

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

Please address all
correspondence to:
**P.O. Box 2347,
Mareeba Q 4880**

Phone: (07) 4092 4638

Mobile: 0408 770 394

Email: jimpapas@westnet.com.au

**WATER SUPPLY RETICULATION REPORT
FOR
OCEAN BREEZE ESTATE
A
RESIDENTIAL SUBDIVISION
AT
COOYA BEACH ROAD
COOYA BEACH**

Date: June 28, 2013

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

1. INTRODUCTION

This report on the water supply reticulation for Ocean Breeze Estate, a residential subdivision at Cooya Beach, is provided to show that a satisfactory level of water supply service is available to meet the interim and ultimate development requirements.

This report provides the necessary input model assumptions and results.

This report compliments another report prepared by SKM on the Cooya Beach water supply in March 2010 and supersedes our earlier report.

2. WATER RETICULATION NETWORK

The existing water supply network is shown on Dwgs 1187-OA Water 1 and Water 2. Dwg 1187-OA Water1 shows the proposed extension to the existing 225Ø water main from Point A to the existing reservoirs. Based on information provided by Cairns Water and Waste we understand that the intention is to convert the existing 150Ø water main to a dedicated inlet main and use the 225Ø water main as a dedicated outlet main to supply the Cooya Beach community including a fully developed Ocean Breeze Estate.

We have modeled the fully developed scenarios on this basis.

Water and Waste provided the following information regarding the reservoir servicing the site:

1. TWL 69.34m
2. BWL 60.07m
3. Volume 3.5ML (From SKM)

Therefore: 95% of TWL = RL 68.88
15% of TWL = RL 61.47

The connection between Nodes 101 and 102 across Cooya Beach Road is provided to allow an alternative source of water supply to some parts of the development. This measure is good practice and enhances firefighting flows but is not necessary during stage construction.

3. ASSUMPTIONS

1. No abnormal conditions affect the water supply
2. 50 rider mains are not modeled.
3. Cairns Water advised SKM that all property services include a pressure-reducing device to cut pressure to approximately 50m head. Therefore, separate and/or additional pressure reducing values are not required on any reticulation mains within the development.

4. WATER SUPPLY REQUIREMENTS

The level of water supply service expected of the reticulated system is in accordance with the requirements of:

1. FNQROC Development Manual 'Water Reticulation Design Guidelines'
2. Department of Natural Resources and Mines 'Planning Guidelines for Water Supply and Sewerage'

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

Based on information from those documents the following data is used in the model:

Average daily consumption (AD) = 500L/person

Single family dwelling on

Lots < 900m² 2.8 persons per connection

Lots > 900m² 3.1 persons per connection

Peak day (PD) = 2.25 x AD

Peak hour = PD/12

Average Day demand for lot < 900m² = 0.016L/sec

Average Day demand for lot > 900m² = 0.018L/sec

Peak hour demand for lot < 900m² = 0.073L/sec 2/3 Peak Hour Demand = 0.049L/sec

Peak hour demand for lot > 900m² = 0.081L/sec 2/3 Peak Hour Demand = 0.054L/sec

From the figures shown above it can be determined that the demand at 2/3 of the Peak Hour is not less than the Average Day demand.

The peak hour flows were allocated to the nodes and a static analysis used. The residential pressure for domestic flows at peak hour is required to be in the range of 22m to 60m head.

5. FIRE FIGHTING FLOW

The 'Planning Guidelines for Water Supply and Sewerage' provides that a system with a population of less than 2000 persons have the firefighting flows imposed on $\frac{2}{3}$ of the peak hour demand. Cooya Beach has an approximate population of about 1700 persons, which is well below the threshold noted above.

The water source for Cooya Beach is a reservoir reported by SKM to be 3.5ML capacity. The required firefighting flow is 15 L/sec for two hours and there is sufficient reservoir capacity for the firefighting flow.

The minimum permitted residential pressure during firefighting flow is 12m head. This is based on a reservoir level at 15% of top water level or RL 61.47. The maximum permitted pressure is 60.00m.

6. MAXIMUM RESIDUAL PRESSURE

The maximum residual head available, assuming no demand whatsoever, is about 66m. As noted above Cairns Water advised SKM that all property services include a pressure-reducing device to cut pressure to approximately 50m head.

7. RESIDENTIAL DEMANDS

Demands

This model is based on the following demands:

1. Existing Cooya Beach demands
2. Proposed subdivision demands

The existing Cooya Beach demands are based on information provided by the former DCS to SKM. This information is provided in Appendix A.

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

The proposed subdivision demand is based on the current lot layout. These are summarised as follows:

| | |
|---------------------------------------------------------------------------------------------------------------------------|----------|
| Existing Cooya Beach demand external to the subject site: (Includes an undeveloped lot comprising potentially 20 lots) | 280 lots |
| Existing demand from previous stages of the estate: | 121 lots |
| Ocean Breeze Stage 5 demand: | 10 lots |
| Demand in remaining stages of Ocean Breeze Estate: | 157 lots |
| | |
| Total demand all lots at Cooya Beach: | 568 lots |

Surface elevations for the model nodes have been determined from the existing survey information provided by RPS. The survey data, existing and proposed lot layouts are shown on Dwg 1187-OA Water 1 and Water 2, which are attached as Appendix B.

It is beyond the scope of this report to model the remainder of the Cooya Beach community. Therefore we have modeled the existing Cooya Beach consumption as demands at Nodes 118 and 146. Refer the above mentioned drawings for details.

8. MODELLING PARAMETERS

The reticulation network is modelled using EPA Net Program Version 2. The model is a static analysis at peak hour or part thereof as applicable.

This program analysed the reticulation network using Hazen-Williams head loss formula. Values of roughness coefficient 'c' used are in accordance with the FNQROC Development Manual requirements, which are:

| | |
|----------------------|-------|
| Diameter < 150 | c=100 |
| Diameter > 150 < 300 | c=110 |

The following different scenarios are modeled:

- Scenario 1 – Existing development only at peak hour flow with reservoir level at RL 61.47m and with the sole supply line being the existing 150Ø water main in Boonie Doon Road.
- Scenario 2 – Existing development at peak hour flow with reservoir level at RL 61.47m and with a single 150Ø supply line from the reservoir to Point A as shown on Dwg 1187 - OA Water 1 and 150Ø augmented by a 225Ø supply lines from this point to the intersection of Bonnie Doon and Cooya Beach Roads.
- Scenario 3 – Existing development at peak hour flow with reservoir level at RL 61.47m and with a 150Ø a 225Ø supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.
- Scenario 4 - Full development at peak hour flow with reservoir level at RL 61.47m with a 150Ø and a 225Ø supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.
- Scenario 5 - Full developed at peak hour flow with reservoir level at RL 68.88m with the supply line being the existing 150Ø water main in Boonie Doon Road fully augmented by the new 225Ø main. This scenario represents the maximum pressure present in the system.
- Scenario 6 – Firefighting flows imposed on 2/3 of existing peak hour flows with reservoir level at RL 61.47m and with the sole supply line being the existing 150Ø water main in Boonie Doon Road.

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

- Scenario 7 – Firefighting flows imposed on 2/3 existing peak hour flows with reservoir level at RL 61.47m and with a single 150Ø supply line from the reservoir to Point A as shown on Dwg 1187 - OA Water 1 and 150Ø augmented by a 225Ø supply lines from this point to the intersection of Bonnie Doon and Cooya Beach
- Scenario 8 – Firefighting Flows imposed on 2/3 of existing peak hour flows with reservoir level at RL 61.47m with a 150Ø and a 225Ø supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.
- Scenario 9 – Firefighting Flows imposed on 2/3 peak hour flows for for full development with reservoir level at RL 61.47m with a 150Ø and a 225Ø supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.
- Scenario 10 – Firefighting flow imposed on the peak hour flow for the full development with reservoir level at RL 61.47m and with the supply line being the existing 150Ø water main in Boonie Doon Road fully augmented by the new 225Ø main.
- Scenario 11 – Firefighting flow imposed on the peak hour flow for the full development with reservoir level at RL 68.88m and with the supply line being the existing 150Ø water main in Boonie Doon Road fully augmented by the new 225Ø main.

9. PEAK HOUR FLOWS

Model results

The results of the modeling are shown in Appendix C. The results of the modeling for the various peak hour scenarios are summarised below:

Scenario 1

This scenario models the existing development only at peak hour flow with reservoir level at RL 61.47m and with the sole supply line being the existing 150Ø water main in Boonie Doon Road.

The modeling results show that this system is unsatisfactory with numerous nodes having less than the minimum pressure of 22m head.

Scenario 2

This scenario models the existing development at peak hour flow with reservoir level at RL 61.47m and with a single 150Ø supply line from the reservoir to Point A as shown on Dwg 1187 - OA Water 1 and 150Ø augmented by a 225Ø supply lines from this point to the intersection of Bonnie Doon and Cooya Beach Roads.

The modeling results show that this system provides a satisfactory level of service for the domestic supply but is deficient when the firefighting flows are considered. Refer to Scenario 7.

Scenario 3

This scenario models the existing development at peak hour flow with reservoir level at RL 61.47m and with a 150Ø a 225Ø supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

The modeling results show that this system provides a satisfactory level of service with the all nodes predicted to have strong residual pressures well in excess of the minimum 22m head.

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

Scenario 4

This scenario models the full development at peak hour flow with reservoir level at RL 61.47m and with the sole supply line being the 225Ø water main from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

The modeling results show that this system provides a satisfactory level of service with the all nodes predicted to have strong residual pressures well in excess of the minimum 22m head.

Scenario 5

This scenario models the full development at peak hour flow with reservoir level at RL 68.88m and with the sole supply line being the 225Ø water main from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

The modeling results show that this system provides a satisfactory level of service with the all nodes predicted to have strong residual pressures well in excess of the minimum 22m head and no node with a predicted pressure in excess of 60.0m head.

10. FIRE FIGHTING FLOWS

Model results

The model was examined on a number of occasions to establish the most hydraulically disadvantaged hydrant. In the existing development the worst case is Node 131 and in the fully developed scenario Node 148 in Stage 3. The results of the modeling are shown in Appendix C and are summarised below:

Scenario 6

This scenario models the firefighting flows imposed on 2/3 of existing peak hour flows with reservoir level at RL 61.47m and with the sole supply line being the existing 150Ø water main in Bonnie Doon Road.

The modeling results show that this system is totally unsatisfactory with a predicted pressure at Node 131 of -22.59m

Scenario 7

This scenario models the firefighting flows imposed on 2/3 existing peak hour flows with reservoir level at RL 61.47m and with a single 150Ø supply line from the reservoir to Point A as shown on Dwg 1187 - OA Water and 150Ø augmented by a 225Ø supply lines from this point to the intersection of Bonnie Doon and Cooya Beach Roads.

The modeling results show that this system is totally unsatisfactory with a predicted pressure at Node 131 of -0.43m

Scenario 8

This scenario models the firefighting flows imposed on 2/3 of existing peak hour flows with reservoir level at RL 61.47m with a 150Ø and a 225Ø supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

The modeling results show that this system provides a satisfactory level of service with a minimum residual pressure considerably greater than 12m at all nodes and with a predicted pressure at Node 131 of 20.78m

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

Scenario 9

This scenario models the firefighting flows imposed on 2/3 peak hour flows for the full development with reservoir level at RL 61.47m and with the sole supply line being the 225Ø water main from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

The modeling results show that this system provides a satisfactory level of service for the fully developed estate and adjoining residential area with a minimum residual pressure considerably greater than 12m head at all nodes within the system with a predicted pressure at Node 148 of 21.75m.

Scenario 10

This scenario models the firefighting flows imposed on the full peak hour flows for the full development with the reservoir level at RL 61.47m and with the sole supply line being the 225Ø water main from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

The modeling results show that this system provides a satisfactory level of service for the fully developed estate and adjoining residential area with no negative pressures predicted.

Scenario 11

This scenario models the firefighting flows imposed on the full peak hour flows for the full development with the reservoir level at RL 68.88m and with the sole supply line being the 225Ø water main from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

The modeling results show that this system provides a satisfactory level of service for the fully developed estate and adjoining residential area with a minimum residual pressure considerably greater than 12m head at all nodes within the system with a predicted pressure at Node 148 of 18.65m.

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

11. CONCLUSIONS

From the above analyses, it is obvious that to provide a water supply network to service the Cooya Beach community in accordance with the requirements of both FNQROC Development Manual, 'Water Reticulation Design Guidelines' and Department of Natural Resources and Mines 'Planning Guidelines for Water Supply and Sewerage', the existing 225Ø water main must be extended to the reservoir immediately.

When this work is completed, then:

1. The proposed water supply network provides a satisfactory level of domestic water supply for all the proposed development and the wider Cooya Beach community.
2. That the reticulation network within Cooya Beach has adequate capacity to meet future demands
3. No further upgrading of existing water supply infrastructure is required as a result of the development
4. The proposed water supply network within the subdivision as shown in Appendix B conforms with the requirements of both FNQROC Development Manual 'Water Reticulation Design Guidelines' and Department of Natural Resources and Mines 'Planning Guidelines for Water Supply and Sewerage'

We recommend that Council approve this report.

Attachments:

| | |
|------------|----------------------------------------|
| Appendix A | Existing Cooya Beach Demands. |
| Appendix B | Water Supply Reticulation Master Plans |
| Appendix C | Model Results |

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

APPENDIX A EXISTING COOYA BEACH DEMANDS

facsimile transmission

| SINCLAIR KNIGHT MERZ | | | |
|----------------------|-------------|---------------|----|
| REC'D | 14 FEB 2005 | PMGR | |
| WHO | Noted | INITIALS | AK |
| | | | |
| PROJECT No. 66 22501 | | OUR REF: FILE | |



TO: Wade Quinn

COMPANY: SKM

FAX NO: 4031 3967

DATE: 14 February 2005

PAGES: 4
(including this page)

FROM: Peter Cymbala

DEPT: Engineering Services

Enquiries to: Peter Cymbala
 Douglas Shire Council, PO Box 357, Mossman Qld 4873
 Phone: (07) 4099 9462
 Fax: (07) 4098 2902
 Email: douglas@dsc.qld.gov.au

This facsimile is confidential and may be the subject of legal privilege. It is intended for the named addressee. If you are not the addressee, any use of this facsimile whatsoever or the information contained in it is prohibited. Please let us know immediately if you have received this communication in error so that we can arrange for it to be returned.

MESSAGE: Cooya Beach

Wade

Find out sketch of existing services and Reservoir site

Regards
Peter Cymbala

WATCH.

3967
4031

Douglas Shire Council

1

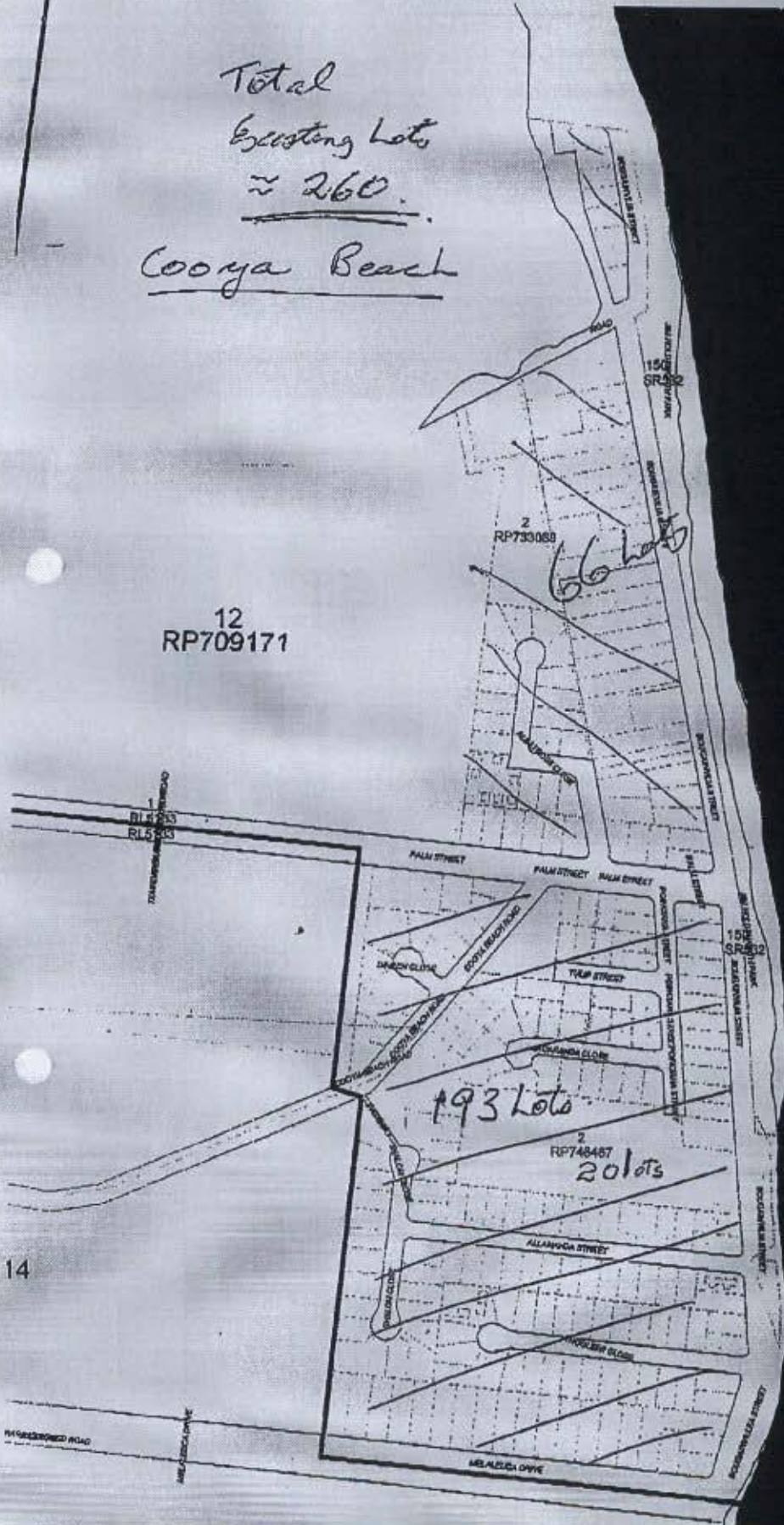
Total
Existing Lots
≈ 260.
Coonya Beach



12
RP709171

2
RP730050
66 lots

193 Lots
2
RP748467
20 lots



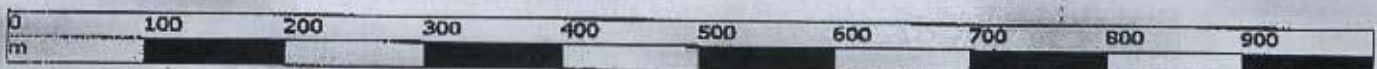
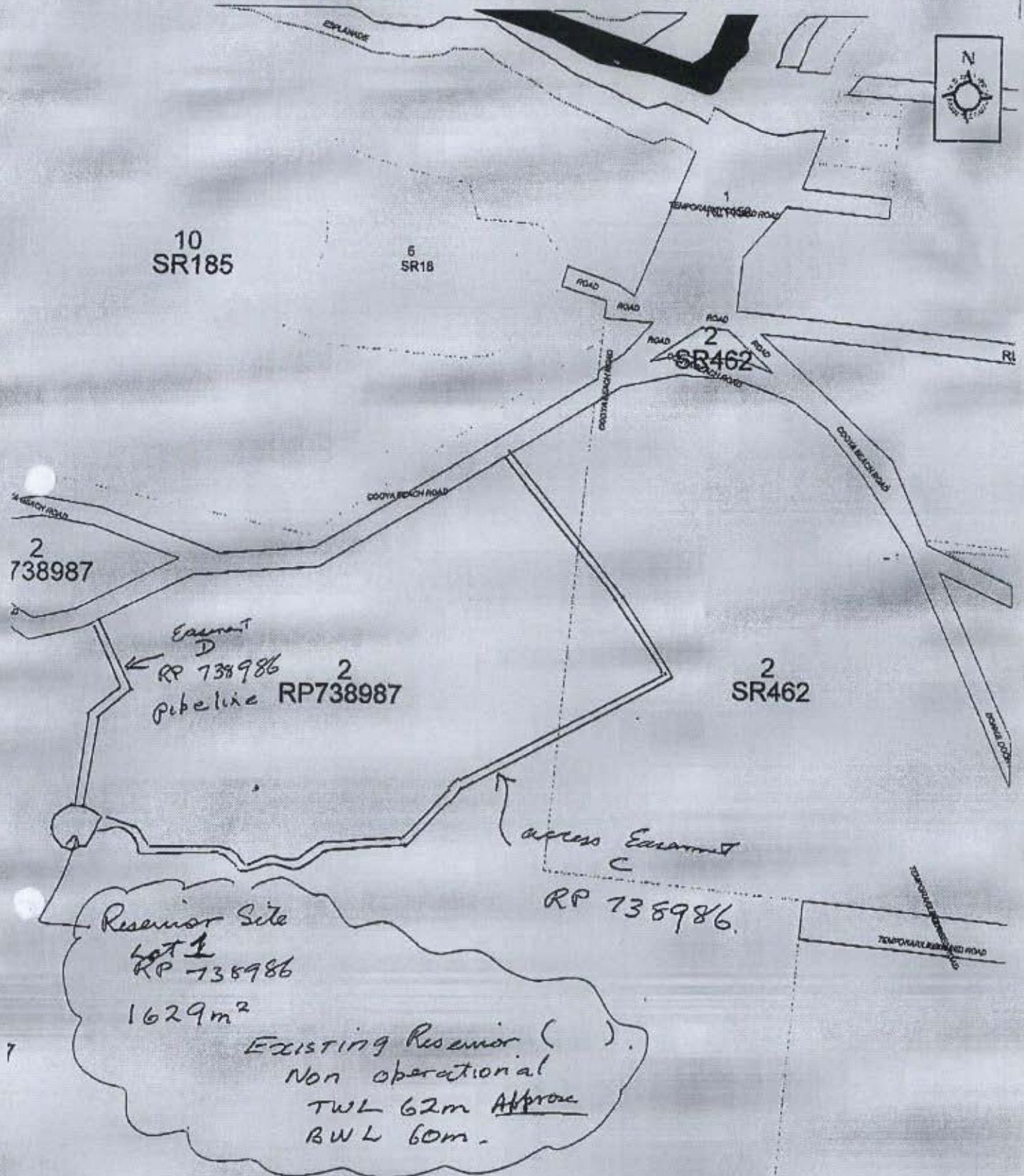
14



Scale: 1:5918.507 Date: 14/2/2005

Douglas Shire Council

3



Scale: 1:5140.149 Date: 14/2/2005

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

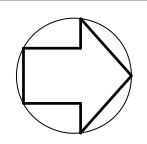
APPENDIX B WATER RETICULATION MASTER PLAN



amendments

| | | |
|---|-----------------------------------------------|----------|
| A | ORIGINAL ISSUE FOR OPERATIONAL WORKS APPROVAL | 28.04.11 |
| B | GENERAL REVISION | 10.04.13 |
| C | EXTERNAL WATER SUPPLY SHOWN, GENERAL REVISION | 24.06.13 |

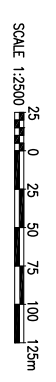
JIM PAPAS DRAFTING
PTY. LTD.
 CIVIL ENGINEERING DESIGN AND DRAFTING
 6 Neptune Court
 Mt. Sheridan Q 4868
 Ph. (07) 4036 1690
 Mob. 0408 770 394
 Email: jim@papas@westnet.com.au

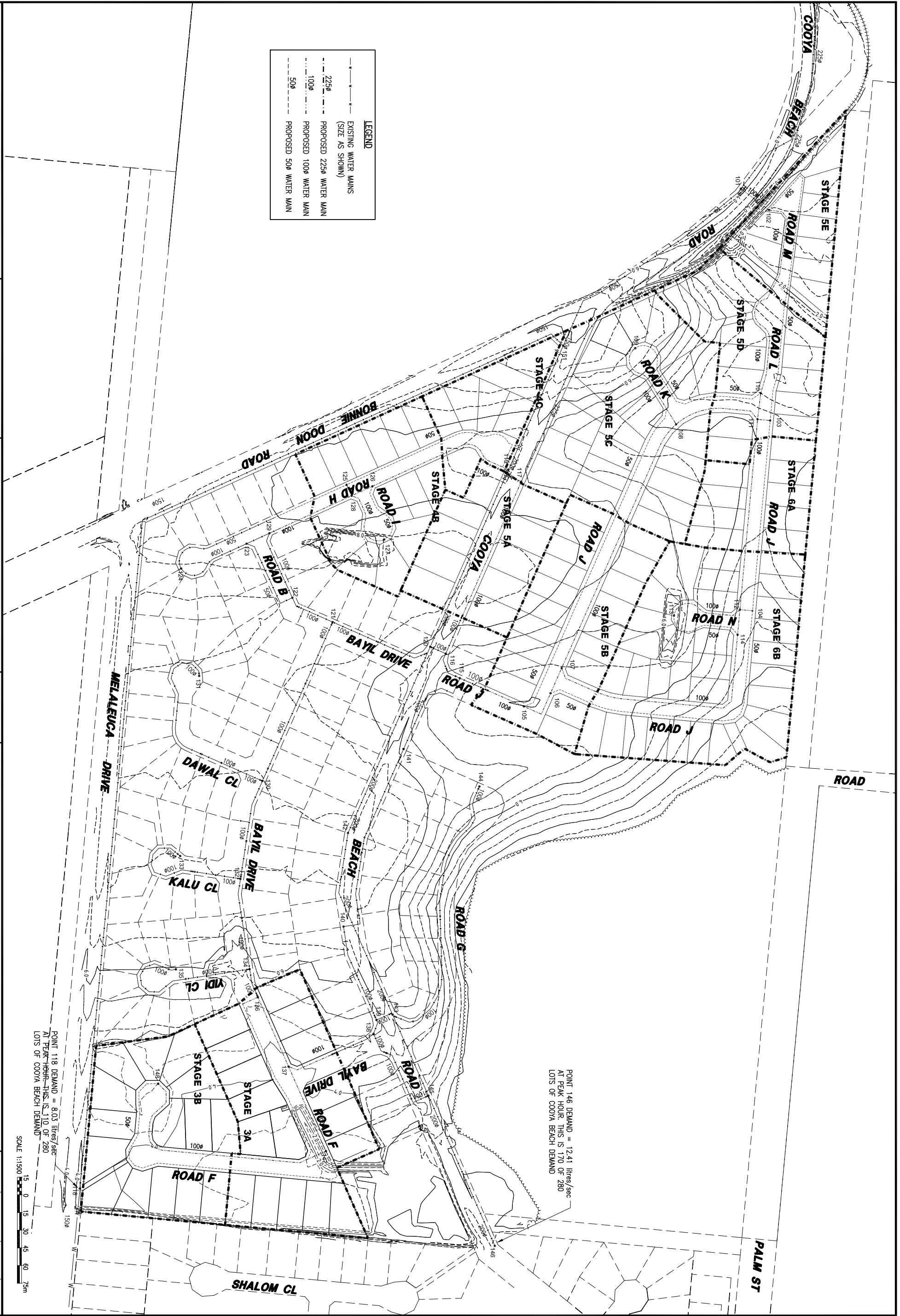


"Ocean Breeze Estate"
 PROPOSED RESIDENTIAL SUBDIVISION AT COOYA BEACH ROAD, COOYA BEACH

DRAWING TITLE: WATER RETICULATION MASTER PLAN (SHEET 1 OF 2)

| | | | | |
|--------------------|-----------------|---------|----------|------|
| SCALE (AT A1 SIZE) | HOR 1:2500 | VER | DRWN | J.P. |
| DATE | APRIL 2011 | CHECKED | DESIGNED | J.P. |
| APPROVED | | | | J.P. |
| DWG NUMBER | 1187 OA Water 1 | | AMDT | C |





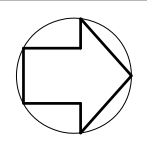
LEGEND

| | |
|------------|--------------------------------------|
| — | EXISTING WATER MAINS (SIZE AS SHOWN) |
| - - - 225ø | PROPOSED 225ø WATER MAIN |
| - - - 100ø | PROPOSED 100ø WATER MAIN |
| - - - 50ø | PROPOSED 50ø WATER MAIN |

amendments

| | | |
|---|-----------------------------------------------|----------|
| A | ORIGINAL ISSUE FOR OPERATIONAL WORKS APPROVAL | 28.04.11 |
| B | GENERAL REVISION | 10.04.13 |
| C | EXTERNAL WATER SUPPLY SHOWN, GENERAL REVISION | 24.06.13 |

JIM PAPAS DRAFTING
PTY. LTD.
 CIVIL ENGINEERING DESIGN AND DRAFTING
 6 Neptune Court
 Mt. Sheridan Q 4868
 Email: jim.papas@westnet.com.au
 Ph. (07) 4036 1690
 Mob. 0408 770 394



"Ocean Breeze Estate"
 PROPOSED RESIDENTIAL SUBDIVISION AT
 COOYA BEACH ROAD, COOYA BEACH
 DRAWING TITLE: WATER RETICULATION MASTER PLAN (SHEET 2 OF 2)

| | | | | |
|--------------------|-----------------|----------|------|------|
| SCALE (AT A1 SIZE) | HOR 1:1500 | VER | DRWN | J.P. |
| DATE | APRIL 2011 | DESIGNED | J.P. | |
| APPROVED | | CHECKED | J.P. | |
| DWG NUMBER | 1187-0A Water 2 | AUDT | A | |

JIM PAPAS DRAFTING PTY. LTD.

ACN 010 943 905 ABN 56 010 943 905

APPENDIX C MODEL RESULTS


```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.0                                 *
*****
```

Input File: 1253-01 Scenario 1 Existing PH Flows 150 Only.NET

Scenario 1
Existing development at peak hour flow with reservoir level at RL 61.47m and with the sole supply line being the existing 1500 water main in Boonie Doon Road.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |
| 38 | 132 | 133 | 121 | 104.3 |
| 39 | 132 | 134 | 79 | 104.3 |
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |
| 62 | 150 | 149 | 5 | 225 |
| 63 | 149 | 50 | 671 | 152 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 64 | 149 | 101 | 404 | 152.2 |

1253-01 Scenario 1 Existing PH Flows 150 Only

| | | | | |
|----|-----|-----|-----|-----|
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|----------------|
| 101 | 0.00 | 32.08 | 28.58 | 0.00 |
| 115 | 0.07 | 24.24 | 19.34 | 0.00 |
| 116 | 0.49 | 24.29 | 18.69 | 0.00 |
| 117 | 0.57 | 24.81 | 18.21 | 0.00 |
| 119 | 0.54 | 24.82 | 19.52 | 0.00 |
| 120 | 0.39 | 24.29 | 18.49 | 0.00 |
| 121 | 0.15 | 23.57 | 16.67 | 0.00 |
| 122 | 0.15 | 23.55 | 16.65 | 0.00 |
| 123 | 0.27 | 23.51 | 17.21 | 0.00 |
| 124 | 0.73 | 23.50 | 16.80 | 0.00 |
| 129 | 0.07 | 23.52 | 17.32 | 0.00 |
| 130 | 0.51 | 22.92 | 15.87 | 0.00 |
| 131 | 0.51 | 22.90 | 15.90 | 0.00 |
| 132 | 0.37 | 22.71 | 15.71 | 0.00 |
| 133 | 0.80 | 22.68 | 15.58 | 0.00 |
| 134 | 0.22 | 22.64 | 17.34 | 0.00 |
| 135 | 0.95 | 22.59 | 16.59 | 0.00 |
| 136 | 0.49 | 22.64 | 18.04 | 0.00 |
| 138 | 0.22 | 23.81 | 18.61 | 0.00 |
| 139 | 0.16 | 23.82 | 18.52 | 0.00 |
| 140 | 0.32 | 23.89 | 17.09 | 0.00 |
| 141 | 0.41 | 24.09 | 18.19 | 0.00 |
| 142 | 0.56 | 24.04 | 16.94 | 0.00 |
| 143 | 0.31 | 23.82 | 18.42 | 0.00 |
| 144 | 0.58 | 23.79 | 18.59 | 0.00 |
| 145 | 0.69 | 23.74 | 20.34 | 0.00 |
| 146 | 12.41 | 23.55 | 20.55 | 0.00 |
| 151 | 0.00 | 26.32 | 18.32 | 0.00 |
| 118 | 8.03 | 24.12 | 20.02 | 0.00 |
| 150 | 0.00 | 43.08 | 31.08 | 0.00 |
| 149 | 0.00 | 43.08 | 31.08 | 0.00 |
| 50 | -30.97 | 61.47 | 0.00 | 0.00 Reservoir |

♀

Link Results:

| Link ID | Flow LPS | Velocity m/s | Head loss m/km | Status |
|---------|----------|--------------|----------------|--------|
| 18 | -2.36 | 0.28 | 1.75 | Open |
| 19 | -2.65 | 0.31 | 2.16 | Open |
| 20 | -0.20 | 0.02 | 0.02 | Open |
| 23 | 19.18 | 0.60 | 2.81 | Open |
| 25 | 5.22 | 0.61 | 7.57 | Open |
| 26 | 13.37 | 0.42 | 1.44 | Open |
| 27 | 1.22 | 0.14 | 0.51 | Open |
| 28 | 3.85 | 0.45 | 4.31 | Open |
| 29 | 1.07 | 0.13 | 0.40 | Open |
| 30 | 1.00 | 0.12 | 0.35 | Open |
| 31 | 0.73 | 0.09 | 0.20 | Open |
| 36 | 0.51 | 0.06 | 0.10 | Open |
| 37 | 2.83 | 0.33 | 2.44 | Open |

1253-01 Scenario 1 Existing PH Flows 150 Only

| | | | | |
|----|--------|------|-------|--------|
| 38 | 0.80 | 0.09 | 0.23 | Open |
| 39 | 1.66 | 0.19 | 0.91 | Open |
| 40 | 0.95 | 0.11 | 0.32 | Open |
| 41 | 0.49 | 0.06 | 0.09 | Open |
| 45 | -1.78 | 0.21 | 1.04 | Open |
| 46 | 1.56 | 0.18 | 0.81 | Open |
| 47 | -1.56 | 0.18 | 0.81 | Open |
| 48 | -0.38 | 0.04 | 0.06 | Open |
| 49 | -1.88 | 0.22 | 1.15 | Open |
| 50 | -2.29 | 0.27 | 1.65 | Open |
| 51 | 12.81 | 0.40 | 1.33 | Open |
| 52 | 0.58 | 0.07 | 0.13 | Open |
| 53 | 11.54 | 0.36 | 1.10 | Open |
| 54 | 12.41 | 0.39 | 1.25 | Open |
| 21 | -3.22 | 0.08 | 0.06 | Open |
| 22 | 30.97 | 1.71 | 27.41 | Open |
| 59 | 22.94 | 1.26 | 15.72 | Open |
| 60 | 8.03 | 0.44 | 2.25 | Open |
| 61 | 0.00 | 0.00 | 0.00 | Closed |
| 62 | 0.00 | 0.00 | 0.00 | Open |
| 63 | -30.97 | 1.71 | 27.41 | Open |
| 64 | 30.97 | 1.70 | 27.23 | Open |
| 66 | 0.00 | 0.00 | 0.00 | Closed |
| 67 | 0.00 | 0.00 | 0.00 | Closed |
| 68 | 0.00 | 0.00 | 0.00 | Closed |

```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality               *
*                               Analysis for Pipe Networks                 *
*                               Versi on 2. 0                             *
*****
```

Input File: 1253-02 Scenario 2 Existing PH Flows 225 + 150 Mains.NET

Scenario 2

Existing development at peak hour flow with reservoir level at RL 61.47m and with a single 1500 supply line from the reservoir to Point A as shown on Dwg 1187 - 0A Water and 1500 augmented by a 2250 supply lines from this point to the intersection of Bonnie Doon and Cooya Beach Roads.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |
| 38 | 132 | 133 | 121 | 104.3 |
| 39 | 132 | 134 | 79 | 104.3 |
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |
| 62 | 150 | 149 | 5 | 225 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 63 | 149 | 50 | 671 | 152 |

1253-02 Scenario 2 Existing PH Flows 225 + 150 Mains

| | | | | |
|----|-----|-----|-----|-------|
| 64 | 149 | 101 | 404 | 152.2 |
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|----------------|
| 101 | 0.00 | 42.14 | 38.64 | 0.00 |
| 115 | 0.07 | 40.92 | 36.02 | 0.00 |
| 116 | 0.49 | 40.97 | 35.37 | 0.00 |
| 117 | 0.57 | 41.51 | 34.91 | 0.00 |
| 119 | 0.54 | 41.50 | 36.20 | 0.00 |
| 120 | 0.39 | 40.97 | 35.17 | 0.00 |
| 121 | 0.15 | 40.25 | 33.35 | 0.00 |
| 122 | 0.15 | 40.23 | 33.33 | 0.00 |
| 123 | 0.27 | 40.20 | 33.90 | 0.00 |
| 124 | 0.73 | 40.18 | 33.48 | 0.00 |
| 129 | 0.07 | 40.20 | 34.00 | 0.00 |
| 130 | 0.51 | 39.60 | 32.55 | 0.00 |
| 131 | 0.51 | 39.59 | 32.59 | 0.00 |
| 132 | 0.37 | 39.39 | 32.39 | 0.00 |
| 133 | 0.80 | 39.36 | 32.26 | 0.00 |
| 134 | 0.22 | 39.32 | 34.02 | 0.00 |
| 135 | 0.95 | 39.27 | 33.27 | 0.00 |
| 136 | 0.49 | 39.32 | 34.72 | 0.00 |
| 138 | 0.22 | 40.49 | 35.29 | 0.00 |
| 139 | 0.16 | 40.50 | 35.20 | 0.00 |
| 140 | 0.32 | 40.57 | 33.77 | 0.00 |
| 141 | 0.41 | 40.77 | 34.87 | 0.00 |
| 142 | 0.56 | 40.72 | 33.62 | 0.00 |
| 143 | 0.31 | 40.50 | 35.10 | 0.00 |
| 144 | 0.58 | 40.47 | 35.27 | 0.00 |
| 145 | 0.69 | 40.42 | 37.02 | 0.00 |
| 146 | 12.41 | 40.23 | 37.23 | 0.00 |
| 151 | 0.00 | 41.67 | 33.67 | 0.00 |
| 118 | 8.03 | 39.46 | 35.36 | 0.00 |
| 150 | 0.00 | 43.07 | 31.07 | 0.00 |
| 149 | 0.00 | 43.08 | 31.08 | 0.00 |
| 50 | -30.97 | 61.47 | 0.00 | 0.00 Reservoir |

♀

Link Results:

| Link ID | Flow LPS | Velocity m/s | Head loss m/km | Status |
|---------|----------|--------------|----------------|--------|
| 18 | -2.36 | 0.28 | 1.75 | Open |
| 19 | -2.68 | 0.31 | 2.21 | Open |
| 20 | -0.17 | 0.02 | 0.01 | Open |
| 23 | 19.15 | 0.60 | 2.80 | Open |
| 25 | 5.22 | 0.61 | 7.57 | Open |
| 26 | 13.37 | 0.42 | 1.44 | Open |
| 27 | 1.22 | 0.14 | 0.51 | Open |
| 28 | 3.85 | 0.45 | 4.31 | Open |
| 29 | 1.07 | 0.13 | 0.40 | Open |
| 30 | 1.00 | 0.12 | 0.35 | Open |
| 31 | 0.73 | 0.09 | 0.20 | Open |
| 36 | 0.51 | 0.06 | 0.10 | Open |

| | 1253-02 | Scenario 2 | Existing | PH Flows | 225 + 150 Mains |
|----|---------|------------|----------|----------|-----------------|
| 37 | 2.83 | 0.33 | 2.44 | Open | |
| 38 | 0.80 | 0.09 | 0.23 | Open | |
| 39 | 1.66 | 0.19 | 0.91 | Open | |
| 40 | 0.95 | 0.11 | 0.32 | Open | |
| 41 | 0.49 | 0.06 | 0.09 | Open | |
| 45 | -1.78 | 0.21 | 1.04 | Open | |
| 46 | 1.56 | 0.18 | 0.81 | Open | |
| 47 | -1.56 | 0.18 | 0.81 | Open | |
| 48 | -0.38 | 0.04 | 0.06 | Open | |
| 49 | -1.88 | 0.22 | 1.15 | Open | |
| 50 | -2.29 | 0.27 | 1.65 | Open | |
| 51 | 12.81 | 0.40 | 1.33 | Open | |
| 52 | 0.58 | 0.07 | 0.13 | Open | |
| 53 | 11.54 | 0.36 | 1.10 | Open | |
| 54 | 12.41 | 0.39 | 1.25 | Open | |
| 21 | 12.60 | 0.32 | 0.77 | Open | |
| 22 | 8.06 | 0.44 | 2.27 | Open | |
| 59 | 7.08 | 0.39 | 1.78 | Open | |
| 60 | 8.03 | 0.44 | 2.25 | Open | |
| 61 | 0.00 | 0.00 | 0.00 | Closed | |
| 62 | -22.77 | 0.57 | 2.29 | Open | |
| 63 | -30.97 | 1.71 | 27.41 | Open | |
| 64 | 8.20 | 0.45 | 2.32 | Open | |
| 66 | 22.77 | 0.57 | 2.29 | Open | |
| 67 | 22.91 | 0.58 | 2.32 | Open | |
| 68 | 15.86 | 0.40 | 1.17 | Open | |

```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Versi on 2. 0                               *
*****
```

Input File: 1253-03 Scenario 3 Existing PH Flows 225 + 150 Mains.NET

Scenario 3

Existing development at peak hour flow with reservoir level at RL 61.47m and with a 1500 a 2250 supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |
| 38 | 132 | 133 | 121 | 104.3 |
| 39 | 132 | 134 | 79 | 104.3 |
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |
| 62 | 150 | 149 | 5 | 225 |
| 63 | 149 | 50 | 671 | 152 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 64 | 149 | 101 | 404 | 152.2 |

1253-03 Scenario 3 Existing PH Flows 225 + 150 Mains

| | | | | |
|----|-----|-----|-----|-----|
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|----------------|
| 101 | 0.00 | 58.48 | 54.98 | 0.00 |
| 115 | 0.07 | 57.26 | 52.36 | 0.00 |
| 116 | 0.49 | 57.31 | 51.71 | 0.00 |
| 117 | 0.57 | 57.85 | 51.25 | 0.00 |
| 119 | 0.54 | 57.83 | 52.53 | 0.00 |
| 120 | 0.39 | 57.31 | 51.51 | 0.00 |
| 121 | 0.15 | 56.59 | 49.69 | 0.00 |
| 122 | 0.15 | 56.57 | 49.67 | 0.00 |
| 123 | 0.27 | 56.53 | 50.23 | 0.00 |
| 124 | 0.73 | 56.52 | 49.82 | 0.00 |
| 129 | 0.07 | 56.54 | 50.34 | 0.00 |
| 130 | 0.51 | 55.94 | 48.89 | 0.00 |
| 131 | 0.51 | 55.92 | 48.92 | 0.00 |
| 132 | 0.37 | 55.73 | 48.73 | 0.00 |
| 133 | 0.80 | 55.70 | 48.60 | 0.00 |
| 134 | 0.22 | 55.66 | 50.36 | 0.00 |
| 135 | 0.95 | 55.61 | 49.61 | 0.00 |
| 136 | 0.49 | 55.66 | 51.06 | 0.00 |
| 138 | 0.22 | 56.83 | 51.63 | 0.00 |
| 139 | 0.16 | 56.84 | 51.54 | 0.00 |
| 140 | 0.32 | 56.91 | 50.11 | 0.00 |
| 141 | 0.41 | 57.11 | 51.21 | 0.00 |
| 142 | 0.56 | 57.06 | 49.96 | 0.00 |
| 143 | 0.31 | 56.84 | 51.44 | 0.00 |
| 144 | 0.58 | 56.81 | 51.61 | 0.00 |
| 145 | 0.69 | 56.76 | 53.36 | 0.00 |
| 146 | 12.41 | 56.57 | 53.57 | 0.00 |
| 151 | 0.00 | 58.01 | 50.01 | 0.00 |
| 118 | 8.03 | 55.80 | 51.70 | 0.00 |
| 150 | 0.00 | 59.41 | 47.41 | 0.00 |
| 149 | 0.00 | 59.41 | 47.41 | 0.00 |
| 50 | -30.97 | 61.47 | 0.00 | 0.00 Reservoir |

♀

Link Results:

| Link ID | Flow LPS | Velocity m/s | Head loss m/km | Status |
|---------|----------|--------------|----------------|--------|
| 18 | -2.36 | 0.28 | 1.75 | Open |
| 19 | -2.68 | 0.31 | 2.21 | Open |
| 20 | -0.17 | 0.02 | 0.01 | Open |
| 23 | 19.15 | 0.60 | 2.80 | Open |
| 25 | 5.22 | 0.61 | 7.57 | Open |
| 26 | 13.37 | 0.42 | 1.44 | Open |
| 27 | 1.22 | 0.14 | 0.51 | Open |
| 28 | 3.85 | 0.45 | 4.31 | Open |
| 29 | 1.07 | 0.13 | 0.40 | Open |
| 30 | 1.00 | 0.12 | 0.35 | Open |
| 31 | 0.73 | 0.09 | 0.20 | Open |
| 36 | 0.51 | 0.06 | 0.10 | Open |
| 37 | 2.83 | 0.33 | 2.44 | Open |

| | 1253-03 | Scenario 3 | Existing | PH Flows | 225 + 150 Mains |
|----|---------|------------|----------|----------|-----------------|
| 38 | 0.80 | 0.09 | 0.23 | Open | |
| 39 | 1.66 | 0.19 | 0.91 | Open | |
| 40 | 0.95 | 0.11 | 0.32 | Open | |
| 41 | 0.49 | 0.06 | 0.09 | Open | |
| 45 | -1.78 | 0.21 | 1.04 | Open | |
| 46 | 1.56 | 0.18 | 0.81 | Open | |
| 47 | -1.56 | 0.18 | 0.81 | Open | |
| 48 | -0.38 | 0.04 | 0.06 | Open | |
| 49 | -1.88 | 0.22 | 1.15 | Open | |
| 50 | -2.29 | 0.27 | 1.65 | Open | |
| 51 | 12.81 | 0.40 | 1.33 | Open | |
| 52 | 0.58 | 0.07 | 0.13 | Open | |
| 53 | 11.54 | 0.36 | 1.10 | Open | |
| 54 | 12.41 | 0.39 | 1.25 | Open | |
| 21 | 12.60 | 0.32 | 0.77 | Open | |
| 22 | 8.06 | 0.44 | 2.27 | Open | |
| 59 | 7.08 | 0.39 | 1.78 | Open | |
| 60 | 8.03 | 0.44 | 2.25 | Open | |
| 61 | 21.48 | 0.54 | 2.06 | Open | |
| 62 | -1.34 | 0.03 | 0.01 | Open | |
| 63 | -9.49 | 0.52 | 3.07 | Open | |
| 64 | 8.16 | 0.45 | 2.30 | Open | |
| 66 | 22.81 | 0.57 | 2.30 | Open | |
| 67 | 22.91 | 0.58 | 2.32 | Open | |
| 68 | 15.86 | 0.40 | 1.17 | Open | |

```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                 *
*                               Version 2.0                               *
*****
```

Input File: 1253-04 Scenario 4 Full Dev PH Flows 225 + 150 Mains.net

Scenario 4

Full development at peak hour flow with reservoir level at RL 61.47m with the sole supply line being the 2250 water main from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 2 | 101 | 102 | 30 | 104.3 |
| 3 | 102 | 110 | 183 | 104.3 |
| 5 | 110 | 111 | 23 | 104.3 |
| 6 | 111 | 103 | 11 | 104.3 |
| 7 | 111 | 108 | 77 | 104.3 |
| 8 | 111 | 112 | 165 | 104.3 |
| 9 | 112 | 113 | 67 | 104.3 |
| 10 | 112 | 114 | 22 | 104.3 |
| 11 | 112 | 104 | 11 | 104.3 |
| 12 | 114 | 107 | 216 | 104.3 |
| 13 | 107 | 106 | 24 | 104.3 |
| 14 | 106 | 105 | 36 | 104.3 |
| 15 | 107 | 108 | 233 | 104.3 |
| 16 | 108 | 109 | 83 | 104.3 |
| 17 | 105 | 115 | 60 | 104.3 |
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 24 | 119 | 126 | 154 | 104.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 32 | 126 | 128 | 20 | 104.3 |
| 33 | 128 | 125 | 10 | 104.3 |
| 34 | 128 | 127 | 57 | 104.3 |
| 35 | 128 | 129 | 78 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 38 | 132 | 133 | 121 | 104.3 |

1253-04 Scenario 4 Full Dev PH Flows 225 + 150 Mains

| | | | | |
|----|-----|-----|------|-------|
| 39 | 132 | 134 | 79 | 104.3 |
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 42 | 136 | 137 | 65 | 104.3 |
| 43 | 137 | 147 | 80 | 104.3 |
| 44 | 137 | 138 | 81 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 55 | 147 | 148 | 216 | 104.3 |
| 56 | 109 | 110 | 157 | 48.4 |
| 57 | 105 | 108 | 288 | 48.4 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |
| 62 | 150 | 149 | 5 | 225 |
| 63 | 149 | 50 | 671 | 152 |
| 64 | 149 | 101 | 404 | 152.2 |
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 101 | 0.00 | 51.63 | 48.13 | 0.00 |
| 102 | 0.66 | 51.32 | 47.92 | 0.00 |
| 103 | 0.66 | 49.70 | 45.90 | 0.00 |
| 104 | 0.66 | 49.55 | 46.15 | 0.00 |
| 105 | 0.80 | 49.56 | 45.46 | 0.00 |
| 106 | 0.73 | 49.56 | 45.46 | 0.00 |
| 107 | 0.44 | 49.56 | 45.16 | 0.00 |
| 108 | 0.44 | 49.61 | 45.61 | 0.00 |
| 109 | 0.80 | 49.61 | 42.51 | 0.00 |
| 110 | 0.58 | 49.84 | 46.44 | 0.00 |

♀

Page 3

Scenario 4

Node Results: (continued)

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 111 | 0.37 | 49.70 | 45.90 | 0.00 |
| 112 | 0.29 | 49.55 | 46.15 | 0.00 |
| 113 | 0.44 | 49.55 | 44.35 | 0.00 |
| 114 | 0.51 | 49.55 | 46.15 | 0.00 |
| 115 | 0.07 | 49.60 | 44.70 | 0.00 |
| 116 | 0.49 | 49.72 | 44.12 | 0.00 |
| 117 | 0.57 | 50.33 | 43.73 | 0.00 |
| 119 | 0.54 | 50.31 | 45.01 | 0.00 |
| 120 | 0.39 | 49.73 | 43.93 | 0.00 |

1253-04 Scenari o 4 Ful l Dev PH Fl ows 225 + 150 Mai ns

| | | | | |
|-----|--------|-------|-------|----------------|
| 121 | 0.15 | 49.55 | 42.65 | 0.00 |
| 122 | 0.15 | 49.57 | 42.67 | 0.00 |
| 123 | 0.27 | 49.59 | 43.29 | 0.00 |
| 124 | 0.73 | 49.58 | 42.88 | 0.00 |
| 125 | 0.51 | 49.72 | 44.02 | 0.00 |
| 126 | 0.29 | 49.78 | 44.08 | 0.00 |
| 127 | 0.29 | 49.72 | 43.32 | 0.00 |
| 128 | 0.07 | 49.72 | 43.92 | 0.00 |
| 129 | 0.07 | 49.60 | 43.40 | 0.00 |
| 130 | 0.51 | 49.05 | 42.00 | 0.00 |
| 131 | 0.51 | 49.03 | 42.03 | 0.00 |
| 132 | 0.37 | 48.90 | 41.90 | 0.00 |
| 133 | 0.80 | 48.87 | 41.77 | 0.00 |
| 134 | 0.22 | 48.86 | 43.56 | 0.00 |
| 135 | 0.95 | 48.81 | 42.81 | 0.00 |
| 136 | 0.49 | 48.86 | 44.26 | 0.00 |
| 137 | 0.08 | 48.86 | 44.96 | 0.00 |
| 138 | 0.22 | 49.03 | 43.83 | 0.00 |
| 139 | 0.16 | 49.08 | 43.78 | 0.00 |
| 140 | 0.32 | 49.17 | 42.37 | 0.00 |
| 141 | 0.41 | 49.42 | 43.52 | 0.00 |
| 142 | 0.56 | 49.40 | 42.30 | 0.00 |
| 143 | 0.31 | 49.10 | 43.70 | 0.00 |
| 144 | 0.58 | 49.07 | 43.87 | 0.00 |
| 145 | 0.69 | 49.01 | 45.61 | 0.00 |
| 146 | 12.41 | 48.82 | 45.82 | 0.00 |
| 147 | 0.81 | 48.76 | 45.36 | 0.00 |
| 148 | 1.22 | 48.65 | 43.55 | 0.00 |
| 151 | 0.00 | 50.55 | 42.55 | 0.00 |
| 118 | 8.03 | 48.34 | 44.24 | 0.00 |
| 150 | 0.00 | 54.46 | 42.46 | 0.00 |
| 149 | 0.00 | 55.85 | 43.85 | 0.00 |
| 50 | -41.62 | 61.47 | 0.00 | 0.00 Reservoir |

♀

| Link ID | Flow LPS | Velocity m/s | Unit Head loss m/km | Status |
|---------|----------|--------------|---------------------|--------|
| 2 | 6.08 | 0.71 | 10.05 | Open |
| 3 | 5.42 | 0.63 | 8.13 | Open |
| 5 | 4.56 | 0.53 | 5.89 | Open |
| 6 | 0.66 | 0.08 | 0.16 | Open |
| 7 | 1.87 | 0.22 | 1.13 | Open |
| 8 | 1.66 | 0.19 | 0.91 | Open |
| 9 | 0.44 | 0.05 | 0.08 | Open |
| 10 | 0.27 | 0.03 | 0.03 | Open |
| 11 | 0.66 | 0.08 | 0.16 | Open |
| 12 | -0.24 | 0.03 | 0.03 | Open |
| 13 | 0.14 | 0.02 | 0.01 | Open |
| 14 | -0.59 | 0.07 | 0.13 | Open |
| 15 | -0.82 | 0.10 | 0.25 | Open |
| 16 | 0.51 | 0.06 | 0.10 | Open |
| 17 | -1.30 | 0.15 | 0.57 | Open |
| 18 | -3.89 | 0.46 | 4.40 | Open |
| 19 | -2.86 | 0.33 | 2.48 | Open |
| 20 | -1.52 | 0.18 | 0.77 | Open |
| 23 | 20.13 | 0.63 | 3.07 | Open |
| 24 | 3.41 | 0.40 | 3.46 | Open |
| 25 | 2.49 | 0.29 | 1.93 | Open |

1253-04 Scenari o 4 Full Dev PH Flows 225 + 150 Mains

| | | | | |
|----|-------|------|------|------|
| 26 | 15.72 | 0.49 | 1.94 | Open |
| 27 | -1.03 | 0.12 | 0.38 | Open |
| 28 | 3.37 | 0.39 | 3.37 | Open |
| 29 | -1.18 | 0.14 | 0.48 | Open |
| 30 | 1.00 | 0.12 | 0.35 | Open |
| 31 | 0.73 | 0.09 | 0.20 | Open |
| 32 | 3.12 | 0.37 | 2.92 | Open |
| 33 | 0.51 | 0.06 | 0.10 | Open |
| 34 | 0.29 | 0.03 | 0.04 | Open |
| 35 | 2.25 | 0.26 | 1.59 | Open |
| 36 | 0.51 | 0.06 | 0.10 | Open |
| 37 | 2.35 | 0.28 | 1.73 | Open |
| 38 | 0.80 | 0.09 | 0.23 | Open |
| 39 | 1.18 | 0.14 | 0.48 | Open |
| 40 | 0.95 | 0.11 | 0.32 | Open |
| 41 | 0.01 | 0.00 | 0.00 | Open |
| 42 | -0.48 | 0.06 | 0.09 | Open |
| 43 | 2.03 | 0.24 | 1.32 | Open |
| 44 | -2.59 | 0.30 | 2.06 | Open |
| 45 | -3.66 | 0.43 | 3.92 | Open |
| 46 | 0.85 | 0.10 | 0.26 | Open |
| 47 | -1.80 | 0.21 | 1.05 | Open |
| 48 | -2.02 | 0.24 | 1.31 | Open |
| 49 | -2.12 | 0.25 | 1.42 | Open |
| 50 | -2.53 | 0.30 | 1.98 | Open |
| 51 | 15.16 | 0.47 | 1.82 | Open |

†

Page 5

Scenari o 4

Link Results: (continued)

| Link ID | Flow LPS | Velocity Unit m/s | Headloss m/km | Status |
|---------|----------|-------------------|---------------|--------|
| 52 | 0.58 | 0.07 | 0.13 | Open |
| 53 | 12.25 | 0.38 | 1.22 | Open |
| 54 | 12.41 | 0.39 | 1.25 | Open |
| 55 | 1.22 | 0.14 | 0.51 | Open |
| 56 | -0.29 | 0.16 | 1.47 | Open |
| 57 | -0.09 | 0.05 | 0.18 | Open |
| 21 | 15.57 | 0.39 | 1.14 | Open |
| 22 | 0.00 | 0.00 | 0.00 | Closed |
| 59 | 8.51 | 0.47 | 2.50 | Open |
| 60 | 8.03 | 0.44 | 2.25 | Open |
| 61 | 41.62 | 1.05 | 7.01 | Open |
| 62 | 0.00 | 0.00 | 0.00 | Closed |
| 63 | 0.00 | 0.00 | 0.00 | Closed |
| 64 | 0.00 | 0.00 | 0.00 | Closed |
| 66 | 41.62 | 1.05 | 7.01 | Open |
| 67 | 35.54 | 0.89 | 5.23 | Open |
| 68 | 19.00 | 0.48 | 1.64 | Open |

```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.0                                 *
*****
```

Input File: 1253-05 Scenario 5 Full Dev PH Flows Max. Pressure.NET

Scenario 5

Full development at peak hour flow with reservoir level at RL 68.88m with a 1500 and a 2250 supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 2 | 101 | 102 | 30 | 104.3 |
| 3 | 102 | 110 | 183 | 104.3 |
| 5 | 110 | 111 | 23 | 104.3 |
| 6 | 111 | 103 | 11 | 104.3 |
| 7 | 111 | 108 | 77 | 104.3 |
| 8 | 111 | 112 | 165 | 104.3 |
| 9 | 112 | 113 | 67 | 104.3 |
| 10 | 112 | 114 | 22 | 104.3 |
| 11 | 112 | 104 | 11 | 104.3 |
| 12 | 114 | 107 | 216 | 104.3 |
| 13 | 107 | 106 | 24 | 104.3 |
| 14 | 106 | 105 | 36 | 104.3 |
| 15 | 107 | 108 | 233 | 104.3 |
| 16 | 108 | 109 | 83 | 104.3 |
| 17 | 105 | 115 | 60 | 104.3 |
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 24 | 119 | 126 | 154 | 104.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 32 | 126 | 128 | 20 | 104.3 |
| 33 | 128 | 125 | 10 | 104.3 |
| 34 | 128 | 127 | 57 | 104.3 |
| 35 | 128 | 129 | 78 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |
| 38 | 132 | 133 | 121 | 104.3 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 39 | 132 | 134 | 79 | 104.3 |

| | 1253-05 | Scenario 5 | Full Dev | PH Flows | Max. | Pressure |
|----|---------|------------|----------|----------|------|----------|
| 40 | 134 | 135 | | | 145 | 104.3 |
| 41 | 134 | 136 | | | 25 | 104.3 |
| 42 | 136 | 137 | | | 65 | 104.3 |
| 43 | 137 | 147 | | | 80 | 104.3 |
| 44 | 137 | 138 | | | 81 | 104.3 |
| 45 | 138 | 139 | | | 13 | 104.3 |
| 46 | 138 | 145 | | | 85 | 104.3 |
| 47 | 139 | 140 | | | 86 | 104.3 |
| 48 | 139 | 143 | | | 15 | 104.3 |
| 49 | 140 | 141 | | | 173 | 104.3 |
| 50 | 141 | 115 | | | 90 | 104.3 |
| 51 | 142 | 143 | | | 167 | 202.2 |
| 52 | 143 | 144 | | | 241 | 104.3 |
| 53 | 143 | 145 | | | 76 | 202.2 |
| 54 | 145 | 146 | | | 149 | 202.2 |
| 55 | 147 | 148 | | | 216 | 104.3 |
| 56 | 109 | 110 | | | 157 | 48.4 |
| 57 | 105 | 108 | | | 288 | 48.4 |
| 21 | 117 | 119 | | | 15 | 225 |
| 22 | 101 | 151 | | | 210 | 152 |
| 59 | 151 | 119 | | | 96 | 152 |
| 60 | 151 | 118 | | | 982 | 152 |
| 61 | 50 | 150 | | | 1000 | 225 |
| 62 | 150 | 149 | | | 5 | 225 |
| 63 | 149 | 50 | | | 671 | 152 |
| 64 | 149 | 101 | | | 404 | 152.2 |
| 66 | 150 | 101 | | | 404 | 225 |
| 67 | 101 | 151 | | | 205 | 225 |
| 68 | 151 | 117 | | | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 101 | 0.00 | 59.04 | 55.54 | 0.00 |
| 102 | 0.66 | 58.73 | 55.33 | 0.00 |
| 103 | 0.66 | 57.11 | 53.31 | 0.00 |
| 104 | 0.66 | 56.96 | 53.56 | 0.00 |
| 105 | 0.80 | 56.97 | 52.87 | 0.00 |
| 106 | 0.73 | 56.97 | 52.87 | 0.00 |
| 107 | 0.44 | 56.97 | 52.57 | 0.00 |
| 108 | 0.44 | 57.02 | 53.02 | 0.00 |
| 109 | 0.80 | 57.02 | 49.92 | 0.00 |
| 110 | 0.58 | 57.25 | 53.85 | 0.00 |
| 111 | 0.37 | 57.11 | 53.31 | 0.00 |

♀

Page 3

Scenario 5

Node Results: (continued)

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 112 | 0.29 | 56.96 | 53.56 | 0.00 |
| 113 | 0.44 | 56.96 | 51.76 | 0.00 |
| 114 | 0.51 | 56.96 | 53.56 | 0.00 |
| 115 | 0.07 | 57.01 | 52.11 | 0.00 |
| 116 | 0.49 | 57.13 | 51.53 | 0.00 |
| 117 | 0.57 | 57.74 | 51.14 | 0.00 |
| 119 | 0.54 | 57.72 | 52.42 | 0.00 |
| 120 | 0.39 | 57.14 | 51.34 | 0.00 |
| 121 | 0.15 | 56.96 | 50.06 | 0.00 |

1253-05 Scenario 5 Full Dev PH Flows Max. Pressure

| | | | | |
|-----|--------|-------|-------|----------------|
| 122 | 0.15 | 56.98 | 50.08 | 0.00 |
| 123 | 0.27 | 57.00 | 50.70 | 0.00 |
| 124 | 0.73 | 56.99 | 50.29 | 0.00 |
| 125 | 0.51 | 57.13 | 51.43 | 0.00 |
| 126 | 0.29 | 57.19 | 51.49 | 0.00 |
| 127 | 0.29 | 57.13 | 50.73 | 0.00 |
| 128 | 0.07 | 57.13 | 51.33 | 0.00 |
| 129 | 0.07 | 57.01 | 50.81 | 0.00 |
| 130 | 0.51 | 56.46 | 49.41 | 0.00 |
| 131 | 0.51 | 56.44 | 49.44 | 0.00 |
| 132 | 0.37 | 56.31 | 49.31 | 0.00 |
| 133 | 0.80 | 56.28 | 49.18 | 0.00 |
| 134 | 0.22 | 56.27 | 50.97 | 0.00 |
| 135 | 0.95 | 56.22 | 50.22 | 0.00 |
| 136 | 0.49 | 56.27 | 51.67 | 0.00 |
| 137 | 0.08 | 56.27 | 52.37 | 0.00 |
| 138 | 0.22 | 56.44 | 51.24 | 0.00 |
| 139 | 0.16 | 56.49 | 51.19 | 0.00 |
| 140 | 0.32 | 56.58 | 49.78 | 0.00 |
| 141 | 0.41 | 56.83 | 50.93 | 0.00 |
| 142 | 0.56 | 56.81 | 49.71 | 0.00 |
| 143 | 0.31 | 56.51 | 51.11 | 0.00 |
| 144 | 0.58 | 56.48 | 51.28 | 0.00 |
| 145 | 0.69 | 56.42 | 53.02 | 0.00 |
| 146 | 12.41 | 56.23 | 53.23 | 0.00 |
| 147 | 0.81 | 56.17 | 52.77 | 0.00 |
| 148 | 1.22 | 56.06 | 50.96 | 0.00 |
| 151 | 0.00 | 57.96 | 49.96 | 0.00 |
| 118 | 8.03 | 55.75 | 51.65 | 0.00 |
| 150 | 0.00 | 61.87 | 49.87 | 0.00 |
| 149 | 0.00 | 63.26 | 51.26 | 0.00 |
| 50 | -41.62 | 68.88 | 0.00 | 0.00 Reservoir |

♀

| Link ID | Flow LPS | Velocity m/s | Headloss m/km | Status |
|---------|----------|--------------|---------------|--------|
| 2 | 6.08 | 0.71 | 10.05 | Open |
| 3 | 5.42 | 0.63 | 8.13 | Open |
| 5 | 4.56 | 0.53 | 5.89 | Open |
| 6 | 0.66 | 0.08 | 0.16 | Open |
| 7 | 1.87 | 0.22 | 1.13 | Open |
| 8 | 1.66 | 0.19 | 0.91 | Open |
| 9 | 0.44 | 0.05 | 0.08 | Open |
| 10 | 0.27 | 0.03 | 0.03 | Open |
| 11 | 0.66 | 0.08 | 0.16 | Open |
| 12 | -0.24 | 0.03 | 0.03 | Open |
| 13 | 0.14 | 0.02 | 0.01 | Open |
| 14 | -0.59 | 0.07 | 0.13 | Open |
| 15 | -0.82 | 0.10 | 0.25 | Open |
| 16 | 0.51 | 0.06 | 0.10 | Open |
| 17 | -1.30 | 0.15 | 0.57 | Open |
| 18 | -3.89 | 0.46 | 4.40 | Open |
| 19 | -2.86 | 0.33 | 2.48 | Open |
| 20 | -1.52 | 0.18 | 0.77 | Open |
| 23 | 20.13 | 0.63 | 3.07 | Open |
| 24 | 3.41 | 0.40 | 3.46 | Open |
| 25 | 2.49 | 0.29 | 1.93 | Open |
| 26 | 15.72 | 0.49 | 1.94 | Open |

| | 1253-05 | Scenario 5 | Full Dev | PH Flows | Max. Pressure |
|----|---------|------------|----------|----------|---------------|
| 27 | -1.03 | 0.12 | 0.38 | Open | |
| 28 | 3.37 | 0.39 | 3.37 | Open | |
| 29 | -1.18 | 0.14 | 0.48 | Open | |
| 30 | 1.00 | 0.12 | 0.35 | Open | |
| 31 | 0.73 | 0.09 | 0.20 | Open | |
| 32 | 3.12 | 0.37 | 2.92 | Open | |
| 33 | 0.51 | 0.06 | 0.10 | Open | |
| 34 | 0.29 | 0.03 | 0.04 | Open | |
| 35 | 2.25 | 0.26 | 1.59 | Open | |
| 36 | 0.51 | 0.06 | 0.10 | Open | |
| 37 | 2.35 | 0.28 | 1.73 | Open | |
| 38 | 0.80 | 0.09 | 0.23 | Open | |
| 39 | 1.18 | 0.14 | 0.48 | Open | |
| 40 | 0.95 | 0.11 | 0.32 | Open | |
| 41 | 0.01 | 0.00 | 0.00 | Open | |
| 42 | -0.48 | 0.06 | 0.09 | Open | |
| 43 | 2.03 | 0.24 | 1.32 | Open | |
| 44 | -2.59 | 0.30 | 2.06 | Open | |
| 45 | -3.66 | 0.43 | 3.92 | Open | |
| 46 | 0.85 | 0.10 | 0.26 | Open | |
| 47 | -1.80 | 0.21 | 1.05 | Open | |
| 48 | -2.02 | 0.24 | 1.31 | Open | |
| 49 | -2.12 | 0.25 | 1.42 | Open | |
| 50 | -2.53 | 0.30 | 1.98 | Open | |
| 51 | 15.16 | 0.47 | 1.82 | Open | |

♀

Link Results: (continued)

| Link ID | Flow LPS | Velocity Unit m/s | Headloss m/km | Status |
|---------|----------|-------------------|---------------|--------|
| 52 | 0.58 | 0.07 | 0.13 | Open |
| 53 | 12.25 | 0.38 | 1.22 | Open |
| 54 | 12.41 | 0.39 | 1.25 | Open |
| 55 | 1.22 | 0.14 | 0.51 | Open |
| 56 | -0.29 | 0.16 | 1.47 | Open |
| 57 | -0.09 | 0.05 | 0.18 | Open |
| 21 | 15.57 | 0.39 | 1.14 | Open |
| 22 | 0.00 | 0.00 | 0.00 | Closed |
| 59 | 8.51 | 0.47 | 2.50 | Open |
| 60 | 8.03 | 0.44 | 2.25 | Open |
| 61 | 41.62 | 1.05 | 7.01 | Open |
| 62 | 0.00 | 0.00 | 0.00 | Closed |
| 63 | 0.00 | 0.00 | 0.00 | Closed |
| 64 | 0.00 | 0.00 | 0.00 | Closed |
| 66 | 41.62 | 1.05 | 7.01 | Open |
| 67 | 35.54 | 0.89 | 5.23 | Open |
| 68 | 19.00 | 0.48 | 1.64 | Open |

```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Versi on 2.0                               *
*****
```

Input File: 1253-06 Scenario 6 FFF + 0.667 Exist PH Flows.NET

Scenario 6

Refighting flows imposed on 2/3 of existing peak hour flows with reservoir level at RL 61.47m and with the sole supply line being the existing 1500 water main in Boonie Doon Road.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |
| 38 | 132 | 133 | 121 | 104.3 |
| 39 | 132 | 134 | 79 | 104.3 |
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |
| 62 | 150 | 149 | 5 | 225 |
| 63 | 149 | 50 | 671 | 152 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 64 | 149 | 101 | 404 | 152.2 |

1253-06 Scenario 6 FFF + 0.667 Exist PH Flows

| | | | | |
|----|-----|-----|-----|-----|
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|----------------|
| 101 | 0.00 | 23.31 | 19.81 | 0.00 |
| 115 | 0.05 | 12.38 | 7.48 | 0.00 |
| 116 | 0.33 | 12.40 | 6.80 | 0.00 |
| 117 | 0.38 | 13.31 | 6.71 | 0.00 |
| 119 | 0.36 | 13.32 | 8.02 | 0.00 |
| 120 | 0.26 | 12.39 | 6.59 | 0.00 |
| 121 | 0.10 | 4.91 | -1.99 | 0.00 |
| 122 | 0.10 | 4.90 | -2.00 | 0.00 |
| 123 | 0.18 | 4.88 | -1.42 | 0.00 |
| 124 | 0.49 | 4.88 | -1.82 | 0.00 |
| 129 | 0.05 | 4.89 | -1.31 | 0.00 |
| 130 | 0.34 | -5.84 | -12.89 | 0.00 |
| 131 | 15.34 | -15.59 | -22.59 | 0.00 |
| 132 | 0.25 | -5.94 | -12.94 | 0.00 |
| 133 | 0.53 | -5.95 | -13.05 | 0.00 |
| 134 | 0.15 | -5.97 | -11.27 | 0.00 |
| 135 | 0.63 | -5.99 | -11.99 | 0.00 |
| 136 | 0.33 | -5.97 | -10.57 | 0.00 |
| 138 | 0.15 | 12.16 | 6.96 | 0.00 |
| 139 | 0.11 | 12.17 | 6.87 | 0.00 |
| 140 | 0.21 | 12.20 | 5.40 | 0.00 |
| 141 | 0.27 | 12.30 | 6.40 | 0.00 |
| 142 | 0.37 | 12.27 | 5.17 | 0.00 |
| 143 | 0.21 | 12.17 | 6.77 | 0.00 |
| 144 | 0.39 | 12.15 | 6.95 | 0.00 |
| 145 | 0.46 | 12.13 | 8.73 | 0.00 |
| 146 | 8.28 | 12.04 | 9.04 | 0.00 |
| 151 | 0.00 | 15.84 | 7.84 | 0.00 |
| 118 | 5.36 | 14.80 | 10.70 | 0.00 |
| 150 | 0.00 | 40.79 | 28.79 | 0.00 |
| 149 | 0.00 | 37.60 | 25.60 | 0.00 |
| 50 | -35.66 | 61.47 | 0.00 | 0.00 Reservoir |

♀

Link Results:

| Link ID | Flow LPS | Velocity m/s | Head loss m/km | Status |
|---------|----------|--------------|----------------|--------|
| 18 | -1.61 | 0.19 | 0.86 | Open |
| 19 | -3.57 | 0.42 | 3.74 | Open |
| 20 | 1.63 | 0.19 | 0.88 | Open |
| 23 | 25.99 | 0.81 | 4.93 | Open |
| 25 | 18.48 | 2.16 | 78.71 | Open |
| 26 | 8.88 | 0.28 | 0.67 | Open |
| 27 | 0.81 | 0.10 | 0.24 | Open |
| 28 | 17.57 | 2.06 | 71.65 | Open |
| 29 | 0.71 | 0.08 | 0.19 | Open |
| 30 | 0.67 | 0.08 | 0.17 | Open |
| 31 | 0.49 | 0.06 | 0.09 | Open |
| 36 | 15.34 | 1.80 | 55.74 | Open |
| 37 | 1.89 | 0.22 | 1.15 | Open |

1253-06 Scenario 6 FFF + 0.667 Exist PH Flows

| | | | | |
|----|--------|------|-------|--------|
| 38 | 0.53 | 0.06 | 0.11 | Open |
| 39 | 1.11 | 0.13 | 0.43 | Open |
| 40 | 0.63 | 0.07 | 0.15 | Open |
| 41 | 0.33 | 0.04 | 0.04 | Open |
| 45 | -1.19 | 0.14 | 0.49 | Open |
| 46 | 1.04 | 0.12 | 0.38 | Open |
| 47 | -1.08 | 0.13 | 0.41 | Open |
| 48 | -0.22 | 0.03 | 0.02 | Open |
| 49 | -1.29 | 0.15 | 0.57 | Open |
| 50 | -1.57 | 0.18 | 0.81 | Open |
| 51 | 8.51 | 0.26 | 0.62 | Open |
| 52 | 0.39 | 0.05 | 0.06 | Open |
| 53 | 7.69 | 0.24 | 0.52 | Open |
| 54 | 8.28 | 0.26 | 0.59 | Open |
| 21 | -3.95 | 0.10 | 0.09 | Open |
| 22 | 35.66 | 1.97 | 35.58 | Open |
| 59 | 30.30 | 1.67 | 26.32 | Open |
| 60 | 5.36 | 0.30 | 1.06 | Open |
| 61 | 0.00 | 0.00 | 0.00 | Closed |
| 62 | 0.00 | 0.00 | 0.00 | Closed |
| 63 | -35.66 | 1.97 | 35.58 | Open |
| 64 | 35.66 | 1.96 | 35.35 | Open |
| 66 | 0.00 | 0.00 | 0.00 | Closed |
| 67 | 0.00 | 0.00 | 0.00 | Closed |
| 68 | 0.00 | 0.00 | 0.00 | Closed |

 * E P A N E T *
 * Hydraulic and Water Quality *
 * Analysis for Pipe Networks *
 * Versi on 2.0 *

Input File: 1253-07 Scenario 7 FFF + 0.667 Exist PH Flows 225 + 150 Mains.NET

Scenario 7

Firefighting flows imposed on 2/3 existing peak hour flows with reservoir level at RL 61.47m and with a single 1500 supply line from the reservoir to Point A as shown on Dwg 1187 - OA Water and 1500 augmented by a 2250 supply lines from this point to the intersection of Bonnie Doon and Cooya Beach Roads.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |
| 38 | 132 | 133 | 121 | 104.3 |
| 39 | 132 | 134 | 79 | 104.3 |
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 62 | 150 | 149 | 5 | 225 |

1253-07 Scenario 7 FFF + 0.667 Exist PH Flows 225 + 150 Mains

| | | | | |
|----|-----|-----|-----|-------|
| 63 | 149 | 50 | 671 | 152 |
| 64 | 149 | 101 | 404 | 152.2 |
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|----------------|
| 101 | 0.00 | 36.38 | 32.88 | 0.00 |
| 115 | 0.05 | 34.54 | 29.64 | 0.00 |
| 116 | 0.33 | 34.56 | 28.96 | 0.00 |
| 117 | 0.38 | 35.49 | 28.89 | 0.00 |
| 119 | 0.36 | 35.47 | 30.17 | 0.00 |
| 120 | 0.26 | 34.55 | 28.75 | 0.00 |
| 121 | 0.10 | 27.07 | 20.17 | 0.00 |
| 122 | 0.10 | 27.06 | 20.16 | 0.00 |
| 123 | 0.18 | 27.04 | 20.74 | 0.00 |
| 124 | 0.49 | 27.04 | 20.34 | 0.00 |
| 129 | 0.05 | 27.05 | 20.85 | 0.00 |
| 130 | 0.34 | 16.32 | 9.27 | 0.00 |
| 131 | 15.34 | 6.57 | -0.43 | 0.00 |
| 132 | 0.25 | 16.22 | 9.22 | 0.00 |
| 133 | 0.53 | 16.21 | 9.11 | 0.00 |
| 134 | 0.15 | 16.19 | 10.89 | 0.00 |
| 135 | 0.63 | 16.17 | 10.17 | 0.00 |
| 136 | 0.33 | 16.19 | 11.59 | 0.00 |
| 138 | 0.15 | 34.32 | 29.12 | 0.00 |
| 139 | 0.11 | 34.33 | 29.03 | 0.00 |
| 140 | 0.21 | 34.36 | 27.56 | 0.00 |
| 141 | 0.27 | 34.46 | 28.56 | 0.00 |
| 142 | 0.37 | 34.43 | 27.33 | 0.00 |
| 143 | 0.21 | 34.33 | 28.93 | 0.00 |
| 144 | 0.39 | 34.31 | 29.11 | 0.00 |
| 145 | 0.46 | 34.29 | 30.89 | 0.00 |
| 146 | 8.28 | 34.20 | 31.20 | 0.00 |
| 151 | 0.00 | 35.76 | 27.76 | 0.00 |
| 118 | 5.36 | 34.72 | 30.62 | 0.00 |
| 150 | 0.00 | 37.58 | 25.58 | 0.00 |
| 149 | 0.00 | 37.60 | 25.60 | 0.00 |
| 50 | -35.66 | 61.47 | 0.00 | 0.00 Reservoir |

♀

Link Results:

| Link ID | Flow LPS | Velocity Unit m/s | Headloss m/km | Status |
|---------|----------|-------------------|---------------|--------|
| 18 | -1.61 | 0.19 | 0.86 | Open |
| 19 | -3.61 | 0.42 | 3.82 | Open |
| 20 | 1.67 | 0.19 | 0.91 | Open |
| 23 | 25.95 | 0.81 | 4.92 | Open |
| 25 | 18.48 | 2.16 | 78.71 | Open |
| 26 | 8.88 | 0.28 | 0.67 | Open |
| 27 | 0.81 | 0.10 | 0.24 | Open |
| 28 | 17.57 | 2.06 | 71.65 | Open |
| 29 | 0.71 | 0.08 | 0.19 | Open |
| 30 | 0.67 | 0.08 | 0.17 | Open |
| 31 | 0.49 | 0.06 | 0.09 | Open |

1253-07 Scenario 7 FFF + 0.667 Exist PH Flows 225 + 150 Mains

| | | | | |
|----|--------|------|-------|---------|
| 36 | 15.34 | 1.80 | 55.74 | Open |
| 37 | 1.89 | 0.22 | 1.15 | Open |
| 38 | 0.53 | 0.06 | 0.11 | Open |
| 39 | 1.11 | 0.13 | 0.43 | Open |
| 40 | 0.63 | 0.07 | 0.15 | Open |
| 41 | 0.33 | 0.04 | 0.04 | Open |
| 45 | -1.19 | 0.14 | 0.49 | Open |
| 46 | 1.04 | 0.12 | 0.38 | Open |
| 47 | -1.08 | 0.13 | 0.41 | Open |
| 48 | -0.22 | 0.03 | 0.02 | Open |
| 49 | -1.29 | 0.15 | 0.57 | Open |
| 50 | -1.57 | 0.18 | 0.82 | Open |
| 51 | 8.50 | 0.26 | 0.62 | Open |
| 52 | 0.39 | 0.05 | 0.06 | Open |
| 53 | 7.69 | 0.24 | 0.52 | Open |
| 54 | 8.28 | 0.26 | 0.59 | Open |
| 21 | 16.95 | 0.43 | 1.33 | Open |
| 22 | 9.28 | 0.51 | 2.94 | Open |
| 59 | 9.36 | 0.52 | 2.99 | Open |
| 60 | 5.36 | 0.30 | 1.06 | Open |
| 61 | 0.00 | 0.00 | 0.00 | Cl osed |
| 62 | -26.22 | 0.66 | 2.98 | Open |
| 63 | -35.66 | 1.97 | 35.58 | Open |
| 64 | 9.44 | 0.52 | 3.02 | Open |
| 66 | 26.22 | 0.66 | 2.98 | Open |
| 67 | 26.38 | 0.66 | 3.01 | Open |
| 68 | 20.94 | 0.53 | 1.96 | Open |

```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.0                                 *
*****
```

Input File: 1253-08 Scenario 8 FFF + 0.667 Exist PH Flows 225 + 150 Mains.NET

Scenario 8

Refighting flows imposed on 2/3 of existing peak hour flows with reservoir level at RL 61.47m with a 1500 and a 2250 supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |
| 38 | 132 | 133 | 121 | 104.3 |
| 39 | 132 | 134 | 79 | 104.3 |
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |
| 62 | 150 | 149 | 5 | 225 |
| 63 | 149 | 50 | 671 | 152 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 64 | 149 | 101 | 404 | 152.2 |

1253-08 Scenario 8 FFF + 0.667 Exist PH Flows 225 + 150 Mains

| | | | | |
|----|-----|-----|-----|-----|
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|----------------|
| 101 | 0.00 | 57.59 | 54.09 | 0.00 |
| 115 | 0.05 | 55.75 | 50.85 | 0.00 |
| 116 | 0.33 | 55.77 | 50.17 | 0.00 |
| 117 | 0.38 | 56.70 | 50.10 | 0.00 |
| 119 | 0.36 | 56.68 | 51.38 | 0.00 |
| 120 | 0.26 | 55.76 | 49.96 | 0.00 |
| 121 | 0.10 | 48.28 | 41.38 | 0.00 |
| 122 | 0.10 | 48.27 | 41.37 | 0.00 |
| 123 | 0.18 | 48.26 | 41.96 | 0.00 |
| 124 | 0.49 | 48.25 | 41.55 | 0.00 |
| 129 | 0.05 | 48.26 | 42.06 | 0.00 |
| 130 | 0.34 | 37.53 | 30.48 | 0.00 |
| 131 | 15.34 | 27.78 | 20.78 | 0.00 |
| 132 | 0.25 | 37.43 | 30.43 | 0.00 |
| 133 | 0.53 | 37.42 | 30.32 | 0.00 |
| 134 | 0.15 | 37.40 | 32.10 | 0.00 |
| 135 | 0.63 | 37.38 | 31.38 | 0.00 |
| 136 | 0.33 | 37.40 | 32.80 | 0.00 |
| 138 | 0.15 | 55.53 | 50.33 | 0.00 |
| 139 | 0.11 | 55.54 | 50.24 | 0.00 |
| 140 | 0.21 | 55.58 | 48.78 | 0.00 |
| 141 | 0.27 | 55.67 | 49.77 | 0.00 |
| 142 | 0.37 | 55.64 | 48.54 | 0.00 |
| 143 | 0.21 | 55.54 | 50.14 | 0.00 |
| 144 | 0.39 | 55.53 | 50.33 | 0.00 |
| 145 | 0.46 | 55.50 | 52.10 | 0.00 |
| 146 | 8.28 | 55.41 | 52.41 | 0.00 |
| 151 | 0.00 | 56.97 | 48.97 | 0.00 |
| 118 | 5.36 | 55.93 | 51.83 | 0.00 |
| 150 | 0.00 | 58.80 | 46.80 | 0.00 |
| 149 | 0.00 | 58.80 | 46.80 | 0.00 |
| 50 | -35.66 | 61.47 | 0.00 | 0.00 Reservoir |

♀

Link Results:

| Link ID | Flow LPS | Velocity m/s | Head loss m/km | Status |
|---------|----------|--------------|----------------|--------|
| 18 | -1.61 | 0.19 | 0.86 | Open |
| 19 | -3.61 | 0.42 | 3.82 | Open |
| 20 | 1.67 | 0.19 | 0.91 | Open |
| 23 | 25.95 | 0.81 | 4.92 | Open |
| 25 | 18.48 | 2.16 | 78.71 | Open |
| 26 | 8.88 | 0.28 | 0.67 | Open |
| 27 | 0.81 | 0.10 | 0.24 | Open |
| 28 | 17.57 | 2.06 | 71.65 | Open |
| 29 | 0.71 | 0.08 | 0.19 | Open |
| 30 | 0.67 | 0.08 | 0.17 | Open |
| 31 | 0.49 | 0.06 | 0.09 | Open |
| 36 | 15.34 | 1.80 | 55.74 | Open |
| 37 | 1.89 | 0.22 | 1.15 | Open |

1253-08 Scenario 8 FFF + 0.667 Exist PH Flows 225 + 150 Mains

| | | | | |
|----|--------|------|------|------|
| 38 | 0.53 | 0.06 | 0.11 | Open |
| 39 | 1.11 | 0.13 | 0.43 | Open |
| 40 | 0.63 | 0.07 | 0.15 | Open |
| 41 | 0.33 | 0.04 | 0.04 | Open |
| 45 | -1.19 | 0.14 | 0.49 | Open |
| 46 | 1.04 | 0.12 | 0.38 | Open |
| 47 | -1.08 | 0.13 | 0.41 | Open |
| 48 | -0.22 | 0.03 | 0.02 | Open |
| 49 | -1.29 | 0.15 | 0.57 | Open |
| 50 | -1.57 | 0.18 | 0.82 | Open |
| 51 | 8.50 | 0.26 | 0.62 | Open |
| 52 | 0.39 | 0.05 | 0.06 | Open |
| 53 | 7.69 | 0.24 | 0.52 | Open |
| 54 | 8.28 | 0.26 | 0.59 | Open |
| 21 | 16.95 | 0.43 | 1.33 | Open |
| 22 | 9.28 | 0.51 | 2.94 | Open |
| 59 | 9.36 | 0.52 | 2.99 | Open |
| 60 | 5.36 | 0.30 | 1.06 | Open |
| 61 | 24.73 | 0.62 | 2.67 | Open |
| 62 | -1.54 | 0.04 | 0.02 | Open |
| 63 | -10.93 | 0.60 | 3.98 | Open |
| 64 | 9.39 | 0.52 | 2.99 | Open |
| 66 | 26.26 | 0.66 | 2.99 | Open |
| 67 | 26.38 | 0.66 | 3.01 | Open |
| 68 | 20.94 | 0.53 | 1.96 | Open |

```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                 *
*                               Version 2.0                               *
*****
```

Input File: 1253-09 Scenario FFF + 0.667 Full Dev. PH Flows 225 + 150 Mains.NET

Scenario 9

Firefighting flows imposed on 2/3 peak hour flows for the full development with reservoir level at RL 61.47m with the sole supply line being the 2250 water main from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 2 | 101 | 102 | 30 | 104.3 |
| 3 | 102 | 110 | 183 | 104.3 |
| 5 | 110 | 111 | 23 | 104.3 |
| 6 | 111 | 103 | 11 | 104.3 |
| 7 | 111 | 108 | 77 | 104.3 |
| 8 | 111 | 112 | 165 | 104.3 |
| 9 | 112 | 113 | 67 | 104.3 |
| 10 | 112 | 114 | 22 | 104.3 |
| 11 | 112 | 104 | 11 | 104.3 |
| 12 | 114 | 107 | 216 | 104.3 |
| 13 | 107 | 106 | 24 | 104.3 |
| 14 | 106 | 105 | 36 | 104.3 |
| 15 | 107 | 108 | 233 | 104.3 |
| 16 | 108 | 109 | 83 | 104.3 |
| 17 | 105 | 115 | 60 | 104.3 |
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 24 | 119 | 126 | 154 | 104.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 32 | 126 | 128 | 20 | 104.3 |
| 33 | 128 | 125 | 10 | 104.3 |
| 34 | 128 | 127 | 57 | 104.3 |
| 35 | 128 | 129 | 78 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 38 | 132 | 133 | 121 | 104.3 |

1253-09 Scenario FFF + 0.667 Full Dev. PH Flows 225 + 150 Mains

| | | | | |
|----|-----|-----|------|-------|
| 39 | 132 | 134 | 79 | 104.3 |
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 42 | 136 | 137 | 65 | 104.3 |
| 43 | 137 | 147 | 80 | 104.3 |
| 44 | 137 | 138 | 81 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 55 | 147 | 148 | 216 | 104.3 |
| 56 | 109 | 110 | 157 | 48.4 |
| 57 | 105 | 108 | 288 | 48.4 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |
| 62 | 150 | 149 | 5 | 225 |
| 63 | 149 | 50 | 671 | 152 |
| 64 | 149 | 101 | 404 | 152.2 |
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 101 | 0.00 | 51.12 | 47.62 | 0.00 |
| 102 | 0.44 | 50.84 | 47.44 | 0.00 |
| 103 | 0.44 | 49.18 | 45.38 | 0.00 |
| 104 | 0.44 | 48.97 | 45.57 | 0.00 |
| 105 | 0.53 | 48.87 | 44.77 | 0.00 |
| 106 | 0.49 | 48.89 | 44.79 | 0.00 |
| 107 | 0.29 | 48.92 | 44.52 | 0.00 |
| 108 | 0.29 | 49.07 | 45.07 | 0.00 |
| 109 | 0.53 | 49.07 | 41.97 | 0.00 |
| 110 | 0.39 | 49.33 | 45.93 | 0.00 |

♀

Node Results: (continued)

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 111 | 0.25 | 49.18 | 45.38 | 0.00 |
| 112 | 0.19 | 48.97 | 45.57 | 0.00 |
| 113 | 0.29 | 48.97 | 43.77 | 0.00 |
| 114 | 0.34 | 48.96 | 45.56 | 0.00 |
| 115 | 0.05 | 48.85 | 43.95 | 0.00 |
| 116 | 0.33 | 48.90 | 43.30 | 0.00 |
| 117 | 0.38 | 49.69 | 43.09 | 0.00 |
| 119 | 0.36 | 49.67 | 44.37 | 0.00 |
| 120 | 0.26 | 48.90 | 43.10 | 0.00 |

1253-09 Scenario FFF + 0.667 Full Dev. PH Flows 225 + 150 Mains

| | | | | |
|-----|--------|-------|-------|----------------|
| 121 | 0.10 | 48.38 | 41.48 | 0.00 |
| 122 | 0.10 | 48.46 | 41.56 | 0.00 |
| 123 | 0.18 | 48.59 | 42.29 | 0.00 |
| 124 | 0.49 | 48.58 | 41.88 | 0.00 |
| 125 | 0.34 | 48.84 | 43.14 | 0.00 |
| 126 | 0.19 | 48.93 | 43.23 | 0.00 |
| 127 | 0.19 | 48.84 | 42.44 | 0.00 |
| 128 | 0.05 | 48.84 | 43.04 | 0.00 |
| 129 | 0.05 | 48.59 | 42.39 | 0.00 |
| 130 | 0.34 | 46.55 | 39.50 | 0.00 |
| 131 | 0.34 | 46.55 | 39.55 | 0.00 |
| 132 | 0.25 | 45.68 | 38.68 | 0.00 |
| 133 | 0.53 | 45.67 | 38.57 | 0.00 |
| 134 | 0.15 | 45.07 | 39.77 | 0.00 |
| 135 | 0.63 | 45.05 | 39.05 | 0.00 |
| 136 | 0.33 | 44.92 | 40.32 | 0.00 |
| 137 | 0.05 | 44.60 | 40.70 | 0.00 |
| 138 | 0.15 | 47.56 | 42.36 | 0.00 |
| 139 | 0.11 | 47.82 | 42.52 | 0.00 |
| 140 | 0.21 | 48.04 | 41.24 | 0.00 |
| 141 | 0.27 | 48.54 | 42.64 | 0.00 |
| 142 | 0.37 | 48.42 | 41.32 | 0.00 |
| 143 | 0.21 | 47.97 | 42.57 | 0.00 |
| 144 | 0.39 | 47.95 | 42.75 | 0.00 |
| 145 | 0.46 | 47.87 | 44.47 | 0.00 |
| 146 | 8.28 | 47.78 | 44.78 | 0.00 |
| 147 | 0.54 | 39.58 | 36.18 | 0.00 |
| 148 | 15.81 | 26.85 | 21.75 | 0.00 |
| 151 | 0.00 | 49.98 | 41.98 | 0.00 |
| 118 | 5.36 | 48.93 | 44.83 | 0.00 |
| 150 | 0.00 | 54.10 | 42.10 | 0.00 |
| 149 | 0.00 | 54.10 | 42.10 | 0.00 |
| 50 | -42.75 | 61.47 | 0.00 | 0.00 Reservoir |

♀

| Link ID | Flow LPS | Velocity m/s | Unit Headloss m/km | Status |
|---------|----------|--------------|--------------------|--------|
| 2 | 5.91 | 0.69 | 9.53 | Open |
| 3 | 5.47 | 0.64 | 8.25 | Open |
| 5 | 4.78 | 0.56 | 6.43 | Open |
| 6 | 0.44 | 0.05 | 0.08 | Open |
| 7 | 2.10 | 0.25 | 1.41 | Open |
| 8 | 1.99 | 0.23 | 1.27 | Open |
| 9 | 0.29 | 0.03 | 0.04 | Open |
| 10 | 1.06 | 0.12 | 0.40 | Open |
| 11 | 0.44 | 0.05 | 0.08 | Open |
| 12 | 0.72 | 0.08 | 0.19 | Open |
| 13 | 1.82 | 0.21 | 1.07 | Open |
| 14 | 1.33 | 0.16 | 0.60 | Open |
| 15 | -1.39 | 0.16 | 0.65 | Open |
| 16 | 0.23 | 0.03 | 0.02 | Open |
| 17 | 0.99 | 0.12 | 0.35 | Open |
| 18 | -2.45 | 0.29 | 1.87 | Open |
| 19 | -3.29 | 0.38 | 3.21 | Open |
| 20 | 0.51 | 0.06 | 0.10 | Open |
| 23 | 23.39 | 0.73 | 4.06 | Open |
| 24 | 4.07 | 0.48 | 4.79 | Open |
| 25 | 4.38 | 0.51 | 5.46 | Open |

1253-09 Scenario FFF + 0.667 Full Dev. PH Flows 225 + 150 Mains

| | | | | |
|----|--------|------|-------|------|
| 26 | 19.26 | 0.60 | 2.83 | Open |
| 27 | -2.48 | 0.29 | 1.91 | Open |
| 28 | 6.75 | 0.79 | 12.20 | Open |
| 29 | -2.58 | 0.30 | 2.05 | Open |
| 30 | 0.67 | 0.08 | 0.17 | Open |
| 31 | 0.49 | 0.06 | 0.09 | Open |
| 32 | 3.87 | 0.45 | 4.36 | Open |
| 33 | 0.34 | 0.04 | 0.05 | Open |
| 34 | 0.19 | 0.02 | 0.02 | Open |
| 35 | 3.29 | 0.39 | 3.23 | Open |
| 36 | 0.34 | 0.04 | 0.05 | Open |
| 37 | 6.07 | 0.71 | 10.02 | Open |
| 38 | 0.53 | 0.06 | 0.11 | Open |
| 39 | 5.29 | 0.62 | 7.77 | Open |
| 40 | 0.63 | 0.07 | 0.15 | Open |
| 41 | 4.51 | 0.53 | 5.78 | Open |
| 42 | 4.19 | 0.49 | 5.03 | Open |
| 43 | 16.35 | 1.91 | 62.71 | Open |
| 44 | -12.21 | 1.43 | 36.55 | Open |
| 45 | -8.82 | 1.03 | 19.99 | Open |
| 46 | -3.54 | 0.41 | 3.69 | Open |
| 47 | -2.91 | 0.34 | 2.56 | Open |
| 48 | -6.02 | 0.70 | 9.85 | Open |
| 49 | -3.12 | 0.37 | 2.92 | Open |
| 50 | -3.40 | 0.40 | 3.41 | Open |
| 51 | 18.89 | 0.59 | 2.73 | Open |

‡

Page 5

Scenario 9

Link Results: (continued)

| Link ID | Flow LPS | Velocity m/s | Unit Head loss m/km | Status |
|---------|----------|--------------|---------------------|--------|
| 52 | 0.39 | 0.05 | 0.06 | Open |
| 53 | 12.28 | 0.38 | 1.23 | Open |
| 54 | 8.28 | 0.26 | 0.59 | Open |
| 55 | 15.81 | 1.85 | 58.92 | Open |
| 56 | -0.30 | 0.17 | 1.64 | Open |
| 57 | -0.19 | 0.10 | 0.69 | Open |
| 21 | 18.08 | 0.45 | 1.50 | Open |
| 22 | 0.00 | 0.00 | 0.00 | Closed |
| 59 | 9.74 | 0.54 | 3.22 | Open |
| 60 | 5.36 | 0.30 | 1.06 | Open |
| 61 | 42.75 | 1.08 | 7.37 | Open |
| 62 | 0.00 | 0.00 | 0.00 | Open |
| 63 | 0.00 | 0.00 | 0.00 | Closed |
| 64 | 0.00 | 0.00 | 0.00 | Closed |
| 66 | 42.75 | 1.08 | 7.37 | Open |
| 67 | 36.84 | 0.93 | 5.60 | Open |
| 68 | 21.75 | 0.55 | 2.11 | Open |

```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.0                                 *
*****
```

Input File: 1253-10 Scenario FFF + Full Dev. PH Flows Min Pressure.NET

Scenario 10

Firefighting flows imposed on the full peak hour flows for the full development with the reservoir level at RL 61.47m with the sole supply line being the 2250 water main from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 2 | 101 | 102 | 30 | 104.3 |
| 3 | 102 | 110 | 183 | 104.3 |
| 5 | 110 | 111 | 23 | 104.3 |
| 6 | 111 | 103 | 11 | 104.3 |
| 7 | 111 | 108 | 77 | 104.3 |
| 8 | 111 | 112 | 165 | 104.3 |
| 9 | 112 | 113 | 67 | 104.3 |
| 10 | 112 | 114 | 22 | 104.3 |
| 11 | 112 | 104 | 11 | 104.3 |
| 12 | 114 | 107 | 216 | 104.3 |
| 13 | 107 | 106 | 24 | 104.3 |
| 14 | 106 | 105 | 36 | 104.3 |
| 15 | 107 | 108 | 233 | 104.3 |
| 16 | 108 | 109 | 83 | 104.3 |
| 17 | 105 | 115 | 60 | 104.3 |
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 24 | 119 | 126 | 154 | 104.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 32 | 126 | 128 | 20 | 104.3 |
| 33 | 128 | 125 | 10 | 104.3 |
| 34 | 128 | 127 | 57 | 104.3 |
| 35 | 128 | 129 | 78 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 38 | 132 | 133 | 121 | 104.3 |

1253-10 Scenario FFF + Full Dev. PH Flows Min Pressure

| | | | | |
|----|-----|-----|------|-------|
| 39 | 132 | 134 | 79 | 104.3 |
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 42 | 136 | 137 | 65 | 104.3 |
| 43 | 137 | 147 | 80 | 104.3 |
| 44 | 137 | 138 | 81 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 55 | 147 | 148 | 216 | 104.3 |
| 56 | 109 | 110 | 157 | 48.4 |
| 57 | 105 | 108 | 288 | 48.4 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |
| 62 | 150 | 149 | 5 | 225 |
| 63 | 149 | 50 | 671 | 152 |
| 64 | 149 | 101 | 404 | 152.2 |
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 101 | 0.00 | 44.06 | 40.56 | 0.00 |
| 102 | 0.66 | 43.57 | 40.17 | 0.00 |
| 103 | 0.66 | 40.74 | 36.94 | 0.00 |
| 104 | 0.66 | 40.41 | 37.01 | 0.00 |
| 105 | 0.80 | 40.32 | 36.22 | 0.00 |
| 106 | 0.73 | 40.33 | 36.23 | 0.00 |
| 107 | 0.44 | 40.36 | 35.96 | 0.00 |
| 108 | 0.44 | 40.57 | 36.57 | 0.00 |
| 109 | 0.80 | 40.57 | 33.47 | 0.00 |
| 110 | 0.58 | 40.99 | 37.59 | 0.00 |

♀

Page 3

Scenario 10

Node Results: (continued)

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 111 | 0.37 | 40.75 | 36.95 | 0.00 |
| 112 | 0.29 | 40.41 | 37.01 | 0.00 |
| 113 | 0.44 | 40.40 | 35.20 | 0.00 |
| 114 | 0.51 | 40.40 | 37.00 | 0.00 |
| 115 | 0.07 | 40.31 | 35.41 | 0.00 |
| 116 | 0.49 | 40.43 | 34.83 | 0.00 |
| 117 | 0.57 | 41.68 | 35.08 | 0.00 |
| 119 | 0.54 | 41.65 | 36.35 | 0.00 |
| 120 | 0.39 | 40.43 | 34.63 | 0.00 |

1253-10 Scenario FFF + Full Dev. PH Flows Min Pressure

| | | | | |
|-----|--------|-------|-------|----------------|
| 121 | 0.15 | 39.72 | 32.82 | 0.00 |
| 122 | 0.15 | 39.82 | 32.92 | 0.00 |
| 123 | 0.27 | 39.98 | 33.68 | 0.00 |
| 124 | 0.73 | 39.96 | 33.26 | 0.00 |
| 125 | 0.51 | 40.35 | 34.65 | 0.00 |
| 126 | 0.29 | 40.49 | 34.79 | 0.00 |
| 127 | 0.29 | 40.35 | 33.95 | 0.00 |
| 128 | 0.07 | 40.35 | 34.55 | 0.00 |
| 129 | 0.07 | 39.98 | 33.78 | 0.00 |
| 130 | 0.51 | 37.31 | 30.26 | 0.00 |
| 131 | 0.51 | 37.29 | 30.29 | 0.00 |
| 132 | 0.37 | 36.23 | 29.23 | 0.00 |
| 133 | 0.80 | 36.20 | 29.10 | 0.00 |
| 134 | 0.22 | 35.54 | 30.24 | 0.00 |
| 135 | 0.95 | 35.49 | 29.49 | 0.00 |
| 136 | 0.49 | 35.40 | 30.80 | 0.00 |
| 137 | 0.08 | 35.10 | 31.20 | 0.00 |
| 138 | 0.22 | 38.48 | 33.28 | 0.00 |
| 139 | 0.16 | 38.80 | 33.50 | 0.00 |
| 140 | 0.32 | 39.11 | 32.31 | 0.00 |
| 141 | 0.41 | 39.85 | 33.95 | 0.00 |
| 142 | 0.56 | 39.67 | 32.57 | 0.00 |
| 143 | 0.31 | 38.96 | 33.56 | 0.00 |
| 144 | 0.58 | 38.93 | 33.73 | 0.00 |
| 145 | 0.69 | 38.80 | 35.40 | 0.00 |
| 146 | 12.41 | 38.61 | 35.61 | 0.00 |
| 147 | 0.81 | 29.69 | 26.29 | 0.00 |
| 148 | 16.22 | 16.34 | 11.24 | 0.00 |
| 151 | 0.00 | 42.14 | 34.14 | 0.00 |
| 118 | 8.03 | 39.93 | 35.83 | 0.00 |
| 150 | 0.00 | 49.07 | 37.07 | 0.00 |
| 149 | 0.00 | 49.07 | 37.07 | 0.00 |
| 50 | -56.62 | 61.47 | 0.00 | 0.00 Reservoir |

♀

| Link ID | Flow LPS | Velocity m/s | Head loss m/km | Status |
|---------|----------|--------------|----------------|--------|
| 2 | 7.95 | 0.93 | 16.51 | Open |
| 3 | 7.29 | 0.85 | 14.06 | Open |
| 5 | 6.31 | 0.74 | 10.77 | Open |
| 6 | 0.66 | 0.08 | 0.16 | Open |
| 7 | 2.71 | 0.32 | 2.25 | Open |
| 8 | 2.57 | 0.30 | 2.04 | Open |
| 9 | 0.44 | 0.05 | 0.08 | Open |
| 10 | 1.18 | 0.14 | 0.48 | Open |
| 11 | 0.66 | 0.08 | 0.16 | Open |
| 12 | 0.67 | 0.08 | 0.17 | Open |
| 13 | 1.88 | 0.22 | 1.15 | Open |
| 14 | 1.15 | 0.14 | 0.46 | Open |
| 15 | -1.65 | 0.19 | 0.90 | Open |
| 16 | 0.40 | 0.05 | 0.07 | Open |
| 17 | 0.57 | 0.07 | 0.13 | Open |
| 18 | -3.74 | 0.44 | 4.08 | Open |
| 19 | -4.23 | 0.50 | 5.14 | Open |
| 20 | 0.01 | 0.00 | 0.00 | Open |
| 23 | 30.10 | 0.94 | 6.47 | Open |
| 24 | 5.19 | 0.61 | 7.53 | Open |
| 25 | 5.17 | 0.61 | 7.44 | Open |

1253-10 Scenario FFF + Full Dev. PH Flows Min Pressure

| | | | | |
|----|--------|------|-------|------|
| 26 | 24.54 | 0.76 | 4.44 | Open |
| 27 | -2.81 | 0.33 | 2.41 | Open |
| 28 | 7.84 | 0.92 | 16.06 | Open |
| 29 | -2.96 | 0.35 | 2.65 | Open |
| 30 | 1.00 | 0.12 | 0.35 | Open |
| 31 | 0.73 | 0.09 | 0.20 | Open |
| 32 | 4.90 | 0.57 | 6.74 | Open |
| 33 | 0.51 | 0.06 | 0.10 | Open |
| 34 | 0.29 | 0.03 | 0.04 | Open |
| 35 | 4.03 | 0.47 | 4.70 | Open |
| 36 | 0.51 | 0.06 | 0.10 | Open |
| 37 | 6.82 | 0.80 | 12.41 | Open |
| 38 | 0.80 | 0.09 | 0.23 | Open |
| 39 | 5.65 | 0.66 | 8.75 | Open |
| 40 | 0.95 | 0.11 | 0.32 | Open |
| 41 | 4.48 | 0.52 | 5.69 | Open |
| 42 | 3.99 | 0.47 | 4.59 | Open |
| 43 | 17.03 | 1.99 | 67.64 | Open |
| 44 | -13.12 | 1.54 | 41.75 | Open |
| 45 | -9.78 | 1.14 | 24.22 | Open |
| 46 | -3.56 | 0.42 | 3.73 | Open |
| 47 | -3.51 | 0.41 | 3.63 | Open |
| 48 | -6.43 | 0.75 | 11.14 | Open |
| 49 | -3.83 | 0.45 | 4.26 | Open |
| 50 | -4.24 | 0.50 | 5.15 | Open |
| 51 | 23.98 | 0.75 | 4.25 | Open |

‡

Page 5

Scenario 10

Link Results: (continued)

| Link ID | Flow LPS | Velocity Unit m/s | Head Loss m/km | Status |
|---------|----------|-------------------|----------------|--------|
| 52 | 0.58 | 0.07 | 0.13 | Open |
| 53 | 16.66 | 0.52 | 2.17 | Open |
| 54 | 12.41 | 0.39 | 1.25 | Open |
| 55 | 16.22 | 1.90 | 61.80 | Open |
| 56 | -0.40 | 0.22 | 2.72 | Open |
| 57 | -0.22 | 0.12 | 0.88 | Open |
| 21 | 23.26 | 0.59 | 2.39 | Open |
| 22 | 0.00 | 0.00 | 0.00 | Closed |
| 59 | 12.57 | 0.69 | 5.16 | Open |
| 60 | 8.03 | 0.44 | 2.25 | Open |
| 61 | 56.62 | 1.42 | 12.40 | Open |
| 62 | 0.00 | 0.00 | 0.00 | Open |
| 63 | 0.00 | 0.00 | 0.00 | Closed |
| 64 | 0.00 | 0.00 | 0.00 | Closed |
| 66 | 56.62 | 1.42 | 12.40 | Open |
| 67 | 48.67 | 1.22 | 9.37 | Open |
| 68 | 28.06 | 0.71 | 3.38 | Open |

```
*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.0                                 *
*****
```

Input File: 1253-11 Scenario FFF + Full Dev PH Flows Max Pressure.NET

Scenario 11

Refighting flows imposed on 2/3 peak hour flows for the full development with reservoir level at RL 68.88m with a 1500 and a 2250 supply lines from the reservoir to the intersection of Bonnie Doon and Cooya Beach Roads.

Link - Node Table:

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 2 | 101 | 102 | 30 | 104.3 |
| 3 | 102 | 110 | 183 | 104.3 |
| 5 | 110 | 111 | 23 | 104.3 |
| 6 | 111 | 103 | 11 | 104.3 |
| 7 | 111 | 108 | 77 | 104.3 |
| 8 | 111 | 112 | 165 | 104.3 |
| 9 | 112 | 113 | 67 | 104.3 |
| 10 | 112 | 114 | 22 | 104.3 |
| 11 | 112 | 104 | 11 | 104.3 |
| 12 | 114 | 107 | 216 | 104.3 |
| 13 | 107 | 106 | 24 | 104.3 |
| 14 | 106 | 105 | 36 | 104.3 |
| 15 | 107 | 108 | 233 | 104.3 |
| 16 | 108 | 109 | 83 | 104.3 |
| 17 | 105 | 115 | 60 | 104.3 |
| 18 | 115 | 116 | 29 | 104.3 |
| 19 | 116 | 117 | 244 | 104.3 |
| 20 | 116 | 120 | 15 | 104.3 |
| 23 | 119 | 120 | 188 | 202.2 |
| 24 | 119 | 126 | 154 | 104.2 |
| 25 | 120 | 121 | 95 | 104.3 |
| 26 | 120 | 142 | 170 | 202.2 |
| 27 | 121 | 122 | 42 | 104.3 |
| 28 | 121 | 130 | 150 | 104.3 |
| 29 | 122 | 129 | 61 | 104.3 |
| 30 | 129 | 123 | 22 | 104.3 |
| 31 | 123 | 124 | 68 | 104.3 |
| 32 | 126 | 128 | 20 | 104.3 |
| 33 | 128 | 125 | 10 | 104.3 |
| 34 | 128 | 127 | 57 | 104.3 |
| 35 | 128 | 129 | 78 | 104.3 |
| 36 | 130 | 131 | 175 | 104.3 |
| 37 | 130 | 132 | 87 | 104.3 |
| 38 | 132 | 133 | 121 | 104.3 |

♀

Link - Node Table: (continued)

| Link ID | Start Node | End Node | Length m | Diameter mm |
|---------|------------|----------|----------|-------------|
| 39 | 132 | 134 | 79 | 104.3 |

1253-11 Scenario FFF + Full Dev PH Flows Max Pressure

| | | | | |
|----|-----|-----|------|-------|
| 40 | 134 | 135 | 145 | 104.3 |
| 41 | 134 | 136 | 25 | 104.3 |
| 42 | 136 | 137 | 65 | 104.3 |
| 43 | 137 | 147 | 80 | 104.3 |
| 44 | 137 | 138 | 81 | 104.3 |
| 45 | 138 | 139 | 13 | 104.3 |
| 46 | 138 | 145 | 85 | 104.3 |
| 47 | 139 | 140 | 86 | 104.3 |
| 48 | 139 | 143 | 15 | 104.3 |
| 49 | 140 | 141 | 173 | 104.3 |
| 50 | 141 | 115 | 90 | 104.3 |
| 51 | 142 | 143 | 167 | 202.2 |
| 52 | 143 | 144 | 241 | 104.3 |
| 53 | 143 | 145 | 76 | 202.2 |
| 54 | 145 | 146 | 149 | 202.2 |
| 55 | 147 | 148 | 216 | 104.3 |
| 56 | 109 | 110 | 157 | 48.4 |
| 57 | 105 | 108 | 288 | 48.4 |
| 21 | 117 | 119 | 15 | 225 |
| 22 | 101 | 151 | 210 | 152 |
| 59 | 151 | 119 | 96 | 152 |
| 60 | 151 | 118 | 982 | 152 |
| 61 | 50 | 150 | 1000 | 225 |
| 62 | 150 | 149 | 5 | 225 |
| 63 | 149 | 50 | 671 | 152 |
| 64 | 149 | 101 | 404 | 152.2 |
| 66 | 150 | 101 | 404 | 225 |
| 67 | 101 | 151 | 205 | 225 |
| 68 | 151 | 117 | 136 | 225 |

Node Results:

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 101 | 0.00 | 51.47 | 47.97 | 0.00 |
| 102 | 0.66 | 50.98 | 47.58 | 0.00 |
| 103 | 0.66 | 48.15 | 44.35 | 0.00 |
| 104 | 0.66 | 47.82 | 44.42 | 0.00 |
| 105 | 0.80 | 47.73 | 43.63 | 0.00 |
| 106 | 0.73 | 47.74 | 43.64 | 0.00 |
| 107 | 0.44 | 47.77 | 43.37 | 0.00 |
| 108 | 0.44 | 47.98 | 43.98 | 0.00 |
| 109 | 0.80 | 47.98 | 40.88 | 0.00 |
| 110 | 0.58 | 48.40 | 45.00 | 0.00 |
| 111 | 0.37 | 48.16 | 44.36 | 0.00 |

♀

Node Results: (continued)

| Node ID | Demand LPS | Head m | Pressure m | Quality |
|---------|------------|--------|------------|---------|
| 112 | 0.29 | 47.82 | 44.42 | 0.00 |
| 113 | 0.44 | 47.81 | 42.61 | 0.00 |
| 114 | 0.51 | 47.81 | 44.41 | 0.00 |
| 115 | 0.07 | 47.72 | 42.82 | 0.00 |
| 116 | 0.49 | 47.84 | 42.24 | 0.00 |
| 117 | 0.57 | 49.09 | 42.49 | 0.00 |
| 119 | 0.54 | 49.06 | 43.76 | 0.00 |
| 120 | 0.39 | 47.84 | 42.04 | 0.00 |
| 121 | 0.15 | 47.13 | 40.23 | 0.00 |

1253-11 Scenario FFF + Full Dev PH Flows Max Pressure

| | | | | |
|-----|--------|-------|-------|----------------|
| 122 | 0.15 | 47.23 | 40.33 | 0.00 |
| 123 | 0.27 | 47.39 | 41.09 | 0.00 |
| 124 | 0.73 | 47.37 | 40.67 | 0.00 |
| 125 | 0.51 | 47.76 | 42.06 | 0.00 |
| 126 | 0.29 | 47.90 | 42.20 | 0.00 |
| 127 | 0.29 | 47.76 | 41.36 | 0.00 |
| 128 | 0.07 | 47.76 | 41.96 | 0.00 |
| 129 | 0.07 | 47.39 | 41.19 | 0.00 |
| 130 | 0.51 | 44.72 | 37.67 | 0.00 |
| 131 | 0.51 | 44.70 | 37.70 | 0.00 |
| 132 | 0.37 | 43.64 | 36.64 | 0.00 |
| 133 | 0.80 | 43.61 | 36.51 | 0.00 |
| 134 | 0.22 | 42.95 | 37.65 | 0.00 |
| 135 | 0.95 | 42.90 | 36.90 | 0.00 |
| 136 | 0.49 | 42.81 | 38.21 | 0.00 |
| 137 | 0.08 | 42.51 | 38.61 | 0.00 |
| 138 | 0.22 | 45.89 | 40.69 | 0.00 |
| 139 | 0.16 | 46.21 | 40.91 | 0.00 |
| 140 | 0.32 | 46.52 | 39.72 | 0.00 |
| 141 | 0.41 | 47.26 | 41.36 | 0.00 |
| 142 | 0.56 | 47.08 | 39.98 | 0.00 |
| 143 | 0.31 | 46.37 | 40.97 | 0.00 |
| 144 | 0.58 | 46.34 | 41.14 | 0.00 |
| 145 | 0.69 | 46.21 | 42.81 | 0.00 |
| 146 | 12.41 | 46.02 | 43.02 | 0.00 |
| 147 | 0.81 | 37.10 | 33.70 | 0.00 |
| 148 | 16.22 | 23.75 | 18.65 | 0.00 |
| 151 | 0.00 | 49.55 | 41.55 | 0.00 |
| 118 | 8.03 | 47.34 | 43.24 | 0.00 |
| 150 | 0.00 | 56.48 | 44.48 | 0.00 |
| 149 | 0.00 | 56.48 | 44.48 | 0.00 |
| 50 | -56.62 | 68.88 | 0.00 | 0.00 Reservoir |

♀

| Link ID | Flow LPS | Velocity m/s | Head loss m/km | Status |
|---------|----------|--------------|----------------|--------|
| 2 | 7.95 | 0.93 | 16.51 | Open |
| 3 | 7.29 | 0.85 | 14.06 | Open |
| 5 | 6.31 | 0.74 | 10.77 | Open |
| 6 | 0.66 | 0.08 | 0.16 | Open |
| 7 | 2.71 | 0.32 | 2.25 | Open |
| 8 | 2.57 | 0.30 | 2.04 | Open |
| 9 | 0.44 | 0.05 | 0.08 | Open |
| 10 | 1.18 | 0.14 | 0.48 | Open |
| 11 | 0.66 | 0.08 | 0.16 | Open |
| 12 | 0.67 | 0.08 | 0.17 | Open |
| 13 | 1.88 | 0.22 | 1.15 | Open |
| 14 | 1.15 | 0.14 | 0.46 | Open |
| 15 | -1.65 | 0.19 | 0.90 | Open |
| 16 | 0.40 | 0.05 | 0.07 | Open |
| 17 | 0.57 | 0.07 | 0.13 | Open |
| 18 | -3.74 | 0.44 | 4.08 | Open |
| 19 | -4.23 | 0.50 | 5.14 | Open |
| 20 | 0.01 | 0.00 | 0.00 | Open |
| 23 | 30.10 | 0.94 | 6.47 | Open |
| 24 | 5.19 | 0.61 | 7.53 | Open |
| 25 | 5.17 | 0.61 | 7.44 | Open |
| 26 | 24.54 | 0.76 | 4.44 | Open |

1253-11 Scenario FFF + Full Dev PH Flows Max Pressure

| | | | | |
|----|--------|------|-------|------|
| 27 | -2.81 | 0.33 | 2.41 | Open |
| 28 | 7.84 | 0.92 | 16.06 | Open |
| 29 | -2.96 | 0.35 | 2.65 | Open |
| 30 | 1.00 | 0.12 | 0.35 | Open |
| 31 | 0.73 | 0.09 | 0.20 | Open |
| 32 | 4.90 | 0.57 | 6.74 | Open |
| 33 | 0.51 | 0.06 | 0.10 | Open |
| 34 | 0.29 | 0.03 | 0.04 | Open |
| 35 | 4.03 | 0.47 | 4.70 | Open |
| 36 | 0.51 | 0.06 | 0.10 | Open |
| 37 | 6.82 | 0.80 | 12.41 | Open |
| 38 | 0.80 | 0.09 | 0.23 | Open |
| 39 | 5.65 | 0.66 | 8.75 | Open |
| 40 | 0.95 | 0.11 | 0.32 | Open |
| 41 | 4.48 | 0.52 | 5.69 | Open |
| 42 | 3.99 | 0.47 | 4.59 | Open |
| 43 | 17.03 | 1.99 | 67.64 | Open |
| 44 | -13.12 | 1.54 | 41.75 | Open |
| 45 | -9.78 | 1.14 | 24.22 | Open |
| 46 | -3.56 | 0.42 | 3.73 | Open |
| 47 | -3.51 | 0.41 | 3.63 | Open |
| 48 | -6.43 | 0.75 | 11.14 | Open |
| 49 | -3.83 | 0.45 | 4.26 | Open |
| 50 | -4.24 | 0.50 | 5.15 | Open |
| 51 | 23.98 | 0.75 | 4.25 | Open |

♀

Page 5

Scenario 11

Link Results: (continued)

| Link ID | Flow LPS | Velocity Unit m/s | Head loss m/km | Status |
|---------|----------|-------------------|----------------|--------|
| 52 | 0.58 | 0.07 | 0.13 | Open |
| 53 | 16.66 | 0.52 | 2.17 | Open |
| 54 | 12.41 | 0.39 | 1.25 | Open |
| 55 | 16.22 | 1.90 | 61.80 | Open |
| 56 | -0.40 | 0.22 | 2.72 | Open |
| 57 | -0.22 | 0.12 | 0.88 | Open |
| 21 | 23.26 | 0.59 | 2.39 | Open |
| 22 | 0.00 | 0.00 | 0.00 | Closed |
| 59 | 12.57 | 0.69 | 5.16 | Open |
| 60 | 8.03 | 0.44 | 2.25 | Open |
| 61 | 56.62 | 1.42 | 12.40 | Open |
| 62 | 0.00 | 0.00 | 0.00 | Open |
| 63 | 0.00 | 0.00 | 0.00 | Closed |
| 64 | 0.00 | 0.00 | 0.00 | Closed |
| 66 | 56.62 | 1.42 | 12.40 | Open |
| 67 | 48.67 | 1.22 | 9.37 | Open |
| 68 | 28.06 | 0.71 | 3.38 | Open |