



Constructed Waterway Design Manual

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TABLE OF CONTENT

ACRONYMS AND ABBREVIATIONS	4
INTRODUCTION TO THE MANUAL	6
Purpose of the manual.....	6
How to use the manual.....	7
PART A: VISION, OUTCOMES AND CRITERIA	8
A1. DESIGN CONTEXT	9
A2. VISION	10
A2.1 Healthy Waterway Strategy Vision	10
A2.2 Project (Site or Place) Vision.....	10
A3. DESIGN OUTCOMES AND OBJECTIVES	11
A3.1 Asset protection	12
A3.2 Amenity	13
A3.3 Community Connection.....	14
A3.4 Native flora and fauna	14
A3.5 Asset Management	15
A3.6 Design criteria	16
PART B: DESIGN APPROACH AND FUNDAMENTALS.....	17
B1. DESIGN APPROACH.....	18
B1.1 Design stages	18
B1.2 The threshold waterway design method	18
B1.3 Waterway design tools	21
B1.4 Waterway design inputs	21
B1.5 Waterway design outputs	21
B2. WATERWAY DESIGN FUNDAMENTALS.....	22
B2.1 Hydrology and hydraulics	22
B2.2 Physical form, processes and stability	29
B2.3 Ecological values in waterways	39
B2.4 Social Values	43
PART C: DESIGN ACCEPTANCE PROCESS AND DEEMED TO COMPLY	46
C1. DESIGN ACCEPTANCE APPROACH	47
C1.1 Design acceptance options	49
C1.2 Working with Melbourne Water	50
C2. CONCEPT DESIGN STAGE	52
C3. FUNCTIONAL DESIGN STAGE	57
C4. DETAILED DESIGN STAGE.....	61
C5. PRE-CONSTRUCTION STAGE	64
C6. AS-CONSTRUCTED AND ESTABLISHMENT STAGE	67
C7. DEEMED TO COMPLY	71
C7.1 Introduction	71
C7.2 Deemed to Comply criteria.....	71

PART D: TECHNICAL DESIGN ELEMENTS 83

D1. CONCEPT DESIGN 84

D1.1 Background Information 85

D1.2 Context and site analysis 87

D1.3 Place-making considerations 88

D1.4 Establish the waterway corridor width 89

D1.5 Establishing the waterway alignment 90

D1.6 Establish the initial waterway grade 91

D1.7 Determining the waterway type 95

D1.8 Landscape features and waterway structures 97

D2. FUNCTIONAL DESIGN 101

D2.1 Hydrology - design flow rates 103

D2.2 The waterway planform 105

D2.3 Waterway cross-section geometry 113

D2.4 Vegetation design 119

D2.5 Hydraulic structures and interface elements 125

D2.6 Developing a digital terrain model for functional design 127

D2.7 Developing the hydraulic model 127

D2.8 Hydraulic assessment 129

D2.9 Post-construction risk assessment 140

D2.10 Locating engineering and habitat features 144

D3. DETAILED DESIGN 146

D3.1 Design of waterway features 148

D3.2 Incorporate waterway features into the terrain model 168

D3.3 Hydraulic modelling - placement of cross-sections for detailed design investigation 169

PART E: DESIGN TOOLS AND RESOURCES 170

E1. DESIGN TOOLS 171

E1.1 Hydrologic Modelling 172

E1.2 Terrain Modelling 176

E1.3 Hydraulic Modelling 182

E2. DESIGN RESOURCES 189

E2.1 Geology and Soil 190

E2.2 Waterway Types 192

E2.3 Healthy Waterways Visions 198

E2.4 Waterway Protection & Rehabilitation 203

E2.5 Waterway maintenance requirements 204

E2.6 Useful Guidelines 206

ACRONYMS AND ABBREVIATIONS

TERM	DEFINITION
AEP	Annual Exceedance Probability
ARI	Average Recurrence Interval
ARF	Areal Reduction Factor
ARR	Australia Rainfall and Runoff
ARR2019	Australia Rainfall and Runoff, 2019 revision
DEM	Digital Elevation Model
DTM	Digital Terrain Model
EVC	Ecological Vegetation Class
EY	Exceedances per year
IFD	Intensity-frequency-duration as used to specify design rainfalls
MWC	Melbourne Water Corporation
WSUD	Water Sensitive Urban Design
VPP	Victorian Planning Provisions



INTRODUCTION

INTRODUCTION TO THE MANUAL

Waterways provide a range of environmental, cultural, social, and economic benefits. Waterways provide habitat for flora and fauna and are important in sustaining much of our region's native biodiversity. Socially, waterways are important for our wellbeing. They provide places to escape the busy urban landscape, to bird watch, to actively commute, to meet with friends and family, to exercise, and connect with nature. Culturally, they are places of memories, spiritual connection, and ancestral history. Economically, waterways can provide benefits, through provision of drinking water for towns and cities, water for livestock and irrigation (diversion licence dependent) and protect life and property from flood events.

Melbourne Water is the regional waterway manager for more than 8,000 km of waterways in the Port Phillip and Westernport region. Constructed waterways are created to service urbanising catchments, and Melbourne Water is responsible for delivering these new urban waterways as part of our Development Services Schemes.

Greenfield urban development often requires the construction of a new waterway (or substantial modification of an existing, degraded or undersized waterway) to provide an appropriate drainage level of service to a new development. In some cases, a waterway will be partially constructed, to preserve high value remnants of the existing waterway, which may also contain associated flora, fauna and cultural heritage values. In other cases, where such values are not present or not significant, waterways may be fully constructed. Waterways are usually constructed in conjunction with surrounding development in order to service that development.

Well designed, constructed and maintained urban waterways integrate with other stormwater management infrastructure such as constructed wetlands and rain gardens and therefore form a key element in both the water sensitive urban design of new developments and the recreational opportunities this infrastructure provides.

Purpose of the manual

The manual is intended primarily for use by members of the land development industry who design, construct, and establish waterways on behalf of Melbourne Water. The manual can also be used by any multi-disciplinary consultant working on constructed waterway design and may also be a useful resource for other professionals working within the stormwater management, waterway management and land development industry, including authority staff and interested community members.

The aim of the manual is to facilitate the consistent delivery of best practice constructed waterways which are sustainable assets to maintain. The manual will improve the experience of customers working with Melbourne Water during the design, construction, and establishment phases. It articulates Melbourne Water's expectations and requirements for constructed waterways and the appropriate waterway design approach to be used by consultants. The manual also sets out the design acceptance process that applies to constructed waterway designs.

The manual:

- Provides detail on fundamental concepts of waterway function
- Defines best practice in constructed waterway design and why it is required
- Describes the design approach and tools necessary to deliver best practice waterway design
- Articulates the requirements of Melbourne Water's constructed waterway design approach and design acceptance process
- Defines Deemed to Comply criteria
- Provides links to relevant guidelines and resources

How to use the manual

The manual is structured in five Parts, each with a distinct purpose:

Part A: Vision, outcomes and criteria

Sets out the vision and desired outcomes for constructed waterways in Port Phillip and Westernport and presents a detailed description of the design objectives and criteria that will deliver the desired outcomes and realize the vision.

Part B: Design approach and fundamentals

Provides an overview of the constructed waterway design approach and the fundamental waterway values and processes

Part C: Design acceptance process and Deemed to Comply

A detailed description of the concept, functional, and detailed design stages and the associated requirements of Melbourne Water's constructed waterway design acceptance process.

Part D: Technical design elements

A detailed guide for preparing a waterway design that meets the requirements of the key stages in the design acceptance process.

Part E: Design tools and resources

Details of the various analytical design tools, information sources and Melbourne Water resources needed to develop constructed waterway design

It is recommended the waterway designers familiarise themselves with the entire document to gain a full understanding of the requirements of Melbourne Water for best practice constructed waterway design. However, the manual has been written in a way that the parts can be used separately if and when required. The manual is intended for use by engineers, landscape architects, urban designers and ecologists.



Image 1: Simmons Creek, Plenty