NWP 07

TRAINING HANDBOOK

WATER TRAINING PACKAGE

NATIONALLY RECOGNISED TRAINING

Registered Training Organisation No. 21058

FOREWORD

The wise management of one of our most precious natural resources, water, is of vital importance to the Australian community and training of operations personnel for the water industry is consistent with Total Quality Management and essential if a high standard of water management is to be attained.

The Water Industry Training Centre Pty Ltd is located at Deakin University's Geelong Campus. Victoria. It maintains comprehensive training facilities which are used for in-Centre training and off-campus training at customer locations. Details of the location of the Centre are given in Section 12 of this Handbook.

The Centre has continued and updated the excellent training programs developed by the former Water Training Centre and specialises in the provision of vocational training for operators of water and wastewater treatment plants throughout Australia.

The Water Industry Training Centre is a corporate member of both the Water Industry Operators Association of Australia (WIOA) and the Australian Water Association (AWA).

The original Water Training Centre was set up by the Victorian Government at Werribee, Victoria in 1978 and the current organisation retains staff with collectively over 60 years of training expertise unique to the water industry. Restructuring of the industry and changes to the way vocational training is offered today, has led to the establishment of the Centre at Deakin University where it leases office and training areas.

The Water Industry Training Centre Pty Ltd. offers an integrated study program leading to the award of:

Certificate II in Water Operations (NWP20107)
Certificate III in Water Operations (NWP30107)
Certificate IV in Water Operations (NWP40107)

These Certificates are part of the Water Training Package (NWP07).

The Centre is a Registered Training Organisation (RTO) and its scope of registration enables it to deliver training and award both Statements of Attainment and Certificates from the Water Training Package.

Demand for training in the many subject areas offered by the Centre comes from throughout Australia and the high standing of the Centre has not been possible without continued support from the many diverse areas of the water industry.

PREFACE

This latest edition of the Water Industry Training Centre Pty Ltd's Training Handbook provides general information concerning the Centre, its training programs, facilities and capabilities. A Training Schedule including a Module Nomination Form detailing Training Fees is circulated every six months and advertises modules and the dates on which they are scheduled. If however, you a have a training requirement that is not listed on the Training Schedule please contact the Training Centre since we can often offer additional modules upon request.

This Training Handbook is distributed widely and additional copies are available on request. Should you wish to be included on the Centre's Mailing List, please contact us.

It is recommended that this Handbook be kept as an overall reference for the Centre. Brief descriptions of the modules offered by the Water Industry Training Centre Pty Ltd have been included in this Handbook and more detailed module descriptions are available upon request.

To view the latest edition of this Handbook, log onto www.witc.com.au and use the WITC Handbook link.

If you have any queries relating to the Handbook please contact the Centre.

Water Industry Training Centre Pty Ltd
P.O. Box 593
Belmont, Vic, 3216.
Tel. (03) 52 440800
Fax (03) 52 440804
www.witc.com.au

TABLE OF CONTENTS

1. INTRODUCTION 1

2. QUALIFICATIONS PATHWAYS ..... ……2

3. STRUCTURE OF THE QUALIFICATIONS …… ..... ……3

4. INDUSTRY SPECIALIZATIONS ……..... …….6

3. ADDITIONAL TRAINING INFORMATION …… ..... …….6

6. THE CENTRE'S STAFF……...9

7. SPECIAL FACILITIES AVAILABLE FOR TRAINING……11

8. MODULE DESCRIPTIONS 12

9. MODULE / UNIT OF COMPETENCY ASSESSMENT 22

10. EXEMPTIONS AND GRIEVANCE PROCEDURES..... 22

11. TRAINING PLANS..... 23

12. ENROLMENTS..... 24

13. GENERAL INFORMATION..... 25

14. LOCATION MAP 27

15. APPENDIX 1 - RPL APPLICATIONS..... 29

1 INTRODUCTION

Certificate II in Water Operations – NWP20107

Certificate III in Water Operations – NWP30107

Certificate IV in Water Operations – NWP40107

The Water Industry Training Centre Pty Ltd is a nationally registered training organisation (RTO) with authority to deliver the Water Training Package. Its relevance to the needs of the Industry is undoubtedly due to the experience gained since 1978 in the delivery of a wide range of programs which have given the antecedent Water Training Centre national prominence in the field of operator training.

As part of the Water Training Package, the Certificate II in Water Operations aims to provide operations staff with the competencies required to efficiently and effectively monitor and operate the processes used in either water and wastewater treatment while the Certificate III in Water Operations aims to provide more senior operations staff with a similar background to monitor and coordinate these treatment processes. The Certificate IV in Water Operations aims to provide operating skills to coordinate and optimise treatment processes. The competencies are described in the Water Training Package (NWP07).

Qualifications in these Certificate courses equip operators to operate their treatment facilities to standards as required to protect public health and the environment.

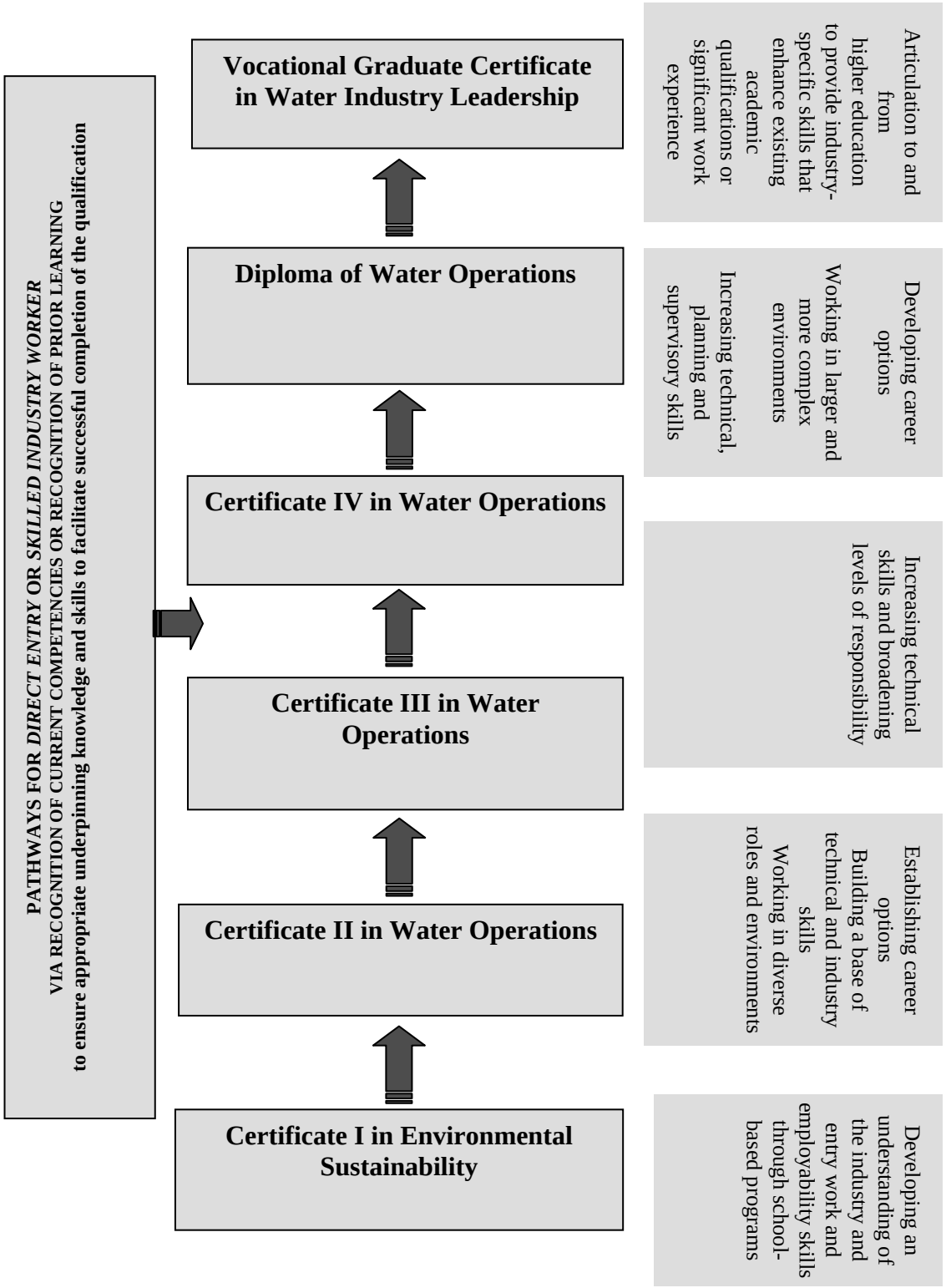
Because of the wide variety of roles and situations represented in the water sector, the content of the training programmes has been planned to be as flexible and adaptable as possible. The modules offered by the WITC are accessible both to personnel who may wish only to enrol for selected units of competency and to personnel who seek to complete a full qualification. In the latter case certain requirements apply and these are explained later in this handbook.

In addition to the technical subject matter delivered, the content also presents some important ancillary study areas such as employability skills and customer relations. Fundamental to all training is an emphasis on the importance of occupational health and safety. This forms a key element of each technical module as well as receiving particular attention within core modules.

Training - An important Strategy in Career Development

Structured training programs provide an opportunity for operations staff to progress their careers in a systematic and productive way. Employers will find that training provides useful indicators of the level of skills possessed by job applicants and their suitability for appointment or promotion.

2 QUALIFICATION PATHWAYS



(extracted from Water Training package NWP07)

3 STRUCTURE OF THE QUALIFICATIONS – WATER & WASTEWATER TREATMENT

3.1 Certificate II in Water Operations

To achieve this qualification the candidate must demonstrate competency in 11 units of competency, comprising three core and eight elective units.

Core *All core units must be completed.*	
NWP201B	Follow defined OHS procedures and regulatory requirements
NWP202B	Apply environmental and licensing procedures
NWP203B	Plan and organise personal work activities
Electives *Eight elective units must be completed.* The elective units must comprise at least five and up to eight electives drawn from the Certificate II elective pool. The balance of units required to complete the qualification may be selected according to the following rules. • A maximum of three units may be drawn from Certificate III level in this Training Package. • A maximum of three relevant units may be drawn from another endorsed Training Package at Certificate II or III level.	
Water & Wastewater relevant elective units	
NWP208A	Perform basic wastewater tests
NWP210B	Perform basic water quality tests
NWP211B	Use computerised systems
NWP218B	Perform and record sampling
NWP219A	Work safely in confined spaces
NWP260A	Monitor and report water treatment processes
NWP261A	Operate and maintain water treatment plant and equipment
NWP262A	Monitor and report wastewater treatment processes
NWP263A	Operate and maintain wastewater treatment plant and equipment
NWP264B	Monitor, operate and report wastewater pre-treatment processes
NWP268B	Monitor, operate and report chlorine disinfection systems
NWP270B	Monitor, operate and report basic anaerobic processes
NWP271B	Monitor, operate and report sedimentation processes
NWP272B	Monitor, operate and report wastewater lagoon processes
NWP273A	Monitor, operate and report ultraviolet irradiation disinfection systems
NWP274A	Monitor, operate and report ozone treatment systems
NWP275A	Monitor, operate and report chlorine dioxide systems
NWP276A	Monitor, operate and report fluoridation systems
NWP277A	Work safely with liquefied chlorine gas
NWP278A	Perform blue green algae sampling

3.2 Certificate III in Water Operations

To achieve this qualification the candidate must demonstrate competency in 11 units of competency, comprising three core and eight elective units.

Core
All units must be completed.

NWP301B	Implement, monitor and coordinate environmental procedures
BSBWOR301A	Organise personal work priorities and development
BSBOHS303B	Contribute to OHS hazard identification and risk assessment

Electives
Eight elective units must be completed.

The elective units must comprise at least four and up to eight electives drawn from the Certificate III elective pool .

The balance of units required to complete the qualification may be selected according to the following rules.

- A maximum of three water industry specific elective units (coded NWP) may be drawn from the Certificate II in this Training Package.
- A maximum of three units may be drawn from this Training Package at Certificate IV level.
- A maximum of three relevant units may be drawn from another endorsed Training Package at Certificate III or IV levels.

Water & Wastewater relevant elective units

NWP300B	Provide and promote customer service
NWP345B	Monitor, operate and control water treatment processes
NWP346B	Monitor, operate and control wastewater treatment processes
NWP347B	Monitor, operate and control coagulation and flocculation processes
NWP348B	Monitor, operate and control sedimentation and clarification processes
NWP349B	Monitor operate and control incineration processes
NWP350B	Monitor, operate and control trickling filters processes
NWP351B	Monitor, operate and control activated sludge processes
NWP352B	Monitor, operate and control dissolved air flotation processes
NWP353B	Monitor, operate and control anaerobic bioreactor processes
NWP354B	Monitor, operate and control granular media filtration processes
NWP355B	Monitor, operate and control membrane filtration processes
NWP356B	Monitor, operate and control ion exchange processes
NWP357B	Monitor, operate and control reverse osmosis and nano filtration processes
NWP359B	Monitor, operate and control nutrient removal processes
NWP360B	Monitor, operate and control dewatering processes
NWP361B	Monitor, operate and control gas scrubber treatment processes
NWP362B	Monitor, operate and control reclaimed water irrigation
NWP363B	Monitor performance and control maintenance of treatment plant assets
NWP364B	Perform laboratory testing
NWP365A	Identify and confirm blue green algae outbreaks
NWP366A	Monitor, operate and control chloramination disinfection processes
NWP367A	Monitor, operate and control activated carbon adsorption processes
NWP368A	Respond to blue green algae incidents

3.3 Certificate IV in Water Operations

The Certificate IV in Water Operations supports candidates seeking competency and requiring increasingly specialised technical skills or those who require a broad range of skills.
To achieve this qualification the candidate must demonstrate competency in nine units, comprising two core and seven elective units of competency.

Core *All core units must be completed.*	
BSBOHS404B	Contribute to the implementation of strategies to control OHS risk
NWP401B	Coordinate and monitor the application of environmental plans and procedures
Electives *Seven elective units must be completed.* The elective units must comprise at least three and up to seven elective units of competency drawn from the elective pool below. The balance of units required to complete the qualification may be selected according to the following rules. • A maximum of two water industry specific elective units (coded NWP) may be drawn from the Certificate III level in this Training Package. • A maximum of three units may be drawn from this Training Package at Diploma level. • A maximum of three relevant units may be drawn from another endorsed Training Package at Certificate IV or Diploma levels.	
NWP219A#	Work safely in confined spaces
NWP444A#	Investigate and plan the optimisation of potable water distribution systems
NWP445A#	Apply principles of chemistry to water treatment processes
NWP446A#	Investigate and plan the optimisation of granular media filtration processes
NWP 447A#	Investigate and plan the optimisation of dissolved air flotation processes
NWP 448A#	Investigate and plan the optimisation of sedimentation and clarification processes
NWP 449A#	Investigate and plan to optimise the operation of chemical addition, coagulation and flocculation processes
NWP450A#	Select treatment requirements for waterborne microorganisms
NWP 451A#	Investigate and plan the optimisation of activated sludge processes
NWP 452A#	Investigate and plan the optimisation of anaerobic treatment processes
NWP 453A#	Select strategies to control microbial impact on wastewater treatment processes
NWP454A#	Contribute to the implementation and continuous improvement of quality systems in the water industry
BSBCMN402A	Develop work priorities
BSBFLM405B	Implement operational plan

 # proposed technical units

4 INDUSTRY SPECIALISATION

All certificates in endorsed Training Packages can be customised to suit industry needs and use industry specialisations (often called 'streams' such as Water Treatment and Wastewater Treatment) relevant to their market and customers that are consistent with the packaging rules of NWP07.

Because of the generic nature of other qualifications, industry specialisations are mainly relevant for Certificates II and III, although may be applied to other qualifications.

The requirements for the industry specialisation must be consistent with the packaging rules for NWP07. An industry specialisation should include a range of units that focus more on the industry specialisation than a generic qualification.

It should be noted that a qualification with an industry specialisation does not change the title of the qualification, although RTOs may choose to record the specialisation, For Example: Certificate III in Water Operations (Water Treatment)

5 ADDITIONAL TRAINING INFORMATION

5.1 Access to Training Package Information

More detailed information on the Water Training Package is available on request from the Water Industry Training Centre Pty Ltd or from the National Training Information Service (NTIS) website – www.ntis.gov.au.

The Centre holds copies of the documentation for all of the courses covered in its Scope of Registration.

5.2 Other Providers

Some units of competency may be awarded by other registered training organisations eg. TAFE colleges. Students will be required to arrange for documentary evidence of units completed successfully with other organisations to be made available to the Water Industry Training Centre to enable credit transfer.

5.3 Single unit of competency / module enrolment

The Centre makes provision for trainees who wish to enrol in specific modules rather than undertake a complete qualification.

Statements of Attainment can awarded for each unit of competency successfully completed. In some cases a single module may be equivalent to a number of units of competency.

5.4 Literacy and Numeracy

Where applicants do not have the prerequisite literacy and numeracy skills for course entry they will be advised of other training providers who could assist them in gaining these prerequisite skills.

5.5 On-Site Delivery of Modules

Selected modules that are provided by the Water Industry Training Centre may be delivered at regional centres on the basis of sufficient local demand and facilities appropriate to the selected module being available eg. suitable laboratory facilities.

Any organisation or regional group wishing to discuss this delivery option should contact the staff of the Water Industry Training Centre.

5.6 Flexible Training Delivery

There are two broad approaches to the Centre's training -

(i) Group Studies - block release typically 2-5 days

- Delivered at the Water Industry Training Centre, Geelong
- On-site in regional locations

(ii) Individual Studies (for selected modules)

- Distance delivery
- Self paced learning.

Flexible delivery enables the trainee to use both of these approaches – block release and distance delivery to suit the requirements of themselves and their employer. Flexibility exists for trainees to change their mode of study as required.

Water Industry Training Centre modules consist of four elements-

(i) Knowledge - Theory

(ii) Skills - Practical competencies

(iii) Assessment.

(iv) On the job application of skills as demonstrated by Workplace Evidence

Knowledge can be attained by either the Group Mode or Individual Mode of Study.

Skills training is delivered in the group mode either at the Centre (Waurn Ponds, Geelong) or on the job by a workplace trainer/assessor.

Assessment of both the knowledge and skills components can be carried out by Water Industry Training Centre staff at the Centre or at a suitable location. The Centre has a wide range of current, well maintained equipment and facilities to support the practical assessment of trainees.

For the award of a Statement of Attainment evidence of on the job application of the skills associated with the unit of competency is required. This evidence can be collected by a suitably qualified workplace supervisor or a workplace assessor.

The proportion of each module which can be undertaken by individual study will vary according to the amount of skills training involved.

5.7 Relevant Legislation

There is a range of legislation that significantly affects students participating in vocational education and training.
Legislation includes:

Occupational Health and Safety Act, 2004, (Vic)
Workplace Relations Act, 1996, (CTH)
Equal Opportunities Act, 1995, (Vic)
Employment, Education and Training Act, 1988, (CTH)
Privacy Act, 1988, (CTH)

Copies of this legislation are held by the WITC and may be viewed by arrangement.

6 THE CENTRE'S STAFF

Greg Creek

Qualifications:
Diploma of Civil Engineering - 1977
Bachelor of Engineering (Civil) – 1979
Post Graduate Diploma in Natural Resources – 1982
Certificate in Water Operations (Water and Wastewater Treatment) – 1992
Certificate IV Training & Assessment - 2006

Experience:

1977 – 1979	Surveyor & Surveyor's Assistant, Ballarat City Council
1980	Supervising Engineer, Rodger & Vickers
1982 – 1983	Design & Supervising Engineer, John Scroggie Consulting Engineers
1983 – 1986	Advisory & Extension Officer, Soil Conservation Authority
1986 – 1989	Planning Officer, Department of Conservation, Forrest & Lands
1989 – 1994	Training Officer, Water Training Centre
1994 – 2007	Project Manager, Environment Protection Authority
2007 -	Senior Training Officer, Water Industry Training Centre

John Park

Qualifications:

Master of Engineering (Environmental) Deakin University 2000
Certificate IV Assessment & Workplace Training - 2000
Diploma of Civil Engineering (1972) Gordon Institute of Technology, Geelong
Engineer of Water Supply (1975) Victorian Water Act

Memberships:

Member, Institute of Engineers, Australia (1972), Australian Water Association (1977)- Victorian Branch Secretary 1980-1993, President 1993-1995, Vic. Branch Federal Councillor 1997-2000, Director 2001-2003
Honorary Life Member 2005

Experience:

1973 - 1980	State Rivers and Water Supply Commission. Engineering duties including surveying, hydraulic modelling, salinity studies, construction and site supervision, liaison with consultants and Water Authorities.
1980 - 2001	Water Training Centre - Senior Training Officer.
2001	Director, Water Industry Training Centre Pty Ltd

Stephen Wilson

Qualifications:

Bachelor of Applied Science (Applied Chemistry) - 1980
Graduate Diploma of Education – 1983
Master of Applied Science (Applied Chemistry) - 1987
Certificate in Water Operations (Water and Wastewater Treatment) – 1991
Certificate IV Assessment & Workplace Training - 2000

Memberships:

Water Industry Operators of Association of Australia – committee member
Australian Water Association – corporate member
Government Skills Australia – Water Industry Advisory Committee - member

Experience:

1982 - 1983 Patent, Trademarks and Design Officer - Canberra
Examining and reporting on patent applications pertinent to water and wastewater processes.

1983 - 1985 Glaxo Aust Pty Ltd - Port Fairy

Research and Development Chemist with involvement in design, implementation and evaluation of experimental work as well as plant commissioning.

1985 - 2001 Water Training Centre - Senior Training Officer.

2001 - Water Industry Training Centre Pty Ltd - Director

Anthea Duthie

Position: Administrative Officer

- Administrative responsibilities including
  - Arrangements for training bookings
  - Maintaining WITC financial matters
  - Maintaining student records in a relational database

7 SPECIAL FACILITIES AVAILABLE FOR TRAINING

7.1 Laboratory

The Centre has access to a well equipped laboratory, with a range of up-to-date scientific equipment required to perform routine process monitoring of water and wastewater treatment plants.

The Centre has a policy of continually upgrading the laboratory equipment and process monitoring procedures in line with current industry standards.

7.2 Pilot Scale Training Rigs

The Centre maintains a number of pilot scale treatment rigs which provide trainees with a hands-on approach to learning.
Examples include

- Filter rig – a modular pilot granular media filter rig which incorporates both single media and dual media filter columns. This rig is fully transportable and can be test run with a wide range of raw water qualities.

- Disinfection of water mains – a transportable pilot water pipe and associated sodium hypochlorite dosing equipment, flow measurement, flow measurement and valving

7.3 Safe Handling of Liquefied Chlorine Gas

Trainees gain hands-on experience at correctly operating simulated disinfection equipment. Breathing apparatus and other safety equipment are used to demonstrate routine change over procedures for gaseous chlorine cylinders in a simulated environment.

8 MODULE DESCRIPTIONS

8.1 List of Modules

(Note: this is a list of training Modules which align to specific units in the training package at the following levels)

MODULE	PAGE NUMBER
CERTIFICATE II	
Chlorination / Hypochlorination	13
Disinfection of Water Mains	13
Hypochlorination	14
Apply Environmental Procedures	14
Fluoridation	14
Lagoons	15
Basic Mathematics	15
Occupational Health and Safety Procedures & Regulations	15
Wastewater Pre-treatment Processes	15
Sampling	16
Plan & Organise Personal Work Activities	16
U.V. Disinfection	16
Water Treatment	16
Wastewater Treatment	17
CERTIFICATE III	
Anaerobic Treatment Processes	17
Activated Sludge	17
Blue Green Algae	18
Chloramination	18
Coagulation/Flocculation	18
Customers and Clients	18
Dissolved Air Flotation	19
Implement & Monitor Environmental Procedures	19
Filtration	19
Ion Exchange Processes	19
Laboratory Skills and Procedures	20
Mechanical Equipment and Maintenance Scheduling	20
Membrane Filtration	20
Nutrient Removal Processes	20
Occupational Health and Safety Risk Assessment	
Organise Personal Work Priorities & Development	
Reverse Osmosis & Nano Filtration Processes	21
Sedimentation/Clarification	21
Sludge Thickening and Dewatering	21
Trickling Filters	21
Water Quality in Distribution Systems	22
Wastewater Treatment Principles and Processes	22
Water Treatment Principles and Processes	22
CERTIFICATE IV	
Monitor & Co-ordinate Environmental Procedures	23
Chemical Procedures	23

8.2 Module Descriptions

Brief descriptions of the modules offered by the Water Industry Training Centre Pty Ltd have been included in this section; more detailed module descriptions are available upon request. These modules have been mapped against the units of competency from the Water Training Package.

8.2.1 CERTIFICATE II

CHLORINATION / HYPOCHLORINATION

Duration: 5 days
Note: that participants need to be clean shaven to obtain competency in the use of Breathing Apparatus.

The topics covered include:

- The need for disinfection, waterborne diseases, indicator organisms and process control
- Gaseous chlorinator & hypo chlorinator components and operation
- Process monitoring and sampling
- Safe handling of chlorine including cylinder change-over using self contained breathing apparatus.
- Sources of water contamination and microbiology processes
- Chlorination principles
- Emergency procedures including plans and implementation
- Process calculation to permit feed rate adjustment
- Routine troubleshooting and fault finding.

DISINFECTION OF WATER MAINS

Duration: 3 days

The topics covered include:

- Theory of chlorination
- Sodium hypochlorite dosing systems
- Water mains disinfection procedures
- Chlorine usage calculations

HYPOCHLORINATION

Duration: 3 days

The topics covered include:

- The disinfection of water and factors which affect the efficiency of the process
- Components and operation of hypochlorination systems
- Process monitoring and sampling
- Procedures for the safe handling of hypochlorites.
- Sources of water contamination and microbiology
- Hypochlorination principles
- Process calculations to permit feed rate adjustment.
- Operation & monitoring of the hypochlorination processes

APPLY ENVIRONMENTAL PROCEDURES

Available by distance learning mode.

The topics covered include:

- Defining environmental impacts and risk
- Characteristics of Environmental Discharges
- Environmental controls and procedures.

FLUORIDATION

Duration: 2 days

The topics covered include:

- Rationale for fluoridation
- Methods of application
- Process Calculations
- Analysis of fluoridated water supplies
- Individual demonstration of fluoride residual measurement
- Safety and emergency procedures.

LAGOONS

Duration: 3 days

Topics covered include:

- Process and design features
- Concepts of lagoon treatment
- Lagoon upgrading principles.
- Lagoon system process calculations
- Routine maintenance procedures
- Troubleshooting lagoon operations.
- Features and operation of lagoon treatment systems
- Observations and monitoring tests for lagoon operation
- Hazards and safe working practices.

BASIC MATHMATICS

Duration: 1 day
* Also available by distance learning mode

The topics covered include:

- Use of a calculator and BODMAS principle
- Fractions and decimals
- Percentages, ratios and averages
- Powers, graphs
- Areas and volumes

OCCUPATIONAL, HEALTH AND SAFETY PROCEDURES & REGULATIONS

* Available by distance learning mode

The topics covered include:

- Role and responsibility of employer, supervisor and employee
- Procedures for the implementation of a safety programme including safe systems of work
- Hazard identification and control of workplace hazards
- Accident reporting and recording procedures

WASTEWATER PRE-TREATMENT PROCESSES

* Available by distance learning mode.

The topics covered include:

- Features of pre-treatment processes
- Routine operation and control of pre-treatment processes
- Process monitoring and chemical usage

SAMPLING

Duration: *2 days
*Also available as a one day seminar style training course

The topics covered include:
- Water and Wastewater sampling
- Algae sampling
- Soil sampling for reuse sites

PLAN & ORGANISE PERSONAL WORK ACTIVITIES

* Available by distance learning mode.

The topics covered include:
- Planning and organising daily work tasks
- Completing work tasks and obtaining feedback.

ULTRAVIOLET DISINFECTION

*Also available by distance learning mode

Duration: 2 days

The topics covered include:
- The need for disinfection of water and wastewater and factors which affect the efficiency.
- Components and operation of a ultraviolet disinfection system
- Monitoring and maintenance of the ultraviolet process.

WATER TREATMENT

Duration: 8 days

The topics covered include:
- The impact of water quality on treatment processes eg. physical, chemical bacteriological.
- Principles and practices of operation of water treatment unit processes
- Operation of major mechanical equipment.
- Safety for water treatment processes
- Disinfection
- Water sources and water use
- Requirements for monitoring water treatment processes
- Individual demonstration of basic process monitoring procedures.
- Sampling.

WASTEWATER TREATMENT

Duration: 8 days

The topics covered include:

- Sources and characteristics of wastewater
- Wastewater quality and operational response to changes
- Operation and features of wastewater treatment processes
- Operation and maintenance programs for a range of wastewater treatment mechanical equipment.
- Safety aspects for wastewater treatment processes
- Monitoring requirements of wastewater treatment processes
- Individual demonstration of basic monitoring procedures for wastewater analyses
- Performance of routine field wastewater treatment monitoring tests.

8.2.2 LEVEL III

ANAEROBIC TREATMENT PROCESSES

Duration: 4 days

Topics covered include:

- Principles of anaerobic treatment
- Anaerobic processes
- Operational requirements
- Process monitoring
- Process calculations.

ACTIVATED SLUDGE

Duration: 5 days

The topics covered include:

- Process features,
- Operation and monitoring procedures for activated sludge processes
- Process calculations for activated sludge
- Performance of monitoring tests and interpretation of results.
- Troubleshooting activated sludge operations
- Flow measurement.

BLUE GREEN ALGAE

Duration: 3 days

The topics covered include:

- Characteristics of blue-green algae and factors which influence growth.
- Methods of control and safety precautions.
- Individual demonstration of blue green algae sampling, identification and counting.
- Reporting arrangements.

CHLORAMINATION

Duration: 3 days

The topics covered include:

- Chloramination principles
- Chloramination processes
- Ammonia handling and emergency procedures
- Process monitoring
- Process calculations
- Operation of liquid ammonia plant.

COAGULATION AND FLOCCULATION

Duration: 5 days

The topics covered include:

- The characteristics of water quality and their impact on water treatment process
- Water quality standards in Australia
- Coagulation-flocculation principles and processes
- Chemical additions including handling, points of application and calibration of feeding equipment.
- Jar testing on a range of raw water samples.

CUSTOMERS & CLIENTS

Available by distance learning mode

The topics covered include:

- Implementing and contributing to customer service standards
- Responding to customer needs

DISSOLVED AIR FLOTATION

Duration: 2 days

The topics covered include:

- Operation and routine maintenance of dissolved air flotation unit processes
- Process calculations
- Process monitoring

IMPLEMENT & MONITOR ENVIRONMENTAL PROCEDURES

Available by distance learning mode

The topics covered include:

- Implementing environmental plans and procedures
- Development of Standard Operating Procedures
- Management of environmental incidents
- Monitoring and reporting on environmental issues.

FILTRATION

Duration: 4 days

The topics covered include:

- Applications, major components and process features
- Operation and safe working practices
- Filter bed function and maintenance procedures
- Process calculations.
- Optimisation and comparison of performance of rapid sand and multi media filters
- Sludge treatment and disposal.

ION EXCHANGE PROCESSES

Duration: 2 days

Topics covered include:

- Ion exchange and adsorption processes
- Operational requirements
- Process monitoring.

LABORATORY SKILLS AND PROCEDURES

Duration: 5 days

The topics covered include:

- Safe working practices in laboratories
- Quality control
- Laboratory equipment
- Gravimetric analysis
- Volumetric analysis
- Instrumental analysis
- Digestion techniques
- Microscopy
- Jar tests
- Individual demonstration of laboratory skills.

MECHANICAL EQUIPMENT AND MAINTENANCE SCHEDULING

Duration: 3 days

Available by distance learning mode

The topics covered include:

- Types of mechanical equipment used in water and wastewater treatment
- Application and basic operation of plant
- Types and operation of pumps
- Preventative maintenance procedures & scheduling maintenance

MEMBRANE FILTRATION PROCESSES

Duration: 3 days
* May be offered jointly with Reverse Osmosis module

The topics covered include:

- Typical membrane processes – micro and ultra filtration
- Operational requirements
- Process monitoring and chemical usage
- Process calculations

NUTRIENT REMOVAL PROCESSES

Duration: 3 days.

Topics covered include:

- Nutrient removal principles
- Nitrogen and phosphorus removal techniques
- Process monitoring data and interpretation of results
- Process monitoring and calculations
- Chemical feeders

OCCUPATIONAL HEALTH & SAFETY RISK ASSESSMENT

Available by distance learning mode

The topics covered include:

- Hazard identification tools
- Workplace hazard ID
- Risk assessment processes
- Identifying risk factors

ORGANISE PERSONAL WORK PRIORITIES & DEVEOLOPMENT

Available by distance learning mode

The topics covered include:

- Planning & conducting work
- Monitoring work quality
- Feedback and information

REVERSE OSMOSIS AND NANO FILTRATION PROCESSES

Duration: 3 days
May be offered jointly with Membrane Filtration Processes

The topics covered include:

- Membrane Processes – reverse osmosis and nano filtration
- Membrane material, form and structure
- Process operation and monitoring
- Process calculations

SEDIMENTATION-CLARIFICATION

Duration: 3 days

The topics covered include:

- Features and operation of sedimentation and clarification processes
- Process calculations
- Process monitoring
- Operational problems and corrective actions

SLUDGE THICKENING AND DEWATERING

Duration: 2 days.

Topics covered include:

- Sludge thickening and dewatering techniques
- Routine operation and maintenance
- Process monitoring
- Process calculations

TRICKLING FILTERS

Available by distance learning mode

The topics covered include:

- Process features of trickling filters and operating variations
- Operation of trickling filters and their maintenance requirements
- Performance of routine monitoring tests
- Trickling filter process calculations
- Troubleshooting trickling filter operations

WATER QUALITY IN DISTRIBUTION SYSTEMS

Duration : 2 days

The topics covered include:

- Physical and chemical characteristics of water
- Microbiological characteristics of water
- Introduction to disinfection
- Sampling
- Corrosion
- Water quality complaints
- Individual demonstration of water quality monitoring procedures

WASTEWATER TREATMENT PRINCIPLES AND PROCESSES

Duration: 5 days

Topics covered include:

- Pre and primary treatment
- Secondary treatment - activated sludge, trickling filters, lagoons
- Sludge digestion and disposal
- Routine process monitoring
- Process calculations

WATER TREATMENT PRINCIPLES AND PROCESSES

Duration: 5 days

Topics covered include:

- Pre-treatment
- Coagulation – flocculation
- Sedimentation – clarification
- Dissolved air flotation
- Filtration
- Sludge thickening and disposal
- Routine process monitoring
- Process calculations

8.2.3 CERTIFICATE IV

MONITOR & CO-ORDINATE ENVIRONMENTAL PROCEDURES

Available by distance learning mode

The topics covered include:

- Environmental Policy, Regulations and Trends
- Environmental Management Systems
- Environmental Impacts from Water Industry Operations
- Effluent and Biosolids Reuse

CHEMICAL PROCESSES

Duration: 3 days

The topics covered include:

- Matter and Energy
- Elements and Compounds
- Chemical Equations
- Acids and Bases
- Solutions and Solubility
- Colloids and Coagulation
- Chemical Properties of Water
- Corrosion
- Saturation Indices
- Water Industry Chemicals – functions and selection criteria
- Storage and Handling of Chemicals.

Further Certificate IV modules will be developed to support the delivery of the proposed water and wastewater technical units shown on page 11.

9 MODULE /UNIT OF COMPETENCY ASSESSMENT.

9.1 Assessment Procedures

Where appropriate, modules / unit of competencies will be assessed in one or more of the following areas:

- Underpinning Knowledge
- Process Calculations
- Skills

The method of assessment varies for each of these areas as follows:

- Underpinning knowledge is tested in short answer, closed book written papers.
- Process calculations are assessed in open book paper.
- The competent performance of relevant skills is assessed by individual demonstration by the participants of the skills involved

For the award of a Statement of Attainment, evidence of on the job application of the skills associated with the unit of competency is required. This evidence can be collected by a suitably qualified workplace supervisor or a workplace assessor.

10 EXEMPTIONS AND GRIEVANCE PROCEDURES

10.1 Recognition of Prior Learning (RPL) & Recognition of Current Competency (RCC)

RPL & RCC processes are available for all course participants. Given the nature of previous skill development for many course participants, much of the prior learning credit consideration will relate to:

- on-the-job work experience;
- short course training development, related to specific processes or equipment applications, provided by manufacturers or suppliers.

The competency standards contained within the Water Industry Training Package will form the basis for RPL and RCC consideration. Information about the unit of competency requirements is available to assist in RPL and RCC applications and assessment.

In some instances RPL & RCC will be based on the successful completion of a challenge test.

The RPL & RCC procedures are outlined in Appendix 1.

10.3 Procedure for Recognition of Prior Learning and Current Competencies

The Water Industry Training Centre Pty Ltd is a Registered Training Organisation (RTO) with authority to deliver Certificate II Certificate III and Certificate IV in Water Operations. As such this organization is obliged to recognize any AQF qualification or Statement of Attainment from any other RTO.

For any credit or exemption to be granted, the trainee must make the claim in writing and must clearly demonstrate that by virtue of any previous studies and work experience, they are worthy of exemption from the unit of competency.(For full details refer to Appendix 1)

The decision relating to the granting of any credit rests with the Water Industry Training Centre and such a decision will only be reached after examination of documented results of prior studies, support information provided and trainee interview, if necessary, related to the request.

Trainees may be required to undertake a Challenge Test (either written or competency based) to validate their claim for credit.

10.4 Grievance Procedures

Any participant who has concerns with the assessment of performance, or any other issue, may discuss these matters with the staff of the Water Industry Training Centre Pty Ltd or submit a more formal written complaint. The organisation will respond to such complaints as quickly as possible and such a response will be made no later than one month after the receipt of the complaint.

11 TRAINING PLANS

Training plans can be prepared for individual trainees on request to meet the Qualification Rules and enterprise requirements.

Training Plans list, recommended Units of Competency based on enterprise requirements and the training modules required to achieve these units.

An RPL process can be integrated into Training Plans where trainees where trainees can provide validated approved evidence.

12 ENROLMENTS

12.1 Enrolment procedures for modules provided by the Water Industry Training Centre.

Organisations will be asked to specify a Training Contact Officer as the formal point of contact for bookings into modules.

An electronic Nomination Form is available on our web site and could be retained as a photocopy/e-mail master.

On receipt of the Nomination Form, the Centre's Booking Officer will send an acceptance letter which will notify the Training Contact Officer of the date of the module/s into which the nominee/s have been booked, together with an invoice for the module fees.

In the event of cancellation of published modules, the Contact Officers will be advised and alternative arrangements publicised. Additional classes may be scheduled according to numbers of nominations received.

12.2 Under age trainees

Trainees under 18 years of age may enrol in off-the-job training at the Water Industry Training Centre Pty Ltd subject to the availability of suitable supervised residential accommodation.

12.3 Student support services

The training delivery for all modules is supported by a Module Reference Manual which is a comprehensive set of notes that are distributed to trainee at the commencement of each module.

The preamble in these notes supplies general information and maps the relationship between Module/s and the Units of Competency from the Water Industry Training Package.

Trainees who are experiencing any difficulty are encouraged to discuss such problems with the Centre's staff who will endeavour to find a sensitive, confidential and timely resolution of any problems.

13 GENERAL INFORMATION

13.1 Travel Arrangements:

Travel to and from the Centre needs to be arranged privately.
AIR TRAVEL: Those trainees who intend to travel by air can travel between Melbourne Airport (Tullamarine) and Geelong by bus using the Gull Airport Service. Buses regularly depart from the lower level between the Domestic and International terminals; the trip to Geelong City takes approximately $1^1/_2$ hrs. Bookings for the bus are recommended and can be made for the Airport to Geelong leg directly through the Gull Bus Airport Service (03) 5222 4966. Some flights can be made directly to Avalon Airport (located approx. 20 km NE of Geelong). Buses also operate form this airport to various places in Geelong; the trip takes approximately $^1/_2$ hr. Bookings for the bus are recommended and can be made on (03) 5278 8788.
TRAIN TRAVEL: The Geelong Railway Station is located approximately 8 km from the Centre. A bus service from the City to the Deakin site is available.

13.2 Commencement of Module:

Registration procedures commence between 9.00 and 9.30am on the first day of each module. Trainees can either assemble at the Training room or report to the Centre's office.

13.3 Accommodation:

Trainees will need to make arrangements with local motels. A list of motels is available on request.

13.4 Meals:

Trainees are advised that they will need to make their own arrangements for all meals. Lunch is available at the Deakin student cafeteria which has a Food Court and the Café in the Geelong Technology Precinct building.

13.5 Telephones:

Phone number for contact - Centre (03) 5244 0800 (office hours), Fax (03) 5244 0804

13.6 Daily Program

First day Registration	9.00 am	-	9.30 am
Morning Sessions	8.30 am	-	12.00 pm
Lunch	12.00 pm	-	12.30 pm
Afternoon Sessions	12.30 pm	-	4.30 pm

Please note that the session hours may be varied occasionally according to need.

13.7 Course Notes:

The training manuals supplied by the Water Industry Training Centre are designed to support operator level training either by distance or off-the-job learning.

All the information given is believed to be from reliable sources and accurate at the time of printing. Please note that errors may occur and operating strategies and guidelines used within the water industry continually change. As a consequence training manuals produced by the Water Industry Training Centre are revised at regular intervals.

If you find information which you believe to be incorrect, contact the Training Centre to allow us to confirm or correct the information.

Whilst these manuals may be considered as a useful general reference they are not intended as either operations manuals or standards and the Water Industry Training Centre accepts no liability to any organization or persons for the information contained in the training manuals.

14 LOCATION MAP

1. The Centre is located at **Deakin University – Waurn Ponds Campus** approx. 8 km south-west of Geelong City on the Princes Hwy (A1- Melway Map 464, Ref. J-5).

2. Referring to the attached map:
   Enter the Geelong Campus on Nicol Drive North.
   Proceed to the 2nd roundabout
   Park in Car Park No. 2 or the free carpark, No. CP11.
   Note that Car Park No. 2 requires a daily parking ticket. Ticket machines are located at the main university entrances.

3. The Water Industry Training Centre Pty Ltd
   Office is located in the Geelong Technology Precinct (Room No. na.1.017)
   Training Room is located in the Science and Technology building (Room No. ka.4.531)

Geelong Campus at Waurn Ponds

accurate as at 29 November 2007

Geelong campus at Waurn Ponds

Building

da **K.D. Stewart Centre:** Auditorium, Sports Centre; Division of Student Life; Small Conference Rooms; Marketing Division
db Nicol Sports Pavilion
fi fe Deakin Childcare Centre
ib Level 1: **Faculty of Business and Law:** School of Law; School of Management Information Systems; Bowater School of Management and Marketing
Level 2: **Faculty of Arts:**
Dean's Office; School of History Heritage and Society; School of International and Political Studies; Faculty Registrar; Financial Controller; Associate Dean (Research); HDR office; Centre for Citizenship and Human Rights
Faculty of Business and Law:
Dean's Office; Faculty Office (Inquiries)
School of Accounting and Finance
School of Management Information Systems
School of Law; MBA Program
ic Level 1: **Faculty of Arts:**
School of Communication and Creative Arts (SCCA)
Level 2: **Faculty of Arts:**
Staff Support Office; Student Support Office
Manager: Teaching and Learning
Manager: International and Partnerships
Manager: Staff and Student Support
School of Social and International Studies (SSIS)
Level 3: **Faculty of Education:**
Centre for Maths, Science & Environmental Education
Deakin Centre for Education and Change
Graduate School of Education
School of Social and Cultural Studies in Education
School of Scientific and Developmental Studies in Education
Faculty of Business and Law:
Management Information Systems
School of Accounting and Finance
Bowater School of Management and Marketing
id Chapel
jb Level 1: **Deakin University Student Association** (DUSA): Student Lounge; Cafeteria
Level 2: **Division of Student Administration** (DSA): Scanning Operations; Assignment Tracking; Student Information Centre; Deakin Merchandise; Deakin International; Deakin Central; Campus Catering Office; GEA—The Shop; Disability Resource Centre (DRC); Versity Hair Studio; ANZ Bank; Bistro; STA Student Travel; UNITEXTS Bookshop (DUSA); Aheadstart JOBshop; Deakin Card Machine
Level 3: **Division of Student Administration** (DSA)
Campus Finance Office: Cashier; Equity and Diversity office; Research Services; Deputy Vice-Chancellor (Research); Information Technology Services (ITS) Financial and Business Services Division Human Resources Services Division (HRSD) Staff Lounge; Breast feeding facilities (next to HRSD)
jc **Library**
Level 1: Library; Knowledge Media Division (KMD)
Level 2: Library Entrance: Offices; Computer catalogues
Level 3: Library books
jd Deakin Lakehouse
ka Level 1: Computer Labs;
Faculty of Science and Technology
Level 2: **ka2.306**—TQRTM Graham Walters and Associates

Building

ka Level 3: **Faculty of Science and Technology:**
School of Life and Environmental Sciences
Level 4: **Faculty of Science and Technology:**
School of Life and Environmental Sciences
School of Engineering and Information Technology (Inquiries)
Level 5: **Faculty of Science and Technology:**
School of Life and Environmental Sciences
School of Engineering and Information Technology
kc Institute of Koorie Education
Faculty of Science and Technology:
School of Engineering and Technology
la Printery; Supply Distribution Centre; Mail Centre
Course materials despatch
Examinations despatch and returns
lc Property Services Division Office (PSD)
lh Property Services Division Workshop (PSD)
lo Astronomy Observatory
na **The Geelong Technology Precinct:**
International Fibre Centre
Water Training Centre
Faculty of Science and Technology
nb **Faculty of Health and Behavioural Sciences:**
Metabolic Research Unit
ChemGenex Pharmaceuticals
nc **Gordon Institute TAFE:**
Shearing Shed
nd **Gordon Institute TAFE:**
Horticultural School
oa **The Management Centre:**
Residential Conference Facility
Professional Associations Division; Deakin Australia
Portables: if Muslim Prayer Room
ie Karingal
io Chaplains
Student Residences:
Barton Annex dc
Hammond units (Barton College) ea→ef
Dawson units (Barton College) eg→en
Solar House ep Collins annex ea Laird annex eo
Barton College common room fa
Gordon units (Deakin College) gb→gf
Evatt units (Watson House) gg→gj
Institute of Koorie Education Study Residences gl→gp
Collins/Laird units (Deakin College) ha
Wookey flats (Deakin College) hb→hd
Percy Baxter Common Room he
Boyd units (Deakin College) hf→hj
Residential Services Office hk
Major Lecture Theatres:
ia Peter Thwaites Lecture Theatre—**LT1**
ib **ib3.311, ib3.232**
ka **ka3.403, ka3.406, ka3.411**
Videoconferencing Rooms:
jb **jb2.107**
ka **ka5.332**
Telephones for internal use only are installed in:
Building da (Level 1), Building ib (Level 1)
Building ib ic (Level 1, Level 2, Level 3)
Building kc (Level 1), Building oa (Level 1)
Wheelchair access to most buildings and student residences but restricted to some areas, but progressively being upgraded as part of the management plan.
Parking: Visitor parking day permits are available from ticket machines. Annual or semester permits can be purchased by staff or students from Campus Finance Offices. Traffic regulations under the *Road Safety Act 1986* are enforced. Owner onus applies.

APPENDIX 1

Guidelines for Applicants:

1. **Recognition of Formal Prior Learning**
(ie. training courses attended)

i). A formal written request must be submitted to the Water Industry Training Centre. A separate request should be made for each Unit sought.

ii) The request should include a copy of any Certificate/s suitably annotated by an executive officer of the applicant's employer stating that the original documents have been sighted.

iii) The attached Application Form and Checklist should be completed and submitted, with requested information.

iv) To determine which Unit of Competence you might be entitled to, refer to Section 3 of the Training Handbook Appendix attached which details Water Industry Training Centre Modules and a mapping to Water Training Package Units.

v) To obtain a list of the Elements of the relevant Unit requested, log on to www.ntis.gov.au and view the relevant information for the Water Training Package (NWP07) or (if you do not have access to the Internet), contact the Centre for details.

An RPL fee applies for the issue of each Statement of Attainment, further charges might be applicable based on the time involved in mapping equivalence.

Certificate II, Certificate III and Certificate IV in Water Industry Operations

Application for Recognition of Prior Learning/Exemption

Name of Applicant.....

Address for correspondence .....

.....Postcode .....

Tel..... Fax .....

Unit of Competence for which credit is sought: ……
(Use Mapping List given in Section 3 and 11 of the Training Handbook)

Attachments Required-

1. **Authenticated** copies of Statements of Attainment/certificates.
2. Completed Checklist
3. Support information documenting curriculum topics and duration.
4. Other support information documenting prior learning/experience.

Office Use Only

Credit/Exemption Form Completed .....

Student Progress Report Updated .....

Advice letter sent .....

Application for Recognition of Prior Learning/Exemption

CHECKLIST

- ☐ Application form completed
- ☐ One application for each Unit of competence sought.
- ☐ Validated copy of Certificate or Statement of Results attached.
- ☐ A statement of the curriculum content of prior completed studies. This should contain a statement of the major topics covered and the duration of each topic. Such information should be available from the Training Provider.
- ☐ Skills and/or knowledge to meet Elements of Unit, details provided, or
- ☐ Experience and knowledge validated by Supervisor attached.
- ☐ Application Fee of $50/unit attached.