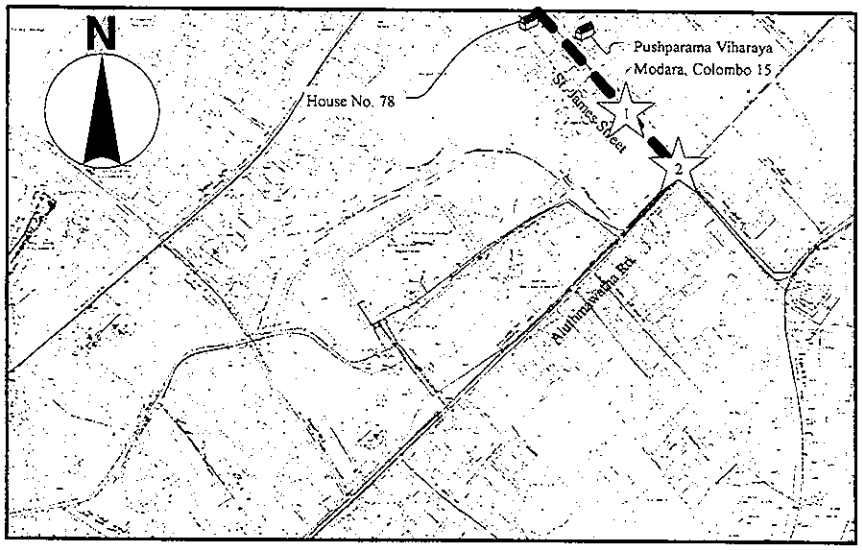
APPENDIX 5B

RESULTS OF LEAKAGE SURVEY

Appendix 5B



Investigation Memo

Location	St. James St.
Map ID No.	66-3-23-A
Date of Inspection	04-Apr-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Modara
Road Ownership	DO-D1
Traffic Intensity	Heavy

0 200m :Leak Detected :Pipeline Inspected

Investigation Results

:Leak No. 1

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	4
Age Group	70 to 100 years
Pipe Location	under Roadway (paved)
Detected by:	Visual Inspection on the Ground
Leakage from:	Previously Repaired Leak
Leakage Volume	Small

Notes
- Leakage observed on the ground as shown in Photo No. 1

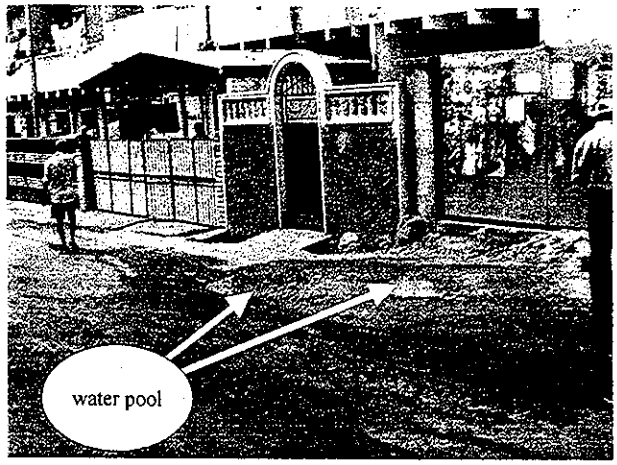


Photo No. 1

:Leak No. 2

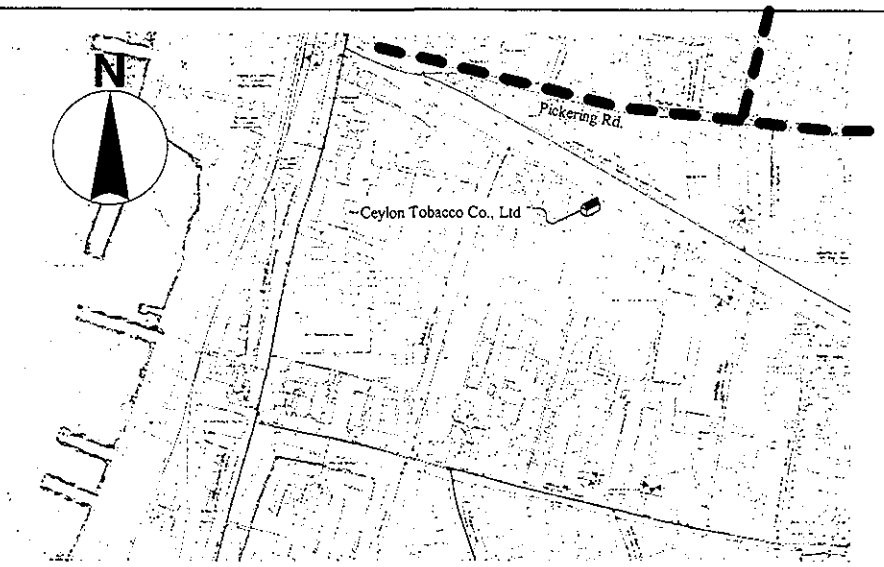
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	7
Age Group	over 100 years
Pipe Location	under Roadway (paved)
Detected by:	Visual Inspection on the Ground
Leakage from:	Valve Head
Leakage Volume	Medium

Notes
- Leakage observed on the ground as shown in Photo No. 2

Photo No. 2

Leakage Survey (St. James St.)

Appendix 5B



Investigation Memo

Location	Pickering Rd. 1
Map ID No.	66- 8-2-D
Date of Inspection	05-Apr-2000
Started at:	9:00
Finished at:	12:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	DO-D1
Traffic Intensity	Light

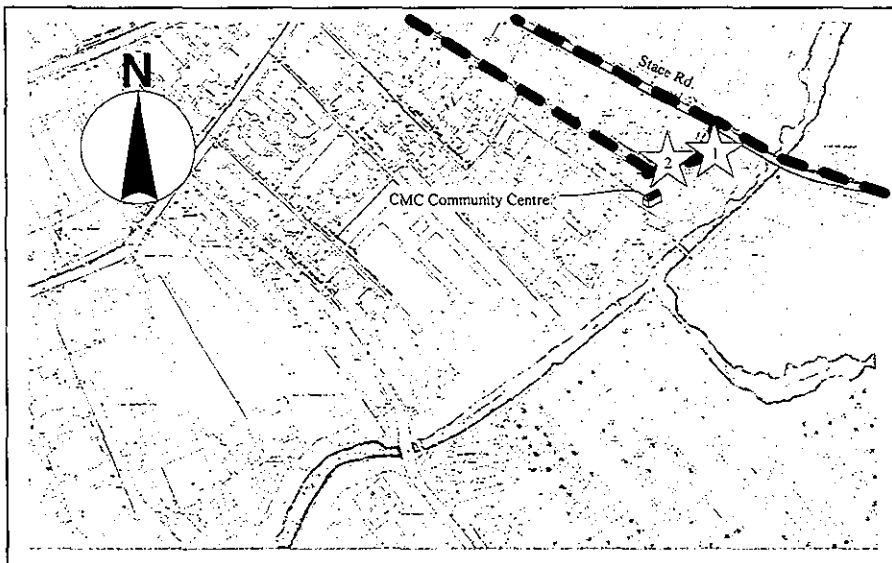
0 200m :Leak Detected :Pipeline Inspected

Investigation Results

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	5
Age Group	over 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not Detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Pickering Rd.)

Appendix 5B



Investigation Memo

Location	Stace Rd.
Map ID No.	66-8-8-B
Date of Inspection	06-Apr-2000
Started at:	20:00
Finished at:	26:00
Weather	Fine
Police Div.	Grandpass
Road Ownership	CRMU
Traffic Intensity	Heavy

0 200m :Leak Detected Pipeline Inspected

Investigation Results

:Leak No. 1

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	3
Age Group	over 100 years
Pipe Location	under Roadway (paved)
Detected by:	Visual Inspection and Leak Detector
Leakage from:	N. A.
Leakage Volume	Small

Notes

- Due to the relatively high system pressure, leakage sound was much clearer than in other areas (Photo No.1)

Photo No. 1

:Leak No. 2

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	3
Age Group	over 100 years
Pipe Location	under Roadway (paved)
Detected by:	Leak Detector
Leakage from:	Joint
Leakage Volume	Small

Notes

- *It could be leakage from service pipe*
- Due to the relatively high system pressure, leakage sound was much clearer than in other areas (Photo No. 2)

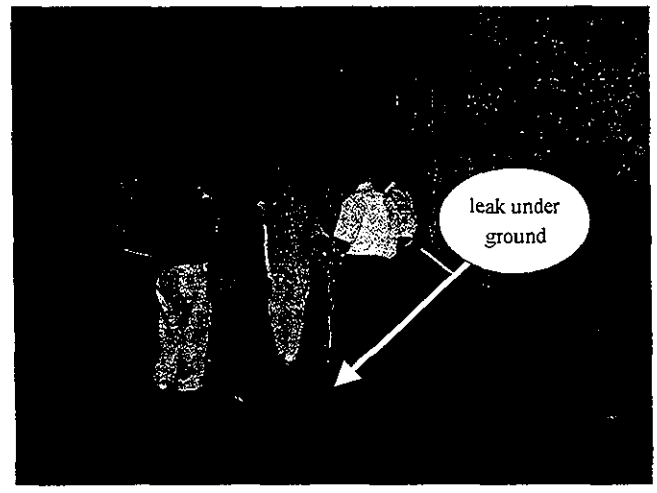
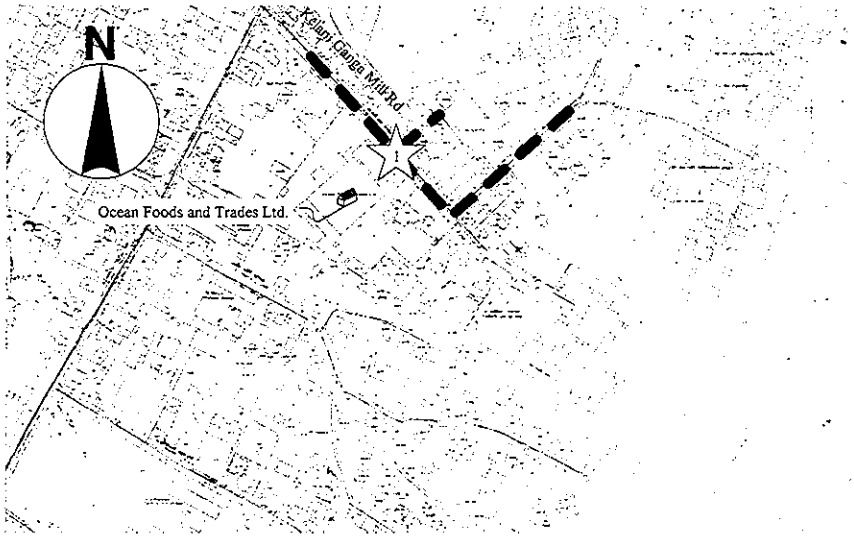


Photo No. 2

Leakage Survey (Stace Rd.)

Appendix 5B



Investigation Memo

Location	Kelani Ganga Mill Rd.
Map ID No.	66-3-19-A
Date of Inspection	10-Apr-2000
Started at:	9:00
Finished at:	13:00
Weather	Fine
Police Div.	Mattakkuliya
Road Ownership	DO-D1
Traffic Intensity	Medium

0 200m :Leak Detected :Pipeline Inspected

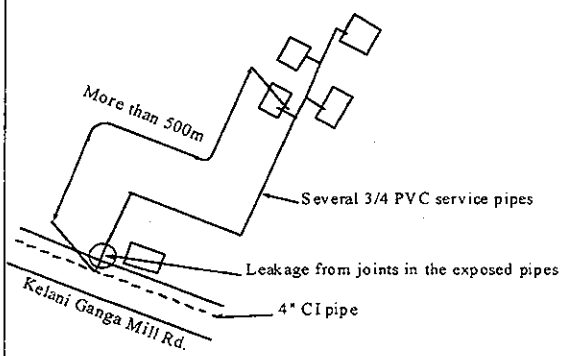
Investigation Results

:Leak No. 1

Pipe Material	PVC (Service Pipe)
Nominal Internal Dia. (inch)	3/4
Age Group	unknown
Pipe Location	see Notes
Detected by:	Visual Inspection on the Ground
Leakage from:	Joint
Leakage Volume	Medium

Notes

- Many small leaks were observed near the joint
- Some part of service pipe were exposed on the ground and leaking from joint
- Service pipe shown in photo No.1 and No.2 was connected to the house 500m away from distribution main drawn as below



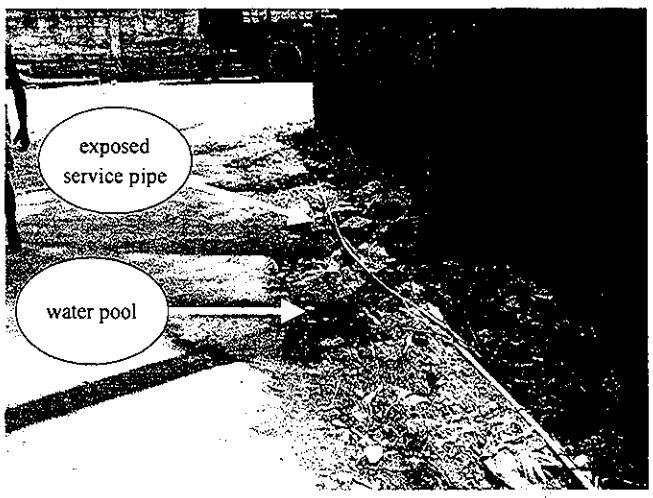


Photo No.1

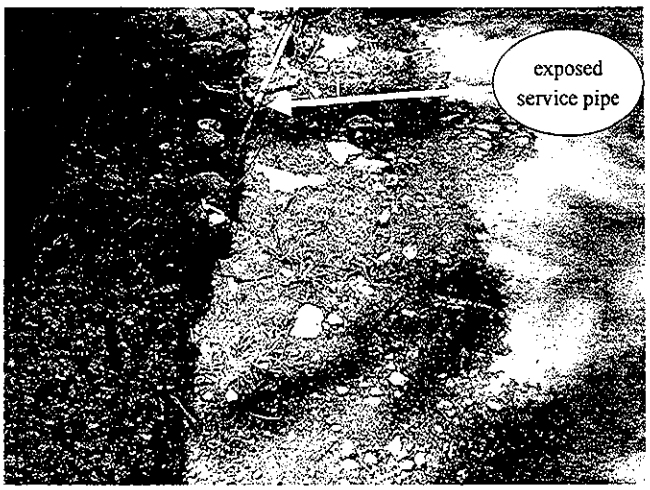
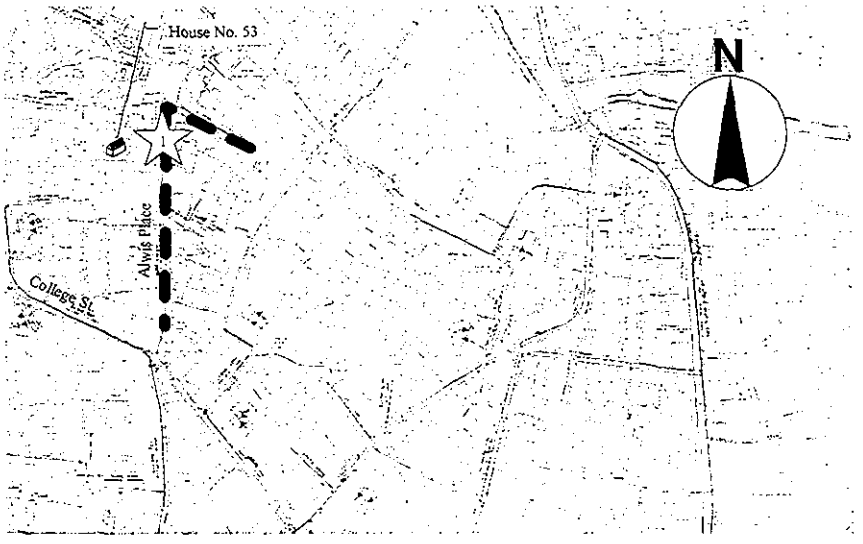


Photo No.2

Leakage Survey (Kelani Ganga Mill Rd.)

Appendix 5B



Investigation Memo

Location	Alwis Place
Map ID No.	66-8-3-A
Date of Inspection	11-Apr-2000
Started at:	9:00
Finished at:	13:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	DO-D1
Traffic Intensity	Light

0 200m

:Leak Detected

:Pipeline Inspected

Investigation Results

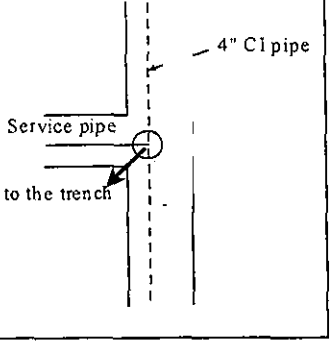
:Leak No. 1

Pipe Material	unknown
Nominal Internal Dia. (inch)	unknown
Age Group	unknown
Pipe Location	under Roadway (paved)
Detected by:	Visual Inspection on the Ground
Leakage from:	Unknown
Leakage Volume	Medium

Photo No.1

Notes

- There was leaking water flowing in the trenc shown in photos and below
- It could be leakage from service pipe
- It was very difficult to hear the leakage soun ce water pressure was extremely low



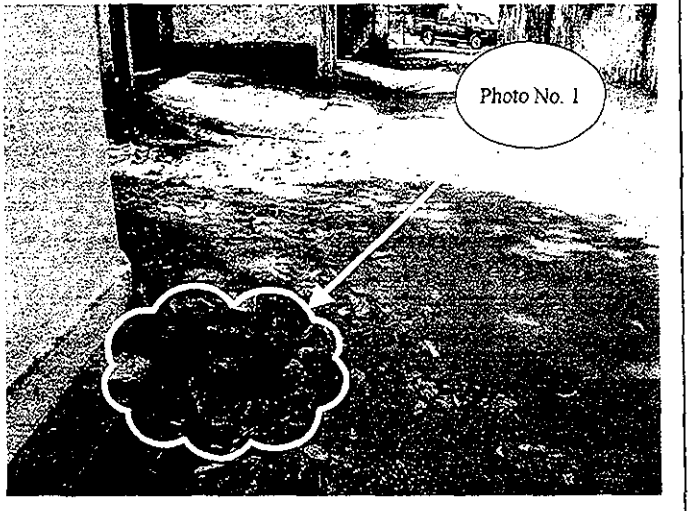
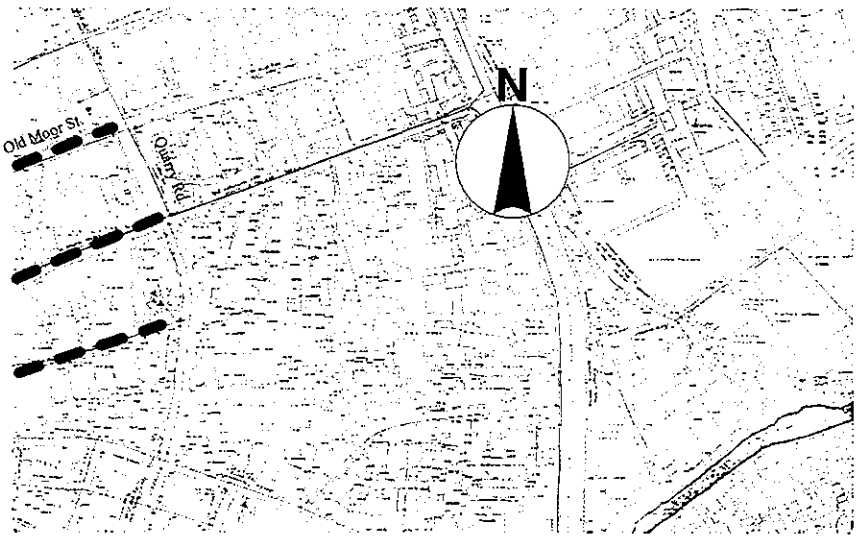


Photo No.2

Leakage Survey (Alwis Place)

Appendix 5B



Investigation Memo

Location	Old Moor St.
Map ID No.	66-8-8-C
Date of Inspection	15-Apr-2000
Started at:	19:30
Finished at:	23:00
Weather	Fine
Police Div.	Armour St.
Road Ownership	DO-2A
Traffic Intensity	Heavy

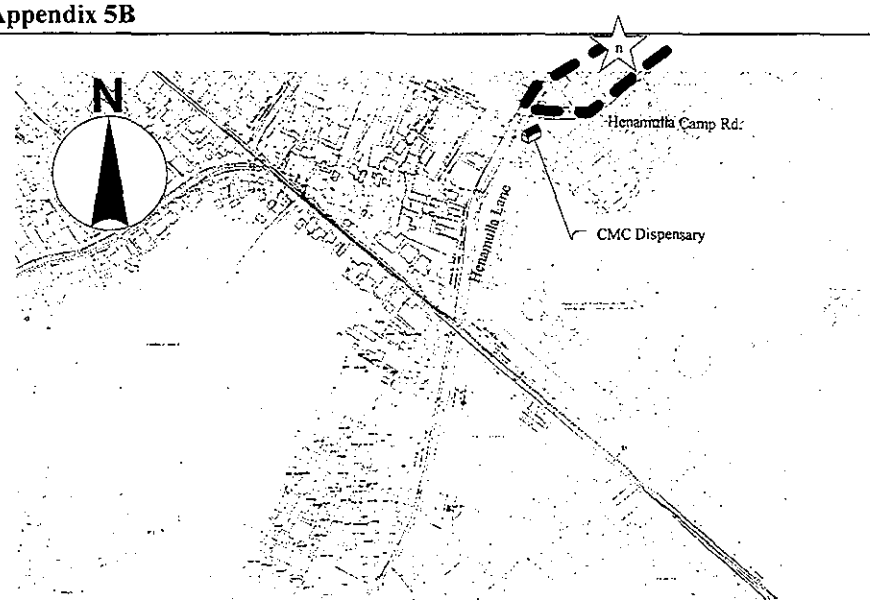
0 200m :Leak Detected :Pipeline Inspected

Investigation Results

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	3
Age Group	over 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not Detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Old Moor St.)

Appendix 5B



Investigation Memo

Location	Henamulla Camp Rd.
Map ID No.	66-3-23-B
Date of Inspection	17-Apr-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Modara
Road Ownership	DO-DI
Traffic Intensity	Light

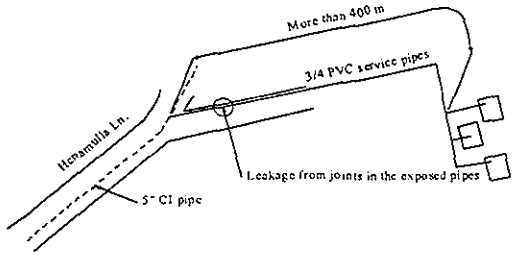
Investigation Results

:Leak No. 1

Pipe Material	PVC (Service Pipe)
Nominal Internal Dia. (inch)	3/4
Age Group	unknown
Pipe Location	see Notes
Detected by:	Visual Inspection on the Ground
Leakage from:	Joint
Leakage Volume	Small

Notes

- Some part of service pipe were exposed on the ground and leaking from joint
- Service pipe show in photos was connected to the house 400 m away from distribution drawn as bellow



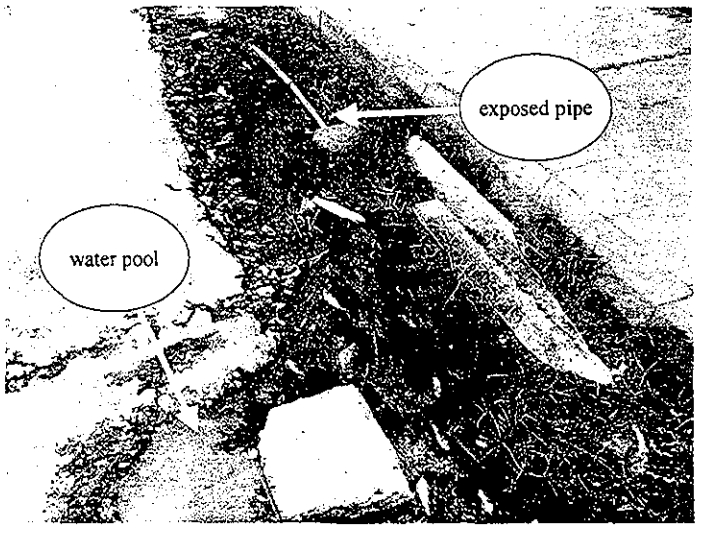


Photo No. 1

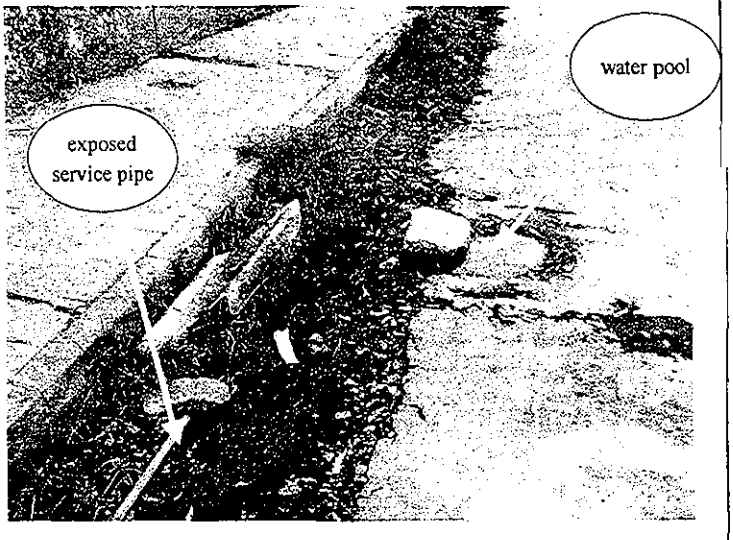
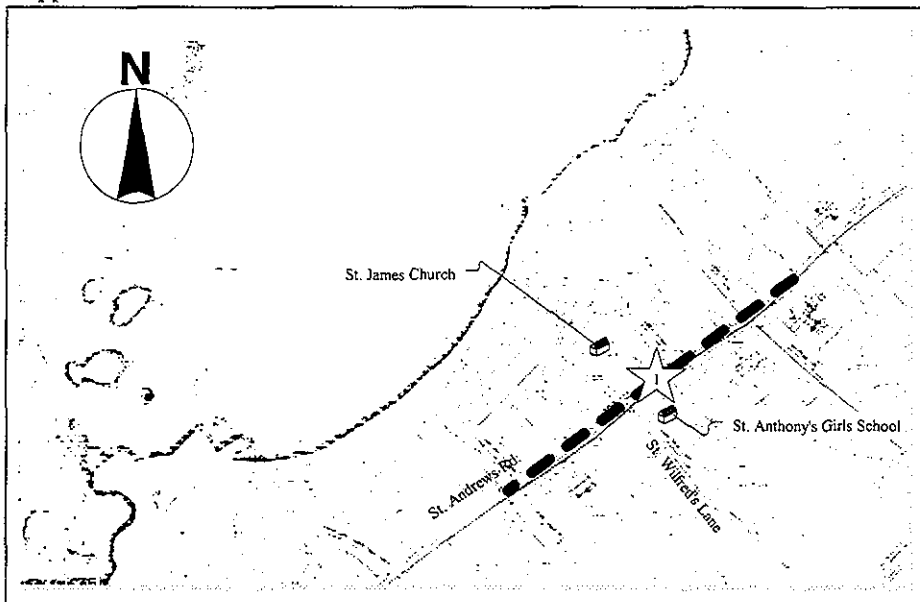


Photo No. 2

Leakage Survey (Henamulla Camp Rd.)

Appendix 5B



Investigation Memo

Location	St. Andrews Rd.
Map ID No.	66-3-18-C
Date of Inspection	19-Apr-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Modara
Road Ownership	DO-D1
Traffic Intensity	Light (wide road)

0 200m

:Leak Detected

:Inspected Site

Result

:Leak No.1

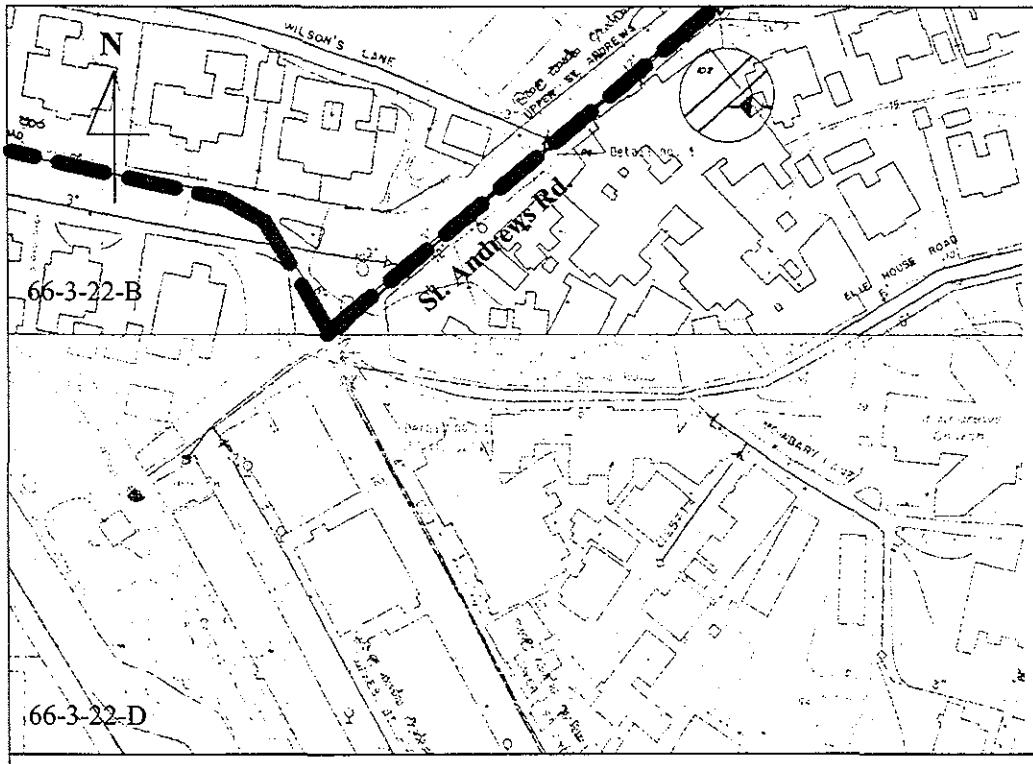
Pipe Material	PVC
Nominal Internal Dia. (inch)	6
Age Group	less than 20 years
Pipe Location	under Roadway (paved)
Detected by:	Visual Inspection on the Ground
Leakage from:	Unknown
Leakage Volume	Small

Notes

N. A.

Leakage Survey (St. Andrews St.)

Appendix 5B



Investigation Memo

Location	St. Andrews Rd. 2
Map ID No.	66-3-22-B
Date of Inspection	20-Apr-2000
Started at:	9:00
Finished at:	12:00
Weather	Fine
Police Div.	Modara
Road Ownership	DO-D1
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

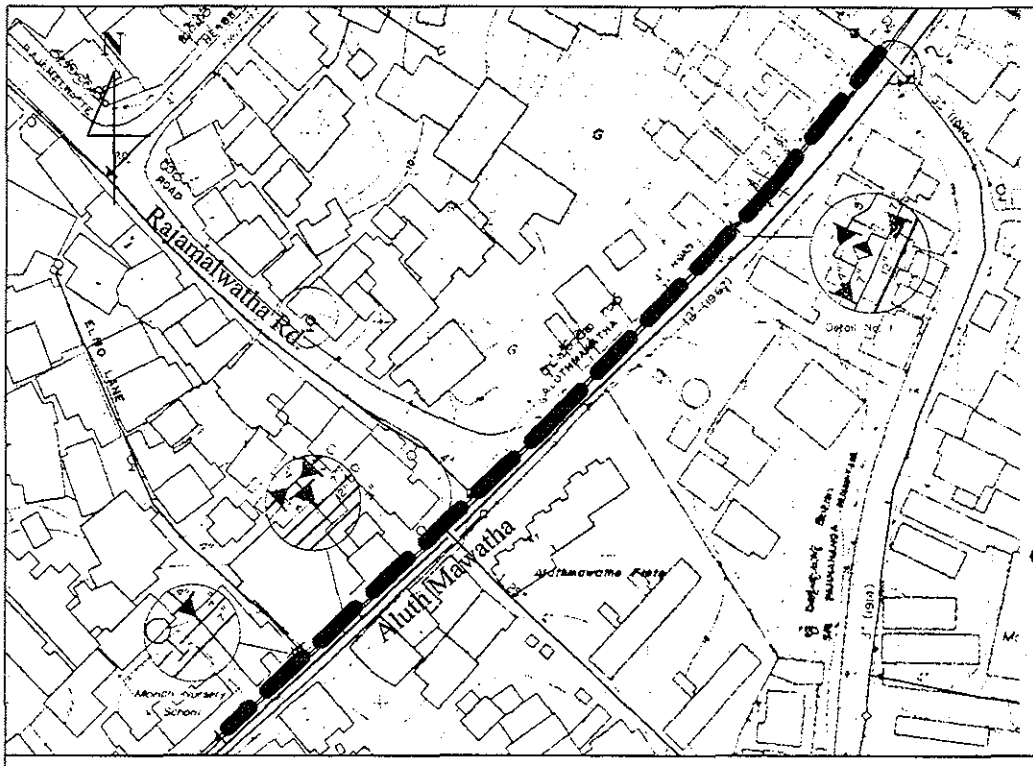
Scale 1:2000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	12
Age Group	over 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (St. Andrews Rd.)

Appendix 5B



Investigation Memo

Location	Aluth Mavatha Rd.
Map ID No.	66-3-18-D
Date of Inspection	22-Apr-2000
Started at:	9:00
Finished at:	13:00
Weather	Fine
Police Div.	Modara
Road Ownership	CRMU
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

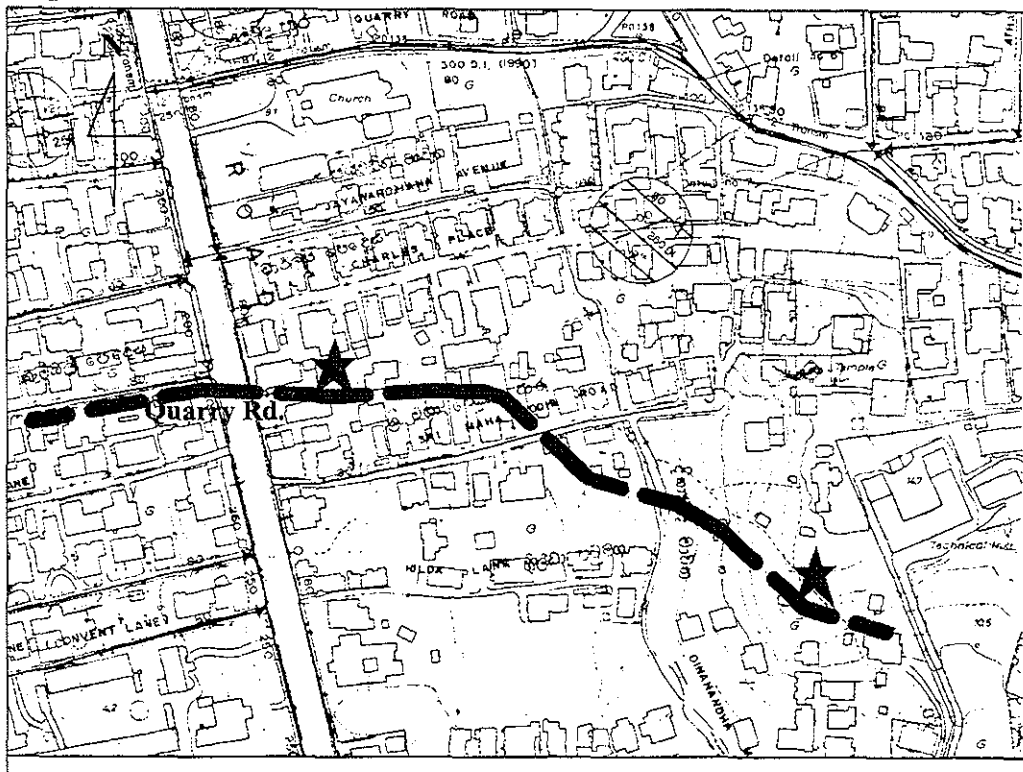
Scale 1:2000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	4
Age Group	over 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Aluth Mawatha Rd.)

Appendix 5B



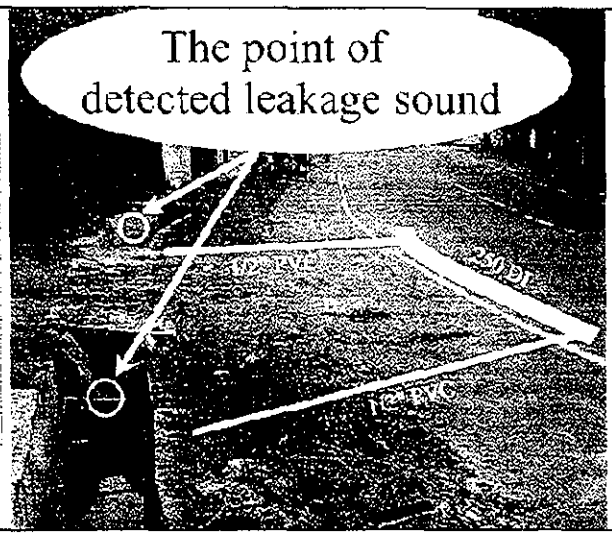
Investigation Memo

Location	Quarry Rd.
Map ID No.	66-18-3
Date of Inspection	24-Apr-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Dehiwara
Road Ownership	PRDA(Western)
Traffic Intensity	Heavy

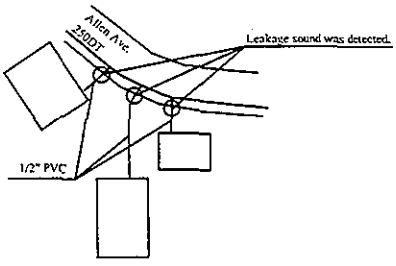
Investigation Results

★ Leak No. 1

Pipe Material	Unknown
Nominal Internal Dia. (inch)	Unknown
Age Group	20 to 50 years
Pipe Location	under Roadway (paved)
Detected by:	Sounding Bar
Leakage from:	Unknown
Leakage Volume	Medium

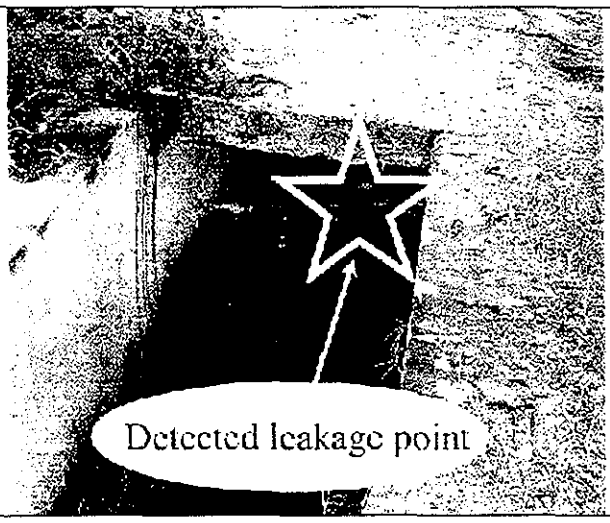


Notes



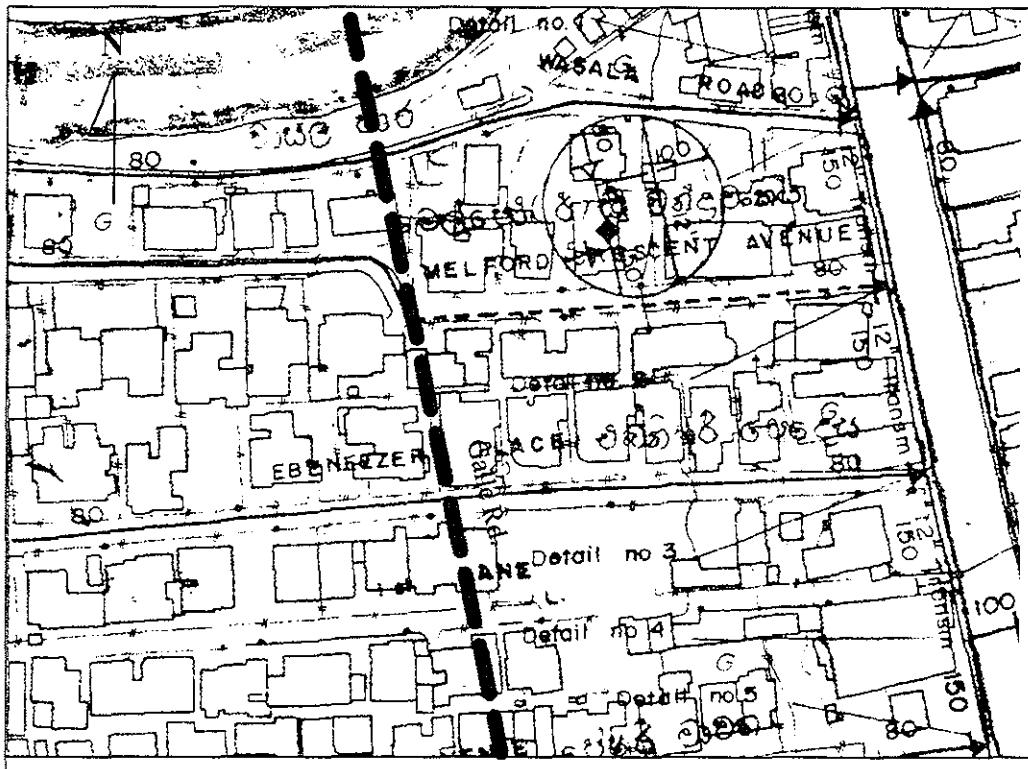
★ Leak No. 2

Pipe Material	PVC
Nominal Internal Dia. (inch)	1/2"
Age Group	Unknown
Pipe Location	under Bridge
Detected by:	Visual Inspection and Leak Detector
Leakage from:	Unknown
Leakage Volume	Small



Leakage Survey (Quarry Rd.)

Appendix 5B



Investigation Memo

Location	Galle Rd. 1
Map ID No.	66-13-28-A
Date of Inspection	25-Apr-2000
Started at:	20:00
Finished at:	25:00
Weather	Fine
Police Div.	Wellawatta
Road Ownership	CRMU
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

Scale 1:2000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	10
Age Group	20 to 50 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Galle Rd. 1)

Appendix 5B

Investigation Memo

Location	Galle Rd. 2
Map ID No.	66-13-17-B
Date of Inspection	03-May-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Bambalapitiya
Road Ownership	CRMU
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

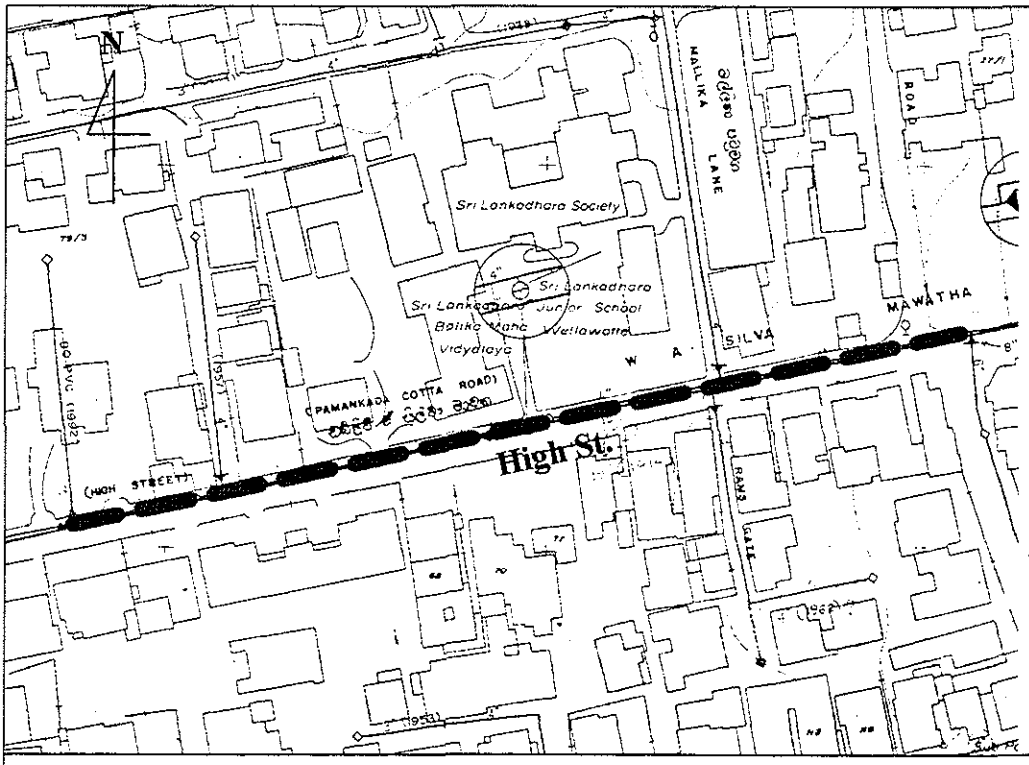
Scale 1:2000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	10
Age Group	70 to 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Galle Rd. 2)

Appendix 5B



Investigation Memo

Location	High St.
Map ID No.	66-13-18-C
Date of Inspection	05-May-2000
Started at:	20:00
Finished at:	26:00
Weather	Fine
Police Div.	Wellawatta
Road Ownership	DO-D5
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

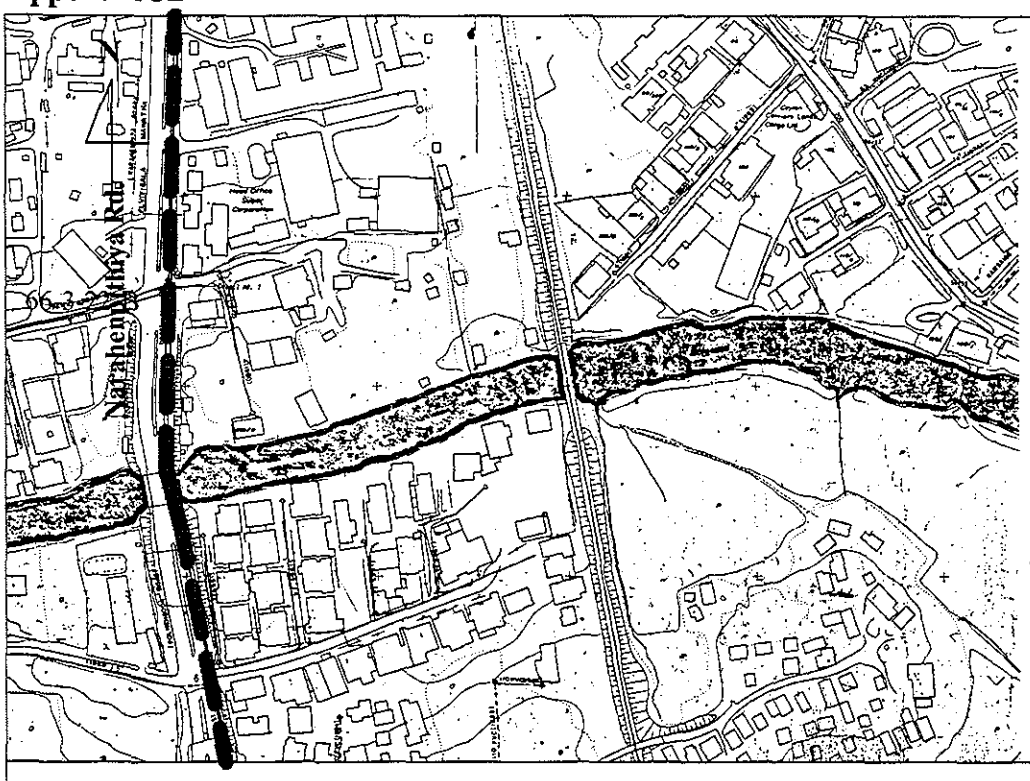
Scale 1:2000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	15
Age Group	50 to 70 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (High St.)

Appendix 5B



Investigation Memo

Location	Narahenpitiya Rd.
Map ID No.	66-13-14-A
Date of Inspection	02-May-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Narahenpitiya Police
Road Ownership	CRMU
Traffic Intensity	Medium

Pipeline Inspected

Leak Detected

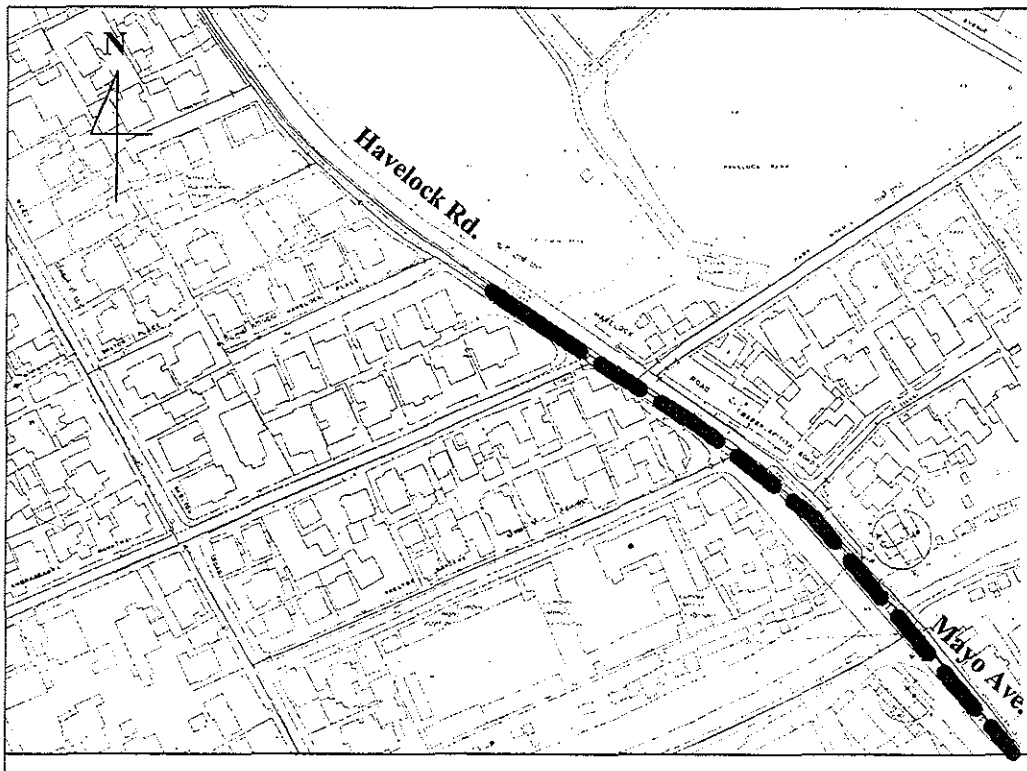
Scale 1:4000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Steel
Nominal Internal Dia. (inch)	15
Age Group	20 to 50 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N.A.
Leakage Volume	N.A.

Leakage Survey (Narahenpitiya Rd.)

Appendix 5B



Investigation Memo

Location	Mayo Ave.
Map ID No.	66-13-13-C
Date of Inspection	04-May-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Kirulapone Police
Road Ownership	CRMU
Traffic Intensity	Medium

Pipeline Inspected

Leak Detected

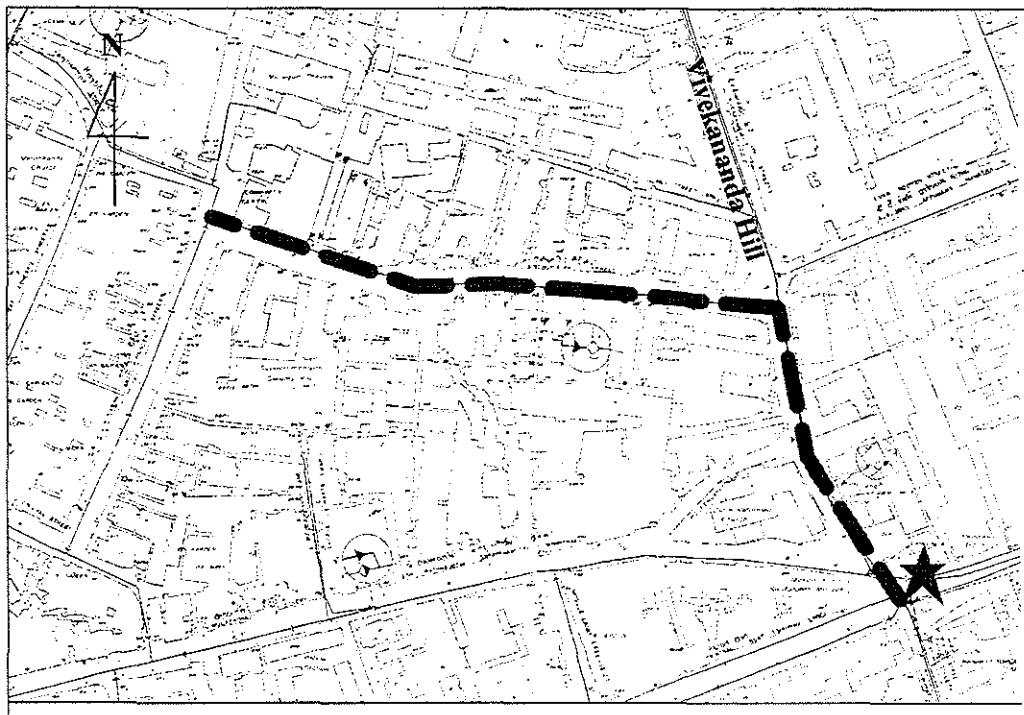
Scale 1:2000

Investigation Results

Pipe Material	Steel
Nominal Internal Dia. (inch)	20
Age Group	50 to 70 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N.A.
Leakage Volume	N.A.

Leakage Survey (Mayo Ave.)

Appendix 5B



Investigation Memo

Location	Vivekananda Hill
Map ID No.	66-8-7-B
Date of Inspection	09-May-2000
Started at:	20:00
Finished at:	25:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	DO-2A
Traffic Intensity	Heavy

Pipeline Inspected

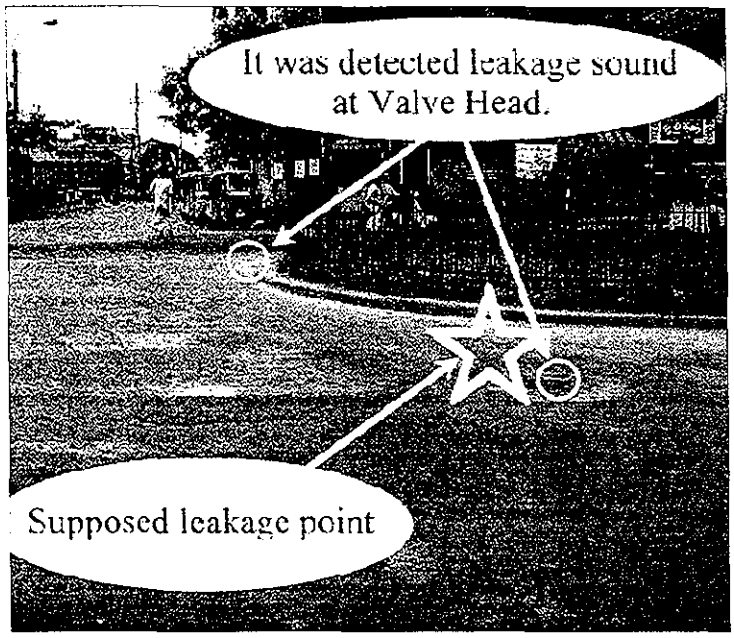
Leak Detected

Scale 1:4000

Investigation Results

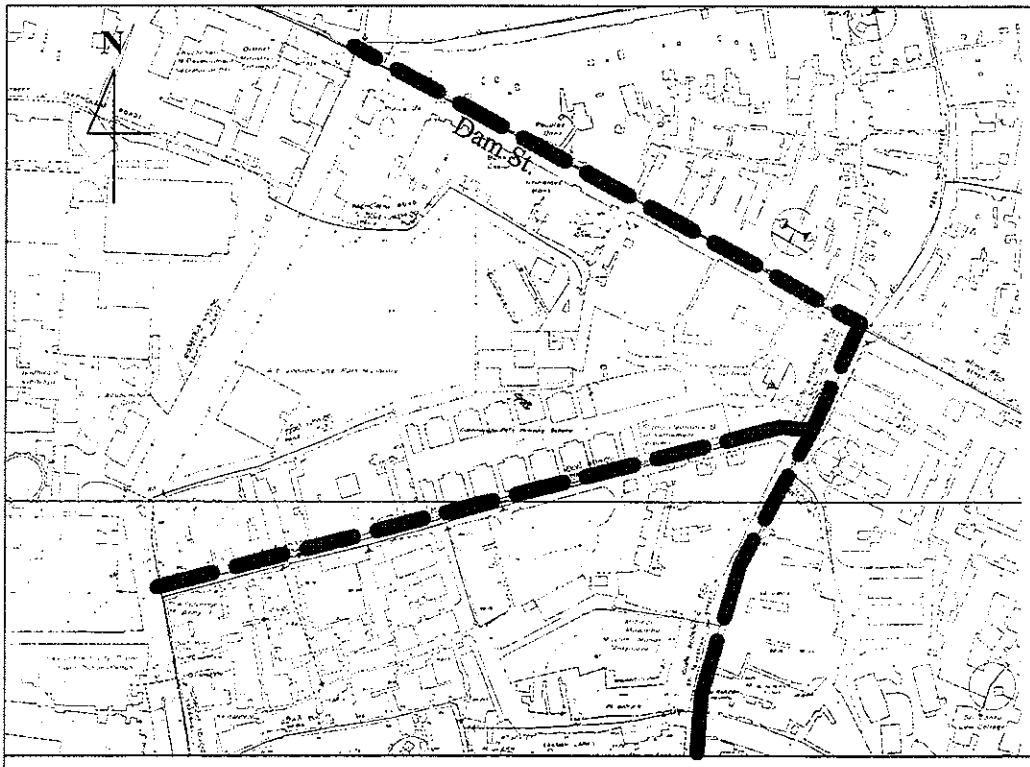
Leak No. 1

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	7
Age Group	70 to 100 years
Pipe Location	under Roadway (paved)
Detected by:	Leak Detector
Leakage from:	Unknown
Leakage Volume	Medium



Leakage Survey (Vivekananda Hill)

Appendix 5B



Investigation Memo

Location	Dam St.
Map ID No.	66-8-7-D
Date of Inspection	10-May-2000
Started at:	20:00
Finished at:	25:00
Weather	Fine
Police Div.	Kesalwatta
Road Ownership	DO-2A
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

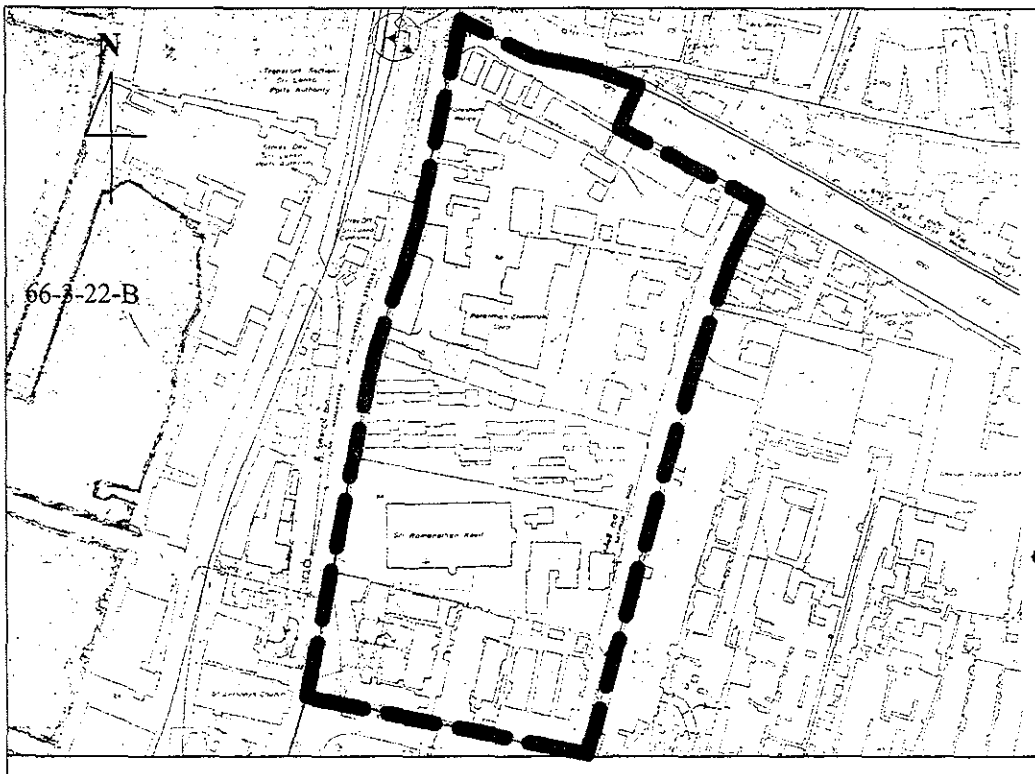
Scale 1:4000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	21
Age Group	70 to 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Dam St.)

Appendix 5B



Investigation Memo

Location	Ramanathan Mavata
Map ID No.	66-8-2-D
Date of Inspection	11-May-2000
Started at:	20:00
Finished at:	25:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	CRMU
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

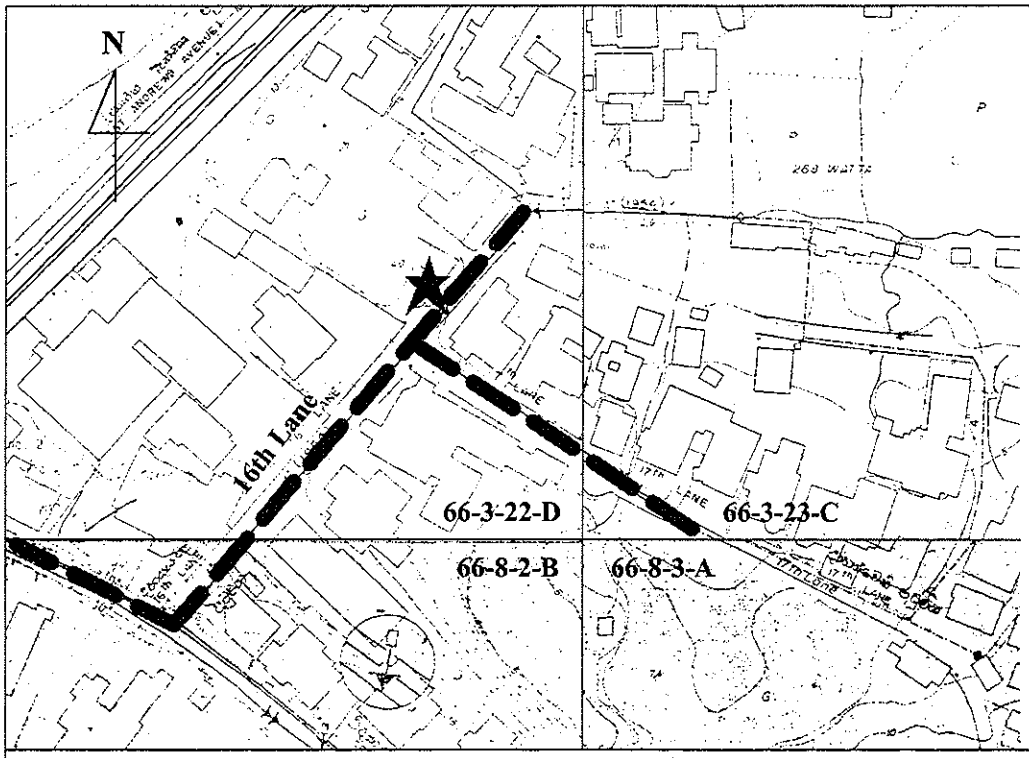
Scale 1:4000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	18
Age Group	over 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Ramanathan Mawatha)

Appendix 5B



Investigation Memo

Location	16th Lane
Map ID No.	66-3-22-D
Date of Inspection	12-May-2000
Started at:	9:00
Finished at:	13:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	DO-D1
Traffic Intensity	Light

Pipeline Inspected

Leak Detected

Scale 1:2000

Investigation Results

Leak No. 1

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	4
Age Group	20 to 50 years
Pipe Location	under Roadway (paved)
Detected by:	Leak Detector
Leakage from:	Unknown
Leakage Volume	Medium

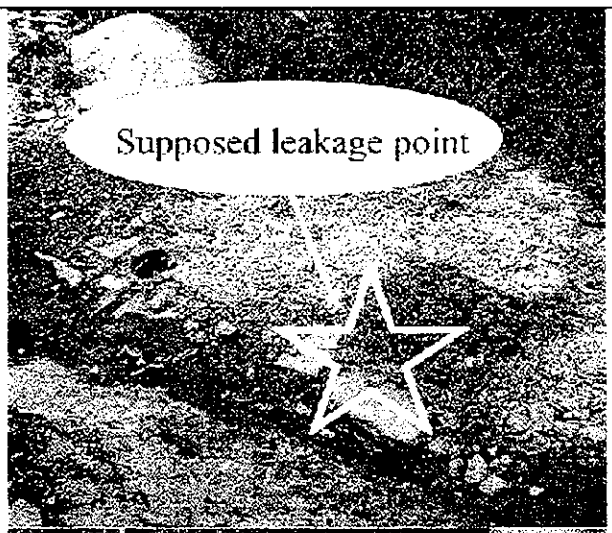


Photo No. 1

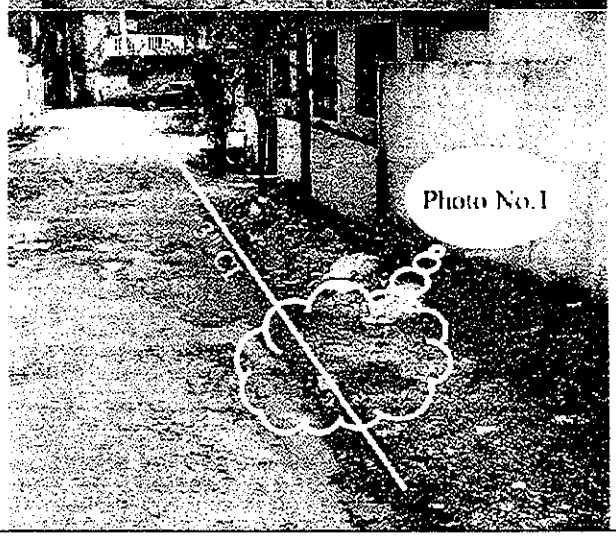
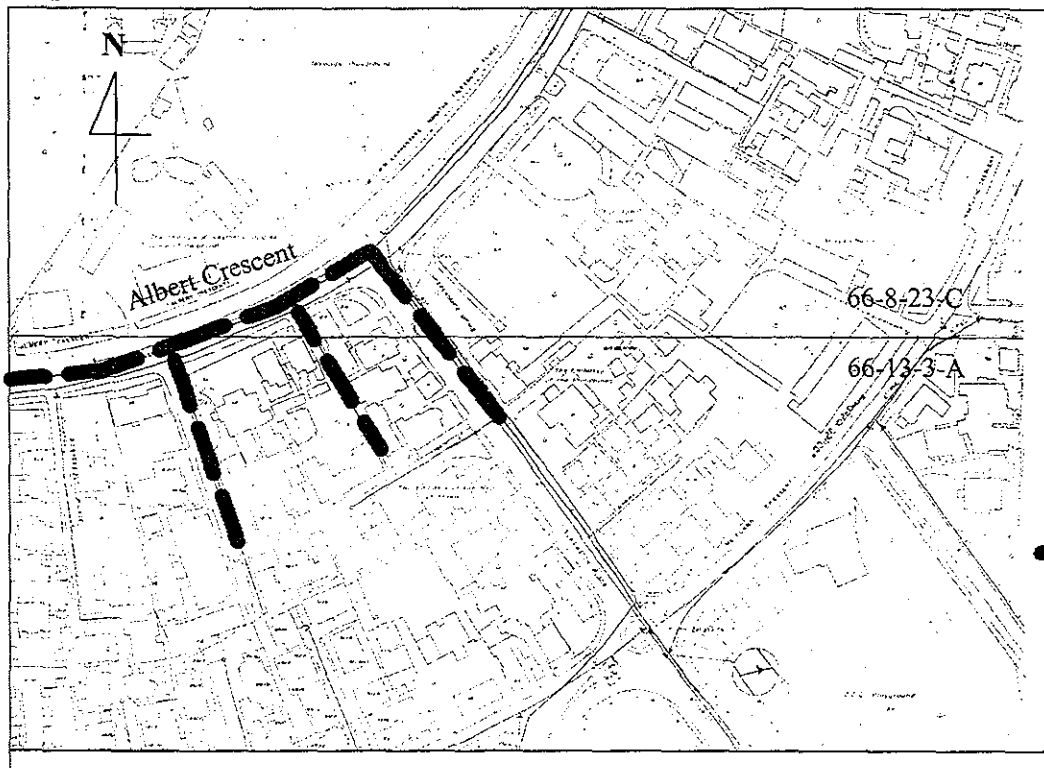


Photo No. 2

Leakage Survey (16th Lane)

Appendix 5B



Investigation Memo

Location	Albert Cresent
Map ID No.	66-13-2-D
Date of Inspection	15-May-2000
Started at:	20:00
Finished at:	26:00
Weather	Fine
Police Div.	Kurunduwatta
Road Ownership	CRMU
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

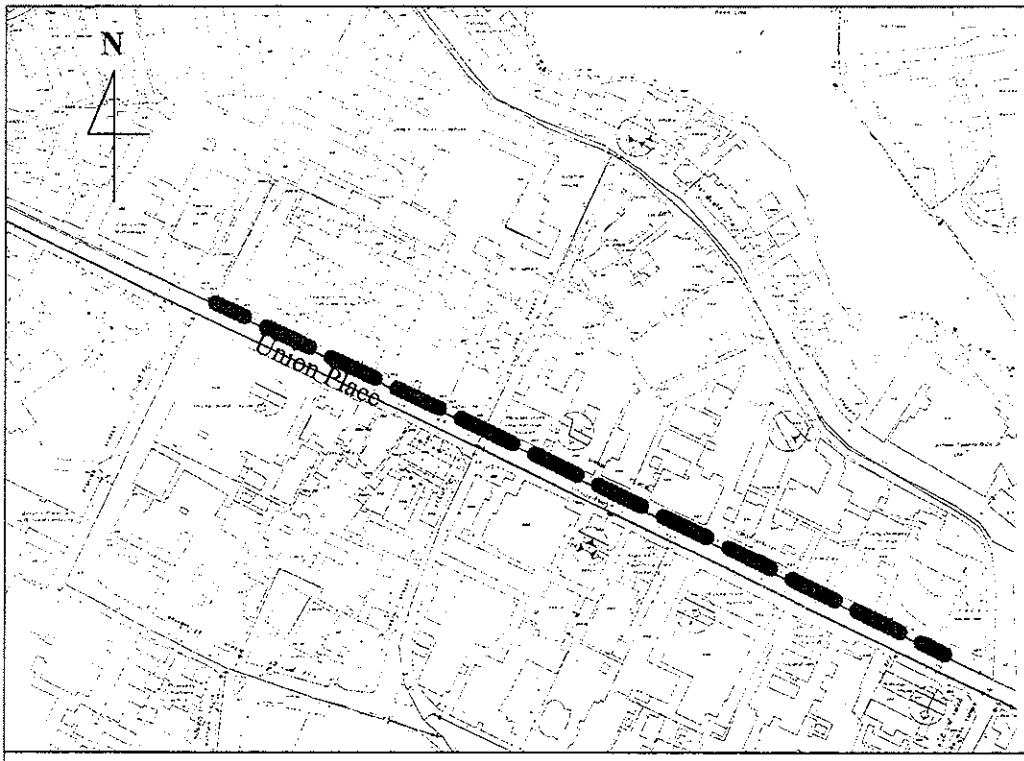
Scale 1:4000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	18
Age Group	70 to 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Albert Cresent)

Appendix 5B



Investigation Memo

Location	Union Place
Map ID No.	66-8-17-D
Date of Inspection	22-May-2000
Started at:	21:00
Finished at:	25:00
Weather	Fine
Police Div.	Slave Island
Road Ownership	CRMU
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

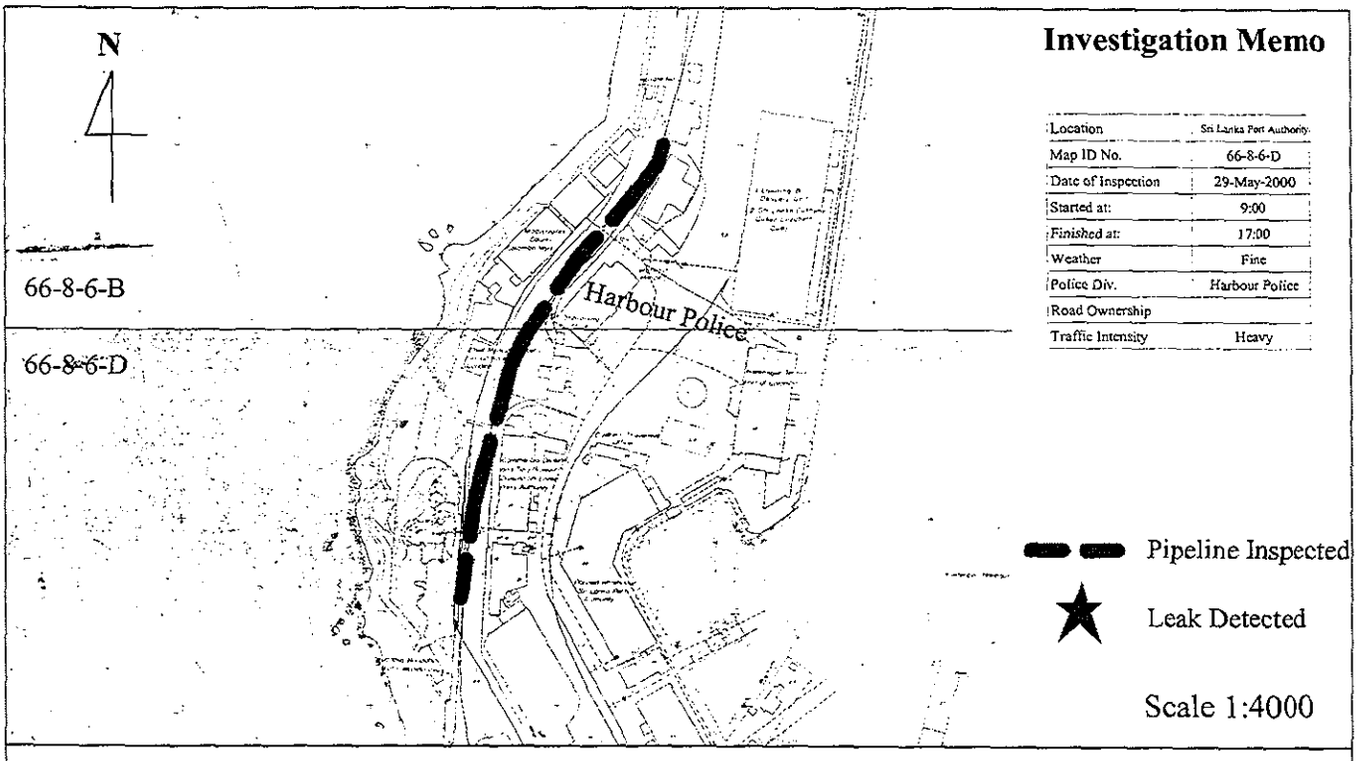
Scale 1:5000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	12
Age Group	70 to 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Union Place)

Appendix 5B



Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	10
Age Group	70 to 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Sri Lanka Port Authority)

Appendix 5B

Investigation Memo

Location	Galle Rd3
Map ID No.	66-8-17-C
Date of Inspection	29-May-2000
Started at:	20:00
Finished at:	2:00
Weather	Fine
Police Div.	
Road Ownership	
Traffic Intensity	Heavy

Pipeline Inspected

Leak Detected

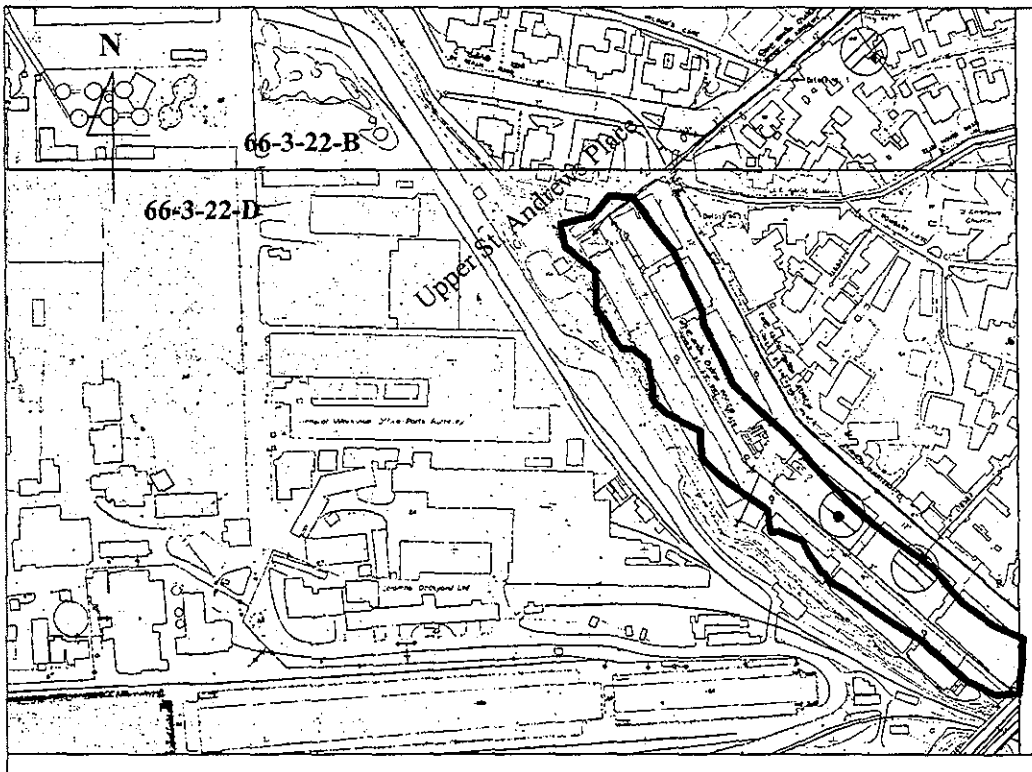
Scale 1:2000

Investigation Results

Nos. of Leakage Detected	0
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	10
Age Group	70 to 100 years
Pipe Location	under Roadway (paved)
Detected by:	Not detected
Leakage from:	N. A.
Leakage Volume	N. A.

Leakage Survey (Galle Rd. 3)

Appendix 5B



Investigation Memo

Location:	Upper St.Andrews
Map ID No.	66-3-22-D
Date:	20 Apr, 2000
Started at:	10:00
Finished at:	12:30
Weather	Fine
Nos. of checked individual water meters :	122
No. of detected leaks:	16

Investigated Area

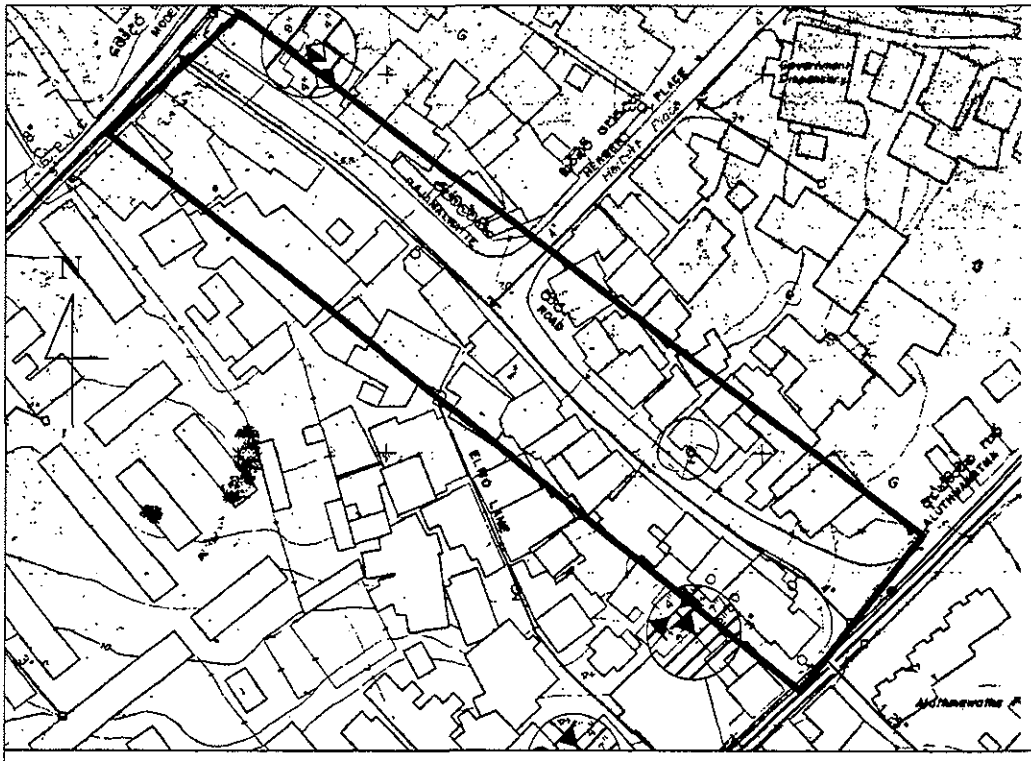
Scale 1:4000

Investigation Results

No.	House No.	Leakage from:	Leakage Volume
1	161	Meter	Small
2	157	Meter	Small
3	109	Unknown	Small
4	79	Meter	Small
5	82	Meter	Small
6	77	Stop Valve	Small
7	57	Unknown	Small
8	56	Unknown	Small
9	45	Stop Valve	Small
10	44	Unknown	Small
11	21	Meter	Small
12	15	Unknown	Small
13	18	Unknown	Small
14	20	Unknown	Small
15	9	Unknown	Small
16	16	Unknown	Small

Leakage Survey (Service Pipe: Upper St.Andrews Place)

Appendix 5B



Investigation Memo

Location:	Rajamalwatta Rd.
Map ID No.	66-3-18-D
Date:	22, Apr, 2000
Started at:	10:00
Finished at:	12:30
Weather	Fine
No. of checked individual water meters :	42
No. of detected leaks:	3

Investigated Area

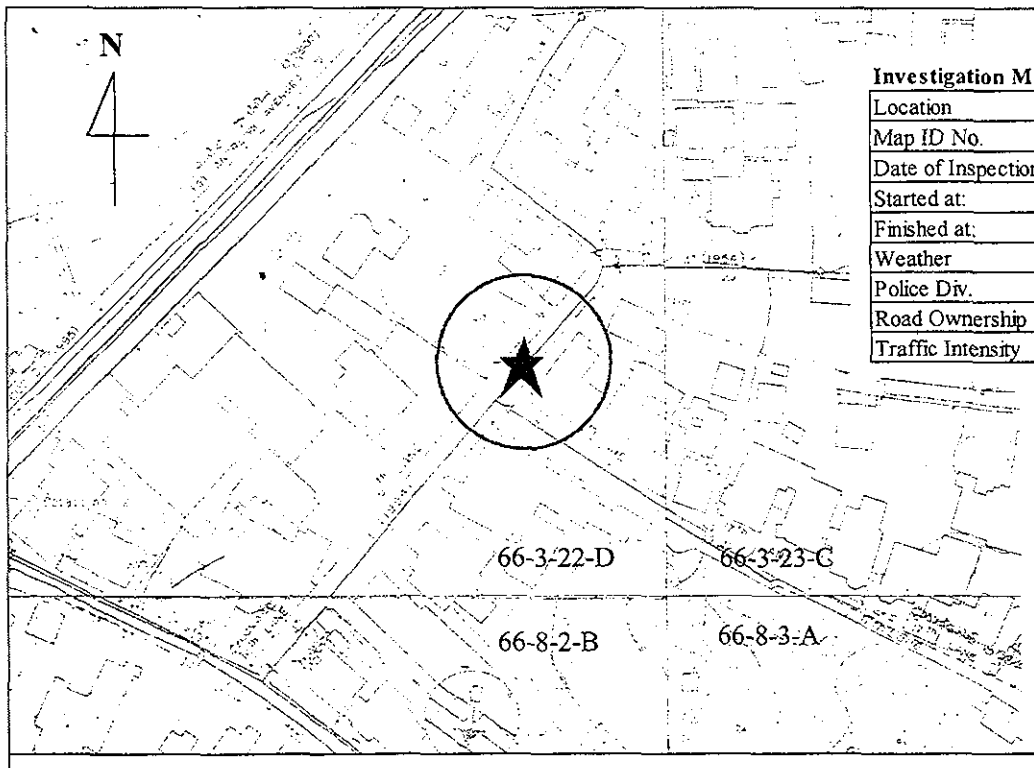
Scale 1:2000

Investigation Results

No.	House No.	Leakage from:	Leakage Volume
1	2/85	Unknown	Small
2	1/88	Unknown	Small
3	14	Unknown	Small

Leakage Survey (Service Pipe: Rajamalwatta Rd.)

Appendix 5B



Investigation Memo

Location	16th Lane
Map ID No.	66-3-22-D
Date of Inspection	12-Jun-2000
Started at:	9:00
Finished at:	13:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	DO-D1
Traffic Intensity	Light

Previous Investigation Results

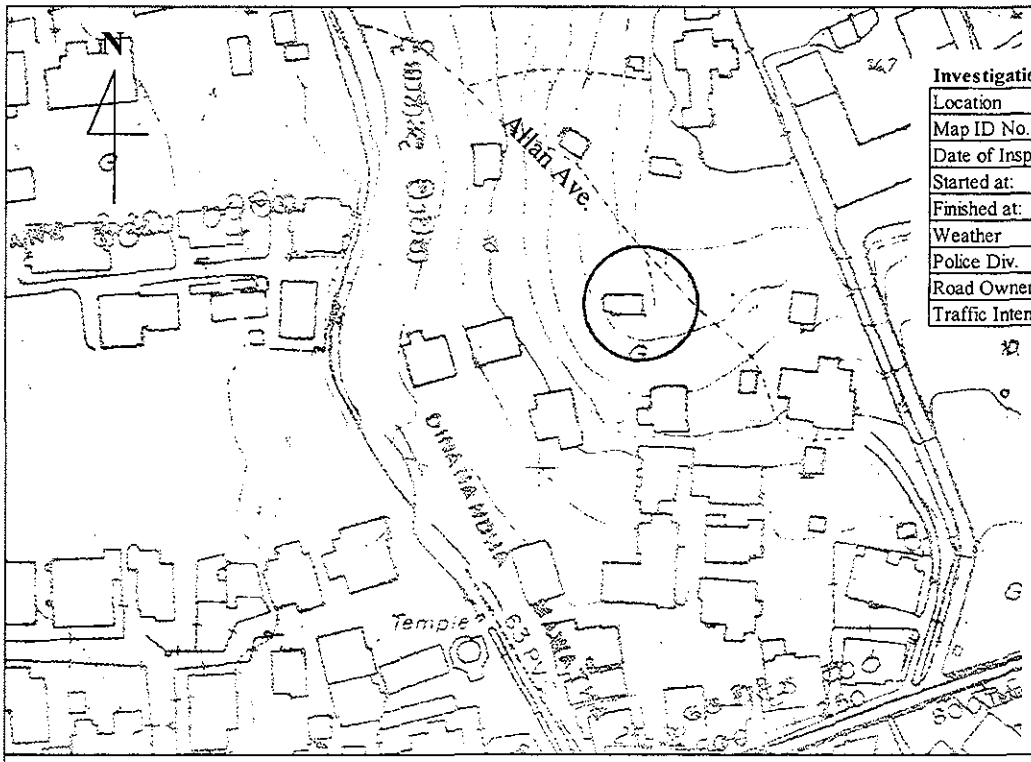
Nos. of Leakage Detected	1
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	4
Age Group	20 to 50 years
Pipe Location	under Roadway (paved)
Detected by:	Correlator and Leak Detector
Leakage from:	Valve
Leakage Volume	Medium

Notes

* None

Leakage Survey - Leakage Confirmation Work (16th Lane)

Appendix 5B



Investigation Memo

Location	Quarry Rd.
Map ID No.	66-18-3
Date of Inspection	19-Jun-2000
Started at:	16:00
Finished at:	17:00
Weather	Fine
Police Div.	Dehiwara
Road Ownership	PRDA (Western)
Traffic Intensity	Heavy

Previous Investigation Results

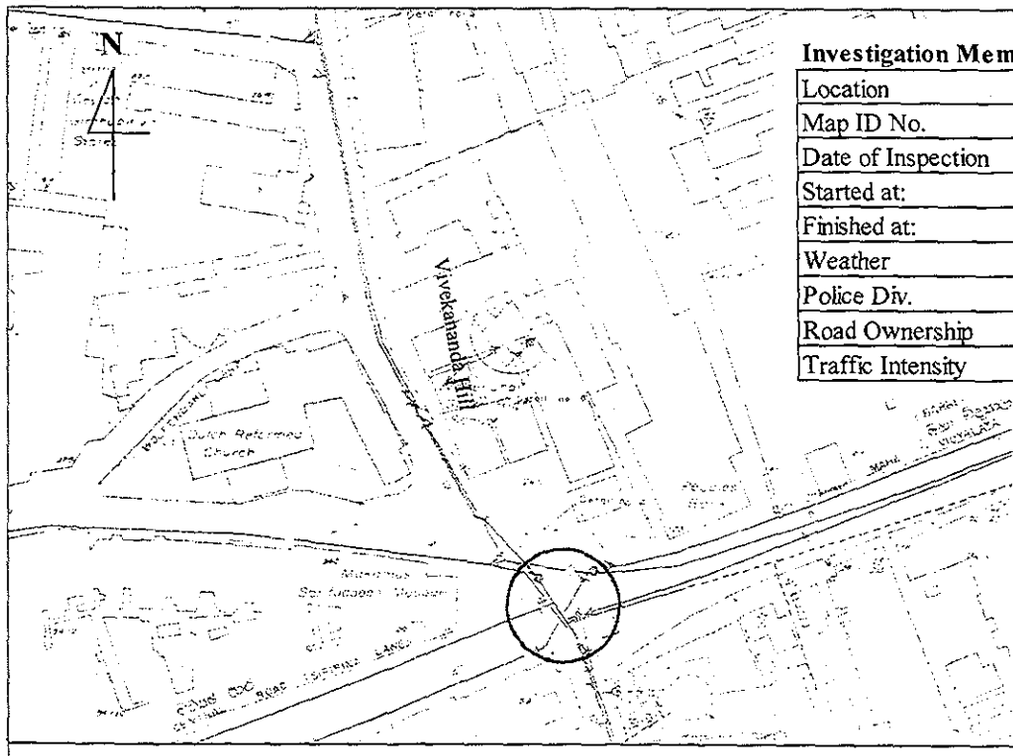
Nos. of Leakage Detected	1
Pipe Material	Unknown
Nominal Internal Dia. (inch)	Unknown
Age Group	Unknown
Pipe Location	under Roadway (paved)
Detected by:	Sounding Bar
Leakage from:	N.A.
Leakage Volume	Medium

Notes

* Leakage has already been repaired

Leakage Survey - Leakage Confirmation Work (Quarry Rd.)

Appendix 5B



Investigation Memo

Location	Vivekananda Hill
Map ID No.	66-8-7-B
Date of Inspection	19-Jun-2000
Started at:	23:00
Finished at:	0:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	DO-2A
Traffic Intensity	Heavy

Previous Investigation Results

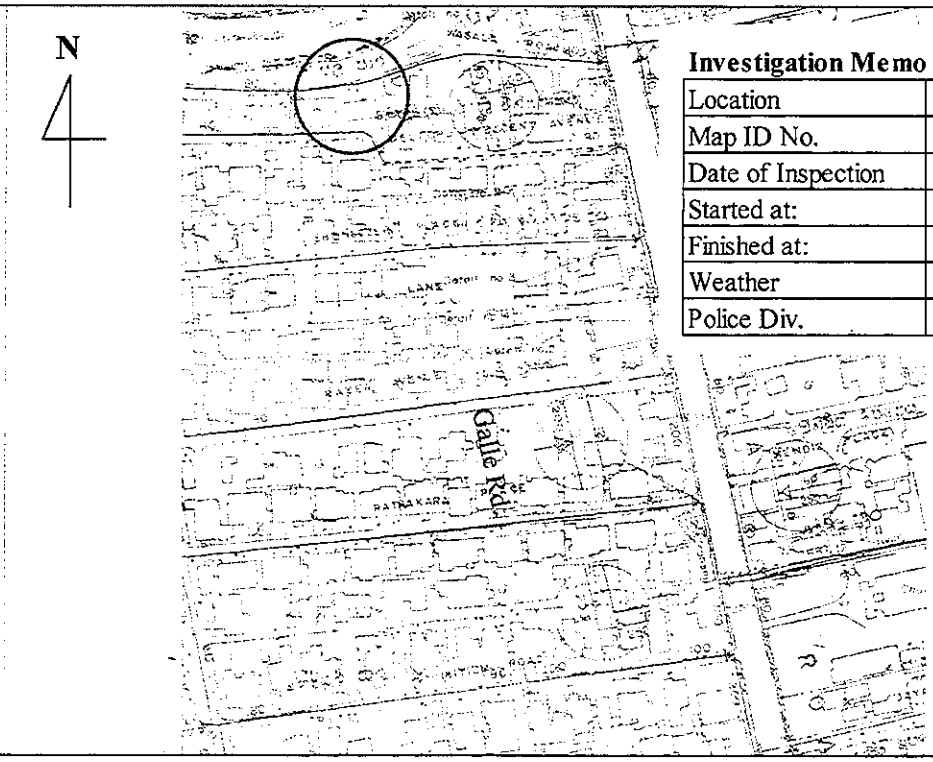
Nos. of Leakage Detected	1
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	7
Age Group	70 to 100 years
Pipe Location	under Roadway (paved)
Detected by:	Leak Detector
Leakage from:	N.A.
Leakage Volume	Medium

Notes

* Leakage point could not be specified by sounding
* Water pressure was measured to be 0.05 kgf / m2

Leakage Survey - Leakage Confirmation Work (Vivekananda Hill)

Appendix 5B



Investigation Memo

Location	Galle Rd.
Map ID No.	66-18-3
Date of Inspection	20-Jun-2000
Started at:	10:00
Finished at:	10:30
Weather	Fine
Police Div.	Wellawatha

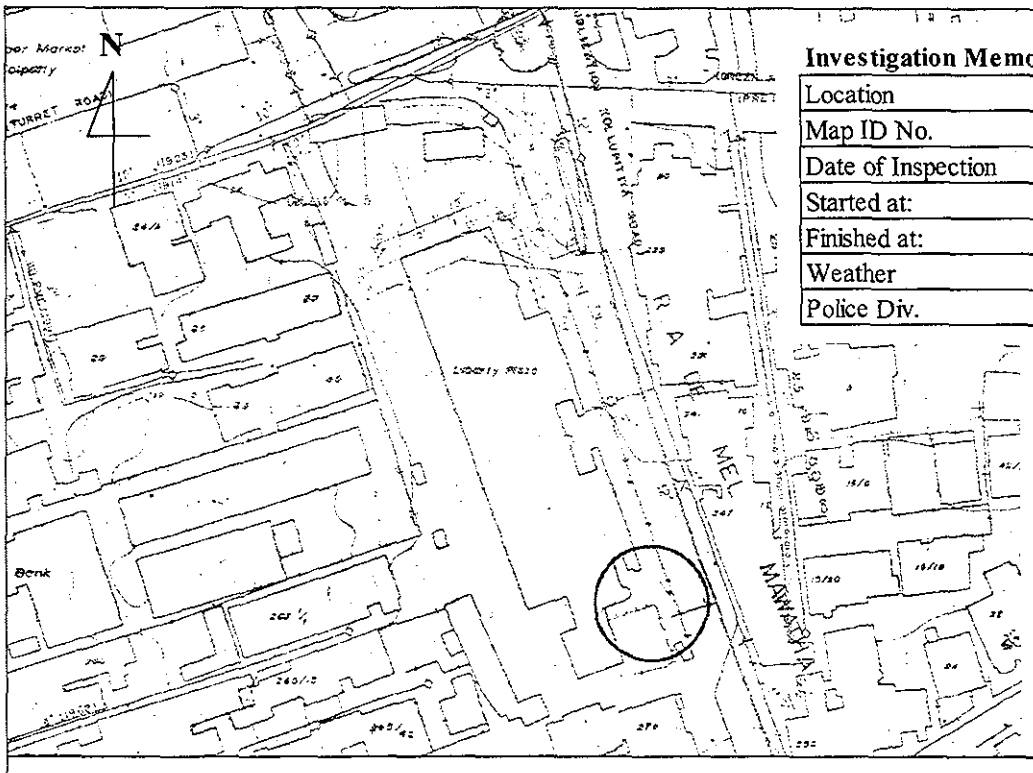
Investigation Results

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	7
Age Group	70 to 100 years

Notes

* Small part of GI pipes around the meter found to have been replaced before
* No leakage was found but the surface of this pipe was seriously corroded

Appendix 5B



Investigation Memo

Location	R. A. de Mel Mawatha
Map ID No.	66-8-22-C
Date of Inspection	20-Jun-2000
Started at:	10:30
Finished at:	11:00
Weather	Fine
Police Div.	Kollupitiya

○ Location of Investigation

Scale 1:2000

Investigation Results

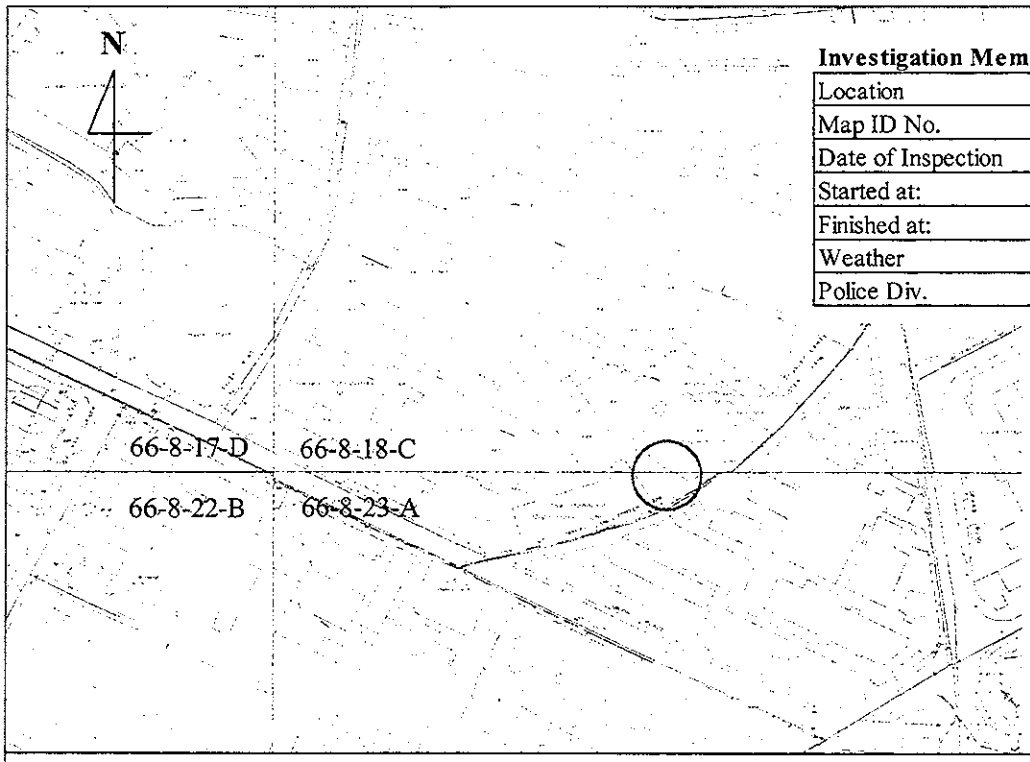
Pipe Material	PVC
Nominal Internal Dia. (inch)	4
Age Group	Less than 20 years

Notes

* NWSDB replaced 3 inch GI pipes with 4 inch PVC pipes four month ago

Leakage Survey - Investigation for GIP (R.A. De Mel Mawatha)

Appendix 5B



Investigation Memo

Location	Union Place No.1
Map ID No.	66-8-23-C
Date of Inspection	20-Jun-2000
Started at:	11:30
Finished at:	12:00
Weather	Fine
Police Div.	Slave Island

Investigation Results

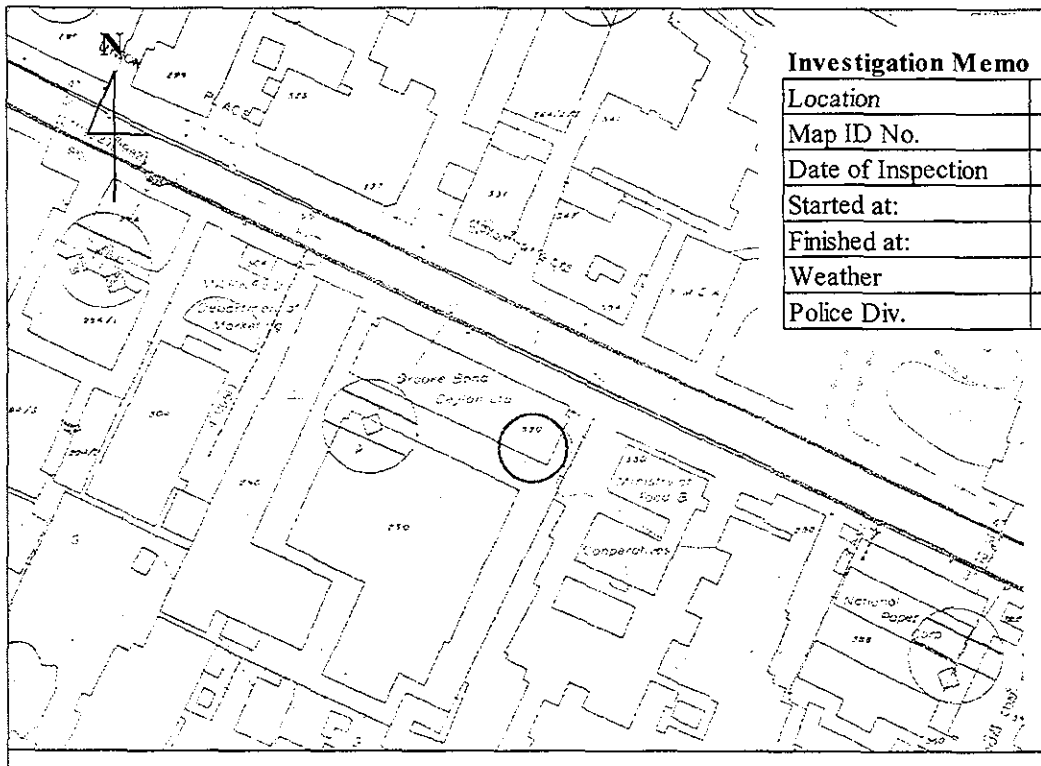
Pipe Material	PVC
Nominal Internal Dia. (inch)	3/4
Age Group	Unknown

Notes

* NWSDB replaced 3/4 inch GI pipes with 3/4 inch PVC pipes three month ago

Leakage Survey - Investigation for GIP (Union Place No.1)

Appendix 5B



Investigation Memo

Location	Union Place No.2
Map ID No.	66-8-17-D
Date of Inspection	20-Jun-2000
Started at:	11:00
Finished at:	11:30
Weather	Fine
Police Div.	Slave Island

Investigation Results

Pipe Material	GIP
Nominal Internal Dia. (inch)	3
Age Group	50 to 70 year

Notes

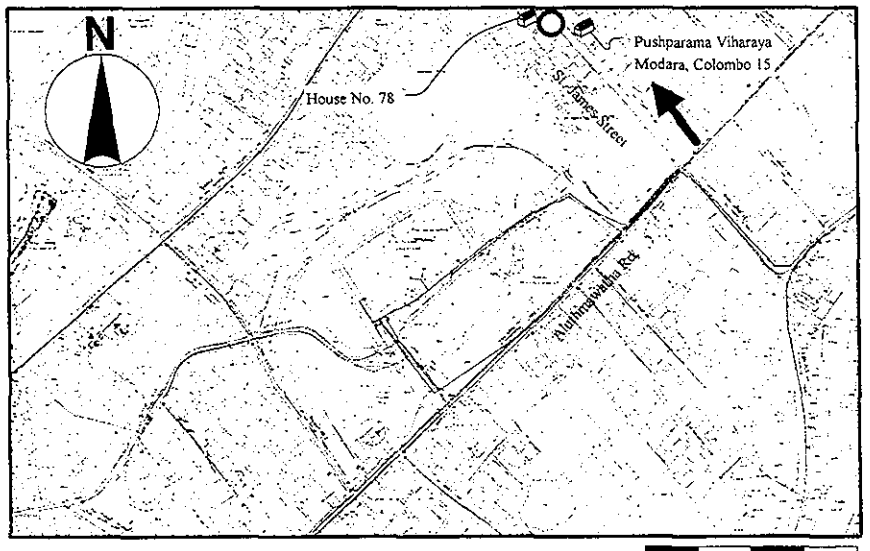
* Small part of GI pipes around the meter found to have been replaced before

Leakage Survey - Investigation for GIP (Union Place No.2)

APPENDIX 5C

RESULTS OF PIPE ASSESSMENT

Appendix 5C



O :Assessment → :Direction of Flow

0 200m

Investigation Memo

Location	St. James St.
Map ID No.	66-3-23-A
Date of Inspection	04-Apr-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Modara
Road Ownership	DO-D1
Traffic Intensity	Heavy

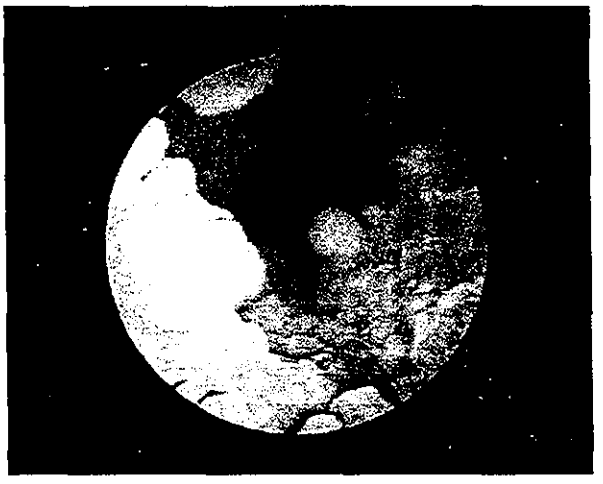
Investigation Results

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	3
Measured Circumference (mm)	305
Age Group	70 to 100 years
Previous Scraping	None
Pipe Depth (m)	0.9
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kg/cm2)	0.50
Max. Scale Thickness (mm)	25
State of Encrustation	Heavy
Effective Cross Section Area	11%
Bubbles	High
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

Notes

- This pipeline was shown in NWSDB drawing as 4 inches, but it was found to be 3 inches
- Flow velocity was relatively high

Internal view of pipe

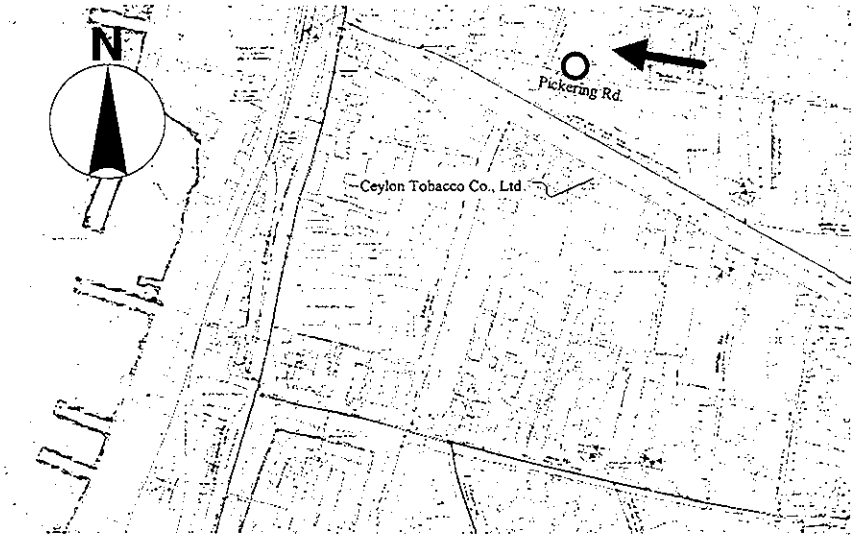


Upstream view from pipe center

Downstream view from pipe center

Pipeline Assessment (St. James St.)

Appendix 5C



O :Assessment → :Direction of Flow

0 200m

Investigation Memo

Location	Pickering Rd. 1
Map ID No.	66- 8-2-D
Date of Inspection	05-Apr-2000
Started at:	9:00
Finished at:	12:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	DO-D1
Traffic Intensity	Light

Investigation Results

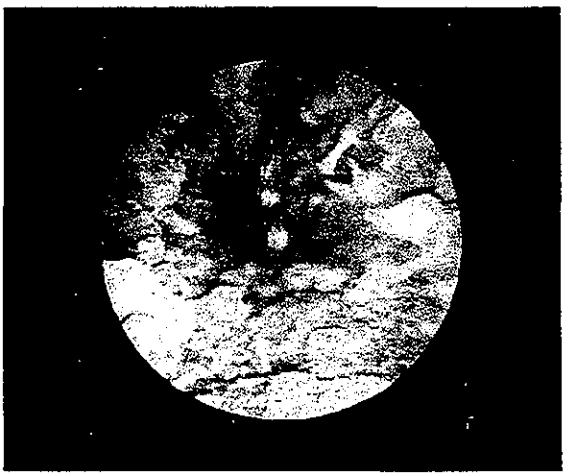
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	4
Measured Circumference (mm)	387
Age Group	over 100 years
Previous Scraping	None
Pipe Depth (m)	0.5
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	1.00
Max. Scale Thickness (mm)	20
State of Encrustation	Heavy
Effective Cross Section Area	25%
Bubbles	Low
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

Notes

- Flow velocity was extremely low

Internal view of pipe

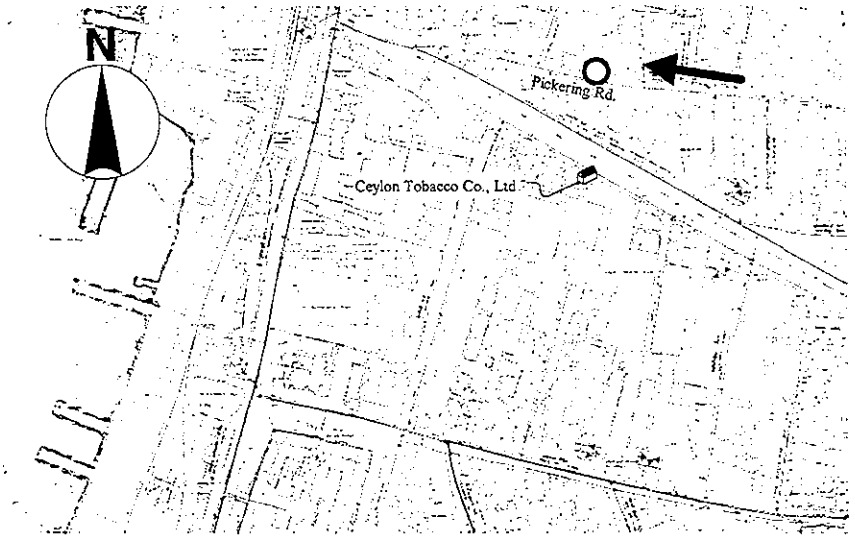
Upstream view from pipe center



Downstream view from pipe center

Pipeline Assessment (Pickering Rd. 1)

Appendix 5C



O :Assessment → :Direction of Flow

0 200m

Investigation Memo

Location	Pickering Road. 2
Map ID No.	66-8-2-D
Date of Inspection	05-Apr-2000
Started at:	13:00
Finished at:	17:00
Weather	Fine
Police Div.	*Kotahena*
Road Ownership	DO-D1
Traffic Intensity	Light

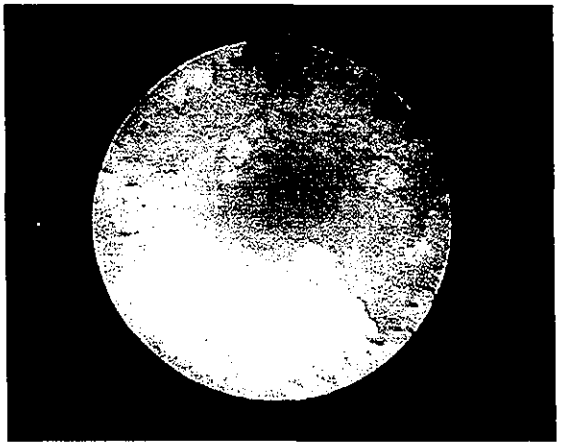
Investigation Results

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	5
Measured Circumference (mm)	480
Age Group	over 100 years
Previous Scraping	None
Pipe Depth (m)	0.85
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kg/cm2)	1.00
Max. Scale Thickness (mm)	15
State of Encrustation	Medium
Effective Cross Section Area	57%
Bubbles	High
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

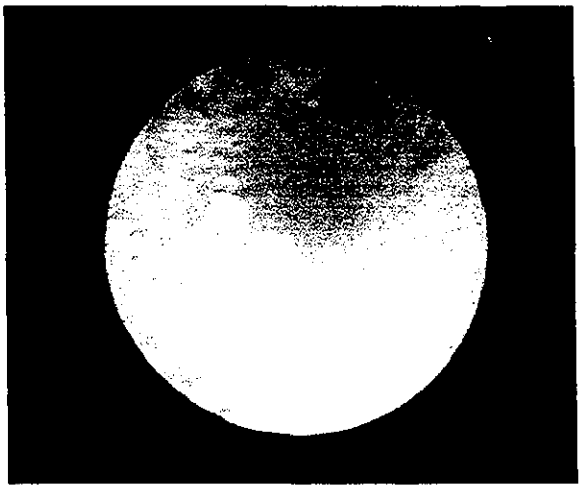
Notes

- Telephone cable was installed just above this pipe

Internal view of pipe



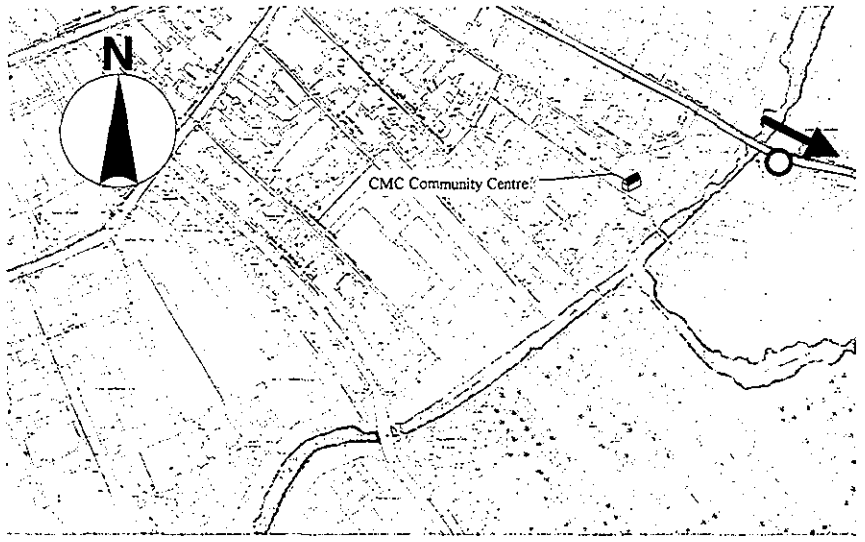
Upstream view from pipe center



Downstream view from pipe center

Pipeline Assessment (Pickering Rd. 2)

Appendix 5C



O :Assessment → :Direction of Flow

0 200m

Investigation Memo

Location	Stace Rd. 1
Map ID No.	66-8-8-B
Date of Inspection	06-Apr-2000
Started at:	20:00
Finished at:	22:30
Weather	Fine
Police Div.	Grandpass
Road Ownership	CRMU
Traffic Intensity	Heavy

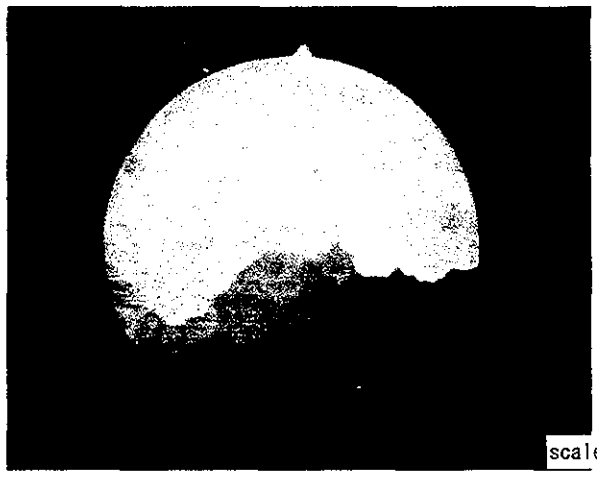
Investigation Results

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	6
Measured Circumference (mm)	550
Age Group	over 100 years
Previous Scraping	None
Pipe Depth (m)	see Notes
Pipe Location	Road Embankment
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	1.50
Max. Scale Thickness (mm)	25
State of Encrustation	Medium
Effective Cross Section Area	45%
Bubbles	Low
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

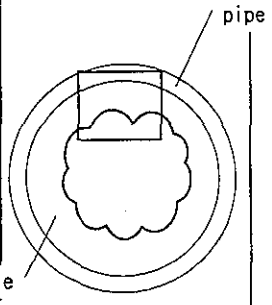
Notes

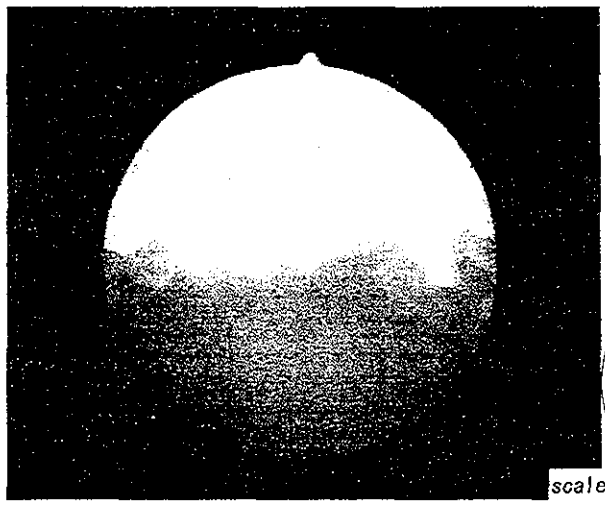
- This pipe is exposed because of erosion of road embankment
- It was observed that color distribution of scale of this pipe was partly different

Internal view of pipe

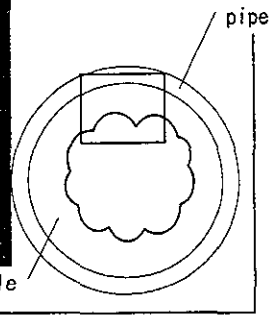


Upstream view from upper part of pipe as drawn below



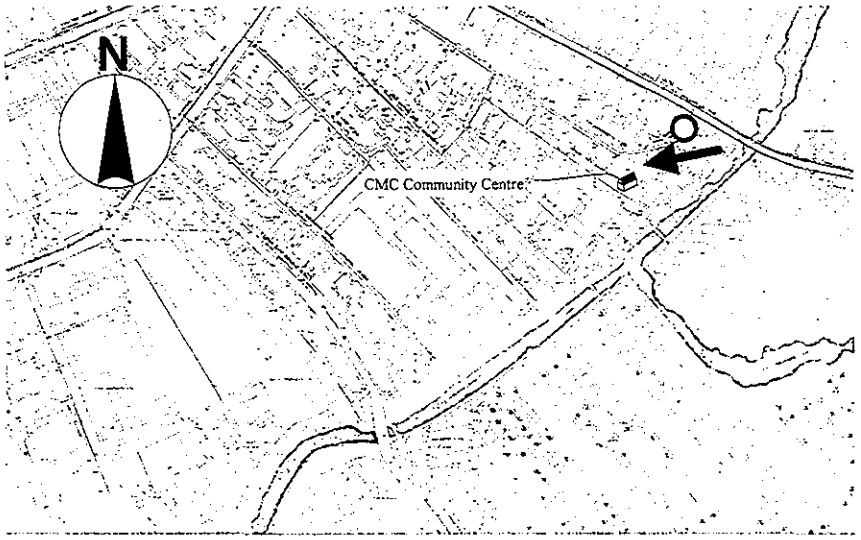


Upstream view from upper part of pipe as drawn below



Pipeline Assessment (Stace Rd. 1)

Appendix 5C



O :Assessment → :Direction of Flow

0 200m

Investigation Memo

Location	Stace Rd. 2
Map ID No.	66-8-8-B
Date of Inspection	06-Apr-2000
Started at:	22:00
Finished at:	26:00
Weather	Fine
Police Div.	Grandpass
Road Ownership	CRMU
Traffic Intensity	Light

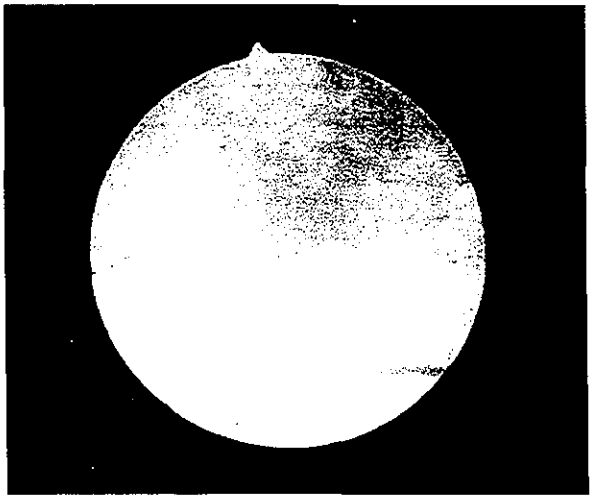
Investigation Results

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	3
Measured Circumference (mm)	303
Age Group	over 100 years
Previous Scraping	None
Pipe Depth (m)	0.8
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	1.50
Max. Scale Thickness (mm)	20
State of Encrustation	Heavy
Effective Cross Section Area	22%
Bubbles	High
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

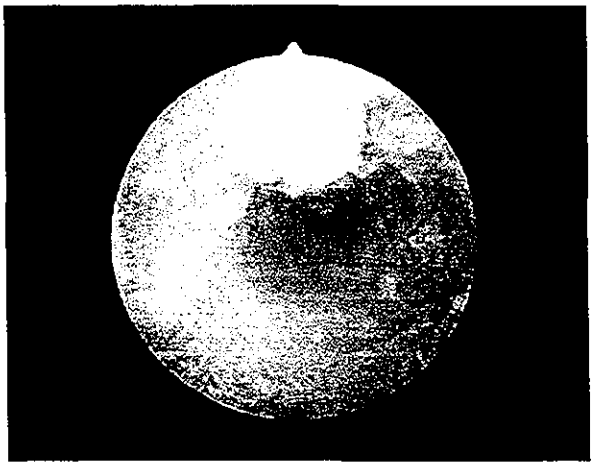
Notes

- Visible leakage was observed near here (10m downstream from investigated site)

Internal view of pipe



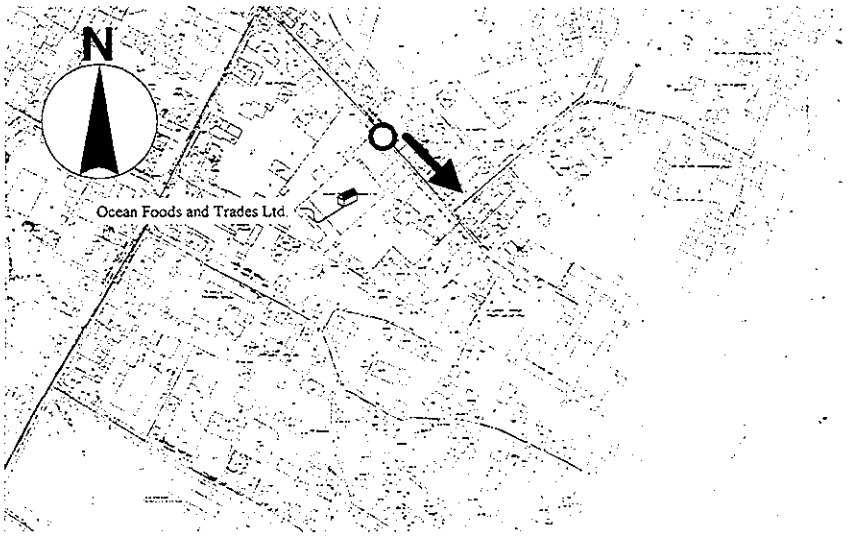
Upstream view from pipe center



Upstream view from pipe center

Pipeline Assessment (Stace Rd. 2)

Appendix 5C



O :Assessment → :Direction of Flow

0 200m

Investigation Memo

Location	Kelani Ganga Mill Rd.
Map ID No.	66-3-19-A
Date of Inspection	10-Apr-2000
Started at:	9:00
Finished at:	13:00
Weather	Fine
Police Div.	Mattakkuliya
Road Ownership	DO-D1
Traffic Intensity	Medium

Investigation Results

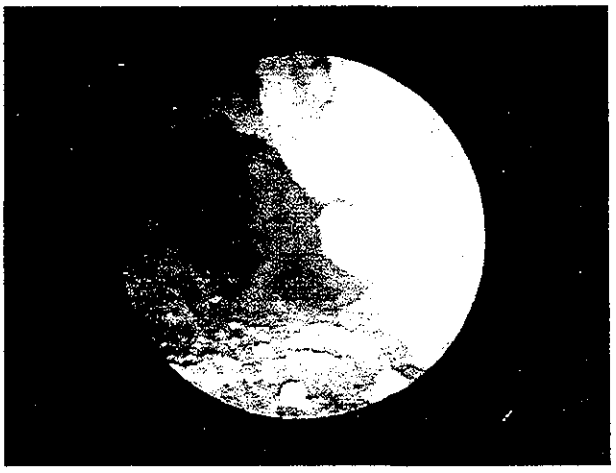
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	4
Measured Circumference (mm)	396
Age Group	70 to 100 years
Previous Scraping	Once (between 1980 and 1997)
Pipe Depth (m)	0.6
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	0.10
Max. Scale Thickness (mm)	25
State of Encrustation	Heavy
Effective Cross Section Area	25%
Bubbles	Medium
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

Notes

- This pipeline was shown in NWSDB drawing as 3 inches, but it was found to be 4 inches.
- This pipeline was once scraped sometime between 1980 to 1997, but has already developed heavy encrustation again to date

Internal view of pipe

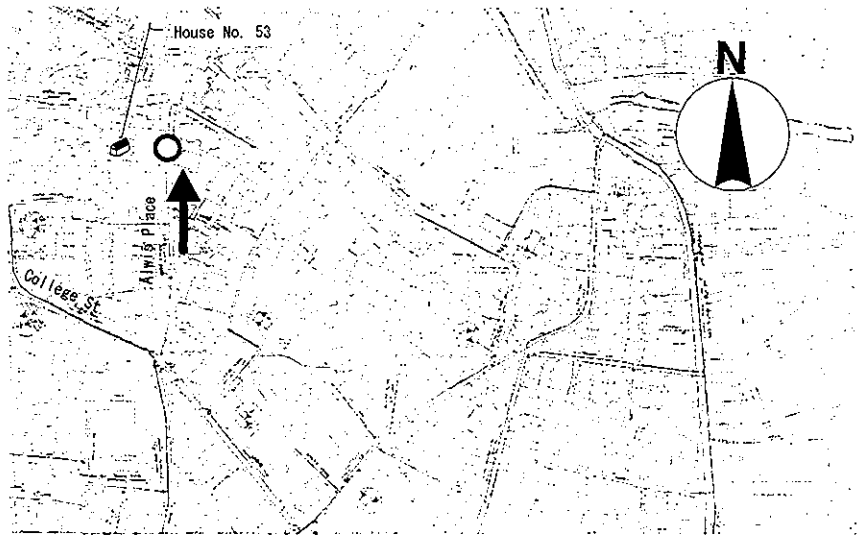
Upstream view from pipe center



Upstream view from pipe center

Pipeline Assessment (Kelani Ganga Mill Rd.)

Appendix 5C



Investigation Memo

Location	Alwis Place
Map ID No.	66-8-3-A
Date of Inspection	11-Apr-2000
Started at:	9:00
Finished at:	13:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	DO-D1
Traffic Intensity	Light

O :Assessment → :Direction of Flow

0 200m

Investigation Results

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	4
Measured Circumference (mm)	385
Age Group	70 to 100 years
Previous Scraping	Unknown
Pipe Depth (m)	0.4
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	0.60
Max. Scale Thickness (mm)	0
State of Encrustation	None
Effective Cross Section Area	100%
Bubbles	Low
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

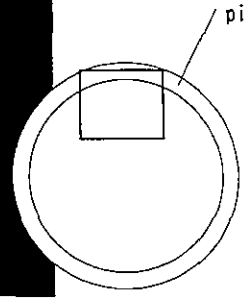
Notes

- This pipeline was shown in NWSDB drawing as 3 inches, but it was found to be 4 inches.
- The internal condition of this pipeline was found to be excellent. It appears that this pipeline was previously scraped and cement mortal lined, but no information is available.

Internal view of pipe

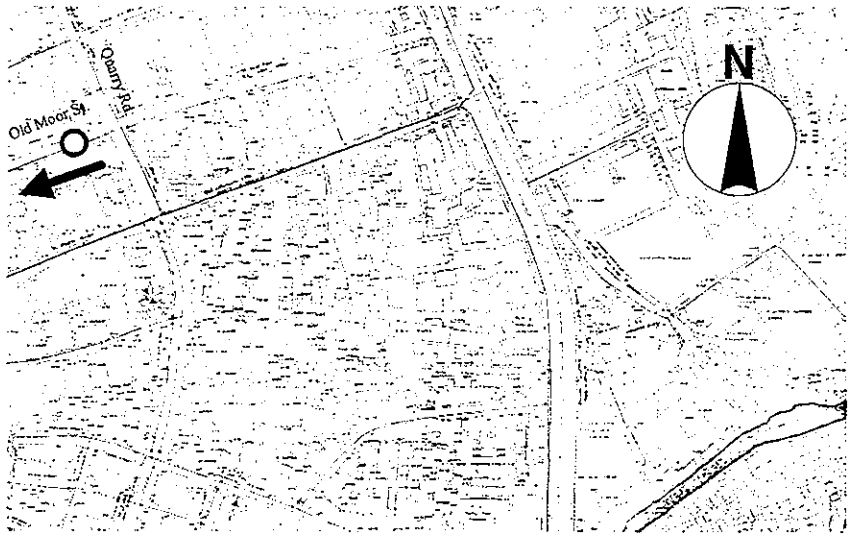
Internal view of pipe wall

Upstream view from upper part of pipe as drawn below



Pipeline Assessment (Alwis Place)

Appendix 5C



Investigation Memo

Location	Old Moor St.
Map ID No.	66-8-8-C
Date of Inspection	15-Apr-2000
Started at:	19:30
Finished at:	23:00
Weather	Fine
Police Div.	Armour St.
Road Ownership	DO-2A
Traffic Intensity	Heavy

Investigation Results

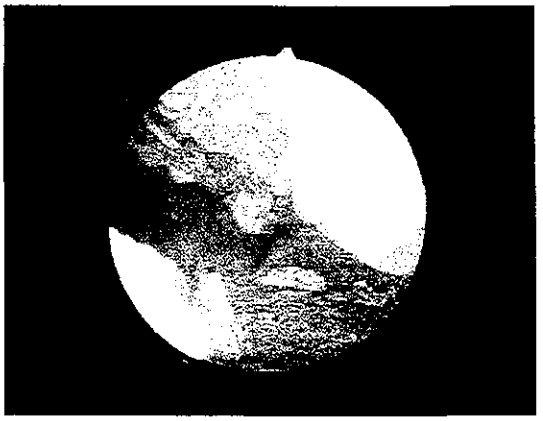
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	3
Measured Circumference (mm)	301
Age Group	over 100 years
Previous Scraping	None
Pipe Depth (m)	1.3
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	0.15
Max. Scale Thickness (mm)	30
State of Encrustation	Extremely Heavy
Effective Cross Section Area	4%
Bubbles	Low
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

Notes

- The internal condition of pipe was extremely poor.

Internal view of pipe

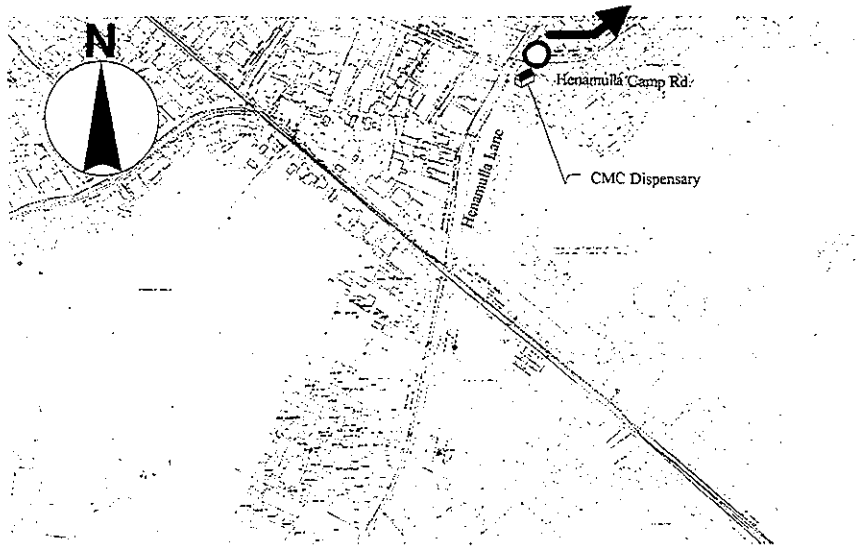
Upstream view from pipe center



Downstream view from pipe center

Pipeline Assessment (Old Moor St.)

Appendix 5C



O :Assessment → :Direction of Flow

0 200m

Investigation Memo

Location	Henamulla Camp Rd.
Map ID No.	66-3-23-B
Date of Inspection	17-Apr-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Modara
Road Ownership	DO-D1
Traffic Intensity	Light

Investigation Results

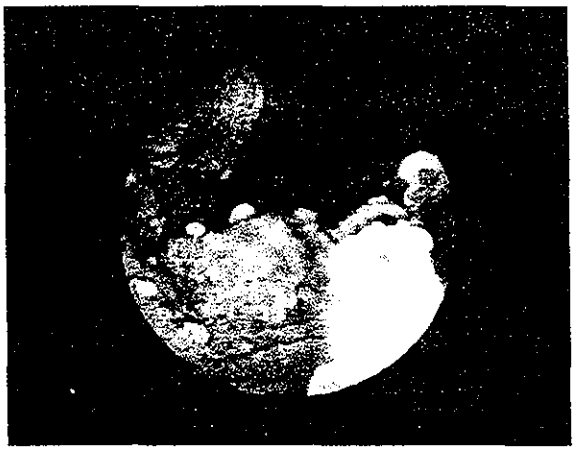
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	3
Measured Circumference (mm)	303
Age Group	over 100 years
Previous Scraping	Once (between 1980 and 1997)
Pipe Depth (m)	0.6
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	0.15
Max. Scale Thickness (mm)	20
State of Encrustation	Heavy
Effective Cross Section Area	11%
Bubbles	High
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

Notes

- This pipeline was once scraped sometime between 1980 to 1997, but has already developed heavy encrustation *again to date*

Internal view of pipe

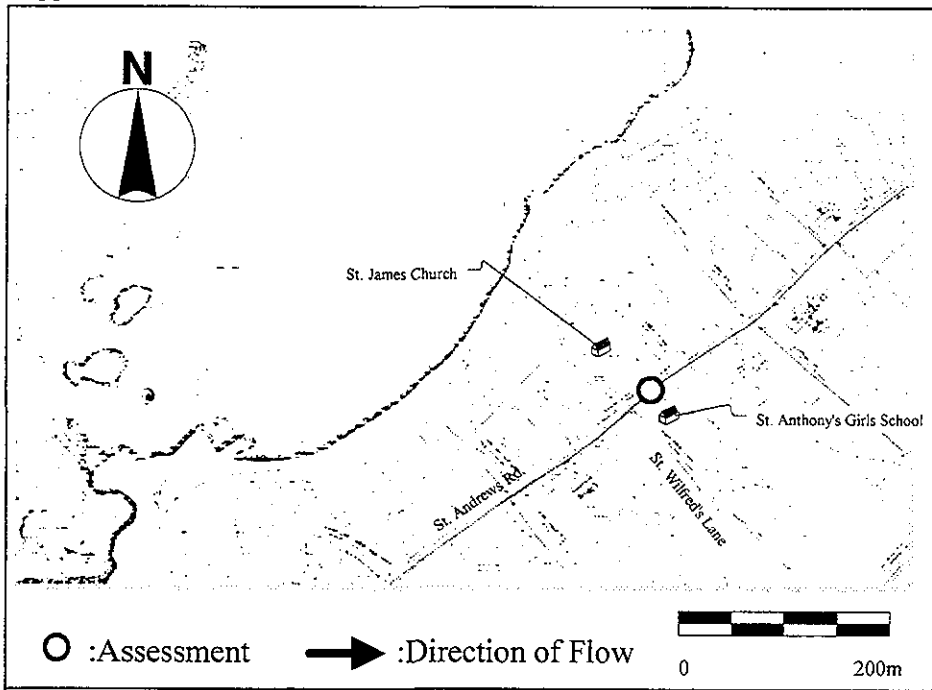
Upstream view from pipe center



Downstream view from pipe center

Pipeline Assessment (Henamulla Camp Rd.)

Appendix 5C



Investigation Memo

Location	St. Andrews Rd. 1
Map ID No.	66-3-18-C
Date of Inspection	19-Apr-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Modara
Road Ownership	DO-D1
Traffic Intensity	Light (wide road)

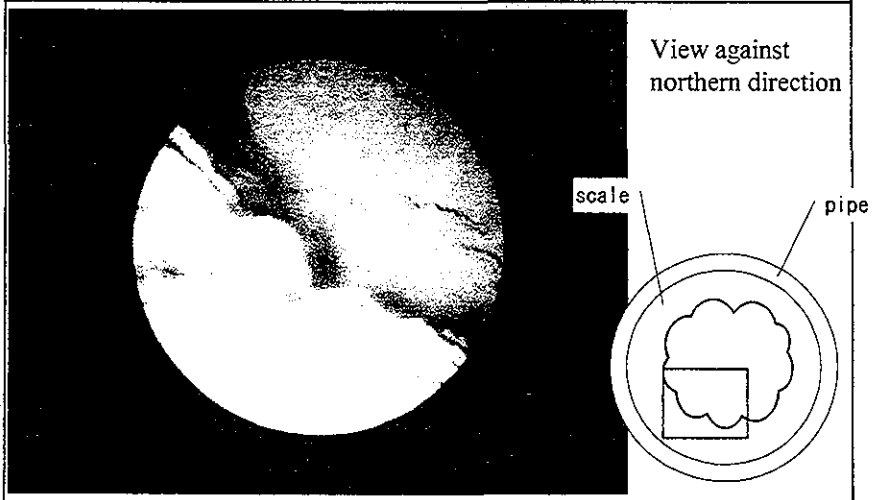
Investigation Results

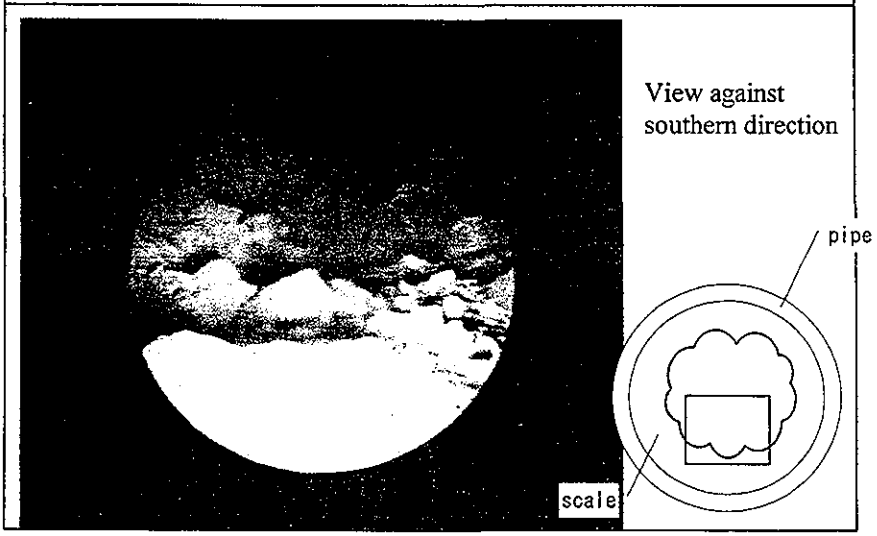
Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	4
Measured Circumference (mm)	388
Age Group	over 100 years
Previous Scraping	None
Pipe Depth (m)	0.5
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Slightly Corroded
Water Pressure (kgf/cm2)	0.60
Max. Scale Thickness (mm)	15
State of Encrustation	Medium
Effective Cross Section Area	36%
Bubbles	Low
Residual Chlorine	N. A.
pH	N. A.
EC	N. A.

Notes

- It was observed that color distribution of scale of this pipe was partly different
- Direction of flow was changing

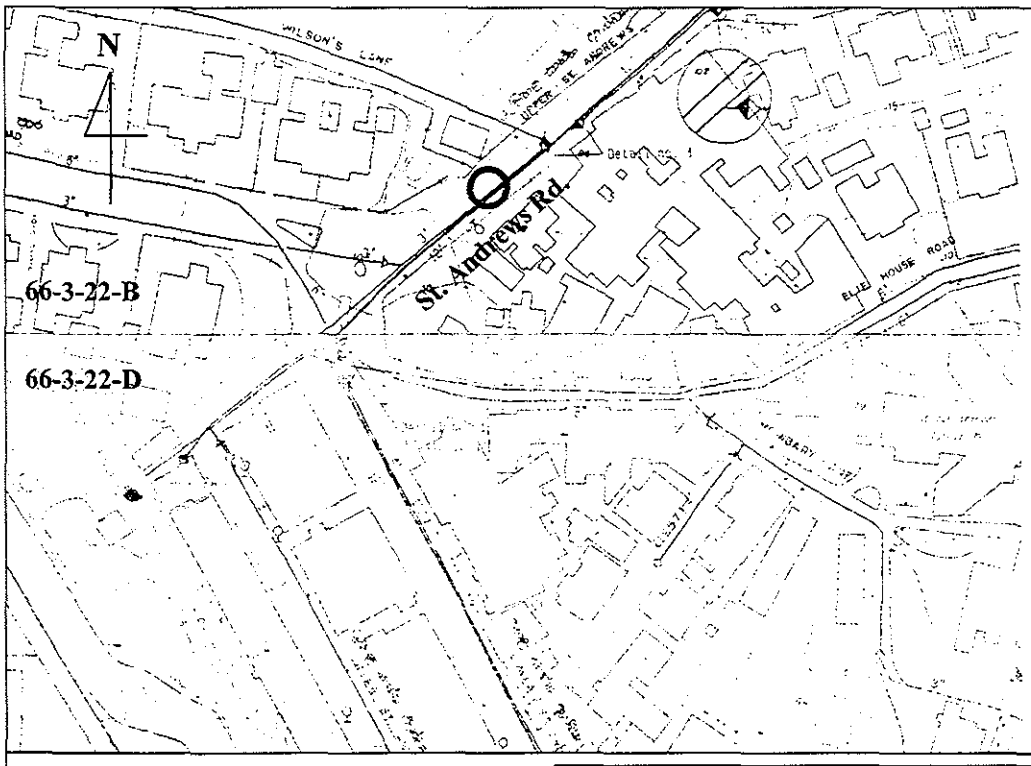
Internal view of pipe





Pipeline Assessment (St. Andrews Rd. 1)

Appendix 5C



Investigation Memo

Location	St. Andrews Rd. 2
Map ID No.	66-3-22-B
Date of Inspection	20-Apr-2000
Started at:	9:00
Finished at:	12:00
Weather	Fine
Police Div.	Modara
Road Ownership	DO-D1
Traffic Intensity	Heavy

○ Assessment

Scale 1:2000

Investigation Results

Pipe Material	Cast Iron
Nominal Internal Dia. (inch)	3
Measured Circumference (mm)	306
Age Group	over 100 years
Previous Scraping	None
Pipe Depth (m)	0.73
Pipe Location	under Roadway (paved)
Pipe Wall Condition	*Good*
Water Pressure (kgf/cm2)	1.00
Max. Scale Thickness (mm)	20
State of Encrustation	Heavy
Effective Cross Section Area	22%
Bubbles	Medium
Residual Chlorine (mg/l)	N. A.
pH	7.42
EC (ms/m)	9.63

Internal View of Pipe

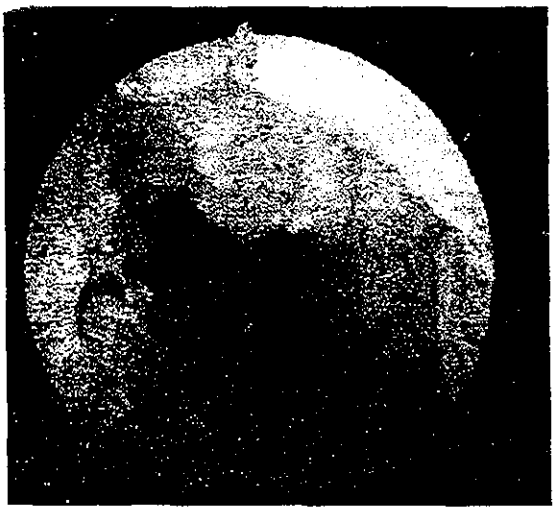


Photo No.1

Upstream view from pipe center

Photo No.2

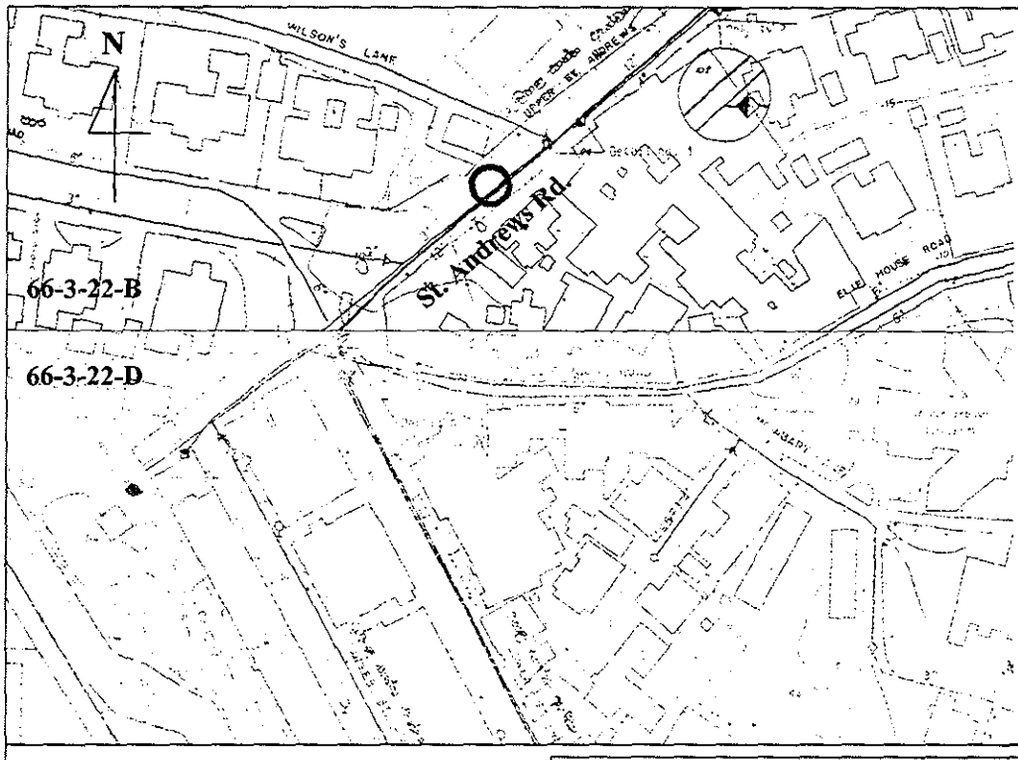
Downstream view from pipe center

Notes

- The pipe has been laid in parallel to a 12" pipe
- Water pressure is about 1.0 kgf/cm2, the highest among existing pipes in the vicinity of Ellie House reservoir

Pipeline Assessment (St. Andrews Rd. 2)

Appendix 5C



Investigation Memo

Location	St. Andrews Rd. 3
Map ID No.	66-3-22-B
Date of Inspection	20-Apr-2000
Started at:	13:00
Finished at:	17:00
Weather	Fine
Police Div.	Modara
Road Ownership	DO-D1
Traffic Intensity	Heavy

○ Assessment

Scale 1:2000

Investigation Results

Measured Circumference (mm)	1055
Age Group	over 100 years
Previous Scraping	None
Pipe Depth (m)	0.75
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	1.10
Max. Scale Thickness (mm)	20
State of Encrustation	Light
Effective Cross Section Area	75%
Bubbles	Light
Residual Chlorine (mg/l)	N. A.
pH	N. A.
EC (ms/m)	N. A.

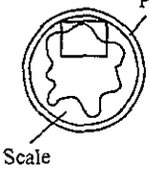
Notes

- The pipe has been laid in parallel to a 4 ipe.
- Velocity appears to be low.

Internal View of Pipe

Photo No.1

Upstream view
from upper part
of pipe as drawn below



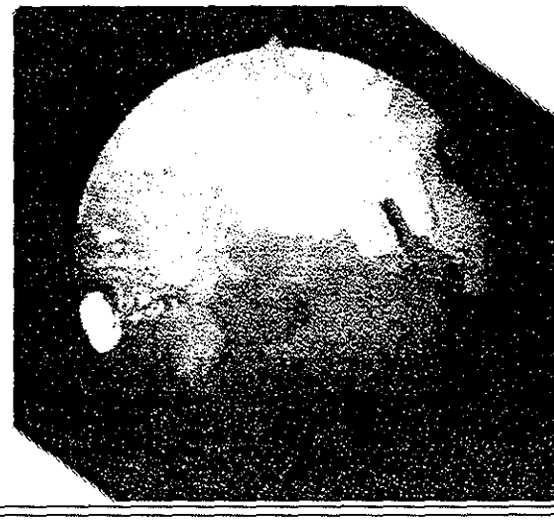
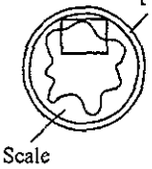


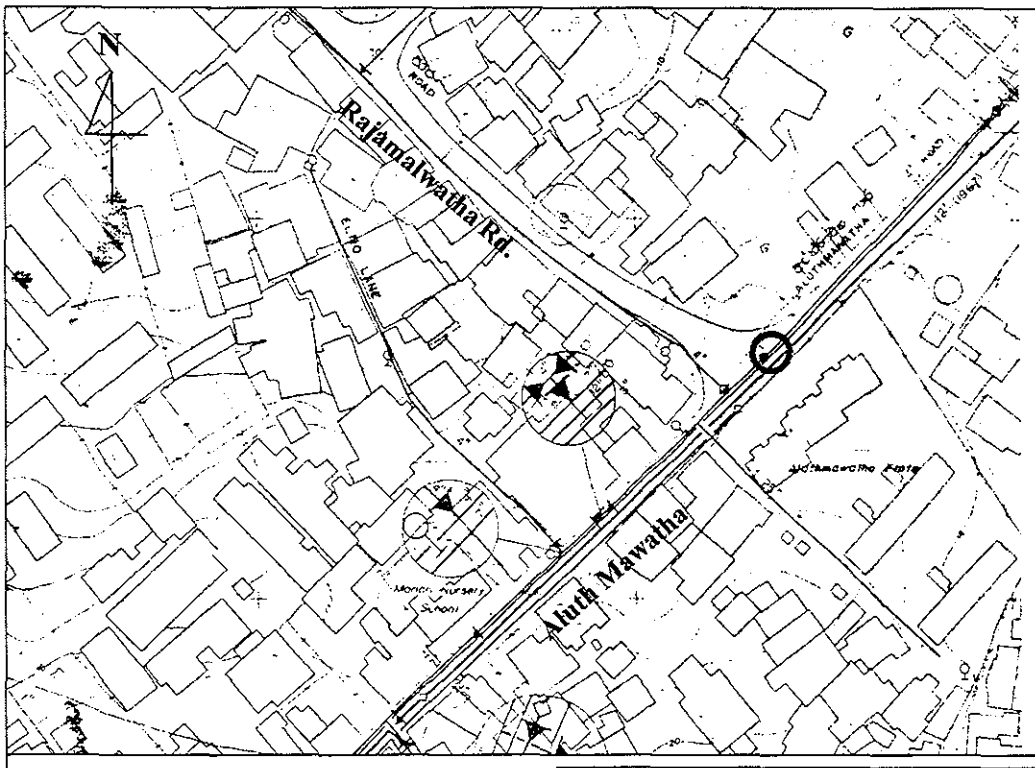
Photo No.2

Downstream view
from pipe center
as drawn below



Pipeline Assessment (St. Andrews Rd.3)

Appendix 5C



Investigation Memo

Location	Aluth Mavatha Rd.
Map ID No.	66-3-18-D
Date of Inspection	22-Apr-2000
Started at:	9:00
Finished at:	13:00
Weather	Fine
Police Div.	Modara
Road Ownership	CRMU
Traffic Intensity	Heavy

○ Assessment

Scale 1:2000

Investigation Results

Measured Circumference (mm)	387
Age Group	over 100 years
Previous Scraping	None
Pipe Depth (m)	0.60
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	0.15
Max. Scale Thickness (mm)	20
State of Encrustation	Medium
Effective Cross Section Area	36%
Bubbles	Medium
Residual Chlorine (mg/l)	N. A.
pH	N. A.
EC (ms/m)	N. A.

Internal View of Pipe

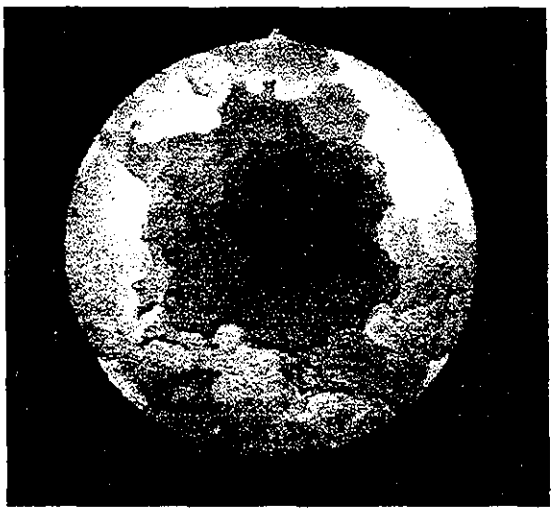


Photo No.1

Upstream view from pipe center

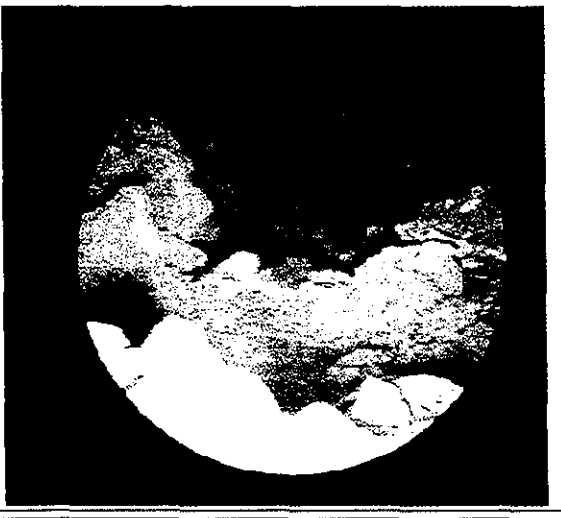


Photo No.2

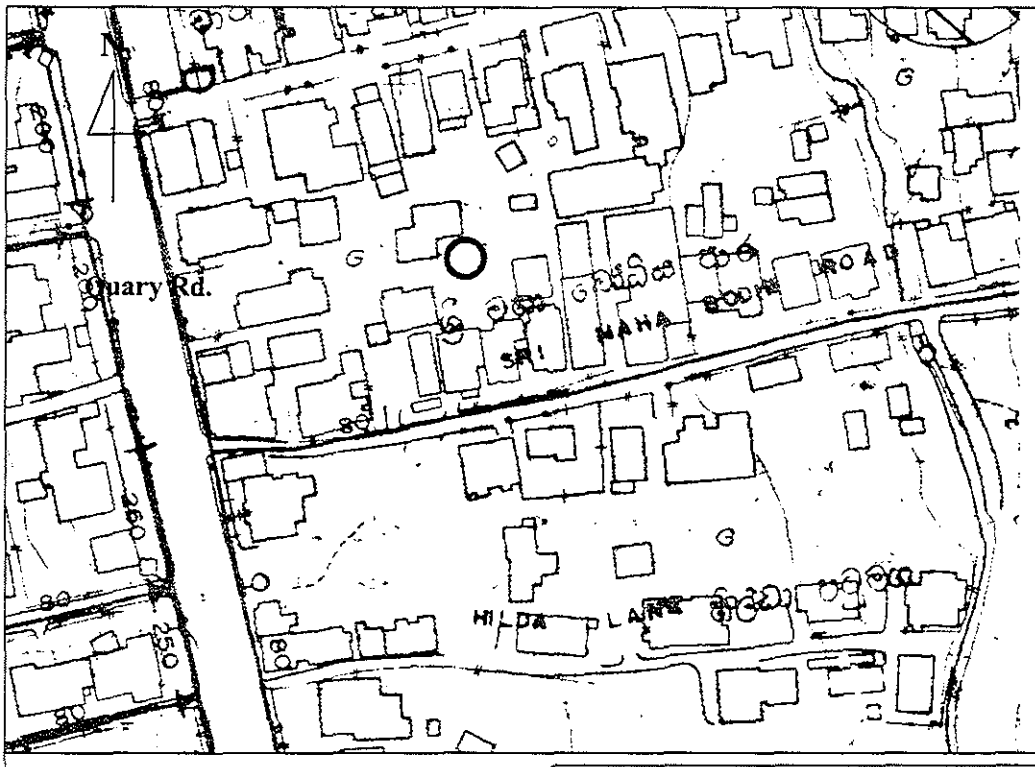
Downstream view from pipe center

Notes

- NWSDB drawings indicated "3 inch", but was actually found to be 4-inch.

Pipeline Assessment (Aluth Mawatha)

Appendix 5C



Investigation Memo

Location	Quarry Rd.
Map ID No.	66-18-3
Date of Inspection	24-Apr-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Dehiwara
Road Ownership	PRDA(Western)
Traffic Intensity	Heavy

○ Assessment

Scale 1:2000

Investigation Results

Measured Circumference (mm)	1100
Age Group	20 to 50 years
Previous Scraping	None
Pipe Depth (m)	1.35
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	1.90
Max. Scale Thickness (mm)	25
State of Encrustation	Light
Effective Cross Section Area	69%
Bubbles	High
Residual Chlorine (mg/l)	0.6
pH	7.93
EC (ms/m)	16.58

Notes

- Has a relatively large earth cover of 1.35m.
- Observed the sign of groundwater at the pipe bottom.
- EC(16.58ms/m) is relatively high compared to other location.

Internal View of Pipe

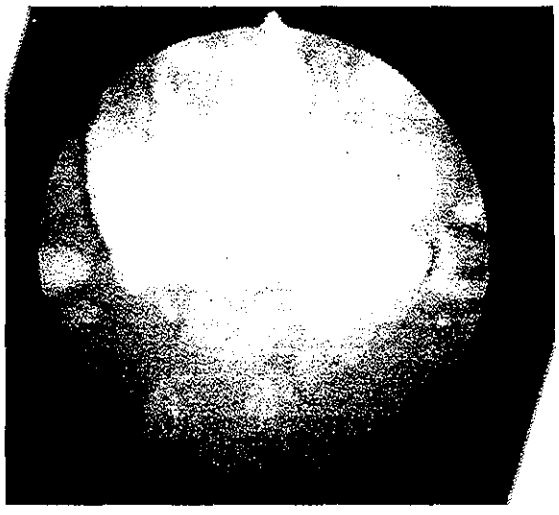
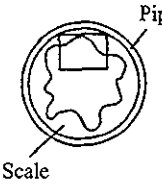


Photo No.1

Upstream view
from upper part
of pipe as drawn below



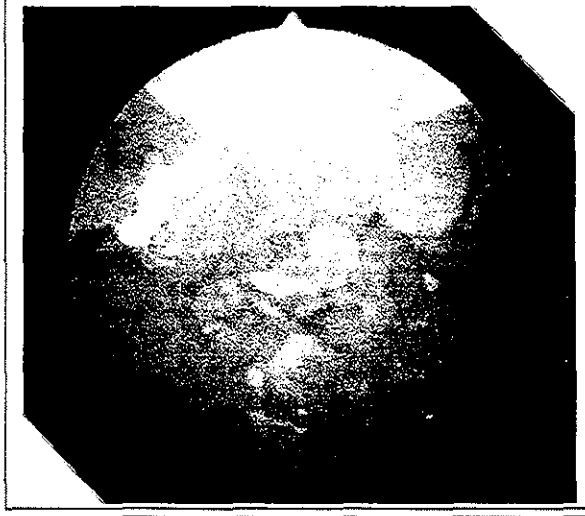
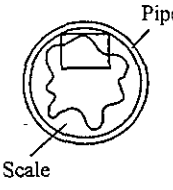


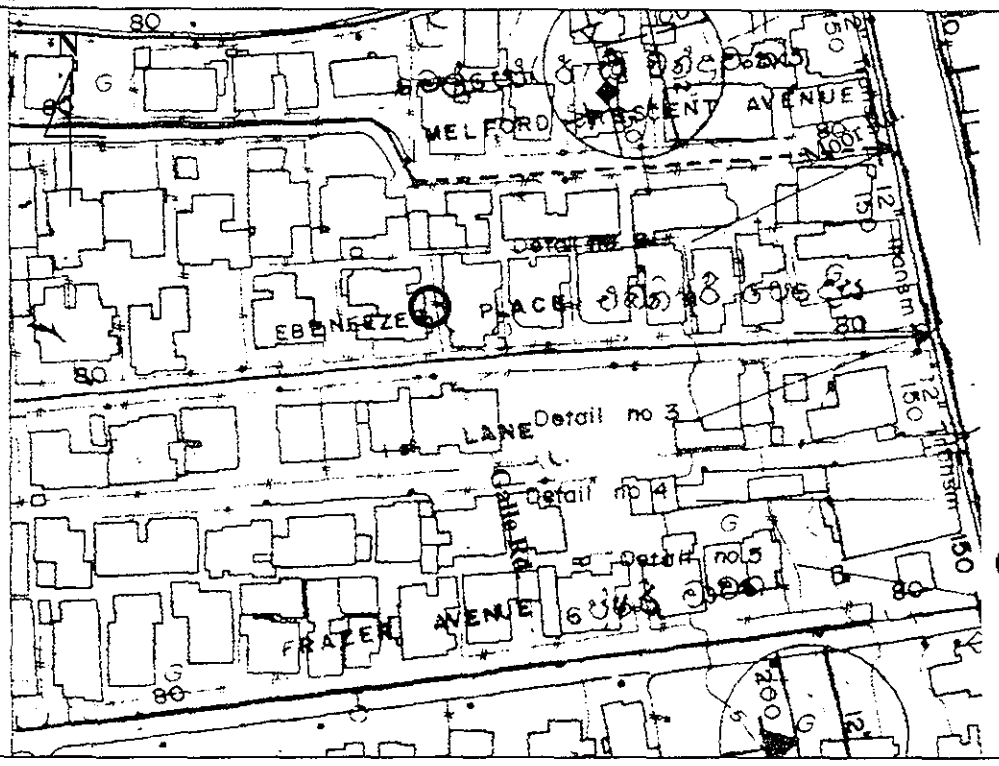
Photo No.2

Downstream view
from pipe center
as drawn below



Pipeline Assessment (Quarry Rd.)

Appendix 5C



Investigation Memo

Location	Galle Rd. 1
Map ID No.	66-13-28-A
Date of Inspection	25-Apr-2000
Started at:	20:00
Finished at:	25:00
Weather	Fine
Police Div.	Wellawatta
Road Ownership	CRMU
Traffic Intensity	Heavy

Investigation Results

Measured Circumference (mm)	910
Age Group	20 to 50 years
Previous Scraping	None
Pipe Depth (m)	Exposed
Pipe Location	Hung from Bridge
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	1.20
Max. Scale Thickness (mm)	25
State of Encrustation	Light
Effective Cross Section Area	64%
Bubbles	Medium
Residual Chlorine (mg/l)	0.4
pH	7.40
EC (ms/m)	7.11

Notes

- This pipe has been placed on the walkway at the boundary bridge.
- When it investigated .the pipe was exposed.
- Pipeline will be protected with the culvert.

Internal View of Pipe

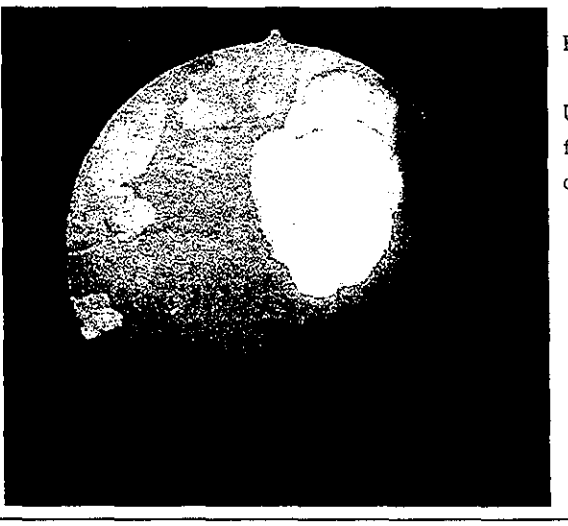
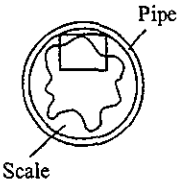


Photo No.1

Upstream view from upper part of pipe as drawn below



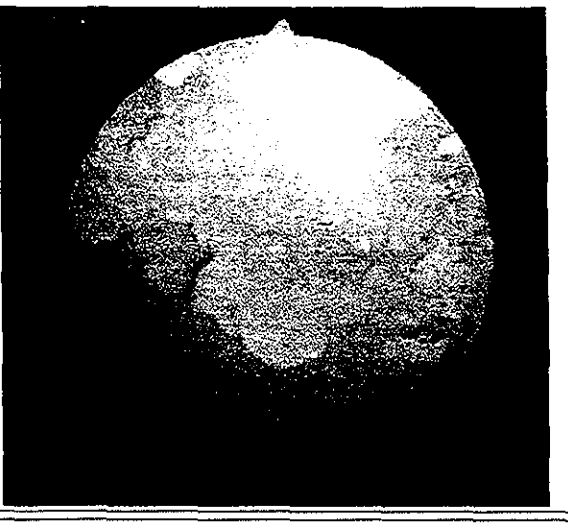
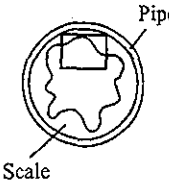


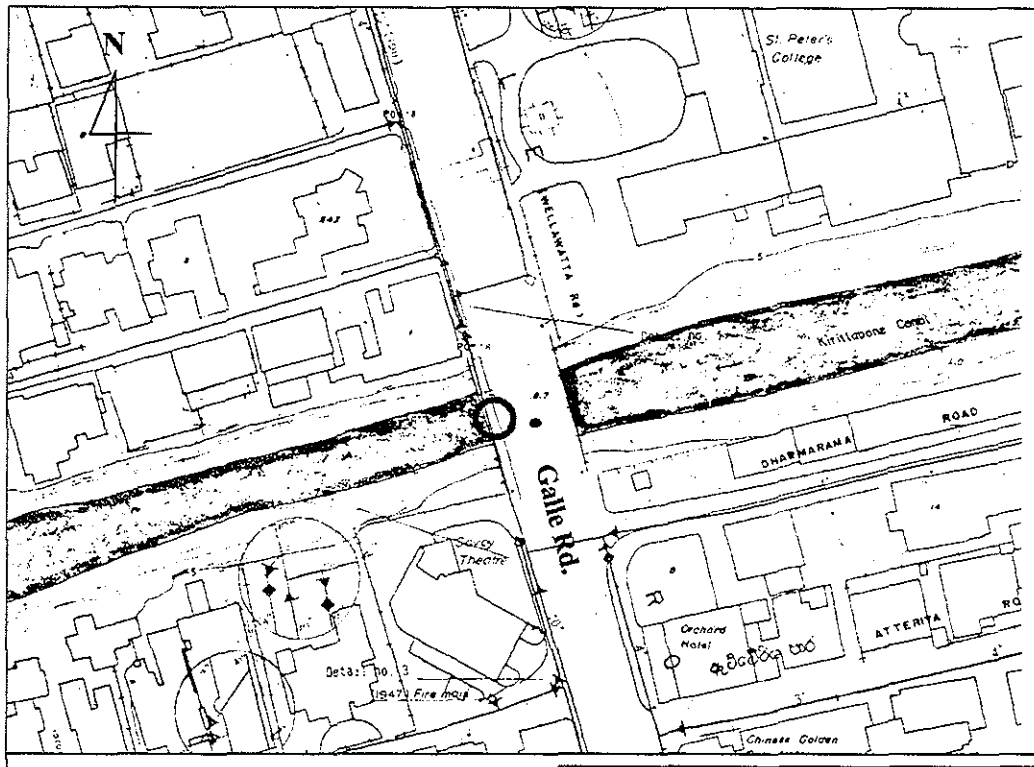
Photo No.2

Downstream view from pipe center as drawn below



Pipeline Assessment (Galle Rd. 1)

Appendix 5C



Investigation Memo

Location	Galle Rd. 2
Map ID No.	66-13-17-B
Date of Inspection	03-May-2000
Started at:	9:00
Finished at:	14:00
Weather	Fine
Police Div.	Bambalapitiya
Road Ownership	CRMU
Traffic Intensity	Heavy

○ Assessment

Scale 1:2000

Investigation Results

Measured Circumference (mm)	905
Age Group	70 to 100 years
Previous Scraping	None
Pipe Depth (m)	Exposed
Pipe Location	Hung from Bridge
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	1.20
Max. Scale Thickness (mm)	30
State of Encrustation	Medium
Effective Cross Section Area	58%
Bubbles	Medium
Residual Chlorine (mg/l)	N. A.
pH	N. A.
EC (ms/m)	N. A.

Notes

- This pipe has been placed below the deck.
- Tar painting was carried outand it was good condition as for the pipe external surface.

Internal View of Pipe

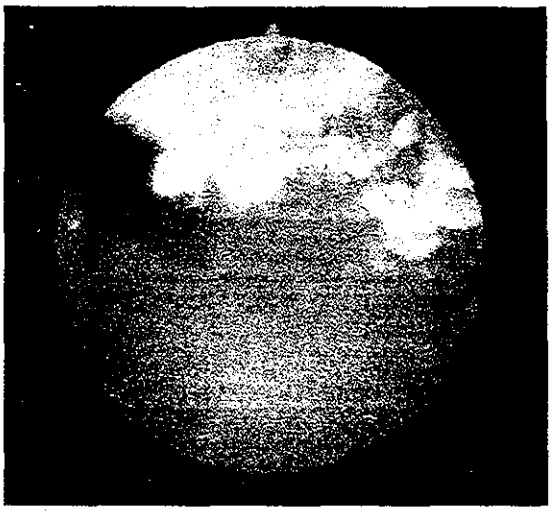
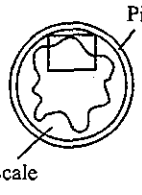


Photo No.1

Upstream view
from upper part
of pipe as drawn below



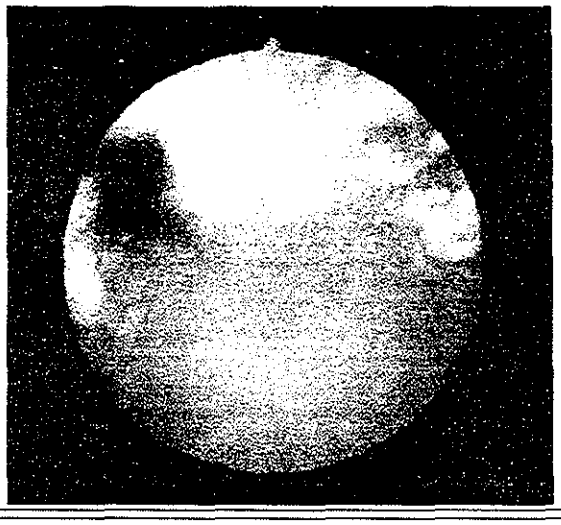
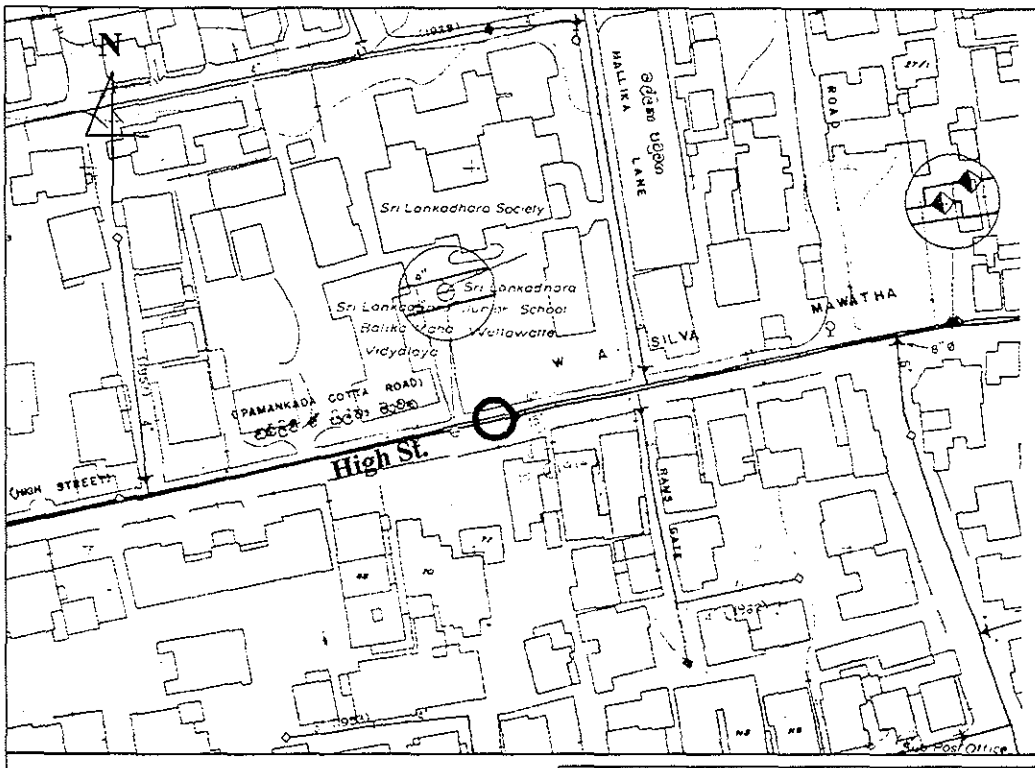


Photo No.2

Downstream view
from pipe center
as drawn below

Pipeline Assessment (Galle Rd. 2)

Appendix 5C



Investigation Memo

Location	High St.
Map ID No.	66-13-18-C
Date of Inspection	05-May-2000
Started at:	20:00
Finished at:	26:00
Weather	Fine
Police Div.	Wellawatta
Road Ownership	DO-D5
Traffic Intensity	Heavy

Assessment

Scale 1:2000

Investigation Results

Measured Circumference (mm)	1365
Age Group	50 to 70 years
Previous Scraping	Once (in 1982)
Pipe Depth (m)	0.80
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	2.00
Max. Scale Thickness (mm)	0
State of Encrustation	Light
Effective Cross Section Area	100%
Bubbles	Medium
Residual Chlorine (mg/l)	0.2
pH	6.50
EC (ms/m)	2.02

Notes

- This pipe was scraped/lined in 1982, the internal conditions was extremely good.
- Water pressure was 2.0k g f /cm2, and this value was highest of all investigation point.

Internal View of Pipe

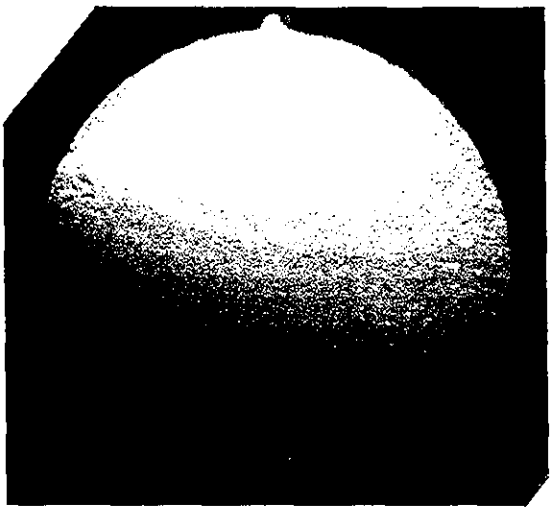
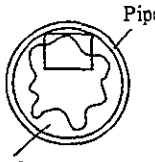


Photo No.1

Upstream view from upper part of pipe as drawn below



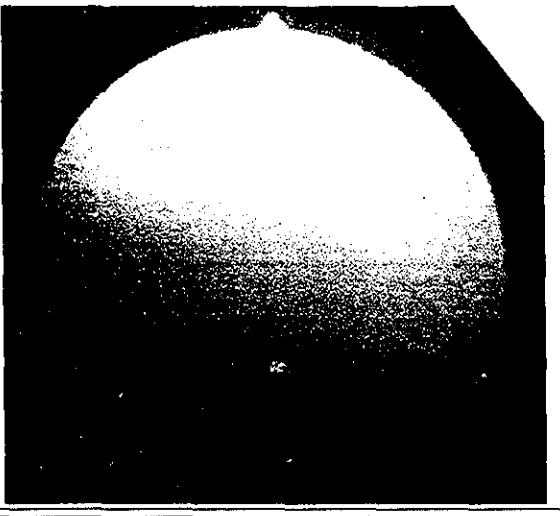
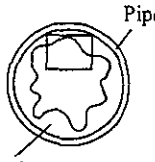


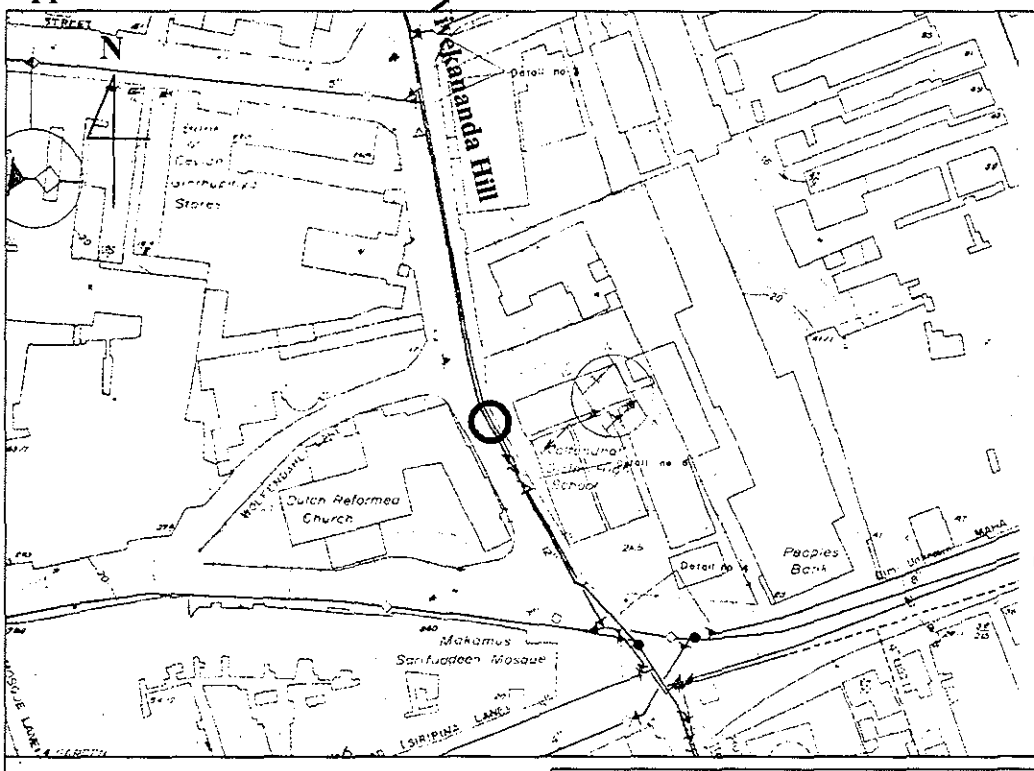
Photo No.2

Downstream view from pipe center as drawn below



Pipeline Assessment (High St.)

Appendix 5C



Investigation Memo

Location	Vivekananda Hill
Map ID No.	66-8-7-B
Date of Inspection	09-May-2000
Started at:	20:00
Finished at:	25:00
Weather	Fine
Police Div.	Kotahena
Road Ownership	DO-2A
Traffic Intensity	Heavy

Investigation Results

Measured Circumference (mm)	1068
Age Group	70 to 100 years
Previous Scraping	None
Pipe Depth (m)	0.90
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	N. A.
Max. Scale Thickness (mm)	2
State of Encrustation	Light
Effective Cross Section Area	97%
Bubbles	N. A.
Residual Chlorine (mg/l)	N. A.
pH	N. A.
EC (ms/m)	N. A.

Internal View of Pipe

- Observed no significant encrustation.
- This pipe appears to have been empty for many years.
- Opened the valve located upstream and confirmed air exhaustion from the pipe.

Internal View of Pipe

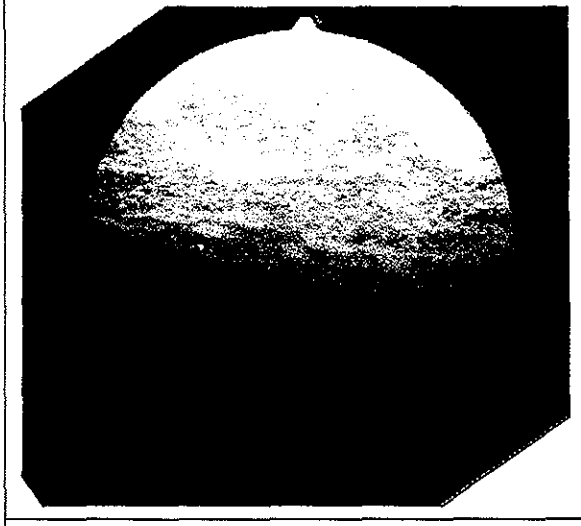
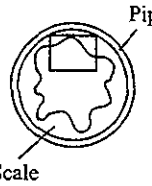


Photo No.1

Upstream view from upper part of pipe as drawn below



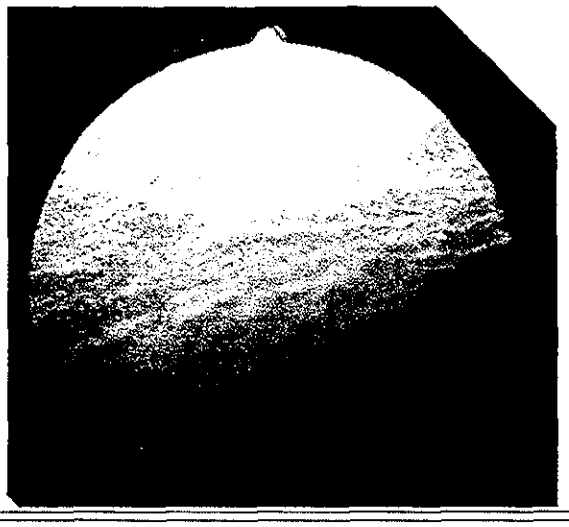
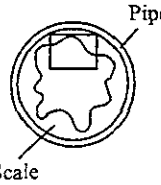


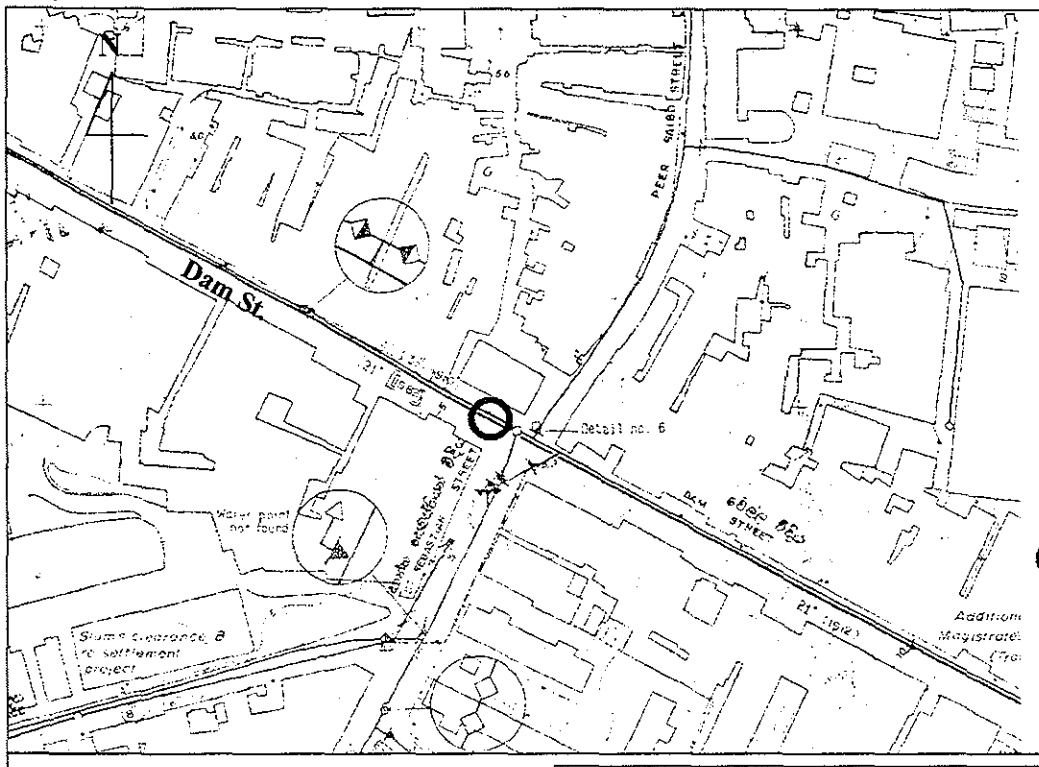
Photo No.2

Downstream view from pipe center as drawn below



Pipeline Assessment (Vivekananda Hill)

Appendix 5C



Investigation Memo

Location	Dam St.
Map ID No.	66-8-7-D
Date of Inspection	10-May-2000
Started at:	20:00
Finished at:	25:00
Weather	Fine
Police Div.	Kesselwatta
Road Ownership	DO-2A
Traffic Intensity	Heavy

○ Assessment

Scale 1:2000

Investigation Results

Measured Circumference (mm)	1830
Age Group	70 to 100 years
Previous Scraping	Once (in 1982)
Pipe Depth (m)	0.55
Pipe Location	under Roadway (paved)
Pipe Wall Condition	Good
Water Pressure (kgf/cm2)	0.45
Max. Scale Thickness (mm)	0
State of Encrustation	Light
Effective Cross Section Area	100%
Bubbles	Light
Residual Chlorine (mg/l)	0.1
pH	7.10
EC (ms/m)	2.69

Notes

- This pipe was scraped in 1982 and has no serious encrustation at present.
- Residual chlorine (0.1mg/l) is smaller than adjacent location, suggesting that water is stagnant in the pipe.
- Earth covering depth is as small as 0.55m.

Internal View of Pipe

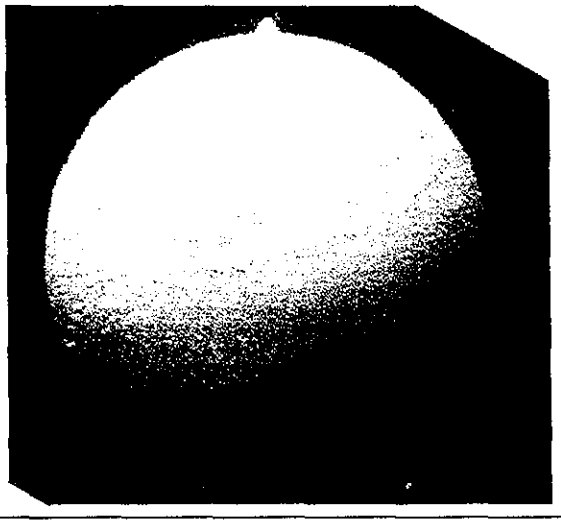


Photo No.1

Upstream view from upper part of pipe as drawn below

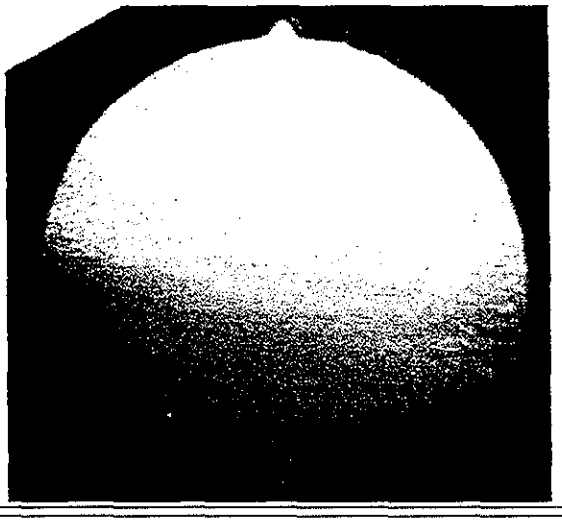
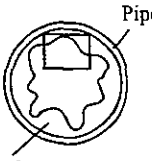


Photo No.2

Downstream view from pipe center as drawn below



Pipeline Assessment (Dam St.)