Our File: McElhanney Project No.2231-27316-01

TECHNICAL MEMO

To	From
John Marsh, CPA, CMA, Administrator Deep Bay Improvement District	Nathan Slater, P.Eng., Project Engineer
Re	**Date**
Deep Bay Improvement District – Asbestos Cement Pipe Replacement	April 14, 2023

1. Introduction

McElhanney Ltd. (McElhanney) has been retained by the Deep Bay Improvement District (the District) to develop an Asbestos Cement (AC) Pipe replacement guide for the District's water distribution system.

The objective of this report is to assist the District in understanding the associated risks of operating aging AC watermain infrastructure, while meeting acceptable levels of service and regulatory requirements. Also, to provide guidance on prioritization of the replacement of the AC watermain piping.

The work was carried out in accordance with McElhanney proposal dated October 5, 2022. The methodology included a desktop review of available published information and review of system breaks with operations staff.

1.1. BACKGROUND

1.1.1. Distribution System

The Water System has been constructed in Phases over a period of approximately 5 decades. Approximately 80% of the system was constructed using AC pipe and the remainder is Polyvinyl Chloride (PVC) pipe.

Most of the lines were constructed with 150 mm (6 inch) diameter piping. Larger pipe was used along Gainsburg Road and Thompson Clark Drive and serves as the "trunk" main. Smaller 100 mm (4 inch) diameter pipe was used for short dead-end lines and within the Longview, Seaview, and Shoreline Drive subdivision.

AC pipe went out of common use in the mid 1970's when PVC became available. Since that time many communities have experienced problems with deterioration and eventual failure of their AC pipe system.

Problems can be attributed to a combination of factors that generally include:

- Failures are most prevalent in communities that have slightly more acidic water. This 'soft' water attacks the cement and reduces pipe strength.
- AC pipe is a brittle material that is prone to crack when subjected to uneven loads due to trench settlement, slope movement or vehicle loads.
- Insufficient bedding during installation may result in point loads against the outside of the pipe that result in high stress and pipe failure.

The cost of replacing AC water mains is a large expense and many communities in BC have adopted AC pipe replacement programs to spread this cost out over time. The warrant for immediate action is assessed on a case-by-case basis depending on factors that relate to a specific community.

1.1.2. System Piping

Table 1 below shows the approximate distribution of the existing watermain piping.

Table 1: System Piping Distribution

Pipe Diameter (mm)	AC Pipe (m)	PVC Pipe (m)
100	3334	356
150	8795	2678
200	2054	214
250	1495	281
300	2297	78
Total	**17975**	**3607**

1.1.3. Previous Condition Reporting

In 2008, the District retained Levelton Consultants Ltd (now WSP Canada Inc.) to conduct a series of non-destructive and destructive testing on a single sample of AC piping taken from Shoreline Drive. The objective was to evaluate the remaining service life. The conclusion from the report indicated an approximate remaining service life of 20 years[1] (2028). The report also recommended that if any further AC water distribution pipe is replaced, consideration be given to carrying out evaluation of additional pipe lengths to further develop the information database of long-term AC pipe behaviour in the District's system.

[1] Class 150 Asbestos Cement (AC) Watermain Pipe Condition Evaluation Deep Bay Water District December 11, 2008

2. OPERATIONAL FACTORS

The following operational factors were reviewed as part of the evaluation process. They can generally be described as follows:

2.1. LEVEL OF SERVICE

The level-of-service includes the following:

- Regulatory Compliance.
- Capacity of the System (existing and future) and,
- Ratepayer Expectations / Risk tolerance.

2.1.1. Regulatory Compliance

The regulatory compliance level-of-service is mandatory and must be achieved to meet minimum public health and safety standards for safe drinking water and safe operation of the system. Regulatory compliance regulations, guidelines and standards for the District's Water System are listed below:

- Guidelines for Canadian Drinking Water Quality, Health Canada.
- Drinking Water Protection Act and Regulations, British Columbia.
- British Columbia Water Sustainability Act and Groundwater Protection Act.
- Island Health Authority.
- Worksafe BC.

Based on our understanding of the District distribution system, it is in general conformance with the above standards and guidelines.

2.1.2. Capacity of the Distribution System

The capacity of the distribution system relates to its ability to convey both domestic water and fire flows throughout the service area. There are several factors that can influence this level-of-service including, how much water people consume, age of the system (reduced efficiency) and growth of the service area.

Based on the Water System Evaluation Report (McElhanney, 2008), the system can meet the requirements for domestic distribution, but upgrades are required to achieve fire protection standards.

2.1.3. Ratepayer Expectations

Ratepayer expectation and risk tolerance is related to how well customers expect the system to perform over the long-term. This can include factors such as, water quality, system pressures, reliability of piping, and frequency of water disruptions.

Risk tolerance also relates to how much preventative maintenance should be performed on the system, when assets should be upgraded or replaced.

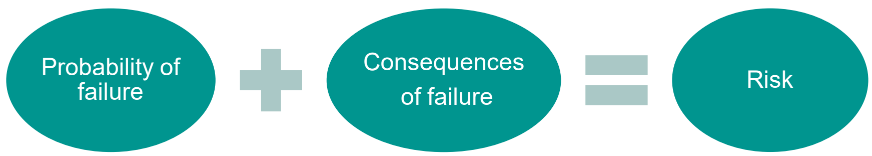
Ratepayer expectation and risk tolerance for the District's water distribution system may be defined as follows:

- Water quality meets regulatory compliance and safe drinking water guidelines.
- System pressures are maintained at a reasonable level.

- Pipe sizing is adequate for existing usage but does not meet minimum fire flow requirements in all areas.
- System breakage and outages occur but are infrequent.
- Flushing of watermains occurs regularly for maintenance of the system, including exercising valves and hydrants.
- The maintenance program is generally a combination of preventative and reactive, with the goal leaning more towards cost savings, rather than system resiliency.

3. Risk

Risk management is a systematic approach used to assist in prioritizing infrastructure replacement. Risk depends on both the probability and consequence of an event and is often represented using the following equation:



Probability of failure (POF) represents the likelihood that that a specific asset will fail (not deliver the required level of service). Consequence of failure (COF) represents the overall impact of an asset failing.

3.1. PROBABILITY OF FAILURE

Table 2 summarizes potential probability of failure (POF) components for a watermain prioritization. analysis.

3.2. APPROACH FOR PRIORITIZATION

The purpose of a water main prioritization analysis is to provide a systematic methodology for the prioritization of water main replacement based on the consequence of failure (COF) and probability of failure (POF) for each water main segment.

A risk matrix provides indication that a water main with a high consequence of failure and high probability of failure presents a higher risk to District.

The greater the risk the more critical the replacement is, conversely, a water main in very good condition with a low consequence of failure provides a lower risk to the District.

Taking that into account a water main with a high consequence of failure in good condition could still pose a moderate level of risk and consequently requires a greater level of action than a lower risk water main.

Table 2 Probability of Failure Factors

Component	Description	Data
Leaks and Breaks	As water mains deteriorate, pipe leaks and/or breaks become more prevalent; therefore, break history can provide a good indication of the condition of the water distribution system and the probability of failure.	• Leak/break location • Date of leak/break • Cause of leak/break
Remaining Useful Life	Water mains generally deteriorate with age.	• Water main installation date • Water main material • Survival curves (normally developed from above data)
Hydraulic Performance	Hydraulic performance (Hazen Williams C-Values) is an indication of the corrosion/condition of the inside of the pipe.	• Hydraulic model (C-values generally determined during calibration of the hydraulic model)
Complaints	Water quality in the distribution network can provide an indication of the condition or deterioration of water mains. For example, high customer complaints (related to water quality issues such as odor, taste, and appearance) can indicate that the mains in that area are corroding or deteriorating	• Historical complaint records o Location o Date o Description/type
Fire Flow Deficiency Improvements	Some water mains may need to be replaced/upsized based on available fire flows in the system.	• Fire flow deficiency results (potentially from hydraulic model) • Pipes identified for replacement
Headloss/ Velocity	Headloss and velocity are two parameters used as indicators of whether individual water mains are reaching their hydraulic capacity. AWWA Manual M32, *Computer Modeling of Water Distribution Systems,* Third Edition includes guidelines for maximum recommended limits of pipe headloss and velocity.	• Hydraulic model simulation results
Desktop Condition Assessment	Based on pipe material and pipeline construction specifications used some pipes may be more susceptible to failure.	• Pipe construction specifications used • Pipe depth of bury • Manufacturer/material specifications for pipe
Material	Some communities have historical data indications certain pipe materials are more likely to fail.	• Pipe Material

3.2.1. Consequence of Failure

Table 3 summarizes potential consequence of failure components for a water main prioritization analysis.

Table 3 Consequence of Failure Factors

Component	Description	Data
Critical Users	Consequence of water main failing is generally related to the customers that a water main serves (critical customers) and the number of services each critical customer has.	• Location/size of services (laterals) • Location/size of meters (s)
Large Users	Consequence of water main failing is related to the volume of water the customers use.	• Location of meter (s) • Historical usage of users
Land Use/Type of Use	Land use or type of use (residential, institution, river crossing) is generally a good indicator of the consequence of a water main failing.	• Hydraulic model simulation results
Flow	Consequence of water main failing is related to the flow through a water main.	• Hydraulic model simulation results
Diameter	Generally, the larger the diameter of the pipe the more significant the pipe is in the overall service to customers; therefore, water main diameter considered for consequence of failure.	• Water main diameter
Sensitive Areas	Specific sensitive areas for repairs/construction may exist including wetlands, contaminated areas, adjacent to street cars, etc.	• Map with sensitive areas
Redundancy	Consequence of water main failing is related to the redundancy of that main. Therefore, mains that provide all or most of the flow to an area (e.g. neighborhood, pressure zone, etc.) have a higher consequence of failure.	• Hydraulic model evaluations and/or engineering judgement/review

4. ASSESSMENT METHODOLOGY

The assessment methodology used in the review and prioritization of the piping, focused on the following criteria:

1. Asset Physical Condition Grading
2. Asset Criticality Grading (Risk)
3. Asset Data Confidence Grading
4. Asset System Capacity Grading

Below is an overview of each.

4.1. ASSET PHYSICAL CONDITION GRADING SYSTEM

Asset physical conditions were graded based on the level of maintenance now required and on expected renewal / rehabilitation requirements:

1. **Very Good** – Asset is physically sound, performing its function as originally intended. Generally new or recently rehabilitated. Only planned maintenance required.
2. **Good** – Asset is physically sound, performing its function as originally intended. Required maintenance costs as within acceptable standards but increasing. Asset has been used for some time but is within mid stage of expected life.
3. **Fair** – Asset is showing signs of deterioration, performing at a lower level that originally intended. Some components are becoming physically deficient. Required maintenance costs exceed acceptable standards and increasing. Asset within the later stages of expected life.
4. **Poor** – Asset is showing significant signs of deterioration, performance is much lower than originally intended. Majority of asset is physically deficient. Required maintenance costs significantly exceed acceptable standards. Asset is approaching end of expected life.
5. **Very Poor** – Asset is physically unsound and/or not performing as originally intended. Asset has higher probability of failure or failure is imminent. Maintenance costs are unacceptable. Replacement / major refurbishment required.

4.2. ASSET CRITICALITY GRADING SYSTEM

Asset criticality grades were established focusing on system interruption risk and health and safety issues. The grades are based on the following criteria:

1. **Non-Critical Asset –** Failure would not result in an immediate problem.
2. **Asset Standby Equipment Available –** Asset failure would result in replacement/repairs which could be completed relatively quickly.
3. **No Asset Equipment Redundancy –** Asset failure could result in moderately prolonged service interruption. Asset standby equipment not readily available.
4. **No Equipment Redundancy & Failure of equipment not monitored by alarm -** Asset failure could cause prolonged system interruption. Significant time and cost to get system back online.

5. **No Equipment Redundancy & Failure of equipment not monitored by alarm and/or immediate Health & Safety Concerns -** Asset Failure could cause prolonged system interruption. Significant time and cost to get system back online. Asset essential to health and safety requirements.

4.3. ASSET DATA CONFIDENCE GRADING SYSTEM

Assets were graded based on available data and records including but not limited to; documented procedures, investigations, analyses, reports, and drawings. Data confidence grades are based on the following criteria:

A. **Highly Reliable -** Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete. Accuracy estimated +/- 2%.

B. **Reliable -** Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, i.e. some data is old, missing, and / or extrapolated. Dataset is complete. Accuracy estimated +/- 10%.

C. **Uncertain -** Data is based on sound records, procedures, investigations and analysis which is incomplete, unsupported, and/or extrapolated. Dataset is substantially complete but up to 50% is extrapolated. Accuracy estimated +/- 25%.

D. **Very Uncertain -** Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete, and most of the data is estimated or extrapolated. Accuracy estimated +/- 40%.

E. **Unknown -** Very little or no data available.

It should be noted that the majority the District piping data is considered uncertain. Therefore, the data confidence grading has generally been based on discussions with operations staff.

4.4. ASSET SYSTEM CAPACITY GRADING SYSTEM

A capacity analysis was conducted for existing and future system requirements based on anticipated growth projections. The asset capacity analysis is based off the Water System Evaluation Report (McElhanney, 2008).

Assets were graded based on capacity to meet current and long-term demands. Capacity Grades are based on the following criteria:

A. **Excellent -** The asset has the capacity to meet long-term demand up to 10 years.

B. **Good -** The asset has the capacity to meet medium-term demand up to 5 years.

C. **Moderate -** The asset has the capacity to meet short-term growth demands.

D. **Borderline -** The asset has the capacity to meet short-term growth demands but experiences some shortfalls.

E. **Fail -** The asset capacity is not meeting its current demand and experiencing frequent shortfalls.

5. ASSET GRADING RESULTS

The asset grading results are summarized in Tables 4 & 5 below. A complete summary is included in the appendices. The results in generally can be summarized as follows:

- **Condition –** apart from PVC piping, all AC piping has been assigned the same condition rating. Based on operational staff input, all areas generally require a similar level of maintenance. The previous review of AC piping undertaken by Levelton Consultants Ltd, suggests a remaining service life of AC piping to the 2028 year.
- **Criticality –** criticality varied, primarily based on the impact of disruption to rate payers and the ability of the District to repair internally or requiring third party contractors. Piping located under Gainsburg Road services the entire District and as such would be considered the most critical given the potential disruption to rate payers.
- **Data Confidence –** apart from PVC piping (and recently installed system upgrades), all AC piping has been assigned the same level of data confidence.
- **Capacity –** capacity ratings varied, throughout and reflected potential development lands and ability of the system to provide fire protection.

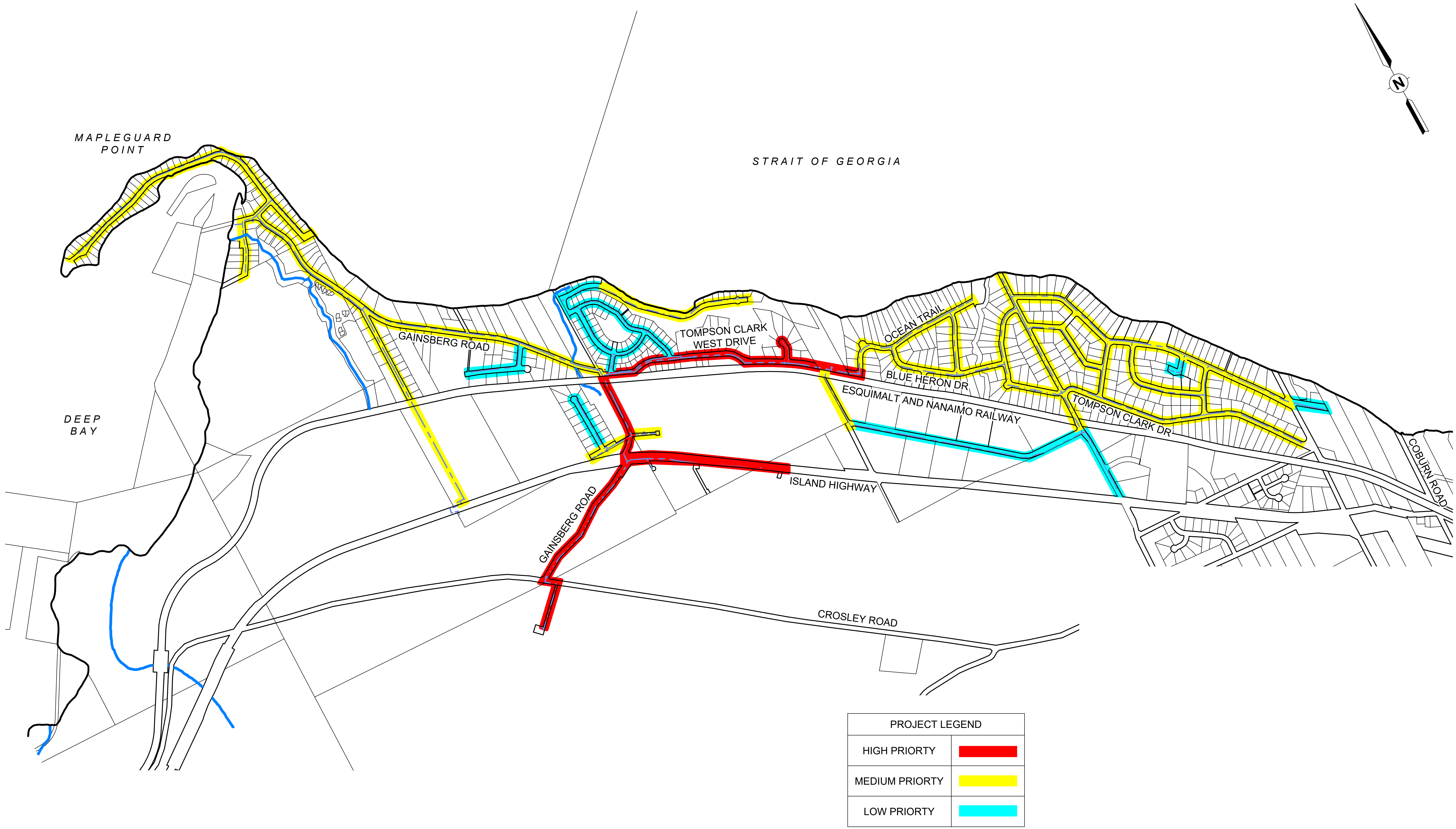
For the purposes of this report, the total asset ratings will be used to prioritize and recommend AC pipe replacement projects to be undertaken. Values in Tables 4 & 5 can be adjusted based on District priorities.

Table 4 Asset Ratings

Asset Ratings	Prioritization Description	Number of Segments	Approx. Total Length Piping (m)
11 - 15	Highest Priority	8	2,975
6 – 10	Medium Priority	42	11,810
0 – 5	Lowest Priority	13	3,190

Note: Table 4 includes sections of PVC piping.

Refer to Figure 1 attached for location priority details.



Rev	Date	Description	Drawn	Design	App'd
PA	2023-04-04	ISSUED WITH REPORT	JS		CP

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ORIGINAL DWG SIZE: ANSI B (11" x 17")

McElhanney

Suite 1
1351 Estevan Road
Nanaimo BC
Canada V9S 3Y3
T 250 716 3336

DEEP BAY IMPROVEMENT DISTRICT
5031 MOUNTAIN VIEW ROAD, BOWSER, BC, V0R 1G0

WATER SYSTEM PRIORTY

Drawing No.
FIG 1.0

Project Number
2231-27316-01

Rev.
PA

DATE: 2023-04-04, 16:04 FILE: Z:\Proj-Active\27316-01 Deep Bay - Water System Evaluation Update\10.0 Drawings\10.3 Engineering\10.3.2 Sketches\27316-01-FIG-1.0.dwg
McElhanney ANSI B - 2021-12-08

The locations identified as the highest priority are summarized as follows:

Table 5 Highest Priority Sections

Location	Start	End	Asset Rating	Class “D” Estimated Replacement Cost
Thompson Clark West	Lot 44	Ocean Trail	13	$587,000
Gainsberg Road	Thompson Clark West	Mountain View Road	12	$437,115
Gainsberg Road	Mountain View Road	Reservoir	12	$1,436,925
Island Highway	Gainsberg Road	Well No. 5	12	$630,557
Island Highway	Well No. 5	Well No. 8	12	$247,699
Thompson Clark West	Gainsberg Road	Kopina Drive	12	$85,000
Thompson Clark West	Seaview Drive	Melvin Crescent	12	$626,532
Thompson Clark West	Melvin Crescent	Lot 44	12	$218,558
Thompson Clark West	Kopina Drive	Seaview Drive	11	$480,827

Replacement cost estimates provided in Table 5 are considered Class “D” (+/-40%). Class “D” is a preliminary estimate, that due to little or no site information, indicates the approximate magnitude of cost of the proposed project, based on the client’s broad requirements. The overall cost estimate is derived from unit costs of similar work on Vancouver Island and included a 40% Contingency and 15% Consulting (Engineering, Archaeology, Environmental and Permitting). It may be used for approval in principle and for discussion purposes.

6. Recommendations

The following recommendations have been developed, which focus on maintaining the current level of service of the system and strengthening the system through AC pipe replacement:

- Allocate additional time and resources to operations staff to assemble, update, and keep track of all documentation relating to the water system which could assist in future AC planning and prioritization.
- As AC piping is replaced, collect representative samples throughout the District for continued testing to determine remaining services life.
- As funding permits, undertake capital works replacement projects for the High Priority locations identified.
- As High Priority locations are completed, replace Medium Priority locations. Replacement in these areas should be reviewed in conjunction with development permit applications and CEC Projects.
- Continue to monitor the system for “high” maintenance areas and revise priority locations as warranted.

CLOSING

Sincerely,
McElhanney Ltd.

Prepared By:

Nathan Slater, P.Eng., Project Engineer
nslater@mcelhanney.com | 778 762 0658

Reviewed By:

Chris Pogson, P.Eng., Branch Manager
cpogson@mcelhanney.com | 778 762 0667

APPENDIX A

Statement of Limitations

Statement of Limitations

Use of this Report. This report was prepared by McElhanney Ltd. ("**McElhanney**") for the particular site, design objective, development and purpose (the “**Project**”) described in this report and for the exclusive use of the client identified in this report (the “**Client**”). The data, interpretations and recommendations pertain to the Project and are not applicable to any other project or site location and this report may not be reproduced, used or relied upon, in whole or in part, by a party other than the Client, without the prior written consent of McElhanney. The Client may provide copies of this report to its affiliates, contractors, subcontractors and regulatory authorities for use in relation to and in connection with the Project provided that any reliance, unauthorized use, and/or decisions made based on the information contained within this report are at the sole risk of such parties. McElhanney will not be responsible for the use of this report on projects other than the Project, where this report or the contents hereof have been modified without McElhanney’s consent, to the extent that the content is in the nature of an opinion, and if the report is preliminary or draft. This is a technical report and is not a legal representation or interpretation of laws, rules, regulations, or policies of governmental agencies.

Standard of Care and Disclaimer of Warranties. This report was prepared with the degree of care, skill, and diligence as would reasonably be expected from a qualified member of the same profession, providing a similar report for similar projects, and under similar circumstances, and in accordance with generally accepted engineering/planning/etc and scientific judgments, principles and practices. McElhanney expressly disclaims any and all warranties in connection with this report.

Information from Client and Third Parties. McElhanney has relied in good faith on information provided by the Client and third parties noted in this report and has assumed such information to be accurate, complete, reliable, non-fringing, and fit for the intended purpose without independent verification. McElhanney accepts no responsibility for any deficiency, misstatements or inaccuracy contained in this report as a result of omissions or errors in information provided by third parties or for omissions, misstatements or fraudulent acts of persons interviewed.

Effect of Changes. All evaluations and conclusions stated in this report are based on facts, observations, site-specific details, legislation and regulations as they existed at the time of the site assessment/report preparation. Some conditions are subject to change over time and the Client recognizes that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site may substantially alter such evaluations and conclusions. Construction activities can significantly alter soil, rock and other geologic conditions on the site. McElhanney should be requested to re-evaluate the conclusions of this report and to provide amendments as required prior to any reliance upon the information presented herein upon any of the following events: a) any changes (or possible changes) as to the site, purpose, or development plans upon which this report was based, b) any changes to applicable laws subsequent to the issuance of the report, c) new information is discovered in the future during site excavations, construction, building demolition or other activities, or d) additional subsurface assessments or testing conducted by others.

Independent Judgments. McElhanney will not be responsible for the independent conclusions, interpretations, interpolations and/or decisions of the Client, or others, who may come into possession of this report, or any part thereof. This restriction of liability includes decisions made to purchase, finance or sell land or with respect to public offerings for the sale of securities.

APPENDIX B

Asset Ratings

ASSET DESCRIPTION						ASSET RATINGS						
LOCATION	LOCATION DESCRIPTION		PIPE DIAMETER	PIPE MATERIAL	APPROX. LENGTH	CONDITION	CRITICALITY (General)	CRITICALITY (Impacted Rate Payers)	TOTAL ASSET RATING	DATA CONFIDENCE	CAPACITY	ESTIMATED REPLACEMENT COSTS
	Start	End	(mm)		(m)	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5		A,B,C,D,E	A,B,C,D,F	2023 $
Deep Bay Drive	Terminus	Lot 44	100	AC	200	3	2	1	6	C	E	$ 240,212
Deep Bay Drive	Lot 44	Burne Road	150	AC	780	3	2	2	7	C	E	$ 936,827
Deep Bay Drive	Burne Road	Terminus	100	AC	180	3	2	1	6	C	E	$ 216,191
Burne Road	Deep Bay Drive	Gainsberg Road	150	AC	100	3	2	1	6	C	E	$ 120,106
Burne Road	Gainsberg Road	Crome Point Road	100	AC	60	3	2	1	6	C	E	$ 72,064
Crome Point Road	Burne Road	Terminus	100	AC	210	3	2	1	6	C	E	$ 252,223
Gainsberg Road	Burne Road	Hembrough Road	150	AC	580	3	2	3	8	C	E	$ 696,615
Hembrough Road	Gainsberg Road	Well No. 2	150	AC	900	3	3	3	9	C	D	$ 1,080,954
Gainsberg Road	Hembrough Road	Parry Road	150	AC	430	3	3	3	9	C	D	$ 516,456
Gainsberg Road	Parry Road	Myhers Road	150	AC	230	3	3	3	9	C	D	$ 276,244
Myhers Road	Gainsberg Road	Pearl Road	150	PVC	110	2	2	1	5	C	C	$ 132,117
Pearl Road	Myhers Road	Terminus	150	PVC	190	2	2	1	5	C	C	$ 228,201
Gainsberg Road	Myhers Road	Thompson Clark West	150	AC	380	3	3	3	9	C	D	$ 456,403
Gainsberg Road	Thompson Clark West	Mountian View Road	250	AC	300	3	4	5	12	C	A	$ 437,115
Mountian View Road	Gainsberg Road	Sabina Road	200	AC	120	3	3	1	7	C	A	$ 174,846
Sabina Road	Mountian View Road	Terminus	150	PVC	250	2	2	1	5	C	A	$ 300,265
Gainsberg Road	Mountian View Road	Reservoir	300	AC	900	3	4	5	12	C	A	$ 1,436,925
Island Highway	Gainsberg Road	Well No. 5	150	PVC	525	3	4	5	12	C	A	$ 630,557
Island Highway	Well No. 5	Well No. 8	250	PVC	170	3	4	5	12	C	A	$ 247,699
Thompson Clark West	Gainsberg Road	Kopina Drive	250	AC	30	3	4	5	12	C	A	$ 85,000
Kopina Drive	Thompson Clark West	Longview Drive	200	PVC	100	1	2	2	5	A	A	$ 145,705
Longview Drive	Kopina Drive	Seaview Drive	200	PVC	120	1	2	2	5	A	A	$ 174,846
Longview Drive	Kopina Drive	Seaview Drive	200	PVC	190	1	2	2	5	A	A	$ 276,840
Shoreline Drive	Longview Drive	Lot 10	200	HDPE	260	1	2	1	4	A	A	$ 378,833
Shoreline Drive	Lot 10	Termiuns	100	AC	650	3	2	1	6	C	E	$ 780,689
Seaview Drive	Longview Drive	Longview Drive	200	PVC	300	1	2	2	5	A	A	$ 437,115
Seaview Drive	Longview Drive	Thompson Clark West	200	PVC	150	1	2	2	5	A	A	$ 218,558
Thompson Clark West	Kopina Drive	Seaview Drive	150	AC	330	3	3	1	7	C	A	$ 396,350
Thompson Clark West	Kopina Drive	Seaview Drive	250	AC	330	3	4	4	11	C	A	$ 480,827
Thompson Clark West	Seaview Drive	Melvin Crescent	250	AC	430	3	4	5	12	C	A	$ 626,532
Melvin Crescent	Thompson Clark West	Termiuns	100	AC	100	3	2	1	6	C	A	$ 120,106
Thompson Clark West	Melvin Crescent	Lot 44	250	AC	150	3	4	5	12	C	A	$ 218,558
Thompson Clark West	Lot 44	Ocean Trail	250	AC	140	3	5	5	13	C	A	$ 587,000
ROW	Lot 44	Faye Road	150	PVC	250	2	3	1	6	C	B	$ 300,265
Faye Road	ROW	Jamieson Road	150	PVC	1000	2	2	1	5	C	B	$ 1,201,060
Ocean Trail	Lot 44	Blue Heron Drive	200	AC	230	3	2	4	9	C	A	$ 335,122
Ocean Trail	Blue Heron Drive	Lighthouse Drive	150	AC	300	3	2	3	8	C	A	$ 360,318
Ocean Trail	Lighthouse Drive	Terminus (Park)	100	AC	100	3	2	1	6	C	A	$ 120,106
Blue Heron Drive	Ocean Trail	Lighthouse Drive	200	AC	310	3	2	3	8	C	A	$ 451,686
Blue Heron Drive	Lighthouse Drive	Bald Eagle Crescent	200	AC	200	3	2	4	9	C	A	$ 291,410
Lighthouse Drive	Ocean Trail	Blue Heron Drive	150	AC	260	3	2	2	7	C	A	$ 312,276
Bald Eagle Crescent	Blue Heron Drive	Jamieson Road	150	AC	250	3	2	2	7	C	A	$ 300,265
Bald Eagle Crescent	Blue Heron Drive	Jamieson Road	200	AC	320	3	2	2	7	C	A	$ 466,256
Jamieson Road	Bald Eagle Crescent	Faye Road	200	PVC	200	2	2	3	7	B	A	$ 291,410
Jamieson Road	Faye Road	Terminus	150	PVC	280	2	2	1	5	B	A	$ 336,297
Jamieson Road	Bald Eagle Crescent	Moors Drive	200	AC	300	3	2	3	8	C	A	$ 437,115
Jamieson Road	Moors Drive	Bald Eagle Crescent	150	AC	100	3	2	3	8	C	A	$ 120,106
Jamieson Road	Bald Eagle Crescent	Maple Guard Drive	150	AC	50	3	2	3	8	C	A	$ 60,053
Jamieson Road	Maple Guard Drive	Terminus (Foreshore)	100	AC	80	3	2	3	8	C	A	$ 96,085
Thompson Clark East	Jamieson Road	Blackbeard Drive	200	AC	160	3	2	2	7	C	A	$ 233,128
Thompson Clark East	Blackbeard Drive	Frontier Drive	150	AC	450	3	2	3	8	C	A	$ 540,477
Thompson Clark East	Frontier Drive	Henry Morgan Drive	150	AC	420	3	2	3	8	C	A	$ 504,445
Moors Drive	Jamieson Road	Captian Kidd Drive	150	AC	140	3	2	3	8	C	A	$ 168,148
Moors Drive	Captian Kidd Drive	Blackbeard Drive	150	AC	260	3	2	3	8	C	A	$ 312,276
Blackbeard Drive	Thompson Clark East	Maple Guard Drive	150	AC	250	3	2	2	7	C	A	$ 300,265
Maple Guard Drive	Jamieson Road	Captian Kidd Drive	150	AC	270	3	2	3	8	C	A	$ 324,286
Maple Guard Drive	Captian Kidd Drive	Blackbeard Drive	150	AC	180	3	2	3	8	C	A	$ 216,191
Maple Guard Drive	Blackbeard Drive	Berbers Drive	150	AC	100	3	2	2	7	C	A	$ 120,106
Maple Guard Drive	Berbers Drive	Frontier Drive	150	AC	340	3	2	2	7	C	A	$ 408,360
Maple Guard Drive	Frontier Drive	Henry Morgan Drive	150	AC	380	3	2	3	8	C	A	$ 456,403
Maple Guard Drive	Henry Morgan Drive	Terminus	150	PVC	120	2	2	1	5	B	A	$ 144,127
Berbers Drive	Maple Guard Drive	Frontier Drive	150	AC	450	3	2	1	6	C	A	$ 540,477
Frontier Drive	Thompson Clark East	Maple Guard Drive	150	AC	210	3	2	1	6	C	A	$ 252,223
Privatier Road	Maple Guard Drive	Terminus	100	PVC	120	2	2	1	5	B	A	$ 144,127