



WATER SERVICES
ASSOCIATION OF AUSTRALIA

PRESSURE SEWERAGE CODE OF AUSTRALIA

Version 1.1

CONTENTS

PREFACE

INTRODUCTION

PART 0: GLOSSARY OF TERMS AND ABBREVIATIONS

I Glossary of Terms

II Abbreviations

III Referenced Documents

IV Bibliography

PART 1: PLANNING AND DESIGN

Contents

Preface

1 General

2 Concept Design

3 General Design

4 Hydraulic Design

5 Pressure Sewer Design

6 On-Property Design

7 Collection/Pump Units

8 Service Connection Pipe Work

9 Structural Design

Appendix A Air management in Pressure Sewer Systems

Appendix B Specific Water Agency Requirements

PART 2: PRODUCTS AND MATERIALS

Contents

10 Products and Materials Overview

Appendix C Quality Assurance of Products, Quality Assurance Options and Selection

PART 3: CONSTRUCTION

Contents

11 General

12 Quality

13 General Construction

14 Products and Materials

15 Electrical Works

16 Excavation

17 Bedding for Pipes and Collection Tanks

18 System Installation and Jointing

19 Pipe Embedment and Support

20 Fill

21 Inspection and Acceptance Testing

22 Tolerances on As-Constructed Work

23 Restoration

24 Asset Documentation and Work As Constructed Details

Appendix D Specific Water Agency Requirements

PART 4: STANDARD DRAWINGS

Contents

25 Introduction

26 Listing of Standard Drawings

27 Commentary on PSS-1000 Series Drawings – Pressure
Sewerage Network



WATER SERVICES
ASSOCIATION OF AUSTRALIA

PART 1: PLANNING AND DESIGN

Pressure Sewerage Code of Australia
Version 1.1

CONTENTS

PREFACE

1 GENERAL

- 1.1 PLANNING
- 1.2 PRESSURE SEWER SYSTEMS
 - 1.2.1 Pressure system philosophy
 - 1.2.2 Application of pressure sewerage
 - 1.2.3 Description of the system
 - 1.2.4 Advantages and disadvantages
- 1.3 SCOPE
- 1.4 PURPOSE AND APPLICATION
- 1.5 PLANNING AND DESIGN RESPONSIBILITIES AND INTERFACES
 - 1.5.1 General
 - 1.5.2 Planning responsibilities
 - 1.5.3 Design responsibilities
 - 1.5.4 Consultation with other parties
- 1.6 SEWER SYSTEM DESIGN APPROACH
 - 1.6.1 System design life
 - 1.6.2 Objectives of the system design
 - 1.6.3 Design output
- 1.7 DESIGN RESPONSIBILITIES
 - 1.7.1 Concept Plan
 - 1.7.2 Concept Design
 - 1.7.3 Detail Design

2 CONCEPT DESIGN

- 2.1 LIFE CYCLE CONSIDERATIONS
- 2.2 FUNCTIONALITY
- 2.3 MAINTAINABILITY
- 2.4 RELIABILITY
- 2.5 DUE DILIGENCE REQUIREMENTS
- 2.6 MATERIALS DESIGN
- 2.7 STAGING
- 2.8 SEPTICITY CONTROL
 - 2.8.1 Septicity
 - 2.8.2 Sewage quality / Trade waste management
- 2.9 ODOUR CONTROL
- 2.10 TERRORISM
- 2.11 NOISE CONTROL
- 2.12 HEALTH AND SAFETY
 - 2.12.1 General
 - 2.12.2 Hazards
 - 2.12.3 Health and safety
- 2.13 COMMISSIONING PLAN
 - 2.13.1 General
 - 2.13.2 Pre-commissioning
 - 2.13.2.1 General
 - 2.13.2.2 Controls
 - 2.13.2.3 Schedule
 - 2.13.3 Commissioning

3 GENERAL DESIGN

- 3.1 GENERAL
- 3.2 DESIGN TOLERANCES

3.3 LEVELS

3.4 UNFORESEEN GROUND CONDITIONS

3.5 IMPACT OF CONSEQUENTIAL DAMAGE

3.6 ENVIRONMENTAL CONSIDERATIONS

3.6.1 General

3.6.2 Urban salinity

3.6.3 Vegetation

3.6.4 Contaminated sites

3.6.5 Tidal zones

3.7 EASEMENTS

3.7.1 Reticulation sewers

3.7.2 On-property components

3.8 RAILWAY RESERVES

3.9 SPECIAL DESIGN CONSIDERATIONS

3.10 MECHANICAL PROTECTION OF PIPELINES

3.11 OVERHEAD POWER LINES AND TRANSMISSION TOWERS

3.12 OBSTRUCTIONS AND CLEARANCES

3.12.1 General

3.12.2 Deviation of pipelines around structures

3.12.3 Clearance from structures

3.12.4 Clearance requirements

3.12.5 Crossings

3.13 TRENCHLESS TECHNIQUES

3.14 DISUSED OR REDUNDANT PIPELINES

3.15 SEWAGE QUALITY

3.15.1 Septicity

3.15.2 Sewage quality / Trade waste management

4 HYDRAULIC DESIGN

4.1 INTRODUCTION

4.2 GRAVITY SEWERS

4.3 DESIGN INPUTS AND OUTPUTS

4.4 DESIGN FLOWS AND THEIR VARIABILITY

4.4.1 Sanitary flows

4.4.2 Infiltration and inflows

4.4.3 Peak flows from homes and required pumping rates

4.4.4 Design flows

4.4.4.1 General

4.4.4.2 Simplified design flow equation

4.4.4.3 Design flow verification

4.5 SIZING OF PRESSURE SEWERS

4.5.1 General

4.5.2 Minimum pipe sizes

4.5.1 Pipe sizing by analysis

4.5.3.1 General

4.5.3.2 Head losses

4.5.3.3 Hydraulic roughness values

4.5.3.4 Required flow velocities in pressure sewers

5 PRESSURE SEWER DESIGN

5.1 PRESSURE SEWER LAYOUT

5.1.1 System configuration

5.1.2 Zoning

5.1.3 Location of network system

5.1.4 Alignment of pressure sewers

5.1.5 Pressure sewers in road reserves

5.1.6 Location markers

5.2 PRESSURE SEWER PROFILES

5.2.1 Profile design

5.3 VALVES—GENERAL

5.3.1 Valves design

5.3.2 Location

5.3.3 Selection considerations

5.3.4 Installation

5.4 ISOLATION VALVES

5.4.1 General

5.4.2 Isolation valve locations

5.4.3 Isolation valve covers and surrounds

5.5 AIR RELEASE AND VACUUM BREAK VALVES

5.5.1 Installation design criteria

5.5.2 Types

5.5.3 Size

5.5.4 Locations

5.5.5 Chambers

5.6 PROVISION FOR CONDITION MONITORING, SAMPLING AND MAINTENANCE

5.6.1 General

5.6.2 Flushing points and scours

5.6.3 Sampling points

5.6.4 Chambers

5.7 FLOW METERS

6 ON-PROPERTY DESIGN

6.1 DESIGN CONSIDERATIONS

6.1.1 Property Sewer Service Diagram

6.1.2 Design tolerances

6.2 CLEARANCES

6.3 VACANT LOTS

6.4 EXISTING PROPERTY DATA COLLECTION

6.5 DESIGN AND LAYOUT OF NEW ON-PROPERTY COMPONENTS

6.6 CONTROL AND ALARM PANELS

6.7 SIGNAGE

7 COLLECTION/PUMP UNITS

7.1 GENERAL DESIGN REQUIREMENTS

7.2 EMERGENCY STORAGE

7.2.1 General

7.2.2 Emergency pumping arrangements

7.3 LOCATION

7.4 MAXIMUM FLOWS TO COLLECTION/PUMP UNITS

7.5 FLOTATION

7.6 COVERS AND FRAMES

7.7 CONNECTION TO CUSTOMER SANITARY DRAIN

7.8 GRINDER PUMP IDENTIFICATION

8 SERVICE CONNECTION PIPE WORK

8.1 PROPERTY DISCHARGE LINE

8.2 LATERALS

8.3 DESIGN CRITERIA

8.4 DEPTH OF PIPEWORK

8.5 SURFACE BOXES

9 STRUCTURAL DESIGN

9.1 DIFFICULT GROUND CONDITIONS

9.1.1 Foundation design and ground water control

9.2 PRESSURE SEWERS

- 9.2.1 General
- 9.2.2 Pipe cover
- 9.2.3 Trench design
- 9.2.4 Shared trenching
- 9.2.5 Pipe embedment
- 9.2.6 Other structural design considerations

APPENDIX A AIR MANAGEMENT IN PRESSURE SEWER SYSTEMS

- A1 INTRODUCTION
- A2 AIR ENTRAPMENT
- A3 REQUIRED FLOW VELOCITIES
- A4 AIR RELEASE

APPENDIX B SPECIFIC WATER AGENCY REQUIREMENTS

- B1 SYDNEY WATER
 - B1.1 Easements
 - B1.2 Vacant lots
 - B1.3 Emergency storage
- B2 MELBOURNE RETAIL WATER AGENCIES
 - B2.1 Easements
- B3 SOUTH EAST WATER
 - B3.1 Vacant lots

TABLES

- 1.1 NOMINAL ASSET DESIGN LIFE
- 3.1 CLEARANCES BETWEEN PIPELINES AND UNDERGROUND SERVICES
- 3.2 RISK OF SEPTICITY

FIGURES

- I PLAN OF TYPICAL ON-PROPERTY COMPONENTS OF PRESSURE SEWER SYSTEM
- II SECTION OF TYPICAL ON-PROPERTY COMPONENTS OF PRESSURE SEWER SYSTEM FOR SERVICING EXISTING PROPERTIES
- 1 PRESSURE SEWER SYSTEM DISAGGREGATION DIAGRAM
 - 1.1 CONCEPT DESIGN FLOWCHART
 - 2.1 OVERFLOW RISK REDUCTION DECISION DIAGRAM
 - 2.2 TYPICAL PRE-COMMISSIONING AND COMMISSIONING PROCESS
 - 2.3 TYPICAL HANDOVER TO WATER AGENCY
 - 4.1 SYSTEM PRESSURE/COMPONENT PRESSURE RELATIONSHIP
 - 5.1 TYPICAL DENDRITIC PRESSURE SEWER SYSTEM LAYOUT
 - 6.1 ALTERNATIVE ARRANGEMENTS FOR TERMINATION AT VACANT LOTS



WATER SERVICES
ASSOCIATION OF AUSTRALIA

PART 2: PRODUCTS AND MATERIALS

Pressure Sewerage Code of Australia
Version 1.1

CONTENTS

10 PRODUCTS AND MATERIALS OVERVIEW

- 10.1 PURPOSE
- 10.2 SCOPE
- 10.3 RESPONSIBILITIES
 - 10.3.1 Water Agency
 - 10.3.2 Designer
 - 10.3.3 Constructor
 - 10.3.4 Purchaser
- 10.4 PRODUCT AND MATERIAL STANDARDS AND SPECIFICATIONS
 - 10.4.1 Product standards
 - 10.4.2 Purchase specifications
- 10.5 QUALITY ASSURANCE
 - 10.5.1 Default requirement
 - 10.5.2 Additional information on quality assurance
 - 10.5.3 Innovative products and materials
- 10.6 COLLECTION TANK/PUMP UNITS
 - 10.6.1 General
 - 10.6.2 Grinder pumps
 - 10.6.2.1 General
 - 10.6.2.2 Over-pressure protection
 - 10.6.3 Collection tanks
- 10.7 PIPEWORK AND FITTINGS FOR PRESSURE SEWERS
 - 10.7.1 General
 - 10.7.2 Polyethylene (PE) pipes and fittings
 - 10.7.3 Pipeline identification
 - 10.7.4 PE for directional drilling
 - 10.7.5 Polyvinyl chloride (PVC) pipes and fittings
- 10.8 EFFECT OF CHEMICALS
- 10.9 CORROSION PROTECTION
 - 10.9.1 Application
 - 10.9.2 Corrosion protection against aggressive environments
 - 10.9.3 Protection against contaminated ground
- 10.10 ADDITIONAL PRODUCT AND MATERIAL INFORMATION

APPENDIX C QUALITY ASSURANCE OF PRODUCTS QUALITY ASSURANCE OPTIONS AND SELECTION

- C1 GENERAL
- C2 QUALITY ASSURANCE OPTIONS
 - C2.1 ISO 9001 quality management system certification
 - C2.2 Product certification
 - C2.2.1 General
 - C2.2.2 Product certification – Type 1
 - C2.2.3 Product certification – Type 3
 - C2.2.4 Product certification – Type 5
 - C2.3 Supplier's declaration of conformance
 - C2.4 Second party verification
- C3 FACTORS INFLUENCING SELECTION OF QUALITY ASSURANCE OPTIONS
 - C3.1 General factors
 - C3.2 Likelihood of manufacturing non-conformance
 - C3.3 Likelihood of failure of pipeline system from a product non-conformance
 - C3.4 Consequences of failure
 - C3.5 Product specification
 - C3.6 Project magnitude / management
 - C3.7 Innovative products

C4 SELECTING THE QUALITY ASSURANCE OPTION

C4.1 General factors

C4.2 Product certification

C4.2.1 General

C4.2.2 Type 1

C4.2.3 Type 3

C4.2.4 Type 5

C4.3 ISO 9001 quality management system certification

C4.4 Supplier's declaration of conformance

C4.5 Second party verification

TABLES

10.1 LIST OF PURCHASE SPECIFICATIONS FOR PRESSURE SEWERAGE

10.2 INTERNAL DIAMETERS OF PE PIPES

10.3 GUIDANCE TO THE RELATIVE ACID, SOLVENT AND OZONE
RESISTANCE OF ELASTOMERS



WATER SERVICES
ASSOCIATION OF AUSTRALIA

PART 3: CONSTRUCTION

Pressure Sewerage Code of Australia
Version 1.1

CONTENTS

11 GENERAL

11.1 SCOPE

11.2 INTERPRETATION

12 QUALITY

12.1 QUALITY ASSURANCE

12.1.1 General

12.1.2 Quality system

12.1.3 Project management plan

12.1.4 Inspection and test plans

12.1.5 Quality tests

12.1.6 Quality audits

12.1.7 Traceability

12.1.8 Quality records

12.1.9 Inspection

12.2 PERSONNEL QUALIFICATIONS

13 GENERAL CONSTRUCTION

13.1 GENERAL

13.2 ORDER OF CONSTRUCTION, TESTING AND COMMISSIONING

13.3 CONTRACT INTERFACES

13.4 CUSTOMER FOCUS

13.4.1 General

13.4.2 Resolution of complaints

13.5 PROTECTION OF PEOPLE, PROPERTY AND ENVIRONMENT

13.5.1 Safety of people

13.5.2 Protection of other services

13.5.3 Disused / Redundant sewers, drains and tanks

13.5.4 Road reserves or other thoroughfares

13.5.4.1 Treatment of pavements and other surfaces

13.5.4.2 Traffic management

13.5.4.3 Cleanliness of roads, paths, accesses and drainage paths

13.5.4.4 Storage of products, materials and equipment

13.5.4.5 Obstruction of street drainage

13.5.4.6 Private and public properties

13.5.5 Protection of the environment and heritage areas

13.5.5.1 General

13.5.5.2 Collection and disposal of wastes

13.5.5.3 Protection of adjacent lands and vegetation

13.5.5.4 Control of water pollution

13.5.5.5 Contaminated soils

13.5.5.6 Control of noise and atmospheric pollution

13.6 AFFECTED PARTY NOTIFICATIONS

13.7 ALTERATION OF EXISTING SERVICES

13.8 SURVEY MARKS

13.9 CONSTRUCTION TOLERANCES

13.10 LATENT CONDITIONS

14 PRODUCTS AND MATERIALS

14.1 GENERAL

14.2 AUTHORISED PRODUCTS AND MATERIALS

14.3 REJECTED PRODUCTS AND MATERIALS

14.4 TRANSPORTATION, HANDLING AND STORAGE OF PRODUCTS AND MATERIALS

14.5 DELIVERY INSPECTION OF PRODUCTS AND MATERIALS

14.6 CONCRETE WORKS

- 14.6.1 Delivery
- 14.6.2 Transportation of concrete
- 14.6.3 Formwork
- 14.6.4 Reinforcement
- 14.6.5 Placement
 - 14.6.5.1 General
 - 14.6.5.2 Placement in water
- 14.6.6 Slump
- 14.6.7 Compaction
- 14.6.8 Stripping
- 14.6.9 Curing
- 14.6.10 Repair of blemishes

14.7 SUPPLY OF WATER TO THE WORKS

14.8 ON-SITE STOCKPILES

15 ELECTRICAL WORKS

15.1 COMPLIANCE WITH AUTHORITIES, STATUTES, REGULATIONS AND STANDARDS

15.2 SCOPE OF WORK

15.3 ELECTRICAL DISTRIBUTION BOX

16 EXCAVATION

16.1 SAFETY

16.2 LIMITS OF EXCAVATION

16.3 EXCAVATION ACROSS IMPROVED SURFACES

16.4 EXCAVATION IN ROOT ZONES

16.5 BLASTING

16.6 SUPPORT OF EXCAVATIONS

16.7 DRAINAGE AND DEWATERING

16.8 FOUNDATIONS AND FOUNDATION STABILISATION

16.9 SURPLUS EXCAVATED MATERIAL

17 BEDDING FOR PIPES AND COLLECTION TANKS

17.1 TRENCH FLOOR PREPARATION

17.2 BEDDING MATERIALS

17.3 PLACEMENT OF BEDDING

17.4 SPECIAL PIPE SUPPORT FOR NON-SUPPORTIVE SOILS

18 SYSTEM INSTALLATION AND JOINTING

18.1 GENERAL

18.2 CLEANING, INSPECTION AND JOINT PREPARATION

18.3 PE WELD PRE-QUALIFICATION

18.3.1 Electrofusion

18.3.2 Butt fusion

18.3.3 Quality plans

18.4 OPEN TRENCH INSTALLATION

18.5 TRENCHLESS INSTALLATION

18.6 JOINTING

18.7 THRUST AND ANCHOR BLOCKS AND RESTRAINED JOINTS

18.8 PRESSURE SEWER LATERALS, PROPERTY BOUNDARY ASSEMBLIES

18.9 ON-PROPERTY ITEMS

18.9.1 Collection/Pump units

18.9.2 Customer sanitary drains

18.9.3 Property discharge lines

18.10 PIPELINE TRACER WIRES AND DETECTABLE MARKING TAPES

18.11 MECHANICAL PROTECTION OF PIPELINES

18.12 SQUEEZE-OFF

18.13 VALVES, VALVE CHAMBERS, SCOURS AND SURFACE FITTINGS

18.14 CROSSINGS

18.15 LOCATION MARKERS

19 PIPE EMBEDMENT AND SUPPORT

19.1 GENERAL

19.2 EMBEDMENT MATERIALS

19.3 COMPACTION OF EMBEDMENT

19.3.1 Methods

19.3.2 Compaction trials / Pre-qualification of embedment compaction method

19.3.2.1 General

19.3.2.2 Test Method

19.3.2.3 Interpretation and applicability

19.3.3 Compaction control

19.4 SPECIAL BEDDING AND EMBEDMENTS / GEOTEXTILE SURROUND AND PILLOW

19.5 REMOVAL OF TRENCH SUPPORTS

19.6 GROUTING REQUIREMENTS FOR TRENCHLESS INSTALLTION

19.7 CONCRETE EMBEDMENT AND ENCASEMENT

20 FILL

20.1 TRENCH FILL

20.1.1 Placement

20.1.2 Material requirements

20.1.3 Compaction of trench fill

20.2 EMBANKMENT FILL

21 INSPECTION AND ACCEPTANCE TESTING

21.1 GENERAL

21.2 VISUAL INSPECTION

21.3 COMPACTION TESTING

21.3.1 General

21.3.2 Minimum compaction

21.3.3 Embedment compaction testing

21.3.3.1 Applicable pipe sizes

21.3.3.2 Frequency and location of embedment tests

21.3.3.3 Retesting

21.3.4 Trench fill compaction testing

21.3.4.1 Trafficable areas test zone

21.3.4.2 Non-trafficable areas test zone

21.3.4.3 Property services

21.3.4.4 Frequency and location of tests

21.3.4.5 Retesting

21.3.5 Other fill compaction testing

21.3.5.1 General

21.3.5.2 Trafficable areas test zone

21.3.5.3 Non-trafficable areas test zone

21.3.5.4 Frequency and location of tests

21.3.5.5 Retesting

21.4 PRESSURE TESTING

21.4.1 General

21.4.2 System test pressure

21.4.3 Maximum allowable loss

21.5 TEST PROCEDURE FOR PE

21.5.1 General

21.5.2 Test procedure selection

21.5.3 Basic pressure test (Visual)

21.5.4 General pressure test (Technical)

21.5.4.1 General

21.5.4.2 Test principle

21.5.4.3 Test procedure

21.6 TEST PROCEDURE FOR OTHER MATERIALS

21.6.2 Satisfactory pressure test

21.7 COLLECTION/PUMP UNIT

21.8 CUSTOMER SANITARY DRAIN(S)

22 TOLERANCES ON AS-CONSTRUCTED WORK

22.1 GENERAL

22.2 HORIZONTAL TOLERANCES

22.3 VERTICAL TOLERANCES

22.4 VERTICALITY ("PLUMB")

22.5 TOLERANCES ON FINISHED SURFACE STRUCTURES AND FITTINGS

22.6 CAST IN-SITU CONCRETE STRUCTURES AND SLABS

23 RESTORATION

23.1 GENERAL

23.2 PAVEMENTS

23.3 LAWNS

23.4 GRASSED AREAS

23.5 BUSHLAND

23.6 PROVISION FOR SETTLEMENT

23.7 MAINTENANCE OF RESTORED SURFACES

24 ASSET DOCUMENTATION AND WORK AS CONSTRUCTED DETAILS

24.1 ASSET DOCUMENTATION

24.2 WORK AS CONSTRUCTED DETAILS

24.3 CUSTOMER INFORMATION

APPENDIX D SPECIFIC WATER AGENCY REQUIREMENTS

D1 SOUTH EAST WATER

D1.1 Material requirements of trench fill

TABLES

19.1 MAXIMUM PARTICLE SIZE

21.1 MINIMUM COMPACTION OF EMBEDMENT AND TRENCH/
EMBANKMENT / OTHER FILLS



WATER SERVICES
ASSOCIATION OF AUSTRALIA

PART 4: DRAWINGS

Pressure Sewerage Code of Australia
Version 1.1

CONTENTS

25 INTRODUCTION

25.1 GENERAL

25.2 DRAWING COMMENTARY

26 LISTING OF STANDARD DRAWINGS

27 COMMENTARY ON PSS-1000 SERIES DRAWINGS – PRESSURE SEWERAGE NETWORK

27.1 GENERAL

27.2 PSS-1000 – EMBEDMENT AND TRENCH FILL – TYPICAL ARRANGEMENT

27.3 PSS-1001 – SPECIAL EMBEDMENTS – CONCRETE AND CEMENT STABILISED SYSTEMS

27.4 PSS-1002, PSS-1003 AND PSS-1004 – BURIED CROSSINGS

27.5 PSS-1005 – TYPICAL VALVE INSTALLATION – SHROUD PIPE AND FITTINGS ASSEMBLY

27.6 PSS-1006 – TYPICAL APPURTENANCES – VALVE AND VENT SHAFT DETAILS

27.7 PSS-1007 – TYPICAL APPURTENANCES – FLUSHING POINT DETAILS

27.8 PSS-1100 – DESIGN LAYOUT – TYPICAL LOCALITY AND SITE PLAN

27.9 PSS-1101 – ON-PROPERTY LAYOUT – TYPICAL ARRANGEMENT AND SANITARY DRAINAGE DETAILS

27.10 PSS-1102 – PROPERTY BOUNDARY ASSEMBLY – TYPICAL INSTALLATION

26 LISTING OF STANDARD DRAWINGS

DRAWING NUMBER	ACTIVITY	TITLE
PRESSURE SEWERAGE NETWORK		
PSS-1000	Embedment and Trench Fill	Typical Arrangement
PSS-1001	Special Embedments	Concrete and Cement Stabilised Systems
PSS-1002	Buried Crossings	Major Roadways
PSS-1003	Buried Crossings	Under Obstructions
PSS-1004	Buried Crossings	Railways
PSS-1005	Typical Valve Installation	Shroud Pipe and Fittings Assembly
PSS-1006	Typical Appurtenances	Valve And Vent Shaft Details
PSS-1007	Typical Appurtenances	Details - Flushing Point
ON-PROPERTY COMPONENTS		
PSS-1100	Design Layout	Typical Locality and Site Plan
PSS-1101	On-Property Layout	Typical Arrangement and Sanitary Drainage Details
PSS-1102	Property Boundary Assembly	Typical Installation
PIPELINE LAYOUT		
WAT-1102	Typical Mains Construction	Reticulation Main Arrangements
WAT-1106	Property Services	Single Service Main to Meter
WAT-1107	Property Services	Split Service Main to Meter
WAT-1108	Property Services	Connection to Main
WAT-1109	Property Services	Above Ground Meter Assembly Arrangement
EMBEDMENT / TRENCHFILL AND RESTRAINTS		
WAT-1200	Soil Classification Guidelines	And Allowable Bearing Pressures for Anchors and Thrust Blocks
WAT-1205	Thrust Block Details	Concrete Blocks
WAT-1206	Thrust Block Details	Timber & Recycled Plastic Blocks
WAT-1207	Thrust and Anchor Blocks	Gate Valves and Vertical Bends
WAT-1208	Restrained Joint System	DN 100 to DN 375 DI Mains
WAT-1209	Trench Drainage	Bulkheads and Trenchstop
WAT-1210	Trench Drainage	Typical Systems
INSTALLATION PRACTICES / STRUCTURES		
WAT-1307	Typical Appurtenance Installation	Scour Arrangements
WAT-1312	Aerial Crossings	Bridge Crossing Concepts
FABRICATION DETAILS		
WAT-1409	Hydrant Installation Fittings	PE Assemblies