



MILNS BASINS COMPONENTS:

- 1a. Milns first flush basin
- 1b. Milns treatment wetland - No.1
- 1c. Milns treatment wetland - No.2
- 1d. Milns treatment wetland - No.3
- 1e. Milns treatment wetland - No.4

EASTMAN WETLANDS COMPONENTS:

- 2. Flood storage area
- 3a. Halswell Downs first flush basin
- 3b. Halswell Downs treatment wetland
- 4. Spring buffer/wetland forest habitat
- 5. Sutherlands treatment wetland No. 3
- 6. Low flow channel and flood plain
- 7. Potential treatment wetland
- 8. Forest habitat

SUTHERLANDS BASINS COMPONENTS:

- 9a. First flush basin
- 9b. Treatment wetland No. 1
- 9c. Treatment wetland No. 2a
- 9d. Treatment wetland No. 2b

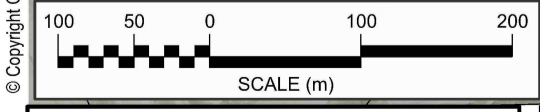
HOON HAY BASINS COMPONENTS:

- 10a. Flood storage wetland
- 10b. First flush basin
- 11. Lizard habitat

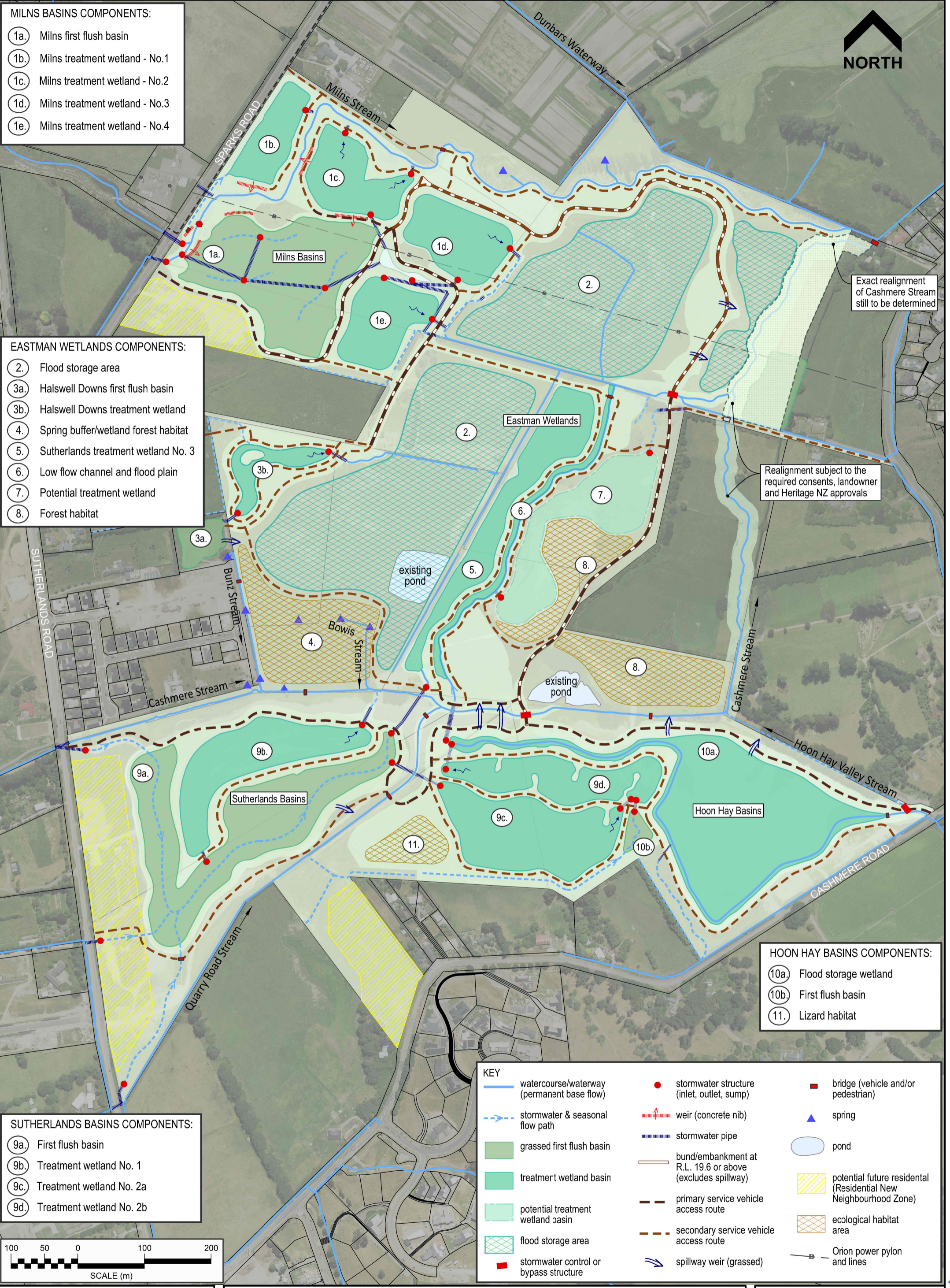
KEY

- | | | |
|--|---|---|
| watercourse/waterway (permanent base flow) | stormwater structure (inlet, outlet, sump) | bridge (vehicle and/or pedestrian) |
| stormwater & seasonal flow path | weir (concrete nib) | spring |
| grassed first flush basin | stormwater pipe | pond |
| treatment wetland basin | bund/embankment at R.L. 19.6 or above (excludes spillway) | potential future residential (Residential New Neighbourhood Zone) |
| potential treatment wetland basin | primary service vehicle access route | ecological habitat area |
| flood storage area | secondary service vehicle access route | Orion power pylon and lines |
| stormwater control or bypass structure | spillway weir (grassed) | |

Original size mm



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Exact realignment of Cashmere Stream still to be determined

Realignment subject to the required consents, landowner and Heritage NZ approvals

CORE ECOLOGICAL HABITAT AREAS:

1. Lowland Wet Grassland with Ephemeral Ponds
Key Species: wetland birds including grazing waterfowl and waders.
2. Juncus Rushland and Carex Sedgeland
Key Species: wetland birds including Australasian Bittern, Marsh and Spotless Crake.



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TANGATA WHENUA VALUES:

- Mahinga kai gathering areas will be sustained by ecological restoration allowing the ongoing customary use of natural resources.
- A mātauranga Māori monitoring programme will be developed.
- Indigenous planted areas will incorporate traditional knowledge and use. Included in the plantings are:
 - a rongoā Māori (traditional medicinal) garden;
 - a pā harakeke garden (flax collection).

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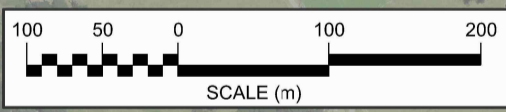
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KEY					
	spring-fed waterway corridor		riparian margin planting (existing)		watercourse/waterway (permanent base flow)
	spring buffer zone		riparian margin planting (proposed)		stormwater and/or seasonal flow path
	ephemeral wetland habitat		native buffer planting (shrubs & groundcovers)		power pylons & lines
	lizard habitat area		existing trees		shared service vehicle and public access route
	Site of Ecological Significance (SES)		specimen trees (proposed)		public access route
	proposed indigenous forest habitat		grassed stormwater basin		bridge (vehicle and/or pedestrian)
	existing native plantings (trees, shrubs & groundcovers)		stormwater treatment wetland basin		potential future residential

ECOLOGICAL CORRIDORS AND NODES:

- | | |
|---|---|
| <p>A. Milns Waterway - riparian and instream habitats
Key species: macroinvertebrates, fish, wetland and bush birds.</p> <p>B. Cashmere Stream - riparian and instream habitats
Key species: macroinvertebrates including wai kōura freshwater crayfish and kākahi/freshwater mussels, fish, wetland and bush birds.</p> <p>C. Indigenous Forest Habitat
Key Species: bush birds including bellbird, kereru, South Island fantail and S.I. tomtit.</p> <p>D. Bunz-Bowis Wetland Forest Habitat
Key Species: macroinvertebrates, fish, wetland and bush birds.</p> | <p>E. Quarry Road Drain - riparian and instream habitats
Key Species: macroinvertebrates, fish, wetland and bush birds.</p> <p>F. Lizard Habitat Zone
Key Species: Southern grass skink.</p> <p>G. Cashmere Road Ephemeral Pond - SES/LP/39
Key Species: Pied still, native waterfowl and waders.
<i>(NOTE: Proposed buffer planting of this SES is on council owned land only.)</i></p> |
|---|---|

- KEY RECREATIONAL ROUTES:**
- A** Milns Basins (circuit via Quarryman's Trail)
 - B** Eastman Wetlands Loop
 - C** Halswell Downs - Cashmere Stream
 - D** Sutherlands Basins
 - E** Hoon Hay Valley Basins
 - F** Sparks Road - Cashmere Road (potential future link)
 - G** Sutherlands Road - Cashmere Road
 - H** Cashmere Stream



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Realignment and public access route subject to landowner and Heritage NZ approvals

Exact realignment of Cashmere Stream still to be determined

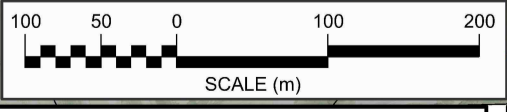
Realignment subject to landowner and Heritage NZ approvals

Proposed location for car park

Potential location for pump track

KEY					
	key recreational track* - gravel/grit/asphalt		watercourse/waterway (permanent base flow)		ecological habitat area
	other recreational track* - grit or grass		stormwater and/or seasonal flow path		riparian margin planting
	potential public access route		grassed stormwater basin		native planting
	defined crossing point (bridge or alternative)		stormwater treatment wetland basin		native buffer planting
	potential or proposed location for future car park		flood storage area/wetland habitat		indigenous forest
	pre-1900 drain/waterway alignment to be retained		pond		specimen trees
	potential location for site information / interpretation / viewing		spring		potential future residential
			Quarryman's Trail		power pylons & lines

* NOTE: Track locations shown are indicative only. Not all connections between the tracks, neighbouring subdivisions or roads are shown, these will be determined at the detailed design stage.



- KEY:**
- watercourse/waterway (permanent base flow)
 - stormwater and/or seasonal flow path
 - pond
 - spring
 - stormwater pipe
 - weir
 - stormwater control or bypass structure
 - stormwater structure (inlet, outlet or sump)
 - shared service vehicle and public access route
 - public access route
 - potential location for future car park
 - power pylons & lines
 - potential future residential
 - grassed first flush basin (existing)
 - stormwater treatment wetland (existing)
 - stormwater treatment wetland (proposed)
 - ephemeral wetland/wetland bird habitat
 - lizard habitat area
 - riparian margin planting (existing)
 - riparian margin planting (proposed)
 - existing native plantings (trees, shrubs & groundcovers)
 - native buffer planting (shrubs & groundcovers)
 - proposed indigenous forest habitat
 - existing trees
 - specimen trees (proposed)

NOTE: Proposed works subject to required approvals and consents including Heritage New Zealand Pouhere Taonga authority.



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EASTMAN WETLANDS, SUTHERLAND AND HOON HAY BASINS MASTER PLAN - SIX VALUES

This Master Plan has been developed utilising 'The Waterways, Wetlands and Drainage Design Guide' Six Values approach and is underpinned by the 'South-West Area Plan'. The Six Values correspond to a number of the Key Issues set out in the area plan, the goal for each of these providing the framework for each value:

Drainage	'Provide a high quality naturalised water environment, connected across the South-West.'
Ecology	'Establish a variety of indigenous forest and wetland habitats, connected by ecological corridors.'
Landscape	'Incorporate local landscape features into urban development and public open space to maintain landscape character.'
Recreation	'Develop a diverse, connected and attractive public open space network that encourages use and enjoyment.'
Culture	'Actively protect and restore values significant to tangata whenua, both historic and contemporary.'
Heritage	'Conserve and protect European and other emerging cultural and heritage values.'

