

1.1 How to Use the Guide

The Christchurch City Council's Waterways, Wetlands, and Drainage Guide comprises two volumes, Part A and Part B. Both parts integrate a wide range of disciplines, experience and expertise, and reflect a multi-disciplinary approach to the protection, restoration, management, and design of waterways and wetlands (of which the main systems are shown in Figure 1-1).

Part A Includes:

- principles and background information for inter-disciplinary planning and management
- site assessment, developing visions, and a summary of the planning process
- procedures for involving the community
- best practice examples of managing waterways.

Part B Includes:

- information on the impacts of urban and rural development on waterways and wetlands
- information on habitat preferences of birds, fish, and invertebrates found in the Christchurch area
- detailed information for design and management of each component of the waterways, wetlands, and drainage system.

Parts A and B are closely interlinked, neither should be regarded in isolation from the other. In order to reflect the evolving nature of research and technology, Part B particularly, has been designed as a living document, enabling updates of sections to reflect current research and improved practical applications.

1.1.2 A Precip of Part B

Table 1-1 gives an overview of the contents of Part B.

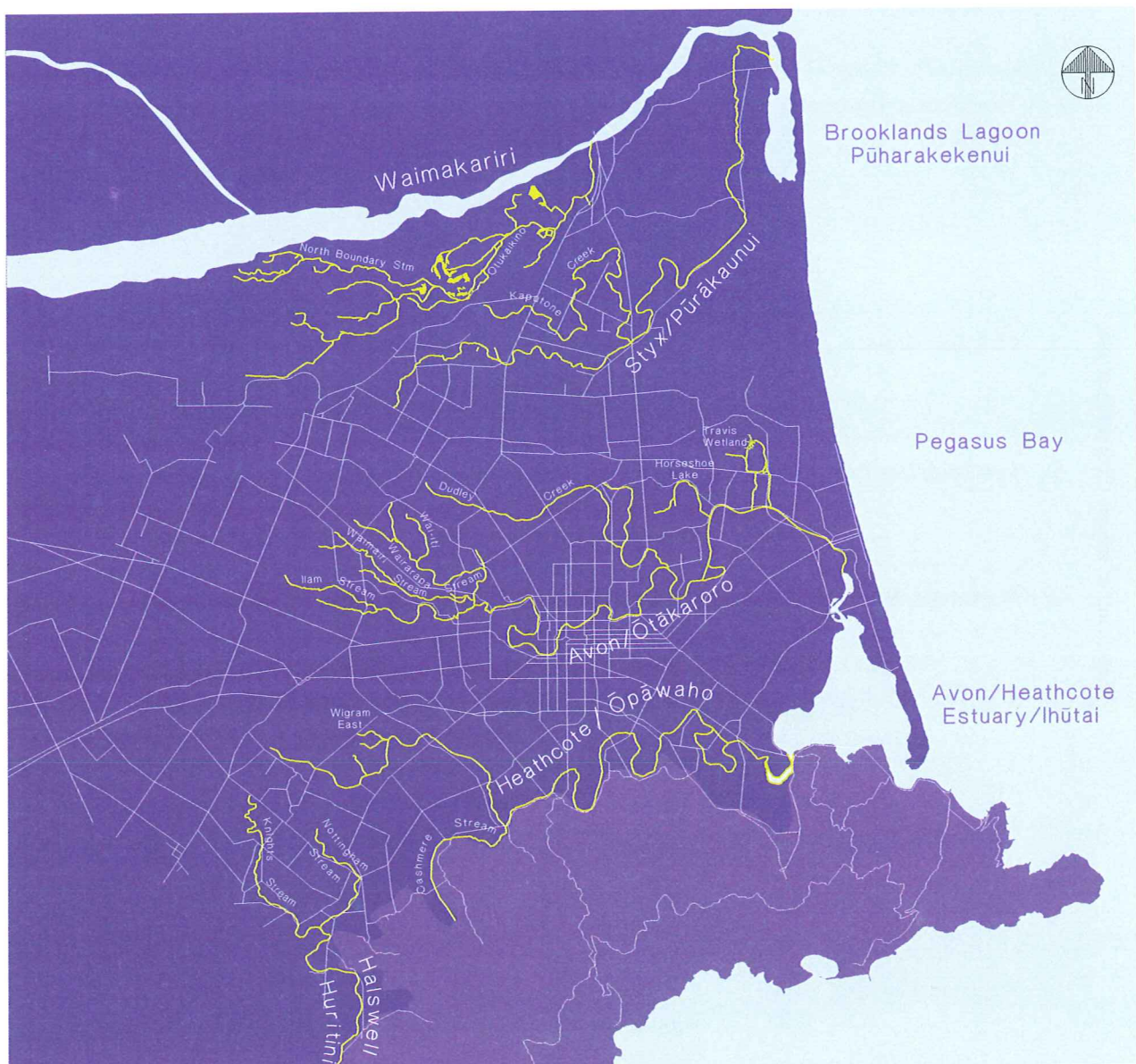


Figure 1-1: Main waterways and wetland systems in the Christchurch area.

Table 1-1 continued: Part B precis of the Waterways, Wetlands, and Drainage Guide.

| Chapter Name | General Description |
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| Waterway Design Considerations | 12: Waterway Erosion Protection Introduces the natural processes of erosion in waterways, and the impacts of development on these erosive forces. Outlines different erosion protection methods, including bed stabilisation and bank protection (bank re-grading and various types of retaining walls). |
| | 13: Waterway Structures Details structures relating to waterways. Includes culverts and bridges (including the design of fish friendly culverts and weirs), fords, grills (including safety, debris separation, design criteria), floodgates, pumping stations, stop banks, and fences adjacent to waterways. |
| | 14: Pipeline Structures Details structures not directly relating to waterways. Includes the detailed design of pipelines (stormwater gravity and pressure pipes), manholes, sumps, and pipe inlet and outfall structures. |
| Other Considerations | 15: Safety Outlines safety considerations that apply to most chapters within Part B. |
| | 16: Public Access Outlines the planning and design considerations for providing public access. |
| | 17: The Consent Process Details how to apply for a building consent, and describes the different types of resource consents used for waterway and wetland design in Canterbury. These consents are issued by the Christchurch City Council and Environment Canterbury. |
| | 18: Mosquitoes and Other Insect Pests Outlines design considerations that may discourage the proliferation of insect pests such as mosquitoes and biting midges, and how to report an insect problem. |
| 19: Operation and Maintenance Provides general information on the operation and maintenance requirements set out elsewhere in the guide. Includes a general operation and maintenance manual checklist. | |
| Technical Information | 20: Inundation Design Performance Standards Sets out design standards for the management of water levels to an acceptable level of inundation risk for various land use types. |
| | 21: Rainfall and Runoff Describes how to determine design rainfall intensity, runoff rates, and rainfall hyetographs for use in sizing waterway components or as input to more detailed hydraulic analysis. |
| | 22: Hydraulics Covers some specific aspects of hydraulic design such as Manning's roughness coefficient, outfall water levels, scour velocities, riffle design, and the hydraulics of structures such as bridges, sumps and weirs. Designers are referred to standard hydraulics textbooks for procedures by which flow depth, velocity, and energy state can be analysed. |