



An Australian Integration of Asset Management
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Australia



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Hervey Bay Australia



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Asset Management

A helicopter view

- What assets?
- What is asset management?
- Why do asset management?



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NRC-CNRC















Asset Management includes The Environment



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EPA sensitive to nutrient discharge into Great Sandy Straits

Australians highly value protecting the environment
They wish all waterways and oceans to be
protected from sewage effluent discharge



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Successes of Water Recycling

- Sugar cane farms winning harvesting awards.
- 300,000 hardwood trees
 - Carbon sequestration (1,000,000 by 2010).
- Protecting the seas around Hervey Bay
 - currently 90+% reuse - 100% 2010.
- 35 tonnes of N and 20 tonnes of P
no longer in the waterways



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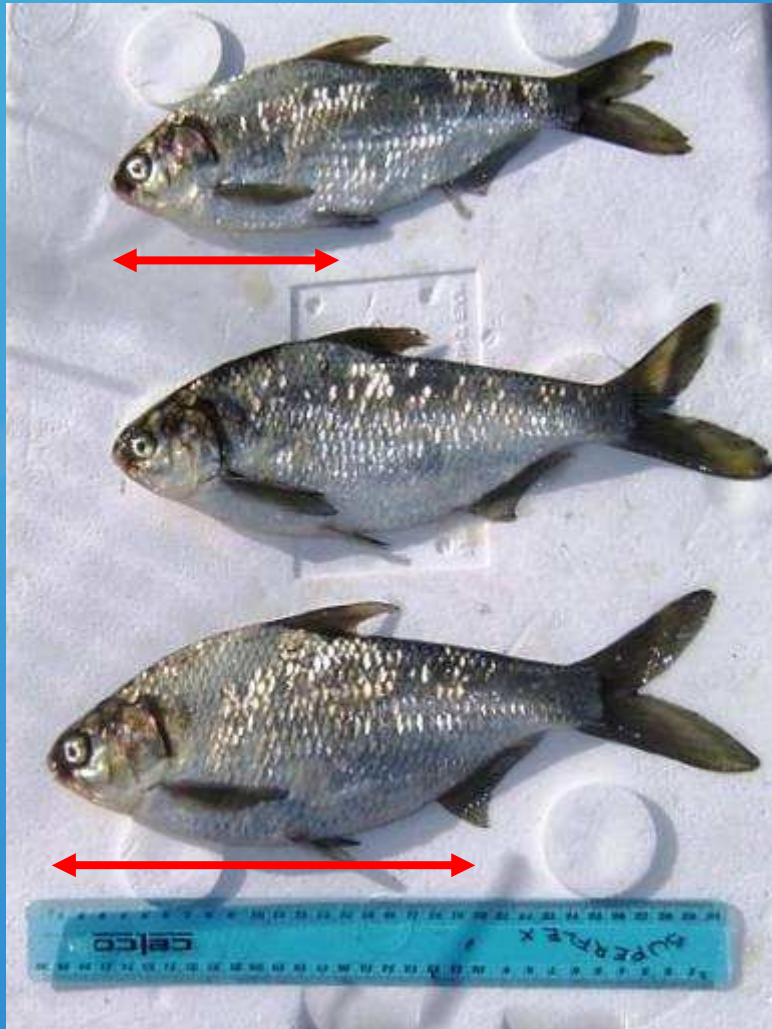


Stage 2 – Full Grow Out
of Caged Fish
for Stocking Density

Positioning of Fish Cages
at discharge end of lagoon



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Bony bream (*Nematalosa erebi*)
Growth after 40 days

- Growth of 1g per day (in at 10g out at 100g)
- Harvest after 90 days
- Grown for fishmeal and fertiliser

(From Willet, 2006). © The State of Queensland, Department of Primary Industries and Fisheries

Return on Investment



15.5%*

*For our 4 lagoons
\$334,000 per year.



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What Other Assets?

Wide Bay Water is the asset owner of \$AU350 million in water and sewerage infrastructure

– Passive assets

- Water mains
- Hydrants
- Valves
- Connections
- Meters
- Sewer mains
- Manholes
- Connections

– Active Assets

- Dams and Weirs
- Treatment Plants
- Pump Stations
- Reservoirs
- Effluent ReUse systems



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Active Assets

All above ground mechanical, civil and electrical assets and their components

e.g. pump stations, treatment plants, reservoirs



Passive Assets

All underground assets

e.g. mains, valves, hydrants, manholes, meters



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Asset Management

- a helicopter view

“A combination of processes, data, software and hardware (systems) to provide information for integrated asset management decision making”

Why do asset management?

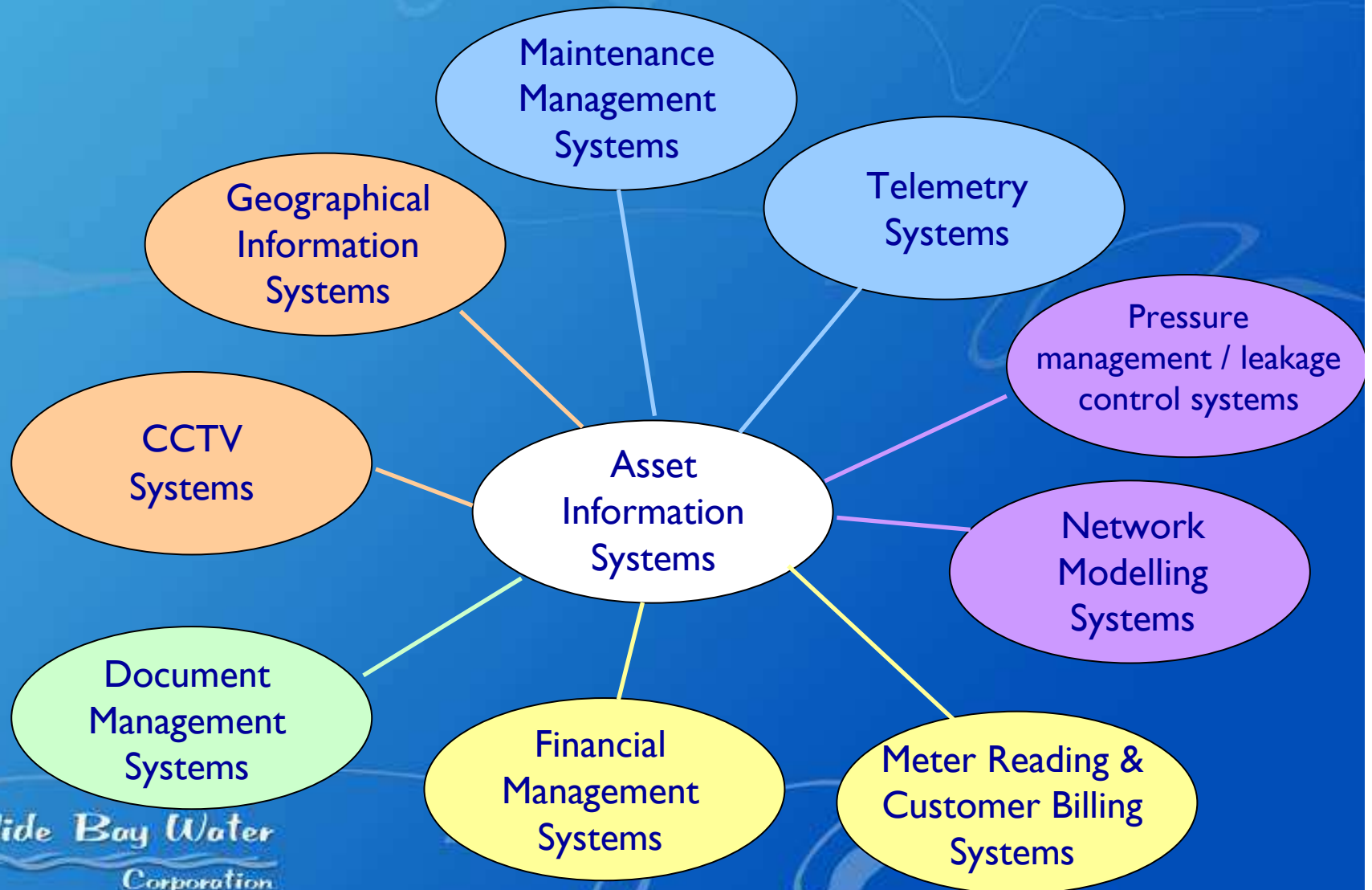
For decision making about

1. improving asset life
2. improving asset performance



Asset Management Systems

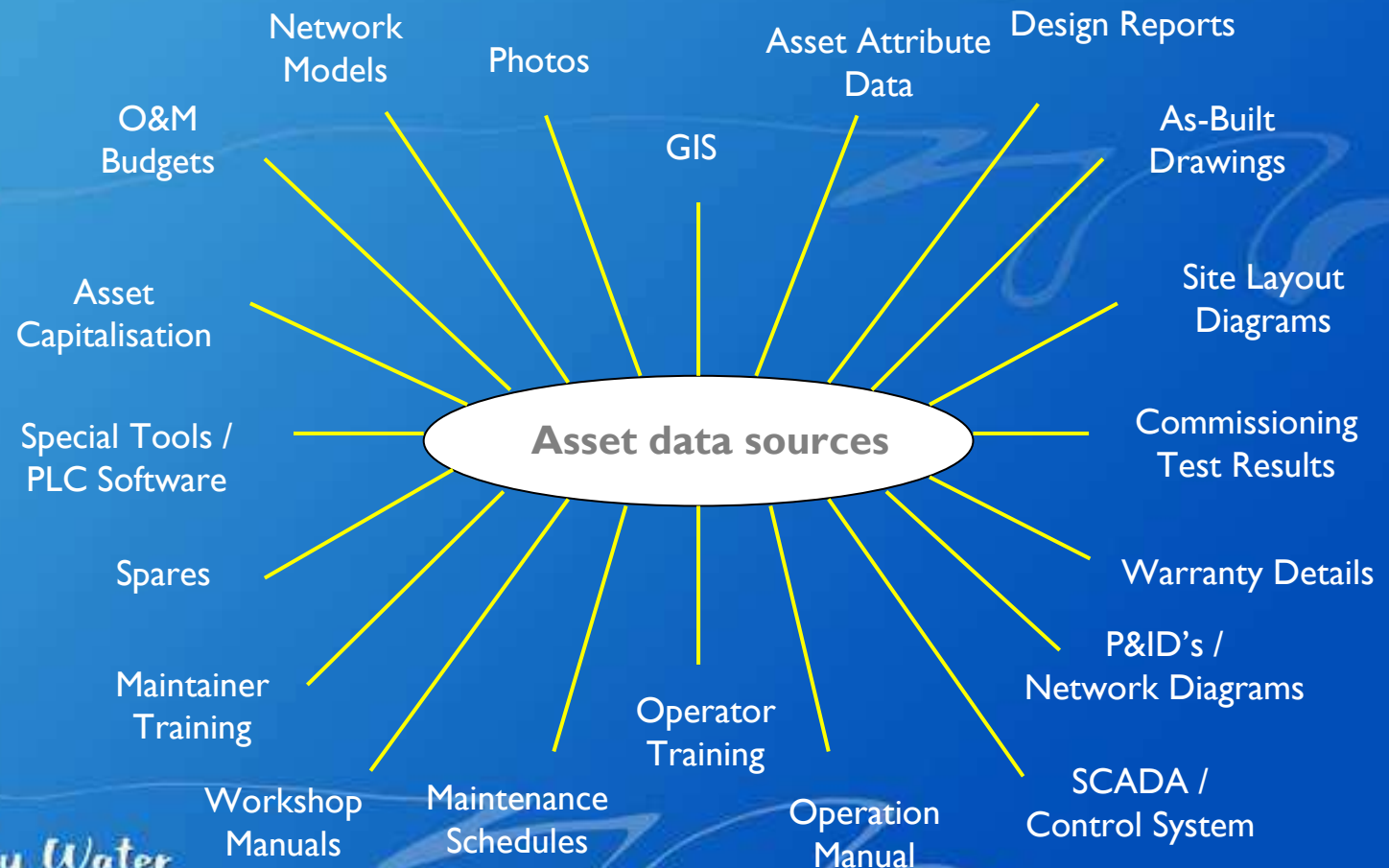
Overview



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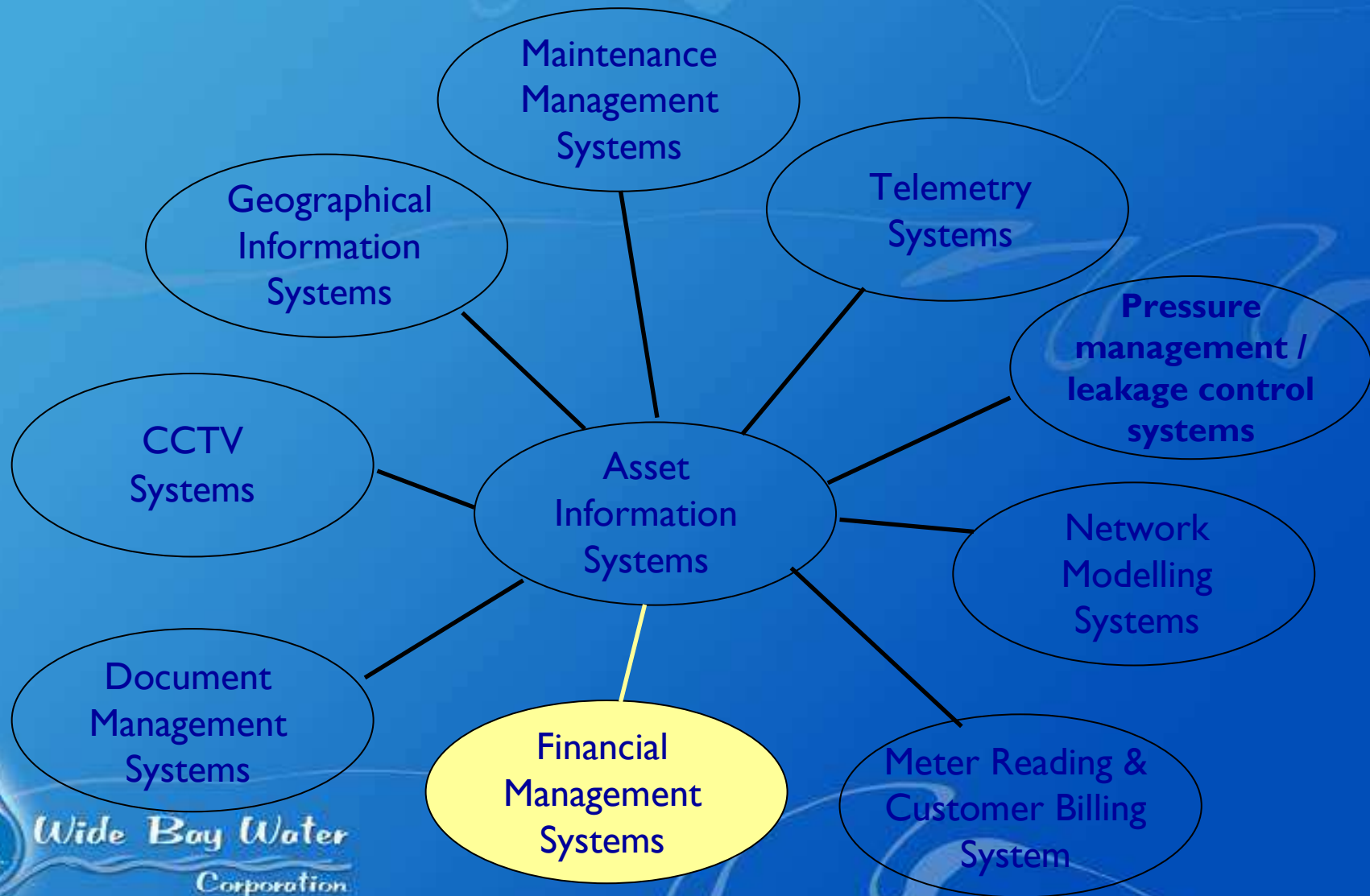
Asset Management systems

Asset Information systems



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Asset Management Systems



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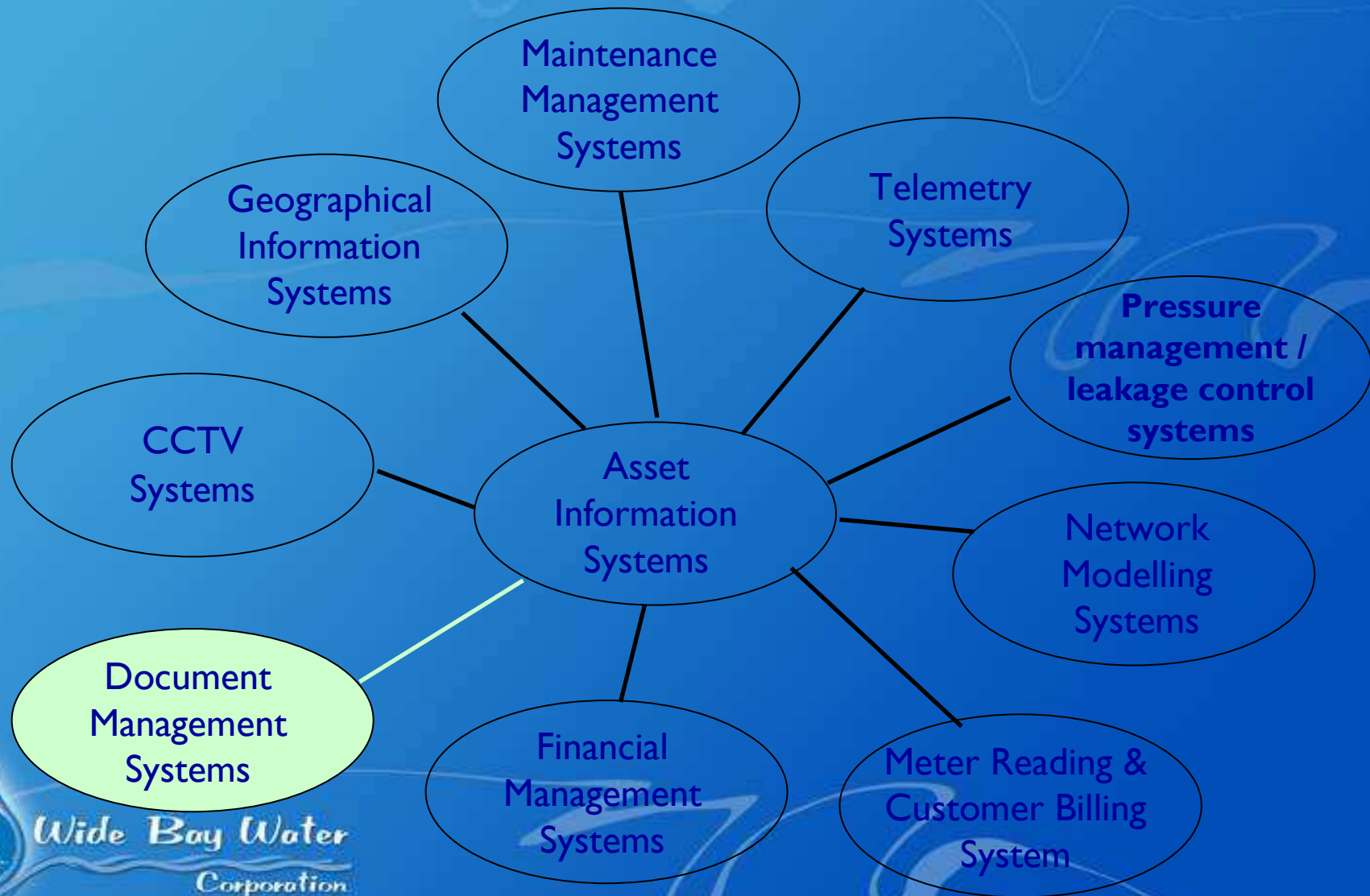
Financial System

Asset information

- What is the day-to-day running cost of your assets?
- Some assets are more efficient than others due to age, wear or operating conditions
- Differences in operating costs can indicate faults that require repair or trigger refurbishment or complete replacement of the asset



Asset Management Systems



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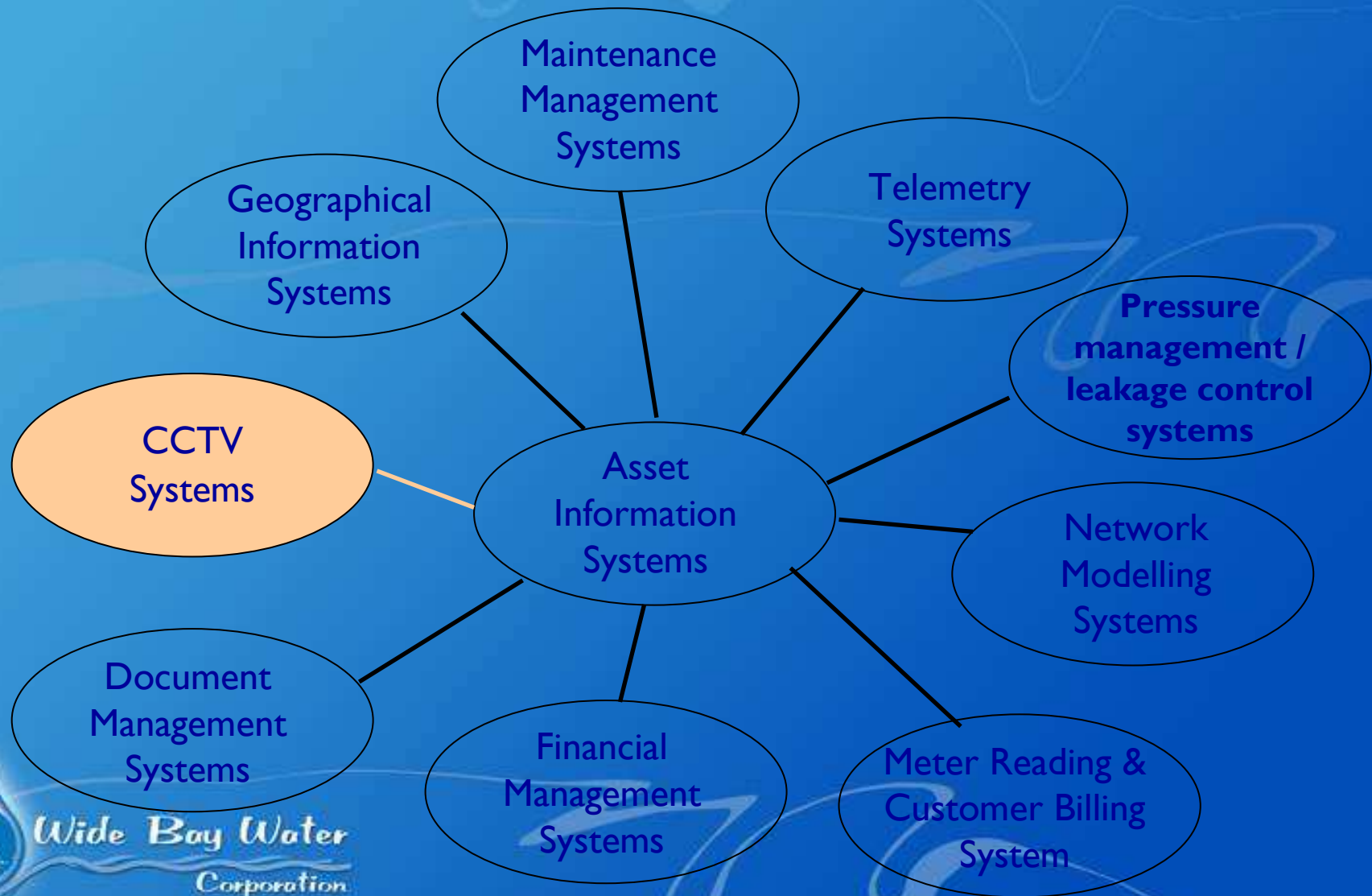
Asset Management systems



Apr 29, 2005 - 9:03am

<div>Revisions</div> <table><tr><td>A</td><td>PRELIMINARY</td><td>AD</td><td>28/5/04</td></tr><tr><td>B</td><td>ISSUED FOR TENDER</td><td>LD</td><td>01/6/04</td></tr><tr><td>D</td><td>ISSUED FOR CONSTRUCTION</td><td>LD</td><td>14/4/05</td></tr></table>				A	PRELIMINARY	AD	28/5/04	B	ISSUED FOR TENDER	LD	01/6/04	D	ISSUED FOR CONSTRUCTION	LD	14/4/05	<div>Wide Bay Water</div> <div>CH2M HILL AUSTRALIA Pty Ltd Level 31 32 Pitt St, Sydney New South Wales 2000 Australia Tel: 02 9230 3000 Fax: 02 9230 3001 www.ch2mhill.com.au</div>				<div>Scale: NTS Date 1/8/04</div> <table><tr><td>Drawn: PT</td><td>Designed: AD</td></tr><tr><td>Checked:</td><td></td></tr><tr><td>Approved:</td><td>LD</td></tr></table>				Drawn: PT	Designed: AD	Checked:		Approved:	LD	<div>PROJECT: PULGUL WASTEWATER TREATMENT PLANT STAGE THREE DEVELOPMENT</div> <div>TITLE: PROCESS FLOW DIAGRAM</div>				<div>Project No. 3138020</div> <div>Drawing No. 019</div> <div>Scale 1:1000 A3</div>			
A	PRELIMINARY	AD	28/5/04																																		
B	ISSUED FOR TENDER	LD	01/6/04																																		
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Drawn: PT	Designed: AD																																				
Checked:																																					
Approved:	LD																																				

Asset Management Systems



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Asset Management systems

CCTV



Ford Transit Van, long wheel base Cab Chassis with custom built pantec body .

This vehicle is set up specifically for the CCTV inspection of any type of conduits. For staff comfort, it has split system air-conditioning ducted into the office area at the rear of the vehicle. This vehicle also has a separate WET and DRY area to eliminate contamination of the office area and to allow thorough cleaning of the equipment without the risk of damage to computer equipment.



IPEK FWI25 six wheel drive tractor and 48/70 camera unit

The camera head of this unit allows for a full 360° pan and 300° tilt enabling direct inspection of any faults or failures. The tractor unit is fitted with a raising kit allowing centre of pipe inspections of most pipe sizes, it is fitted to 200 metres of cable allowing a survey of up to 400 metres in total length.



CCTV - Map Viewer for Assets
File Help

CCTV Viewer

CCTV Viewer
 Catalogue
 Setup

Asset Information

CCTV Data for Sewerage Mains on asset S15918 captured on the 20.12.2001.

Main Details
Manhole Details
Survey Details

S_ID: 6
Start Manhole: MH17074
Start Manhole Depth:

Observations

Movie

Position	Video Position	Comments	Photo	Movie
0	00:00:00	Start of Survey	Fraser Island Views	
0	00:00:00	Water level, 01% height/diameter		
2.65	00:00:00	Junction at 11 o'clock, dia 100 mm	Fraser Island Views	
14.51	00:00:06	Debris silt, 15% cross-sectional area loss		Fraser Island Views
14.93	00:00:00	Junction at 02 o'clock, dia 100 mm	Fraser Island Views	
38.69	00:00:00	Junction at 11 o'clock, dia 100 mm	Fraser Island Views	

Map and Media

☐ Show CCTV Assets

Data Collection

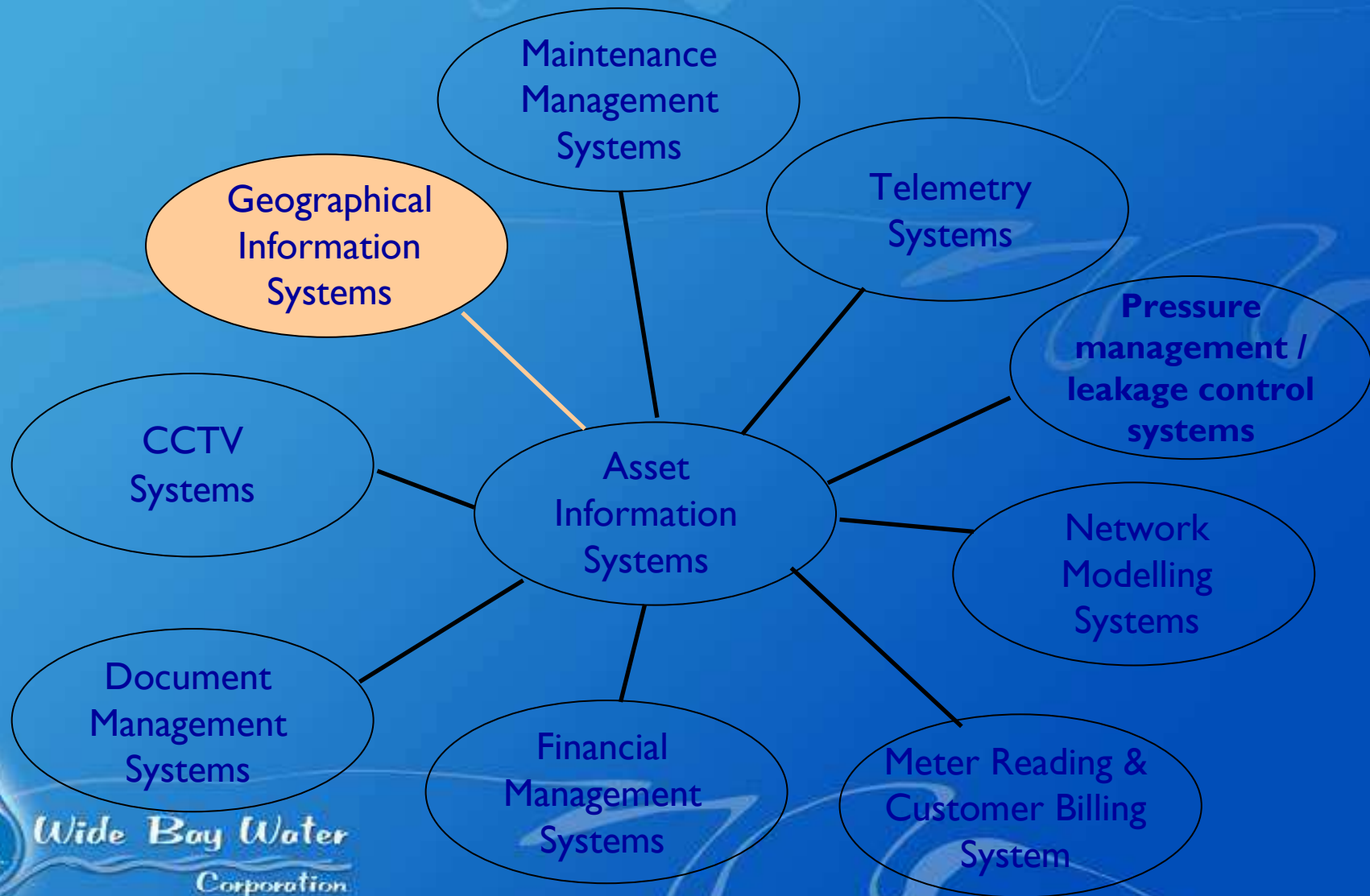
Zoom: 0.1504 km Current Tool: Select Asset Email Note

Harvey Bay
82 Pulgul St
2/9 <- 1/10
dia 150 mm

Debris silt, 15% cross-sectional area loss
20.12.2001 14.51m

Stopped 00:00 / 00:06

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Geographical information systems

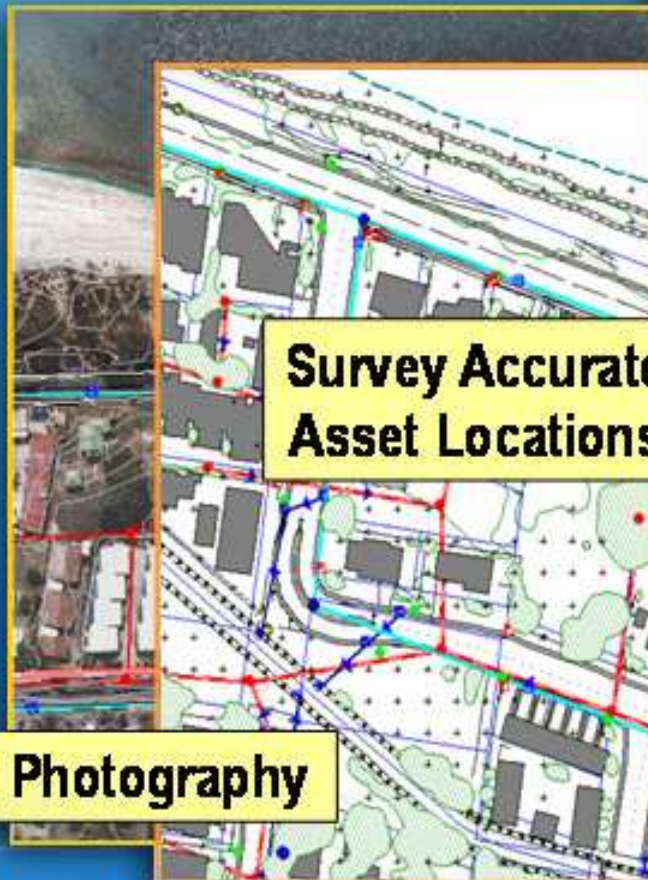
GIS Asset Data

- Visible geographic data mapped from aerial photography
- Accuracy to 90% confidence
 - Horizontal +/- 0.08m (80mm)
 - Vertical +/- 0.10m (100mm)
- Network of over 300 PSM's tied to AMG & AHD
- Contours extracted at 0.25 and 0.5m intervals



Asset Management systems

Geographical Information Systems



**Survey Accurate
Asset Locations**

Aerial Photography

Info Tool

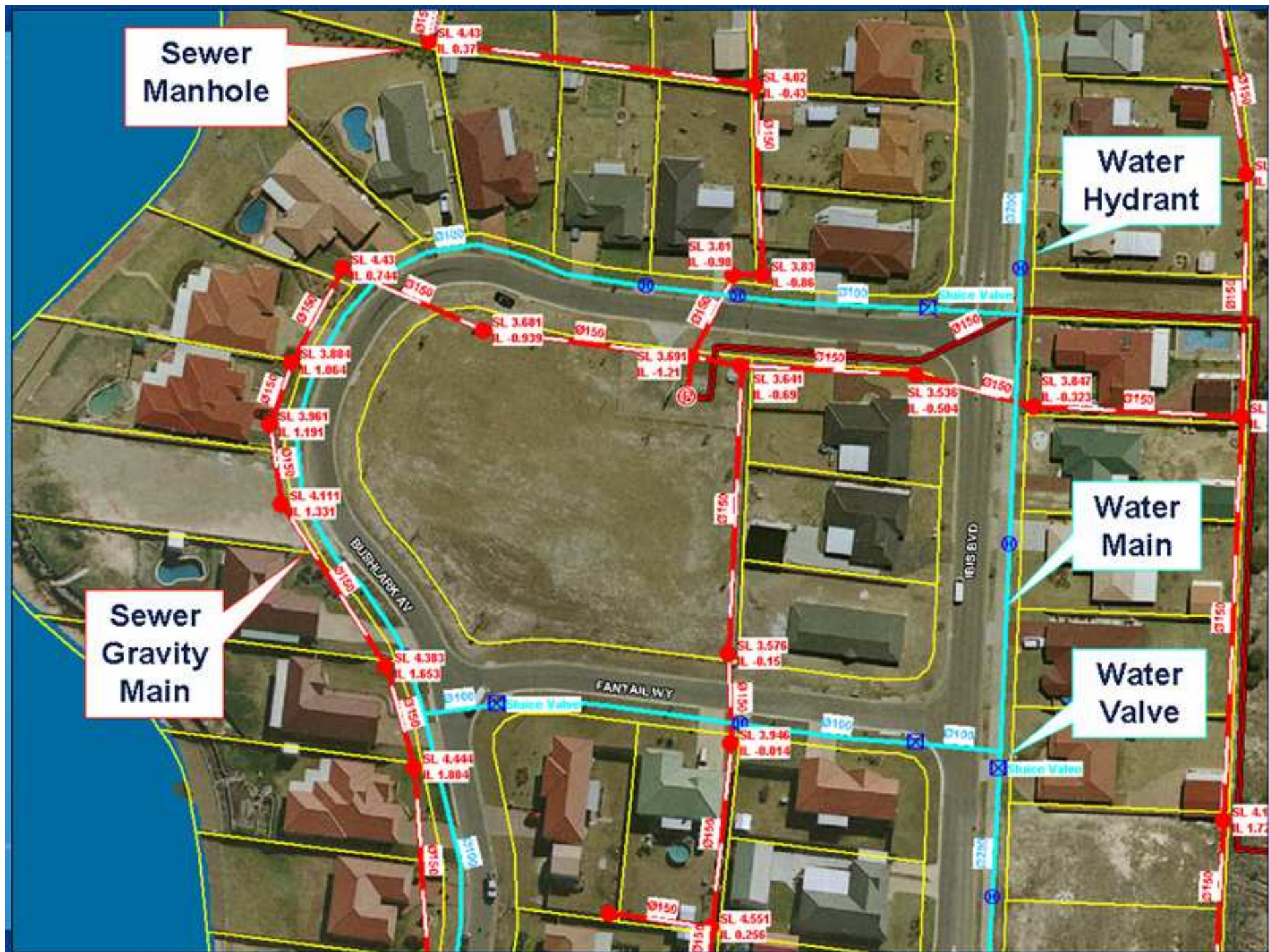
UID:	SWP0249
Type:	Grated Inlet
Location:	Road
Dimension1_mm:	900
Dimension2_mm:	600
CoverMaterial:	Grate
CoverCondition:	Fair
Material:	Concrete
Condition:	Serviceable
Remarks:	
InvertLevel_mAHD:	2.154
SurfaceLevel_mAHD:	2.774
XCoordinate_mAMG:	489,165.013
YCoordinate_mAMG:	7,203,618.498
XYAccuracy_m_90Percent_Confid:	0.07
SLAccuracy_m_90Percent_Confid:	0.08
ILAccuracy_m:	0.105
InstallDate:	
Height_Value:	

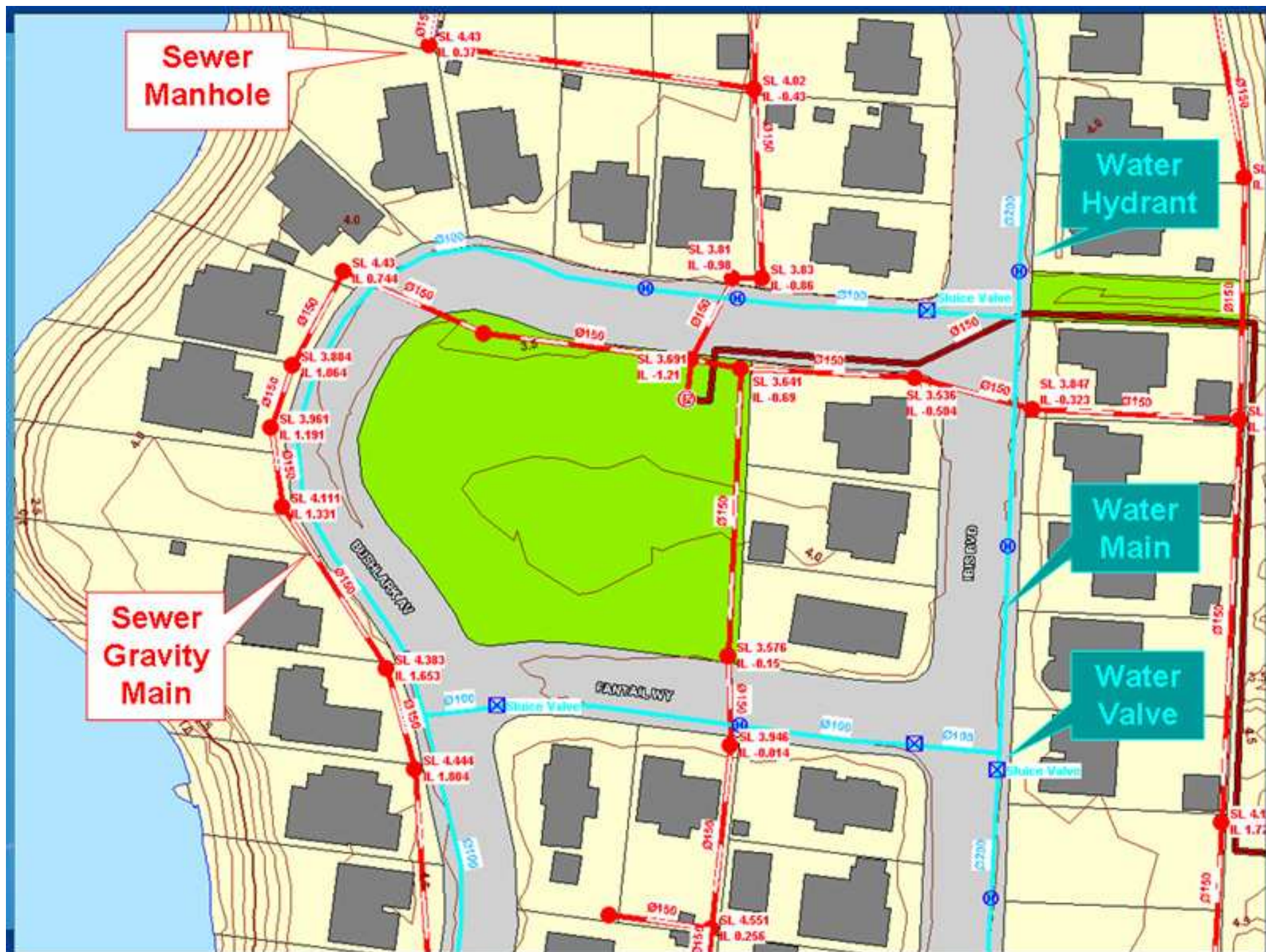
<< >> List Swdpits2

**Condition and Attribute
Information**

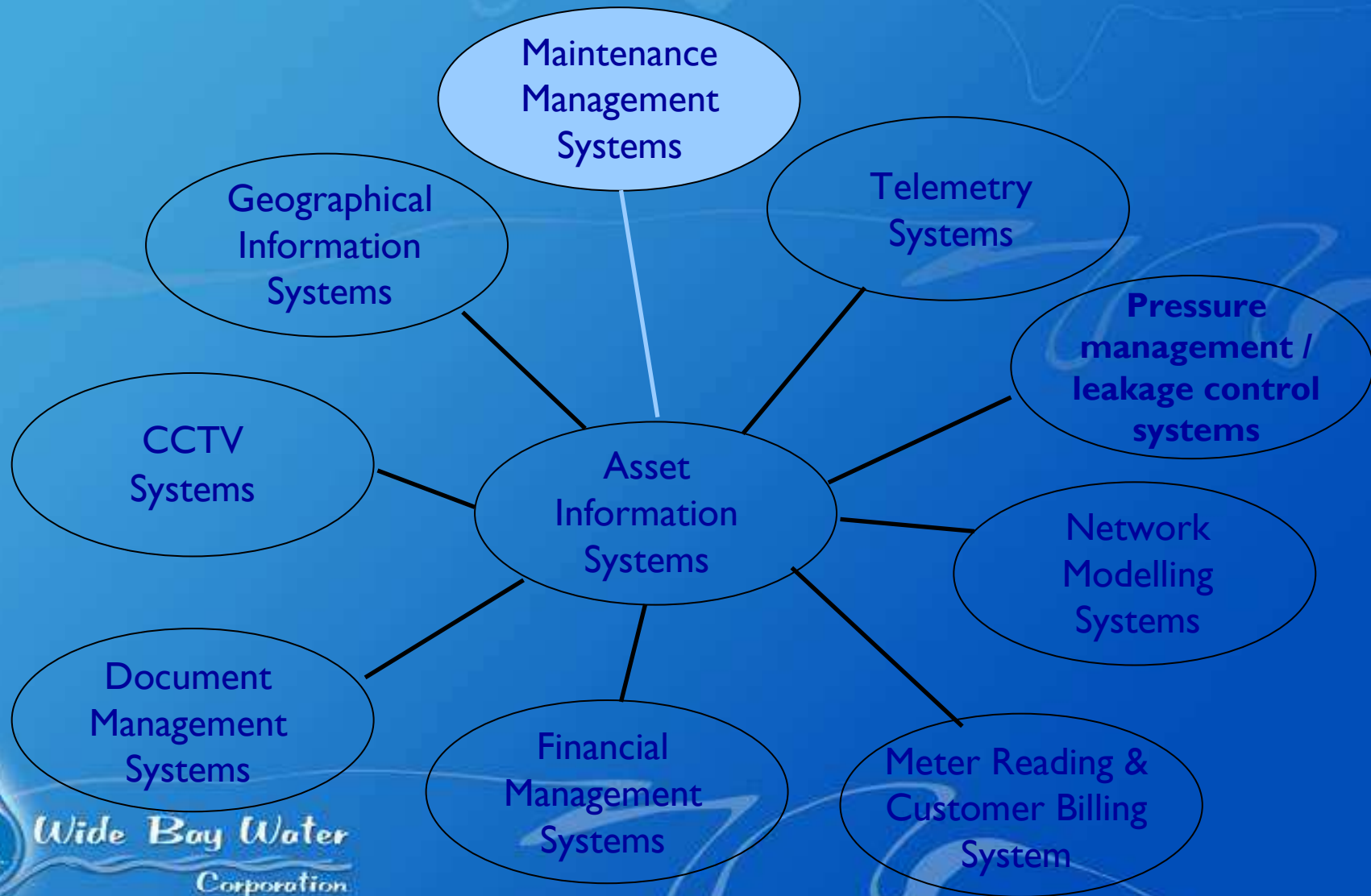


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Maintenance Management system

Preparation of Maintenance Schedules begins with collation of plant data from the registers. Details of the plant are grouped by the Asset/Location and data is kept at the process level and the component level

- Scheduled interval, date
- Crew, materials

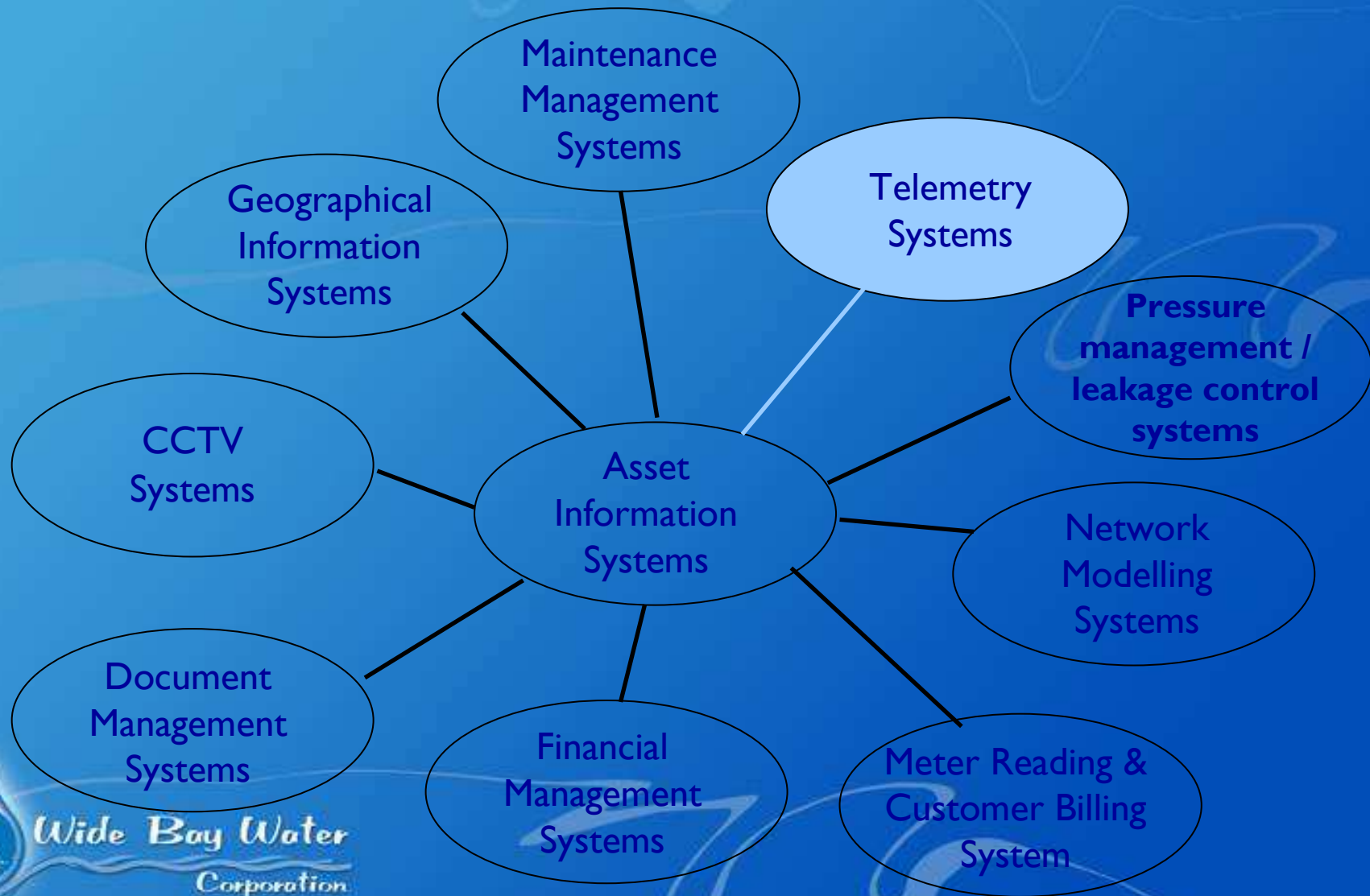
– Crew, materials

WBW - ACTIVE ASSETS ROUTINE MAINTENANCE SCHEDULE



ASSET / LOCATION	STANDARD ACTIVITY : A - LUBRICATION, B - GENERAL SERVICE, C - FULL SERVICE/ EVALUATION D - SPECIALISED SERVICES				REGULARITY				1	2
					2 WEEKLY	3 MONTHLY	12 MONTHLY	RANDOM		
PULGUL WWTP					EST HRS	EST HRS	EST HRS			
AERATORS (plant 1)	A	B	C		EST HRS	EST HRS	EST HRS			0.25
CLARIFIERS (plant 1)	A	B	C			EST HRS	EST HRS			0.25
RETURN ACTIVATED SLUDGE PUMPS (plant 1)		B	C				EST HRS			
INLET CHAMBERS/SCREEN RAKE (plant1)	A		C		EST HRS					0.25

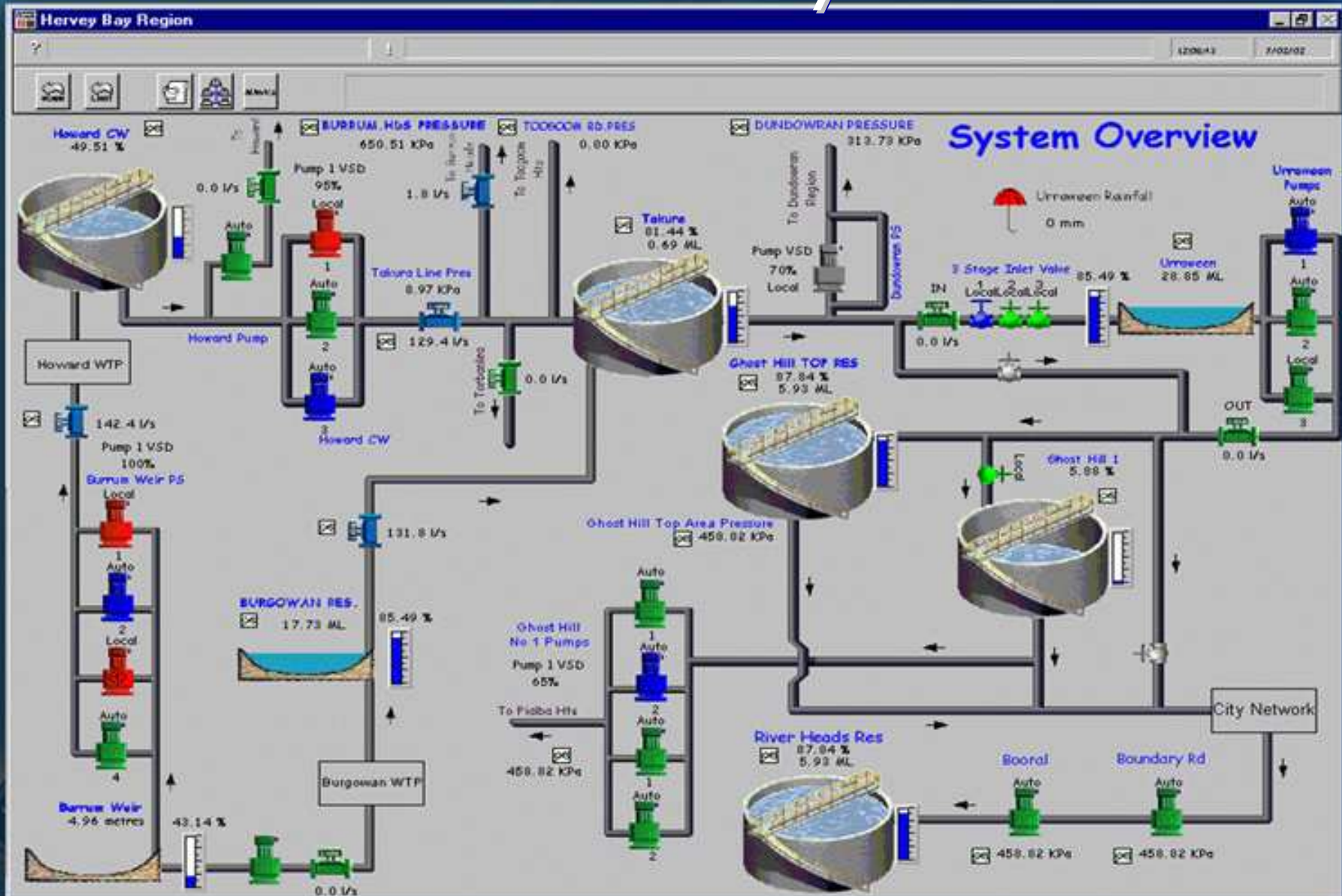
Asset Management Systems



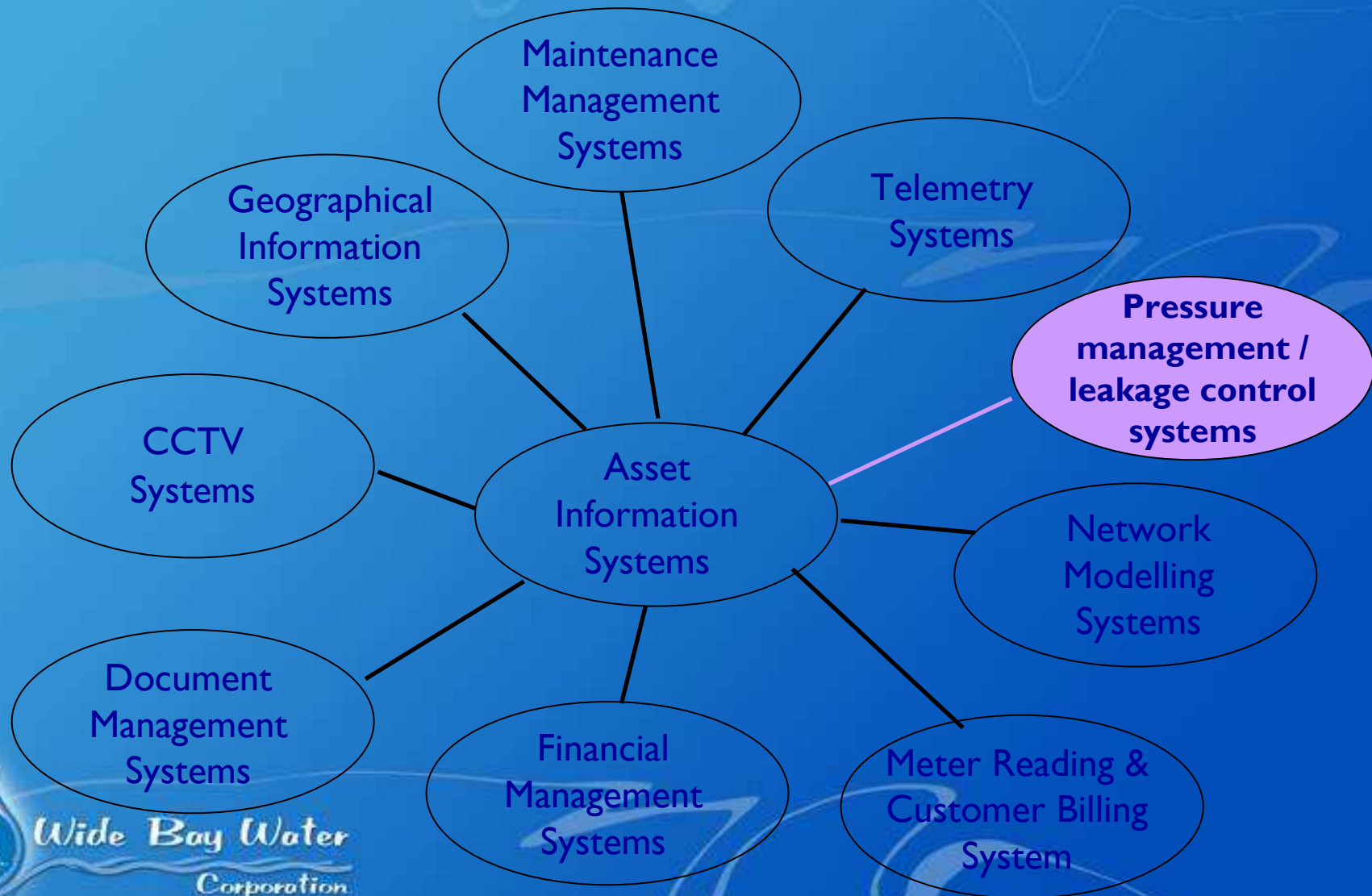
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Asset Management systems

Telemetry

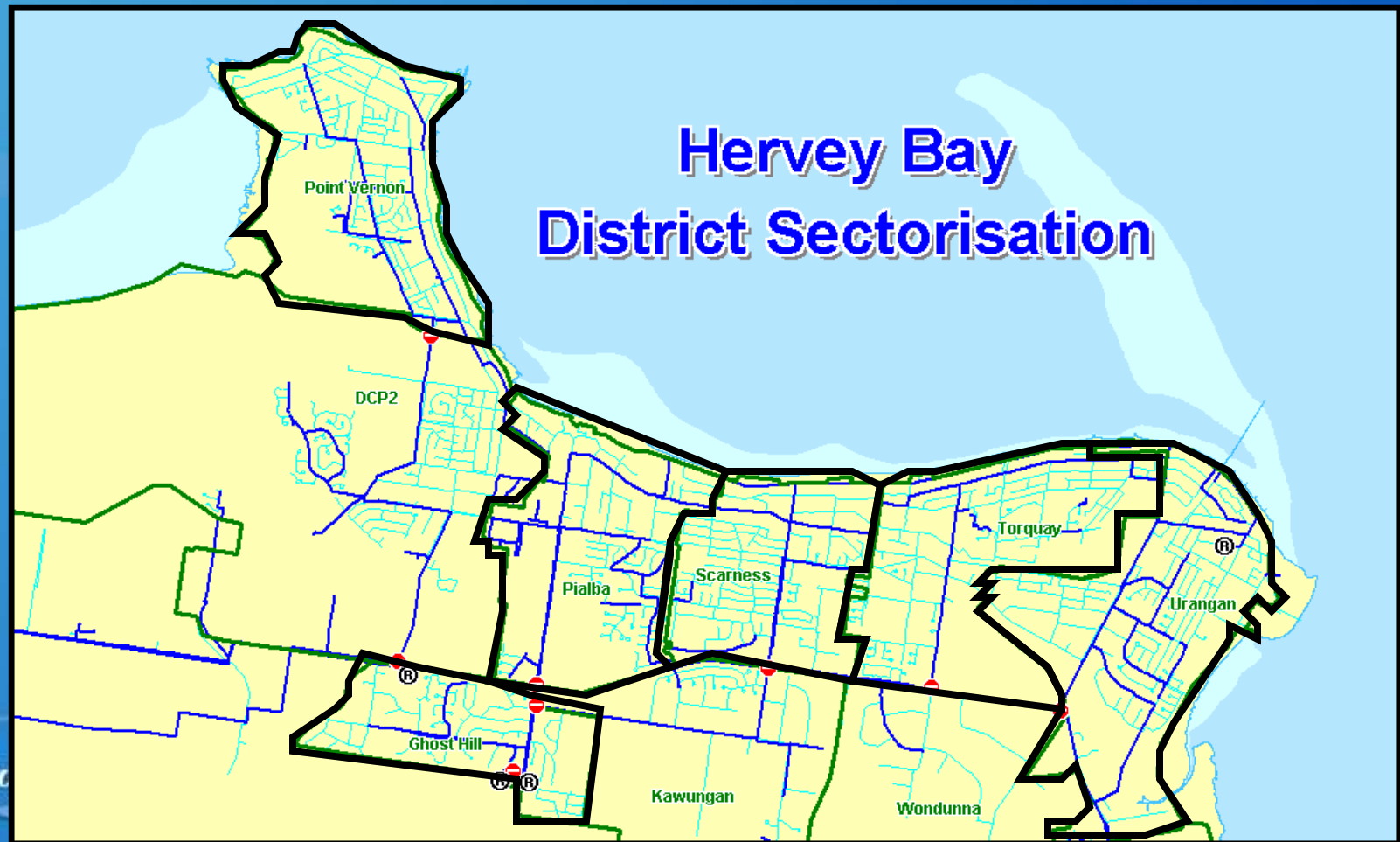


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District Metering/Sectorisation

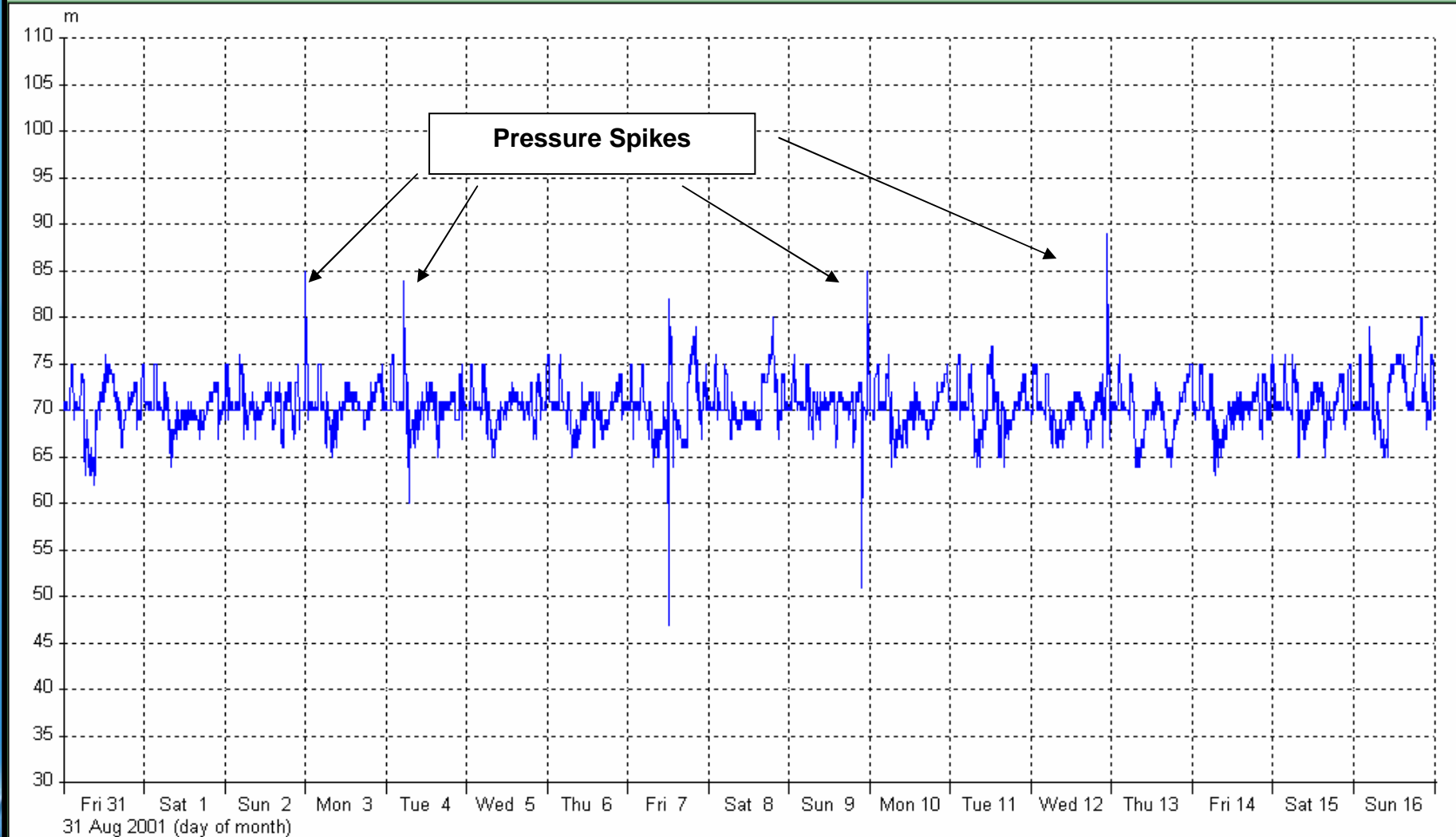


Graph - AZP-Wattle Street

File Line View Options Help

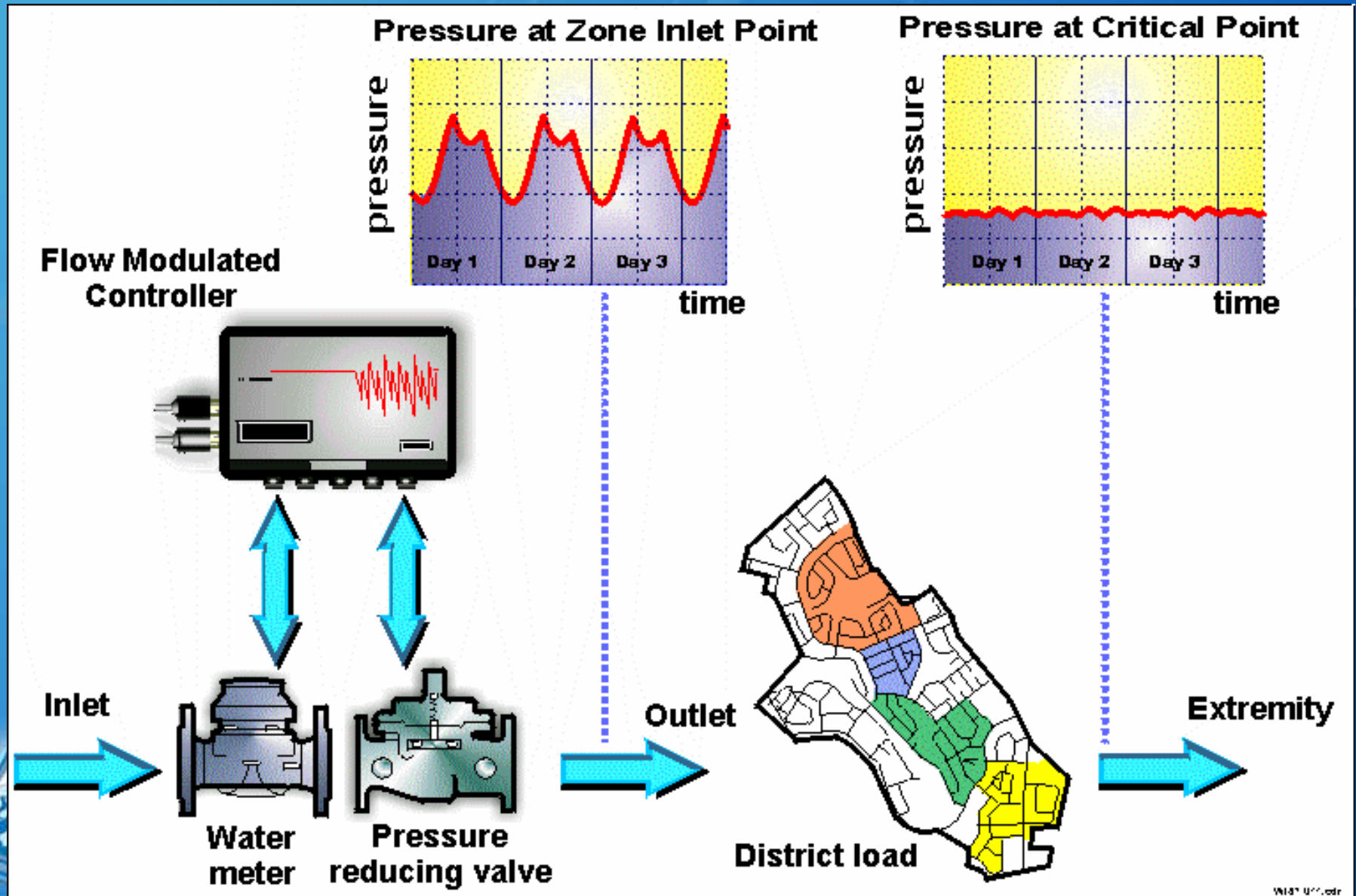


Line	Site Name	Measurand	Units
—	AZP-Wattle Street	Pressure	m



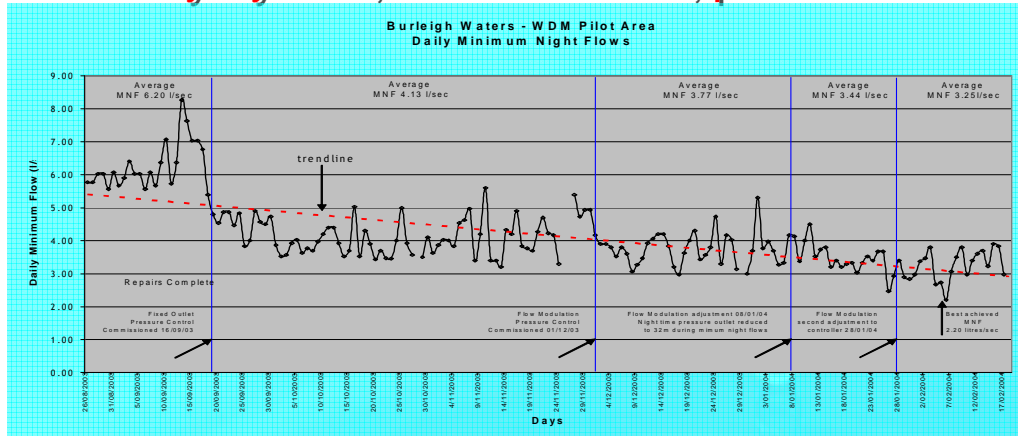
Ready

Flow Modulating PRV Control

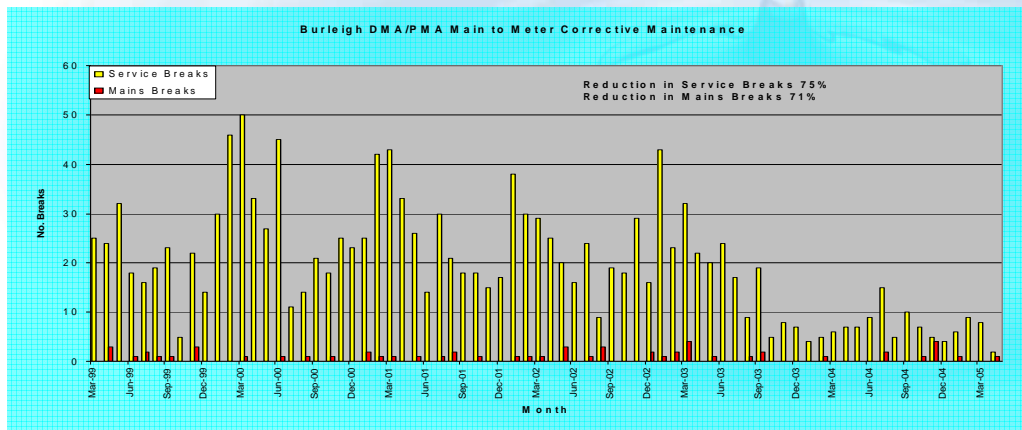


Second Principle: Reduce Excess Pressures: An Australian Example (Gold Coast):

Gravity System, 3300 services ; pressure reduced from 72 to 50 metres



Night flow reduced
from 6 litres/sec
to 3 litres/sec



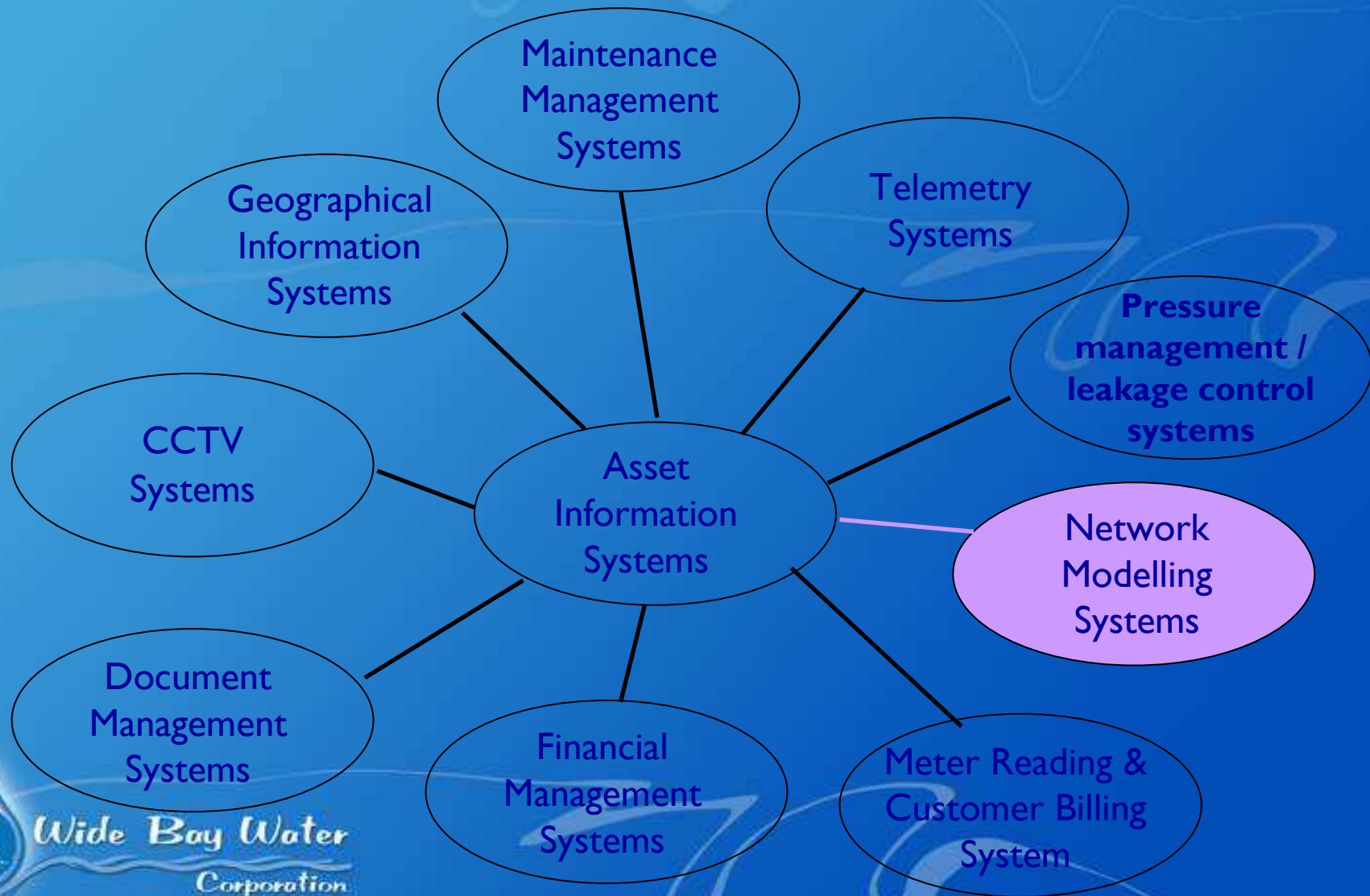
Mains repairs
reduced by 71%

Service pipe repairs
reduced by 75%

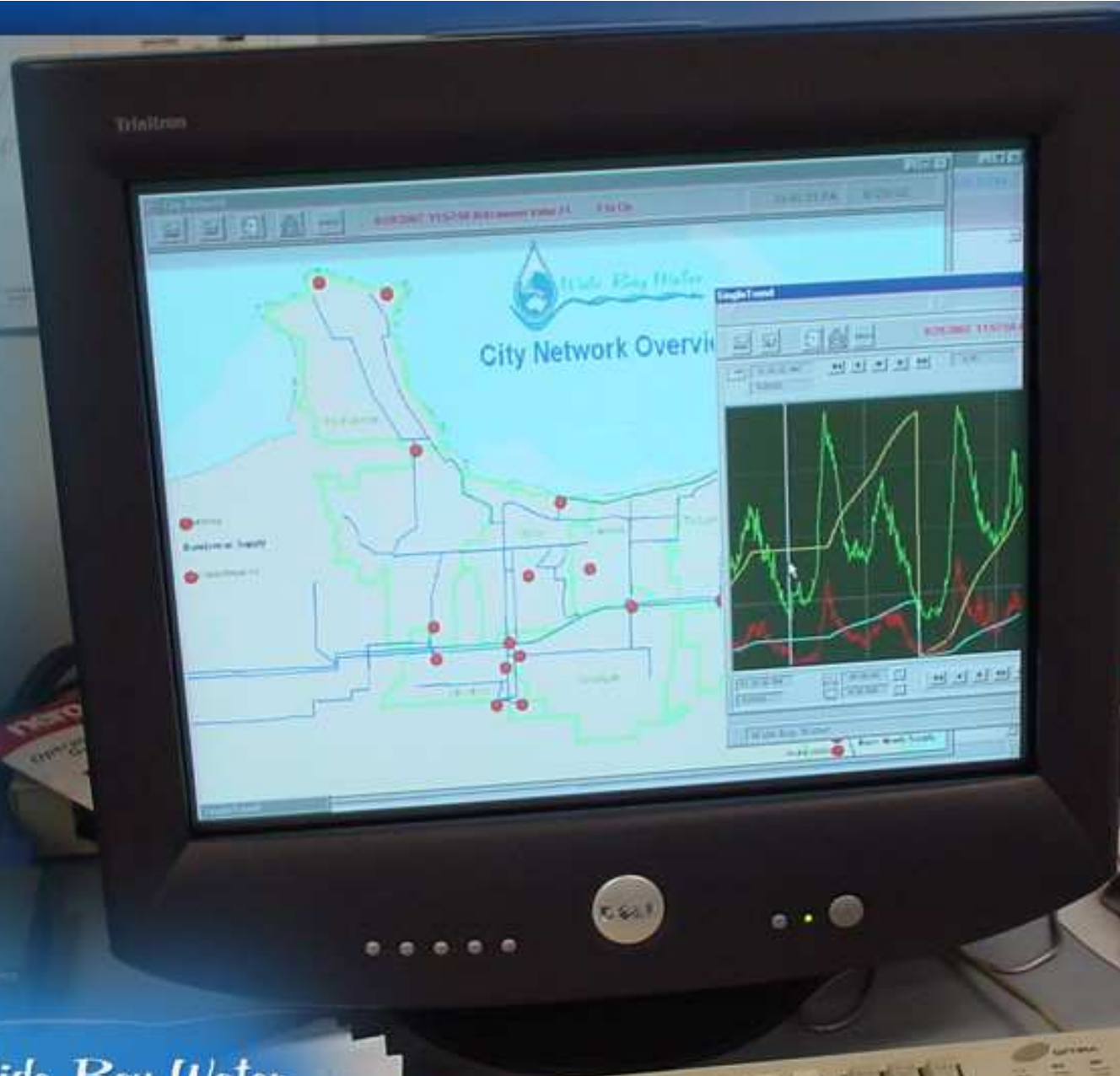


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Asset Management Systems

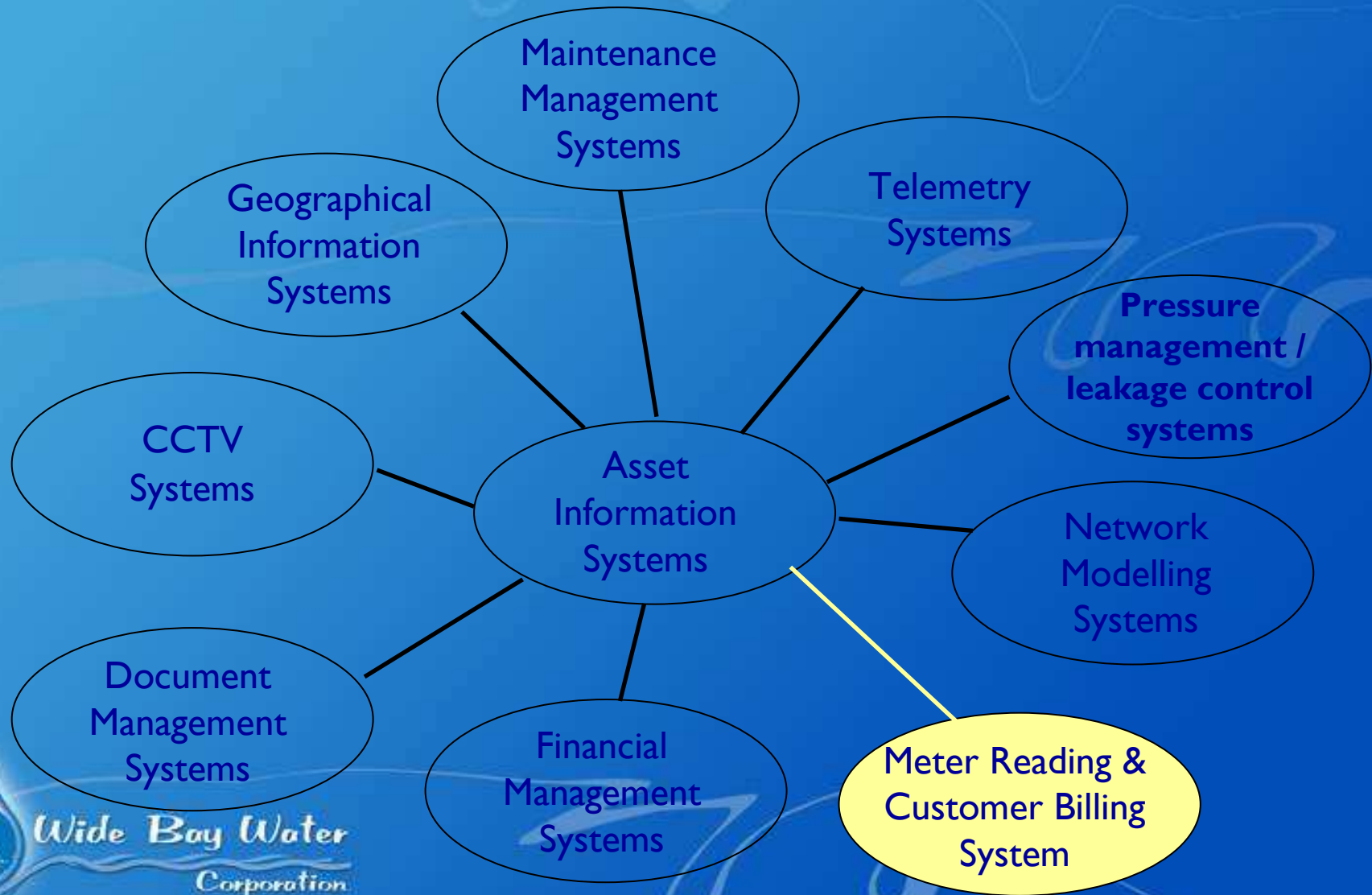


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Asset Management systems

Meter Reading & Customer Billing systems

*A World first...
...at Wide Bay Water*

AMR smart metering



Australian Government Water Fund
Water Smart Australia



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Datamatic ELSTER





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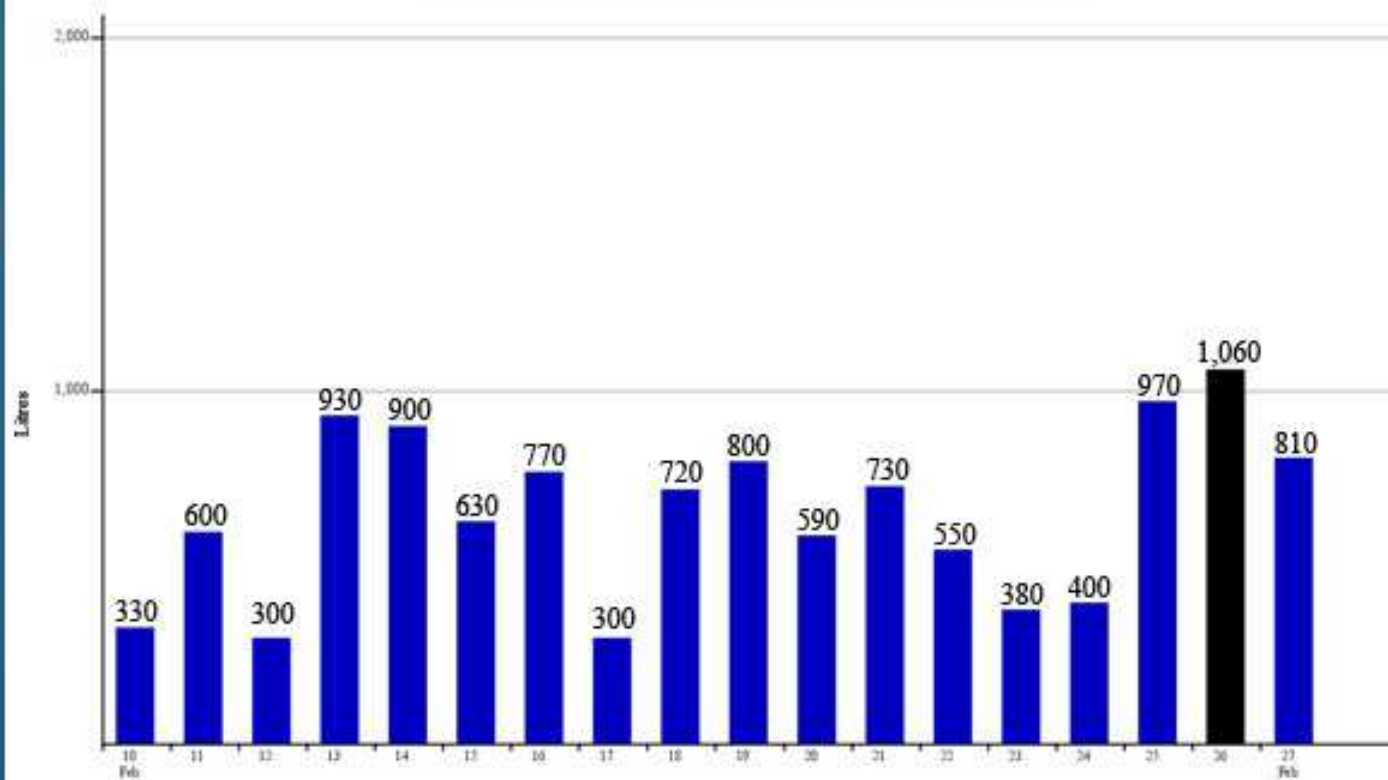


Time Period : 10 Feb 06 through 27 Feb 06
Customer Name : Aconna 3
Address : 50 FORESHORE DRIVE
Meter ID : W437690

Daily Consumption Graph

Utility :
Cycle : 01
Route : 129
Sequence : 000010

Peak Daily Consumption of 1,060 Litres was recorded on Sunday, 26 Feb 06
Total Consumption recorded for the period was 11,770 Litres



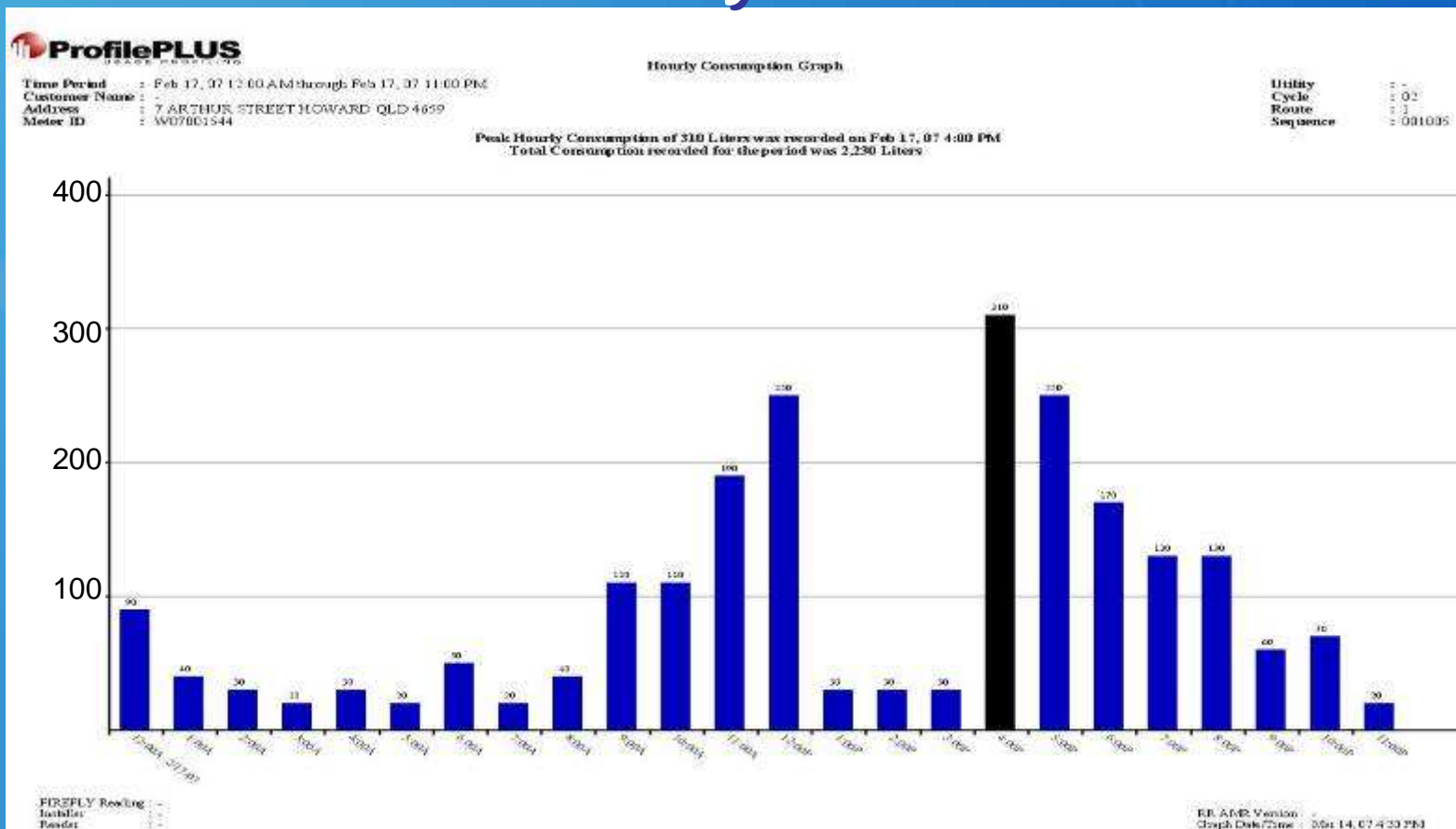
ProfilePLUS
Datafile
Reader

ProfilePLUS Version :
Graph Date/Time : 13 Feb 06 14:09



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Typical Low Flow Leak – Hourly Profile



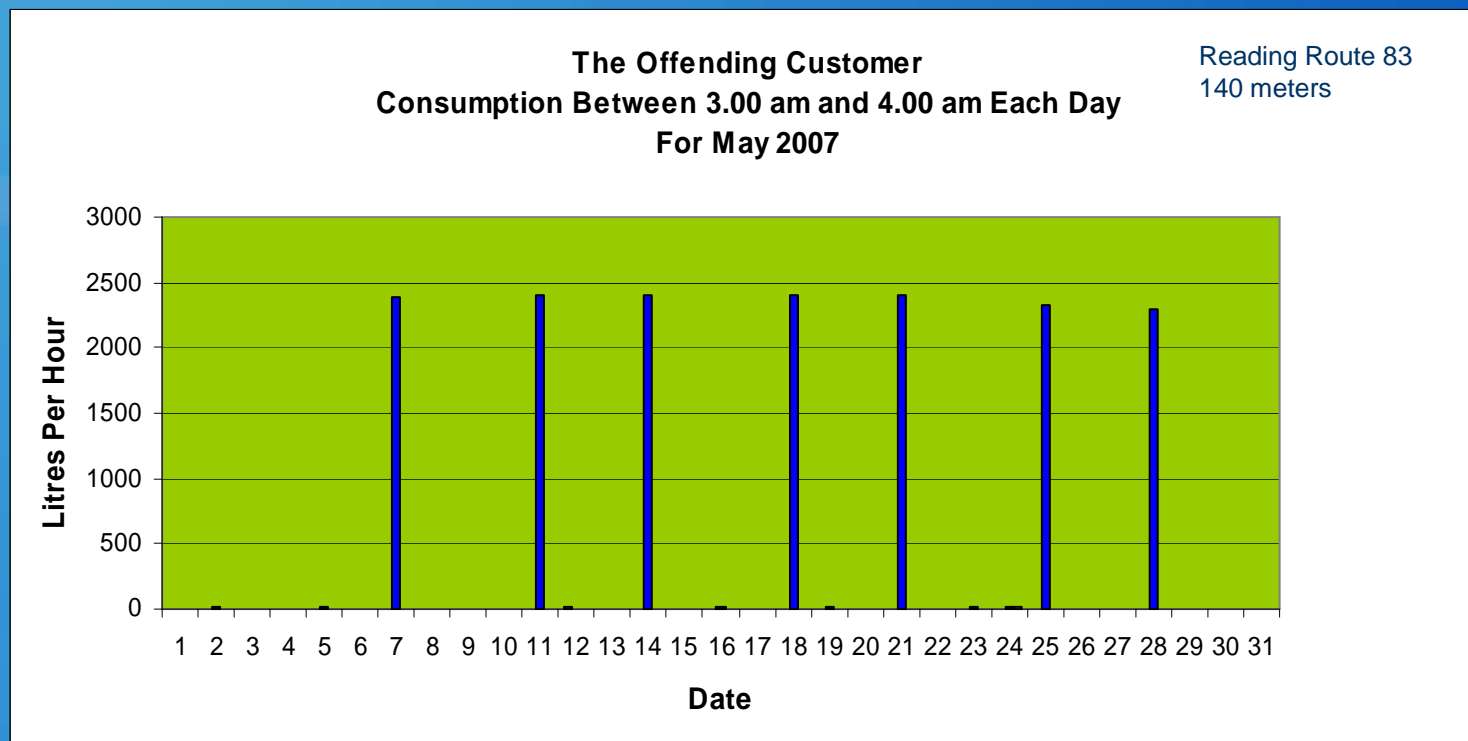
Australian Government Water Fund
Water Smart Australia



Queensland Government
Department of Local Government, Planning,
Sport and Recreation

Monitoring Individual Customer Use During Water Restrictions

(All sprinklers and irrigation banned)



Australian Government Water Fund

Water Smart Australia



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Queensland Government

Department of Local Government, Planning,
Sport and Recreation

Time-of-Use Billing

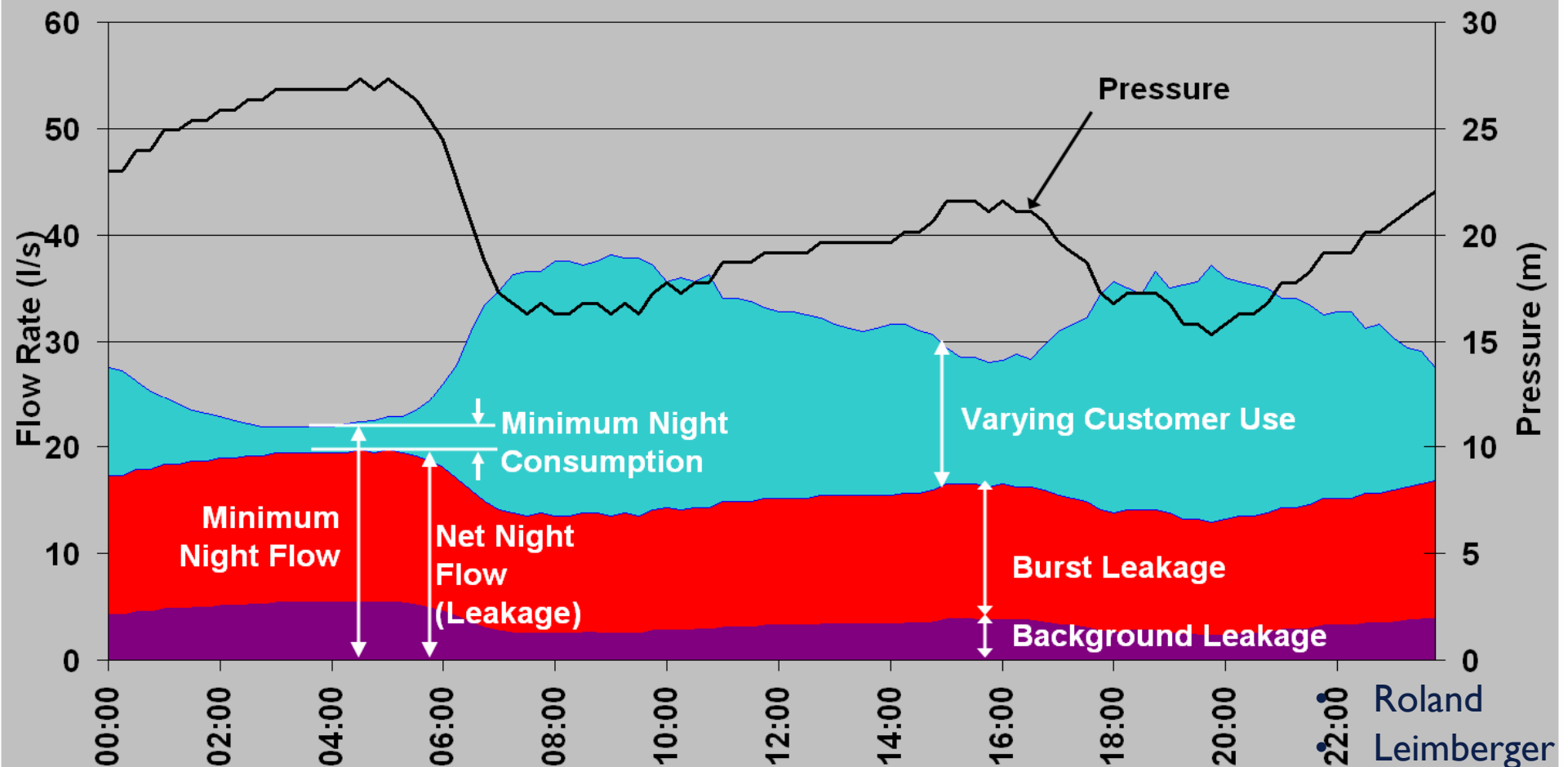
Above all, profile data provides the ability to charge customers *different tariffs* for water used at *different times* of the day



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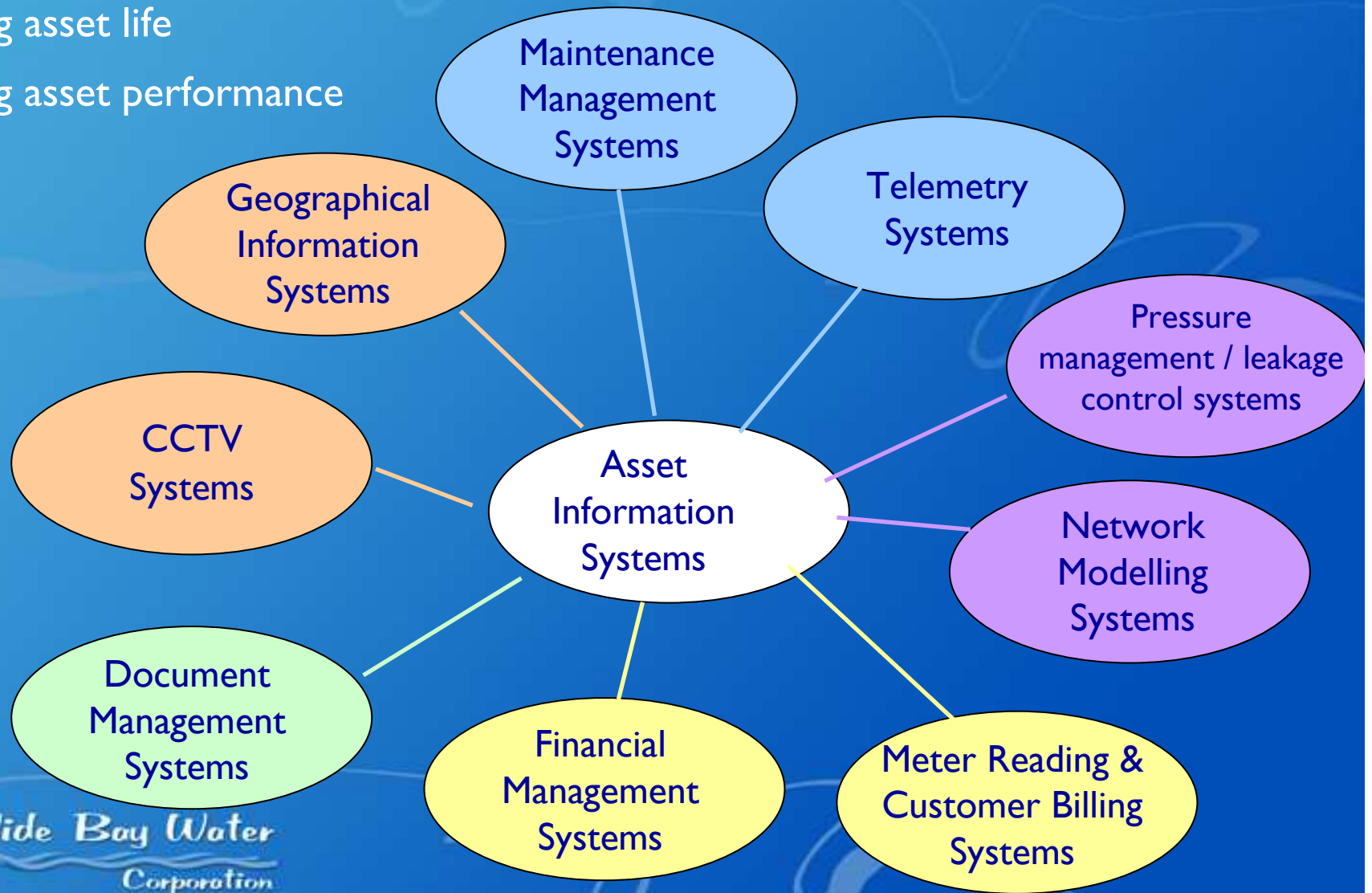
Leakage Modelling



Asset Management Summary

Improving asset life

Improving asset performance



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The Future?

The water crisis in Australia – an opportunity to lead innovation in water pricing reform



Australian Government Water Fund

Water Smart Australia



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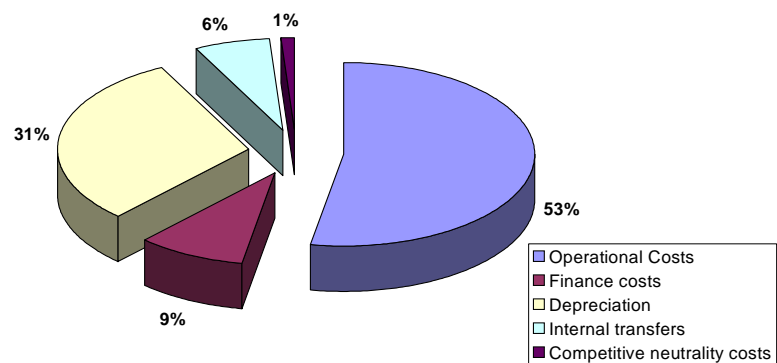


Queensland Government

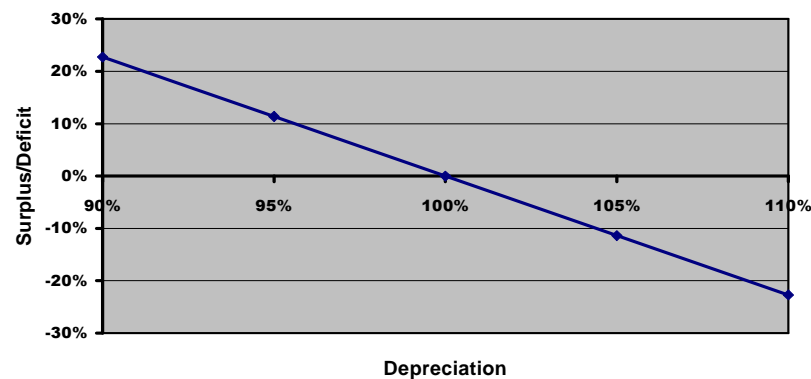
Department of Local Government, Planning,
Sport and Recreation

IMPACT OF DEPRECIATION

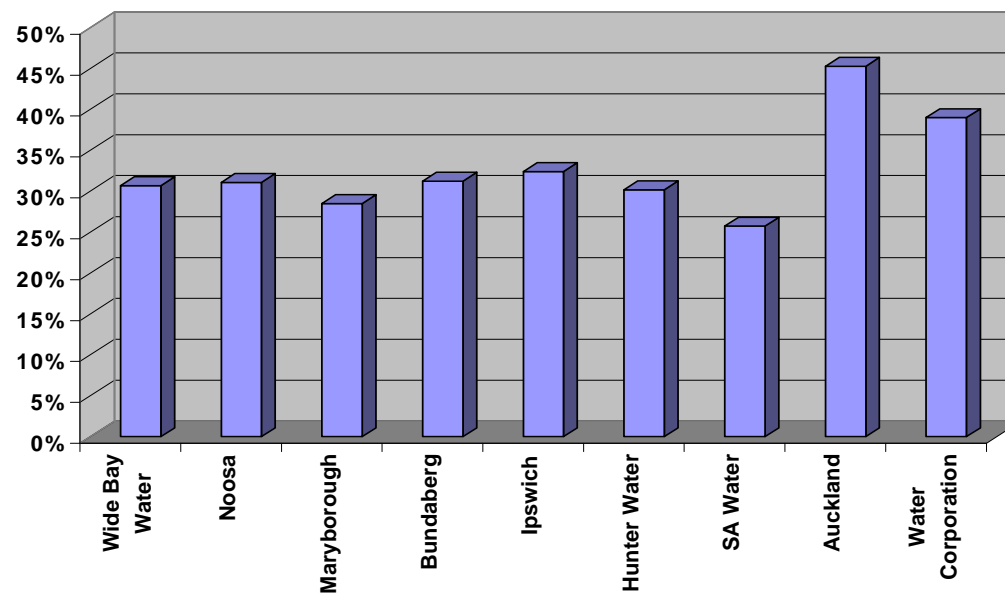
Wide Bay Water Operating Costs 1999/2000



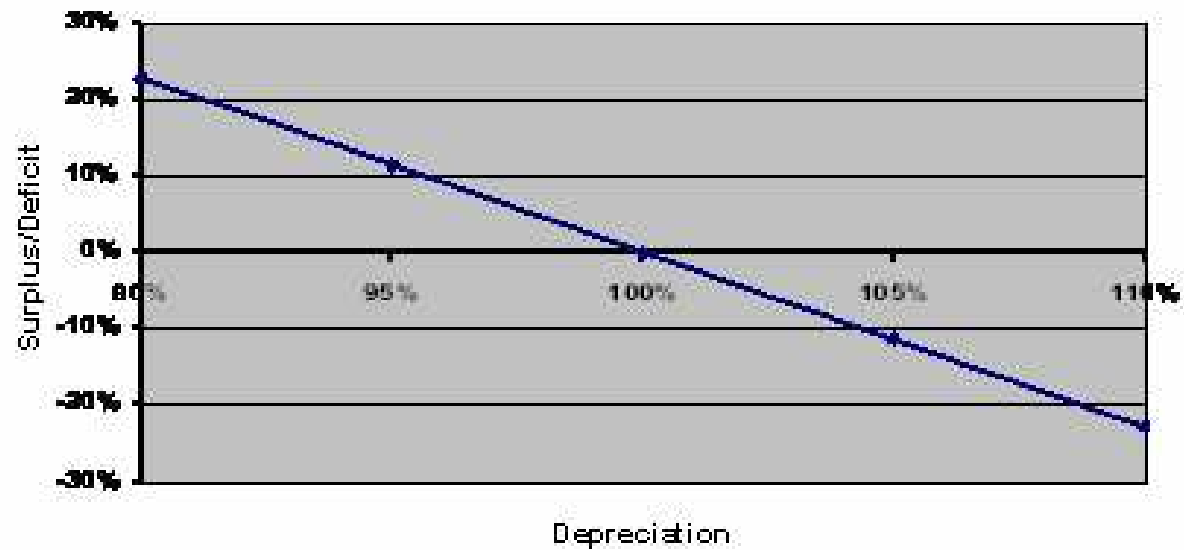
Wide Bay Water
Impact of Depreciation



Depreciation



Wide Bay Water Impact of Depreciation



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**“Whether you think you can or can’t
You are usually right”. *Henry Ford***



We believe we can use Asset Management
to integrate all business knowledge for
asset life extension and performance



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An Australian Integration of Asset Management
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