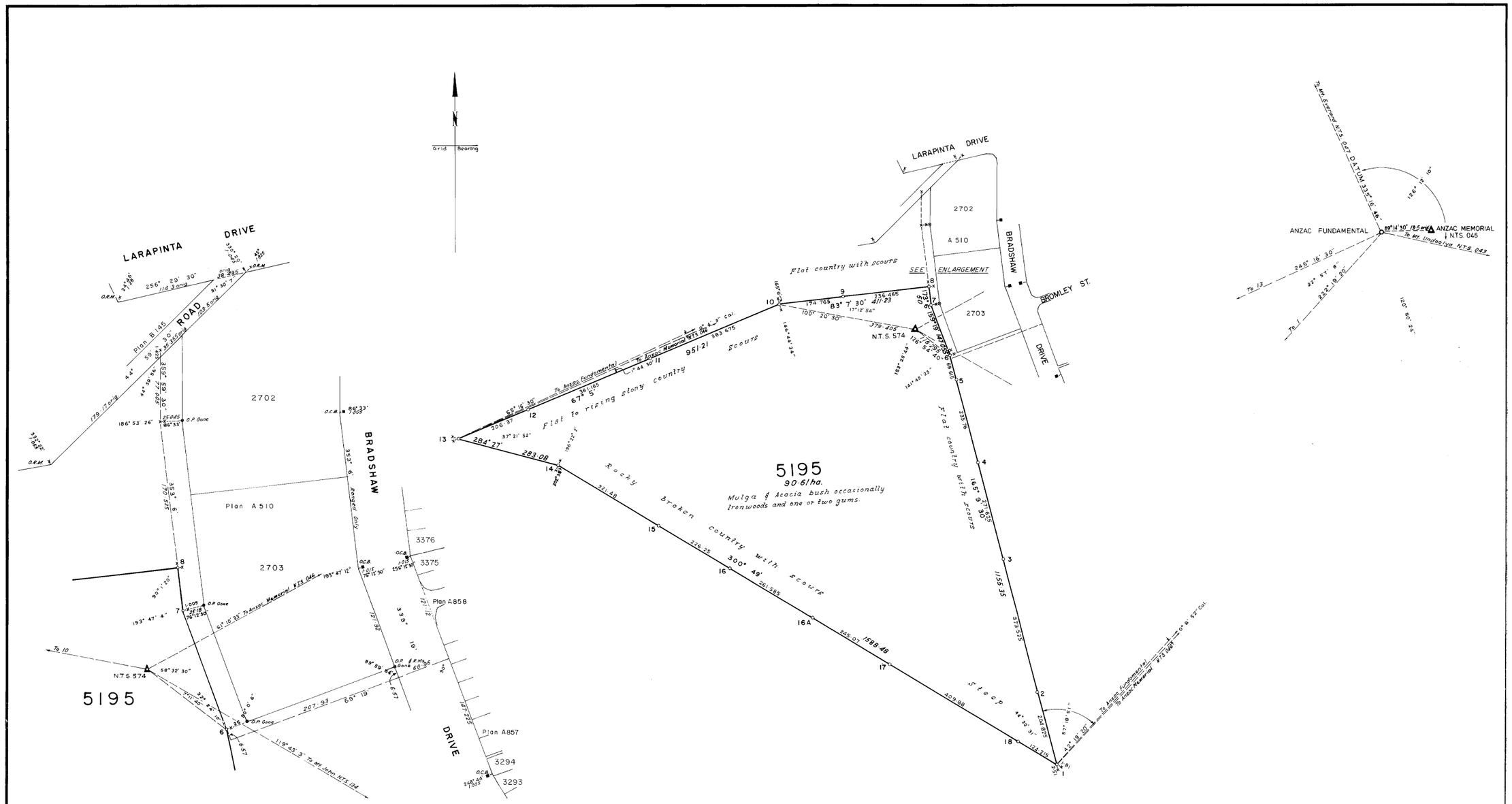
DPI NO: R11-3140

ALICE SPRINGS PACKAGE 12 (LARAPINTA VALLEY - 087)
PROPOSED SUBDIVISION OF H.C. 5195 - BLAIN STREET

EXISTING SEWERAGE LONGITUDINAL SECTIONS
SHEET 4 OF 4

DRAWING NO: TA-12-087-CVL-DWG-0065

REV: -



SURVEYOR'S CERTIFICATE

I, Thomas Ian McKnight hereby certify that the survey represented on this plan was carried out by me or under my immediate supervision and was completed on 22.4.1980 and that this survey has been executed in accordance with the Licensed Surveyors Ordinance 1933–1937 and the Regulations thereunder.

Date 29/5/80 — Licensed Surveyor

SURVEY APPROVED

Date 6.8.80 — Surveyor-General

File No.

Field Book No. S 79 / 98

Index Plan ALICE SPRINGS 2500 Sh 28 32, 2931, 2932 and ALICE SPRINGS 4800 Sh 32

Drawn A.Stobbart 22.5.80

Examined 30/5/80

Calculation Book No.

Passed — Assistant Chief Draftsman

Date 26.8.80

AMENDMENTS				
No	REFERENCE	DETAILS	APPROVED	DATE

LEGEND

Concrete Block ■
Concrete Post □
Wooden Post, Peg or Stake ○
Reference Mark ×
Lockspit ⋈
Fence Post ⊗

AZIMUTH

A. Assumed from line Anzac Fundamental to Mt Eyrard N.T.S. 047

B. Observed at

Latitude Datum

LOT 5195

TOWN OF ALICE SPRINGS

SCALE 1:5000

S79 / 98

18.9.80

Date Registered: 25/02/2011 **Volume** 754 **Folio** 134
Duplicate Certificate as to Title issued? No

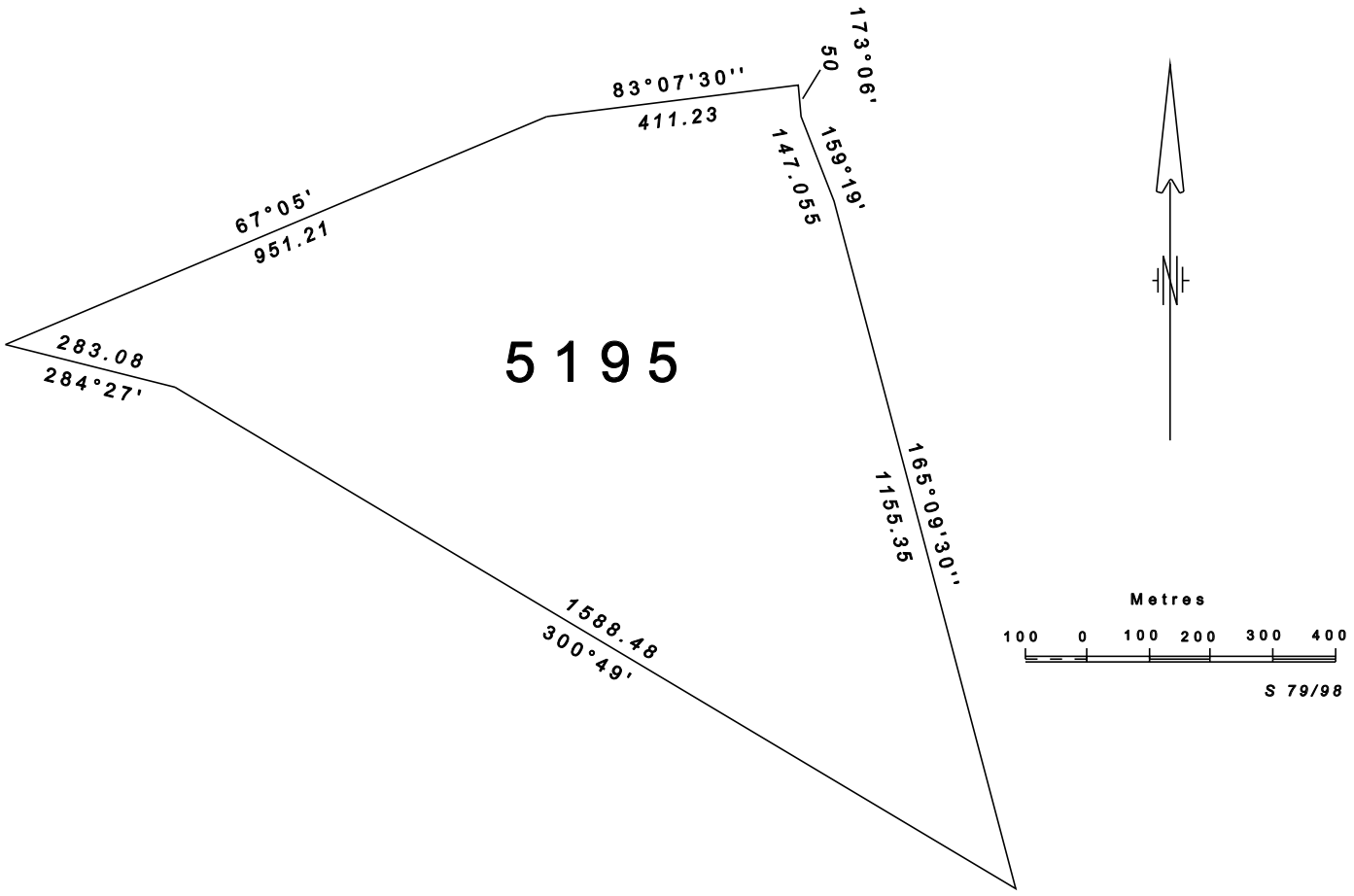
SEARCH CERTIFICATE

SPECIAL PURPOSES LEASE 00536

Lot 5195 Town of Alice Springs from plan(s) S 79/098
Area under title is 90 hectares 6100 square metres

Owner:
Yarrenyty-Arltere Association Incorporated
of C/- Public Officer, 4 Elder Street, Alice Springs NT 0870

Registered Date	Dealing Number	Description
		Previous title is **Register Book**CUCL **Volume** 191 **Folio** 062
29/06/1992	266839	Notice of Lien G & J Dona Sales Pty Ltd (ACN 009 596 264)
End of Dealings		



NORTHERN TERRITORY OF AUSTRALIA

Record of Administrative Interests and Information

Record of Administrative Interests and Information
The information contained in this record of Administrative Interests only relates to the below parcel reference.

Parcel Reference: Lot 05195 Town of Alice Springs plan(s) S 79/098

(See section 38 of the Land Title Act)

Note: The Record of Administrative Interests and Information is not part of the Land Register and is not guaranteed by the Northern Territory of Australia, and the NT Government accepts no Liability for any omission, misstatement or inaccuracy contained in this statement.

Registrar General

Government Land Register
(none found)

Custodian - Registrar General (+61 8 8999 6252)

Current Title
CUFT 754 134 (order 1)

Tenure Type
SPECIAL PURPOSES LEASE 536

Tenure Status
Current

Area Under Title
90 hectares 6100 square metres

Owners
Yarrenyty-Arltere Association Incorporated
C/- Public Officer, 4 Elder Street, Alice Springs NT 0870

Easements
(none found)

Scheme Name
(none found)

Scheme Body Corporate Name
(none found)

Reserved Name(s)
(none found)

Unit Entitlements
(none found)

Transfers
(none found)

Tenure Comments
(none found)

Historic Titles
CUCL 191 062 (order 2)
CUCL 191 062 (order 1)
Visit the website http://www.nt.gov.au/justice/bdm/land_title_office/

Custodian - Surveyor General (+61 8 8995 5362)

Address
52 BLAIN ST, FLYNN

Survey Plan
S 79/098

Survey Status
Approved

Parcel Status
CURRENT

Parcel Area
90 hectares, 6100 square metres

Map Reference
Code 010 Scale 2500 Sheet 29.32
Code 010 Scale 2500 Sheet 29.31
Code 010 Scale 2500 Sheet 28.32

Parent Parcels
(none found)

Parcel Comments
PROP.LEASE TO YARINTJA ASSOC.S79/98/23. "RIGHT TO OCCUPY - YARINTJA ASSOCIATION - FILE REF: 81/157/80". SEE S2008/001 LOTS 9760(A) TO 9800(A) FOR ALLOCATION UNDER THE CONNECTING NEIGHBOURS INITATIVE. VSAPA MANAGEMENT AREA NTG G12 21/3/2012.SEE S2012/015 LOTS 10346(A) TO 10384(A). NTG G27 03/07/2013 P 2-3 NAMING OF PLACE.

Survey Comments
(none found)

Proposed Easements
(none found)

Municipality
ALICE SPRINGS MUNICIPALITY

Region
ALICE SPRINGS

Custodian - Valuer General (+61 8 8995 5375)

Owner's Last Known Address
CEO Housing & Department of Lands and Planning, ATTENTION: CHIEF FINANCE OFFICER, GPO BOX 4621, DARWIN NT 0801

Parcels in Valuation

Lot 05195 Town of Alice Springs

Unimproved Capital Value

$2,850,000 on 01/07/2015
$3,119,000 on 01/07/2012
$2,970,000 on 01/07/2009
$2,100,000 on 01/07/2006
$1,500,000 on 01/07/2003
$1,140,000 on 01/07/2000
$1,100,000 on 01/07/1997
$900,000 on 01/07/1994
$750,000 on 01/07/1991
$700,000 on 01/01/1989
$300,000 on 01/01/1986
$200,000 on 01/01/1983
$115,000 on 01/07/1980

Valuation Improvements

28/05/1990 House x 18
28/05/1990 Ablution block x 3
28/05/1990 Hall
04/09/1980 House
03/09/1980 Land

Custodian - Property Purchasing (+61 8 8999 6631)

Acquisitions

(none found)

Custodian - Building Advisory Service (+61 8 8999 8965)

Building Control Areas

BBASP001 - Building Control Area	ALICE SPRINGS BUILDING AREA

Building Permits

Application Number:	49 of 49
Description:	construction of shade structure intergral to modular climbing play equiptment
Number of Residental Units:	
Australian Bureau of Statistics Type:	(none found)
Building Class:	Structure (Fence, Mast)
Area:	5 square metres
Certification:	Structure (Fence, Mast) - Occupancy Permit - *issued on* 28/04/2016

Application Number:	48 of 49
Description:	alterations to existing, additions of multi-purpose room
Number of Residental Units:	
Australian Bureau of Statistics Type:	(none found)
Building Class:	Assembly building
Area:	156 square metres
Certification:	Assembly building - Full Code - *issued on* 25/08/2015

Application Number:	47 of 49
Description:	house 5 - reglaze exisitng windows, refurbish exisitng kitchen with new stove and ss joiney units. new ceramic floor tiles throughout house. repaint inside and out. supply and install new evap cooling unit.
Number of Residental Units:	1
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling
Area:	(none found)
Certification:	Single Dwelling - Full Code - *issued on* 14/12/2011

Application Number:	42 of 49
Description:	New Duplex house LV62 & LV63
Number of Residental Units:	2
Australian Bureau of Statistics Type:	Semi-detached town house of one storey
Building Class:	Single Dwelling
Area:	219 square metres
Certification:	Single Dwelling - Full Code - *issued on* 28/09/2011

Application Number:	41 of 49
Description:	LV69 & LV6: New concrete and steel residential 3 bedroom dwelling (Type H6VAS) LV7: New concrete and steel residential 3 bedroom dwelling (Type H7AS) LV64: New concrete and steel residential 3 bedroom dwelling (Type H7EAS)
Number of Residental Units:	1
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling

Area:	135 square metres
Certification:	Single Dwelling - Full Code - *issued on* 04/08/2011

Application Number:	39 of 49
Description:	Refurbishment
Number of Residental Units:	1
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling
Area:	(none found)
Certification:	Single Dwelling - Full Code - *issued on* 01/08/2011

Application Number:	35 of 49
Description:	Dwelling Alterations [House 5,8] including New Kitchens,Wet Areas,Floor Linings, Windows & Doors, Air Conditioning & Heating
Number of Residental Units:	2
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling
Area:	(none found)
Certification:	Single Dwelling - Full Code - *issued on* 14/04/2013

Application Number:	34 of 49
Description:	dwelling and carport
Number of Residental Units:	1
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling Non-habitable building
Area:	130 square metres
Certification:	Single Dwelling - Full Code - *issued on* 17/08/2010 Non-habitable building - Full Code - *issued on* 17/08/2010

Application Number:	33 of 49
Description:	dwelling and carport
Number of Residental Units:	1
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling Non-habitable building
Area:	135 square metres
Certification:	Single Dwelling - Full Code - *issued on* 23/11/2010 Non-habitable building - Full Code - *issued on* 23/11/2010

Application Number:	32 of 49
Description:	Dwelling alterations to house 05, 06, 14A & 14B including new kitchens, wet areas, floor linings, windows and doors, air conditioning and heating
Number of Residental Units:	
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling
Area:	(none found)

Certification:	Single Dwelling - Full Code - *issued on* 16/11/2010

Application Number:	31 of 49
Description:	Wall Cladding, Awnings and Pergola.
Number of Residental Units:	1
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling Non-habitable building
Area:	11 square metres
Certification:	Single Dwelling - Full Code - *issued on* 18/02/2009 Non-habitable building - Full Code - *issued on* 18/02/2009

Application Number:	30 of 49
Description:	Upgrade to dwelling including wall cladding, sunshade awnings,
Number of Residental Units:	1
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling
Area:	(none found)
Certification:	Single Dwelling - Full Code - *issued on* 17/02/2009

Application Number:	29 of 49
Description:	Storage shed for playgroup
Number of Residental Units:	
Australian Bureau of Statistics Type:	(none found)
Building Class:	Non-habitable building
Area:	15 square metres
Certification:	Non-habitable building - Full Code - *issued on* 14/03/2008

Application Number:	28 of 49
Description:	Dwelling Alterations - House 1
Number of Residental Units:	1
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling
Area:	(none found)
Certification:	Single Dwelling - Full Code - *issued on* 02/07/2009

Application Number:	27 of 49
Description:	External Ablution Block
Number of Residental Units:	1
Australian Bureau of Statistics Type:	Separate House
Building Class:	Single Dwelling
Area:	14 square metres
Certification:	Single Dwelling - Full Code - *issued on* 21/02/2008

Application Number:	26 of 49
Description:	dwelling

Number of Residental Units: 1
Australian Bureau of Statistics Type: Separate House
Building Class: Single Dwelling
Area: 208 square metres
Certification: Single Dwelling - Full Code - *issued on* 10/09/2007

Application Number: 24 of 49
Description: DWELLING
Number of Residental Units: 1
Australian Bureau of Statistics Type: Separate House
Building Class: Single Dwelling
Area: 0 square metres
Certification: Single Dwelling - Full Code - *issued on* 10/09/2002

Application Number: 23 of 49
Description: CONSTRUCTION OF A DWELLING
Number of Residental Units: 1
Australian Bureau of Statistics Type: Separate House
Building Class: Single Dwelling
Area: 0 square metres
Certification: Single Dwelling - Full Code - *issued on* 06/03/2001

Application Number: 22 of 49
Description: ALTERATIONS TO DWELLING
Number of Residental Units: 0
Australian Bureau of Statistics Type: (none found)
Building Class: Single Dwelling
Area: 15 square metres
Certification: Single Dwelling - Full Code - *issued on* 27/10/1995

Application Number: 21 of 49
Description: ADDITION TO DWELLING
Number of Residental Units: 0
Australian Bureau of Statistics Type: (none found)
Building Class: Single Dwelling
Area: 0 square metres
Certification: Single Dwelling - Full Code - *issued on* 22/06/1995

Application Number: 20 of 49
Description: ALTERATION TO DWELLING
Number of Residental Units: 0
Australian Bureau of Statistics Type: (none found)
Building Class: Single Dwelling
Area: 0 square metres
Certification: Single Dwelling - Full Code - *issued on* 31/01/1995

Application Number:	2 of 49
Description:	TOILET SHELTER BLOCK
Number of Residental Units:	0
Australian Bureau of Statistics Type:	(none found)
Building Class:	Out building
Area:	67 square metres
Certification:	Out building - Full Code - *issued on* 04/07/1980

Application Number:	1 of 49
Description:	HOUSES (7)
Number of Residental Units:	7
Australian Bureau of Statistics Type:	(none found)
Building Class:	House
Area:	765 square metres
Certification:	House - Full Code - *issued on* 04/07/1980

Visit the website http://www.nt.gov.au/building/

Custodian - Town Planning and Development Assessment Services (+61 8 8999 6046)

Planning Scheme Zone
CL (Community Living)

Interim Development Control Orders
(none found)

Planning Notes
(none found)

Planning Applications

File Number
PA2010/0160

Type
Compliance Check

Date Received
17/02/2010

Application Purpose
Larapinta Valley Town Camp - Dwellings

Application Status
Approved

Other Affected Parcels
(none found)

Instrument Signed

Instrument Number

Instrument Issued
Not Complete

Instrument Status

File Number
PA1987/0421

Type
Development

Date Received
23/06/1987

Application Purpose
BUILDING AN ATTACHED DWELLING THIS SITE IS OFF LARAPINTA DRIVE

Application Status
Approved

Other Affected Parcels
(none found)

Instrument Signed
28/07/1987

Instrument Number
DV2759

Instrument Issued
Signed

Instrument Status
Completed

Custodian - Power and Water Corporation (1800 245 092)

Meters on Parcel

Power Water - Electricity	19
Power Water - Water	21

For Account balances, contact the Power and Water Corporation.

Custodian - Pool Fencing Unit (+61 8 8924 3641)

Swimming Pool/Spa Status
(none found)

For more information, contact the Pool Fencing Unit (+61 8 8924 3641).

Custodian - Mines and Energy (+61 8 8999 5322)

For information on possible Exploration Licences, contact Mines & Energy or visit the website http://www.nt.gov.au/d/Minerals_Energy/

For information on possible Petroleum Titles, contact Mines & Energy for further details.

Custodian - NT Environment Protection Authority (+61 8 8924 4218)

Results of site contamination assessment
(none found)

For further information contact Environment Protection Authority or visit the website
https://ntepa.nt.gov.au/waste-pollution/contaminated-land

Custodian - Heritage Branch (+61 8 8999 5039)

Heritage Listing:
(none found)

For further information on heritage places contact Heritage Branch or visit the website
https://nt.gov.au/property/land/heritage-register-search-for-places-or-objects

Other Interests
For Account balances, contact Alice Springs Town Council



Transformer data

Group	Com Id	Location	Community Name	Dwellings No. (Funded Dwellings)	Dwellings No. (Bennett Design)	New Houses ** (Future Demand)	Primary Volatge Level (KV)	PWC Substation ID	PWC Test Number	Transformer size (KVA)	KVA Total dwellings @ 4.5KVA	KVA Total dwellings @ 7KVA	Comments
1	290	Darwin	Bagot	55	55		11	1924	1735	300	247.5	385	
	344	Darwin	Knuckey Lagoons	18	19	2	11	1771	2163	100	85.5	133	
	347	Darwin	Kulaluk	19	19		11	1092	10607	50	85.5	133	
	403	Darwin	Palmerston Town Camp	20	16		22	10196	10245	100	90	140	Two transformers for this Town Camp. Transformers are not in boundary of Town Camp [The nearest transformers data to Town Camp are highlighted in yellow].
							22	265	11645	25			
	412	Darwin	Railway Dam (One Mile Dam)	5	6	2	11	1041	4378	200	27	42	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	427	Adelaide River	Amangal	9	9		22	216	12187	100	40.5	63	Two transformers for this Town Camp.
							22	184	5646	63			
	687	Jabiru	Manabadurma	10	12		11	5050	11107	200	54	84	
	825	Darwin	Minmarama Park	24	24		11	2147	11372	100	108	168	
2	606	Katherine	Warlpiri Transient Camp	9	9		22	6416	4886	100	40.5	63	Two transformers for this Town Camp.
							22	6074	4695	25			
	621	Katherine	Miali Brumby (Kalano)	47	31		22	6133	12247	315	211.5	329	
	640	Pine Creek	Pine Creek Compound	4	4		22	6666	3147	25	18	28	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	971	Mataranka	Mulggan	12	9	4	22	6819	5296	16	54	84	
							22	6818	5297	16			
							22	6384	11028	25			
3	215	Tennant Creek	Blueberry Hill (Munji-Marla)	2	2		22	7079	1868	200	9	14	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	223	Tennant Creek	Dump Camp (Marla-Marla)	7	7		22	7181	11088	200	31.5	49	
	224	Elliott	Elliott South Camp	12	12		11	7504	4718	200	54	84	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	225	Elliott	Elliott North Camp	36	25		11	7505	4715	100	162	252	
	238	Tennant Creek	Kargaru (East Side Camp)	12	12	1	22	7572		200	54	84	
	246	Tennant Creek	Ngalpa Ngalpa	18	21		22	7179		200	94.5	147	Two transformers for this Town Camp.
							22	7033	10904	315			
	271	Tennant Creek	Village Camp	12	12	1	22	7183	11107	200	54	84	
	681	Tennant Creek	Tingkarli	12	12		22	7180		200	54	84	
	684	Tennant Creek	Wuppa	15	15	1	22	7141	11092	100	67.5	105	Two transformers for this Town Camp.
							22	7182	11095	200			
4	3	Alice Springs	Akngwertnarre (Morris Soak)	11	15		11	8596	11336	300	67.5	105	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	16	Alice Springs	Anthelk Ewlpaye (Charles Creek)	17	10		11	8569		315	76.5	119	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	17	Alice Springs	Anthepe	15	15		22	8598	5874	200	67.5	105	Data extracted from PWC asset information. There was not access to this Town Camp due to ceremony on inspection day.
							22	8597	11244	315			
	19	Alice Springs	Aper Alwerrknge (Palmers)	7	6		11	8405	2939	200	31.5	49	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	35	Alice Springs	Ewyenper Atwatye (Hidden Valley)	47	47		11	8622	11202	100	211.5	329	
							11	8623	11203	100			
							22	8625	11205	63			
							11	8626	11204	100			
	47	Alice Springs	Ilparpa	13	13		22	8611	11702	200	58.5	91	
	48	Alice Springs	Ilperle Tyathe (Walpiri)	10	9		11	8001	11209	315	45	70	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	50	Alice Springs	Ilyperenye (Old Timers)	10	10		22	8145	3323	100	45	70	
	64	Alice Springs	Bassos	2	2		11	8002	10946	50	9	14	
	69	Alice Springs	Karnte	19	19		22	8282	2345	100	85.5	133	
	87	Alice Springs	Yarrenty Altere (Larapinta Valley)	34	34		11	8617	11334	100	153	238	
							11	8618	11200	63			
							11	8619	11335	100			
							11	8620	11201	100			
	90	Alice Springs	Inarlenge (Little Sisters)	16	22		22	8137	2925	100	99	154	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	108	Alice Springs	Mpwetyerre (Abbotts)	6	6		11	8093	11703	315	27	42	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	113	Alice Springs	Mount Nancy (Nyewente)	11	12		11	8405	2939	200	54	84	
	129	Alice Springs	Nyewente (Trucking Yards)	26	26		11	8629	11312	300	117	182	
	675	Alice Springs	Hoppys	15	19						85.5	133	There is not any Transformer in boundary of Town Camp. Also it's not shown in PWC asset information.
	676	Alice Springs	Ilpiye Ilpiye (Golders Camp)	15	14		11	8314	369	50	67.5	105	
	1029	Alice Springs	Kunoth	4	4		11	8569		315	18	28	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
5	222	Borroloola	Mara	28	29	2	11	6187	12610	100	130.5	203	Two transformers for this Town Camp.
							11	6545	10203				
	229	Borroloola	Garawa 1	16	14		11	6546	10166	100	72	112	Two transformers for this Town Camp.
							11	6332	4890	100			
	278	Borroloola	Yanyula	29	29		11	6162	10496	200	130.5	203	Data extracted from PWC asset information. It's outside of Twon Camp, shown only Transformer to this Town Camp.
							11		10167				This transformer is not shown in PWC asset information. It's installed in Boat Ramp Road near to Town Camp and connected to Electrical reticulation of Town Camp.
	992	Borroloola	Garawa 2	11	11		11	6189	2669	25	49.5	77	

** For New house's demand calculation see section 13.4 "Future Demand".

Mpwetyerre (Abbotts)

Mpwetyerre (Abbotts)

1 Design

The infrastructure reviews have been undertaken against current relevant standards for typical sub-divisions. The following standards have been used in undertaking the reviews.

Sewerage and water supply

- Water Services Association of Australia – Sewerage Code – WSA 02 Part 1: Planning and Design
- Power and Water Corporation supplement to WSA 02
- Water Services Association of Australia – Sewerage Pumping Station Code – WSA 04 -2005 Part 1: Planning and Design
- Power and Water Corporation supplement to WSA 04
- Water Services Association of Australia – Water Supply Code – WSA 03 2002 Part 1: Planning and Design
- Power and Water Corporation supplement to WSA 03
- Power and Water Corporation Indigenous Community Engineering Guidelines (2008)
- Department of Housing and Community Development Indigenous Community Engineering Guidelines (ICEG 2014, updated September 2016)
- Power and Water Corporation Essential Services Infrastructure Assessment and Upgrade Guidelines (for Town Camps in Urban Communities, 2009)
- Power and Water Corporation Standard Drawings
- Australian Standards

Electrical services

Electrical infrastructure has been assessed against AS/NZS3000 Wiring Rules and against PWC Service, Installation and Metering Rules and Urban Residential Development (URD) Design Standards where possible.

With one exception, town camps are each a single lot and compliance with AS/NZS3000 is sufficient to address potential safety concerns.

As such application of PWC URD Design Standards will mainly apply to the incoming supply and bulk or initial multi-metering panels if provided.

URD Design Standards for internal reticulation and street lighting appear to have been applied in many cases for convenience rather than compliance.

For the purposes of this report, the demand per dwelling allowances of URD Design Standards have been used to estimate incoming supply and overall distribution capacity requirements.

The following standards apply:

- Australian Standards
- Power Networks Design and Construction Guidelines, Power and Water Corporation
  - NP001.1_Design and Construction of Network Assets – General Requirements
  - NP001.3_General Specification for Overhead Electrical Reticulation
  - NP001.6_General Specification for URD Subdivisions
  - NP003_Installation Rules_V3
  - NP007_Service Rules
  - NP027_Capture of Newly Installed Street Lighting Information
  - NP041_Guidelines for Electrical Design Consultants

Further referral to the guidelines in this report will be designated by the guidelines number, NP001.1.

Communications

- National Broadband Network Website viewed 21 January 2017 (http://www.nbnco.com.au/) – NBN rollout maps

Council guidelines

In addition to the above standards, the following Council guidelines will be used where applicable.

- Alice Springs Town Council – Subdivision and Development Guidelines, November 2012

General

It should be noted that if the town camps are proposed to be subdivided and services assets gifted to Power and Water Corporation (PWC) for operation and maintenance, all of these services will need to fully meet PWC standards. With the exception of a few town camps that have recently been upgraded, this will require the full replacement and/or realignment of most services.

2 Condition assessment

2.1 Rating assessment matrix

A condition rating matrix was developed and used to assess all municipal infrastructure. The same rating was used for all services to maintain consistency in assessments. Table 1 Below shows the condition rating and operability.

Table 1 Condition rating

Condition rating		Operability
1	Very Poor	Not operational
2	Poor	Not fully operational or requires immediate maintenance to keep operational
3	Good	Fully operational, may require routine maintenance
4	Very Good	Fully operational, may require maintenance in the next six months
5	Excellent	New, fully operational

2.2 Civil assessment limitations

The civil infrastructure condition investigations were subject to a number of limitations. These include:

- Only accessible services have been investigated. This includes inspecting the top of sewer manholes, side entry pits, etc., however, does not include opening pits to inspect infrastructure below ground.
- No physical testing of the sewer, water or stormwater network was undertaken.
- No survey or service locating was undertaken.

As there was no survey, potholing or CCTV undertaken on the underground infrastructure there is insufficient information to make determinations on the asset condition. The condition assessments discussed in this report are only for the accessible services and do not necessarily represent the condition of the underground infrastructure. For the majority of the town camps, other than a few that have recently been upgraded it was found that the underground services are generally undersized and it is likely, due to their age, that the these services are in poor condition. Either factor would trigger the need for a complete replacement to meet current relevant standards.

2.3 Electrical assessment limitations

The electrical infrastructure condition investigations were subject to a number of limitations. These include:

- Inspections were carried out without the assistance of an electrical tradesman.
- Only accessible services were investigated. Assessments were of a visual nature and no pit covers were removed.
- Overhead equipment was assessed from ground level.
- Switchboards were not opened and no assessment of the internal connections or bus ratings was made.
- Electrical infrastructure was assessed down to the meter for multi-meter panels and down to the termination, overhead pole or distribution pillar, of the supply cable to a meter located at a dwelling.

3 Current infrastructure issues

Power and Water Corporation (PWC) have advised of the following concerns and issues in regard to the sewerage, water and electrical infrastructure at all town camps.

3.1 Ownership and maintenance

PWC stated there has always been confusion regarding the ownership and responsibilities of the internal sewer, water and electrical infrastructure. PWC have advised that they have no legal tenure on the majority of assets in any town camps and that the owner is essentially that of the land owner or leaseholder. This is further discussed for each type of infrastructure for each town camp.

The ownership and who is responsible for the maintenance of the sewage pump stations and street lighting is a major concern. In most town camps it was found that PWC have been maintaining the assets on an in-kind basis, although there are no maintenance or access agreements in place and the infrastructure is generally not compliant to PWC standards.

3.2 Access to infrastructure

PWC advised that due to the uncertainty surrounding ownership and responsibility of the sewerage, water and electrical infrastructure, each town camp is seen as a single lot with multiple houses on it. There are no formal road reserves or easements where the municipal infrastructure should be located. PWC therefore have no legal right to enter the town camps to work on the infrastructure, nor can PWC stop others from working on the infrastructure. There is a risk that the maintenance undertaken by others may be to a lower standard than PWC.

It should be noted that there are currently no legal services easements within the town camps, except for a few cases where a town service passes through the town camp. Therefore it is recommended that easements are created over any infrastructure owned by PWC and any future assets to be gifted to PWC, to allow the service providers access to the infrastructure.

3.3 Existing infrastructure

PWC have stated that although the existing sewerage and water infrastructure appears to comply with relevant standards in some locations, the capacity cannot be assumed to meet PWC requirements due to the potential for underground substandard condition and/or grading of pipework. It is likely that these assets will need to be fully replaced to PWC standards to ensure sufficient capacity.

The planning process currently allows construction within the town camps on Commonwealth land without requiring service authority (PWC) approvals. This means that there has been no opportunity for PWC to recover contributions towards required upgrades to headworks servicing the developments and these upgrades have been paid for by PWC in the past. This inconsistency needs to be addressed for future developments within the town camps to ensure PWC are able to continue to provide adequate services.

3.4 Safety concerns

PWC have expressed concerns with safety of PWC staff and contractors working within the camps. PWC have employed procedures such as multiple people / vehicles to attend the site, with police or housing safety officers as required. This

generally leads to a delayed response time and increased cost to respond to and remediate emergency situations.

PWC have also raised the concern that if others work on water infrastructure within the town camps and do not apply the correct sanitation procedures they not only risk contaminating the entire water supply network within the town camp, at some town camps with direct connections to the town supply, they risk contaminating the entire town's water supply.

4 Available information

As the site investigations were limited to accessible / visible services, information on below ground services (such as electrical cables, sewer pipes, water supply pipes, etc.) were determined from available information. This information included:

- Serviced Land Availability Program (SLAP) maps,
- Department of Family & Community Services - Connecting Neighbours Program – Essential Services Scoping Study Report Volume 1 April 2005,
- Connecting Neighbours Project – Infrastructure Assessment and Recommendation Report - Arup Pty Ltd, April 2005,
- Drawings supplied by NT Department of Infrastructure - Technical Records,
- Drawings supplied by Power and Water Corporation,
- Bennett Design inspection reports and population data,

Aurecon undertook a site investigation of the Mpwetyerre (Abbotts) community on 15 November 2016 to inspect roads, stormwater drainage, electrical services, sewerage and water supply, and community structures. The following sections detail the outcomes of this investigation and the assessments of the infrastructure.

The civil and electrical inspection reports can be found in the Appendicies.

5 Sewerage

5.1 Ownership and boundaries

The sewer infrastructure at Abbotts Camp is owned by the Mpwetyerre Aboriginal Corporation, however is the responsibility of Tangentyere Council Incorporated to maintain.

PWC own a DN150 sewer main that runs at the back of properties in the south of Abbotts Camp. There are no easements over the sewerage infrastructure.

There were no drawings available that detailed the diameter of type of pipe within the community, however the SLAP map showed the location of the pipework.

5.1.1 Connection methods and billing

PWC advised that they currently charge a single sewerage bill based on the number of houses, which for Abbotts is six. The sewerage bill is charged to the Department of Housing and Community Development.

It is not known what contribution the residents make towards the sewerage bills.

5.2 Existing infrastructure condition assessment

The sewer infrastructure inspection was limited to inspecting the condition of manhole covers and pump stations, as all other sewerage infrastructure is below ground. The assets that were inspected had the following conditions:

Table 2 Sewer condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Manhole		1		1		2



Figure 1 Sewer manhole, condition: *very good*



Figure 2 Inspection opening manhole, condition: *poor*

The two manholes that were inspected were a sewer manhole cover, and an inspection opening. The inspection opening was in poor condition as the lid was not sitting properly.

The SIHIP program provided detailed drawings for the sewerage infrastructure upgrades required at Abbotts Camp. The drawings were Issued for Approval, refer Appendicies. The site inspection showed that the sewerage infrastructure upgrades have not been constructed. It is not known whether these works are likely to be constructed in the near future.

5.3 Current performance and risks

5.3.1 Current sewer network performance

The current capacity of the sewer network was calculated based on the following design assumptions:

- The adopted minimum grade for the pipework is 1.0%, as advised by Power and Water Corporation.
- The Equivalent Population (EP) has been calculated assuming one household equates to 9 EP, based on discussions with Power and Water Corporation.
- The capacity has been assessed by calculating the current flow rate, and the maximum flow rate when the sewer pipe flows full. The result is then a percentage of how much of the pipe is currently being used.
- Manning's roughness coefficient of the pipework is 0.012, as recommended by PWC for PVC pipes.
- Where the sewer pipe grade, size or material is not known, it is assumed to be non-compliant to PWC standards.

The current number of houses in is six, this multiplied by 9 EP per house gives a total current EP of 54. The internal pipe size was assumed to be DN100 and non-compliant, as PWC require a DN150 pipe.

The capacity of the existing sewer was then calculated. The percentage shows how much of the pipe capacity is currently being used.

Table 3 Existing sewer capacity

Catchment	Current total EP	Diameter of connection (mm)	Adopted PWC minimum slope (%)	Q_{full} (L/s)	Current Q (L/s)	Current capacity (%)
Catchment 1	54	100	1.0	5.60	0.87	16%

Table 3 above shows that the capacity of the existing sewer network is adequate for the current peak population. It is likely that as the flow is relatively low, self-cleansing velocities are not achieved.

It is recommended that the internal sewer network is upgraded to a DN150 PVC pipe, with new house connections and manholes, including a new connection to the existing PWC main. The new main should be within the road reserve, or within new easements.

5.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

5.5 Recommended works

The following works are recommended:

- Construct new DN150 PVC reticulation main

6 Water supply

6.1 Ownership and boundaries

The existing internal water main at Abbotts community is a DN100 FCP pipe with a dead end.

The water supply assets within Abbotts are believed to be owned by Mpwetyerre Aboriginal Corporation, but are the responsibility of Tangentyere Council Incorporated to maintain. The water is supplied from PWC owned water main outside of the community.

6.1.1 Connection methods and bills

PWC have advised they currently maintain up to the bulk water meter located at Abbotts community. It is assumed that this indicates the location at which they measure the water usage for the community. This means that a single bill would be provided by PWC to the Department of Housing and Community Development. It is not known what contribution the residents make towards the water bills.

It is proposed that PWC continues to measure the water supply for the entire community, as opposed to individual lots within the community. Under this scheme, the water bill for the entire community is the responsibility of the governing body, being Mpwetyerre Aboriginal Corporation for Abbotts. It will be up to governing body to assign bills to residents accordingly.

It is recommended that the individual lot meters are maintained in addition to the proposed use of bulk water meters. This will assist the governing body with distributing bills to residents, the identification of any leaks in the network, and meeting PWC standards should the town camp be subdivided in the future.

Two residential lot water meters were assessed during the inspection. Abbotts is believed to contain six dwellings. Therefore, up to an additional four water meters are required to be installed to cover the properties without an existing water meter. Note, some water meters may have been present however not visible due to overgrown flora or restricted property access. Consequently water meters may have not been discovered during the inspection.

6.2 Existing infrastructure assessment

The site investigation for the water infrastructure included assessing the condition of any air valves, fire hydrants, tanks, taps, and water meters. The assessment was limited to services that could be accessed above ground; no excavation of below ground services was undertaken.

The condition of each asset is as follows:

Table 4 Water asset condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Fire hydrants	1			1		2
Taps	2					2
Water meter (bulk)			1			1
Water meter (residential lots)			2			2



Figure 3 Water meter (bulk), condition: *very good*



Figure 4 Fire hydrant, condition: *very poor*



Figure 5 Residential lot water meter, condition: *good*



Figure 6 Tap, condition: *very poor*

A single above ground fire hydrant was assessed as being in very poor condition. PWC infrastructure guidelines for town camps states that above ground fire hydrants are to be removed and replaced with below ground fire hydrants. It is proposed that the existing fire hydrant is removed and replaced with a new below ground hydrant. Additionally two taps are located within the community which are currently broken and should be replaced.

6.3 Current performance and risks

The current capacity of the water supply was calculated based on the following design assumptions:

- The nominal peak day flow is 1300 L/capita/day, based on PWC's supplement to WSA 03 2002. This value is for the southern region of NT. It was assumed that the nominal peak day flow of 1300 L/capita/day also applies to water usage within the community, although it is possible that this value could be higher in real life due to a lack of controls to reduce water usage.
- The Equivalent Population (EP) has been calculated assuming one household equates to 9 EP, based on discussions with Power and Water Corporation.
- The maximum flow velocity used for calculating the incoming flow capacity is 1.4 m/s. PWC supplement to WSA 03-2002 states that flow velocities should generally not exceed 1.4 m/s during peak hour demand.
- The peak hour factors are listed in PWC's Supplement to WSA 03-2002, and they depend on the population range of the community. The peak hour factor of 3.0 has been adopted, for populations less than 500
- The water meter has PWC's minimum pressure guaranteed value of 15 m.

Table 5 shows the properties used to analyse Abbotts community water supply demand. The pipe size and type has been obtained from drawings supplied by tech records and is shown in Appendicies.

Table 5 Current water demand

Total dwellings	EP	Demand (l/s)	Peak hour demand (l/s)	Fire flow demand (l/s)	Pipe size & type	Total length (m)
6	54	0.81	2.43	25	DN100 FCP	150

Table 6 Current water demand analysis

Demand	Velocity (m/s)	Headloss (m)	Pressure (m)
Peak hour demand	0.31	0.20	14.8
Fire flow demand	3.18	20.66	-5.66

Whilst the existing network has sufficient capacity to supply the peak hour demands, there is insufficient capacity for the significant larger fire flow demands.

Ultimately the existing network has insufficient capacity and is non-compliant with PWC standards.

6.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

6.5 Recommended works

The infrastructure that was assessed as very poor or poor is recommended to be upgraded to prevent failure in the future. The following maintenance works are recommended;

- Replace the two broken taps
- Replace existing fire hydrant

It is recommended that the existing water main is replaced with a DN150 PVC looped main with a new water meter at the community boundary. The replacement below ground fire hydrant should connect to the new DN150 PVC looped main. The cost estimates for the upgrades include:

- Install new fire hydrant
- Install DN150 looped main, approximately 250 m
- Install new DN150 bulk water meter
- Install four new residential lot meters

7 Roadworks

7.1 Ownership and boundaries

It's the current understanding that the road infrastructure at Abbotts Camp is owned by the Mpwetyerre Aboriginal Corporation, however is the responsibility of Tangentyere Council Incorporated to maintain.

7.2 Existing infrastructure condition assessment

The road network within Mpwetyerre community consists of a sealed road.

Road furniture including signs, and car parks were also inspected. Table 7 below summarise the condition of the road furniture as assessed during the site inspection.

Table 7 Roadworks condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Sign			2			2
Carpark			1			1



Figure 7 Carpark, condition: *good*



Figure 8 Sign, condition: *good*

The two signs and the carpark were rated as good condition, and only requiring minor maintenance.

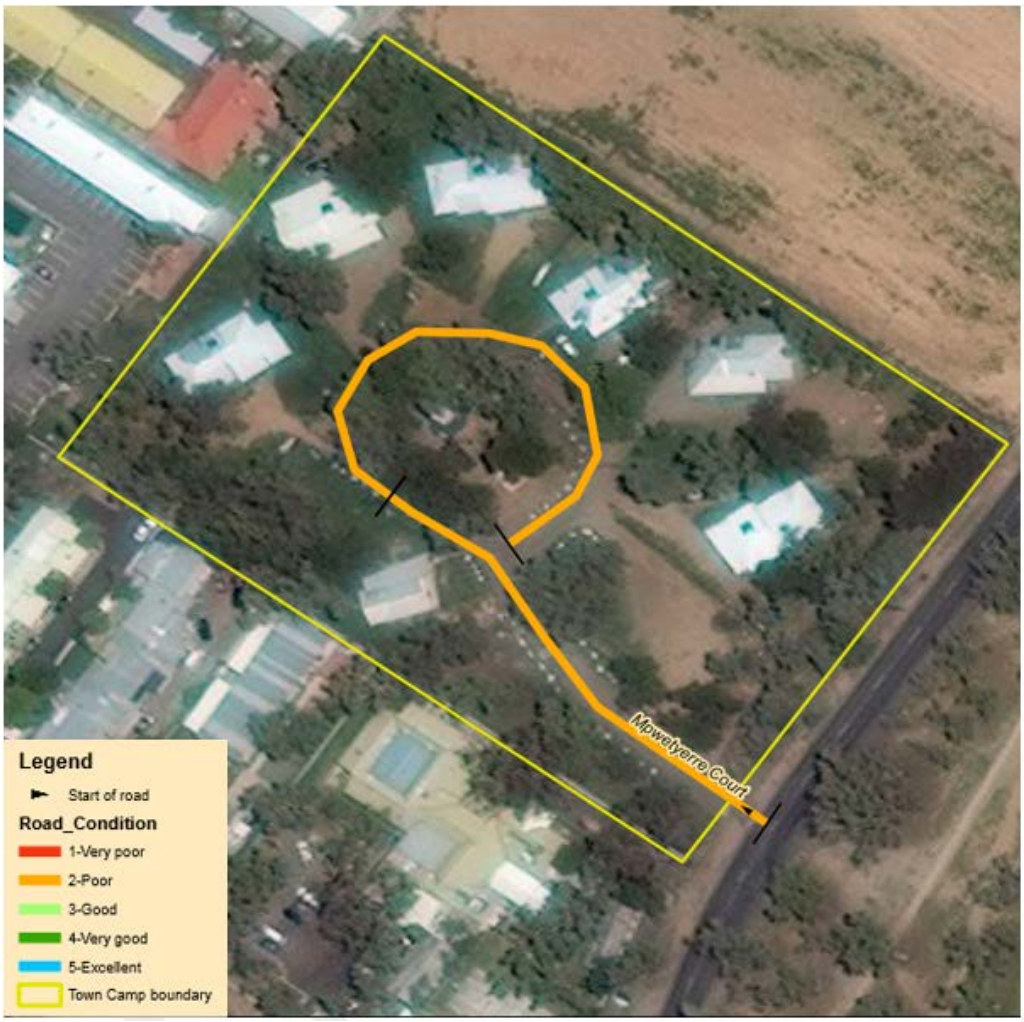


Figure 9 Community road network

Table 8 below details the condition of the roads within Mpwetyerre community for specific segments. Figure 9 shows a map of the community's road network with the condition ratings, road name, and chainage direction. Note, the percentage refers to the percentage of that particular road segment which experiences the defect.

Table 8 Road network condition assessment

Road name	Chainage start (km)	Chainage end (km)	Condition (1 to 5)	Defects and associated condition
Mpwetyerre Court	0.00	0.10	2	-20% of the road has edge breaks (2) -<5% of the road has surface cracking (3) -1 significant pothole as seen in Figure 10 (1)
	0.10	0.22	2	-50% of the road has edge breaks (2) -4 m^2 of the road has undulations (2)



Figure 10 Pothole, condition: *very poor*



Figure 11 Pavement, condition: *poor*

7.3 Current performance and risks

All roads in Mpwetyerre were rated as poor condition as there were significant edge breaks, surface cracking, undulations and some potholes. As the roads have undulations, there may be more significant issues to do with the subgrade or drainage that will require remediation before the road can be resealed.

The layout of the road network is sufficient for the current number of houses.

It is recommended that a road safety audit is undertaken to determine where signage, line marking, etc. are required.

7.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

7.5 Recommended works

The infrastructure that was assessed as very poor or poor is recommended to be upgraded to prevent failure in the future. The following works are recommended to upgrade the current infrastructure;

- Fill and reseal one pothole
- Repair 80 m of edge breaks
- Repair 20 m2 of surface cracking
- General clean of 220 m of pavement and road reserve

In order to allow for a longer term sustainable road network a significant upgrade would be required. It is recommended that a long term design which incorporates a

full two lane road network, with all appropriate road furniture, line-marking, kerbs and gutters is constructed. A cost estimate to reinstate the base and subbase material, reseal with a two coat spray seal surface, construct subsoil drainage, line marking and signage has been included. Note that these works will need to be fully designed, the cost estimate is for budgetary purposes only and only indicates the construction phase. A footpath next to the road is also recommended to provide a safe trail for pedestrians.

As the maximum road width within the Mpwetyerre (Abbotts) community is 3.2 m, this means that all 220 m of the road network will need to be upgraded to a 7.2 m wide road. The stormwater drainage infrastructure upgrades that are closely associated with the road upgrade i.e. kerb and gutters, side entry pits and underground drainage pipes are included in the stormwater section of this report.

8 Stormwater drainage

8.1 Ownership and boundaries

There are no stormwater drainage assets within Abbots Camp.

The SIHIP program designed stormwater drainage for the community, however it appears as though the infrastructure has not been built.

8.2 Current performance and risks

The detailed performance of the stormwater network cannot be fully analysed without significant hydraulic and hydrodynamic modelling, which is outside the scope of this project.

The Alice Springs Town Council's general design philosophy for stormwater drainage is that the system is based on a network of sealed roads, kerb and gutters, side entry pits and underground drainage pipes, including grassed open channels and diversion drains. It is recommended that kerbs and gutters, side entry pits and underground pipes are installed to help reduce flooding in the community. The cost estimates allow for 250 m of stormwater drainage.

8.3 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

8.4 Recommended works

The following works are recommended to upgrade or improve the current infrastructure:

- Construct kerb and gutters, side entry pits, and underground drainage.

9 Community structures

9.1 Ownership and boundaries

The community structures at Abbotts Camp are owned by the Mpwetyerre Aboriginal Corporation, however are the responsibility of Tangentyere Council Incorporated to maintain.

9.2 Existing infrastructure condition assessment

The site investigation for the community structures included assessing the condition and features of playgrounds, basketball courts and shade structures. The following table shows the condition rating given to the community structures.

Table 9 Community structures condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
BBQ area				1		1
Basketball court				1		1
Playground			1			1



Figure 12 Playground, condition: *very good*



Figure 13 Basketball court, condition: *very good*



Figure 14 BBQ area, condition: *good*

9.3 Current performance and risks

The current community structures are in good or very good condition and only require a general clean and some minor maintenance. The community structures are adequate for the number of houses in the community.

9.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

9.5 Recommended works

The following works are recommended to upgrade the community structures:

- Paint 'key' lines on basketball court
- Install net on basketball ring
- General clean of all community structures and surrounding areas to ensure all rubbish, graffiti and glass is removed

10 Electrical services

10.1 Ownership and boundaries

The following points, from Network Policy NP003 Installation Rules Section3, define the typical shared ownership of electrical infrastructure by Power and Water Corporation (PWC) and customers.

- The point of supply is defined as the point where PWC makes the electrical supply available. For domestic supply, this is normally one of the following:
- A point of attachment of an overhead service on to a building or pole on which a metering panel is fitted.
- A point of attachment of an overhead service on to a pole forming part of unmetered aerial consumer's mains.
- A nominated point on a distribution substation located on the customer's lot.
- A point of connection of an underground service in a metering panel, including underground services originating at an overhead line.
- A point of connection of an underground service in a pillar or junction box forming part of unmetered consumer's mains, located on the customer's lot.
- A point on a Power and Water pillar located on the customer's lot.

Typically, distribution infrastructure upstream of the Point Of Supply is owned and maintained by PWC and infrastructure below the point of supply is owned and maintained by the customer.

In many cases PWC have defined a Point Of Supply to ensure that they retain responsibility for aerial high voltage infrastructure, and aerial low voltage infrastructure where installed with aerial high voltage infrastructure, to minimise the possibility of the community or it's contractors coming into contact, either deliberately or inadvertently, with aerial high voltage infrastructure.

In other cases isolation facilities are present or desired by PWC to define the Point of Supply at or near the boundary of the town camp.

PWC advise that most of Tennant Creek/Alice Springs Town Camps have undergone upgrades under the SIHIP program with the intent to normalise the services to look like an urban subdivision but have never been formally handed over to PWC for operations and maintenance.

The Mpwetyerre (Abbotts) community electrical reticulation systems is supplied by an overhead line from PWCs LV distribution network and the Point of Supply and demarcation between PWC infrastructure and community infrastructure is an LV switch on a pole outside the community. Underground LV reticulation runs to meters of individual houses.

PWC advise that street lighting is supplied from unmetered LV infrastructure and is the responsibility of the lot holder and not PWC.

All meters, whether pre- or post-paid are the property of PWC.

Mpwetyerre (Abbotts) community are responsible for maintain all unmetered and metered LV infrastructure including the main switchboard, metering panel (excluding meter), LV distribution feeders, distribution pillars, consumers mains and consumer switchboards and street lights.

10.2 Existing infrastructure condition assessment

The Table 10 shows the condition rating given to the Distribution Panels. The distribution pillars have 100% operational rating.

Table 10 Distribution panel condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Distribution panels			1			1

Table 11 shows the condition rating given to the street lights. The street lights were of a low voltage overhead feeder design, sodium lamp type S70D, with lamp covers protected by cages. The street lights have a 100% operational rating.

Table 11 Street light condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Street light			9			9

Table 12 shows the condition rating given to the Metering panels. All assessed meters in this community are prepaid digital meters.

Table 12 Meter panel condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Pre-paid meter	1		3			4
Switchboard		1	3			4

Table 13 shows the condition rating given to the switchboards associated to dwellings.

Table 13 Switchboard condition assessment (Housing footprint)

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Switchboard			2			2

The details of the individual inspections and photographs of each piece of infrastructure are in Appendicies.

10.3 Current performance and risks

The electrical infrastructure evaluation was conducted against the following criteria

- Number of dwellings on tenure, the higher value of the funded dwelling and as quoted in the population report was utilised.

- Urban area, NP001.1, 4. Definitions.
- General Specification for URD Subdivisions, NP001.6, 4.3 Substation Size.
- Normal ADMD (After Diversity Maximum Demand) of 4.5 kVA and high cost subdivisions at 7 kVA.
- Transformer ratings were assumed to be correct in Dekho (PWC asset information system) and compared against photographs of test or transformer numbers collected.

- Substation loads were compared against transformer sizes only. No load flow analysis was conducted.
- No load calculations were performed or assessment conducted on overhead or underground cable, visual inspection from the ground only.
- Streetlighting loads were ignored as they are not significant.

The calculated maximum demand of Mpwetyerre (Abbotts) transformer is at 9% of rated capacity based on 4.5kVA/dwelling and current needs are met.

Table 14 Mpwetyerre (Abbotts) community current demand load vs transformer ratings

Community name	Dwellings	Transformer (kVA)	kVA Total @ 4.5kVA	kVA Total @ 7kVA	Comments
Mpwetyerre (Abbotts)	6	315	27	42	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].

A tabulated summary of all community transformers is included in Appendicies.

There is a risk of equipment not being maintained associated with the non-standard division of responsibilities between the customer and PWC.

The following points from the PWC Metering Rules should be noted:

- The routine maintenance of metering installations and the replacement of any faulty meters is the responsibility of PWC.
- The property owners are responsible for the maintenance and upkeep of meter rooms, boxes and panels (including lids, doors and locking mechanisms).
- The installation of pre-paid metering is a cost to the customer, refer NP010 Meter Manual-Maintenance of Metering Installations, Power and Water Corporation.

10.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

10.5 Recommended works

The following maintenance works and upgrades are recommended:

- Replace one prepaid digital meter
- Replace one switchboard inside the metering panel
- Install new street lighting - approximately 11 poles

11 Communications

11.1 Ownership and boundaries

Details of Telstra pit and conduit infrastructure within the town camp boundaries were sought but were not forthcoming.

11.2 Existing infrastructure condition assessment

The telecommunications infrastructure assessed included pits and telephone booths. There were no telephone booths found at Abbotts.

Appendicies contains the individual reports.

Table 15 Telecommunication pit condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Telecommunication pit			1			1

11.3 Current performance and risks

No details of the performance of communications infrastructure were obtained.

11.4 Future demands

The current availability of broadband services at Mpwetyerre (Abbotts) is displayed in the Figure 15 below. NBN is available to residents via a fixed telecommunication line on application to an appropriate NBN access provider.

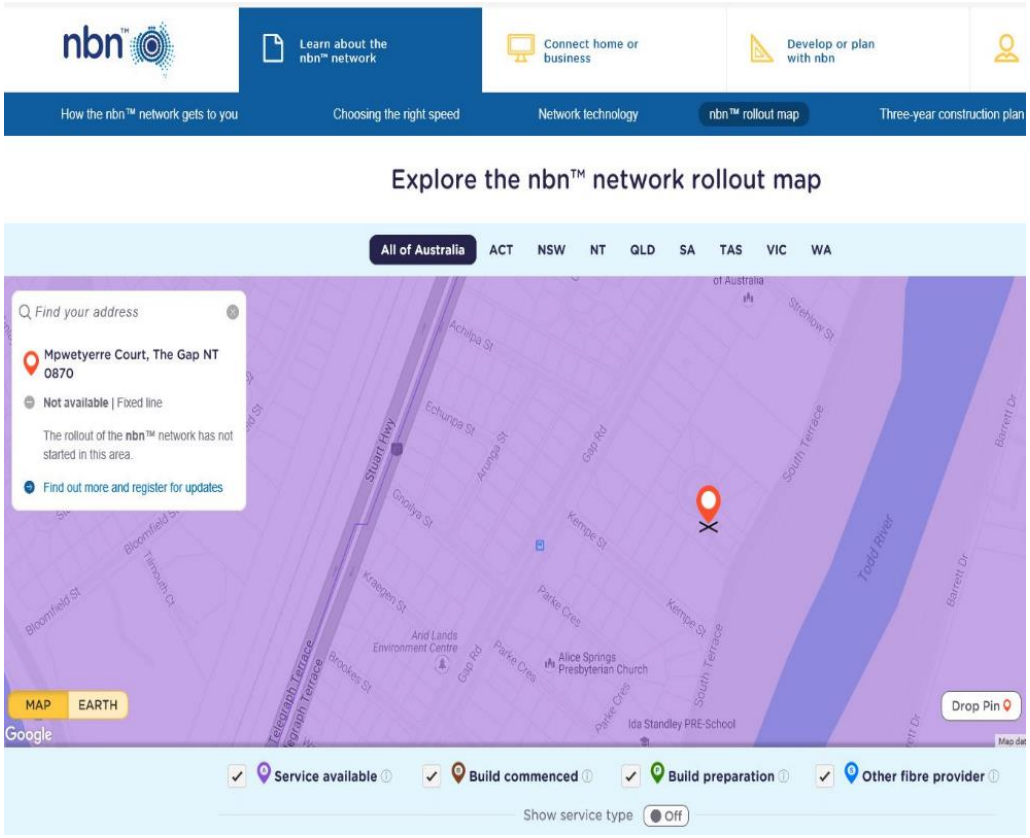


Figure 15 NBN network availability map

The NBN rollout map confirms that NBN is planned to be made available to residents via fixed telecommunications line on application to an appropriate NBN access provider.

11.5 Recommended works

No works are required at Mpwetyerre (Abbotts) because NBN is available to residents via fixed telecommunications line on application to an appropriate NBN access provider.

12 Cost estimates

Table 16 below shows a summary of the cost estimates to undertake the maintenance required to fix the existing infrastructure, to upgrade the existing network to meet current design standards, and to upgrade the existing network to cater for the future design (included in current upgrades). The estimates take into account a 30% contingency, are inclusive of GST. A location factor has been applied to town camps outside of Darwin.

Table 16 Cost estimates

Infrastructure	Maintenance of existing infrastructure	Upgrades to meet current design
Sewerage	$ 0	$ 160,000
Water supply	$ 3,000	$ 239,000
Roadworks	$ 13,000	$ 267,000
Stormwater drainage	$ 0	$ 315,000
Community structures	$ 4,000	$ 0
Electrical	$ 13,000	$ 157,000
Communications	$ 0	$ 0
Miscellaneous provisions	$ 13,000	$ 146,000
Total (including GST)	**$ 46,000**	**$ 1,284,000**
Grand total	**$ 1,330,000**	

The cost estimates are a preliminary estimate only. Since Aurecon has no control over the cost of labour, materials, equipment or services furnished by others, or over contractors' methods of determining prices, or over competitive bidding or market conditions, Aurecon cannot guarantee actual costs will not vary from these estimates.

13 Summary

The following works are recommended for Mpwetyerre (Abbotts) community:

Sewerage

- Construct new DN150 PVC reticulation main – approximately 150 m

Water supply

- Replace the two broken taps
- Install four new residential lot meters
- Remove existing fire hydrant
- Install new fire hydrant
- Install DN150 looped main, approximately 250 m
- Install new DN150 water meters

Roadworks

- Fill and reseal one pothole
- Repair 80 m of edge breaks
- Repair 20 m2 of surface cracking
- General clean of 220 m of pavement and road reserve
- It is recommended that the road is upgraded to a two lane network with all appropriate road furniture, line marking, kerbs, footpaths, etc.

Stormwater drainage

- Construct kerb and gutters, side entry pits, and underground drainage.

Community structures

- Paint 'key' lines on basketball court
- Install net on basketball ring
- General clean of all community structures and surrounding areas to ensure all rubbish, graffiti and glass is removed

Electrical services

- Replace one prepaid digital meter
- Replace one switchboard inside the metering panel
- Install new street lighting - approximately 11 poles

Communications

- No works are required because NBN is available to residents via fixed telecommunications line on application to an appropriate NBN access provider

Civil inspection reports

316

304

Legend

Town Camp boundary

Sewerage

Manholes (2)

Map by: DMcP P:\GIS\Projects\253963_NT_Town_Camps\253963_003_Civil_DDP.mxd 23/02/2017 12:02 Imagery: Digital Globe WV2 2013-2016

A3 scale: 1:1,000

0 20 40 60 80 100 m

Note:
Label numbers refer to survey IDs

Date: 23/02/2017 Version: 2

Coordinate system: MGA94 Zone 52

NT Town Camp Infrastructure Assessments: Sewerage

108 - Mpwetyerre (Alice Springs)

6323



Map by: DMcP P:\GIS\Projects\253963_NT_Town_Camps\253963_003_Civil_DDP.mxd 23/02/2017 12:02 Imagery: Digital Globe WV2 2013-2016

A3 scale: 1:1,000

0 20 40 60 80 100 m

Note:
Label numbers refer to survey IDs

Date: 23/02/2017 Version: 2

Coordinate system: MGA94 Zone 52

NT Town Camp Infrastructure Assessments: Water

108 - Mpwetyerre (Alice Springs)

6324



Map by: DMcP P:\GIS\Projects\253963_NT_Town_Camps\253963_003_Civil_DDP.mxd 23/02/2017 12:02 Imagery: Digital Globe WV2 2013-2016

A3 scale: 1:1,000

Note:
Label numbers refer to survey IDs

0 20 40 60 80 100 m

Date: 23/02/2017 Version: 2

Coordinate system: MGA94 Zone 52

NT Town Camp Infrastructure Assessments
Road furniture, stormwater drainage & community structures
108 - Mpwetyerre (Alice Springs)

6325

Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 3:04:24 PM

Insp ID: 307	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

Road Name:	Mpwetyerre Court
What are you inspecting:	Car Parks
Carpark Width (m):	25
Carpark Length (m):	30
Carpark Type:	Unsealed
Carpark Condition:	3 - Good
Line marking:	No
Kerbs:	No
General Comment:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 3:12:31 PM

Insp ID: 303	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Water Asset Are you Capturing: Fire Hydrants

Single or Double:	Single
Sluice Valve:	Yes
Above or Below ground:	Below ground
FH Leakage:	No Access
Bollards around hydrant:	No
FH Condition:	4 - Very Good
FH Comment:	







Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 3:12:31 PM

Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 3:03:10 PM

Insp ID: 308	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Water Asset Are you Capturing: Fire Hydrants

Single or Double:	Single
Sluice Valve:	No
Above or Below ground:	Above ground
FH Leakage:	Yes
Bollards around hydrant:	No
FH Condition:	1 - Very Poor
FH Comment:	



Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 3:08:38 PM

Insp ID: 304	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	250
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	2 - Poor
Notes on Lid:	
Comments:	Lid not secure in place, overgrown grass





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:51:57 PM

Insp ID: 316	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	600
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	4 - Very Good
Notes on Lid:	Class B
Comments:	



Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:46:23 PM

Insp ID: 315 Group 4 - Alice Springs Mpwetyerre (Abbotts)

Road Name: Mpwetyerre Court

What are you inspecting: Pavements

Ch From (km): 0.1

Ch To (km): 0.22

Road Type: Sealed - asphalt

Section Width (m):

Road Condition: 2 - Poor

General Comment: 1 speed hump

Road Defects Section

Defect Type	Defect QTY	Defect Condition	Defect Comments
Edge Breaks		2 - Poor	
Undulation/Settlement	4	2 - Poor	4 m square

Kerbs Section

Kerb Type	Kerb Cond	Kerb Comments
Flush Kerb	2 - Poor	

Shoulders Section

Shoulder Type	Width	Dropoff(mm)	Erosion	Condition	Shoulder Comments
Unsealed					

Linemarking Section

Obstruction Section

Road Obstruction	Other Road Obstruction
Trees	

Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:46:23 PM









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:46:23 PM





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:39:29 PM

Insp ID: 318 Group 4 - Alice Springs Mpwetyerre (Abbotts)

Road Name:	Mpwetyerre Court
What are you inspecting:	Pavements
Ch From (km):	0
Ch To (km):	0.1
Road Type:	Sealed - asphalt
Section Width (m):	3.2
Road Condition:	2 - Poor
General Comment:	2 speed humps

Road Defects Section

Defect Type	Defect QTY	Defect Condition	Defect Comments
Edge Breaks	20	2 - Poor	
Surfacing Cracks	5	3 - Good	<5%
Potholes	1	1 - Very Poor	

Kerbs Section

Kerb Type	Kerb Cond	Kerb Comments
No kerb		

Shoulders Section

Shoulder Type	Width	Dropoff(mm)	Erosion	Condition	Shoulder Comments
Unsealed		50		2	

Linemarking Section

Obstruction Section

Northern Territory Town Camps

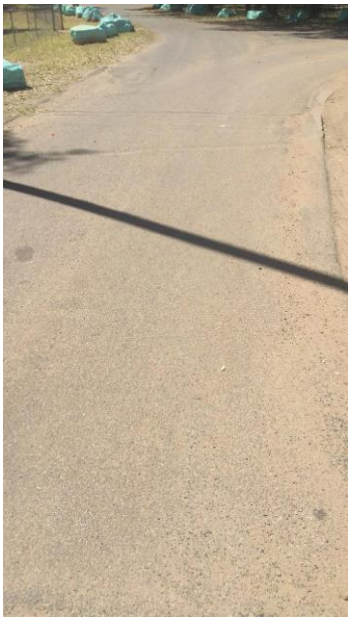
Civil Infrastructure

Inspection Date 15/11/2016 2:39:29 PM









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:39:29 PM

Northern Territory Camps

Civil Infrastructure

Inspection Date 15/11/2016 3:01:19 PM

Insp ID: 310	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

Inspection Type:	Shade Structure
Shade Structure Type:	Basket Ball Court
Shade Floor Type:	Concrete
Roof Type:	No roof
Width (mm):	5
Length (mm):	5
Appearance:	4
Appearance Comment:	
Condition:	4 - Very Good
Comment:	





Northern Territory Camps

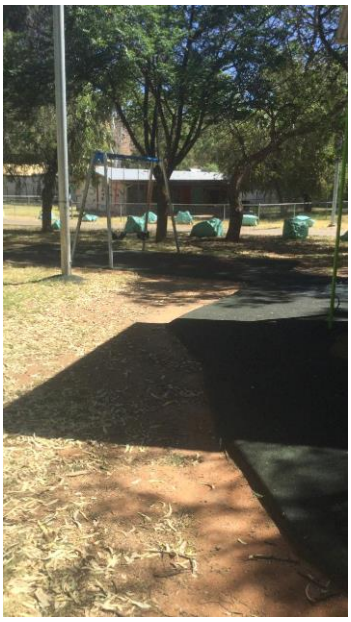
Civil Infrastructure

Inspection Date 15/11/2016 2:57:09 PM

Insp ID: 311	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

Inspection Type:	Shade Structure
Shade Structure Type:	Play ground
Shade Floor Type:	Rubber Mats
Roof Type:	Tin Roof
Width (mm):	8
Length (mm):	15
Appearance:	3
Appearance Comment:	
Condition:	3 - Good
Comment:	





Northern Territory Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:57:09 PM



Northern Territory Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:59:20 PM

Insp ID: 312	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

Inspection Type:	Shade Structure
Shade Structure Type:	BBQ Area
Shade Floor Type:	Grassed area
Roof Type:	No roof
Width (mm):	
Length (mm):	
Appearance:	3
Appearance Comment:	
Condition:	4 - Very Good
Comment:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:44:23 PM

Insp ID: 317	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

Road Name:

What are you inspecting: Signs

Type of Sign: 20kph

Sign Condition: 2 - Poor

Sign Comment:

General Comment:



Northern Territory Town Camps

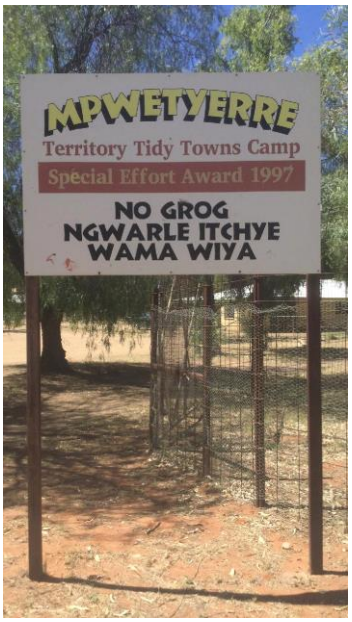
Civil Infrastructure

Inspection Date 15/11/2016 2:35:35 PM

Insp ID: 320	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

Road Name:	Mpwetyerre Court
What are you inspecting:	Signs
Type of Sign:	Community signs
Sign Condition:	3 - Good
Sign Comment:	
General Comment:	









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:34:23 PM

Insp ID: 321	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

Road Name:	Mpwetyerre Court
What are you inspecting:	Signs
Type of Sign:	Street name
Sign Condition:	3 - Good
Sign Comment:	Leaning over
General Comment:	



Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 3:05:52 PM

Insp ID: 306	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Water Asset Are you Capturing: Taps

Diameter(mm):	20
Tap Leakage:	No
Tap Condition:	1 - Very Poor
Tap Comment:	Appears to be defunct



Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:55:39 PM

Insp ID: 313	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Water Asset Are you Capturing: Taps

Diameter(mm):

Tap Leakage: Yes

Tap Condition: 1 - Very Poor

Tap Comment: Tap broken





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:54:04 PM

Insp ID: 314	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Water Asset Are you Capturing: Water Meter

Water Meter Type:	Lot
Bulk Water Meter Size (mm):	
Bulk Water Meter Condition:	
Bulk Water Meter Comment:	
Lot Number:	4
Lot Water Meter Size:	
Lot Water Meter Condition:	3 - Good
Lot Water Meter Comment:	



Northern Territory Town Camps

Civil Infrastructure

Inspection Date 15/11/2016 2:37:22 PM

Insp ID: 319	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Water Asset Are you Capturing: Water Meter

Water Meter Type:	Bulk
Bulk Water Meter Size (mm):	100
Bulk Water Meter Condition:	3 - Good
Bulk Water Meter Comment:	
Lot Number:	
Lot Water Meter Size:	
Lot Water Meter Condition:	
Lot Water Meter Comment:	





Northern Territory Town Camps

Civil Infrastructure

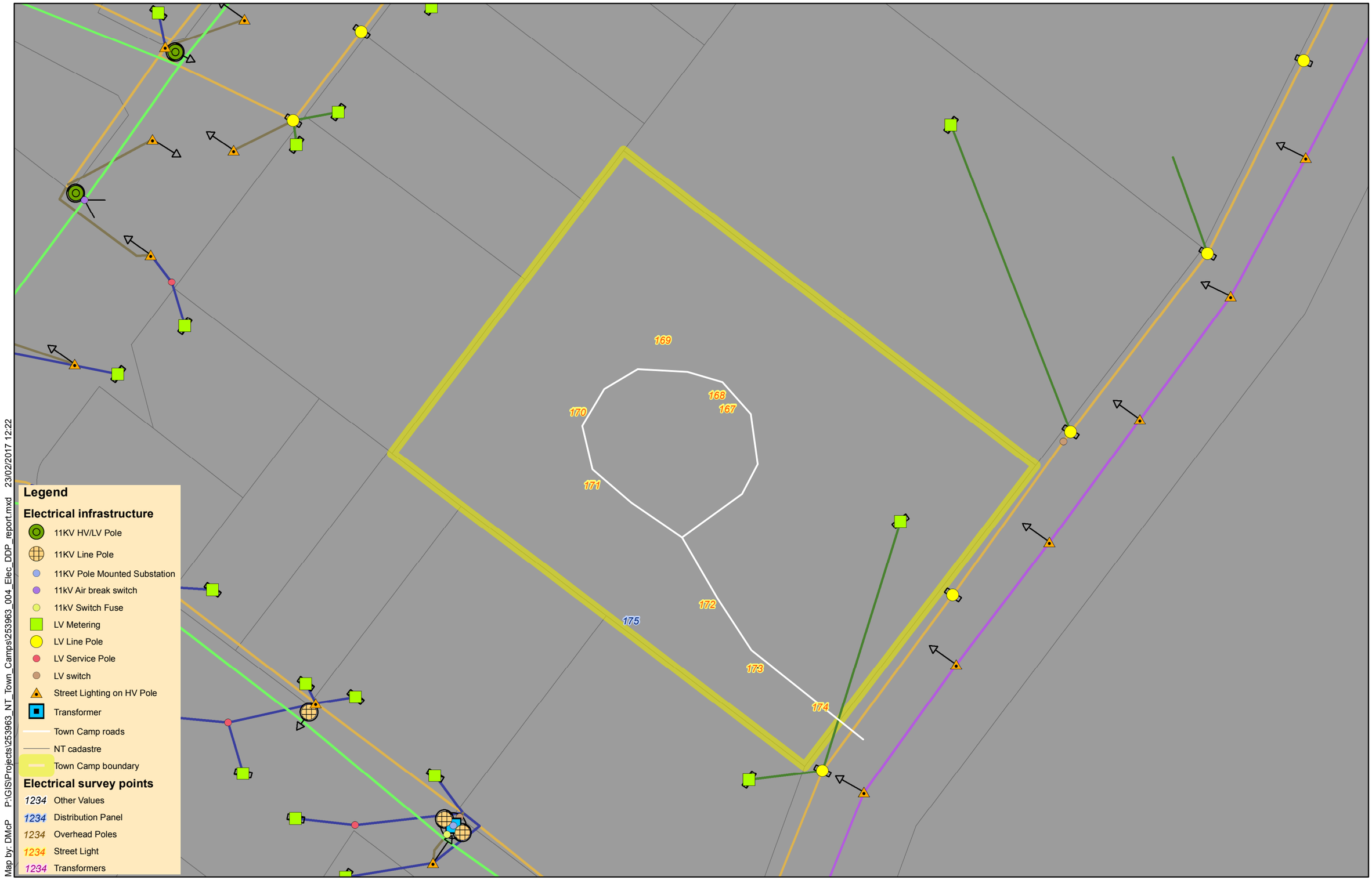
Inspection Date 15/11/2016 2:37:22 PM







Electrical inspection report



A3 scale: 1:1,000

0 20 40 60 80 100 m

Date: 23/02/2017 Version: 3

Coordinate system: MGA94 Zone 52

NT Town Camp Infrastructure Assessments: Electrical

108 - Mpwetyerre (Alice Springs)

6351

Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:32:42 PM

Insp ID: 175 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing:	Distribution Panel
What is Main Distribution Panel installation method:	Outdoor
Is the distribution panel labelled:	No
What is Distribution Panel main CB Rating:	Unknown
What is the main incoming cable type/Size to Distribution Panel:	Unknown
What is the condition of switchboard:	3
Condition Comments:	
What is the condition of cables/glands into switchboard:	
Cable/Gland Condition Comments:	Unknown
Distribution Panels name plate access:	No









Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:32:42 PM





Northern Territory Town Camps

Communications Infrastructure

Inspection Date 15/11/2016 3:37:53 PM

Insp ID: 190	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Comms Category are you capturing:	General
Telstra Comms Drawing Available:	No
Facility upgrade not in drawings:	No
Which telecoms carriers are present in the town camp:	
How many Communications Pit(s) are allocated in this town camp:	



Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 22/11/2016 9:29:08 AM

Insp ID: 3422 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing: Electrical Meters

Meter Type:	Prepaid
Meter Switchboard Cond:	3
Meter Condition:	1
Meter Comment:	Meter is out of service. Condition of CB not assessed.
Comments:	





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 22/11/2016 8:55:49 AM

Insp ID: 3431 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing: Electrical Meters

Meter Type:	Prepaid
Meter Switchboard Cond:	2
Meter Condition:	3
Meter Comment:	Blank plates are missing on CB slot. Indoor SB, Cond 3
Comments:	





Northern Territory Town Camps

Electrical Infrastructure

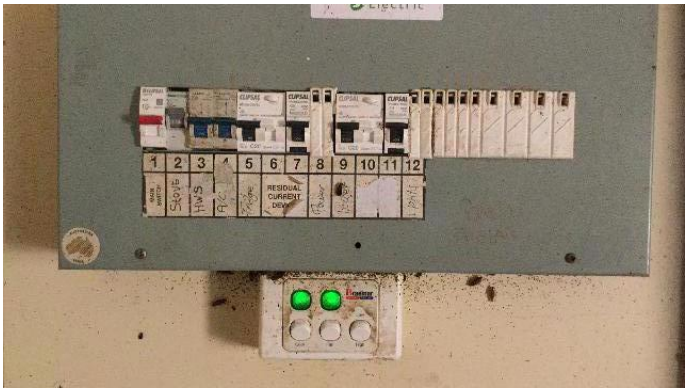
Inspection Date 19/01/2017 2:42:15 PM

Insp ID: 3607 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing: Electrical Meters

Meter Type:	Prepaid
Meter Switchboard Cond:	3
Meter Condition:	3
Meter Comment:	Indoor SB, Cond 3
Comments:	





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 19/01/2017 2:45:09 PM

Insp ID: 3658	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Category are you capturing: Electrical Meters

Meter Type:	Prepaid
Meter Switchboard Cond:	3
Meter Condition:	3
Meter Comment:	
Comments:	







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:27:22 PM

Insp ID: 166 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70D 15
What Wattage is the lamp:	70
What is the condition of street lights:	3
What is Street Lighting pole installation height (approximate):	6









Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:27:22 PM



Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:23:02 PM

Insp ID: 167 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70D 15
What Wattage is the lamp:	70
What is the condition of street lights:	3
What is Street Lighting pole installation height (approximate):	6







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:21:07 PM

Insp ID: 168	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70D 15
What Wattage is the lamp:	70
What is the condition of street lights:	3
What is Street Lighting pole installation height (approximate):	6







Northern Territory Town Camps

Electrical Infrastructure

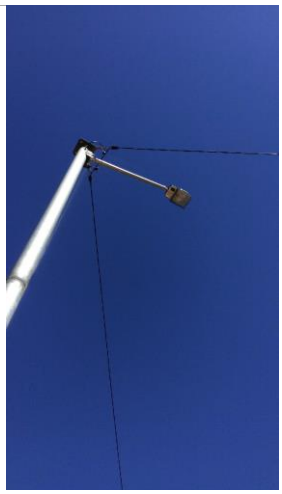
Inspection Date 15/11/2016 3:17:48 PM

Insp ID: 169	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70D 15
What Wattage is the lamp:	70
What is the condition of street lights:	3
What is Street Lighting pole installation height (approximate):	6







Northern Territory Town Camps

Electrical Infrastructure

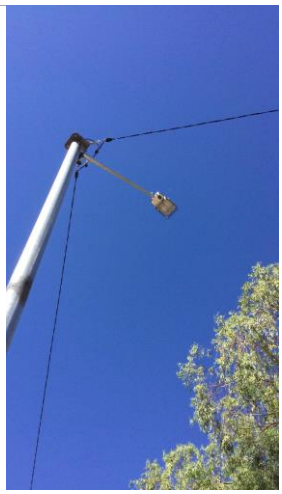
Inspection Date 15/11/2016 3:16:08 PM

Insp ID: 170 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70D 15
What Wattage is the lamp:	15
What is the condition of street lights:	3
What is Street Lighting pole installation height (approximate):	6







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:13:46 PM

Insp ID: 171 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70D 15
What Wattage is the lamp:	70
What is the condition of street lights:	3
What is Street Lighting pole installation height (approximate):	6







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:11:05 PM

Insp ID: 172	Group 4 - Alice Springs	Mpwetyerre (Abbotts)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70D 15
What Wattage is the lamp:	70
What is the condition of street lights:	3
What is Street Lighting pole installation height (approximate):	6







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:08:31 PM

Insp ID: 173 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70D 15
What Wattage is the lamp:	70
What is the condition of street lights:	3
What is Street Lighting pole installation height (approximate):	6







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 15/11/2016 3:06:14 PM

Insp ID: 174 Group 4 - Alice Springs Mpwetyerre (Abbotts)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70D 15
What Wattage is the lamp:	70
What is the condition of street lights:	3
What is Street Lighting pole installation height (approximate):	6







Road map

Map by: DMcP P:\GIS\Projects\253963_NT_Town_Camps\253963_003_Roads_DDP2.mxd 11/02/2017 17:17 Imagery: copyright DigitalGlobe WV 2



A3 scale: 1:1,000

0 20 40 60 80 100 m

Date: 11/02/2017 Version: 1

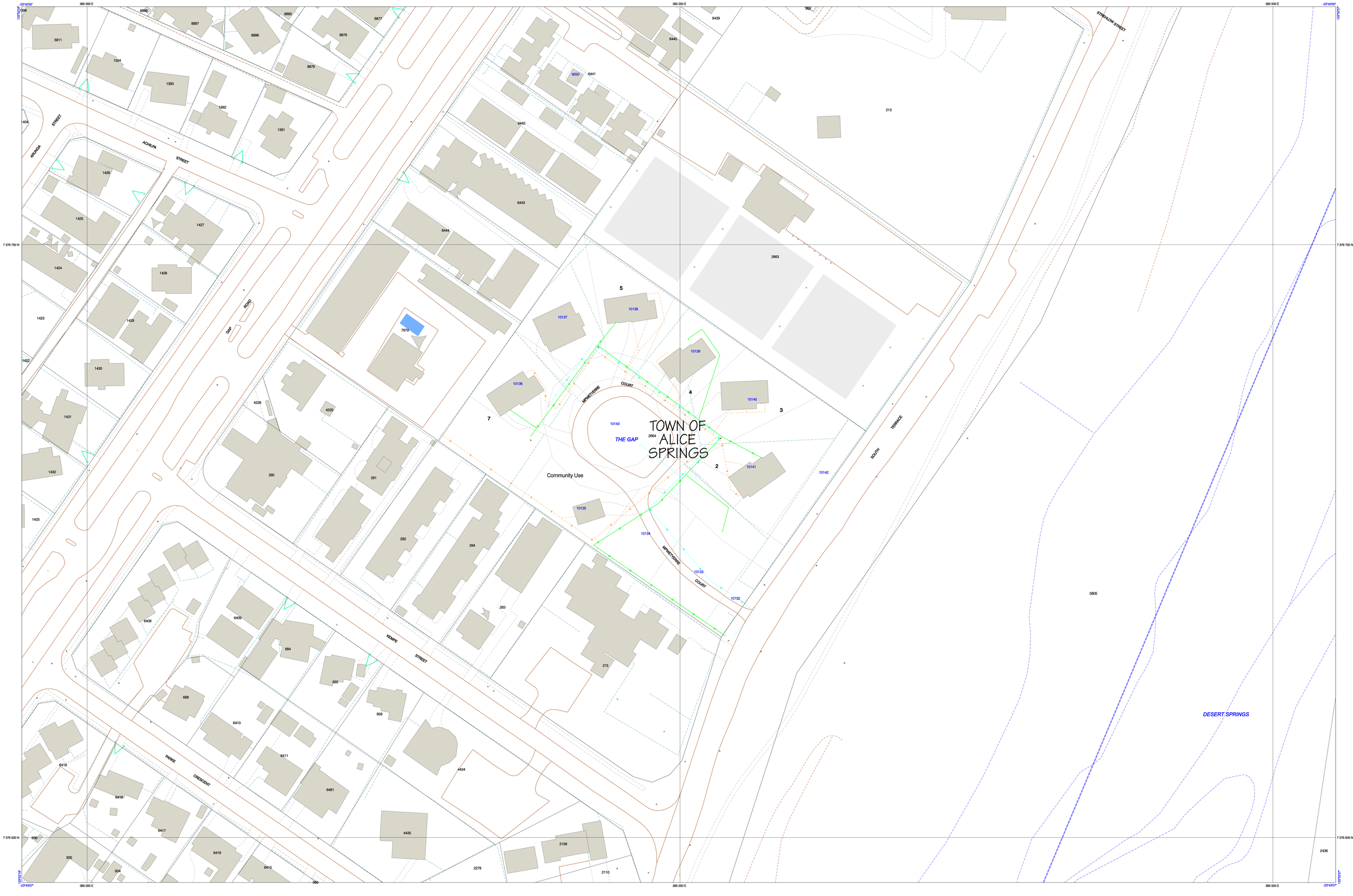
Coordinate system: GDA 1994

NT Town Camp Road Assessments

108 - Mpwetyerre (Alice Springs)

6370

Existing drawings



LAND USE PLANNING:

APPROX. POSITION OF BUILDING constructed since date of photography

LAND EXCLUDED FROM DEVELOPMENT:

GENERAL EXCLUSION/BUFFERS

CULTURAL EXCLUSION AREAS:

Unauthorised entry, works on or use of land where there is a sacred site is an offence under the Northern Territory Aboriginal Sacred Sites Act. For conditions relating to works on or use of land within a Cultural Exclusion Area contact the Aboriginal Areas Protection Authority (AAPA): email enquiries.aapa@nt.gov.au or phone 8999 4332.

This advice does not negate the need for consent for entry, works, or use which may be required under the Aboriginal Land Rights(NT) Act (in the case of Aboriginal land), or another statute.

© NORTHERN TERRITORY OF AUSTRALIA

CADASTRE

Current 123

Proposed 123

Locality LOCALITY

UTILITY SERVICES

ELECTRICITY

LOW VOLTAGE LV

HIGH VOLTAGE HV

WATER RETICULATION

WATER MAIN W

WATER RISING MAIN W

SEWER S

SEWER MAIN S S

SEWER RISING MAIN S

DIAL BEFORE YOU DIG www.1100.com.au

LEGEND

TOPOGRAPHY

Road Sealed, Bridge

Road Unsealed, Track

Footpath, Drain, Culvert

Wall, Gate, Fence, Cattle Grid

Railway, Disused Railway

Aerodrome Tarmac, Landing Strip

Taxiway, Apron

Pipeline: Oil, Water, Undetermined Gas, Sewage

Building, Building-Shape unconfirmed

Shade Structure, Incomplete Building

Sewage Ponds, Tailings Pond

Oval, Arena, Swimming Pool

High Water Mark, Low Water Mark

Mine; Quarry, Surface Excavation

Contour; Index, Intermediate

75

Contour; Depression

Top of Bank, Bottom of Bank, Cliff

Watercourses; Perennial, Intermittent, Channel or Canal

WaterBodies; Perennial, Intermittent

WaterBodies; Reservoir, Water Hole

Swamp; Swamp Perennial, Swamp Intermittent

Flat; Mud Flat, Clay/Saltpan, STI

Pole; Power, General, Light

Tank; Water, Elevated, Non-Water, Silo

Manhole, Pylon, Communication Tower, Bore.

AVAILABLE FROM AND PRODUCED BY:

Northern Territory Government

NOTES:

POWER POLES, MANHOLES, SEPTIC TANKS, TOWERS/POLES and other similar shaped objects are shown as they appear on imagery and have their locations confirmed from aerial survey techniques.

These features are suitable as LOCAL SURVEY CONTROL. Their ground location is generally accurate within +/-0.3m of their mapped location.

DIAL BEFORE YOU DIG phone 1100 (freecall) or visit www.1100.com.au

For water, sewer, and power information and connection requirements for Alice Springs Town Council, Power and Water Corporation, Indigenous Community Development on 1800 245 092, and visit http://www.powerwater.com.au/builders

General enquiries, corrections, updates, errors and omissions:

Indigenous Community Land Use Planning, NT Dept of Lands and Planning

TEL: (08) 8999 1300, FAX: (08) 8999 7189, Email: planning@nt.gov.au

This product is a compilation of data holdings from (but not restricted to) NT Dept of Lands and Planning, NT Dept of Housing, Local Government and Regional Services, Power and Water Corporation and Aboriginal Areas Protection Authority.
Whilst every effort has been made to ensure the accuracy of this map, errors and omissions may occur.
No Warranty is given concerning the accuracy of the information herein. Users should refer to the originating bodies or departments regarding the accuracy and currency of the data.

Topographic Information:
Land Information Division
Dept of Lands and Planning
TEL: (08) 8999 5331, FAX: (08) 8995 5366
Email: landinfo.dpl@nt.gov.au

Aboriginal Areas Protection Authority:
The Registrar
Aboriginal Areas Protection Authority
TEL: (08) 8999 4332
Email: enquiries.aapa@nt.gov.au

Cadastral Information:
Office of the Surveyor-General
Dept of Lands and Planning
TEL: (08) 8995 5353, FAX: (08) 8995 5395
Email: landinfo.dpl@nt.gov.au

Planning Information:
Indigenous Community Land Use Planning
Dept of Lands and Planning
TEL: (08) 8999 1300, FAX: (08) 8999 7189
Email: planning@nt.gov.au

Power, Water or Sewer Information:
Remote Operations Planning Branch
Power and Water Corporation
TEL: (08) 8924 5084, FAX: (08) 8924 5360

Housing Infrastructure Information:
Infrastructure Delivery Branch
Dept of Housing, Local Government, and Regional Services
TEL: (08) 8996 5013, FAX: (08) 8995 5110
Email: tex.dhlgrs@nt.gov.au

SOURCE INFORMATION

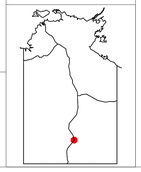
CONTOUR INTERVAL :		CURRENCY OF TOPOGRAPHY :	10 June 2007
HORIZONTAL DATUM :		SOURCE MAP SCALE :	2500
VERTICAL DATUM :		ZONE / UTM :	53
PROJECTION :	Transverse Mercator	DATE GENERATED :	20 June 2012

N

0 10 20 30 40 50

GDA

Locality Diagram



SERVICED LAND AVAILABILITY PROGRAM

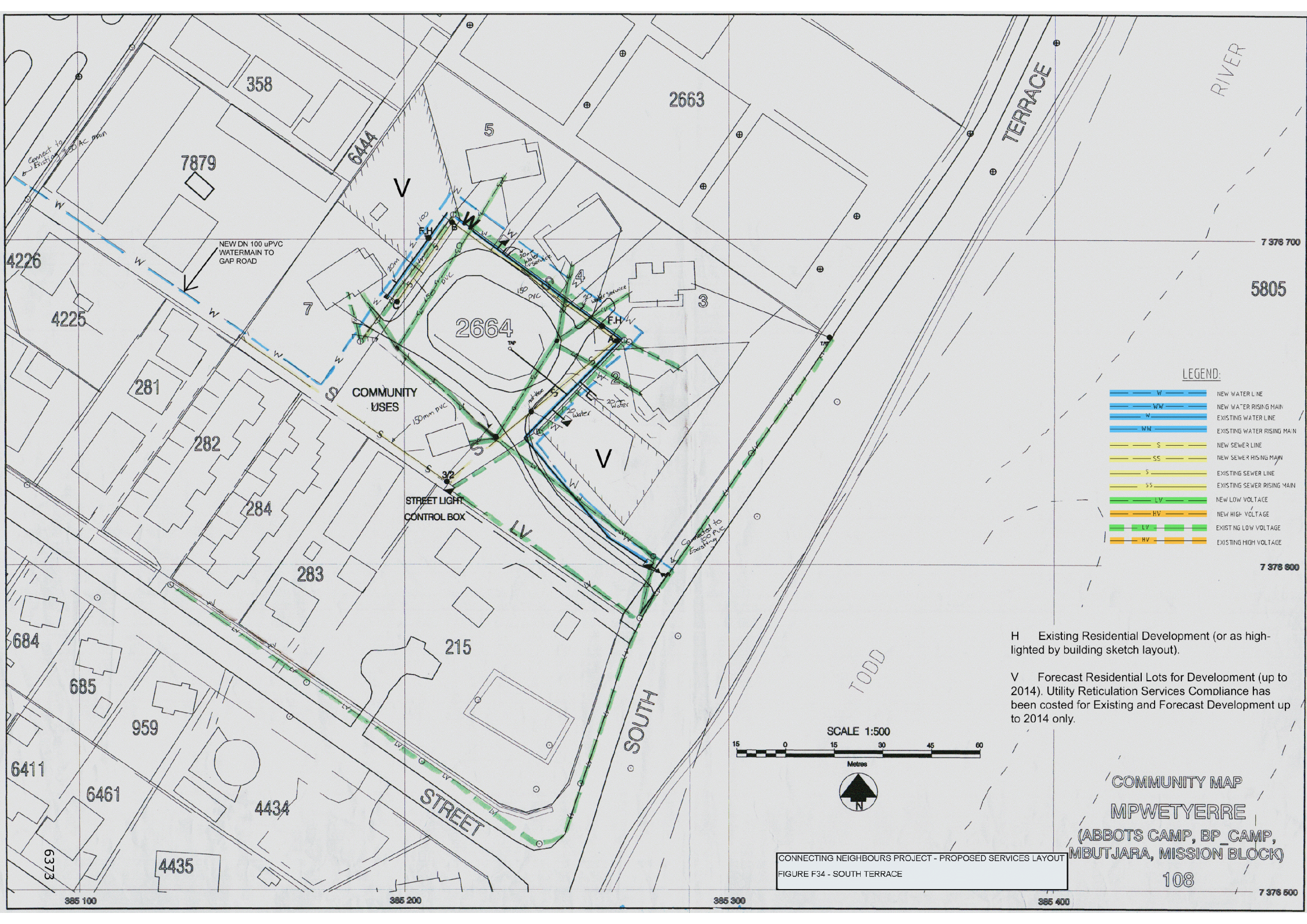
SLAP Map

Mpwetyerre (Alice Springs Town Camp)

Abbots Camp

Alice Springs Town Council

Community ID: 108



H Existing Residential Development (or as high-lighted by building sketch layout).

V Forecast Residential Lots for Development (up to 2014). Utility Reticulation Services Compliance has been costed for Existing and Forecast Development up to 2014 only.

CONNECTING NEIGHBOURS PROJECT - PROPOSED SERVICES LAYOUT

FIGURE F34 - SOUTH TERRACE

COMMUNITY MAP

MPWETYERRE

(ABBOTS CAMP, BP_CAMP, MBUTJARA, MISSION BLOCK)

GENERAL NOTES

1. DESIGN AND CONSTRUCTION OF THE WATER AND SEWERAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE POWERWATER CONNECTION CODE AND ASSOCIATED DOCUMENTS
2. ALL LEVELS GIVEN ARE TO AHD
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN
4. MINIMUM COVER TO PIPE IS 750mm IN TRAFFICABLE AREA, 600mm IN OTHER AREAS

PRIOR TO COMMENCEMENT OF WORKS THE CONSTRUCTOR SHALL CHECK THE LOCATION OF ALL UNDERGROUND SERVICES AND CONFIRM FINISHED SURFACE LEVELS TO BE INCORPORATED IN THE WORKS

5. IT IS NOT GUARANTEED THAT ALL SERVICES ARE SHOWN ON THE DRAWING
6. OBTAIN PERMIT(S) FROM THE RELEVANT ROAD AUTHORITY PRIOR TO ROAD EXCAVATION
7. ALL WATER (HYDRAULIC) WORKS SHALL BE CARRIED OUT AS SHOWN ON THE LATEST AMENDMENT OF THE DESIGN DRAWINGS. CONSTRUCTION SITE DRAWINGS MUST BE SIGNED AS 'APPROVED FOR CONSTRUCTION' BY A LAND DEVELOPMENT OFFICER
8. SEVEN (7) DAYS NOTICE HAS TO BE GIVEN TO LAND DEVELOPMENT, POWERWATER WITH A 'NOTICE OF INTENTION TO START WORK' PRIOR TO COMMENCEMENT OF WORK

NORTHERN REGION–FACSIMILE 89 247212
SOUTHERN REGION–FACSIMILE 89 517347

9. ANY CHANGES TO THIS DRAWING, REQUIRED OR DESIRED DURING THE CONSTRUCTION PHASE MUST BE AUTHORISED BY A LAND DEVELOPMENT OFFICER
10. ALL MATERIALS USED IN THE CONSTRUCTION OF WORKS TO BE CONNECTED TO POWERWATER INFRASTRUCTURE ARE TO BE AS NOMINATED IN POWERWATER'S "WATER AND SEWER MAINS PRODUCT MANUAL"
11. 'AS CONSTRUCTED' DRAWINGS MUST BE PROVIDED TO LAND DEVELOPMENT, POWERWATER PRIOR TO HANDOVER INSPECTION
12. CONTRACTOR IS TO NOTIFY SUPERINTENDENT TO CONTACT LAND DEVELOPMENT, POWERWATER TO ARRANGE FOR HANDOVER INSPECTIONS. SEVEN (7) DAYS NOTICE MUST BE PROVIDED PRIOR TO HANDOVER INSPECTIONS
13. CONNECTIONS TO EXISTING WATER MAINS WILL ONLY BE CARRIED OUT WHEN ALL WORKS UPSTREAM OF THE CONNECTION ARE COMPLETE (IE. TESTED, DISINFECTED WHERE APPLICABLE, BACKFILLED AND CERTIFICATES SUBMITTED) IN ACCORDANCE WITH THE APPROVED DESIGN DRAWINGS AND HAVE SATISFACTORILY PASSED FINAL HANDOVER INSPECTION
14. POWERWATER PERSONNEL SHALL INSTALL ALL WATER CONNECTIONS TO EXISTING MAINS ONLY AFTER ACCEPTANCE OF THE WORK HAS BEEN ACHIEVED. THE CONSTRUCTOR IS RESPONSIBLE FOR ALL CONNECTION FEES, MATERIALS AND LABOUR FOR EXCAVATION, BACKFILLING AND REINSTATEMENT

WATER

1. WATER PIPES SHALL BE DUCTILE IRON CEMENT LINED (DICL)(CLASS 9) OR PVC-M, WITH DICL FITTINGS, UNLESS NOTED OTHERWISE
2. WATER MAINS SHALL BE OFFSET FROM PROPERTY BOUNDARIES AT A DISTANCE OF 2.4m IN ROAD RESERVES AND 1.5m IN PRIVATE PROPERTY, EXCEPT WHERE SHOWN OTHERWISE ON THE DRAWINGS
3. THE SUPERINTENDENT SHALL DETERMINE WATER PIPE BEDDING TYPE AFTER INSPECTION OF THE EXCAVATED TRENCH
4. ALL BENDS TO BE SUPPORTED BY THRUST BLOCKS
5. ALL UNDERGROUND DICL, FITTINGS AND PIPE TO BE POLYETHYLENE SLEEVED TO POWERWATER STANDARD DRAWING NO'S W1-2-17A AND W1-2-17B
6. RE-CONNECT ALL EXISTING PROPERTIES TO NEW WATERMAIN

WARNING

REASONABLE CARE HAS BEEN TAKEN TO ACCURATELY SHOW THE POSITION OF EXISTING AND PROPOSED SERVICES. HOWEVER, THE POSITION OF SUCH SERVICES SHOULD BE PROVEN ON SITE AND NO GUARANTEE CAN BE GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. AREAS SURROUNDING EXISTING SERVICES ARE TO BE EXCAVATED BY HAND.

APPROVED FOR CONSTRUCTION.
POWER AND WATER DWG. NO. R08-1460

SIGNED .....

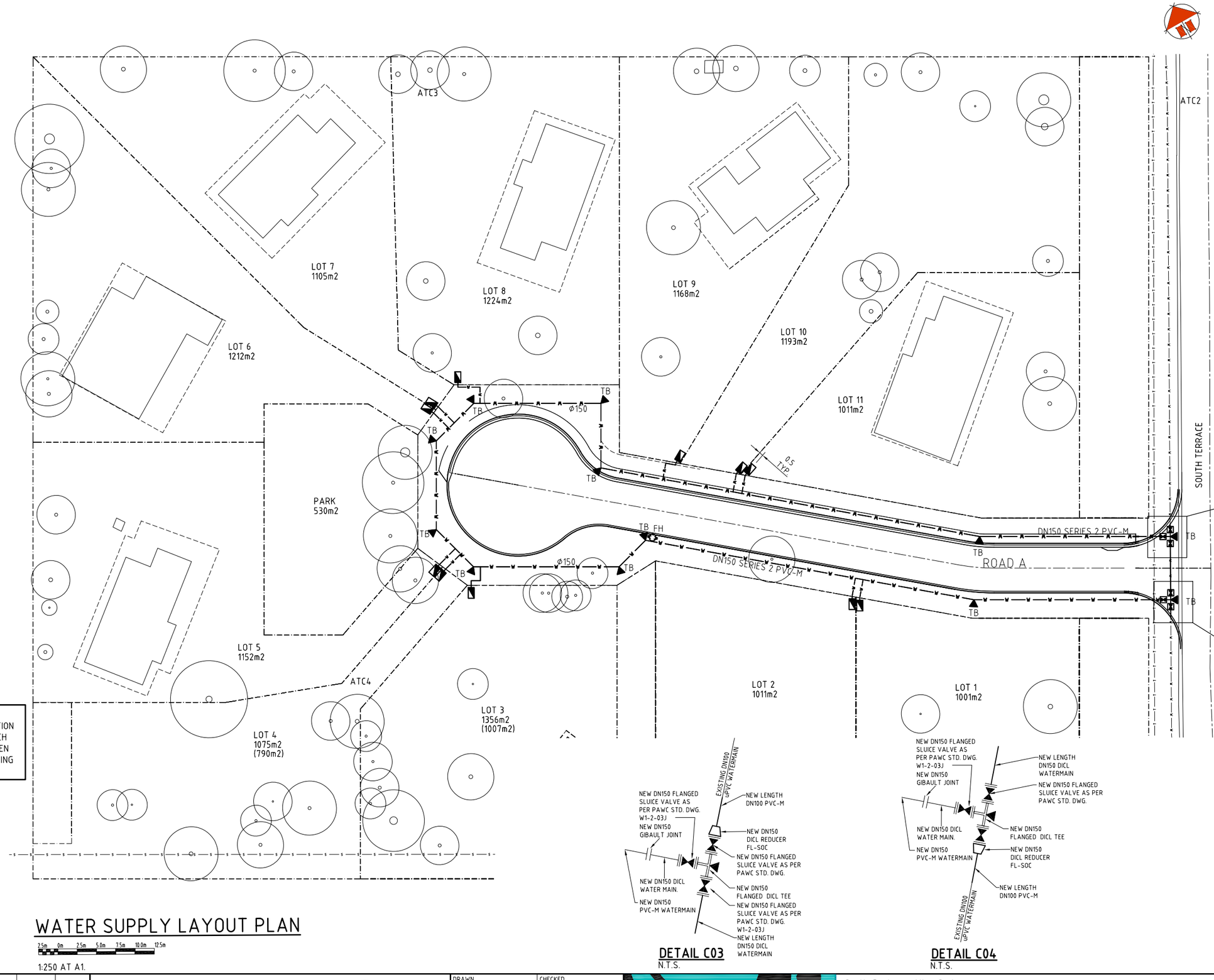
DATE .....

ON BEHALF OF LAND DEVELOPMENT FOR INCORPORATION INTO POWERWATER NETWORK

This Permission to Use is given on the basis that the Developer and/or Consultant is not absolved from full responsibility for the correctness and accuracy of the design and/or documents so associated

LEGEND

G1 FOR LEGEND REFER SHEET 01.



WATER SUPPLY LAYOUT PLAN

2.5m 0m 2.5m 5.0m 7.5m 10.0m 12.5m

1:250 AT A1.

DETAIL C03
N.T.S.

DETAIL C04
N.T.S.

No.	DESCRIPTION	DATE	INIT.
D	ISSUED FOR APPROVAL	28.07.08	SAW
C	ISSUED FOR 90% REVIEW	02.06.08	SAW
B	AMENDED DESIGN - ISSUED FOR 30% REVIEW	04.12.07	TJK
A	ISSUED FOR 30% REVIEW	23.04.07	TJK

AMENDMENTS

QANTEC McWILLIAM consulting engineers
Level 1 NAB Building, 53 Todd Mall
PO Box 2155
Alice Springs, NT 0871
Telephone: (08) 8952 9191
Facsimile: (08) 8952 1771
E-Mail: alicesprings@qmcw.com.au
ABN 79 086 342 065 ACN 086 342 065
Brisbane • Gayndah • Gladstone • Maroochydore • Maryborough • Rockhampton • Darwin • **Alice Springs**
The Association of Consulting Engineers Australia

DRAWN TJK	CHECKED
DATE FEB 07	DATE
DESIGNED JCD	CHECKED
DATE FEB 07	DATE
DESIGN PROJECT LEADER	PROJECT OFFICER
DATE	DATE

Northern Territory Government
Department of Planning and Infrastructure

South Region - Alice Springs
Connecting Neighbours Program - Mpwetyerre (Abbotts Camp) Upgrade Works

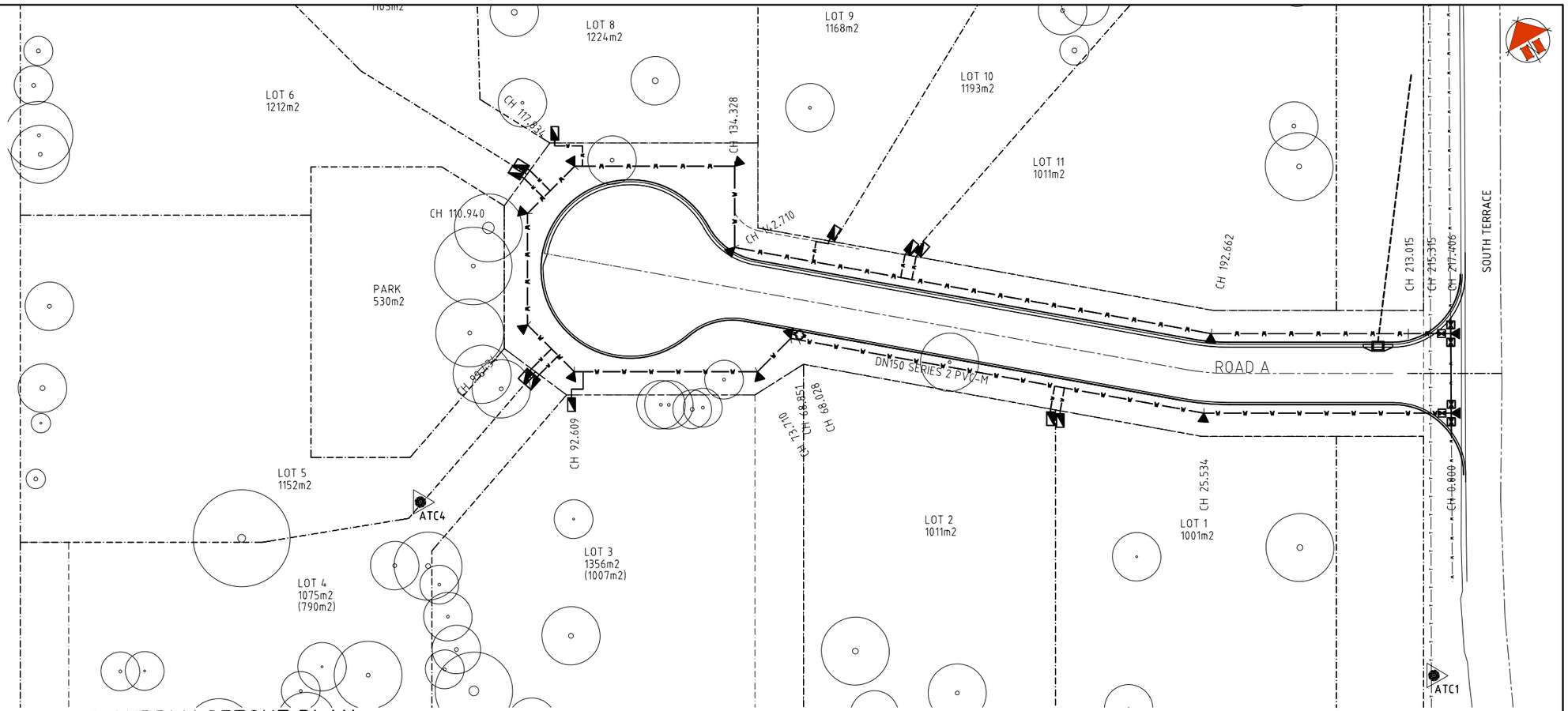
Water Supply Layout Plan

FILE No.	ASSET No.	SHEET No.	DRAWING No.	AMEND.	SHEET
-	-	13 OF 16	R08-1460	D	A1

6324

WATER SUPPLY - SETOUT TABLE

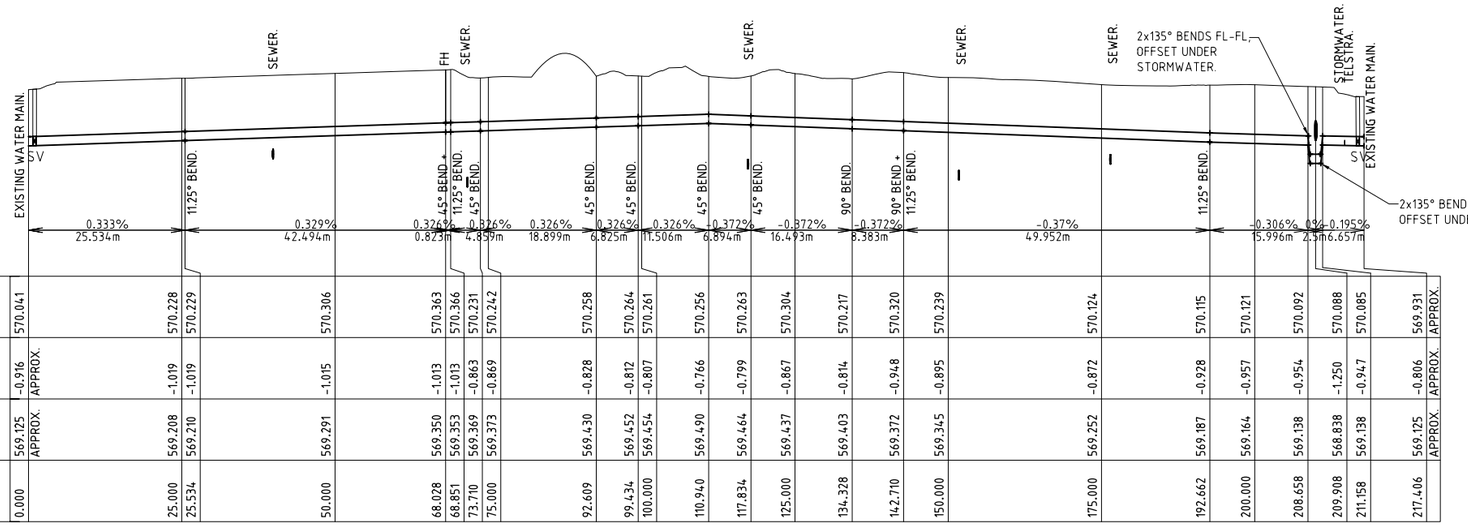
CHAINAGE	DESCRIPTION	EASTING	NORTHING
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25.534	11.25° BEND	4992.596	10035.246
68.851	45° + 11.25° BEND	4959.245	10062.888
73.710	45° BEND	4954.565	10061.581
92.609	45° BEND	4938.100	10070.857
99.434	45° BEND	4936.258	10077.430
110.940	45° BEND	4941.906	10087.455
117.834	45° BEND	4948.547	10089.304
134.328	90° BEND	4962.917	10081.209
142.710	90° + 11.25° BEND	4958.802	10073.905
192.662	11.25° BEND	4997.262	10042.029
217.815	TEE	5018.819	10029.884



WATER SUPPLY SETOUT PLAN

2.5m 0m 2.5m 5.0m 7.5m 10.0m 12.5m

1:250 AT A1.



Datum R.L. 567.000

| | | |

GENERAL NOTES

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2. ALL LEVELS GIVEN ARE TO AHD
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN
4. MINIMUM COVER TO PIPE IS 750mm IN TRAFFICABLE AREA, 600mm IN OTHER AREAS
PRIOR TO COMMENCEMENT OF WORKS THE CONSTRUCTOR SHALL CHECK THE LOCATION OF ALL UNDERGROUND SERVICES AND CONFIRM FINISHED SURFACE LEVELS TO BE INCORPORATED IN THE WORKS
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NORTHERN REGION-FACSIMILE 89 247212
SOUTHERN REGION-FACSIMILE 89 517347
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13. CONNECTIONS TO EXISTING WATER MAINS WILL ONLY BE CARRIED OUT WHEN ALL WORKS UPSTREAM OF THE CONNECTION ARE COMPLETE (IE. TESTED, DISINFECTED WHERE APPLICABLE, BACKFILLED AND CERTIFICATES SUBMITTED) IN ACCORDANCE WITH THE APPROVED DESIGN DRAWINGS AND HAVE SATISFACTORILY PASSED FINAL HANDOVER INSPECTION
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SEWERAGE

1. ALL GRAVITY SEWER PIPES SHALL BE uPVC CLASS SN8 WITH STYRENE-BUTADIENE RUBBER RING JOINTS (SBR), UNLESS NOTED OTHERWISE.
2. SEWERS SHALL BE OFFSET FROM PROPERTY BOUNDARIES A DISTANCE OF 1.6m IN ROAD RESERVES AND 1.5m IN PRIVATE PROPERTY, EXCEPT WHERE SHOWN OTHERWISE ON THE DRAWINGS.
3. ALL GRAVITY SEWERS ARE DN150, UNLESS NOTED OTHERWISE.
4. THE SUPERINTENDENT SHALL DETERMINE SEWER PIPE BEDDING TYPE AFTER INSPECTION OF THE EXCAVATED TRENCH. PIPE EMBEDMENT MATERIAL SHALL COMPLY WITH EXCAVATION AND BACKFILLING SECTION OF POWER WATER MASTER SPECIFICATION.
5. MAINTENANCE HOLE COVERS SLABS SHALL FINISH;
a) FINISHED SURFACE LEVEL IN ROAD RESERVES AND FOOTPATHS;AND
b) 150mm ABOVE SURFACE LEVEL IN PRIVATE PROPERTY AND OPEN SPACE.
6. THE CONSTRUCTOR SHALL INSCRIBE THE MAINTENANCE HOLE COVER WITH THE IDENTIFYING NUMBER AS SHOWN ON THE DRAWINGS.
7. RE-CONNECT ALL EXISTING PROPERTIES TO NEW GRAVITY SEWER.

APPROVED FOR CONSTRUCTION. **POWER AND WATER DWG. NO. R08-1462**

SIGNED .....

DATE .....

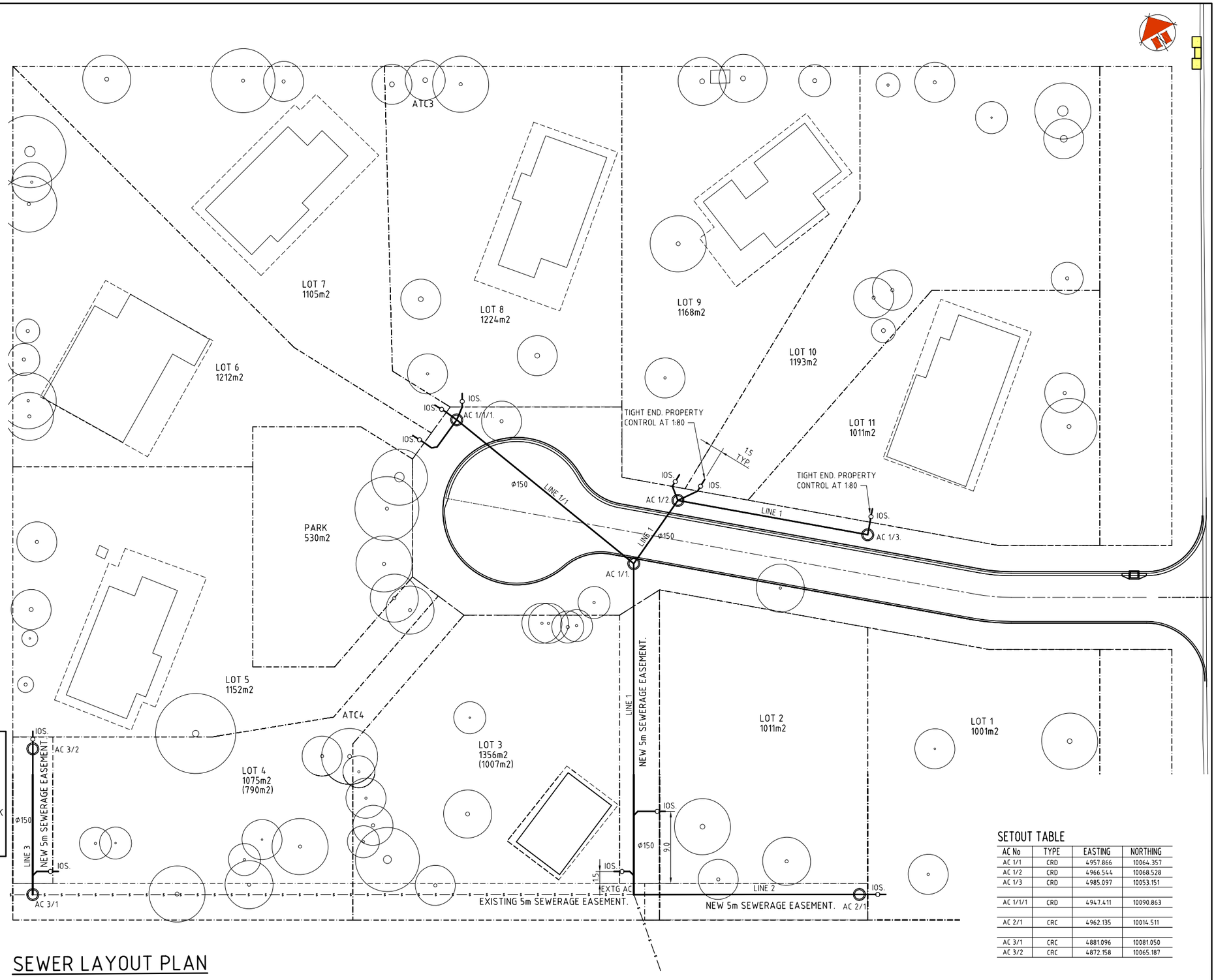
ON BEHALF OF LAND DEVELOPMENT FOR INCORPORATION INTO POWERWATER NETWORK
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WARNING

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LEGEND

G1 FOR LEGEND REFER SHEET 01.



SETOUT TABLE

AC No	TYPE	EASTING	NORTHING
AC 1/1	CRD	4957.866	10064.357
AC 1/2	CRD	4966.544	10068.528
AC 1/3	CRD	4985.097	10053.151
AC 1/1/1	CRD	4947.411	10090.863
AC 2/1	CRC	4962.135	10014.511
AC 3/1	CRC	4881.096	10081.050
AC 3/2	CRC	4872.158	10065.187

SEWER LAYOUT PLAN

2.5m 0m 2.5m 5.0m 7.5m 10.0m 12.5m

1:250 AT A1.

No.	DESCRIPTION	DATE	INIT.
D	ISSUED FOR APPROVAL	28.07.08	SAW
C	ISSUED FOR 90% REVIEW	02.06.08	SAW
B	AMENDED DESIGN - ISSUED FOR 30% REVIEW	04.12.07	TJK
A	ISSUED FOR 30% REVIEW	23.04.07	TJK

AMENDMENTS

QMcW PROJECT: 06A157001
QANTEC McWILLIAM consulting engineers
Level 1 NAB Building, 53 Todd Mall
PO Box 2155
Alice Springs, NT 0871
Telephone: (08) 8952 9191
Facsimile: (08) 8952 1771
E-Mail: alicesprings@qmcw.com.au
ABN 79 086 342 065 ACN 086 342 065
Brisbane • Gayndah • Gladstone • Maroochydore • Maryborough • Rockhampton • Darwin • **Alice Springs**
The Association of Consulting Engineers Australia

DRAWN	CHECKED
SAW	
DATE FEB 07	DATE
DESIGNED	CHECKED
SAW	
DATE FEB 07	DATE
DESIGN PROJECT LEADER	PROJECT OFFICER
DATE	DATE

Northern Territory Government
Department of Planning and Infrastructure

South Region - Alice Springs
Connecting Neighbours Program - Mpwetyerre (Abbotts Camp) Upgrade Works

Sewer
Layout Plan

FILE No.	ASSET No.	SHEET No.	DRAWING No.	AMEND.	SHEET
-	-	15 OF 16	R08-1462	D	A1

WARNING

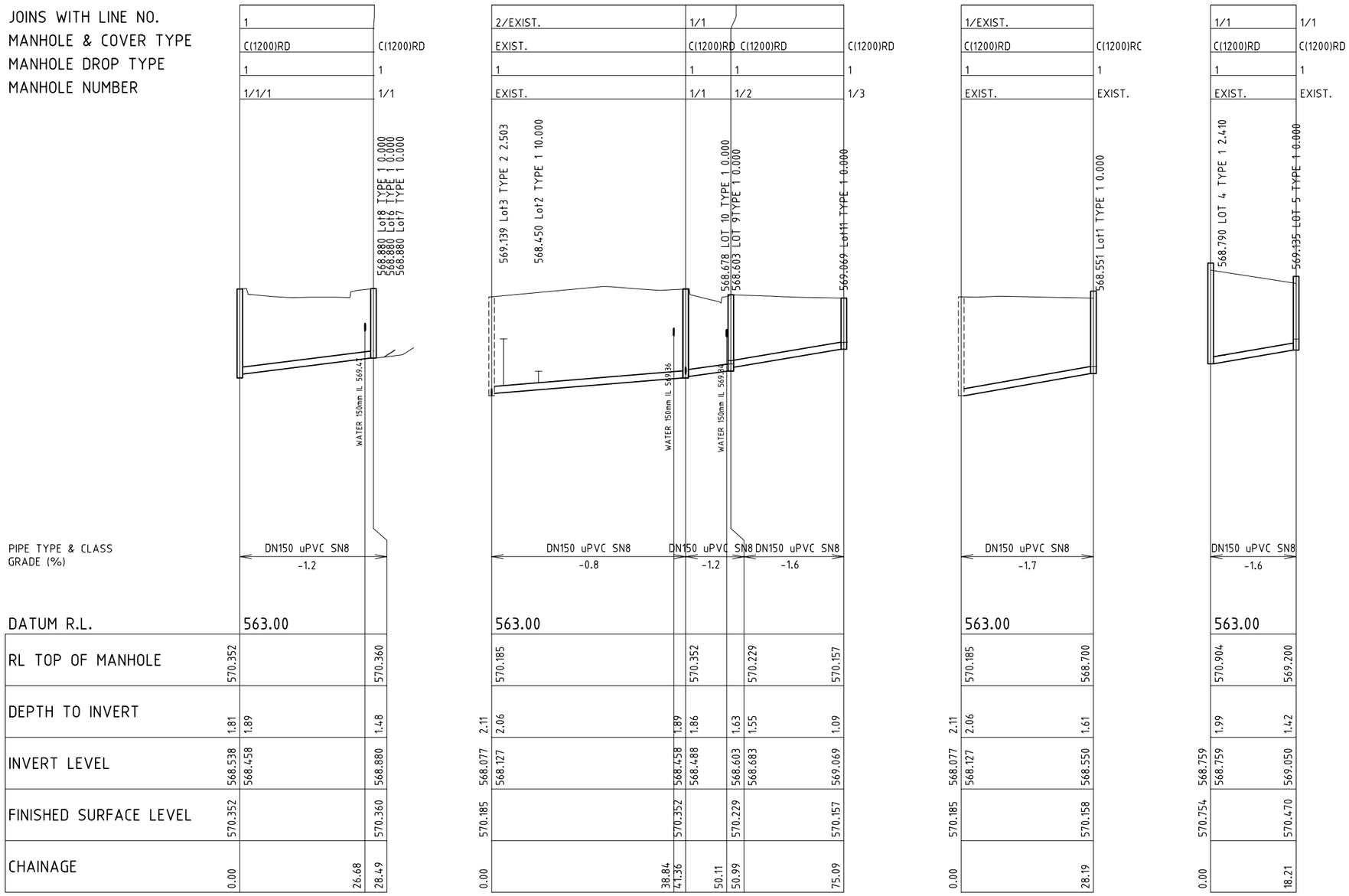
REASONABLE CARE HAS BEEN TAKEN TO ACCURATELY SHOW THE POSITION OF EXISTING AND PROPOSED SERVICES. HOWEVER, THE POSITION OF SUCH SERVICES SHOULD BE PROVEN ON SITE AND NO GUARANTEE CAN BE GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. AREAS SURROUNDING EXISTING SERVICES ARE TO BE EXCAVATED BY HAND.

APPROVED FOR CONSTRUCTION. POWER AND WATER DWG. NO. R08-1463

SIGNED .....

DATE .....

ON BEHALF OF LAND DEVELOPMENT FOR INCORPORATION INTO POWERWATER NETWORK
This Permission to Use is given on the basis that the Developer and/or Consultant is not absolved from full responsibility for the correctness and accuracy of the design and/or documents so associated



SEWER LONGITUDINAL SECTIONS

2.5m 0m 5m 10m 15m 20m 25m
H = 1:500 AT A1.

0.25m 0m 0.5m 1.0m 1.5m 2.0m 2.5m
V = 1:50 AT A1.

No.	DESCRIPTION	DATE	INIT.
D	ISSUED FOR APPROVAL	28.07.08	SAW
C	ISSUED FOR 90% REVIEW	02.06.08	SAW
B	AMENDED DESIGN - ISSUED FOR 30% REVIEW	04.12.07	TJK
-			

AMENDMENTS

QMcW PROJECT: 06A157001

QANTEC McWILLIAM consulting engineers

Level 1 NAB Building,
53 Todd Mall
PO Box 2155
Alice Springs, NT 0871

Telephone: (08) 8952 9191
Facsimile: (08) 8952 1771
E-Mail: alicesprings@qmcw.com.au

ACEA The Association of Consulting Engineers Australia

ABN 79 086 342 065 ACN 086 342 065

Brisbane • Gayndah • Gladstone • Maroochydore • Maryborough • Rockhampton • Darwin • **Alice Springs**

DRAWN SAW	DATE FEB 07	CHECKED	DATE
DESIGNED SAW	DATE FEB 07	CHECKED	DATE
DESIGN PROJECT LEADER	DATE	PROJECT OFFICER	DATE

Northern Territory Government
Department of Planning and Infrastructure

South Region - Alice Springs
Connecting Neighbours Program - Mpwetyerre (Abbotts Camp) Upgrade Works

Sewer
Setout and Longitudinal Section

FILE No.	ASSET No.	SHEET No.	DRAWING No.	AMEND.	SHEET
-	-	16 OF 16	R08-1463	D	A1

Transformer data

Group	Com Id	Location	Community Name	Dwellings No. (Funded Dwellings)	Dwellings No. (Bennett Design)	New Houses ** (Future Demand)	Primary Volatge Level (KV)	PWC Substation ID	PWC Test Number	Transformer size (KVA)	KVA Total dwellings @ 4.5KVA	KVA Total dwellings @ 7KVA	Comments
1	290	Darwin	Bagot	55	55		11	1924	1735	300	247.5	385	
	344	Darwin	Knuckey Lagoons	18	19	2	11	1771	2163	100	85.5	133	
	347	Darwin	Kulaluk	19	19		11	1092	10607	50	85.5	133	
	403	Darwin	Palmerston Town Camp	20	16		22	10196	10245	100	90	140	Two transformers for this Town Camp. Transformers are not in boundary of Town Camp [The nearest transformers data to Town Camp are highlighted in yellow].
							22	265	11645	25			
	412	Darwin	Railway Dam (One Mile Dam)	5	6	2	11	1041	4378	200	27	42	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	427	Adelaide River	Amangal	9	9		22	216	12187	100	40.5	63	Two transformers for this Town Camp.
							22	184	5646	63			
	687	Jabiru	Manabadurma	10	12		11	5050	11107	200	54	84	
	825	Darwin	Minmarama Park	24	24		11	2147	11372	100	108	168	
2	606	Katherine	Warlpiri Transient Camp	9	9		22	6416	4886	100	40.5	63	Two transformers for this Town Camp.
							22	6074	4695	25			
	621	Katherine	Miali Brumby (Kalano)	47	31		22	6133	12247	315	211.5	329	
	640	Pine Creek	Pine Creek Compound	4	4		22	6666	3147	25	18	28	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	971	Mataranka	Mulggan	12	9	4	22	6819	5296	16	54	84	
							22	6818	5297	16			
							22	6384	11028	25			
3	215	Tennant Creek	Blueberry Hill (Munji-Marla)	2	2		22	7079	1868	200	9	14	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	223	Tennant Creek	Dump Camp (Marla-Marla)	7	7		22	7181	11088	200	31.5	49	
	224	Elliott	Elliott South Camp	12	12		11	7504	4718	200	54	84	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	225	Elliott	Elliott North Camp	36	25		11	7505	4715	100	162	252	
	238	Tennant Creek	Kargaru (East Side Camp)	12	12	1	22	7572		200	54	84	
	246	Tennant Creek	Ngalpa Ngalpa	18	21		22	7179		200	94.5	147	Two transformers for this Town Camp.
							22	7033	10904	315			
	271	Tennant Creek	Village Camp	12	12	1	22	7183	11107	200	54	84	
	681	Tennant Creek	Tingkarli	12	12		22	7180		200	54	84	
	684	Tennant Creek	Wuppa	15	15	1	22	7141	11092	100	67.5	105	Two transformers for this Town Camp.
							22	7182	11095	200			
4	3	Alice Springs	Akngwertnarre (Morris Soak)	11	15		11	8596	11336	300	67.5	105	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	16	Alice Springs	Anthelk Ewlpaye (Charles Creek)	17	10		11	8569		315	76.5	119	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	17	Alice Springs	Anthepe	15	15		22	8598	5874	200	67.5	105	Data extracted from PWC asset information. There was not access to this Town Camp due to ceremony on inspection day.
							22	8597	11244	315			
	19	Alice Springs	Aper Alwerrknge (Palmers)	7	6		11	8405	2939	200	31.5	49	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	35	Alice Springs	Ewyenper Atwatye (Hidden Valley)	47	47		11	8622	11202	100	211.5	329	
							11	8623	11203	100			
							22	8625	11205	63			
							11	8626	11204	100			
	47	Alice Springs	Ilparpa	13	13		22	8611	11702	200	58.5	91	
	48	Alice Springs	Ilperle Tyathe (Walpiri)	10	9		11	8001	11209	315	45	70	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	50	Alice Springs	Ilyperenye (Old Timers)	10	10		22	8145	3323	100	45	70	
	64	Alice Springs	Bassos	2	2		11	8002	10946	50	9	14	
	69	Alice Springs	Karnte	19	19		22	8282	2345	100	85.5	133	
	87	Alice Springs	Yarrenty Altere (Larapinta Valley)	34	34		11	8617	11334	100	153	238	
							11	8618	11200	63			
							11	8619	11335	100			
							11	8620	11201	100			
	90	Alice Springs	Inarlenge (Little Sisters)	16	22		22	8137	2925	100	99	154	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	108	Alice Springs	Mpwetyerre (Abbotts)	6	6		11	8093	11703	315	27	42	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	113	Alice Springs	Mount Nancy (Nyewente)	11	12		11	8405	2939	200	54	84	
	129	Alice Springs	Nyewente (Trucking Yards)	26	26		11	8629	11312	300	117	182	
	675	Alice Springs	Hoppys	15	19						85.5	133	There is not any Transformer in boundary of Town Camp. Also it's not shown in PWC asset information.
	676	Alice Springs	Ilpiye Ilpiye (Golders Camp)	15	14		11	8314	369	50	67.5	105	
	1029	Alice Springs	Kunoth	4	4		11	8569		315	18	28	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
5	222	Borroloola	Mara	28	29	2	11	6187	12610	100	130.5	203	Two transformers for this Town Camp.
							11	6545	10203				
	229	Borroloola	Garawa 1	16	14		11	6546	10166	100	72	112	Two transformers for this Town Camp.
							11	6332	4890	100			
	278	Borroloola	Yanyula	29	29		11	6162	10496	200	130.5	203	Data extracted from PWC asset information. It's outside of Twon Camp, shown only Transformer to this Town Camp.
							11		10167				This transformer is not shown in PWC asset information. It's installed in Boat Ramp Road near to Town Camp and connected to Electrical reticulation of Town Camp.
	992	Borroloola	Garawa 2	11	11		11	6189	2669	25	49.5	77	

** For New house's demand calculation see section 13.4 "Future Demand".

Mt Nancy

Mount Nancy (Nyewente)

1 Design

The infrastructure reviews have been undertaken against current relevant standards for typical sub-divisions. The following standards have been used in undertaking the reviews.

Sewerage and water supply

- Water Services Association of Australia – Sewerage Code – WSA 02 Part 1: Planning and Design
- Power and Water Corporation supplement to WSA 02
- Water Services Association of Australia – Sewerage Pumping Station Code – WSA 04 -2005 Part 1: Planning and Design
- Power and Water Corporation supplement to WSA 04
- Water Services Association of Australia – Water Supply Code – WSA 03 2002 Part 1: Planning and Design
- Power and Water Corporation supplement to WSA 03
- Power and Water Corporation Indigenous Community Engineering Guidelines (2008)
- Department of Housing and Community Development Indigenous Community Engineering Guidelines (ICEG 2014, updated September 2016)
- Power and Water Corporation Essential Services Infrastructure Assessment and Upgrade Guidelines (for Town Camps in Urban Communities, 2009)
- Power and Water Corporation Standard Drawings
- Australian Standards

Electrical services

Electrical infrastructure has been assessed against AS/NZS3000 Wiring Rules and against PWC Service, Installation and Metering Rules and Urban Residential Development (URD) Design Standards where possible.

With one exception, town camps are each a single lot and compliance with AS/NZS3000 is sufficient to address potential safety concerns.

As such application of PWC URD Design Standards will mainly apply to the incoming supply and bulk or initial multi-metering panels if provided.

URD Design Standards for internal reticulation and street lighting appear to have been applied in many cases for convenience rather than compliance.

For the purposes of this report, the demand per dwelling allowances of URD Design Standards have been used to estimate incoming supply and overall distribution capacity requirements.

The following standards apply:

- Australian Standards
- Power Networks Design and Construction Guidelines, Power and Water Corporation
  - NP001.1_Design and Construction of Network Assets – General Requirements
  - NP001.3_General Specification for Overhead Electrical Reticulation
  - NP001.6_General Specification for URD Subdivisions
  - NP003_Installation Rules_V3
  - NP007_Service Rules
  - NP027_Capture of Newly Installed Street Lighting Information
  - NP041_Guidelines for Electrical Design Consultants

Further referral to the guidelines in this report will be designated by the guidelines number, NP001.1.

Communications

- National Broadband Network Website viewed 21 January 2017 (http://www.nbnco.com.au/) – NBN rollout maps

Council guidelines

In addition to the above standards, the following Council guidelines will be used where applicable.

- Alice Springs Town Council – Subdivision and Development Guidelines, November 2012

General

It should be noted that if the town camps are proposed to be subdivided and services assets gifted to Power and Water Corporation (PWC) for operation and maintenance, all of these services will need to fully meet PWC standards. With the exception of a few town camps that have recently been upgraded, this will require the full replacement and/or realignment of most services.

2 Condition assessment

2.1 Rating assessment matrix

A condition rating matrix was developed and used to assess all municipal infrastructure. The same rating was used for all services to maintain consistency in assessments. Table 1 Below shows the condition rating and operability.

Table 1 Condition rating

Condition rating		Operability
1	Very Poor	Not operational
2	Poor	Not fully operational or requires immediate maintenance to keep operational
3	Good	Fully operational, may require routine maintenance
4	Very Good	Fully operational, may require maintenance in the next six months
5	Excellent	New, fully operational

2.2 Civil assessment limitations

The civil infrastructure condition investigations were subject to a number of limitations. These include:

- Only accessible services have been investigated. This includes inspecting the top of sewer manholes, side entry pits, etc., however, does not include opening pits to inspect infrastructure below ground.
- No physical testing of the sewer, water or stormwater network was undertaken.
- No survey or service locating was undertaken.

As there was no survey, potholing or CCTV undertaken on the underground infrastructure there is insufficient information to make determinations on the asset condition. The condition assessments discussed in this report are only for the accessible services and do not necessarily represent the condition of the underground infrastructure. For the majority of the town camps, other than a few that have recently been upgraded it was found that the underground services are generally undersized and it is likely, due to their age, that the these services are in poor condition. Either factor would trigger the need for a complete replacement to meet current relevant standards.

2.3 Electrical assessment limitations

The electrical infrastructure condition investigations were subject to a number of limitations. These include:

- Inspections were carried out without the assistance of an electrical tradesman.
- Only accessible services were investigated. Assessments were of a visual nature and no pit covers were removed.
- Overhead equipment was assessed from ground level.
- Switchboards were not opened and no assessment of the internal connections or bus ratings was made.
- Electrical infrastructure was assessed down to the meter for multi-meter panels and down to the termination, overhead pole or distribution pillar, of the supply cable to a meter located at a dwelling.

3 Current infrastructure issues

Power and Water Corporation (PWC) have advised of the following concerns and issues in regard to the sewerage, water and electrical infrastructure at all town camps.

3.1 Ownership and maintenance

PWC stated there has always been confusion regarding the ownership and responsibilities of the internal sewer, water and electrical infrastructure. PWC have advised that they have no legal tenure on the majority of assets in any town camps and that the owner is essentially that of the land owner or leaseholder. This is further discussed for each type of infrastructure for each town camp.

The ownership and who is responsible for the maintenance of the sewage pump stations and street lighting is a major concern. In most town camps it was found that PWC have been maintaining the assets on an in-kind basis, although there are no maintenance or access agreements in place and the infrastructure is generally not compliant to PWC standards.

3.2 Access to infrastructure

PWC advised that due to the uncertainty surrounding ownership and responsibility of the sewerage, water and electrical infrastructure, each town camp is seen as a single lot with multiple houses on it. There are no formal road reserves or easements where the municipal infrastructure should be located. PWC therefore have no legal right to enter the town camps to work on the infrastructure, nor can PWC stop others from working on the infrastructure. There is a risk that the maintenance undertaken by others may be to a lower standard than PWC.

It should be noted that there are currently no legal services easements within the town camps, except for a few cases where a town service passes through the town camp. Therefore it is recommended that easements are created over any infrastructure owned by PWC and any future assets to be gifted to PWC, to allow the service providers access to the infrastructure.

3.3 Existing infrastructure

PWC have stated that although the existing sewerage and water infrastructure appears to comply with relevant standards in some locations, the capacity cannot be assumed to meet PWC requirements due to the potential for underground substandard condition and/or grading of pipework. It is likely that these assets will need to be fully replaced to PWC standards to ensure sufficient capacity.

The planning process currently allows construction within the town camps on Commonwealth land without requiring service authority (PWC) approvals. This means that there has been no opportunity for PWC to recover contributions towards required upgrades to headworks servicing the developments and these upgrades have been paid for by PWC in the past. This inconsistency needs to be addressed for future developments within the town camps to ensure PWC are able to continue to provide adequate services.

3.4 Safety concerns

PWC have expressed concerns with safety of PWC staff and contractors working within the camps. PWC have employed procedures such as multiple people / vehicles to attend the site, with police or housing safety officers as required. This

generally leads to a delayed response time and increased cost to respond to and remediate emergency situations.

PWC have also raised the concern that if others work on water infrastructure within the town camps and do not apply the correct sanitation procedures they not only risk contaminating the entire water supply network within the town camp, at some town camps with direct connections to the town supply, they risk contaminating the entire town's water supply.

4 Available information

As the site investigations were limited to accessible / visible services, information on below ground services (such as electrical cables, sewer pipes, water supply pipes, etc.) were determined from available information. This information included:

- Serviced Land Availability Program (SLAP) maps,
- Department of Family & Community Services - Connecting Neighbours Program – Essential Services Scoping Study Report Volume 1 April 2005,
- Connecting Neighbours Project – Infrastructure Assessment and Recommendation Report - Arup Pty Ltd, April 2005,
- Drawings supplied by NT Department of Infrastructure - Technical Records,
- Drawings supplied by Power and Water Corporation,
- Bennett Design inspection reports and population data,

Aurecon undertook a site investigation of the Mt Nancy (Nyewente) community on 24 November 2016 to inspect roads, stormwater drainage, electrical services, sewerage and water supply, and community structures. The following sections detail the outcomes of this investigation and the assessments of the infrastructure.

The civil and electrical inspection reports can be found in the Appendicies.

5 Sewerage

5.1 Ownership and boundaries

The sewer infrastructure at Mount Nancy is owned by the Mount Nancy Housing Association Incorporated, however is the responsibility of Tangentyere Council Incorporated to maintain.

There was conflicting information as to what has been constructed at Mount Nancy, as the SIHIP infrastructure upgrade drawings were stamped with 'project did not proceed', however PWC's database shows that the network has been upgraded. The poor condition of the infrastructure shows that the network most likely has not been upgraded.

PWC noted that they only maintain up to the sewage pump station and they do not maintain the assets within the community. The maintenance of the pump station is on an in-kind basis as no maintenance agreement is in place.

The sewage pump station was inspected with a representative from PWC.



Figure 1 Sewer network from PWC database

5.1.1 Connection methods and billing

PWC advised that they currently charge a single sewerage bill based on the number of houses, which for Mount Nancy is 12. The sewerage bill is charged to the Department of Housing and Community Development.

It is not known what contribution the residents make towards the sewerage bills.

5.2 Existing infrastructure condition assessment

The sewer infrastructure inspection was limited to inspecting the condition of manhole covers and pump stations, as all other sewerage infrastructure is below ground. The assets that were inspected had the following conditions:

Table 2 Sewer condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Manhole	1	1	7			9
Pump station				1		1



Figure 2 Sewer manhole, condition: *very poor*



Figure 3 Sewer manhole, condition: *good*

The sewer manholes were in poor to good condition. One manhole, as pictured in **Figure 2**, appears to have been altered to allow venting, as this manhole was next to the pump station.

5.3 Current performance and risks

5.3.1 Current sewer network performance

The current capacity of the sewer network was calculated based on the following design assumptions:

- The adopted minimum grade for the pipework is 1.0%, as advised by Power and Water Corporation.
- The Equivalent Population (EP) has been calculated assuming one household equates to 9 EP, based on discussions with Power and Water Corporation.
- The capacity has been assessed by calculating the current flow rate, and the maximum flow rate when the sewer pipe flows full. The result is then a percentage of how much of the pipe is currently being used.
- Manning's roughness coefficient of the pipework is 0.012, as recommended by PWC for PVC pipes.
- Where the sewer pipe grade, size or material is not known, it is assumed to be non-compliant to PWC standards.
- As Mount Nancy disposes to a pump station and absorption trench, the capacity of the pump station has also been assessed.

The current number of houses in is 12, this multiplied by 9 EP per house gives a total current EP of 108.

The Connecting Neighbours report found that the existing sewer was compliant to PWC standards with respect to diameter, so it is assumed that the diameter is 150 mm.

The capacity of the existing sewer was then calculated. The percentage shows how much of the pipe capacity is currently being used.

Table 3 Existing sewer capacity

Catchment	Current total EP	Diameter of connection (mm)	Adopted PWC minimum slope (%)	Q_{full} (L/s)	Current Q (L/s)	Current capacity (%)
Catchment 1	108	150	1.0	16.50	1.44	9%

Table 3 above shows that the capacity of the existing sewer network is adequate for the current peak population. As the flows are relatively low, it is likely that self-cleansing velocities are not achieved in the gravity main.

The current sewer network appears to comply with PWC standards, however the actual diameter or condition of the network was not assessed. Further inspection of the condition of the underground network is required if these assets are to be handed over to PWC.

5.3.2 Current sewage pump station performance

There was insufficient information available to be able to assess the sewage pump station. Detailed drawings that indicate the levels of pump start/stop, and pump duty is required to undertake an analysis.

It should be noted that an investigation was undertaken by Byrne Design in 2014 to confirm the capacity and compliance of the sewage pump stations. The Byrne Design report details the works required to the pump station wet well, collection chamber, and generally around the compound (e.g. lighting, hand rails, etc) to

bring it up to relevant standards. PWC confirmed that none of the recommended upgrades from the Byrne Design report have been constructed.

The Byrne Design report recommended that the Mount Nancy sewage pump station is removed, and a new gravity main installed to the North Edge Pumping Station which takes the inflows from Mount Nancy, Palmers Camp, and possibly Bassos as well. These works are recommended, however the capacity and associated works required at the North Edge Pumping Station would need to be verified. Upgrades to the Northern Edge Pumping Station have not been assessed or included in the cost estimates.

5.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

5.5 Recommended works

The following works are recommended:

- Upgrade one manhole
- Remove existing pump station
- Install new gravity main to North Edge Pumping Station – approximately 700 m

6 Water supply

6.1 Ownership and boundaries

An upgrade design for the water supply at Mount Nancy was conducted under the SIHIP program, however it is appears that the design has not yet been constructed. Engineering drawings of the existing internal water reticulation were not available.

The water supply assets within Mount Nancy are believed to be owned by Mount Nancy Housing Association Incorporated, but are the responsibility of Tangentyere Council Incorporated to maintain. The water is supplied from a PWC owned water main outside of the community.

6.1.1 Connection methods and bills

Through consultation with PWC, it has been determined that the water supply to Mount Nancy is currently charged using a fixed daily rate for a total of thirteen lot water meters and a single bulk water meter. The thirteen lot water meters include connections to twelve houses and one to the sewer pump station. PWC have advised that the lot water meters are sub meters, meaning that the daily rate charged against the house meters is subtracted from the bulk meter to ensure water usage is not charged twice. The water bills for Mount Nancy are issued to the Department of Housing and Community Development. It is not known what contributions are made by the residents.

It is proposed that PWC continues to measures the water supply to the entire community, as opposed to individual lots within the community. Under this scheme, the water bill for the entire community is the responsibility of the governing body, being Mount Nancy Housing Association Incorporated for Mount Nancy. It will be up to governing body to assign bills to residents accordingly.

It is recommended that the individual lot meters are maintained in addition to the proposed use of a bulk water meter. This will assist the governing body with distributing bills to residents, the identification of any leaks in the network, and meeting PWC standards should the town camp be subdivided in the future.

Only two residential lot water meters were assessed during the inspection. Mount Nancy is believed to contain 12 dwellings. Therefore, up to an additional 10 water meters are required to be installed to cover the properties without an existing water meter. Note, some water meters may have been present however not visible due to overgrown flora or restricted property access. Consequently water meters may have not been discovered during the inspection.

6.2 Existing infrastructure assessment

The site investigation for the water infrastructure included assessing the condition of any air valves, fire hydrants, tanks, taps, and water meters. The assessment was limited to services that could be accessed above ground; no excavation of below ground services was undertaken.

The condition of each asset is as follows:

Table 4 Water asset condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Air valves			1			1
Water meter (bulk)			1			1
Water meter (residential lots)			2			2



Figure 4 Air valve, condition: *good*



Figure 5 Water meter (bulk), condition: *good*



Figure 6 Residential lot water meter, condition: *good*

The residential lot meter shown in Figure 6 is located beside the house and next to what appears to be an informal footpath. The water meter is a tripping hazard and at a greater risk of being damaged due to its location. It is recommended that it is relocated near to the property fence line.

6.3 Current performance and risks

The peak hours water demand was calculated based on the following design assumptions:

- The nominal peak day flow is 1300 L/capita/day, based on PWC's supplement to WSA 03 2002. This value is for the southern region of NT. It was assumed that the nominal peak day flow of 1300 L/capita/day also applies to water usage within the community, although it is possible that this value could be higher in real life due to a lack of controls to reduce water usage.
- The Equivalent Population (EP) has been calculated assuming one household equates to 9 EP, based on discussions with Power and Water Corporation.
- The peak hour factors are listed in PWC's Supplement to WSA 03-2002, and they depend on the population range of the community. The peak hour factor of 3.0 has been adopted, for populations less than 500.

With consideration to the layout of Mount Nancy, it is expected that separate lines would have been installed for each of the main roads. Therefore, the number of dwellings used to calculate peak hour demand is not the total dwellings within the community, instead the maximum amount of dwelling serviced by each main was adopted. Table 5 shows the peak hour demand calculated for Mount Nancy.

Table 5 Current water demand

Total dwellings	EP	Demand (l/s)	Peak hour demand (l/s)
12	108	1.62	6.86

Due to insufficient information on the existing network at Mount Nancy, it is unknown if the water reticulation supplies adequate pressure under peak hour demand and/or for fire flow demands. However based on estimates it is assumed the network does not have sufficient capacity and requires upgrades.

The assessment of water supply for firefighting has been based on the size of the water mains and the condition of the accessible fire hydrants. Additional hydrants have been recommended where it appears the existing number of hydrants are insufficient. In the case of Mount Nancy, no firefighting services were found in the community. New fire hydrants are required to be installed to provide sufficient coverage. Five new fire hydrants have been incorporated into the cost estimates for the water supply upgrades.

6.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

6.5 Recommended works

The infrastructure that was assessed as very poor or poor is recommended to be upgraded to prevent failure in the future. The following maintenance works are recommended;

- Relocate existing residential water meter

Limited information on the existing network is available. Therefore, it is expected that the water supply has both insufficient capacity and not compliant with current PWC standards. It is proposed that the existing network is replaced with a new DN150 PVC looped main. The cost estimated for the water supply upgrades at Mount Nancy include;

- Install additional 10 residential water meters
- Install new DN150 looped water main, approximately 750 m
- Replace existing bulk water meter with a new DN150 water meter on new water main
- Install new fire hydrants

7 Roadworks

7.1 Ownership and boundaries

It is the current understanding that the road infrastructure at the Mount Nancy Camp is owned by the Mount Nancy Housing Association Incorporated, however is the responsibility of Tangentyere Council Incorporated to maintain.

7.2 Existing infrastructure condition assessment

The road network within Mount Nancy community consists of two roads entering from two different entrances. There are also numerous informal tracks which appear to be used frequently but are not covered in this inspection and report.

Road furniture including signs were also inspected. Table 6 below summarise the condition of the road furniture as assessed during the site inspection.

Table 6 Roadworks condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Sign		1	1	2		4



Figure 7 Sign, condition: *poor*



Figure 8 Sign, condition: *good*

The only road furniture within Mount Nancy was a collection of four signs in various conditions, it is recommended that one sign be cleaned to remove graffiti whereas the other signs do not require any immediate maintenance.



Figure 9 Community road network

Table 7 below details the condition of the roads within Mount Nancy community for specific segments. Figure 9 shows a map of the community's road network with the condition ratings, road name, and chainage direction.

Table 7 Road network condition assessment

Road name	Chainage start (km)	Chainage end (km)	Condition (1 to 5)	Defects and associated condition
Shaw Court	0.00	0.15	2	-10% of the road has surface cracking (2) -10% of the road has edge breaks (3)
Matthews Court	0.00	0.17	3	-5% of the road has transverse cracking (3) -10% of the road has edge breaks (3)



Figure 10 Pavement, condition: *poor*



Figure 11 Pavement, condition: *good*

7.3 Current performance and risks

One of the main roads into Mount Nancy was rated in poor condition, while the other was in good condition due to having less cracking, however both roads had edge breaks and cracking. As the roads have cracking, there may be more significant issues to do with the subgrade or drainage that will require remediation before the road can be resealed.

The layout of the road network is sufficient for the current number of houses.

It was noted during the site inspections that a number of unsealed 'short-cuts' had been created and were regularly used. It is not recommended that these paths are formalised.

It is recommended that a road safety audit is undertaken to determine where signage, line marking, etc. are required.

7.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

7.5 Recommended works

The infrastructure that was assessed as very poor or poor is recommended to be upgraded to prevent failure in the future. The following works are recommended to upgrade the current infrastructure;

- Repair 100 m2 of surface cracking
- Repair 35 m of edge breaks
- General clean of 320 m of pavement and road reserve
- Replace one sign

In order to allow for a longer term sustainable road network a significant upgrade would be required. It is recommended that a long term design which incorporates a full two lane road network, with all appropriate road furniture, line-marking, kerbs and gutters is constructed. A cost estimate to reinstate the base and subbase material, reseal with a two coat spray seal surface, construct subsoil drainage, line marking and signage has been included. Note that these works will need to be fully designed, the cost estimate is for budgetary purposes only and only indicates the construction phase. A footpath next to the road is also recommended to provide a safe trail for pedestrians.

As the maximum road width within the Mount Nancy community is 3.8 m, this means that all 320 m of the road network will need to be upgraded to a 7.2 m wide road. The stormwater drainage infrastructure upgrades that are closely associated with the road upgrade i.e. kerb and gutters, side entry pits and underground drainage pipes are included in the stormwater section of this report.

8 Stormwater drainage

8.1 Ownership and boundaries

There were no stormwater drainage assets at Mount Nancy.

The Connecting Neighbours Program designed stormwater drainage for the community, however it appears as though the infrastructure has not been built.

8.2 Current performance and risks

The detailed performance of the stormwater network cannot be fully analysed without significant hydraulic and hydrodynamic modelling, which is outside the scope of this project.

The Alice Springs Town Council's general design philosophy for stormwater drainage is that the system is based on a network of sealed roads, kerb and gutters, side entry pits and underground drainage pipes, including grassed open channels and diversion drains. It is recommended that kerbs and gutters, side entry pits and underground pipes are installed to help reduce flooding in the community. The cost estimates allow for 300 m of stormwater drainage.

8.3 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

8.4 Recommended works

The following works are recommended to upgrade or improve the current infrastructure:

- Construct kerb and gutters, side entry pits, and underground drainage.

9 Community structures

9.1 Ownership and boundaries

The community structures infrastructure at the Mount Nancy Camp is owned by the Mount Nancy Housing Association Incorporated, however is the responsibility of Tangentyere Council Incorporated to maintain.

9.2 Existing infrastructure condition assessment

The site investigation for the community structures included assessing the condition and features of playgrounds, basketball courts and shade structures. The following table shows the condition rating given to the community structures.

Table 8 Community structures condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Bubblers	1					1
Playground	1	1		1		3
BBQ area				1		1
Basketball court				1		1



Figure 12 Bubbler, condition: *very poor*



Figure 13 Playground, condition: *very good*



Figure 14 BBQ area, condition: *very good*



Figure 15 Basketball court, condition: *very good*



Figure 16 Playground, condition: *very poor*

9.3 Current performance and risks

The bubblers and playgrounds in Mount Nancy require immediate maintenance and repairs as they are in poor and very poor condition. The BBQ area and basketball court were in very good condition and only require a general tidy up.

9.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

9.5 Recommended works

The following works are recommended to upgrade the community structures:

- Paint 'key' lines on basketball court
- Repair bubbler
- General clean of all community structures and surrounding areas to ensure areas are free of rubbish, graffiti and broken glass
- Fix large tear in shade sail covering the playground rated very good
- Replace equipment in playground rated very poor
- Install seats on swing set within playground rated poor

10 Electrical services

10.1 Ownership and boundaries

The following points, from Network Policy NP003 Installation Rules Section3, define the typical shared ownership of electrical infrastructure by Power and Water Corporation (PWC) and customers.

- The point of supply is defined as the point where PWC makes the electrical supply available. For domestic supply, this is normally one of the following:
- A point of attachment of an overhead service on to a building or pole on which a metering panel is fitted.
- A point of attachment of an overhead service on to a pole forming part of unmetered aerial consumer's mains.
- A nominated point on a distribution substation located on the customer's lot.
- A point of connection of an underground service in a metering panel, including underground services originating at an overhead line.
- A point of connection of an underground service in a pillar or junction box forming part of unmetered consumer's mains, located on the customer's lot.
- A point on a Power and Water pillar located on the customer's lot.

Typically, distribution infrastructure upstream of the Point Of Supply is owned and maintained by PWC and infrastructure below the point of supply is owned and maintained by the customer.

In many cases PWC have defined a Point Of Supply to ensure that they retain responsibility for aerial high voltage infrastructure, and aerial low voltage infrastructure where installed with aerial high voltage infrastructure, to minimise the possibility of the community or it's contractors coming into contact, either deliberately or inadvertently, with aerial high voltage infrastructure.

In other cases isolation facilities are present or desired by PWC to define the Point of Supply at or near the boundary of the town camp.

PWC advise that most of Tennant Creek/Alice Springs Town Camps have undergone upgrades under the SIHIP program with the intent to normalise the services to look like an urban subdivision but have never been formally handed over to PWC for operations and maintenance.

The Mount Nancy (Nyewente) community electrical reticulation systems is supplied from PWCs overhead LV distribution network. Overhead LV distribution runs to individual houses.

PWC advise that the Point Of Supply for this town camp is the LV terminals of the substation that they own and are responsible for.

Both Post-paid & Pre-paid meters are utilised in Mount Nancy dwellings.

PWC advise that street lighting is supplied from unmetered LV infrastructure and is the responsibility of the lot holder and not PWC.

All meters, whether pre- or post-paid are the property of PWC.

Mount Nancy (Nyewente) community are responsible for maintain all unmetered and metered LV infrastructure including the main switchboard, metering panel (excluding meter), LV distribution feeders, distribution pillars, consumers mains and consumer switchboards and street lights.

10.2 Existing infrastructure condition assessment

The Table 9 shows the condition rating given to the Distribution Panels. The distribution panels have 33% operational rating and 64% of the panels have maintenance issues.

Table 9 Distribution panel condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Distribution panels		2		1		3

Table 10 shows the condition rating given to the street lights. The street lights were of a low voltage overhead feeder design, sodium lamp type S70D, with lamp covers protected by cages. The street lights have a 100% operational rating.

Table 10 Street light condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Street light				11		11

Table 11 shows the condition rating given to the street lights. The street lights on OH poles were of a low voltage overhead feeder design, sodium lamp type S70D, with lamp covers protected by cages. The street lights on O/H poles have a 50% operational rating and 50% in non-operational rating.

Table 11 Street light on O/H pole condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Street light on O/H pole		1	1			2

Table 12 shows the condition rating given to the transformer. The transformer was of pole mount substation design. The transformer was visually accessed to be in good condition.

Table 12 Transformer condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Transformer			1			1

Table 13 shows the condition rating given to the Overhead poles. The overhead poles are of Weld Construction (Universal Pole construction) and steel LV construction. The overhead poles have 100% operational rating from the visual inspection.

Table 13 Overhead pole condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Overhead pole			2			2

Table 14 shows the condition rating given to the electrical pits. LV supply connection pits were constructed of concrete.

Table 14 Pit condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Pit						4 (status unknown)

Table 15 shows the condition rating given to the Metering panels.

Table 15 Meter Panel condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Pre-paid meter			4			4
Post-paid meter			1			1
Switchboard			5			5

Table 16 shows the condition rating given to the switchboards associated to dwellings.

Table 16 Switchboard condition assessment (Housing footprint)

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Switchboard			3			3

The details of the individual inspections and photographs of each piece of infrastructure are in Appendicies.

10.3 Current performance and risks

The electrical infrastructure evaluation was conducted against the following criteria

- Number of dwellings on tenure, the higher value of the funded dwelling and as quoted in the population report was utilised.
- Urban area, NP001.1, 4. Definitions.
- General Specification for URD Subdivisions, NP001.6, 4.3 Substation Size.
- Normal ADMD (After Diversity Maximum Demand) of 4.5 kVA and high cost subdivisions at 7 kVA.
- Transformer ratings were assumed to be correct in Dekho (PWC asset information system) and compared against photographs of test or transformer numbers collected.
- Substation loads were compared against transformer sizes only. No load flow analysis was conducted.
- No load calculations were performed or assessment conducted on overhead or underground cable, visual inspection from the ground only.
- Streetlighting loads were ignored as they are not significant.

The calculated maximum demand of Mount Nancy (Nyewente) transformer is at 27% of rated capacity based on 4.5kVA/dwelling and current needs are met.

Table 17 Mount Nancy current demand load vs transformer ratings

Com Id	Community name	Dwellings	Transformer (kVA)	kVA Total @ 4.5kVA	kVA Total @ 7kVA
113	Mount Nancy (Nyewente)	12	200	54	84

A tabulated summary of all community transformers is included in Appendicies.

There is a risk of equipment not being maintained associated with the non-standard division of responsibilities between the customer and PWC.

The following points from the PWC Metering Rules should be noted:

- The routine maintenance of metering installations and the replacement of any faulty meters is the responsibility of PWC.
- The property owners are responsible for the maintenance and upkeep of meter rooms, boxes and panels (including lids, doors and locking mechanisms).
- The installation of pre-paid metering is a cost to the customer, refer NP010 Meter Manual-Maintenance of Metering Installations, Power and Water Corporation.

10.4 Future demands

As no new developments are currently planned for the community, there are no additional upgrades required to cater for future demand.

10.5 Recommended works

The following maintenance works and upgrades are recommended:

- Replace one street lights 70W
- Replace two switchboards
- Install new street lighting - approximately 16 poles

11 Communications

11.1 Ownership and boundaries

Details of Telstra pit and conduit infrastructure within the town camp boundaries were sought but were not forthcoming.

11.2 Existing infrastructure condition assessment

The telecommunications infrastructure assessed included pits and telephone booths.

Appendicies contains the individual reports.

Table 18 Telecommunication pit condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Telecommunication pit			1			1

Table 19 Telephone booth condition assessment

Asset	1 Very Poor	2 Poor	3 Good	4 Very Good	5 Excellent	Total
Phone booth						2 (status unknown)

11.3 Current performance and risks

No details of the performance of communications infrastructure were obtained.

11.4 Future demands

The current availability of broadband services at Mount Nancy (Nyewente) is displayed in the Figure 17 below. NBN is available to residents via a fixed telecommunication line on application to an appropriate NBN access provider.

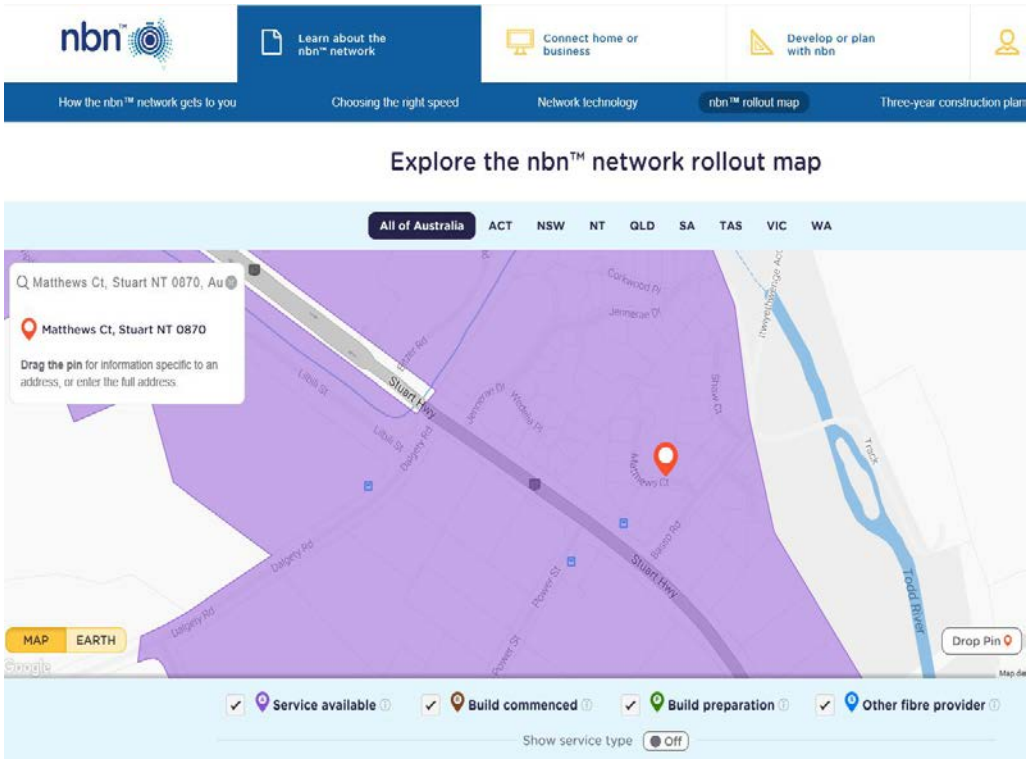


Figure 17 NBN network availability map

The NBN rollout map confirms that NBN is planned to be made available to residents via fixed telecommunications line on application to an appropriate NBN access provider.

11.5 Recommended works

No works are required at Mount Nancy (Nyewente) because NBN is available to residents via fixed telecommunications line on application to an appropriate NBN access provider.

12 Cost estimates

Table 20 below shows a summary of the cost estimates to undertake the maintenance required to fix the existing infrastructure, to upgrade the existing network to meet current design standards, and to upgrade the existing network to cater for the future design (included in current upgrades). The estimates take into account a 30% contingency, are inclusive of GST. A location factor has been applied to town camps outside of Darwin.

Table 20 Cost estimates

Infrastructure	Maintenance of existing infrastructure	Upgrades to meet current design
Sewerage	$ 3,000	$ 515,000
Water supply	$ 3,000	$ 603,000
Roadworks	$ 15,000	$ 390,000
Stormwater drainage	$ 0	$ 372,000
Community structures	$ 26,000	$ 0
Electrical	$ 6,000	$ 229,000
Communications	$ 0	$ 0
Miscellaneous provisions	$ 16,000	$ 263,000
Total (including GST)	**$ 69,000**	**$ 2,372,000**
Grand total	**$ 2,441,000**	

The cost estimates are a preliminary estimate only. Since Aurecon has no control over the cost of labour, materials, equipment or services furnished by others, or over contractors' methods of determining prices, or over competitive bidding or market conditions, Aurecon cannot guarantee actual costs will not vary from these estimates.

13 Summary

The following works are recommended for Mount Nancy (Nyewente) community:

Sewerage

- Upgrade one manhole
- Remove existing pump station
- Install new gravity main to North Edge Pumping Station – approximately 700 m

Water supply

- Relocate existing residential water meter
- Install additional 10 residential water meters
- Install new DN150 looped main, approximately 750 m
- Replace existing bulk water meters with new DN150 water meters on new water main
- Install five new fire hydrants

Roadworks

- Repair 100 m2 of surface cracking
- Repair 35 m of edge breaks
- General clean of 320 m of pavement and road reserve
- Replace one sign
- It is recommended that the road is upgraded to a two lane network with all appropriate road furniture, line marking, kerbs, footpaths, etc.

Stormwater drainage

- Construct kerb and gutters, side entry pits, and underground drainage.

Community structures

- Paint 'key' lines on basketball court
- Repair bubbler
- General clean of all community structures and surrounding areas to ensure areas are free of rubbish, graffiti and broken glass
- Fix large tear in shade sail covering the playground
- Replace equipment in playground
- Install seats on swing set within playground

Electrical services

- Replace one street lights 70W
- Replace two switchboards
- Install new street lighting - approximately 16 poles

Communications

- No works are required because NBN is available to residents via fixed telecommunications line on application to an appropriate NBN access provider

Civil inspection reports



Map by: DMcP P:\GIS\Projects\253963_NT_Town_Camps\253963_003_Civil_DDP.mxd 23/02/2017 12:02 Imagery: Digital Globe WV2 2013-2016

A3 scale: 1:1,500

0 20 40 60 80 100 m

Note:
Label numbers refer to survey IDs

Date: 23/02/2017 Version: 2
Coordinate system: MGA94 Zone 52

NT Town Camp Infrastructure Assessments: Sewerage

113 - Mount Nancy (Alice Springs)

6412



Map by: DMcP P:\GIS\Projects\253963_NT_Town_Camps\253963_003_Civil_DDP.mxd 23/02/2017 12:02 Imagery: Digital Globe WV2 2013-2016

A3 scale: 1:1,500

0 20 40 60 80 100 m

Note:
Label numbers refer to survey IDs

Date: 23/02/2017 Version: 2

Coordinate system: MGA94 Zone 52

NT Town Camp Infrastructure Assessments: Water

113 - Mount Nancy (Alice Springs)

6413



Map by: DMcP P:\GIS\Projects\253963_NT_Town_Camps\253963_003_Civil_DDP.mxd 23/02/2017 12:02 Imagery: Digital Globe WV2 2013-2016

A3 scale: 1:1,500

0 20 40 60 80 100 m

Note:
Label numbers refer to survey IDs

Date: 23/02/2017 Version: 2
Coordinate system: MGA94 Zone 52

NT Town Camp Infrastructure Assessments
Road furniture, stormwater drainage & community structures
113 - Mount Nancy (Alice Springs)

6414

Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:42:27 AM

Insp ID: 1054 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Water Asset Are you Capturing: Air Valves

Air Valve Diameter (mm): 80

Air Valve Make:

Air Valve Leak: No

Air Valve Condition: 3 - Good

Air Valve Comments: Sings air valve has previously leaked









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:42:27 AM





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:10:26 AM

Insp ID: 1031 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Inspection Type:	Bubblers
Leaking bubbler:	Yes
Bubbler Condition:	1 - Very Poor
Bubbler Comments:	Tap attached







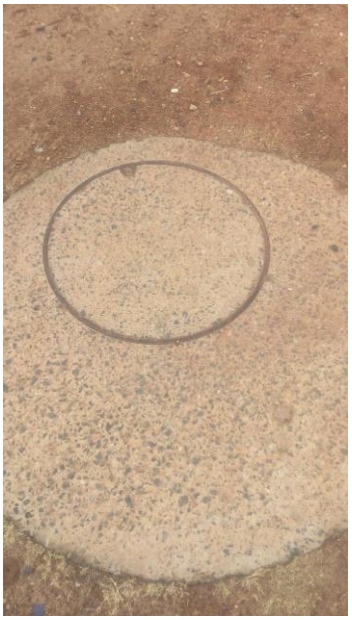
Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:17:04 AM

Insp ID: 1027 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	600
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	3 - Good
Notes on Lid:	
Comments:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:09:10 AM

Insp ID: 1032	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	600
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	3 - Good
Notes on Lid:	
Comments:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:48:51 AM

Insp ID: 1051 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	600
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	3 - Good
Notes on Lid:	
Comments:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:47:03 AM

Insp ID: 1052 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Rectangular
Manhole Cover Diam (mm):	
Manhole Length (mm):	1000
Manhole Width (mm):	700
Manhole Condition:	1 - Very Poor
Notes on Lid:	
Comments:	Can Smell sewage in area, pump station next to manhole





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:45:57 AM

Insp ID: 1053	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	600
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	2 - Poor
Notes on Lid:	
Comments:	



Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:35:53 AM

Insp ID: 1056 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	600
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	3 - Good
Notes on Lid:	
Comments:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:30:13 AM

Insp ID: 1058 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	600
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	3 - Good
Notes on Lid:	
Comments:	No better photo, aggressive dog at house



Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:28:58 AM

Insp ID: 1060	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	600
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	3 - Good
Notes on Lid:	
Comments:	



Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:24:50 AM

Insp ID: 1062	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Manholes
MH Cover Shape:	Round
Manhole Cover Diam (mm):	600
Manhole Length (mm):	
Manhole Width (mm):	
Manhole Condition:	3 - Good
Notes on Lid:	
Comments:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:27:55 AM

Insp ID: 1022 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Road Name:	Shaw Court
What are you inspecting:	Pavements
Ch From (km):	0
Ch To (km):	0.15
Road Type:	Sealed - spray seal
Section Width (m):	3.8
Road Condition:	2 - Poor
General Comment:	Driveways have significant damages

Road Defects Section

Defect Type	Defect QTY	Defect Condition	Defect Comments
Surfacing Cracks	10	2 - Poor	10 percent
Edge Breaks	10	3 - Good	10 percent

Kerbs Section

Kerb Type	Kerb Cond	Kerb Comments
Kerb only	2 - Poor	

Shoulders Section

Shoulder Type	Width	Dropoff(mm)	Erosion	Condition	Shoulder Comments
Unsealed				3	Some large rocks for protection

Linemarking Section

Obstruction Section

Road Obstruction	Other Road Obstruction
Trees	

Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:27:55 AM









Northern Territory Town Camps

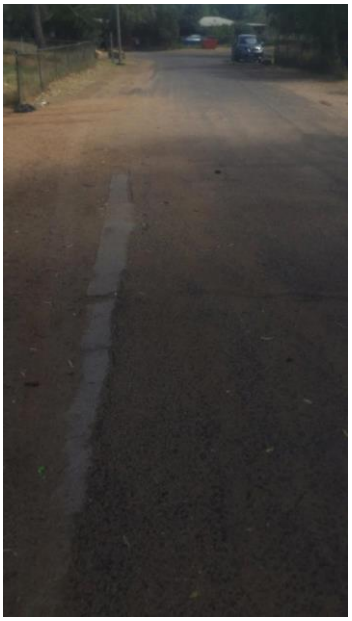
Civil Infrastructure

Inspection Date 24/11/2016 9:27:55 AM









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:27:55 AM







Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:51:54 AM

Insp ID: 1033 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Road Name:	Matthews Court
What are you inspecting:	Pavements
Ch From (km):	0
Ch To (km):	0.17
Road Type:	Sealed - spray seal
Section Width (m):	3.8
Road Condition:	3 - Good
General Comment:	

Road Defects Section

Defect Type	Defect QTY	Defect Condition	Defect Comments
Transverse Cracks	5	3 - Good	5 percent
Edge Breaks	10	3 - Good	

Kerbs Section

Kerb Type	Kerb Cond	Kerb Comments
Flush Kerb	3 - Good	

Shoulders Section

Shoulder Type	Width	Dropoff(mm)	Erosion	Condition	Shoulder Comments
Unsealed		20		3	Large rocks used as protection/ bollards

Linemarking Section

Obstruction Section

Road Obstruction	Other Road Obstruction
Trees	

Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:51:54 AM









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:51:54 AM









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:51:54 AM









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 14/11/2016 2:45:45 PM

Insp ID: 246 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Sewerage Asset are you capturing:	Pump Station
No of Pumps in Pump Station:	2
Cabinet Condition:	3 - Good
Cabinet Comment:	
Alarm Light:	No
Alarm Light Condition:	
Overhead Light:	No
Overhead Light Condition:	
Light Comments:	
Davit Crane Present:	Yes
Davit Crane Capacity (kg):	500
Davit Crane Condition:	4 - Very Good
Davit Crane Comments:	
Fence TYPE:	Standard Security Fence (3 Strands barbed)
PS Fence Height (m):	1.8
PS Gates Locked:	Yes
PS Fence Condition:	4 - Very Good
Fence Comment:	
Flow meter type:	
Flow meter condition:	
Flow meter comments:	Not accessible
Macerator Pump Make/Model:	Not accessible
Manufacturers Date:	13/11/2016 2:30:00 PM
Macerator Pump:	No Access
Macerator Pump Condition:	
Macerator Pump Comments:	
Outgoing Pipe Diameter (mm):	
Valves:	
Outgoing Pipe Comments:	
Water Supply to pump station:	Yes
Fire hose reel:	Yes
Access cover locked:	Yes
Safety grid beneath access cover:	No

Northern Territory Town Camps

Civil Infrastructure

Inspection Date 14/11/2016 2:45:45 PM

Condition:	4 - Very Good
Cabinet Locked:	Yes
Cabinet Lock Condition:	4 - Very Good
Hand rails around entrance:	No
Fixed or removable:	
Rail Condition:	4
Safety Comments:	

Pump Station Pumps section

Pump Capacity	Pump Make	Manufacture Date	Pump Chain	Condition	Comments
			Yes	3 - Good	1 standard





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 14/11/2016 2:45:45 PM









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 14/11/2016 2:45:45 PM









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 14/11/2016 2:45:45 PM



Northern Territory Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:25:03 AM

Insp ID: 1023 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Inspection Type:	Shade Structure
Shade Structure Type:	Play ground
Shade Floor Type:	Natural ground
Roof Type:	Not Covered
Width (mm):	5
Length (mm):	5
Appearance:	3
Appearance Comment:	Old swings
Condition:	2 - Poor
Comment:	No seats on swings





Northern Territory Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:25:03 AM



Northern Territory Camps

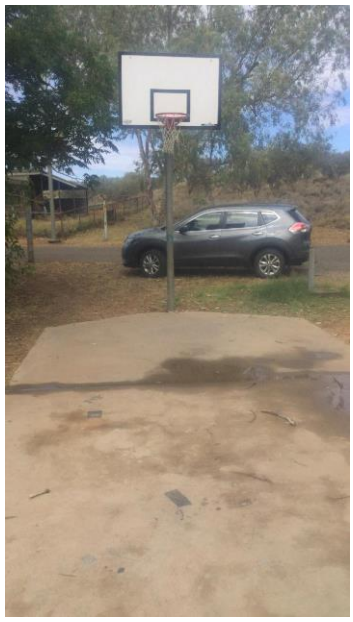
Civil Infrastructure

Inspection Date 24/11/2016 9:15:49 AM

Insp ID: 1028 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Inspection Type:	Shade Structure
Shade Structure Type:	Basket Ball Court
Shade Floor Type:	Concrete
Roof Type:	Not Covered
Width (mm):	4
Length (mm):	12
Appearance:	4
Appearance Comment:	
Condition:	4 - Very Good
Comment:	





Northern Territory Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:14:09 AM

Insp ID: 1029 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Inspection Type:	Shade Structure
Shade Structure Type:	BBQ Area
Shade Floor Type:	Natural ground
Roof Type:	Not Covered
Width (mm):	6
Length (mm):	8
Appearance:	3
Appearance Comment:	
Condition:	4 - Very Good
Comment:	





Northern Territory Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:14:09 AM



Northern Territory Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:11:51 AM

Insp ID: 1030	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

Inspection Type:	Shade Structure
Shade Structure Type:	Play ground
Shade Floor Type:	Sand
Roof Type:	Shadecloth
Width (mm):	8
Length (mm):	15
Appearance:	4
Appearance Comment:	
Condition:	4 - Very Good
Comment:	Shade cloth damaged





Northern Territory Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:11:51 AM







Northern Territory Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:33:32 AM

Insp ID: 1057 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Inspection Type:	Shade Structure
Shade Structure Type:	Play ground
Shade Floor Type:	Natural ground
Roof Type:	Not Covered
Width (mm):	15
Length (mm):	15
Appearance:	1
Appearance Comment:	
Condition:	1 - Very Poor
Comment:	





Northern Territory Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:33:32 AM







Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:24:14 AM

Insp ID: 1024 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Road Name:	Shaw Court
What are you inspecting:	Signs
Type of Sign:	Street name
Sign Condition:	4 - Very Good
Sign Comment:	
General Comment:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:22:46 AM

Insp ID: 1025	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

Road Name:	Shaw Court
What are you inspecting:	Signs
Type of Sign:	Community sign
Sign Condition:	2 - Poor
Sign Comment:	Graffiti
General Comment:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 9:21:38 AM

Insp ID: 1026 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Road Name:	Shaw Court
What are you inspecting:	Signs
Type of Sign:	Community signs
Sign Condition:	4 - Very Good
Sign Comment:	
General Comment:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:50:34 AM

Insp ID: 1063 Group 4 - Alice Springs Mountt Nancy (Nyewente)

Road Name:	Matthews Court
What are you inspecting:	Signs
Type of Sign:	Street name
Sign Condition:	3 - Good
Sign Comment:	
General Comment:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:38:42 AM

Insp ID: 1055 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Water Asset Are you Capturing: Water Meter

Water Meter Type:	Bulk
Bulk Water Meter Size (mm):	80
Bulk Water Meter Condition:	3 - Good
Bulk Water Meter Comment:	Back flow device installed
Lot Number:	
Lot Water Meter Size:	
Lot Water Meter Condition:	
Lot Water Meter Comment:	





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:38:42 AM









Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:38:42 AM





Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:30:34 AM

Insp ID: 1059	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Water Asset Are you Capturing: Water Meter

Water Meter Type:	Lot
Bulk Water Meter Size (mm):	
Bulk Water Meter Condition:	
Bulk Water Meter Comment:	
Lot Number:	11
Lot Water Meter Size:	20
Lot Water Meter Condition:	3 - Good
Lot Water Meter Comment:	



Northern Territory Town Camps

Civil Infrastructure

Inspection Date 24/11/2016 8:26:48 AM

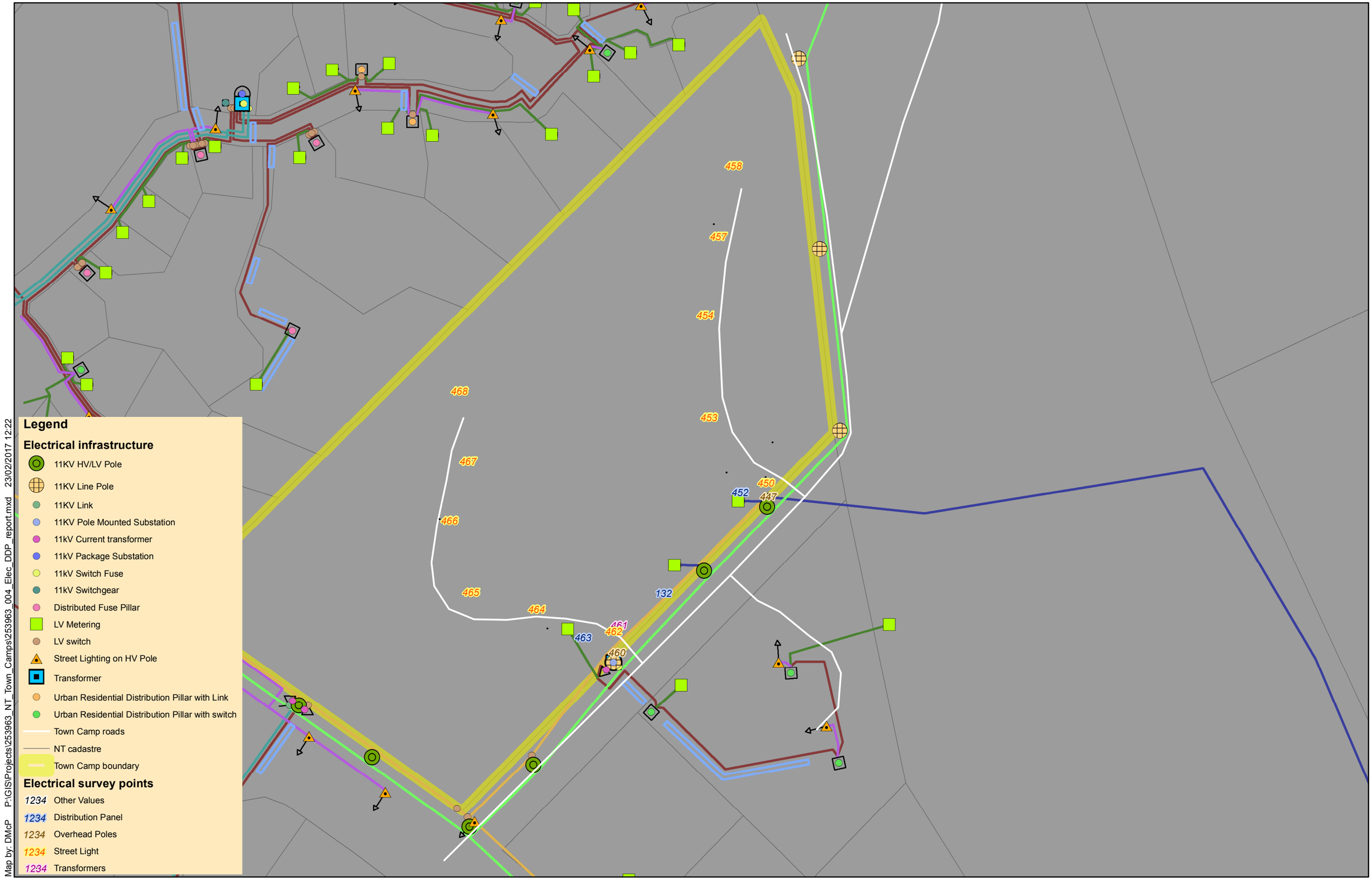
Insp ID: 1061 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Water Asset Are you Capturing: Water Meter

Water Meter Type:	Lot
Bulk Water Meter Size (mm):	
Bulk Water Meter Condition:	
Bulk Water Meter Comment:	
Lot Number:	15
Lot Water Meter Size:	20
Lot Water Meter Condition:	3 - Good
Lot Water Meter Comment:	Water meter very close to house



Electrical inspection report



A3 scale: 1:1,500

0 20 40 60 80 100 m

Date: 23/02/2017 Version: 3

Coordinate system: MGA94 Zone 52

NT Town Camp Infrastructure Assessments: Electrical

113 - Mount Nancy (Alice Springs)

Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 14/11/2016 3:22:47 PM

Insp ID: 132 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Distribution Panel
What is Main Distribution Panel installation method:	Outdoor
Is the distribution panel labelled:	No
What is Distribution Panel main CB Rating:	63A
What is the main incoming cable type/Size to Distribution Panel:	Unknown
What is the condition of switchboard:	4
Condition Comments:	
What is the condition of cables/glands into switchboard:	3
Cable/Gland Condition Comments:	
Distribution Panels name plate access:	Yes







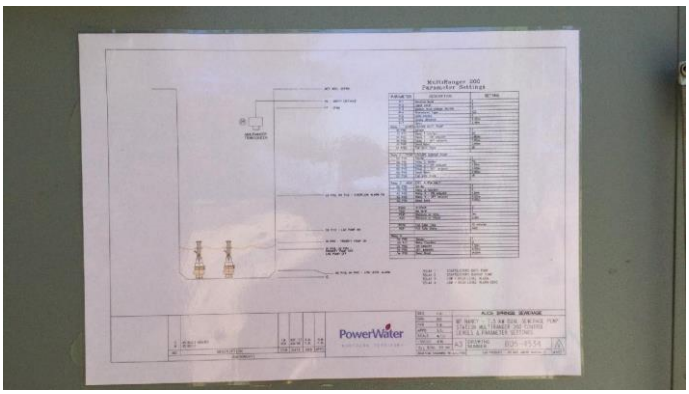


Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 14/11/2016 3:22:47 PM











Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 10:04:15 AM

Insp ID: 448	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Comms Category are you capturing:	Distribution
What is distribution method to households:	Underground
Is it Shared with PWC:	
Is there Anti-climb barrier provided for this pole:	
What is Pole construction type:	
Is street light fitted:	
Is there concrete collar around the base of pole:	
What is the condition of tap off to house:	
What is the condition of pole:	
How many Lots are connected to this pole:	
Is there access to Pits to take a photo:	No
What is Pit Condition:	3
Underground Comments:	





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:57:44 AM

Insp ID: 452 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Distribution Panel
What is Main Distribution Panel installation method:	Outdoor
Is the distribution panel labelled:	No
What is Distribution Panel main CB Rating:	
What is the main incoming cable type/Size to Distribution Panel:	
What is the condition of switchboard:	2
Condition Comments:	
What is the condition of cables/glands into switchboard:	
Cable/Gland Condition Comments:	
Distribution Panels name plate access:	No









Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:57:44 AM







Northern Territory Town Camps

Electrical Infrastructure

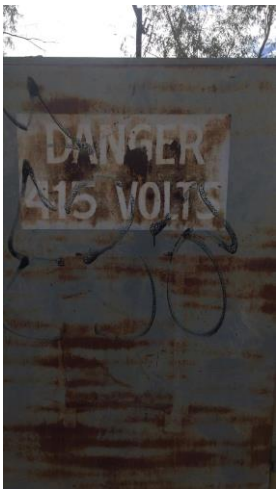
Inspection Date 24/11/2016 9:09:01 AM

Insp ID: 463 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing: Distribution Panel

What is Main Distribution Panel installation method:	Outdoor
Is the distribution panel labelled:	No
What is Distribution Panel main CB Rating:	
What is the main incoming cable type/Size to Distribution Panel:	
What is the condition of switchboard:	2
Condition Comments:	
What is the condition of cables/glands into switchboard:	
Cable/Gland Condition Comments:	
Distribution Panels name plate access:	NA









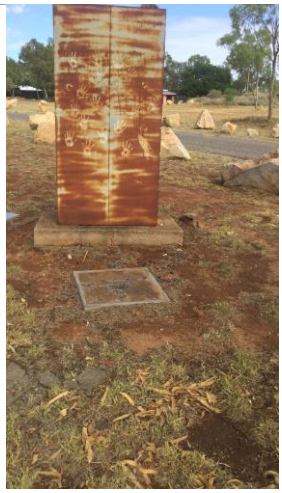
Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:09:01 AM









Northern Territory Town Camps

Communications Infrastructure

Inspection Date 24/11/2016 10:02:21 AM

Insp ID: 449	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Comms Category are you capturing:	General
Telstra Comms Drawing Available:	NA
Facility upgrade not in drawings:	NA
Which telecoms carriers are present in the town camp:	Telstra
How many Communications Pit(s) are allocated in this town camp:	



Northern Territory Town Camps

Communications Infrastructure

Inspection Date 24/11/2016 9:47:31 AM

Insp ID: 455	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Comms Category are you capturing:	General
Telstra Comms Drawing Available:	No
Facility upgrade not in drawings:	NA
Which telecoms carriers are present in the town camp:	Telstra
How many Communications Pit(s) are allocated in this town camp:	





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 16/01/2017 2:15:26 PM

Insp ID: 3587 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing: Electrical Meters

Meter Type:	Prepaid
Meter Switchboard Cond:	3
Meter Condition:	3
Meter Comment:	Indoor SB, Cond 3
Comments:	





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 16/01/2017 2:02:18 PM

Insp ID: 3588 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing: Electrical Meters

Meter Type:	Prepaid
Meter Switchboard Cond:	3
Meter Condition:	3
Meter Comment:	Indoor SB, Cond 3
Comments:	





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 16/01/2017 3:00:18 PM

Insp ID: 3641 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing: Electrical Meters

Meter Type: Post Paid

Meter Switchboard Cond: 3

Meter Condition: 3

Meter Comment:

Comments:





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 16/01/2017 2:01:32 PM

Insp ID: 3642 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing: Electrical Meters

Meter Type: Prepaid

Meter Switchboard Cond: 3

Meter Condition: 3

Meter Comment:

Comments:





Northern Territory Town Camps

Electrical Infrastructure

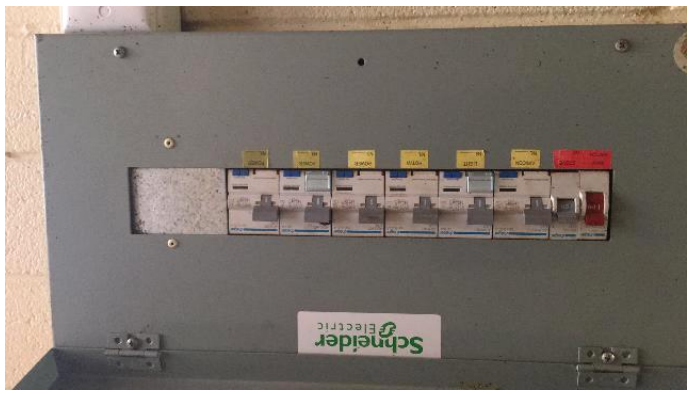
Inspection Date 23/01/2017 10:50:36 AM

Insp ID: 3670	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Category are you capturing: Electrical Meters

Meter Type:	Prepaid
Meter Switchboard Cond:	3
Meter Condition:	3
Meter Comment:	Indoor SB, Cond 3
Comments:	





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 10:07:49 AM

Insp ID: 447 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Overhead Poles
What is Pole Material type:	Welded
What is the condition of pole:	3
How is the pole planted:	Direct
What is the Condition of plant:	3
Is street light fitted:	Yes
Street Light Power Supply:	
Street Light Type	Unknown
Street Light Watts	
Street Light Condition	3
Street Light Height	
What is the type of service:	Combined
What is the HV voltage level:	
What is the arrangement of connected cables:	Parallel
Are there isolators on the pole:	Yes
What is the Condition:	3
How many Lots are connected to this pole:	
Overhead Pole Comments:	Overhead to local underground supply to camp

Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 10:07:49 AM











Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:25:58 AM

Insp ID: 460	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Category are you capturing:	Overhead Poles
What is Pole Material type:	Welded
What is the condition of pole:	3
How is the pole planted:	Direct
What is the Condition of plant:	3
Is street light fitted:	Yes
Street Light Power Supply:	
Street Light Type	S70 D15
Street Light Watts	70
Street Light Condition	2
Street Light Height	
What is the type of service:	Combined
What is the HV voltage level:	
What is the arrangement of connected cables:	Parallel
Are there isolators on the pole:	Yes
What is the Condition:	3
How many Lots are connected to this pole:	
Overhead Pole Comments:	Minor chip on middle isolator

Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:25:58 AM













Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:25:58 AM







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 10:07:49 AM

Insp ID: 447 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Overhead Poles
Is street light fitted:	Yes
Street Light Power Supply:	
Street Light Type	Unknown
Street Light Watts	
Street Light Condition	3
Street Light Height	









Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 10:07:49 AM



Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:25:58 AM

Insp ID: 460 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Overhead Poles
Is street light fitted:	Yes
Street Light Power Supply:	
Street Light Type	S70 D15
Street Light Watts	70
Street Light Condition	2
Street Light Height	









Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:25:58 AM











Northern Territory Town Camps

Electrical Infrastructure

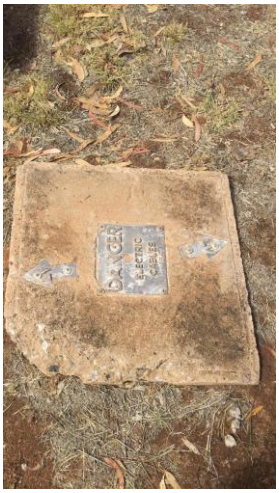
Inspection Date 24/11/2016 10:08:53 AM

Insp ID: 446 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing: Pits and Conduits

Comments:





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:58:53 AM

Insp ID: 451	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Category are you capturing: Pits and Conduits

Comments:





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:45:02 AM

Insp ID: 456	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Category are you capturing: Pits and Conduits

Comments:





Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:29:17 AM

Insp ID: 459	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Category are you capturing: Pits and Conduits

Comments:



Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 10:01:02 AM

Insp ID: 450 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

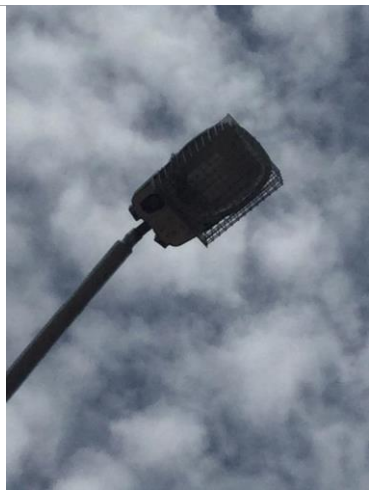
Inspection Date 24/11/2016 9:53:05 AM

Insp ID: 453	Group 4 - Alice Springs	Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:50:21 AM

Insp ID: 454 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:43:33 AM

Insp ID: 457 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

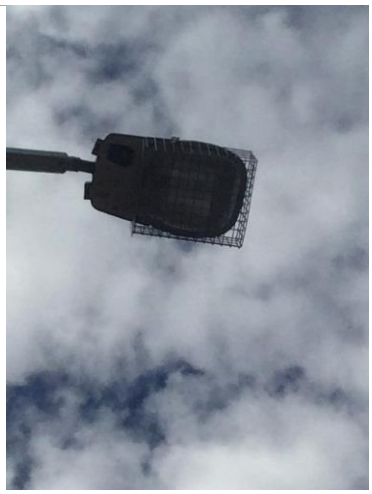
Inspection Date 24/11/2016 9:41:25 AM

Insp ID: 458 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:11:51 AM

Insp ID: 462 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

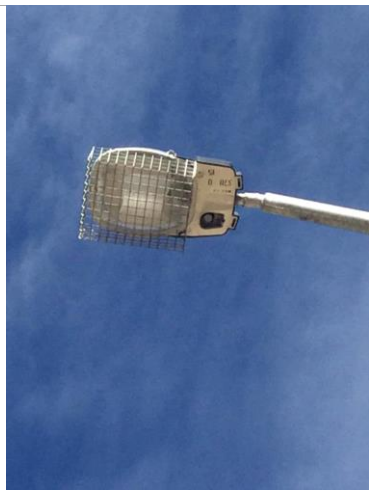
Inspection Date 24/11/2016 9:05:18 AM

Insp ID: 464 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

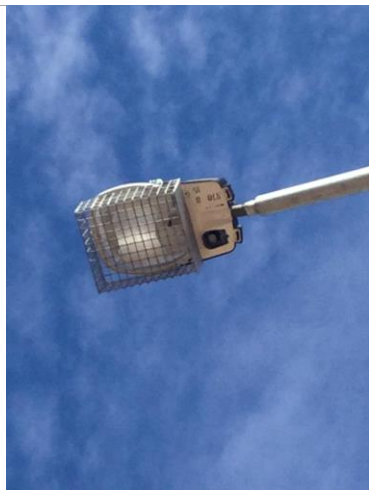
Inspection Date 24/11/2016 9:02:21 AM

Insp ID: 465 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

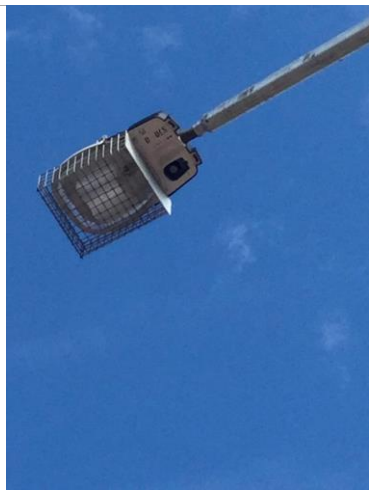
Inspection Date 24/11/2016 9:00:09 AM

Insp ID: 466 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 8:57:45 AM

Insp ID: 467 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

Electrical Infrastructure

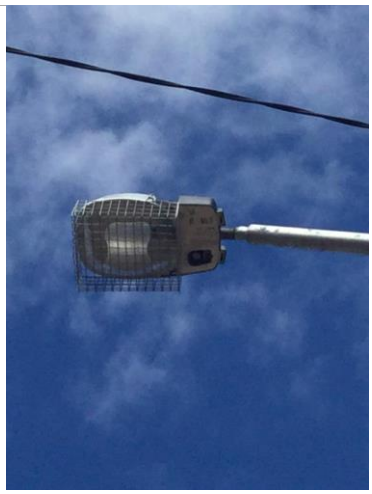
Inspection Date 24/11/2016 8:55:15 AM

Insp ID: 468 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Street Light
What is power supply method:	Overhead
What is the lamp type:	S70 D15
What Wattage is the lamp:	70
What is the condition of street lights:	4
What is Street Lighting pole installation height (approximate):	8







Northern Territory Town Camps

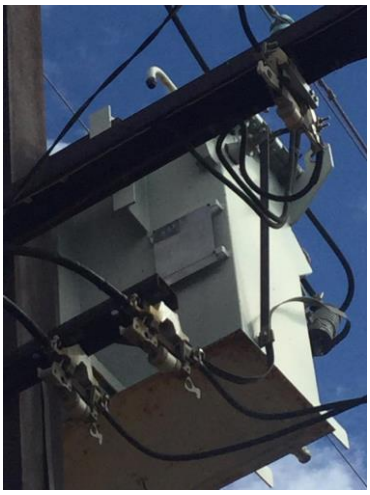
Electrical Infrastructure

Inspection Date 24/11/2016 9:18:54 AM

Insp ID: 461 Group 4 - Alice Springs Mountt Nancy (Nyewente)

What Category are you capturing:	Transformers
What is Transformer installation method:	Pole
If method know:	11SS1P
What is the condition of the mounting:	3
What is Transformer Rating:	
Is there access to transformers name plate to take a photo:	No Access
What is the condition of transformer:	3
What is cable type to transformer:	Black single insulated single core
What is cable size to transformer:	
Is there switch gear or fusing associated with the transformer:	Drop out fuses and surge arestors
Transformer Comment:	









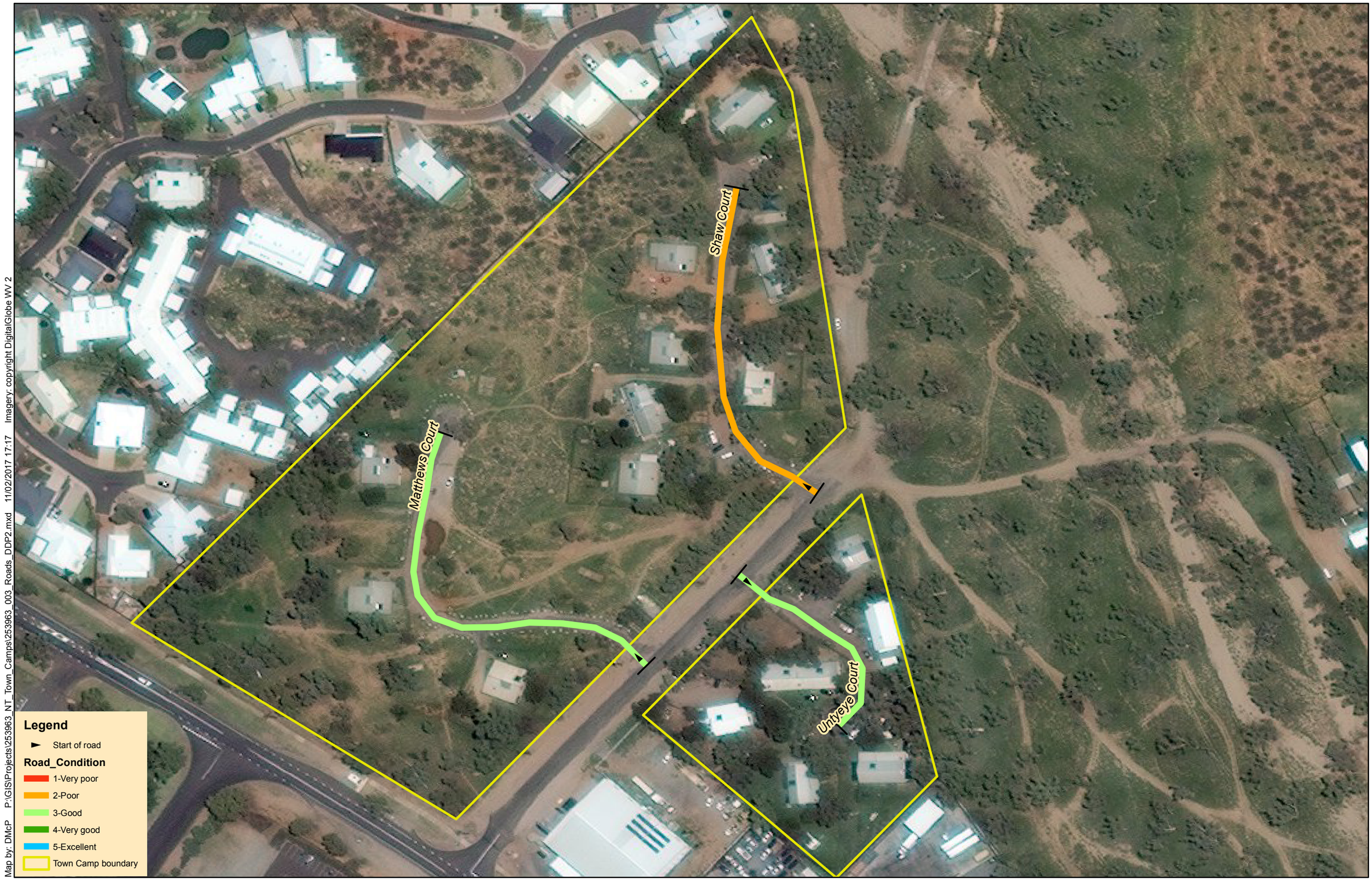
Northern Territory Town Camps

Electrical Infrastructure

Inspection Date 24/11/2016 9:18:54 AM



Road map



Map by: DMcP P:\GIS\Projects\253963_NT_Town_Camps\253963_003_Roads_DDP2.mxd 11/02/2017 17:17 Imagery: copyright DigitalGlobe WV 2

A3 scale: 1:1,500

0 20 40 60 80 100 m

Date: 11/02/2017 Version: 1

Coordinate system: GDA 1994

NT Town Camp Road Assessments

113 - Mount Nancy (Alice Springs)

6501

Existing drawings

-23°39'52"
384 500 E
384 750 E
385 000 E
7 382 250 N
7 382 000 N
-23°40'12"

TOWN OF ALICE SPRINGS

STUART HIGHWAY
BITTER ROAD
BITTER ROAD
BITTER ROAD
GOSHAWK PLACE
JENKENE DRIVE
WEEBILLA PLACE
LILIBLI STREET
DALGETY ROAD
MATTHEWS COURT
STUART COURT
BASSO ROAD
UNTYEYE COURT
SHAW COURT
POWER STREET

STUART
Shed

BRAITLING

Too rocky

For Development

Pump Station

13 12 11 10 9 8 7 6 5 4 3 2 1 1a 1b

6150 5820 5774 8026 8119 8066 9506 9502 9501 9500 9499 9498 9497 9496 9495 9494 9507 9504 9503 9493 9492 9505 9491 9490 9488 9489 9487 9486 9485 9484 9509 9508 9483 9473 9472 9482 9481 9474 9475 9476 9477 9478 9479 9480 9610 9511 8065 7710 5716 2580 5827 2581 2857 10040 2688 10036 5135 5180 10125 10126 10124 10123 10127 10122 10128 10121 10129 10120 10119 10115 10114 10113 10112 10111 10110 10109 10108 10117 10118 10101 10102 10107 10106 10103 10104 10105 9036 9037 798 629 9187 9186 4223 3689 5810 5800

SERVICED LAND AVAILABILITY PROGRAM

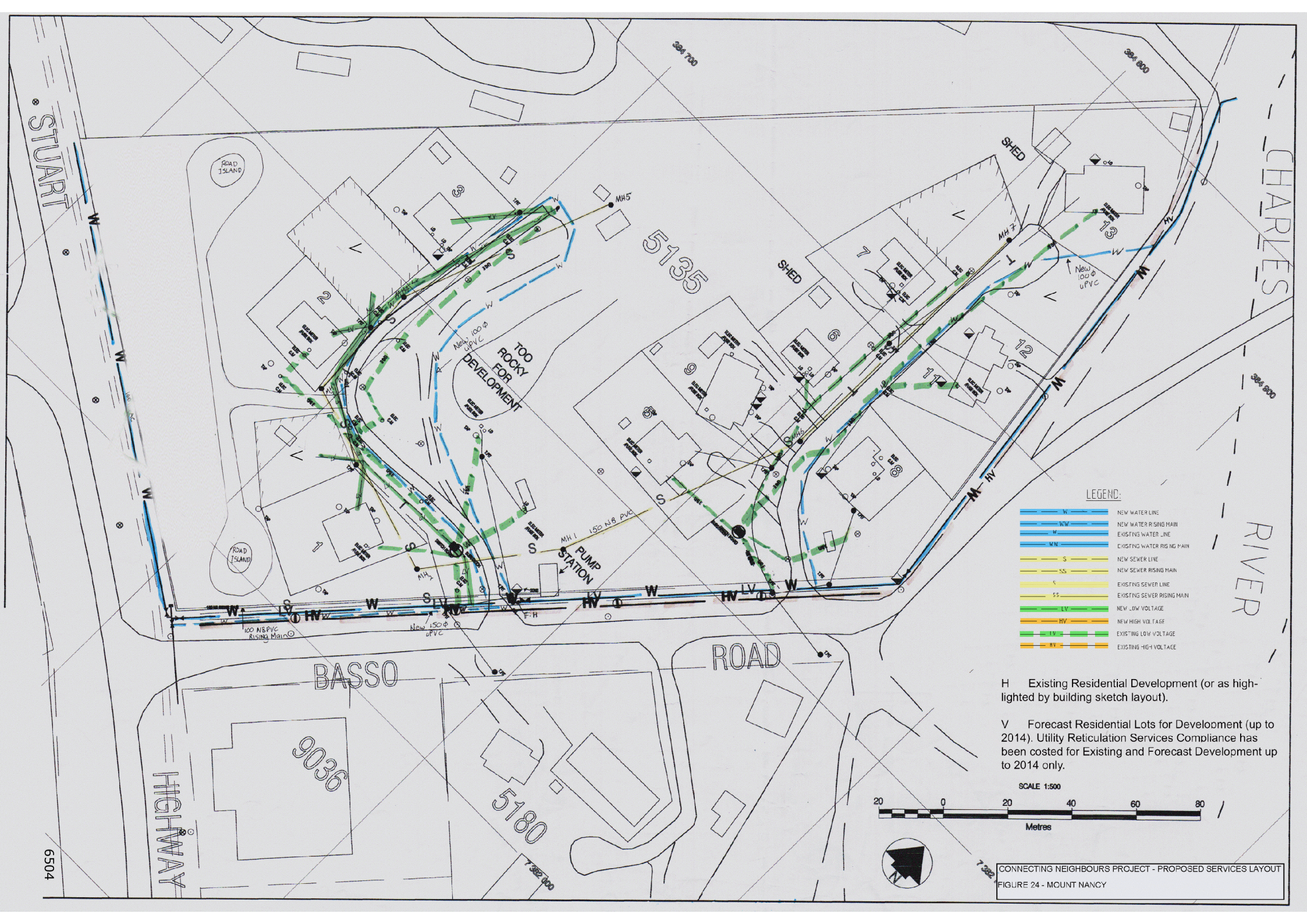
SLAP Map

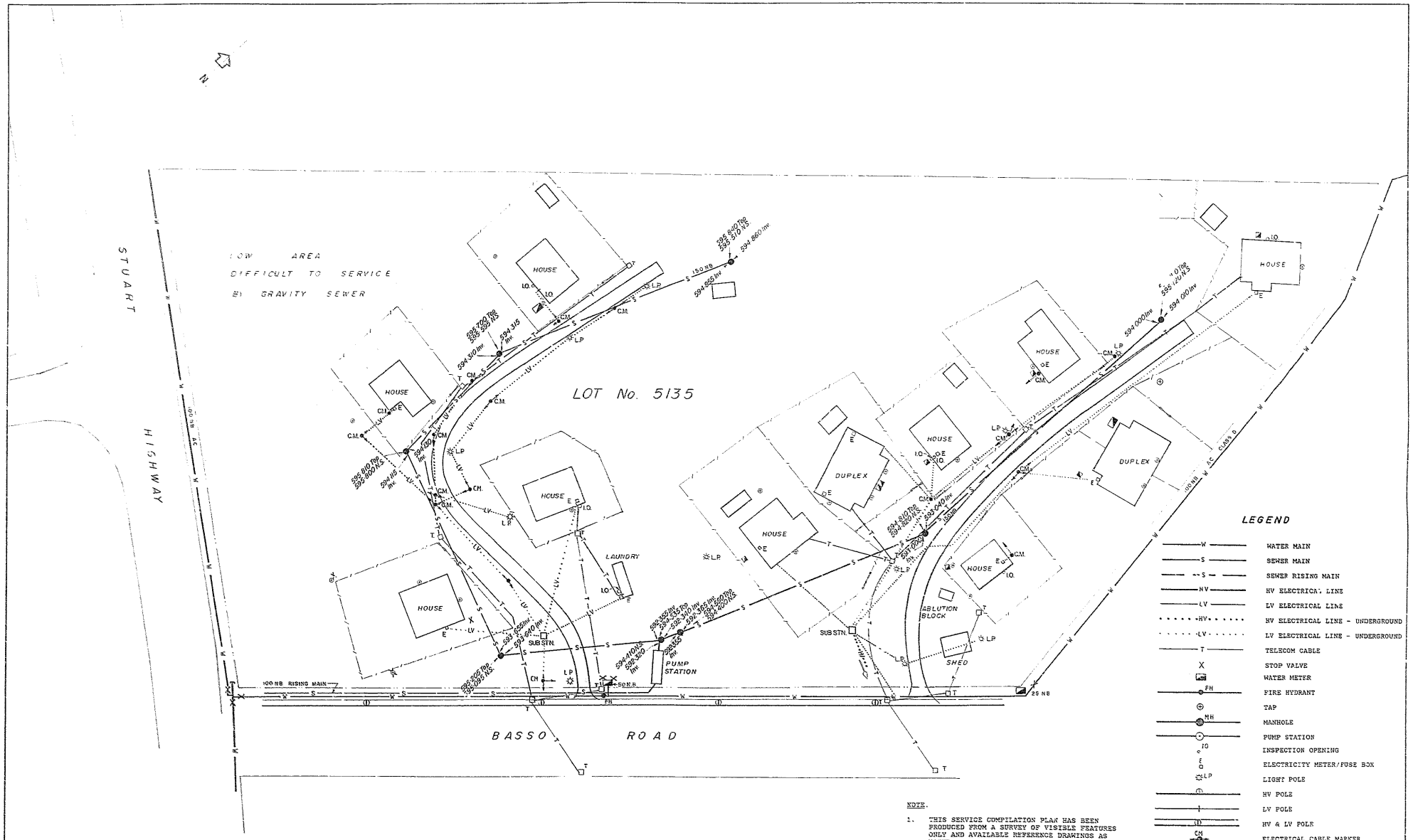
Mount Nancy (Alice Springs Town Camp)

Nyewente

Alice Springs Town Council

Community ID: 113


STUART
HIGHWAY
BASSO
ROAD
CHARLES
RIVER
5135
5180
9036
SHED
SHED
TOO ROCKY FOR DEVELOPMENT
PUMP STATION
ROAD ISLAND
ROAD ISLAND
MH 1
MH 2
MH 5
MH 6
MH 7
150 NB PVC
100 NB PVC Rising Main
New 150Φ uPVC
New 100Φ uPVC
New 100Φ uPVC
384 700
384 800
384 900
7 382 000
LEGEND:
NEW WATER LINE
NEW WATER RISING MAIN
EXISTING WATER LINE
EXISTING WATER RISING MAIN
NEW SEWER LINE
NEW SEWER RISING MAIN
EXISTING SEWER LINE
EXISTING SEWER RISING MAIN
NEW LOW VOLTAGE
NEW HIGH VOLTAGE
EXISTING LOW VOLTAGE
EXISTING HIGH VOLTAGE
H Existing Residential Development (or as high-lighted by building sketch layout).
V Forecast Residential Lots for Development (up to 2014). Utility Reticulation Services Compliance has been costed for Existing and Forecast Development up to 2014 only.
SCALE 1:500
20 0 20 40 60 80
Metres
N
6504
CONNECTING NEIGHBOURS PROJECT - PROPOSED SERVICES LAYOUT
FIGURE 24 - MOUNT NANCY



NOTE.

1. THIS SERVICE COMPILATION PLAN HAS BEEN PRODUCED FROM A SURVEY OF VISIBLE FEATURES ONLY AND AVAILABLE REFERENCE DRAWINGS AS NOTED.
UNDERGROUND WATER SERVICES HAVE NOT BEEN LOCATED.

2. LOCATION OF UNDERGROUND LOW VOLTAGE ELECTRICAL CABLES WAS INTERPRETED FROM VISIBLE FEATURES (EG. CABLE MARKERS, METER BOXES ETC.).

GUTTERIDGE HASKINS & DAVEY PTY. LTD.
ALICE SPRINGS
GHD
PRINCIPAL DATE 1-2 1989

No	DESCRIPTION	DRN	DATE	APPD
AMENDMENTS				

DRG No: C 355

TITLE: ABORIGINAL TOWN CAMP MT. NANCY - DEPT. OF ADMIN. SERVICES, AUST. SURVEY OFFICE. - WATER, SEWERAGE AND ELECTRICAL COMPILATION PLANS - PAWA

REFERENCE DRAWINGS

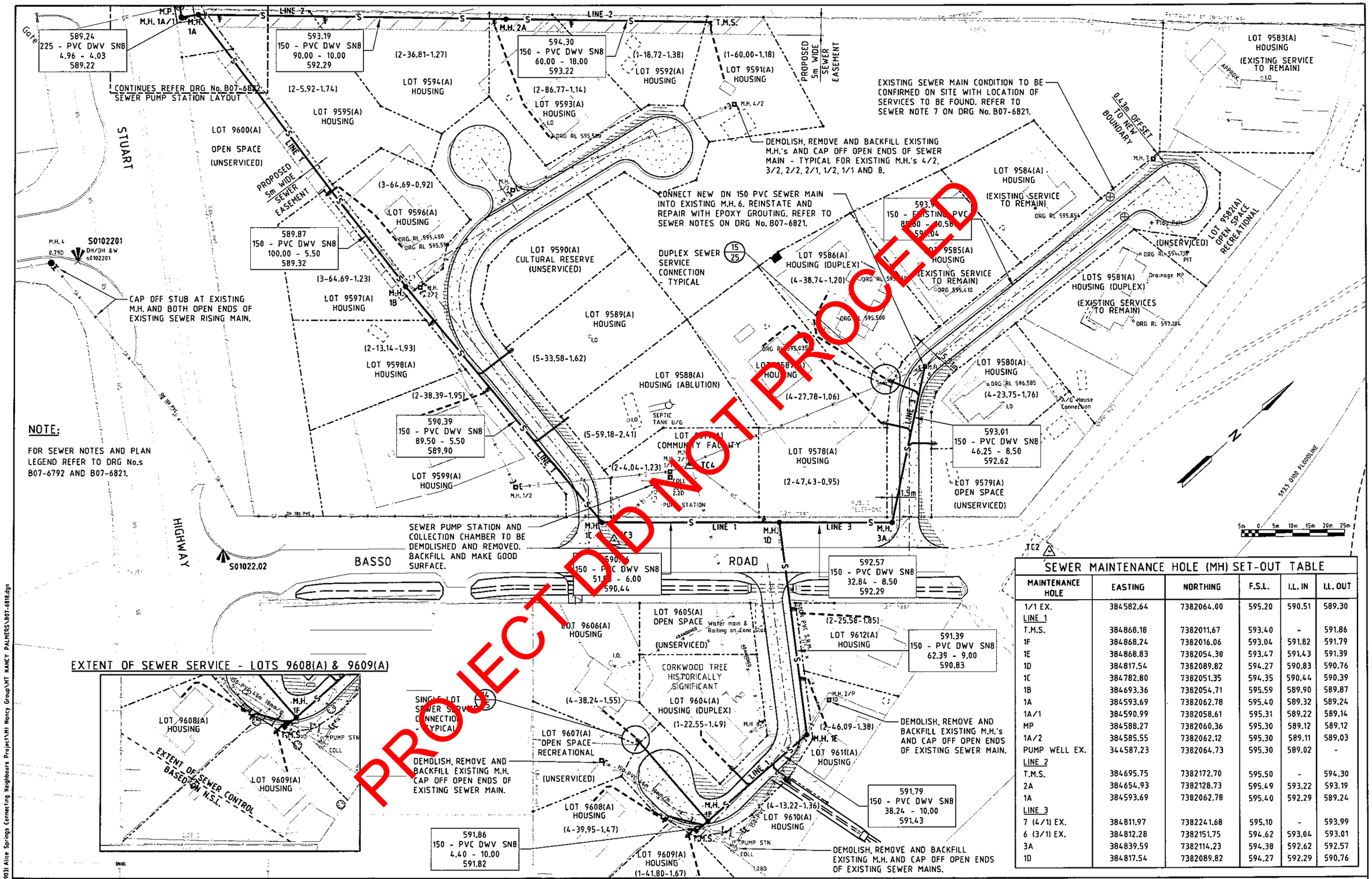
DRAWING STATUS		SIGN & DATE
P	PRELIMINARY/PROPOSED	
T	TENDERING PURPOSES ONLY	
AC	APP FOR CONSTRUCTION	
AS	AS SUPPLIED	
AI	AS INSTALLED	

POWER AND WATER AUTHORITY
NORTHERN TERRITORY

DES
DRN B.D./B.C.B
CKD
APPD
SCALE 1:500
ALL DIM IN mm
DRAFTING STANDARD TO AS 1100

MT. NANCY
SERVICE COMPILATION PLAN

A1 DRAWING NUMBER 400-89-71-2071 AMDT



SEWER MAINTENANCE HOLE (MH) SET-OUT TABLE

MAINTENANCE HOLE	EASTING	NORTHING	F.S.L.	I.L. IN	I.L. OUT
1/1 EX.	384582.64	7382064.00	595.20	590.51	589.30
LINE 1					
T.M.S.	384868.18	7382011.67	593.40	-	591.86
1F	384868.24	7382016.06	593.04	591.82	591.79
1E	384868.83	7382054.30	593.47	591.43	591.39
1D	384817.54	7382089.82	594.27	590.83	590.76
1C	384782.80	7382051.35	594.35	590.44	590.39
1B	384693.36	7382054.71	595.59	589.90	589.87
1A	384593.69	7382062.78	595.40	589.32	589.24
1A/1	384590.99	7382058.61	595.31	589.22	589.14
MP	384588.27	7382060.36	595.30	589.12	589.12
1A/2	384585.55	7382062.12	595.30	589.11	589.03
PUMP WELL EX.	344587.23	7382064.73	595.30	589.02	-
LINE 2					
T.M.S.	384695.75	7382172.70	595.50	-	594.30
2A	384654.93	7382128.73	595.49	593.22	593.19
1A	384593.69	7382062.78	595.40	592.29	589.24
LINE 3					
7 (4/1) EX.	384811.97	7382241.68	595.10	-	593.99
6 (3/1) EX.	384812.28	7382151.75	594.62	593.04	593.01
3A	384839.59	7382114.23	594.38	592.62	592.57
1D	384817.54	7382089.82	594.27	592.29	590.76

No.	DESCRIPTION	DATE	NAME	DEPT/COMPANY
AMENDMENTS				
0	ISSUED FOR CONSTRUCTION	07.03.08	B.M.	DPI - CD - ESB
C	ISSUED FOR APPROVAL	09.11.07	B.M.	DPI - CD - ESB
B	RE-ISSUED FOR 90% DESIGN REVIEW	11.05.07	B.M.	DPI - CD - ESB
A	ISSUED FOR 90%DESIGN REVIEW	05.02.07	B.M.	DPI - CD - ESB

POWER AND WATER

PWC APPROVAL FOR THE CONSTRUCTION OF ALL SEWER COMPONENTS SHOWN ON THIS DRAWING IS CONDITIONAL UPON ELECTRICITY SUPPLY VIA OVERHEAD POWER LINES.

This approval does not relieve the developer and consultant from full responsibility for the correctness of the design which should reflect AAPA clearances and conditions. PWC reserves a right for review and new approval when AAPA clearances and conditions are added to the final design drawings.

SIGNED [signature] DATE 11/4/08

On behalf of Land Development for incorporation into PowerWater's Network.

WARNING

BEWARE OF UNDERGROUND SERVICES

The locations of underground services are approximate only and their exact position should be proven on site. No guarantee is given that all existing services are shown.

DRAWN	CHECKED
N.C./S.B.	
DATE 16/01/07	DATE
DESIGNED	CHECKED
B.M./N.C.	
DATE 19/01/07	DATE
DESIGN PROJECT LEADER	PROJECT OFFICER
DATE	DATE

Northern Territory Government

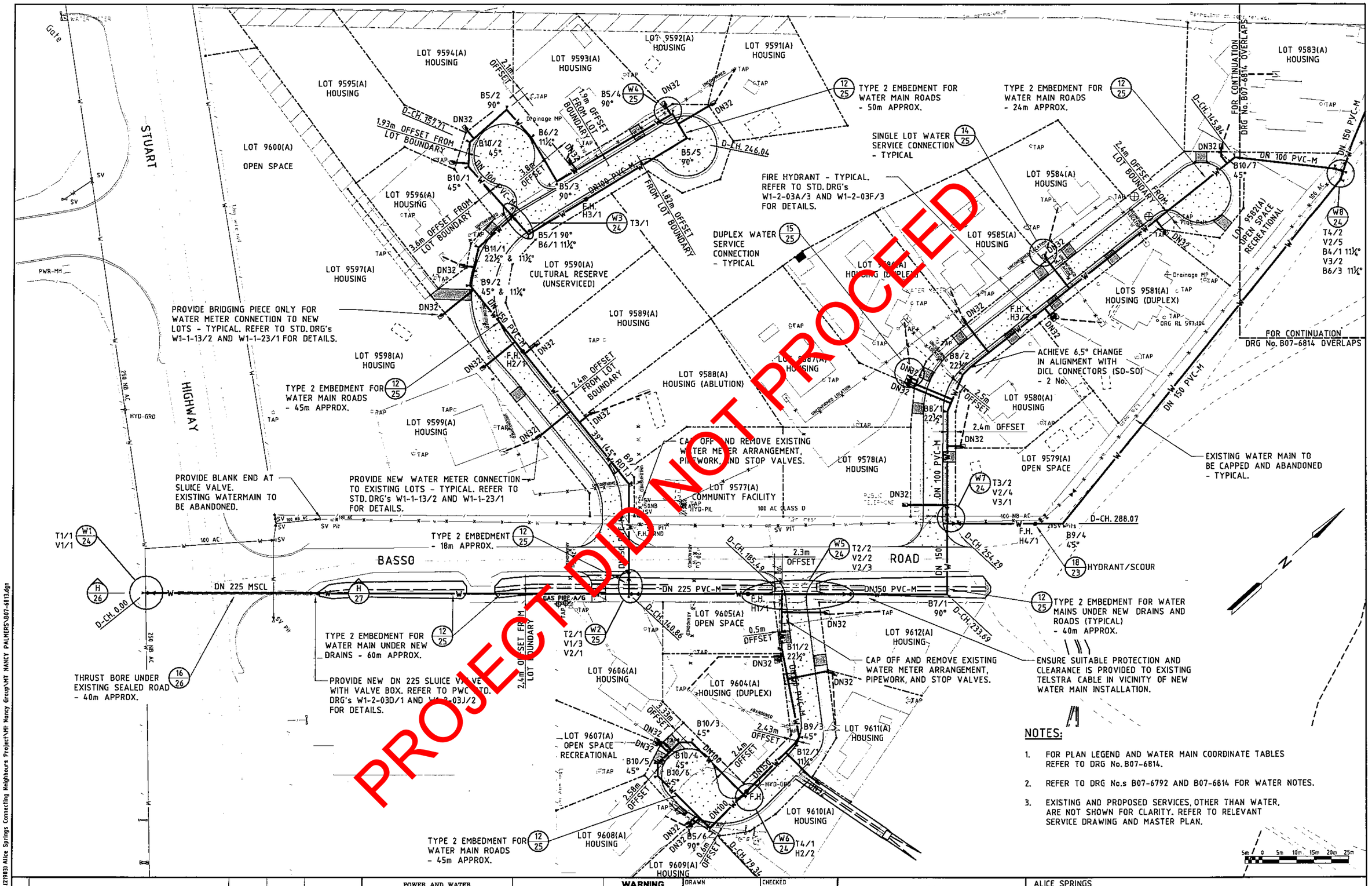
Department of Planning and Infrastructure

ALICE SPRINGS
CONNECTING NEIGHBOURS PROGRAM - ALICE SPRINGS PROJECT
UPGRADE WORKS ON MT. NANCY (L.D. 113) LOTS 9577 TO 9600 AND APER-ALWERRKNGE (L.D. 19 PALMER'S CAMP) LOTS 9604 TO 9612

SEWER LAYOUT AND SET-OUT TABLE - LINES 1, 2 & 3 (MT. NANCY AND PALMER'S CAMP)

FILE No.	ASSET No.	SHEET No.	DRAWING No.	AMEND.	SHEET SIZE
FOS 22270		27 OF 48	B07-6818	0	A1

12/03/2008 5:18:18 PM W:\12903\ Alice Springs Connecting Neighbours Project\MT Nancy Group\MT NANCY PALMERS\B07-6818.dgn



12/03/2008 4:32:05 PM W:\(21983) Alice Springs Connecting Neighbours Project\NT Nancy Group\NT NANCY PALMERS\B07-6813.dgn

No.	DESCRIPTION	DATE	NAME	DEPT/COMPANY
AMENDMENTS				
0	ISSUED FOR CONSTRUCTION	07.03.08	B.M.	DPI - CD - ESB
C	ISSUED FOR APPROVAL	09.11.07	B.M.	DPI - CD - ESB
B	RE-ISSUED FOR 90% DESIGN REVIEW	11.05.07	B.M.	DPI - CD - ESB
A	ISSUED FOR 90% DESIGN REVIEW	05.02.07	B.M.	DPI - CD - ESB

POWER AND WATER

PWC APPROVAL FOR THE CONSTRUCTION OF ALL WATER COMPONENTS SHOWN ON THIS DRAWING IS CONDITIONAL UPON ELECTRICITY SUPPLY VIA OVERHEAD POWER LINES.

This approval does not relieve the developer and consultant from full responsibility for the correctness of the design which should reflect AAPA clearances and conditions. PWC reserves a right for review and new approval when AAPA clearances and conditions are added to the final design drawings.

SIGNED ..... DATE 14/08

On behalf of Land Development for incorporation into PowerWater's Network.

WARNING

BEWARE OF UNDERGROUND SERVICES

The locations of underground services are approximate only and their exact position should be proven on site. No guarantee is given that all existing services are shown.

DRAWN N.C./S.B.	DATE 01/02/07	CHECKED DATE
DESIGNED N.C./B.M.	DATE 19/01/07	CHECKED DATE
DESIGN PROJECT LEADER	DATE	PROJECT OFFICER DATE

Northern Territory Government
Department of Planning and Infrastructure

ALICE SPRINGS
CONNECTING NEIGHBOURS PROGRAM - ALICE SPRINGS PROJECT
UPGRADE WORKS ON MT. NANCY (I.D. 113) LOTS 9577 TO 9600 AND APER-ALWERRKNGE (I.D. 19 PALMER'S CAMP) LOTS 9604 TO 9612

WATER LAYOUT - SHEET 1
(MT. NANCY AND PALMER'S CAMP)

FILE No.	ASSET No.	SHEET No.	DRAWING No.	AMEND.	SHEET SIZE
FOS 22270		22 OF 48	B07-6813	0	A1

Transformer data

Group	Com Id	Location	Community Name	Dwellings No. (Funded Dwellings)	Dwellings No. (Bennett Design)	New Houses ** (Future Demand)	Primary Volatge Level (KV)	PWC Substation ID	PWC Test Number	Transformer size (KVA)	KVA Total dwellings @ 4.5KVA	KVA Total dwellings @ 7KVA	Comments
1	290	Darwin	Bagot	55	55		11	1924	1735	300	247.5	385	
	344	Darwin	Knuckey Lagoons	18	19	2	11	1771	2163	100	85.5	133	
	347	Darwin	Kulaluk	19	19		11	1092	10607	50	85.5	133	
	403	Darwin	Palmerston Town Camp	20	16		22	10196	10245	100	90	140	Two transformers for this Town Camp. Transformers are not in boundary of Town Camp [The nearest transformers data to Town Camp are highlighted in yellow].
							22	265	11645	25			
	412	Darwin	Railway Dam (One Mile Dam)	5	6	2	11	1041	4378	200	27	42	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	427	Adelaide River	Amangal	9	9		22	216	12187	100	40.5	63	Two transformers for this Town Camp.
							22	184	5646	63			
	687	Jabiru	Manabadurma	10	12		11	5050	11107	200	54	84	
	825	Darwin	Minmarama Park	24	24		11	2147	11372	100	108	168	
2	606	Katherine	Warlpiri Transient Camp	9	9		22	6416	4886	100	40.5	63	Two transformers for this Town Camp.
							22	6074	4695	25			
	621	Katherine	Miali Brumby (Kalano)	47	31		22	6133	12247	315	211.5	329	
	640	Pine Creek	Pine Creek Compound	4	4		22	6666	3147	25	18	28	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	971	Mataranka	Mulggan	12	9	4	22	6819	5296	16	54	84	
							22	6818	5297	16			
							22	6384	11028	25			
3	215	Tennant Creek	Blueberry Hill (Munji-Marla)	2	2		22	7079	1868	200	9	14	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	223	Tennant Creek	Dump Camp (Marla-Marla)	7	7		22	7181	11088	200	31.5	49	
	224	Elliott	Elliott South Camp	12	12		11	7504	4718	200	54	84	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	225	Elliott	Elliott North Camp	36	25		11	7505	4715	100	162	252	
	238	Tennant Creek	Kargaru (East Side Camp)	12	12	1	22	7572		200	54	84	
	246	Tennant Creek	Ngalpa Ngalpa	18	21		22	7179		200	94.5	147	Two transformers for this Town Camp.
							22	7033	10904	315			
	271	Tennant Creek	Village Camp	12	12	1	22	7183	11107	200	54	84	
	681	Tennant Creek	Tingkarli	12	12		22	7180		200	54	84	
	684	Tennant Creek	Wuppa	15	15	1	22	7141	11092	100	67.5	105	Two transformers for this Town Camp.
							22	7182	11095	200			
4	3	Alice Springs	Akngwertnarre (Morris Soak)	11	15		11	8596	11336	300	67.5	105	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	16	Alice Springs	Anthelk Ewlpaye (Charles Creek)	17	10		11	8569		315	76.5	119	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	17	Alice Springs	Anthepe	15	15		22	8598	5874	200	67.5	105	Data extracted from PWC asset information. There was not access to this Town Camp due to ceremony on inspection day.
							22	8597	11244	315			
	19	Alice Springs	Aper Alwerrknge (Palmers)	7	6		11	8405	2939	200	31.5	49	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	35	Alice Springs	Ewyenper Atwatye (Hidden Valley)	47	47		11	8622	11202	100	211.5	329	
							11	8623	11203	100			
							22	8625	11205	63			
							11	8626	11204	100			
	47	Alice Springs	Ilparpa	13	13		22	8611	11702	200	58.5	91	
	48	Alice Springs	Ilperle Tyathe (Walpiri)	10	9		11	8001	11209	315	45	70	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	50	Alice Springs	Ilyperenye (Old Timers)	10	10		22	8145	3323	100	45	70	
	64	Alice Springs	Bassos	2	2		11	8002	10946	50	9	14	
	69	Alice Springs	Karnte	19	19		22	8282	2345	100	85.5	133	
	87	Alice Springs	Yarrenty Altere (Larapinta Valley)	34	34		11	8617	11334	100	153	238	
							11	8618	11200	63			
							11	8619	11335	100			
							11	8620	11201	100			
	90	Alice Springs	Inarlenge (Little Sisters)	16	22		22	8137	2925	100	99	154	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	108	Alice Springs	Mpwetyerre (Abbotts)	6	6		11	8093	11703	315	27	42	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
	113	Alice Springs	Mount Nancy (Nyewente)	11	12		11	8405	2939	200	54	84	
	129	Alice Springs	Nyewente (Trucking Yards)	26	26		11	8629	11312	300	117	182	
	675	Alice Springs	Hoppys	15	19						85.5	133	There is not any Transformer in boundary of Town Camp. Also it's not shown in PWC asset information.
	676	Alice Springs	Ilpiye Ilpiye (Golders Camp)	15	14		11	8314	369	50	67.5	105	
	1029	Alice Springs	Kunoth	4	4		11	8569		315	18	28	Transformer is not in boundary of Town Camp [The nearest transformer data to Town Camp is highlighted in yellow].
5	222	Borroloola	Mara	28	29	2	11	6187	12610	100	130.5	203	Two transformers for this Town Camp.
							11	6545	10203				
	229	Borroloola	Garawa 1	16	14		11	6546	10166	100	72	112	Two transformers for this Town Camp.
							11	6332	4890	100			
	278	Borroloola	Yanyula	29	29		11	6162	10496	200	130.5	203	Data extracted from PWC asset information. It's outside of Twon Camp, shown only Transformer to this Town Camp.
							11		10167				This transformer is not shown in PWC asset information. It's installed in Boat Ramp Road near to Town Camp and connected to Electrical reticulation of Town Camp.
	992	Borroloola	Garawa 2	11	11		11	6189	2669	25	49.5	77	

** For New house's demand calculation see section 13.4 "Future Demand".