Appendix A

Statement of Professional Opinion

PAPAKURA DISTRICT COUNCIL

STATEMENT OF PROFESSIONAL OPINION as to SUITABILITY OF LAND FOR BUILDING DEVELOPMENT

Subdivision ……..……..

Owner ……..……..

Location ……..……...

I, ……of ……..……..
(full name)

……..……
(Name and address of firm)

Hereby confirm that:

1. I am a Chartered Professional Engineer experienced in the field of geotechnical engineering and was retained by the subdividing owner as the Geotechnical Engineer on the above subdivision.

2. The extent of my inspections during construction, and the results of all tests carried out are described in my report dated …… .

3. In my professional opinion, not to be construed as a guarantee, I consider that:

   (a) The earth fills shown on the attached Plan No. …… have been placed in compliance with NZS 4431 and in accord with sound and accepted principles in compliance with the Approved Engineering Drawings and Specifications.

   (b) The completed works give due regard to land slope and foundation stability considerations.

   (c) The filled ground is suitable for the erection thereon of residential buildings not requiring specific design in terms of NZS 3604 and related documents providing that:

      (i) ……..
      (ii) ……..
      (iii) ……..

   (d) The original ground not affected by filling is suitable for the erection thereon of residential buildings not requiring specific design in terms of NZS 3604 and related documents providing that:

      (i) ……..
      (ii) ……..
      (iii) ……..

4. This professional opinion is furnished to the Council and the subdividing owner for their purposes alone on the express condition that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection of any dwelling.

Signed: …… Date:……

(Member ID ……)

Appendix B

Certificate of Construction

CERTIFICATE OF CONSTRUCTION

With respect to Works constructed at _____

Address _____

Resource/Subdivision Consent _____

I _____

- Being experienced in the field of Design and Construction of Public Drainage, Water Supply and Roading;
- Being a Chartered Professional Engineer / Licensed Cadastral Surveyor / NZCE (REA) and currently holding an Annual Practicing Certificate;
- Being an independent professional covered by a current policy of Professional Indemnity to a minimum value of $200,000;

Have personally or through personnel under my control carried out periodic reviews of the following works, and based upon these reviews and information supplied by the Contractor during the course of those works hereby certify that all works including:

- Stormwater Drainage
- Wastewater Drainage
- Water Supply Reticulation
- Roading and associated works
- Stormwater pond and structures
- Other

Shown on _____

Plan number _____

Prepared by _____

For the above development, have been constructed in accordance with the sound and accepted engineering principles, the manufacturers recommendations and comply with all provisions of the District Plan, the Papakura District Council Development Code (2009), other applicable standards and the specific requirements of the Resource Consent(s) and Engineering Plan Approval, including completions and other tests.

Signed _____ Date _____

Address _____ Prof Qual _____

_____ Member ACENZ / IPENZ / NZIS

_____ Reg number _____

Appendix C

Soakage Pit Design

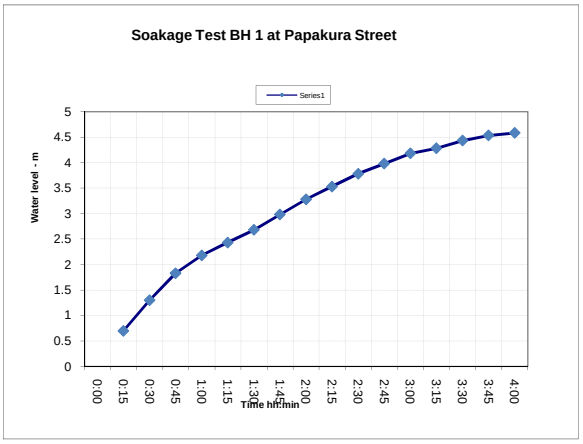
Soakage Pit Design

Refer Section 4.7 Stormwater Soakage

Note: Soakage Pit Design is to be carried out in accordance with the methodology used in the below example

Soakage Test Result at BH 1

Time	Depth to Water	Total depth of water drop
0:00	0	
0:15	0.7	0.7
0:30	0.6	1.3
0:45	0.53	1.83
1:00	0.35	2.18
1:15	0.25	2.43
1:30	0.25	2.68
1:45	0.3	2.98
2:00	0.3	3.28
2:15	0.25	3.53
2:30	0.25	3.78
2:45	0.2	3.98
3:00	0.2	4.18
3:15	0.1	4.28
3:30	0.15	4.43
3:45	0.1	4.53
4:00	0.05	4.58



Borehole details

Diameter of Hole (D)	m	0.1
Depth of Hole (H)	m	1.5
Average depth of water	m	0.928
Average Soakage Rate	mm/min	19.08
Area of Hole	m^2	0.299
Volume of Hole	m^3	0.15

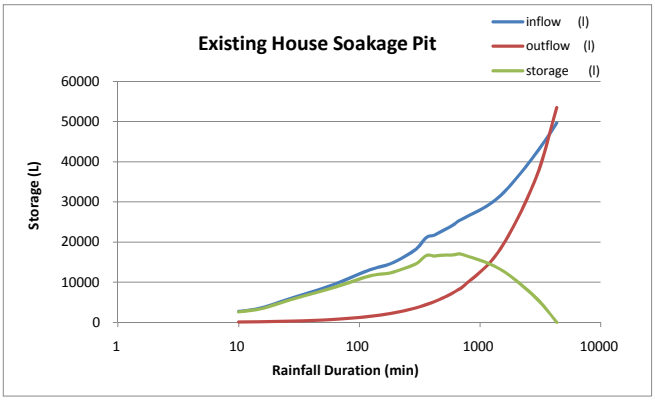
Soakage Pit Design Parameters - Existing House Site

Roof Area	m^2	100
Run off coefficient	C	**0.95**
Paved Area	m^2	50
Run off coefficient	C	**0.9**
Pervious Area	m^2	180
Run off coefficient	C	**0.3**
Total CA	**m^2**	**194**
Percolation Rate (Pa)	$L/m^2/min$	0.50
Pit Depth	m	1.5
Pit Width	m	3
Pit Length	m	6
Void Ratio		60%
Pit Volume	m^3	16.2
Pit Surface Area (As)	m^2	24.75

Existing House Soakage Pit - Onehunga Type

STORAGE (10 year)				
time	depth	inflow	outflow	storage
(min)	(mm)	(l)	(l)	(l)
10	14.0	2716	124	2592
15	18.0	3492	186	3306
20	24.0	4656	248	4408
30	33.0	6402	372	6030
60	48.0	9312	743	8569
120	67.0	12998	1486	11512
180	75.0	14550	2229	12321
240	85.0	16490	2972	13518
300	95.0	18430	3715	14715
360	109.0	21146	4458	16688
420	112.0	21728	5201	16527
480	117.0	22698	5944	16754
540	121.0	23474	6687	16787
600	125.0	24250	7430	16820
660	130.0	25220	8173	17047
720	133.0	25802	8917	16885
1440	161.0	31234	17833	13401
2880	216.0	41900	35666	6234
4320	256.0	49664	53499	0

*inflow=`CA'dev*depth*
*outflow=As*Pa*time*
storage=inflow-outflow



Emptying Time = 23 hrs

Appendix D

Assets to Vest Sheets

Schedule of Land and Assets to Vest in the Papakura District Council

Water Addendum

Pipes:

Diameter & type	*Length*	*Rate*	*Cost*	
50mm MDPE			$	-
100mm uPVC			$	-
150mm uPVC			$	-
200mm uPVC			$	-
		Sub Total	$	-

Sluice Valve

Diameter	*Number*	*Rate*	*Cost*	
50mm			$	-
100mm			$	-
150mm			$	-
		Sub Total	$	-

Fire Hydrant

Diameter	*Number*	*Rate*	*Cost*	
100mm			$	-
150mm			$	-
		Sub Total	$	-

Peet Valve

Diameter	*Number*	*Rate*	*Cost*	
50mm			$	-
Total Water Supply Assets to Vest			$	-

Schedule of Land and Assets to Vest in the Papakura District Council

PAPAKURA DISTRICT COUNCIL

Stormwater Addendum

Pipes:

Diameter & type	*Length*	*Rate*	*Cost*	
225mm RCRRJ (incl CP leads)			$	-
300mm RCRRJ			$	-
375mm RCRRJ			$	-
450mm RCRRJ			$	-
525mm RCRRJ			$	-
600mm RCRRJ			$	-
675mm RCRRJ			$	-
750mm RCRRJ			$	-
900mm RCRRJ			$	-
1800mm RCRRJ			$	-

Manholes:

Diameter	*Number*	*Rate*	*Cost*	
1050mm			$	-
1200mm			$	-
1500mm			$	-
1800mm			$	-
2300mm			$	-
3000mm			$	-
Down Stream Defender			$	-

Inlet / outlet structures

Type	*Number*	*Rate*	*Cost*	
1050mm wingwall			$	-
1800mm wingwall			$	-
		Sub Total	$	-

Cesspits

Type	*Number*	*Rate*	*Cost*	
Single			$	-
Double			$	-
		Sub Total	$	-

Stormwater Quality Pond Structures

Type	*Number*	*Rate*	*Cost*	
Outlet/spillway			$	-
Inlet			$	-
Lighting Supply			$	-
Lighting Install			$	-
Pond Furniture etc			$	-
		Sub Total	$	-
Total Stormwater Assets to Vest			$	-

Schedule of Land and Assets to Vest in the Papakura District Council

PAPAKURA DISTRICT COUNCIL

Sanitary Sewer Addendum

Pipes:

Diameter & Type	*Length/number*	*Rate*	*Cost*	
150mm uPVC (Lot connections/fittings)			$	-
150mm uPVC			$	-
150mm Blank Caps			$	-
225mm uPVC			$	-
		Sub Total	$	-

Manholes:

Diameter	*Number*	*Rate*	*Cost*	
1050mm			$	-
1200mm			$	-
1500mm			$	-
1800mm			$	-
2300mm			$	-
3000mm			$	-
Blank Caps			$	-
		Sub Total	$	-

Other:

Type	*Number*	*Rate*	*Cost*	
Hardfill (m^3)			$	-
Internal MH drops			$	-
		Sub Total	$	-
Total Sanitary Sewer Assets to Vest			$	-

Schedule of Land and Assets to Vest in the Papakura District Council

Developer's Name and Address:	Notice for Assets Vested from a Development at: Site Address: Suburb: Subdiv/Land Use Consent:
Is Developer GST Registered? If Yes, Developer's GST Reg No.	Eng Plan Consent: Completion Date:

All Values are to be exclusive of GST

Land to Vest

Land Use	*Area (m²)*	*Unit Cost*	*Cost*
Roading			$ -
Reserves (recreation)			$ -
Reserves (drainage)			$ -
Reserves (local purpose)			$ -
Land Total			$ -

Assets to Vest

Category	*Measure*		*Unit Cost*	*Cost*
Buildings	Item			$ -
Lighting	Refer to attached lighting addendum for details			$ -
Reserve Amenities	Refer to attached lighting addendum for details			$ -
Bollards	Refer to attached lighting addendum for details			$ -
Roading	Refer to attached road addendum for details			$ -
Footpath	Refer to attached Footpath addendum for details			$ -
Catchpits	Refer to attached stormwater addendum for details			$ -
Kerb & Channel	Length			$ -
Fences (reserves)	Length			$ -
Fence (road boundary)	Length			$ -
Playgrounds	No.			$ -
Footbridges	No.			$ -
Trees, Shrubs	Refer to attached planting addendum for details			$ -
Sanitary Sewer Pipes	Refer to attached sanitary sewer addendum for details			$ -
Sanitary Sewer Manholes	"			
Watermain	Refer to attached water supply addendum for details			$ -
Sluice Valve	"			
Fire Hydrant	"			
Stormwater Pipes	Refer to attached stormwater addendum for details			$ -
StormwaterManholes	"			
Stormwater quality pond stru	"			
Pumpstations - Sewer	No.			$ -
Pumpstations - Other	No.			$ -
Total Assets				$ -
Total Land and Assets				**$ -**

This information is certified as being true and correct		
Name:		
Company Name:		
Position of Signatory in relation to Developer:		
Signed By:		
Dated:		

Schedule of Land and Assets to Vest in the Papakura District Council

PAPAKURA DISTRICT COUNCIL

Road addendum

Road

Road widths	*Length*	*Rate*	*Cost*	
(6m wide)			$	-
(7.5m wide)			$	-
(8.0m wide)			$	-
		Sub Total	$	-

Road Markings & Signs

	Number	*Rate*	*Cost*	
R2-2			$	-
R2-3			$	-
R4-11			$	-
W11-1			$	-
R3-13			$	-
W20-1.1			$	-
Road Name signs			$	-
Pavement Markings			$	-
		Sub Total	$	-

Kerbing

	Length	*Rate*	*Cost*	
Slip Form			$	-
Pre Cast			$	-
Mountable			$	-
Kerb & Nib			$	-
		Sub Total	$	-
Total Roading Assets to Vest			$	-

Schedule of Land and Assets to Vest in the Papakura District Council

PAPAKURA DISTRICT COUNCIL

Planting Addendum

BOTANICAL NAME	COMMON NAME	Grade	No.	Rate	Cost
STREET TREES:					
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
				Sub Total	$ -
RESERVE					
					$ -
					$ -
					$ -
					$ -
					$ -
				Sub Total	$ -
STORMWATER QUALITY POND:					
Tree:					
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
Shrub:					
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
Ground covers:					
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
				Sub Total	$ -
Total Planting Assets to Vest					$ -

Schedule of Land and Assets to Vest in the Papakura District Council

Lighting, Bollards, and Reserve Amenities Addendum

STREET LIGHTS

Pole Type, Height & outreach length, Light type and Wattage	*No.*	*Rate*		*Cost*
			$	-
			$	-
Power installation and connection to main			$	-
Reserve lights			$	-
		Sub Total	$	-

Bollards

Type	*No.*	*Rate*		*Cost*
Reserve bollards			$	-
Street bollards			$	-
		Sub Total	$	-

Reserve Amenities

Type				
Signs				
Gates				
Seats				
Rubbish Bins				
Cycle racks				
		Sub Total	$	-

Total Lighting, Bollard and Reserve Amenities Assets to Vest	$	-

Schedule of Land and Assets to Vest in the Papakura District Council

PAPAKURA DISTRICT COUNCIL

Footpaths / Pram Crossings / Vehicle Crossings

Footpaths

Type	*Area (sqm)*	*Rate*	*Cost*	
Street Footpath (1.50m wide)			$	-
Street Footpath (3.0m wide)			$	-
Reserve Footpath			$	-
Exposed Aggregate			$	-
		Sub Total	$	-

Crossings

Type	*Area (sqm)*	*Rate*	*Cost*	
Pram Crossing			$	-
Vehicle Crossing			$	-
		Sub Total	$	-

Other

Type	*Area (sqm)*	*Rate*	*Cost*	
Parking bays			$	-
Total Footpaths & Crossing Assets to Vest			$	-

Appendix E

Electronic As-Built Requirements

PAPAKURA DISTRICT COUNCIL

CONTENTS

1 PURPOSE

1.1 BACKGROUND

This document is derived from Version 0.1 of the Papakura District Council Digital Data Supply, Technical Specification 16/02/2007. This document and appendices describe in detail the requirements for the supply of digital spatial data to the Papakura District Council (PDC), from external sources and relates to all As-Built data for storm water, water and waste water, lot boundaries, building edits, kerblines, traffic islands, parks and reserves. Such data that is to be integrated into the Council's Geographic Information System (GIS) requires that data supplied from external sources to be of a defined standard.

In addition, attributes (data pertaining to a particular feature) should be required to be supplied according to Council's standards, where possible.

The standards will be updated on a regular basis, as more information is required by Council, and Council's customers. Furthermore Council standards may change due to Auckland Regional and national requirements and changes to technology.

Advancements and developments in technology may facilitate changes to this methodology in the near future. Such changes will include a more seamless approach to the supply of data, whereby Council can provide digital definitions and specifications of data via the functions of the software. It is envisaged that such a process would increase turn-around time of subdivision approval and integrate GIS more closely with the subdivision process. Consequently this document could change significantly.

1.2 OBJECTIVES

To achieve a workable and standardised specification for the integration of digital spatial data into PDC systems

2 TECHNICAL SPECIFICATION

Currently PDC maintains data that could be described as being categorised in three fundamental groups. These are

- Cadastral
- Asset based
- Topographic.

Cadastral data is normally updated via a regular update where data is provided by intermediary data suppliers which is sourced from Land Information New Zealand (LINZ). LINZ data is continually updated, primarily due to sub-division development and re-surveying. However, for 223 purposes, Council also receives data that has not yet been approved. These data are captured in the GIS for operational purposes.

Asset based data includes under-ground water based services (storm water, waste water and water), and parks and reserves.

Topographic data includes building footprints, kerb outlines and traffic islands. Other topographic data such as contour, land-use, soil-types, Lidar and aerial photography are sourced by other third party agencies.

2.1 SPATIAL SPECIFICATION – DATA FORMAT

The PDC operates modern GIS software supplied from the ESRI suite of products. ESRI is able to read a number of spatial data formats. These include Shapefile, Personal Geodatabase, SDE Geodatabase, file-based Geodatabase, DXF, DWG, geo-referenced image files (e.g. TIFF, JPEG, ECW et al), and others if the ESRI extensions are available. At present, the PDC operates their GIS in the File Geodatabase format.

Shapefile is a common data export format between GIS software, including MapInfo, Geomedia, Autodesk and others. Most large engineering and planning consultancies operate GIS. Consequently, the preferred data format for supply is Shapefile. Smaller suppliers will often have CAD based systems and are unable to supply data as Shapefile. Therefore DXF or DWG is the lowest common denominator for supply. However, DXF or DWG data has low functionality for providing attribute values in GIS. If data is to be supplied in DXF or DWG, then features within this format should be numbered accordingly, where that number can be correspondingly matched to an attached MS Excel spreadsheet or MS Access database table.

TABLE 1.0

Preferred Data Format	Attribute Storage
Shapefile	Associated .dbf file
DXF	Attached spreadsheet or database table

2.2 SPATIAL SPECIFICATION – DATA PROJECTION / COORDINATE SYSTEM

PDC is fully operational in the NZGD 2000 geodetic datum projected in the New Transverse Mercator projection (NZTM). This datum and projection is the national standard – not the local circuit standard (Mt Eden local circuit). NZGD 2000 is the 2000 variance of WGS 1984.

Previously PDC operated in the New Zealand Map Grid coordinate system (geodetic datum 1949). Below is the preferred projection and/or coordinate systems for supply of spatial data to PDC.

All spatial data is supplied as points, lines or polygons.

TABLE 2.

Preferred Projection / Coordinate System	Alternate
1. NZTM (NZGD 2000)	NZTM (NZGD 2000) – Mt Eden Local Circuit
2. NZMG	NZMG – Mt Eden Local Circuit

PDC's GIS can read all of the above systems but all spatial data supplies must be accompanied with documentation stating which system is being used. This saves a significant amount of time in trying to ascertain what projection is being used. If no statement

of projection or coordinate system is supplied to the GIS department, the data will not be accepted.

2.3 LAYER TYPE

Layer types relate to the differing levels of data supplied as layers required by the PDC. Layers relevant to this specification are only included in this document. These layers can conveniently be categorised into asset groups where appropriate.

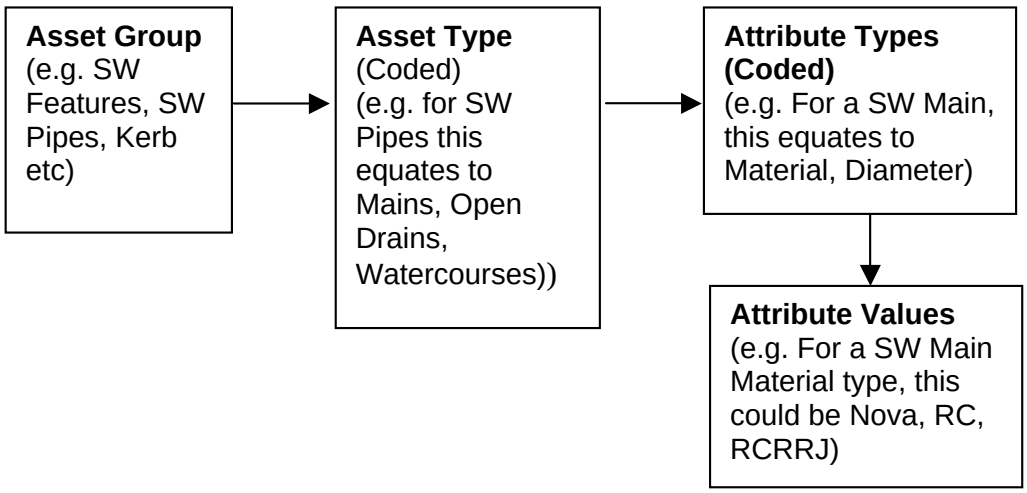
All data should be supplied in their distinctive layers as defined below.

TABLE 3.

Layers	
Stormwater Pipes	Water Feature Points
Stormwater Feature Points	Water Connections
Stormwater Connections	Kerb Lines
Stormwater Ponds	Building Footprints
Wastewater Pipes	Lot Boundaries
Wastewater Feature Points	Traffic Islands
Wastewater Connections	Parks and Reserves Data
Water Pipes	

2.4 ATTRIBUTE SPECIFICATION

These are defined in the appendices below. The asset types within each of the layers, the attribute types and the values for the attribute types are defined in the appendices below. Only the asset attribute data for stormwater are documented at this stage. Attributes for kerbs, traffic islands, building footprints and parks are not yet required. The table below illustrates the hierarchy.



3 APPENDICES

3.1 APPENDIX 1 – STORM WATER FEATURE CODES

Asset Group	Asset Type	Asset Type Code	GIS Feature Type
Stormwater Feature Point	BLANK CAP	SBBC	POINT
Stormwater Feature Point	CESSPIT	SCC	POINT
Stormwater Pipe	CESSPIT LEAD	SIIO	LINE
Stormwater Feature Point	CHAMBER	SMFC	POINT
Stormwater Pipe	CONNECTION	SPCX	LINE
Stormwater Feature Point	DOUBLE CESSPIT	SCDC	POINT
Stormwater Pond	DRY DETENTION POND	SPDD	POLYGON
Stormwater Feature Point	INLET/OUTLET	SIIO	POINT
Stormwater Feature Point	JOIN	SBJN	POINT
Stormwater Feature Point	LAMPHOLE	SMFL	POINT
Stormwater Pipe	MAIN	SPM	LINE
Stormwater Pipe	MAIN - PRIVATE	SPMP	LINE
Stormwater Feature Point	MANHOLE - FORMED IN-SITU	SMFF	POINT
Stormwater Feature Point	MANHOLE - PRECAST	SMHP	POINT
Stormwater Pipe	OPEN DRAIN	SOOD	LINE
Stormwater Feature Point	RECHARGE PIT	SCRP	POINT
Stormwater Feature Point	SOAKHOLE	SMSH	POINT
Stormwater Pipe	WATERCOURSE	SOW	LINE
Stormwater Pond	WET DETENTION POND	SPWD	POLYGON
Stormwater Pond	WET TREATMENT POND	SPWT	POLYGON
Stormwater Pond	WETLANDS TREATMENT AREA	SPWA	POLYGON
Each **asset group** type **must** be supplied as discrete "layers" e.g. Storm water Pipes, Storm water points (manholes etc)			

3.2 APPENDIX 2 – STORM WATER ATTRIBUTE TYPES

Storm water attribute information is stored and maintained in the Confirm Asset Management System. Consequently, the attributes in storm water are more comprehensive.

Asset Type Code	Asset Type	Attribute Field Name Description	Associated Attribute Field Names
SCC	CESSPIT	INVERT LEVEL	IL
		LID LEVEL	LL
SCDC	DOUBLE CESSPIT	INVERT LEVEL	IL
		LID LEVEL	LL
SPCL	CESSPIT LEAD	PIPE DIAMETER	PDIA
		PIPE MATERIAL	PMAT
SCRP	RECHARGE PIT	LID LEVEL	LL
		WIDTH	WDTH
		DEPTH	DPTH
		LENGTH	LGTH
SBBC	BLANK CAP	INVERT LEVEL	IL
SBJN	JOIN	INVERT LEVEL	IL
SMFC	CHAMBER	INLET DEPTH 1	IL1
		INLET DEPTH 2	IL2
		INLET DEPTH 3	IL3
		INLET DEPTH 4	IL4
		INLET DEPTH 5	IL5
		INLET DEPTH 6	IL6
		INVERT LEVEL	IL
		LID LEVEL	LL
		MANHOLE DIAMETER	MDIA
SMFL	LAMPHOLE	INLET DEPTH 1	IL1
		INLET DEPTH 2	IL2
		INLET DEPTH 3	IL3
		INLET DEPTH 4	IL4
		INLET DEPTH 5	IL5
		INLET DEPTH 6	IL6
		INVERT LEVEL	IL
		LID LEVEL	LL
		MANHOLE DIAMETER	MDIA
SMSH	SOAKHOLE	INLET DEPTH 1	IL1
		INLET DEPTH 2	IL2
		INLET DEPTH 3	IL3

		INLET DEPTH 4	IL4
		INLET DEPTH 5	IL5
		INLET DEPTH 6	IL6
		INVERT LEVEL	IL
		LID LEVEL	LL
		MANHOLE DIAMETER	MDIA
SIIO	INLET/OUTLET	INLET DEPTH 1	IL1
		INLET DEPTH 2	IL2
		INLET DEPTH 3	IL3
		INLET DEPTH 4	IL4
		INLET DEPTH 5	IL5
		INLET DEPTH 6	IL6
		LID LEVEL	LL
SMHP	MANHOLE - PRECAST	INLET DEPTH 1	IL1
		INLET DEPTH 2	IL2
		INLET DEPTH 3	IL3
		INLET DEPTH 4	IL4
		INLET DEPTH 5	IL5
		INLET DEPTH 6	IL6
		INVERT LEVEL	IL
		LID LEVEL	LL
		MANHOLE DIAMETER	MDIA
SMFF	MANHOLE - FORMED IN-SITU	MANHOLE DIAMETER	MDIA
SPM	MAIN	PIPE DIAMETER	PDIA
		PIPE MATERIAL	PMAT
SOOD	OPEN DRAIN	OPEN DRAIN MATERIAL	ODM
		WIDTH	WDTH
SOW	WATERCOURSE	OPEN DRAIN MATERIAL	ODM
		WIDTH	WDTH
SPCX	CONNECTION	DISTANCE TO MANHOLE	DTMH

3.3 APPENDIX 3 - STORMWATER ATTRIBUTE CODES

Attribute Name	Attribute Field Code	Attribute Description	Attributes Value Codes
DATE		DATE INSTALLED	DATE TEXT INPUT (DD/MM/YYYY)
COVER DIAMETER	CDIA		FREE NUMERIC INPUT - METRES (0.00)
MANHOLE DIAMETER	MDIA	0	1
		1050	1050
		1200	1200
		1350	1350
		1500	1500
		1800	1800
LID LEVEL	LL		FREE NUMERIC INPUT - METRES (0.00)
INVERT LEVEL	IL		FREE NUMERIC INPUT - METRES (0.00)
OUTLET DEPTH	ODPT		FREE NUMERIC INPUT - METRES (0.00)
OUTLET CAPACITY	OLCP		FREE NUMERIC INPUT - (LITRES PER SEC)
INLET DEPTH 1	ILD1		FREE NUMERIC INPUT - METRES (0.00)
INLET DEPTH 2	ILD2		FREE NUMERIC INPUT - METRES (0.00)
INLET DEPTH 3	ILD3		FREE NUMERIC INPUT - METRES (0.00)
INLET DEPTH 4	ILD4		FREE NUMERIC INPUT - METRES (0.00)
INLET DEPTH 5	ILD5		FREE NUMERIC INPUT - METRES (0.00)
INLET DEPTH 6	ILD6		FREE NUMERIC INPUT - METRES (0.00)
NUMBER OF INLETS	NOII		FREE NUMERIC INPUT - (NUMBER OF)
DISTANCE TO MANHOLE	DTMH		FREE NUMERIC INPUT - METRES (0.00)
PIPE MATERIAL	PMAT	ASBESTOS CEMENT	AC
		BRICK	BRCK

		CAST IRON	CI
		CONCRETE CORRUGATED ALUMINIUM	CONC CA
		CORRUGATED STEEL	CS
		CORRUGATED UNPLASTICISED PVC	CPVC
		GALVANISED IRON	GI
		GALVANISED STEEL	GS
		GLAZED EARTHENWARE	GEW
		HIGH DENSITY POLYETHELENE	HDPE
		MEDIUM DENSITY POLYETHELENE	MDPE
		NOVA	NOVA
		REINFORCED CONCRETE RUBBER RING JOINT	RCRJ
		REINFORCED CONCRETE	RC
		REINFORCED CONCRETE FLUSH JOIN	RCFJ
		UNGLAZED EARTHENWARE	UGEW
		UNPLASTICISED PVC	UPVC
PIPE DIAMETER*	PDIA	0	0
		100	100
		110	110
		150	150
		175	175
		200	200
		225	225
		250	250
		275	275
		300	300
		315	315
		350	350
		375	375
		400	400
		425	425
		450	450
		475	475
		500	500
		525	525
		575	575
		600	600
		650	650
		675	675
		700	700
		750	750
		800	800
		825	825

		850	850
		900	900
		1000	1000
		1050	1050
		1200	1200
		1350	1350
		1375	1375
		1500	1500
		1650	1650
		1800	1800
		2100	2100
		2200	2200
LENGTH	LGTH		FREE NUMERIC INPUT - METRES (0.00)
WIDTH	WDTH		FREE NUMERIC INPUT - METRES (0.00)
DIAMETER	DIAM		FREE NUMERIC INPUT - METRES (0.00)
VOLUME (m3)	VOL		FREE NUMERIC INPUT - CUBIC METRES (0.00)

3.4 APPENDIX 4 – STORM WATER PONDS

Storm water data will be required for volumes, levels, etc. Apply to the Storm Water Planning Engineer for data requirement.

3.5 APPENDIX 5 – WASTE WATER FEATURE CODES

Asset Type	**Asset Code**	**GIS Feature Type**	**Asset Group**
AIR VALVE	SS_AV	POINT	Sewer Feature Point
BLANKCAP	SS_BC	POINT	Sewer Feature Point
CHAMBER	SS_CH	POINT	Sewer Feature Point
JOIN	SS_J	POINT	Sewer Feature Point
LAMPHOLE	SS_LH	POINT	Sewer Feature Point
MANHOLE	SS_MH	POINT	Sewer Feature Point
PUMPSTATION	SS_PS	POINT	Sewer Feature Point
VENT	SS_VH	POINT	Sewer Feature Point
SEWER MAIN	SS_PIPE	LINE	Sewer Pipe
RISING MAIN	SS_RISING	LINE	Sewer Pipe
CONNECTION	SS_CON	LINE	Sewer Pipe
Each **asset group** type should be supplied as discrete "layers". Length will be calculated spatially based on coordinates supplied for each feature or vertex on a line. Area will also be spatially calculated. e.g. cesspits, manholes, chambers can be supplied as a single layer as long as they are identified as such			

3.6 APPENDIX 6 - WASTE WATER ATTRIBUTE CODES

Attribute Name	Attribute Field Name	Attribute Description	Attribute Values Codes	Applies to:
MANHOLE DEPTH	MH_DEPTH		FREE NUMERIC INPUT - METRES (0.00)	All Sewer Feature Points
LID LEVEL	LID_LEV		FREE NUMERIC INPUT - METRES (0.00)	All Sewer Feature Points
INVERT LEVEL	INV_LEV		FREE NUMERIC INPUT - METRES (0.00)	All Sewer Feature Points
DATE	DATE_LAID		DD/MM/YYYY	All Sewer Feature Points and Pipes (excluding Connections)
PIPE DIAMETER	DIAMETER	20mm	20	All Sewer Pipes
		25mm	25	
		32mm	32	
		38mm	38	
		40mm	40	
		50mm	50	
		63mm	63	
		65mm	65	
		75mm	75	
		80mm	80	
		85mm	85	
		100mm	100	
		110mm	110	
		150mm	150	
		160mm	160	
		200mm	200	
		225mm	225	
		230mm	230	
		250mm	250	
		300mm	300	
		380mm	380	
		600mm	600	
		1050mm	1050	
		1200mm	1200	
		1800mm	1800	
PIPE MATERIAL	MATERIAL	ASBESTOS CONCRETE	AC	All Sewer Pipes
		CONCRETE LINED MILD STEEL	CLMS	
		CONCRETE	CONC	
		FIBRE LIGHT	FBRLT	
		GLAZED	GEW	

		EARTHENWARE		
		HIGH DENSITY POLYETHELENE	HDPE	
		MEDIUM DENSITY POLYETHELENE	MDPE	
		POLYVINYL CHLORIDE	PVC	
		UNPLASTICISED POLYVINYL CHLORIDE	UPVC	
DISTANCE TO MANHOLE	DIST_TO_MA		FREE NUMERIC INPUT - METRES (0.00)	Connections

3.7 APPENDIX 7 - WATER FEATURE CODES

Asset Type	Asset Code	GIS Feature Type	Asset Group
AIR VALVE	WM_AV	POINT	Water Feature Point
BLANKCAP	WM_BC	POINT	Water Feature Point
BUILK METER	WM_BM	POINT	Water Feature Point
CHAMBER	WM_CH	POINT	Water Feature Point
FIRE SERVICE VALVE	WM_FSV	POINT	Water Feature Point
HYDRANT	WM_HYD	POINT	Water Feature Point
JOIN	WM_J	POINT	Water Feature Point
PUMPSTATION	WM_PS	POINT	Water Feature Point
PEET VALVE	WM_PV	POINT	Water Feature Point
REDUCER	WM_RED	POINT	Water Feature Point
SCOUR VALVE	WM_SCV	POINT	Water Feature Point
SHUT VALVE	WM_SHV	POINT	Water Feature Point
SLUICE VALVE	WM_SV	POINT	Water Feature Point
T-JUNCTION	WM_TJ	POINT	Water Feature Point
VALVE	WM_V	POINT	Water Feature Point
WHEEL VALVE	WM_WV	POINT	Water Feature Point
MAIN	WM_PIPE	LINE	Water Pipe
CONNECTION	WM_CON	LINE	Water Pipe
Each **asset group** type should be supplied as discrete "layers" e.g. cesspits, manholes, chambers can be supplied as a single layer as long as they are identified as such. Length will be calculated spatially based on coordinates supplied for each feature or vertex on a line. Area will also be spatially calculated.			

3.8 APPENDIX 8 - WATER ATTRIBUTE CODES

Attribute Name	Attribute Field Names	Attribute Description	Attribute Values Codes	Applies to:
LID LEVEL	LID_LEV		FREE NUMERIC INPUT - METRES (0.00)	All Water Feature Points
DATE	DATE_LAID		DD/MM/YYYY	All Water Feature Points and Pipes (excl Connections)
PIPE DIAMETER	DIAMETER	20mm	20	All Water Pipes
		25mm	25	
		32mm	32	
		38mm	38	
		40mm	40	
		50mm	50	
		63mm	63	
		65mm	65	
		75mm	75	
		80mm	80	
		85mm	85	
		100mm	100	
		110mm	110	
		150mm	150	
		160mm	160	
		200mm	200	
		225mm	225	
		230mm	230	
		250mm	250	
		300mm	300	
		380mm	380	
		600mm	600	
		1050mm	1050	
		1200mm	1200	
		1800mm	1800	
PIPE MATERIAL	MATERIAL	ASBESTOS CONCRETE	AC	All Water Pipes
		ALKATHENE	ALKTHN	
		CAST IRON	CI	
		CONCRETE LINED MILD STEEL	CLMS	
		CONCRETE	CONC	
		DUCTILE IRON	DI	
		GALVINISED IRON	GI	
		MEDIUM DENSITY POLYETHELENE	MDPE	
		MODIFIED POLYVINYL CHLORIDE	MPVC	

		POLYETHELENE	PE	
		POLYVINYL CHLORIDE	PVC	
		UNPLASTICISED POLYVINYL CHLORIDE	UPVC	
		FIBRE LITE	FBRLT	
		COPPER	COPP	
DISTANCE TO MANHOLE	DIST_TO_MA		FREE NUMERIC INPUT - METRES (0.00)	Connections

3.9 APPENDIX 9 – ATTRIBUTE TABLE STRUCTURES

Below are examples of how an attribute table should be structured for a water pipe and water point feature respectively.

Asset Type	**ID**	**Material**	**Diameter**
WM_PIPE	001	PVC	150
WM_PIPE	002	FBRLT	100

Asset Type	**ID**	**Lid_Level**
WM_HYD	001	1.23
WM_RED	002	1.24

3.10 APPENDIX 10 – KERBLINES

No attributes needed for kerblines at this point in time.

Asset Group	**Asset Code**	**GIS Feature Type**
KERBLINES	KERB	POLYLINE

3.11 APPENDIX 11 – BUILDING FOOTPRINTS

Asset Group	**Asset Code**	**GIS Feature Type**
BUILDING FOOTPRINTS	BUILDING	POLYGON

3.12 APPENDIX 12 – LOT BOUNDARIES

Asset Group	Asset Code	GIS Feature Type
LOT BOUNDARIES	PARCELS	POLYGON

3.13 APPENDIX 13 – TRAFFIC ISLANDS

No attributes needed for traffic islands at this point in time.

Asset Group	Asset Code	GIS Feature Type
TRAFFIC ISLANDS	TRAFFIC ISLANDS	POLYLINE

3.14 APPENDIX 14 – PARKS AND RESERVES FEATURE TYPES

Asset Feature Group	Asset Feature Type	Feature Type Code
P-Play Surfaces	P-Artificial Cricket Wicket	PS11
P-Play Surfaces	P-Artificial Hockey Field	PS12
P-Sportsfields - Summer	P-Athletics Track	SP21
P-Bed	P-Bed - Floral	GD11
P-Bed	P-Bed - Floral Planter	GD12
P-Bed	P-Bed - Groundcover	GD13
P-Bed	P-Bed - Rose	GD14
P-Bed	P-Bed - Shrubs (General)	GD15
P-Bins	P-Bin - Dog	BN11
P-Bins	P-Bin - Litter	BN12
P-Play Surfaces	P-BMX Track	PS13
P-Boardwalks	P-Boardwalk - Aquatic	BW11
P-Boardwalks	P-Boardwalk - Land	BW12
P-Boardwalks	P-Boardwalk - Stairs	BW13
P-Aquatic Structures	P-Boat Ramp	AQ21
P-Bollards	P-Bollards	BL11
P-Play Surfaces	P-Bowling Green	PS14
P-Building	P-Building - Amenity Block	BU12
P-Building	P-Building - Civic	BU13
P-Building	P-Building - Club/Association	BU14
P-Building	P-Building - Community	BU15
P-Building	P-Building - Council House	BU11
P-Building	P-Building - Grandstand	BU16
P-Building	P-Building - Information Kiosk	BU17
P-Building	P-Building - Park House	BU18
P-Building	P-Building - Pavilion	BU19
P-Building	P-Building - Pavilion Toilet	BU1A
P-Building	P-Building - Private	BU1B

P-Building	P-Building - Pump Shed	BU1C
P-Building	P-Building - Shed	BU1D
P-Building	P-Building - Ticket Booth	BU1F
P-Building	P-Building - Toilets	BU1E
P-Carpark/Drive	P-Car Park (Asphalt)	HS21
P-Carpark/Drive	P-Car Park (Chip Seal)	HS22
P-Carpark/Drive	P-Car Park (Cobble Block)	HS23
P-Carpark/Drive	P-Car Park (Concrete)	HS24
P-Carpark/Drive	P-Car Park (Gravel)	HS25
P-Carpark/Drive	P-Car Park (Miscellaneous)	HS26
P-Artwork/Monument	P-Cenotaph	AW11
P-Sports Feature	P-Cricket Nets	SF11
P-Sports Feature	P-Cricket Wicket Blocks	SF12
P-Sportsfields - Summer	P-CricketOutfield	SP22
P-Play Surfaces	P-Croquet	PS15
P-Fountains	P-Drinking Fountain	PF11
P-Fence	P-Fence - Boundary Private	FN22
P-Fence	P-Fence - Boundary Public	FN21
P-Fence	P-Fence - Security	FN27
P-Lighting	P-Floodlight	LT11
P-Bridges	P-Footbridge	BD11
P-Furniture	P-Furniture - BBQ Electric	FU11
P-Furniture	P-Furniture - BBQ Gas	FU12
P-Furniture	P-Furniture - BBQ Open Fire	FU13
P-Furniture	P-Furniture - Bench	FU14
P-Furniture	P-Furniture - Clock	FU15
P-Furniture	P-Furniture - Cycle Barrier	FU20
P-Furniture	P-Furniture - Cycle Stand	FU16
P-Furniture	P-Furniture - Flagpole	FU17
P-Furniture	P-Furniture - Picnic Table	FU18
P-Furniture	P-Furniture - Seat	FU19
P-Furniture	P-Furniture - Tap	FU21
P-Furniture	P-Furniture - Tree Cages	FU1A
P-Furniture	P-Furniture - Walkers Stile	FU1B
P-Gates	P-Gates - Barrier Arm	FN11
P-Gates	P-Gates - Pedestrian	FN12
P-Gates	P-Gates - Stock	FN13
P-Gates	P-Gates - Vehicular	FN14
P-Sports Feature	P-Goal Posts	SF13
P-Grass	P-Grass (Type A)	TF11
P-Grass	P-Grass (Type B)	TF12
P-Grass	P-Grass (Type C)	TF13
P-Grass	P-Grass (Type D)	TF14
P-Graves	P-Grave Area	GR11

P-Graves	P-Graves Concrete Beams	GR12
P-Graves	P-Graves Mown Area	GR13
P-Graves	P-Graves Planted Areas	GR14
P-Graves	P-Graves Unplanted/Un-mown	GR15
P-Play Surfaces	P-Half Court	PS16
P-Hedges	P-Hedge - 0 to 1m	HB11
P-Hedges	P-Hedge - 1m to 2.5m	HB12
P-Sportsfields - Winter	P-Hockey	SP11
P-Sports Feature	P-Hoop	SF14
P-Aquatic Structures	P-Jetty	AQ22
P-Lake	P-Lake	WF31
P-Memorial	P-Memorial Garden	MW11
P-Memorial	P-Memorial Tree	MW12
P-Memorial	P-Memorial Wall	MW13
P-Play Surfaces	P-Miscellaneous	PS17
P-Artwork/Monument	P-Monument	AW12
P-Artwork/Monument	P-Mural	AW13
P-Play Surfaces	P-Netball Court	PS18
P-Fountains	P-Ornamental Fountain (Large)	PF12
P-Fountains	P-Ornamental Fountain (Small)	PF13
P-Lighting	P-Park Light	LT12
P-Path	P-Path (Asphalt)	HS36
P-Path	P-Path (Brick)	HS31
P-Path	P-Path (Chip Seal)	HS37
P-Path	P-Path (Cobble)	HS38
P-Path	P-Path (Concrete)	HS32
P-Path	P-Path (Gravel)	HS33
P-Path	P-Path (Misc)	HS34
P-Path	P-Path (Steps)	HS35
P-Open Structures	P-Pegola	OS15
P-Plaque	P-Plaque	PP11
P-Play Equipment (Climbing)	P-Play - Balance Beam	PE21
P-Play Equipment (Moving)	P-Play - Cantilever Tyre Swing	PE31
P-Play Equipment (Climbing)	P-Play - Chains	PE22
P-Play Equipment (Climbing)	P-Play - Climbing Structure	PE29
P-Play Equipment (Climbing)	P-Play - Climbing Wall	PE23
P-Play Equipment-Modular Unit	P-Play - Comp Structure	PE51
P-Play Equipment (Moving)	P-Play - Horse	PE32
P-Play Equipment (Climbing)	P-Play - Logs	PE24
P-Play Equipment (Climbing)	P-Play - Monkey Bars	PE25
P-Play Equipment (Climbing)	P-Play - Rings on Chains	PE26

P-Play Equipment (Climbing)	P-Play - Rope	PE27
P-Play Equipment (Moving)	P-Play - Roundabout	PE33
P-Play Equipment (Moving)	P-Play - See - Saw	PE34
P-Play Equipment (General)	P-Play - Slides (Stand Alone)	PE11
P-Play Equipment (Moving)	P-Play - Solo Spinner	PE35
P-Play Equipment (Swings)	P-Play - Swing	PE41
P-Play Equipment (Swings)	P-Play - Swing (Modular)	PE42
P-Play Equipment (Moving)	P-Play - Swing Bridge	PE36
P-Play Equipment (Climbing)	P-Play - Tyres	PE28
P-Playground Site	P-Playground	WS21
P-Play Equipment (General)	P-Playground Equipment	PE12
P-Aquatic Features	P-Pool (Ornamental)	AQ11
P-Aquatic Features	P-Pool (Paddling)	AQ12
P-Ramp	P-Ramp	HS41
P-Wetland Plantings	P-Riparian Planting	GD21
P-Carpark/Drive	P-Road	HS27
P-Sportsfields - Winter	P-Rugby	SP12
P-Sportsfields - Winter	P-Rugby League	SP13
P-Sports Feature	P-Scoreboard	SF15
P-Artwork/Monument	P-Sculpture	AW14
P-Open Structures	P-Shelter	OS11
P-Signs	P-Sign - Bylaw	SN11
P-Signs	P-Sign - Community Noticeboard	SN12
P-Signs	P-Sign - Information Board	SN13
P-Signs	P-Sign - Miscellaneous	SN14
P-Signs	P-Sign - Park Name	SN16
P-Signs	P-Sign - Route	SN15
P-Sports Feature	P-Skate Park	SF16
P-Play Surfaces	P-Skateboard Area	PS19
P-Sports Feature	P-Skateboard Ramp	SF17
P-Sportsfields - Winter	P-Soccer	SP14
P-Sports Feature	P-Softball Nets	SF18
P-Sportsfields - Summer	P-SoftballDiamond	SP23
P-Open Structures	P-Soundshell	OS12
P-Lighting	P-Special Lighting	LT13
P-Artwork/Monument	P-Statue	AW15
P-Ponds	P-Stormwater Detention	WF41
P-Rivers and Streams (m)	P-Streams	WF21
P-Structures	P-Structure	ST11
P-Structures	P-Structures (Platform)	ST12
P-Open Structures	P-Sunshade	OS13
P-Play Surfaces	P-Tennis Court	PS1A
P-Sportsfields - Summer	P-Touch	SP24

P-Tracks	P-Tracks	HS11
P-Trees	P-Tree	TR11
P-Trees & Shrubs	P-Tree & Bush Grouping Various	WD11
P-Trees & Shrubs	P-Trees (Native Bush)	WD12
P-Trees	P-Trees (Speciman)	WD15
P-Trees & Shrubs	P-Trees (Woodlots Forestry)	WD13
P-Trees & Shrubs	P-Trees (Woodlots Mixed)	WD14
P-Play Ground Undersurfacing	P-Undersurface (Bark)	PU11
P-Play Ground Undersurfacing	P-Undersurface (Hard Surface)	PU12
P-Play Ground Undersurfacing	P-Undersurface (Misc)	PU13
P-Open Structures	P-Viewing Platform	OS14
P-Wall	P-Wall - 100% Owned	FN31
P-Wall	P-Wall - 50% Owned	FN32
P-Wall	P-Wall - Boundary Retaining	FN33
P-Wetlands	P-Wetland	WF11
P-Aquatic Structures	P-Wharf	AQ23
P-Whole Site	P-Whole Site	WS11

3.15 PARKS AND RESERVES ATTRIBUTE VALUES

These are only supplied where they are known.

Attribute Type Code	Asset Type Description	Attribute Type Code	Attribute Description
AB8	Abatement Type	TBC	TBC
PAW1	Art Work - Size	3	Large
PAW1	Art Work - Size	2	Medium
PAW1	Art Work - Size	NA	Not Applicable
PAW1	Art Work - Size	1	Small
P014	Base Material	5	Asphalt
P014	Base Material	4	Bark
P014	Base Material	1	Concrete
P014	Base Material	3	Grass
P014	Base Material	NA	Not Applicable
P014	Base Material	2	Stamped Concrete
PG05	Bed Maturity	2	Immature
PG05	Bed Maturity	1	Mature
PG05	Bed Maturity	NA	Not Applicable
PG05	Bed Maturity	NK	Not Known
PG05	Bed Maturity	4	Over Mature
PG05	Bed Maturity	3	Ready for Replacement

PBQ2	Coin Operated	2	No
PBQ2	Coin Operated	NA	Not Applicable
PBQ2	Coin Operated	1	Yes
CMNT	Comment	UNKN	Unknown
PWD1	Development Status	1	Fully Developed
PWD1	Development Status	NA	Not Applicable
PWD1	Development Status	NK	Not Known
PWD1	Development Status	2	Partially Developed
PWD1	Development Status	4	Under Developer Maintenance
PWD1	Development Status	3	Undeveloped
PF02	Fence Style	3	Chain
PF02	Fence Style	11	Close Boarded
PF02	Fence Style	4	Mesh
PF02	Fence Style	9	Multi Strand Wire
PF02	Fence Style	NA	Not Applicable
PF02	Fence Style	NK	Not Known
PF02	Fence Style	6	Paling
PF02	Fence Style	7	Picket
PF02	Fence Style	2	Post & Rail
PF02	Fence Style	5	Solid
PF02	Fence Style	12	Swimming Pool
PF02	Fence Style	10	Trellis
PF02	Fence Style	8	Waratah
PF02	Fence Style	1	Wire Rope
GCAT	Grass Category	NA	Not Applicable
GCAT	Grass Category	1	25mm to 40mm
GCAT	Grass Category	2	25mm to 60mm
GCAT	Grass Category	3	40mm to 75mm
GCAT	Grass Category	4	50mm to 300mm
PG04	Groundcover Type of Plants	2	Conifers
PG04	Groundcover Type of Plants	1	Grasses
PG04	Groundcover Type of Plants	5	Hypericum
PG04	Groundcover Type of Plants	3	Ivy
PG04	Groundcover Type of Plants	4	Mixed
PG04	Groundcover Type of Plants	NA	Not Applicable
PG04	Groundcover Type of Plants	NK	Not Known
LB04	Litter Bin - Liner	2	No
LB04	Litter Bin - Liner	NA	Not Applicable
LB04	Litter Bin - Liner	1	Yes
LB02	Litter Bin - Style	2	Cage

LB02	Litter Bin - Style	3	D
LB02	Litter Bin - Style	4	Drum
LB02	Litter Bin - Style	NA	Not Applicable
LB02	Litter Bin - Style	5	Slatted
LB02	Litter Bin - Style	1	Solid
PWM1	Management Plan	3	No
PWM1	Management Plan	NA	Not Applicable
PWM1	Management Plan	1	Yes
PEM1	Manufacture - Play Equip	2	Ausplay
PEM1	Manufacture - Play Equip	3	Little Tykes
PEM1	Manufacture - Play Equip	NA	Not Applicable
PEM1	Manufacture - Play Equip	7	Not Known
PEM1	Manufacture - Play Equip	5	PlayCo
PEM1	Manufacture - Play Equip	1	Playground Centre
PEM1	Manufacture - Play Equip	9	Playground People
PEM1	Manufacture - Play Equip	8	Playworld
PEM1	Manufacture - Play Equip	4	Steel Pole - Old Style
PEM1	Manufacture - Play Equip	6	Wooden Pole - Old Style
MV	Margins Vegetation	FLSE	FALSE
MV	Margins Vegetation	TRUE	TRUE
MV	Margins Vegetation	UNKN	Unknown
POM1	Operating Mechanism	2	Electrical
POM1	Operating Mechanism	3	Manual
POM1	Operating Mechanism	1	Mechanical
POM1	Operating Mechanism	NA	Not Applicable
POM1	Operating Mechanism	NK	Not Known
LO	Ownership	PDC	Papakura District Council
LO	Ownership	PVT	Private
LO	Ownership	UNKN	Unknown
OT01	Ownership Type	2	100% Owned
OT01	Ownership Type	1	50% Owned
OT01	Ownership Type	NA	Not Applicable
HS01	Path Type	3	Cycleway
HS01	Path Type	NA	Not Applicable
HS01	Path Type	1	Pedstrian Only
HS01	Path Type	2	Pedstrian/Cycleway

P002	Plaque	2	No
P002	Plaque	NA	Not Applicable
P002	Plaque	1	Yes
PEU1	Play Equip - Undersurface Type	1	Bark
PEU1	Play Equip - Undersurface Type	3	Grass
PEU1	Play Equip - Undersurface Type	6	None
PEU1	Play Equip - Undersurface Type	NA	Not Applicable
PEU1	Play Equip - Undersurface Type	4	Safety Matting
PEU1	Play Equip - Undersurface Type	2	Sand
PEU1	Play Equip - Undersurface Type	5	Shingle
PCM1	Primary Construction Material	25	Aluminium
PCM1	Primary Construction Material	26	Asphalt
PCM1	Primary Construction Material	19	Brick
PCM1	Primary Construction Material	1	Bronze
PCM1	Primary Construction Material	22	Chain
PCM1	Primary Construction Material	14	Combination
PCM1	Primary Construction Material	3	Concrete
PCM1	Primary Construction Material	4	Concrete Block
PCM1	Primary Construction Material	20	Drum
PCM1	Primary Construction Material	9	Earth
PCM1	Primary Construction Material	8	Fibreglass
PCM1	Primary Construction Material	18	Galvanised
PCM1	Primary Construction Material	15	Granite
PCM1	Primary Construction Material	7	Iron
PCM1	Primary Construction Material	11	Metal
PCM1	Primary Construction Material	12	Metal & Wood
PCM1	Primary Construction Material	NA	Not Applicable
PCM1	Primary Construction Material	NK	Not Known
PCM1	Primary Construction Material	10	Plastic
PCM1	Primary Construction Material	27	Plastic & Metal

PCM1	Primary Construction Material	24	Polycarbonate
PCM1	Primary Construction Material	17	Powder Coated
PCM1	Primary Construction Material	21	Rope
PCM1	Primary Construction Material	5	Sand Stone
PCM1	Primary Construction Material	16	Stainless Steel
PCM1	Primary Construction Material	6	Steel
PCM1	Primary Construction Material	2	Stone
PCM1	Primary Construction Material	23	Tyres
PCM1	Primary Construction Material	13	Wood
PRPK	Purpose - Parks	1	Amenity Aesthetic
PRPK	Purpose - Parks	2	Crowd Control
PRPK	Purpose - Parks	NA	Not Applicable
PRPK	Purpose - Parks	6	Retaining Wall
PRPK	Purpose - Parks	5	Safety
PRPK	Purpose - Parks	3	Stock Protection
PRPK	Purpose - Parks	4	Vehicle Restraint
PG03	Rose Type	5	Bush
PG03	Rose Type	1	Climber
PG03	Rose Type	3	Groundcover
PG03	Rose Type	4	Mixed
PG03	Rose Type	NA	Not Applicable
PG03	Rose Type	NK	Not Known
PG03	Rose Type	2	Standard
PS04	Seat - Style Type	1	Fixed - ground
PS04	Seat - Style Type	3	Fixed - within wall
PS04	Seat - Style Type	2	Movable
PS04	Seat - Style Type	NA	Not Applicable
SDTS	Shade Tree Species	TBC	TBC
PSN2	Sign - Size	3	Large >2.5m2
PSN2	Sign - Size	2	Medium - Btwn 500mm2 & 2m2
PSN2	Sign - Size	NA	Not Applicable
PSN2	Sign - Size	1	Small - <500mm2
PSN4	Sign - Type	2	Informational
PSN4	Sign - Type	NA	Not Applicable
PSN4	Sign - Type	1	Regulatory
PSN4	Sign - Type	3	Warning
HS02	Surface Material - Parks	6	Asphaltic Concrete - AC 10
HS02	Surface Material - Parks	7	Asphaltic Concrete - AC 16

HS02	Surface Material - Parks	5	Asphaltic Concrete - AC 5
HS02	Surface Material - Parks	1	Grade 4
HS02	Surface Material - Parks	3	Grade 4/6
HS02	Surface Material - Parks	2	Grade 5
HS02	Surface Material - Parks	4	Grade 6
HS02	Surface Material - Parks	8	Grit
HS02	Surface Material - Parks	NA	Not Applicable
HS04	Track - Usage	5	All use
HS04	Track - Usage	4	MTB & Horse
HS04	Track - Usage	NA	Not Applicable
HS04	Track - Usage	2	Pedestrian & MTB
HS04	Track - Usage	1	Pedestrian only
HS04	Track - Usage	3	Pedestrian, MTB & Horse
HS04	Track - Usage	UN	Unknown
HS04	Track - Usage	6	Vehicle only
TS01	Track Surface Type	3	Grass
TS01	Track Surface Type	2	Gravel
TS01	Track Surface Type	1	Natural
TS01	Track Surface Type	NA	Not Applicable
VAND	Vandalism Susceptibility	NA	Not Applicable
VAND	Vandalism Susceptibility	AR	Average Risk
VAND	Vandalism Susceptibility	HR	High Risk
VAND	Vandalism Susceptibility	LR	Low Risk

Appendix F

Road Asset Data Standard Specification

PAPAKURA DISTRICT COUNCIL

SPECIFICATION FOR RAMM UPDATING OF ROADS

1. SCOPE

This specification sets out the general requirements for consultants specialising in, and being fully conversant with Road Assessment and Maintenance Management (RAMM) procedures and requirements.

The coverage being:

(a) the existing dedicated roads (either in whole, part thereof, or specified) under the control of the Papakura District Council

or (b) developers roads awaiting dedication through the Council's planning procedures

or (c) following physical works by Contractors on Council's roads.

2. RAMM REQUIREMENTS

The tasks indicated below shall be carried out in compliance with the latest edition of the Transfund New Zealand "RAMM : Road Condition Rating & Roughness Manual. The RAMM Consultant shall prepare new inventory data as hard copy in a form suitable for inputting into the RAMM database. The RAMM Consultant shall supply documentary evidence that the collection of the inventory data has been carried out satisfactorily by experienced RAMM Certified persons and in accordance with the quality plan. This person at a minimum shall hold a current RAMM Condition Rating Certificate or similar, and be familiar with the RAMM Inventory Collection process. The Contractor, on the consultant's behalf, shall submit supporting documentation showing the RAMM person is suitably qualified. The inventory data required is that to complete all fields in the following tables: -

- carriageway
- shoulders and surface water channels
- drainage
- berms and footpaths
- pavement structure and surfacing
- traffic facilities
- features

3. QUALITY ASSURANCE

The consultant shall have a quality plan to ensure proper internal procedures and control checks are used by the staff throughout the project. The consultant shall be responsible for checking the quality assurance requirements of the Contractor and ensuring that all matters of quality assurance and quality control for all aspects of the contract are observed.

4. HEALTH AND SAFETY ACT

When working on roads all reasonable care must be taken by staff for their own safety by use of high visibility coloured clothing and other suitable equipment as may be necessary. For the safety of the general public as well as staff, appropriate Transit approved signs are required to cover the area of work. All vehicles shall be equipped with amber flashing lights.

5. HEALTH AND SAFETY PLAN

Consultants are required to complete the Consultant Safety Pre-Qualification Form at the time of tender.

6. GENERAL INFORMATION

Any available current information required by the Consultant will be supplied by Opus International Consultants on behalf of the Client. This will be applicable to Consultants acting for developers or contractors.

7. NEW WORKS INFORMATION

RAMMS information following completion of physical works is required from:

(a) Developers - prior to approval of the Certificate of Completion (224c).

(b) Contractors - prior to approval of the certificate of completion.

8. APPENDIX

Standard Forms for RAMM Data Collection

(a) Road Carriageway, Drainage, and Shoulders
(b) Surface Water Channels (SWC), and Footpaths
(c) Pavement Structure, and Pavement Surfacing
(d) Traffic Markings, and Traffic Signs
(e) Berm, Crossings, Features, and Guardrails
(f) Street Light Inventory Management

STREET LIGHT INVENTORY MANAGEMENT

Road Name _____ Client _____
Road ID _____ Date _____
Start Displace _____ Surveyed By _____
End Displace _____ Entered _____

Pole Information

Displacement _____ LH Boundary _____
Side _____ Material _____
Offset _____ Shape _____
Owner LA PB TC Make _____
Purpose L E F S Pole No. _____

House Number Features

	Flat No.	A/B/C etc	House No.	Feature
This Side				
Opposite				

Dimensions

Level _____
Use Height _____

Intersects With Road

Road ID _____
Road Name _____
Start Displace _____
End Displace _____
Displacement _____
Side _____

Bracket Information

Type _____
Angle _____
Height _____

Light Information

Supply Point	UG	OH	UG	OH	UG	OH
Make						
Model						
Comments						

STREET LIGHT INVENTORY MANAGEMENT

Road Name _____ Client _____
Road ID _____ Date _____
Start Displace _____ Surveyed By _____
End Displace _____ Entered _____

Pole Information

Displacement _____ LH Boundary _____
Side _____ Material _____
Offset _____ Shape _____
Owner LA PB TC Make _____
Purpose L E F S Pole No. _____

House Number Features

	Flat No.	A/B/C etc	House No.	Feature
This Side				
Opposite				

Dimensions

Level _____
Use Height _____

Intersects With Road

Road ID _____
Road Name _____
Start Displace _____
End Displace _____
Displacement _____
Side _____

Bracket Information

Type _____
Angle _____
Height _____

Light Information

Supply Point	UG	OH	UG	OH	UG	OH
Make						
Model						
Comments						

Client		*Surveyed by*		*Entered By*	
Project No.		*Date Surveyed*		*Date Entered*	

Carriageway Information Opus **K13: 2002**

Road ID.			Road Name				
Start Displacement			Start Name				
End Displacement			End Name				
Local Area							
Miscellaneous				Carriageway			
Class		Length	m	Owner	Crown	Private	TLA
Urban/Rural	U R	Width	m	Other Areas m2			
Hierarchy		R Width	m	Intersection Area m²			
Pavement Type	C T U S	Irregular	I R	Bus Bay Area m²			
Pavement Use (1-7)		No. Lanes		Island Area m²			

Estimated Traffic Volume (vpd) (to be entered in the traffic volume table)

Extra Areas Working Out Space

Extra Area		Islands	
Bus Bays		Intersections	

Drainage

CP1 CP2 CP3 CUL DAM DWELL FLUME OTHER SCOUR SIDE SoakPit SPILL SUB SUMP WEIR

CULVERT INLET/OUTLET CP DC FL G GD HC HT MH N OT RC RH SB Y

Road ID.								
Type (see above)								
Date Constructed								
Carr'way Start Displ.								
Displacement of Feature								
Offset								
Side	L R E	L R E	L R E	L R E	L R E	L R E	L R E	L R E
Length								
Height/Diameter								
Culvert Intake	Y N G	Y N G	Y N G	Y N G	Y N G	Y N G	Y N G	Y N G
Culvert Outlet	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
Material								
Culvert Type								
Culvert Width								

Shoulders

Road ID.								
Side	L R	L R	L R	L R	L R	L R	L R	L R
Start Displacement								
End Displacement								
Length								
Type								
Width								

Surface Water Channels								Opus **K13: 2002**
DA Dish Channel (Asphalt), DC Dish Channel (Conc), DP Dish Channel (Half Pipe), DS Dish Channel (Sealed), KC Kerb only (Conc),								
KCC Kerb & Channel (Conc), KCS Kerb & Channel (Stone), KDC Kerb & Dished Channel (Conc), KS Kerb only (Stone),								
MKC Mountable Kerb only (Conc), MKCC Mountable Kerb & Channel (Conc), OTHER Other type not listed (comments section please)								
SLTC Slot Channel (Conc), SWLD Surface Water Channel (Deep >300mm), SWCS Surface Water Channel (Shallow <300mm)								
Road ID.								
Side	L R	L R	L R	L R	L R	L R	L R	L R
Start Displacement								
End Displacement								
Length								
Distance to Seal								
Type (see above)								
Date								
Verge - Footpaths								
B Boundary, E Accessway (Ends away from road - must include details in Joins to Road section), K Kerb, L Loop footpath,								
J Accessway (Joins another road - must include details in Joins to Road section), M Middle, R Remote from Road								
Road ID.								
Position	B M K	B M K	B M K	B M K	B M K	B M K	B M K	B M K
	E J L R	E J L R	E J L R	E J L R	E J L R	E J L R	E J L R	E J L R
Side	L R	L R	L R	L R	L R	L R	L R	L R
Start Displacement								
End Displacement								
Length								
Width								
Step Length								
Extra Area								
Purpose	F C B	F C B	F C B	F C B	F C B	F C B	F C B	F C B
Use (1 - 5)								
Local Name								
Start Name								
End Name								
Footpath Surfacings (F1)								
Surface Start	0	0	0	0	0	0	0	0
Surface End								
Date								
Material								
Depth								
Size/Grade								
Joins to Road								
Road ID.								
Carriageway Start								
Carriageway End								
Start Displacement								
Side	L R	L R	L R	L R	L R	L R	L R	L R

Pavement Layer and Rehabilitation

Opus **K13: 2002**

Road No.		Road Name	
Start Displacement		Start Name	
End Displacement		End Name	

Layer One (Basecourse)		Offset (m)		Material	
Type	L S	Width (m)		Depth	
Date		Rehab In		Source	
Layer Two		Offset (m)		Material	
Type	L S	Width (m)		Depth	
Date		Rehab In		Source	
Layer Three		Offset (m)		Material	
Type	L S	Width (m)		Depth	
Date		Rehab In		Source	
Subgrade Layer		Offset (m)			
Type	L S	Width (m)		Material	
Date		Rehab In		CBR %	
Rehabiliation Details (F1)		Width (m)		Type	R S
Start		Offset		Agent	
End		Depth		Quantity	

Pavement Surfacing

Road ID				
Start Displacement				
End Displacement				
Start Name				
End Name				
Date				
Life Cycle				
Width				
Offset				
Material				
Depth				
Size/Grade				
Source				
Cutter Type & pph				
Adhesion Type & pph				
Additive Type & pph				
Binder Type				
Res App Rate				

Traffic Markings							Opus **K13: 2002**	
Road ID.								
Start Displacement								
End Displacement								
Type								
Material								
Length								
Side	L C R	L C R	L C R	L C R	L C R	L C R	L C R	L C R
Offset								
Traffic Signs								
Road ID.								
Sign ID								
Class								
Type								
Displacement								
Side	C L R U	C L R U	C L R U	C L R U	C L R U	C L R U	C L R U	C L R U
Offset								
Owner	LA	LA	LA	LA	LA	LA	LA	LA
Legend Text								
Reverse Text								
No. Supports								
Sign Dimensions								
Width (mm)								
Height (mm)								
From Ground								
Angle								
Direction	L N R	L N R	L N R	L N R	L N R	L N R	L N R	L N R
Legend Material	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi
	Dg Un	Dg Un	Dg Un	Dg Un	Dg Un	Dg Un	Dg Un	Dg Un
Legend Colour	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu
	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up
	Wh Ye	Wh Ye	Wh Ye	Wh Ye	Wh Ye	Wh Ye	Wh Ye	Wh Ye
Background Material	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi	Nr Eg Hi
	Dg Un	Dg Un	Dg Un	Dg Un	Dg Un	Dg Un	Dg Un	Dg Un
Background Colour	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu	Bk Br Bu
	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up	Gr Re Up
	Wh Ye	Wh Ye	Wh Ye	Wh Ye	Wh Ye	Wh Ye	Wh Ye	Wh Ye
Substrate	Al Ti Pl	Al Ti Pl	Al Ti Pl	Al Ti Pl	Al Ti Pl	Al Ti Pl	Al Ti Pl	Al Ti Pl
	St Un	St Un	St Un	St Un	St Un	St Un	St Un	St Un
Frame	F N U	F N U	F N U	F N U	F N U	F N U	F N U	F N U
Intersects with Road								
Road ID.								
Start Displacement								
Displacement								
Side	C L R U	C L R U	C L R U	C L R U	C L R U	C L R U	C L R U	C L R U

Verge – Crossings								Opus K13: 2002
***BK** Beveled Kerb, **B** Bridge, **HD** Heavy Duty, **SL** Slot*								
Road ID.								
Carriageway Start								
Side	L B R	L B R	L B R	L B R	L B R	L B R	L B R	L B R
Type								
Verge - Berm								
***C** Cover, **F** Flowers, **FC** Flowers/Cover, **FS** Flowers/Shrubs, **FSC** Flowers/Shrubs/Cover, **G** Grass, **GC** Grass/Cover,*								
***GF** Grass/Flowers, **GFS** Grass/Flowers/Shrubs, **GFSC** Grass/Flowers/Shrubs/Cover, **GS** Grass/Shrubs, **S** Shrubs, **SC** Shrubs/Cover*								
Road ID.								
Carriageway Start								
Side	L B R	L B R	L B R	L B R	L B R	L B R	L B R	L B R
Start Displacement								
End Displacement								
Length								
Width								
Type	B L	B L	B L	B L	B L	B L	B L	B L
Plants								
Trees								
Features								
Road ID.								
Displacement								
Offset (from CL)								
Side	L C R	L C R	L C R	L C R	L C R	L C R	L C R	L C R
	B NA	B NA	B NA	B NA	B NA	B NA	B NA	B NA
Feature Type								
Traffic Guardrails								
***Rail Start & Rail End B** Bull nose, **C** Cable end, **F** Fishtail/Butterfly end, **T** Terminal end, **U** Unknown*								
Road ID.								
Start Displacement								
End Displacement								
Type								
Length								
Side	L R	L R	L R	L R	L R	L R	L R	L R
Offset								
Width								
Shape	C S T	C S T	C S T	C S T	C S T	C S T	C S T	C S T
Rail Start								
Rail End								
Joins to Road								
Road ID.								
Displacement								
Side	L R	L R	L R	L R	L R	L R	L R	L R

Appendix G

Standard Detail Drawings

General

G1	Private Right of Way
G2	Non-residential/Business Private Ways Construction

Roading

R1	Road Name Sign
R2	Services Layout Berm Cross Section (urban)
R3	Design Chart Flexible Pavements
R4	Vehicle Crossing (urban) Footpath Adjacent to Kerb
R5	Vehicle Crossing (urban) Footpath Away from Kerb
R6	Vehicle Crossing (urban) High Speed Turnoff
R7	Vehicle Crossing Commercial
R8	Vehicle Crossing (urban) Drainage via Grass Berm
R9	Vehicle Crossing (urban) Non-standard Berm Slope
R11	Intersection Sight Distance
R13	Cul-de-sac Head Dimensions
R14	Cul-de-sac Head Alternatives
R16	Typical Dimensions Kerb and Channel
R17	Typical Catchpit Details
R19	Recess Catchpit
R21	Wheelchair Ramp Kerb Crossing
R29	Standard Rural Property Entrance – Residential
R31	Private Heavy Vehicle Access
R32	Sand for Use in Replacement of Undercuts in Road Works

Stormwater

SW1	Stormwater Catchment Boundaries
SW2	Design Rainfall DDF Curves
SW3	Onehunga-Manukau Harbour Datums & Tides
SW4	Cast in Situ Reinforced Concrete Drainage Structures
SW5	Precast Manhole Flanged Base up to 4.5m Deep
SW6	Stormwater Manhole Details Cast In-Situ Base
SW7	Precast Manhole Cast In-Situ Base for Pipes >600mm
SW8	Manhole Throat Details
SW9	PE Pipe Manhole Connections
SW10	Stormwater Catchment Boundaries
SW11	Catchpit 1 of 2
SW11	Catchpit 2 of 2
SW13	RAMP Riser for Stormwater House Connections
SW14	Anchor Block Details
SW15	Pipe Bedding
SW16	Inlet and Outlet Structures
SW17	Build Over Influence Zone and Clearances to Manholes
SW18	Foundation/Pipe Clearances for Building Close to Public Drains
SW19	Minimum Freeboard Requirements for Building Adjacent to Floodplains
SW20	Groundwater Recharge Pit for Peat Areas Plan
SW21	Groundwater Recharge Pit for Peat Areas Cross Section
SW22	Recharge Pit Feature Dimensions V Impervious Area

Waste Water

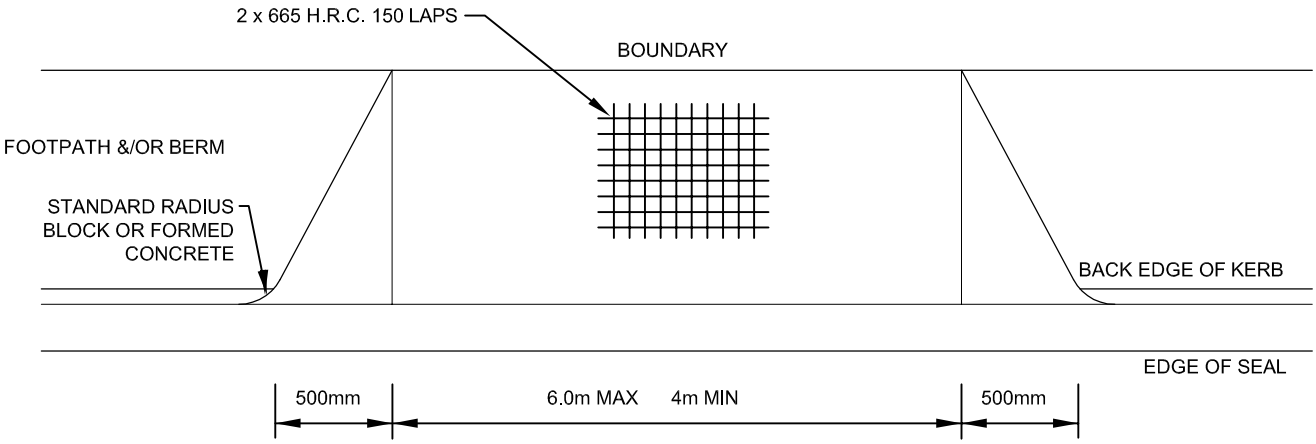
Contact United Water (U.W.I)

Water

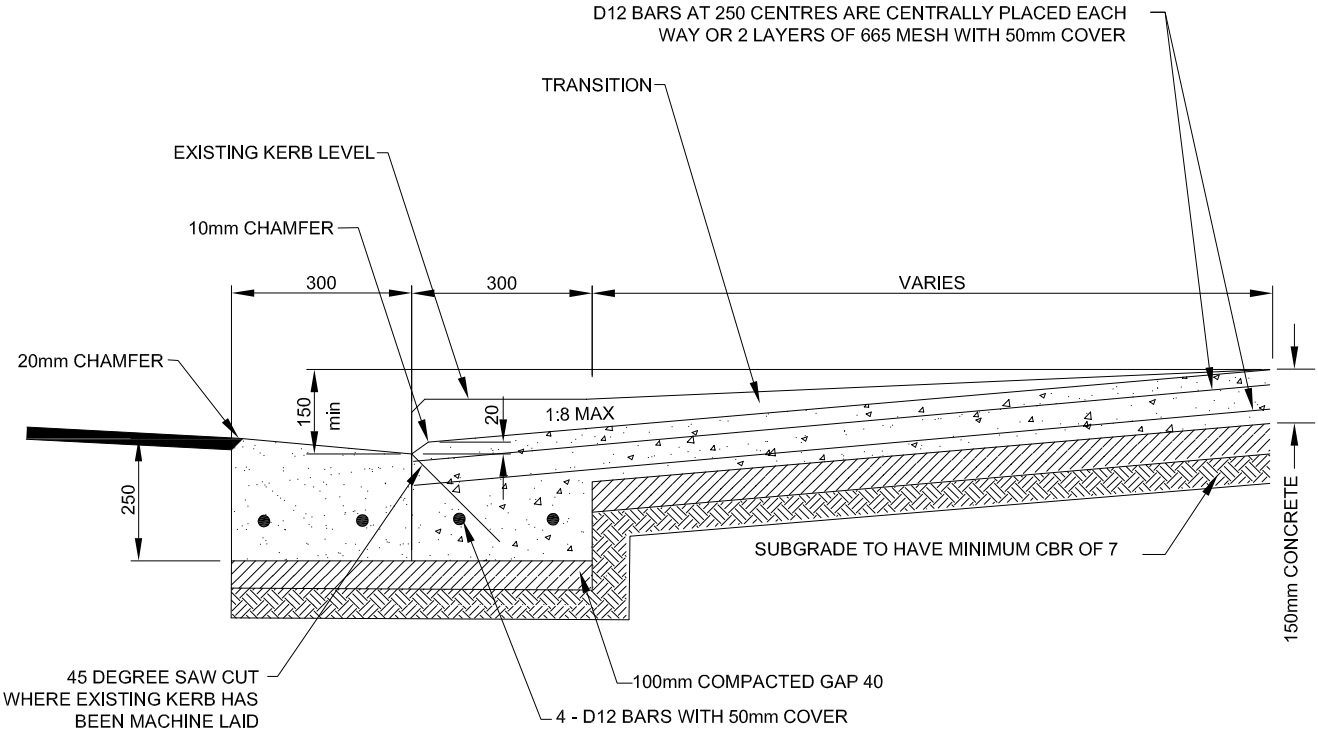
Contact United Water (U.W.I.)

Parks and Reserves

P1	Pedestrian Accessway Details
P3	Standard Park Barriers
P4	Berm Cross-Section for Tree Landscaping
P5	Street Tree Placement



PLAN



SECTION

NOTES:

1. ALL CONCRETE TO BE 20 MPa AND CONSTRUCTED IN ACCORDANCE WITH NZS 3109 WITH A BROOM FINISH.
2. CONCRETE POUR MUST TAKE PLACE WITHIN 48 HRS OF EXCAVATION OF ROAD RESERVE & FOOTPATH AT INSPECTION TIME
3. SAW CUT EXPANSION JOINTS AT 4m CENTRES.
4. MOUNTABLE KERBS TO BE CUT OUT BEFORE CONCRETE PLACEMENT.
5. VEHICLE CROSSINGS SHALL BE DESIGNED TO ENABLE THE 90 PERCENTILE CAR TO USE THEM WITHOUT THE GROUNDING OF ANY PART OF THE VEHICLE.
6. THE PREFERRED FOOTPATH LOCATION IS SEPARATED FROM THE KERB AND CHANNEL.

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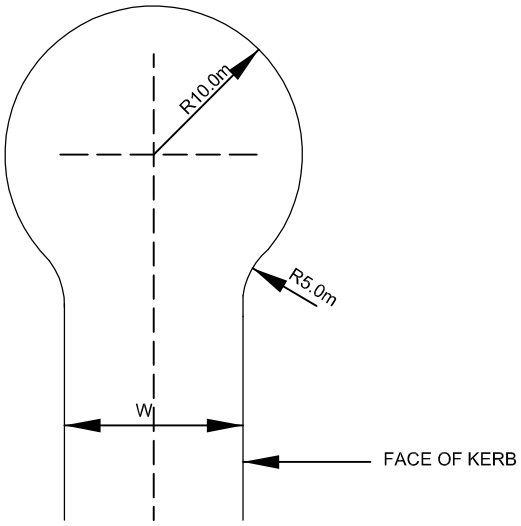
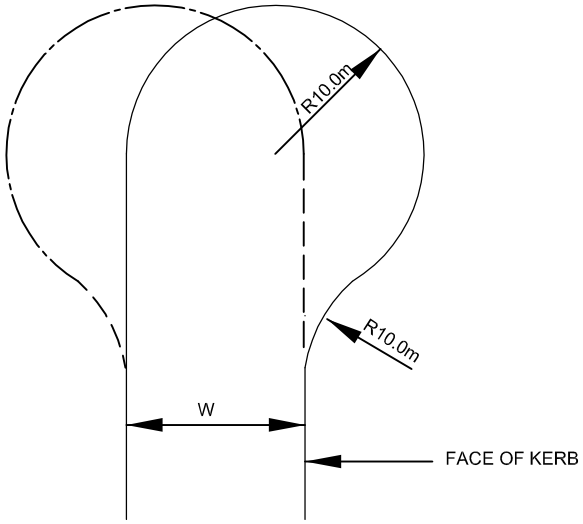
DATE ISSUED: JUNE 2009

DWG NO: R 7

VEHICLE CROSSING (COMMERCIAL)



CIRCULAR TURNING AREA FOR RESIDENTIAL CUL-DE-SAC



R=10.0m FOR WIDTH <7.8m
R=12.0m FOR WIDTH >7.8m

OFFSET CIRCULAR TURNING AREA FOR RESIDENTIAL CUL-DE-SAC

NOTES:-
1. THE TURNING AREA DIMENSIONS SHOWN ARE MINIMUM.

2. INDUSTRIAL OR COMMERCIAL AREAS, THE RADIUS OF THE CUL-DE-SAC TURNING AREAS SHALL BE 12.5m.

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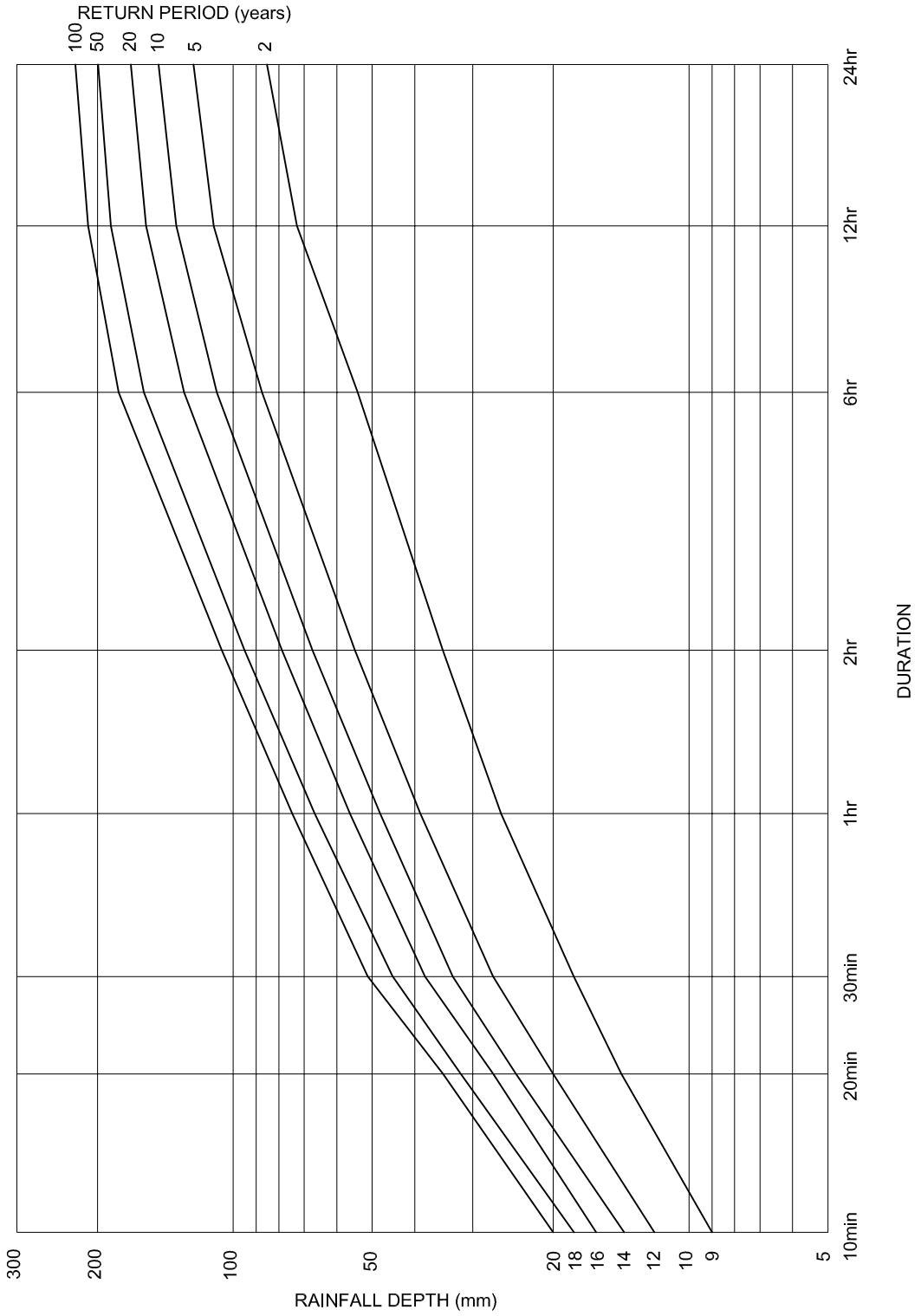
DWG NO: R 13

URBAN STREET DIMENSION OF CUL-DE-SAC HEAD



ANNUAL RAINFALL DEPTH-DURATION-FREQUENCY ANALYSIS
PAPAKURA FILTER STATION-SITE No. 750012
(Data between 1973 ~ 1990)

PAPAKURA
DISTRICT COUNCIL

DESIGN RAINFALL D.D.F. CURVES

DATE ISSUED: JUNE 2009

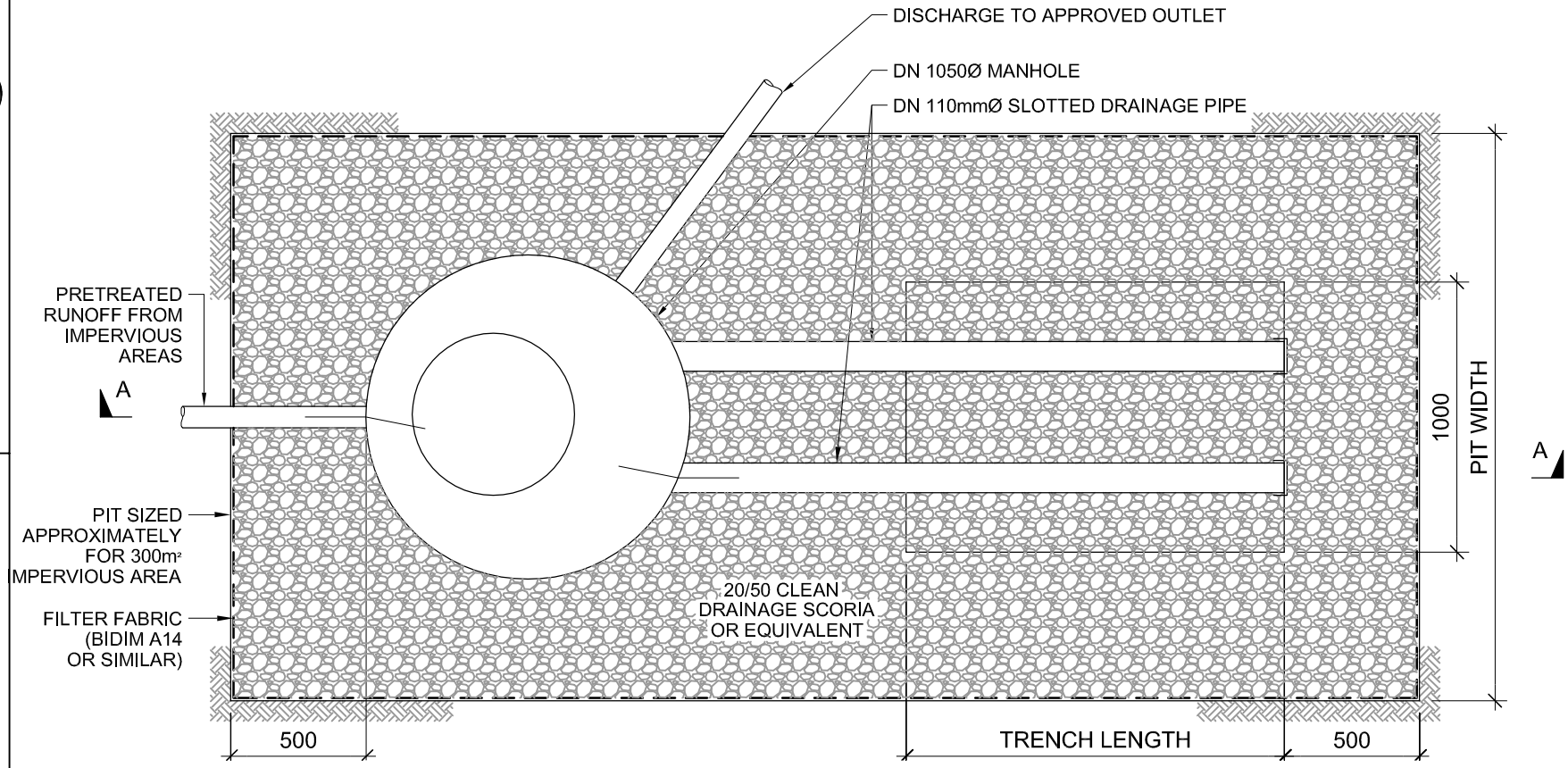
DWG NO: SW - 2

PAPAKURA DISTRICT COUNCIL

DATE ISSUED: JUNE 2009

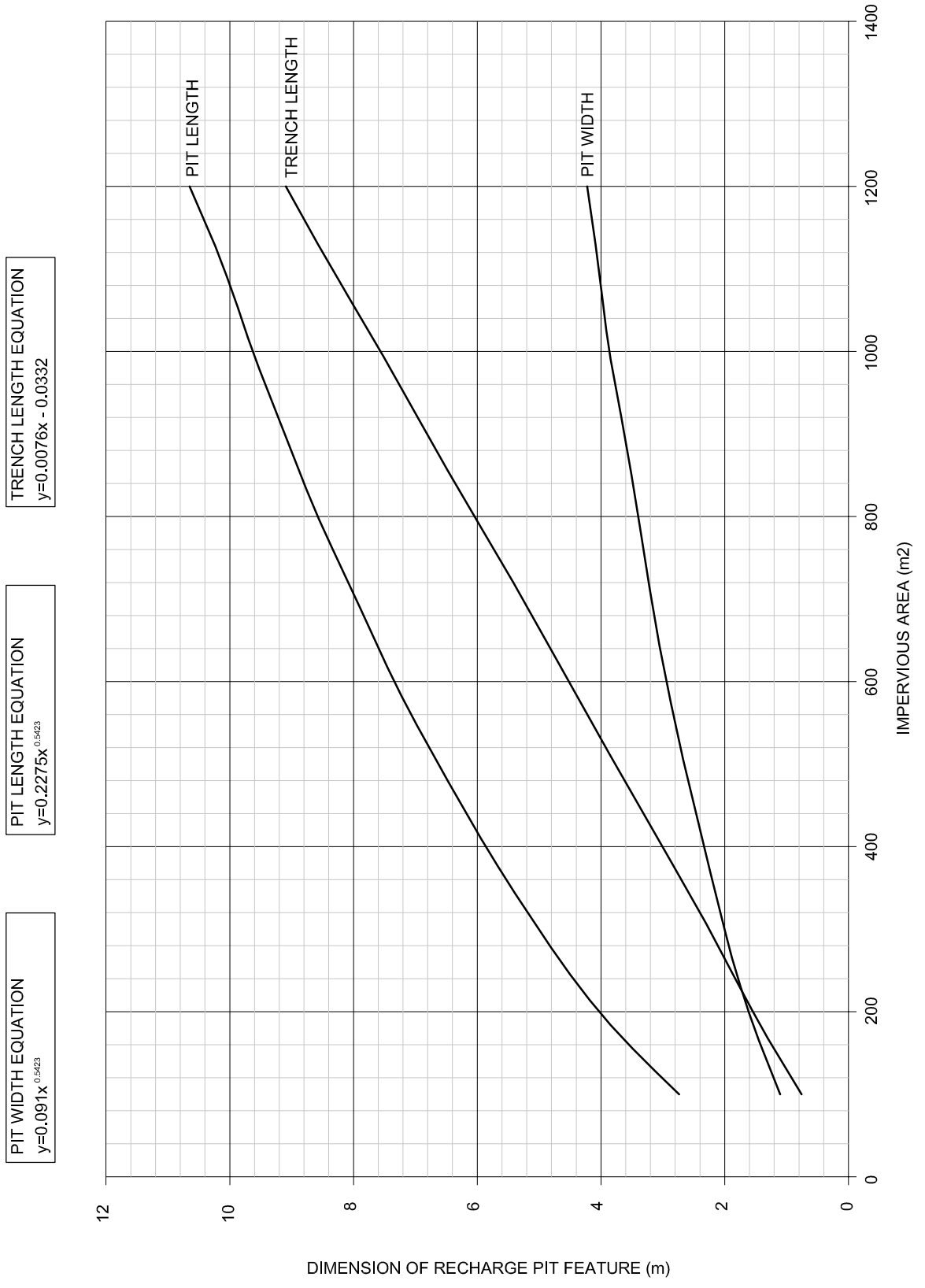
DWG NO: SW - 20

GROUNDWATER RECHARGE PIT FOR PEAT AREAS (PLAN)



NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. PRIVATE SW CONNECTION PIPES LAID WITH <600mm COVER REQUIRE CONCRETE PROTECTION.
3. MANHOLE INSTALLATION AND SW CONNECTION TO PUBLIC SYSTEM AS PER THE RELEVANT PARTS OF THE PDC DEVELOPMENT CODE.
4. LEAF TRAP TO BE INSTALLED IN ROOF GUTTERS.
5. ALL SCORIA/SOIL INTERFACES TO BE LINED WITH FILTER FABRIC (BIDIM A14 OR SIMILAR).
6. RECHARGE PITS MUST NOT BE LOCATED WITHIN 3.0m OF BUILDINGS OR BOUNDARIES, OR 2.0m OF SANITARY SEWERS.
7. 20mmø HOLES IN MH CHAMBER TO BE DRILLED AT 300mm HORIZONTAL SPACING AND 150mm VERTICAL SPACING.
8. DEVICE DIMENSIONS TO BE SIZED IN ACCORDANCE WITH SW-22.



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DATE ISSUED: DEC 2009

DWG NO: SW - 22

RECHARGE PIT FEATURE DIMENSIONS V IMPERVIOUS AREA

Appendix H

Standards and Guidelines Relevant to the Road Network

PAPAKURA DISTRICT COUNCIL

STANDARDS AND GUIDELINES

Bridges and Culverts

Bridge Manual : Transit New Zealand, 1994

Bridge Inspection and Maintenance Manual: Transit New Zealand, 1991

Waterway Design – A Guide to the Hydraulic Design of Bridges, Culverts and Floodways: AUSTROADS, 1994

Procurement

Manual of Competitive Pricing Procedures – Volume 1: Physical Works and Professional Services: Transfund New Zealand, 1997

General Conditions of Contract for Building and Civil Engineering Construction: NZS 3910, 2003

Model Conditions of Engagement between Commercial Client and Consultant for Professional Services: ACENZ/IPENZ, 1997

Geometric Design

Code of Practice for Urban Land Subdivision: NZS 4404, 1981

Rural Road Design – Guide to the Geometric Design of Rural Roads: AUSTROADS, 1989

Guide to Traffic Engineering Practice – Parts 1 – 14: AUSTROADS, 1988

Highway Surface Drainage – Design Guide for Highways with a Positive Collection System: National Roads Board, 1977

Maintenance Management Systems

RAMM Road Condition Rating and Roughness Manual: Transfund New Zealand, 1997

RAMM Database Operation Manual: Transfund New Zealand, 1997

Operational Management

Code of Practice for Temporary Traffic Management, Edition 3: Transit New Zealand, 2004

Code of Practice for Working in the Road, AUOG, 2004

Overweight Permit Manual: Transit New Zealand, 1995

Pavement Design

Bituminous Sealing Manual: Transit New Zealand, 1993

Pavement Design – A Guide to the Structural Design of Road Pavements: AUSTROADS, 1992 (plus New Zealand supplement, 1995)

Safety

Manual of Traffic Signs and Markings - Part 1 Traffic Signs: Transit New Zealand/LTSA, 1992

Manual of Traffic Signs and Markings - Part 2 Markings: Transit New Zealand/LTSA, 1994

RSMA Compliance Standard for Traffic Signs: Transit New Zealand/ Road Safety Manufacturer's Association, 2003

RTS 1 – Guidelines for the Implementation of Traffic Control at Crossroads: Ministry of Transport 1990

RTS 2 – Guidelines for Street Name Signs: Ministry of Transport, 1990

RTS 3 – Guidelines for Establishing Rural Selling Places: Ministry of Transport/Transit New Zealand, 1992

RTS 4 – Guidelines for Flush Medians: Ministry of Transport/Transit New Zealand, 1991

RTS 5 – Guidelines for Rural Road Marking and Delineation: Ministry of Transport/Transit New Zealand, 1992

RTS 6 – Guidelines for Visibility at Driveways: Ministry of Transport, 1993

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