



**Western Cape
Government**

Environmental Affairs and
Development Planning

Information Document for the Development of a Maintenance
Management Plan for a Watercourse

**Request for the relevant Competent Authority to define or adopt a Maintenance Management Plan
for a watercourse in terms of the National Environmental Management Act, 1998 (Act No. 107 of
1998), Environmental Impact Assessment Regulations, 2014 (as amended).**

File Reference Number:
Date Received by Department:
Date Received by Component:
Form Duly Signed and Dated:

(For official use only)	
	Yes No

PROJECT TITLE

REPAIR AND MAINTENANCE OF ROADS, BRIDGES, BOREHOLES AND PIPE CROSSINGS LOCATED
WITHIN SENSITIVE TERRESTRIAL ECOSYSTEMS, WATERCOURSES AND WETLANDS FOR THE STEENBRAS
WELLFIELD, LOCATED IN THE STEENBRAS NATURE RESERVE, WESTERN CAPE

A. MAINTENANCE MANAGEMENT PRINCIPLES

- 1) The following are overarching principles to be used by landowners and managers when considering the development and implementation of a MMP:
 - a. The anticipation and prevention of negative impacts and risks, then minimisation, rehabilitation or 'repair', where a sequence of possible mitigation measures to avoid, minimize, rehabilitate and/or remedy negative impacts is explicitly considered;
 - b. Avoid and reduce unnecessary maintenance;
 - c. Maintenance and management of a watercourse must be informed by the condition of the physical and ecological processes that drive and maintain aquatic ecosystems within a catchment, relative to the desired state of the affected system;
 - d. Management actions must aim to prevent further deterioration to the condition of affected watercourses and, overall, be guided by a general commitment to improving and maintaining ecological infrastructure for the delivery of ecosystem services;
 - e. Managers and organs of state must identify, address and, where feasible, eliminate the factors that necessitate intrusive, environmentally-damaging maintenance; and
 - f. A process of continuous management improvement be applied, namely Planning; Implementing; Checking (monitoring, auditing, determine corrective action) and Acting (management review).
- 2) The following table provides a simple overview for the determination of the need for a MMP:

	Question	If the answer to any of the questions is YES, then a MMP may be applicable.
2.1	Is there a watercourse on or adjacent to the property?	YES
2.2	Has there been a history of flood damage or vandalism to the existing infrastructure or watercourse – erosion and/or sedimentation?	YES
2.3	Is there infrastructure or any community at risk of being damaged by flooding?	YES
2.4	Is the design of infrastructure considered inadequate in terms of managing the risk of flooding, erosion and/or sedimentation?	NO
2.5	Would you consider an improved design to existing infrastructure to reduce maintenance needs?	YES
2.6	Are there specific incidences where the watercourse is obstructed or blockages occur that alter the flow of the river during floods?	YES
2.7	Is there an existing obstruction in the watercourse that has changed the flow of the river under normal conditions?	YES
2.8	Is there a marked increase in the rate of erosion/sedimentation being experienced which threatens operations and assets?	YES
2.9	Is there a presence of alien or bush encroachment vegetation within the watercourse and/or the presence of woody debris after flooding?	YES

- 3) It is important to consider that the type of maintenance required will impact on the level of assessment needed in terms of the impact the activity will have on the system and how best to mitigate the impact. Types of maintenance can broadly be classified in the following categories, with recognition that maintenance activities vary across the rural and urban context:

Maintenance Category	Types of maintenance activities (examples only)
Category A: Sediment removal as a result of deposition or sediment deposition as a result of erosion	• Clearing sediment or placing sediment at: ○ Pump hole/trench ○ Return flow (irrigation) ○ Off-take weir ○ Stormwater outfall ○ Detention/retention ponds ○ Canalized urban rivers ○ Bridges, culverts and drifts • Prevent formation of islands in the channel of the river • Dredging of in-stream dams
Category B: Emergency repairs – urgent action required to manage risk and damage to assets	• Repair to erosion of river bank or servicing infrastructure (e.g. pipelines/roads) • Removal of material built up as a result of flooding/sedimentation and increasing risk to infrastructure • Address damage or replacement of infrastructure (e.g. bridge, pipeline, pump house) • Manage the condition of flood protection berms, and existing structures such as gabions, canalized and stormwater systems • Installing temporary gravel approaches at flood-damaged river crossings
Category C: Managing alien invasive and bush encroachment plant species	• Clearing of alien invasive vegetation out of a watercourse to reduce maintenance requirements as they relate to erosion and sedimentation • Management of indigenous species categorized as bush encroachment, to improve hydrological flow and reduce associated flooding impacts
Category D: Rehabilitation and restoration activities for maintaining ecological infrastructure	• Development and maintenance of ecological buffering systems to improve and/or restore functioning (e.g. wetlands and stormwater detention ponds) • Actively rehabilitating riparian zones through planting of locally indigenous species • Bank grading and movement/removal of berms and barriers to flow

B. REQUEST FOR THE COMPETENT AUTHORITY TO DEFINE OR ADOPT A MAINTENANCE MANAGEMENT PLAN FOR A WATERCOURSE IN TERMS OF THE NEMA, EIA REGULATIONS 2014 (AS AMENDED).

The following information must be submitted as part of the request for the competent authority to define or adopt the MMP:

1. PERSONAL DETAILS

Highlight the Departmental Sub-Region(s) in which the maintenance is to be undertaken. (mark the appropriate box with an 'X'). For Departmental details see Annexure A.

REGION 1 (City of Cape Town Metropolitan and West Coast District) ☐	REGION 2 (Cape Winelands District, Overberg District) ☒	REGION 3 (Eden & Central Karoo Districts) ☐
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Name of person/authority who will undertake responsibility for the activity:	City of Cape Town – Steenbras Catchment Management / City of Cape Town – Environmental Management Department		
Contact person (if other):	Ricardo Hendricks / Owen Wittridge		
Postal address:	P.O. Box 91, Grabouw /		
Telephone:	021 444 9684 / 021 444 9743	Postal code:	7160 / 8000
Fax:	086 202 8988	Cell:	071 687 9243 / 084 528 0401
Email:	RicardoGlenville.Hendricks@capetown.gov.za / Owen.Wittridge@capetown.gov.za		
Name of person who has prepared the MMP:	Jeanne-Louise Wiese (Zutari Pty Ltd)		
Contact Person (if other):	Jeanne-Louise Wiese		
Postal address:	PO Box 494, Cape Town		
Telephone:	(021) 526 6024	Postal code:	8000
Fax:	-	Cell:	073 163 6409
E-mail:	Jeanne-Louise.Wiese@zutari.com		
Name of landowner(s) on whose behalf the plan has been developed: *	City of Cape Town – Environmental Management Department (Management Authority)		
Contact person(s):	Julia Wood		
Postal address:	PO Box 298, Cape Town		
Telephone:	021 444 1760	Postal code:	8000
Fax:	086 201 1017	Cell:	084 464 9153
E-mail:	Julia.Wood@capetown.gov.za		
Municipality for proposed project:	City of Cape Town		
Farm name(s), erf(s) and portion number(s) etc*:	Farm 307 Portion 0 (C01300000000030700000) Farm 310 Portion 0 (C01300000000031000000) Farm 310 Portion 1 (C01300000000031000001) Farm 309 Portion 5 (C01300000000030900005)		
Magisterial District or Town:	City of Cape Town		
Name(s) of watercourse(s) in question:	Multiple unnamed tributaries within the Steenbras Dam catchment		
*In instances where there is more than one landowner, please attach a list of landowners with their full names, contact details, farm name, farm number, portion number, Erf number, coordinates and signed declaration confirming approval for development and responsibility of the MMP			

2. DECLARATION

THE PERSON THAT WILL BE UNDERTAKING THE MAINTENANCE

I Owen Wittridge, in my **personal capacity** or **duly authorised** (please circle the applicable option) by Biodiversity Management, City of Cape Town (name of legal entity) thereto hereby declare that I/we:

- Request the MMP to be adopted by the Competent Authority;
- Regard the information contained herein to be true and correct for this Maintenance Management Plan;
- Am fully aware of my responsibilities in terms of the National Environmental Management Act of 1998 ("NEMA") (Act No. 107 of 1998) and that, notwithstanding the adoption of this MMP, I/we shall comply with any other statutory requirement applicable, which may include, but not limited to the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983), the National Water Act, 1998 (Act No. 36 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended) ("EIA Regulations"), in terms of NEMA;
- Am fully aware that the proposed maintenance constitutes a listed activity in terms of the NEMA EIA Regulations, 2014 (as amended) and that an environmental assessment for environmental authorisation may be required for any other listed activities not included as part of this MMP;
- Acknowledge that any activity undertaken that does not form part of the defined and adopted MMP, will be subject to the Section 24(F) of NEMA and that appropriate enforcement and compliance requirements will follow;
- Shall undertake only those tasks described in the MMP, failing which environmental authorisation will be required, where applicable;
- Shall provide the competent authorities with access to all information at my disposal that is relevant to this request;
- Shall be responsible for any costs incurred in complying with environmental legislation;
- Hereby indemnify the government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of, inter alia, any loss or damage to property or person as a consequence of undertaking this MMP; and
- Am aware that a false declaration is an offence in terms of Regulation 48(1)(a) GN No. R. 982 of 4 December 2014 (as amended).


O. WITTRIDGE
10026658

3 October 2022

Signature of the proponent:

Date:

City of Cape Town

Name of institution/company:

REPORTING FOR INTENT TO UNDERTAKE MAINTENANCE ACTIVITIES – FORM A				
Section A: Landowner Details				
Name	Surname	Farm No.	Erf No.	Today's Date
City of Cape Town	N/A	Farm 307. Farm 310. Farm 310, Portion 1. Farm 309, Portion 5.	N/A	15 August 2022
Section B: Details of proposed maintenance activity				
WUA/GA reference number and DEA&DP reference number for MMP.	Activity Type:	Reference code (<i>make reference to MMP</i>)	Footprint area (m ²)	Volume of material (m ³)
Water Use License (WUL) registration number 01/G40A/CI/9068 DEA&DP Section 30A Directive ref no. 16/6/A7/4/3128/17	Repair of damaged water crossing infrastructure, replacement of damaged road and pipeline infrastructure after large storm events, repair of pipeline infrastructure, clearing of culverts, clearing of alien invasives from watercourses, replacement of eroded stream crossing approaches, replacement / installation of erosion control measures and clearing of silt or flood debris from infrastructure and streams.	No reference number for MMP yet.	Undefined	Undefined
Equipment to be used:	Description of method for planned activity:		Date when work will commence:	
Loaders (rubber tyred up to 8-12 ton mass) Excavators (up to 2m ³) Rollers / Compactors (up to 10 ton mass) Tip truck, more than 5m ³ capacity Compressors & jackhammers Crane truck for the movement of large	Repair of damaged water crossing infrastructure: Some existing infrastructure is in need of repair. This would include the replacement of broken culverts, redirecting of culverts which are located against the natural flow of a stream, dredging inside the watercourse to obtain access to infrastructure, removal of flood debris and silt and the infilling of material for stabilisation and support of new infrastructure. This will be a like-for-like repair. Replacement of damaged road and pipeline infrastructure after large storm events: In most instances after large storm events there are some degree of damage, including erosion of banks, gravel roads and bridge approaches. Some flood debris could also cause damage to the infrastructure itself which would need to be fixed or replaced if damaged extensively. This could entail dredging, excavating and infilling in a stream.		October 2022	

infrastructure Chainsaw	Repair of pipeline infrastructure: Over time some damage could occur to the installed pipeline infrastructure, which would result in machinery needing to access the pipe over / underneath the stream and would entail dredging, excavating and potentially infilling inside a watercourse. Clearing of culverts: Regular clearing of culverts, especially during the rainy season, would need to take place to avoid damage and flooding along the entire road and pipeline networks where streams are crossed. The clearing would entail the dredging or excavating of debris, silt and other flooded material from the crossings. Clearing of alien invasive vegetation from watercourses: Large alien invasives will be cleared using chainsaws. Smaller plants will be removed by hand using hand tools to remove the roots from the beds and banks of watercourses. All plant material will be removed and disposed of at a garden waste facility. Clearing of indigenous vegetation around the borehole sites in case of borehole maintenance or drilling activities: More than 300 square metres of indigenous vegetation could be cleared in redrilling or maintenance is needed at any of the borehole sites for the establishment of drill rigs and associated infrastructure. Replacement of eroded stream crossing approaches: Over time some of the gravel road approached alongside the stream crossings could erode and cause the need for replacement or installation of erosion control measures. This would entail the infilling of material within close proximity to watercourses or within wetland areas. Replacement / installation of erosion control measures: Where erosion control measures are required or already installed, maintenance would have to be done to ensure these remain in good working order or that areas that become prone to erosion is secured to protect infrastructure and prevent downstream impacts to the aquatic ecosystems. This would entail the potential excavation and infilling of material within watercourses or wetland areas and activities such as gabion basket installations. Clearing of silt or flood debris from infrastructure and streams: Over time silt and gravel will accumulate along, under and behind infrastructure in streams and wetlands. These need to be cleared regularly to ensure proper functioning of the infrastructure and ecosystems and prevent flooding and associated damage within these areas. Borehole cleaning: Removal of installed production pump, set up of rehabilitation rig, drilling & testing, test pumping rig setup, step-drawdown test with water being pumped into the	
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	water pipeline, de-establishment of rig and re-installation of production pump and associated equipment.	
Date of last flood event for site:	Note any further damage and comments regarding the state of the site	
Winter 2021	Minor damage to erosion control measures, siltation of culverts, erosion dongas, debris around and under river crossings.	

Section C: Photographs of activity location before maintenance

WATER PIPELINE THROUGH WETLAND AREAS

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
1	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 9' 41.71" S 18° 56' 39.63" E	
2	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 9' 40.36" S 18° 56' 26.96" E	
3	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 10' 34.23" S 18° 54' 18.9" E	
4	River crossing	Farm 309 Portion 5, Caledon RD	34° 10' 18.5" S 18° 55' 4.88" E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
5	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 10' 7.65" S 18° 55' 23.3" E	
6	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 9' 52.2" S 18° 55' 50.74" E	
7	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 11' 16.37" S 18° 53' 34.04" E	
8	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 9' 41.61" S 18° 56' 12.59" E	

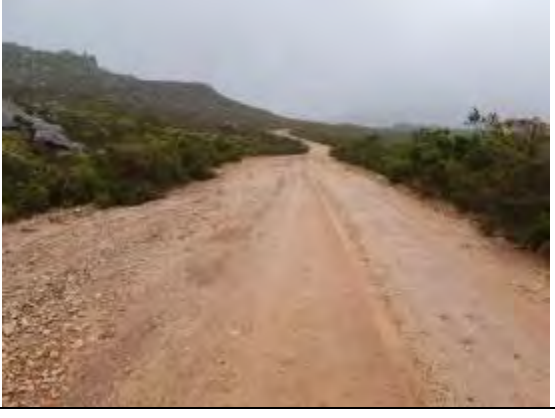
Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
9	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 10' 19.65" S 18° 56' 29.28" E	
10	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 11' 27.51" S 18° 53' 22.98" E	
11	Below ground pipeline	Farm 310 Portion 1, Caledon RD	34° 10' 51.65" S 18° 56' 54.34" E	
12	Below ground pipeline	Farm 310 Portion 1, Caledon RD	34° 10' 50.81" S 18° 56' 47.09" E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
13	Below ground pipeline	Farm 310 Portion 0, Caledon RD	34° 10' 46.12" S 18° 56' 44.48" E	
14	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 11' 7.04" S 18° 53' 31.88" E	
15	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 9' 58.86" S 18° 56' 11.12" E	
16	Below ground pipeline	Farm 307 Portion 0, Caledon RD	34° 10' 42.75" S 18° 56' 41.69" E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
17	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 10' 50.26" S 18° 54' 28.13" E	
18	Below ground pipeline	Farm 309 Portion 5, Caledon RD	34° 11' 7.58" S 18° 53' 56.01" E	
19	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 10' 46.99" S 18° 54' 31.99" E End 34° 10' 34.18" S 18° 54' 24.99" E	
20	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 9' 37.14" S 18° 56' 47.13" E End 34° 9' 45.22" S 18° 56' 30.99" E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
21	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 10' 11.5" S 18° 56' 22.27" E End 34° 9' 46.66" S 18° 56' 0.96" E	
22	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 11' 17.12" S 18° 53' 34.91" E End 34° 11' 46.11" S 18° 52' 32.11" E	
23	Discharge of water into Steenbras Dam	Farm 309 Portion 5, Caledon RD	34° 9' 19.69" S 18° 56' 20.6" E	
24	Below ground pipeline	Farm 310 Portion 1, Caledon RD	Start 34° 10' 51.58" S 18° 57' 1.19" E End 34° 10' 51.88" S 18° 56' 47.5" E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
25	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 9' 35.46" S 18° 56' 22.74" E End 34° 9' 46.65" S 18° 56' 0.36" E	
26	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 9' 46.82" S 18° 56' 0.24" E End 34° 9' 57.79" S 18° 55' 41.15" E	
27	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 11' 17.73" S 18° 53' 35.47" E End 34° 11' 14.93" S 18° 53' 32.65" E	
28	River crossings	Farm 309 Portion 5, Caledon RD	34° 11' 27.02" S 18° 53' 24.79" E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
29	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 10' 27.44" S 18° 56' 37.43" E End 34° 10' 11.6" S 18° 56' 22.31" E	
30	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 10' 58.25" S 18° 53' 32.79" E End 34° 11' 14.91" S 18° 53' 32.7" E	
31	Below ground pipeline	Farm 307 Portion 0, Caledon RD	Start 34° 10' 42.76" S 18° 56' 41.69" E End 34° 10' 27.44" S 18° 56' 37.43" E	
32	Below ground pipeline	Farm 310 Portion 0, Caledon RD	Start 34° 10' 50.1" S 18° 56' 46.7" E End 34° 10' 42.76" S 18° 56' 41.69" E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
33	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 10' 46.99" S 18° 54' 31.99" E End 34° 10' 34.18" S 18° 54' 24.99" E	
34	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 10' 51.67" S 18° 54' 26.53" E End 34° 11' 17.74" S 18° 53' 35.95" E	
35	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 10' 18.23" S 18° 55' 3.68" E End 34° 10' 57.94" S 18° 53' 32.93" E	
36	Below ground pipeline	Farm 310 Portion 1, Caledon RD	Start 34° 10' 51.88" S 18° 56' 47.67" E End 34° 10' 50.1" S 18° 56' 46.7" E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
37	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 9' 57.78" S 18° 55' 41.23" E End 34° 10' 18.3" S 18° 55' 3.53" E	
38	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 9' 45.43" S 18° 56' 31.46" E End 34° 9' 34.51" S 18° 56' 22.96" E	
39	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 10' 49.75" S 18° 54' 30.11" E End 34° 10' 51.28" S 18° 54' 26.36" E	
H8 A1 1 New pipeline	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 10' 58.32" S 18° 53' 32.81" E End 34° 11' 9.56" S 18° 53' 11.55" E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during May 2022)
Pipeline from Nuweberg wellfield	Below ground pipeline	Farm 309 Portion 5, Caledon RD	Start 34° 9' 12.33" S 18° 58' 0.3" E End 34° 9' 28.76" S 18° 56' 30.04" E	

BELOW AND ABOVE GROUND RIVER CROSSINGS

Ref #	Start		End		Infrastructure	Properties
1	34° 9'37.24"S	18°56'47.23"E	34° 9'38.06"S	18°56'46.09"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
2	34° 9'40.58"S	18°56'41.35"E	34° 9'41.51"S	18°56'39.92"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
3	34° 9'45.42"S	18°56'32.69"E	34° 9'45.29"S	18°56'31.25"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
4	34° 9'42.79"S	18°56'29.05"E	34° 9'40.98"S	18°56'27.45"E	River crossing	Remainder of portion 5 of farm portion 309
						
5	34° 9'36.39"S	18°56'21.08"E	34° 9'37.38"S	18°56'19.32"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
6	34° 9'42.05"S	18°56'11.95"E	34° 9'42.26"S	18°56'11.33"E	Above ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
7	34° 9'46.90"S	18°56'0.04"E	34° 9'52.06"S	18°55'50.96"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
8	34° 9'52.15"S	18°55'50.83"E	34° 9'53.73"S	18°55'48.19"E	Above ground pipeline	Remainder of portion 5 of farm portion 309
						
9	34° 9'54.91"S	18°55'45.88"E	34° 9'55.29"S	18°55'45.31"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
10	34° 9'55.56"S	18°55'44.87"E	34° 9'56.60"S	18°55'43.14"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
11	34° 9'57.01"S	18°55'42.46"E	34° 9'58.04"S	18°55'40.77"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
12	34° 9'58.19"S	18°55'40.38"E	34°10'0.31"S	18°55'37.43"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
13	34°10'1.37"S	18°55'35.02"E	34°10'1.95"S	18°55'33.61"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
14	34°10'2.45"S	18°55'32.69"E	34°10'3.39"S	18°55'31.06"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
15	34°10'4.67"S	18°55'28.69"E	34°10'5.96"S	18°55'26.29"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
16	34°10'7.13"S	18°55'24.08"E	34°10'8.52"S	18°55'21.86"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
17	34°10'9.08"S	18°55'20.96"E	34°10'9.60"S	18°55'20.16"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
18	34°10'10.59"S	18°55'18.91"E	34°10'10.59"S	18°55'18.91"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
19	34°10'13.12"S	18°55'14.39"E	34°10'16.39"S	18°55'8.10"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
20	34°10'17.30"S	18°55'5.99"E	34°10'18.25"S	18°55'3.62"E	Above ground pipeline	Remainder of portion 5 of farm portion 309
						
21	34°10'22.58"S	18°54'52.98"E	34°10'25.16"S	18°54'46.66"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
22	34°10'33.29"S	18°54'19.77"E	34°10'34.70"S	18°54'17.70"E	Above ground pipeline	Remainder of portion 5 of farm portion 309
						
23	34°10'42.64"S	18°53'56.33"E	34°10'10.59"S	18°55'18.91"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
24	34°10'52.05"S	18°53'40.36"E	34°10'55.38"S	18°53'36.27"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
25	34°11'1.96"S	18°53'31.96"E	34°11'3.68"S	18°53'31.69"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
26	34°11'5.18"S	18°53'31.72"E	34°11'5.62"S	18°53'31.86"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
27	34°11'8.83"S	18°53'31.03"E	34°11'9.74"S	18°53'30.84"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
28	34°11'10.80"S	18°53'30.92"E	34°11'14.01"S	18°53'32.10"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
29	34°11'15.22"S	18°53'32.84"E	34°11'16.99"S	18°53'34.71"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
30	34°11'17.61"S	18°53'35.80"E	34°11'15.94"S	18°53'40.54"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
31	34°11'9.17"S	18°53'51.60"E	34°11'8.03"S	18°53'54.10"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
32	34°11'7.20"S	18°53'56.37"E	34°11'5.37"S	18°54'3.05"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
33	34°10'39.48"S	18°54'30.15"E	34°10'39.48"S	18°54'30.15"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
34	34°11'19.20"S	18°53'30.93"E	34°11'20.44"S	18°53'28.65"E	Above ground pipeline	Remainder of portion 5 of farm portion 309
						
35	34°11'23.23"S	18°53'27.22"E	34°11'25.09"S	18°53'26.09"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
36	34°11'26.31"S	18°53'25.20"E	34°11'27.05"S	18°53'23.99"E	Above ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
37	34°11'28.29"S	18°53'21.11"E	34°11'28.84"S	18°53'18.62"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
38	34°11'28.98"S	18°53'17.92"E	34°11'30.44"S	18°53'14.58"E	Above ground pipeline	Remainder of portion 5 of farm portion 309
						
39	34°11'32.21"S	18°53'11.05"E	34°11'33.67"S	18°53'8.43"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
40	34°11'34.31"S	18°53'7.29"E	34°11'34.77"S	18°53'6.00"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
41	34°11'35.83"S	18°53'3.41"E	34°11'36.44"S	18°53'1.47"E	Above ground pipeline	Remainder of portion 5 of farm portion 309
						
42	34°11'37.06"S	18°52'59.24"E	34°11'37.30"S	18°52'58.59"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
43	34°11'37.35"S	18°52'58.47"E	34°11'38.85"S	18°52'53.45"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
44	34°11'39.46"S	18°52'52.16"E	34°11'41.37"S	18°52'47.63"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
45	34°11'41.85"S	18°52'46.33"E	34°11'42.10"S	18°52'45.66"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
46	34°11'42.70"S	18°52'44.31"E	34°11'42.94"S	18°52'41.71"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
47	34°11'43.84"S	18°52'36.28"E	34°11'44.88"S	18°52'34.68"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
48	34°11'45.40"S	18°52'33.94"E	34°11'46.19"S	18°52'32.15"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
49	34° 10'37.95"S	18°54'29.32"E	34° 10'37.98"S	18°54'29.74"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
50	34° 11'3"S	18°53'27.32"E	34° 11'3.01"S	18°53'26.84"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
51	34° 11'8.26"S	18°53'15.66"E	34° 11'8.01"S	18°53'15.46"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

Ref #	Start		End		Infrastructure	Properties
52	34° 9'37.98"S	18°57'16.33"E	34° 9'37.75"S	18°57'16.14"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
53	34° 9'24.47"S	18°56'39.63"E	34° 9'24.26"S	18°56'39.44"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						
54	34° 9'26.49"S	18°56'35.55"E	34° 9'26.26"S	18°56'35.38"E	Below ground pipeline	Remainder of portion 5 of farm portion 309
						

VEGETATION CLEARANCE AROUND BOREHOLE SITES

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during early 2022)
H1A1	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34° 9'37.25" S 18°56'47.01" E	
H1A2	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34° 9'39.99" S 18°56'26.54" E	
H1A3b	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34° 9'57.91"S 18°55'40.58"E	
H1A4b	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34°10'22.68"S 18°55'26.94"E	
H8A2	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34°11'4.69"S 18°54'7.41"E	
H8A4	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34°11'7.75"S 18°53'55.90"E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during early 2022)
H8A5	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34°11'36.87"S 18°53'0.62"E	
H8A7	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34°11'17.49"S 18°53'35.01"E	
H8A9	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34°10'46.46"S 18°54'31.84"E	
H8A10	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34°11'17.26"S 18°53'34.94"E	
H8A11	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34°11'9.41"S 18°53'11.69"E	

Ref #	Infrastructure	Properties	Co-ordinates	Photo (Taken during early 2022)
H8A13	Production borehole pumphouse	Farm 309 Portion 5, Caledon RD	34°10'54.76"S 18°53'36.59"E	