

Boffa Miskell






APPENDIX 3: TE HAKAPUPU PLEASANT RIVER CATCHMENT MAPS

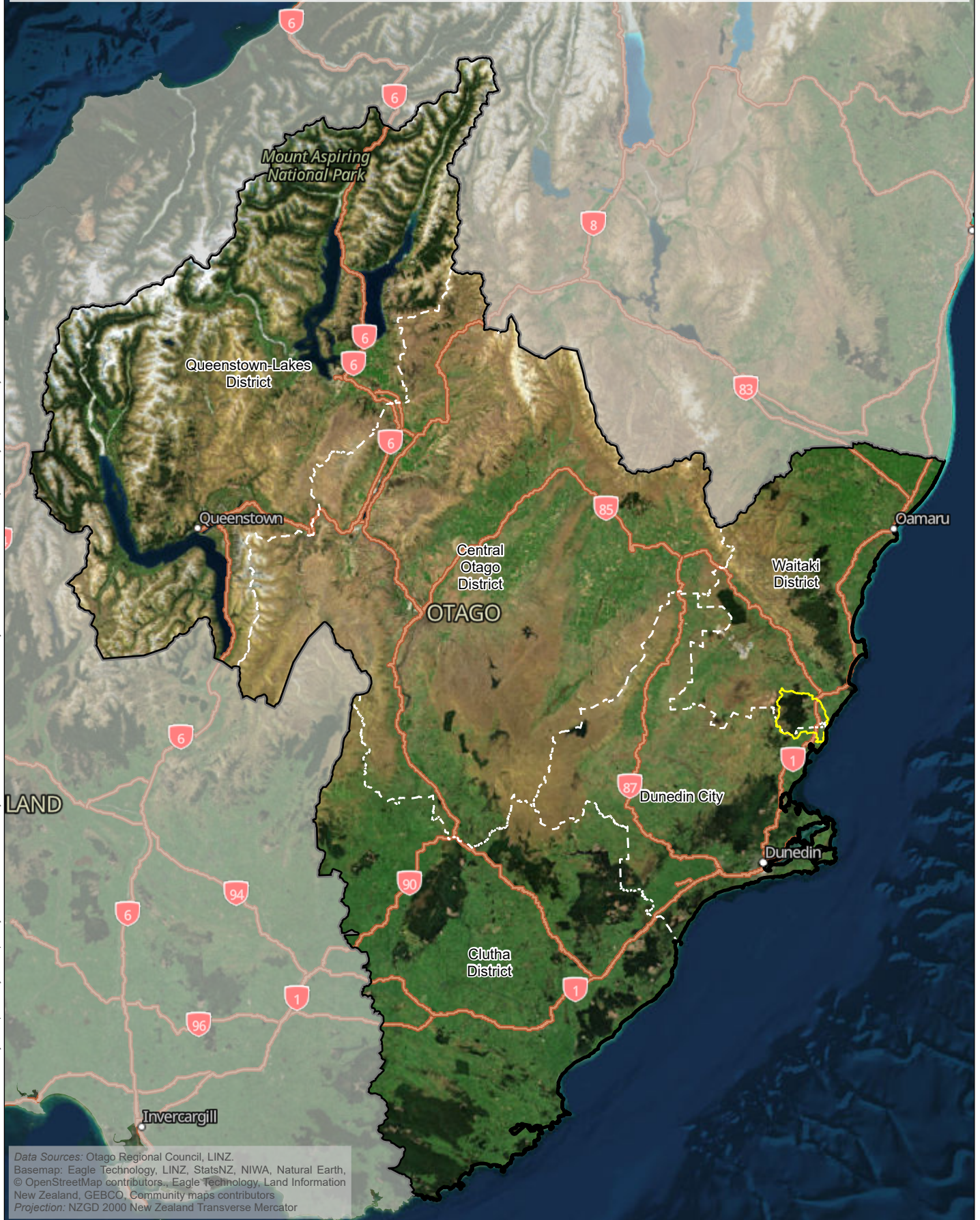
FEASIBILITY REPORT MAPS

DECEMBER 2024

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LEGEND

-  Mt Pleasant / Te Hikapupu catchment
-  Otago Region
-  Territorial Authority boundary



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0 20 km

1:1,350,000 @ A4

TE HAKAPUPU CATCHMENT NATURE-BASED SOLUTIONS

Catchment Location

Date: 04 December 2024 | Revision: 0

Plan prepared for Otago Regional Council by Boffa Miskell Limited

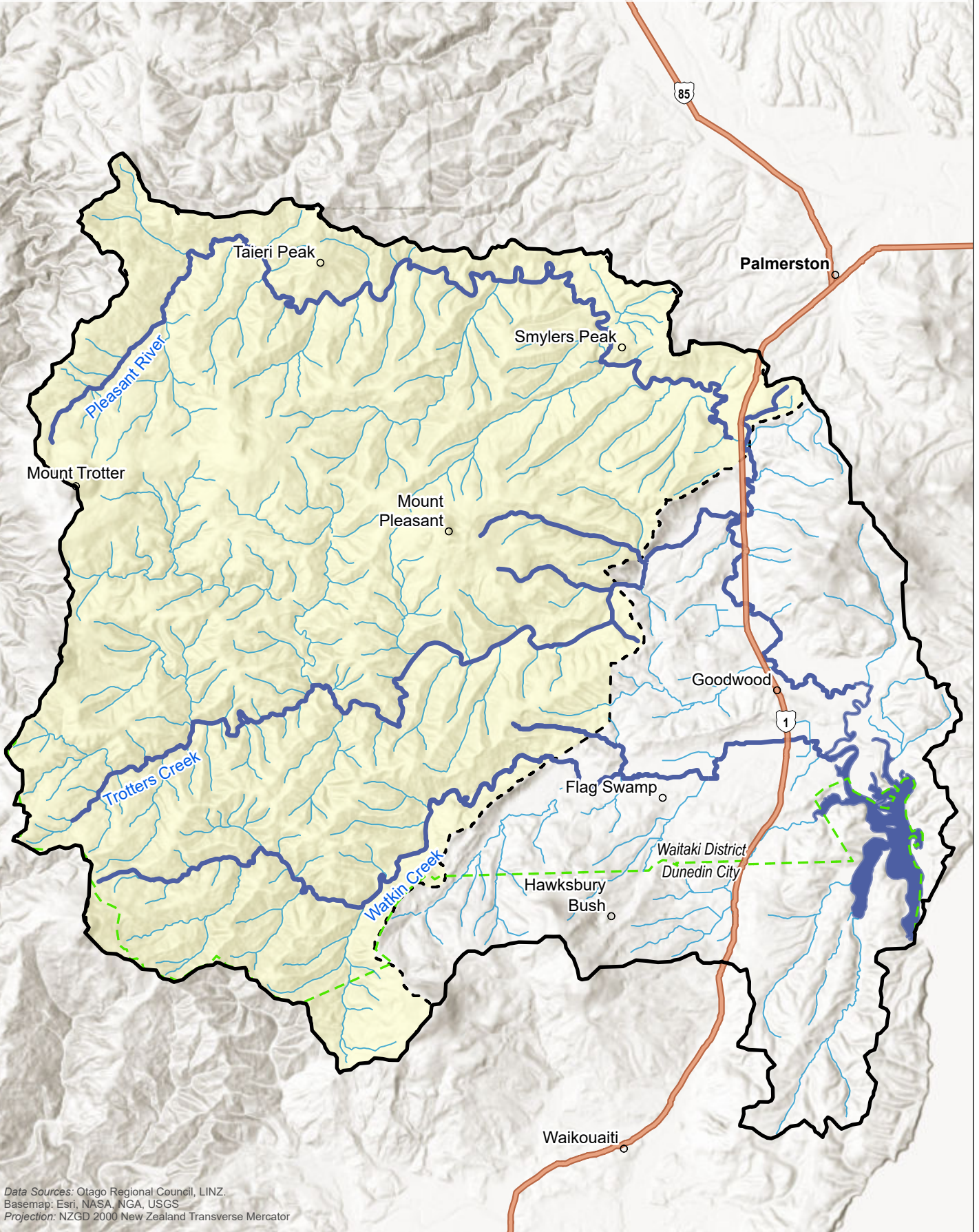
Project Manager: Rachael.Eaton@boffamiskell.co.nz | Drawn: LJa | Checked: SPa

MAP 1

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LEGEND

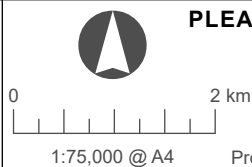
- Mt Pleasant / Te Hakapupu catchment
- Tributaries
- River / Waterway
- Pleasant River / Te Hakapupu Estuary
- Upper catchment
- Territorial Authority boundary



Data Sources: Otago Regional Council, LINZ.
 Basemap: Esri, NASA, NGA, USGS
 Projection: NZGD 2000 New Zealand Transverse Mercator



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PLEASANT RIVER / TE HAKAPUPU CATCHMENT NATURE-BASED SOLUTIONS

Feasibility Study

Date: 05 December 2024 | Revision: 0

Plan prepared for Otago Regional Council by Boffa Miskell Limited

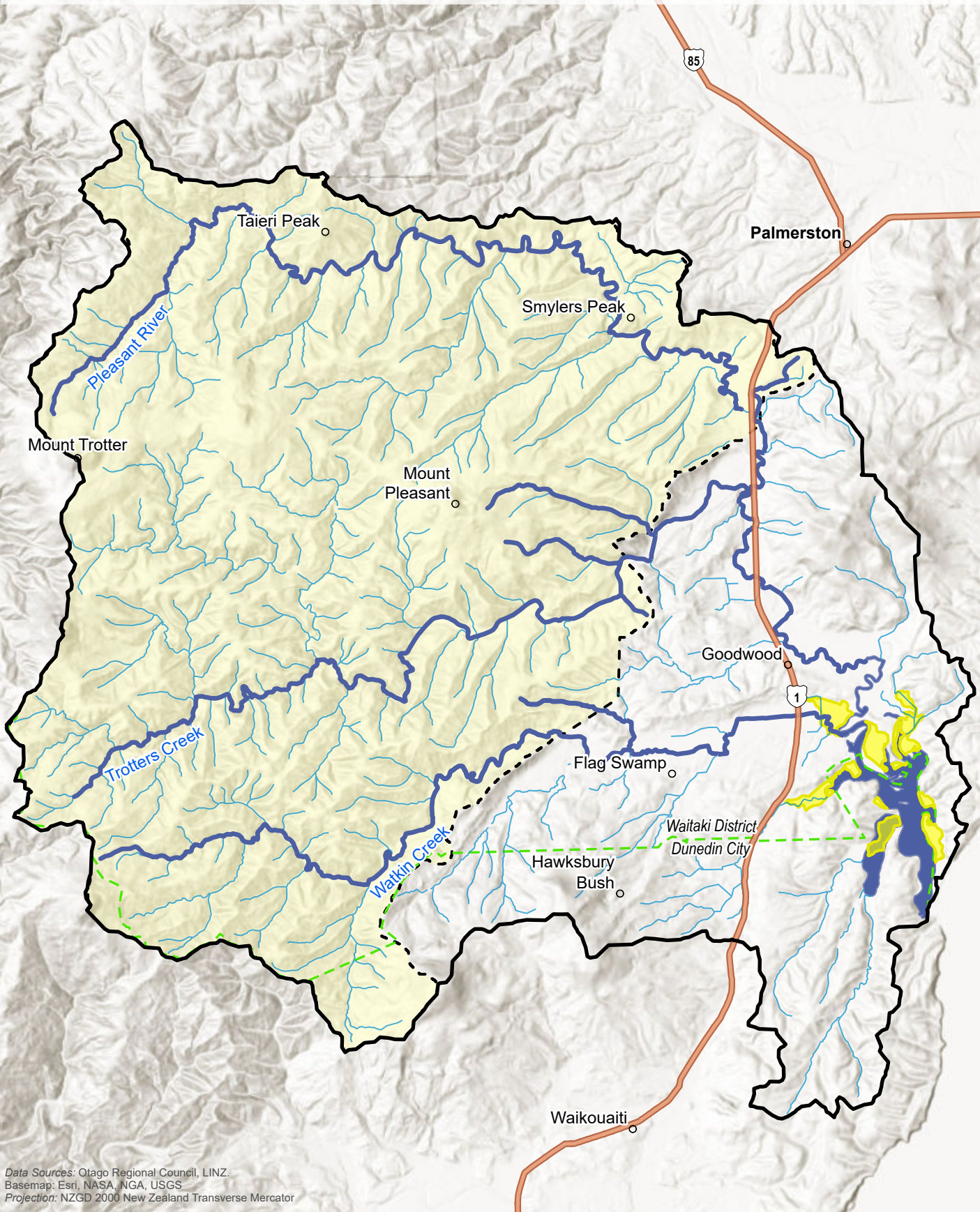
Project Manager: Rachael.Eaton@boffamiskell.co.nz | Drawn: LJJa | Checked: SPa

MAP 2

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LEGEND

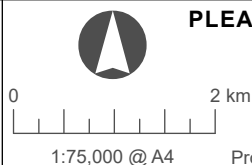
- Mt Pleasant / Te Hakapupu catchment
- Upper catchment
- Tributaries
- River / Waterway
- Pleasant River / Te Hakapupu Estuary
- Territorial Authority boundary
- Otago Regional Council regionally significant wetland



Data Sources: Otago Regional Council, LINZ.
 Basemap: Esri, NASA, NGA, USGS
 Projection: NZGD 2000 New Zealand Transverse Mercator



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PLEASANT RIVER / TE HAKAPUPU CATCHMENT NATURE-BASED SOLUTIONS

Waterways and Wetlands

Date: 06 December 2024 | Revision: 0







Plan prepared for Otago Regional Council by Boffa Miskell Limited

Project Manager: Rachael.Eaton@boffamiskell.co.nz | Drawn: LJa | Checked: SPa



MAP 3

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LEGEND

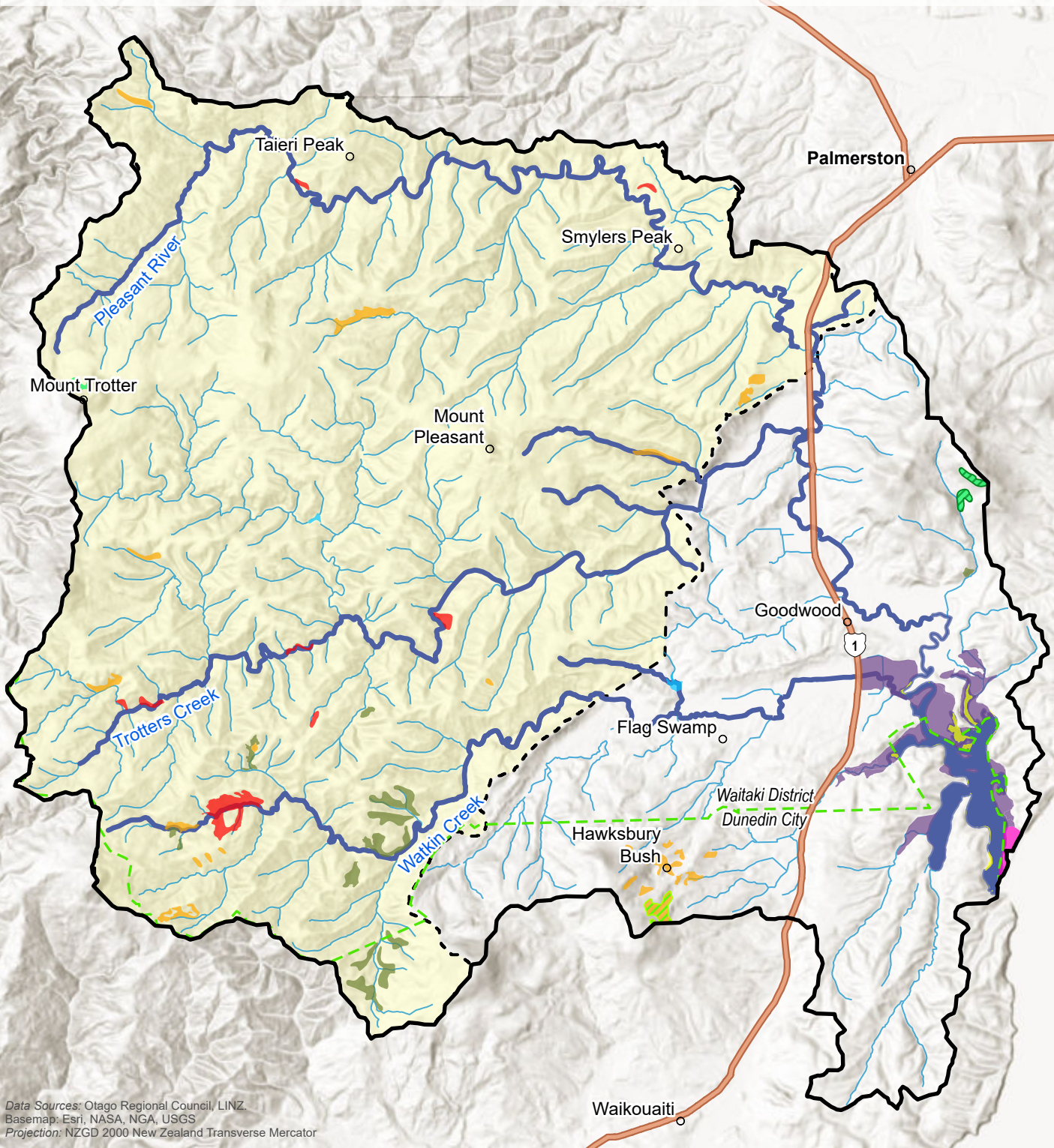
-  Mt Pleasant / Te Hākapupu catchment
-  Tributaries
-  River / Waterway
-  Pleasant River / Te Hākapupu Estuary
-  Upper catchment
-  Territorial Authority boundary

Otago Regional Council Terrestrial Habitat

-  Broadleaved Indigenous Hardwoods
-  Indigenous Forest

Otago Regional Council Current Indigenous Ecosystems

-  Estuary
-  Kanuka scrub/forest
-  Lake or Pond
-  CLF4.2: Kahikatea, tōtara, matai forest
-  DN3: Pingao sedgeland
-  SA3: Glasswort, sea primrose herbfield (saltmarsh)
-  VS5: Broadleaved species scrub/forest
-  VS6: Matagouri, Coprosma propinqua, kowhai scrub (grey scrub)



Data Sources: Otago Regional Council, LINZ.
 Basemap: Esri, NASA, NGA, USGS
 Projection: NZGD 2000 New Zealand Transverse Mercator

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0 2 km

1:75,000 @ A4

PLEASANT RIVER / TE HAKAPUPU CATCHMENT NATURE-BASED SOLUTIONS

Ecosystems and Habitat

Date: 05 December 2024 | Revision: 0






Plan prepared for Otago Regional Council by Boffa Miskell Limited


Project Manager: Rachael.Eaton@boffamiskell.co.nz | Drawn: LJa | Checked: SPa

MAP 4




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LEGEND

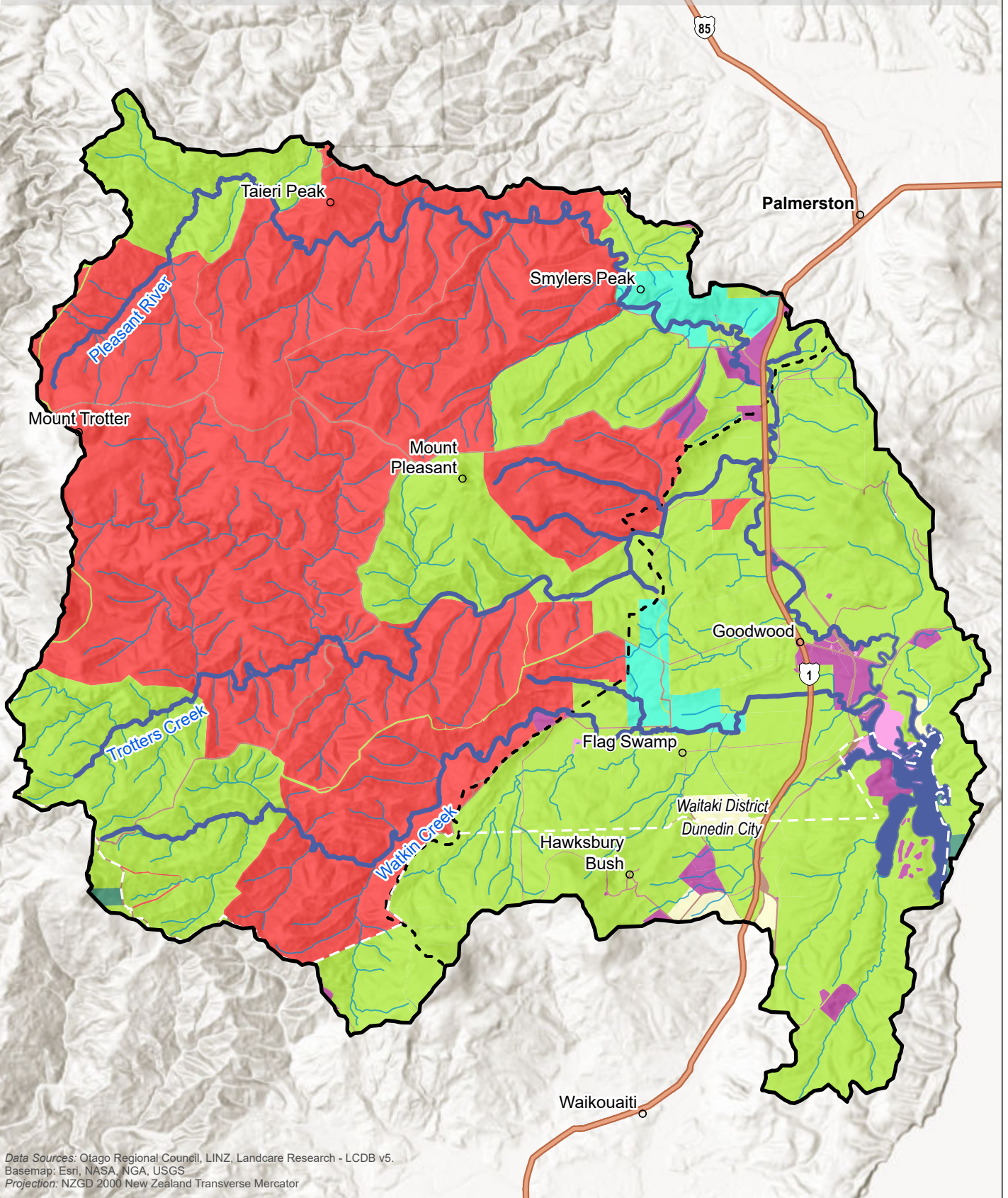
-  Mt Pleasant / Te Hikapupu catchment
-  Tributaries
-  River / Waterway
-  Pleasant River / Te Hikapupu Estuary
-  Upper catchment boundary

 Territorial Authority boundary

Otago Land Use

-  Dairy Farming
-  Exotic Forestry
-  Pastoral Farming

-  Residential & Lifestyle
-  DOC Public Conservation Land
-  Road & Rail
-  Other
-  Unknown Land Use



Data Sources: Otago Regional Council, LINZ, Landcare Research - LCDB v5.
 Basemap: Esri, NASA, NGA, USGS
 Projection: NZGD 2000 New Zealand Transverse Mercator

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0 2 km

1:75,000 @ A4

PLEASANT RIVER / TE HAKAPUPU CATCHMENT NATURE-BASED SOLUTIONS

Land Use

Date: 05 December 2024 | Revision: 0

Plan prepared for Otago Regional Council by Boffa Miskell Limited

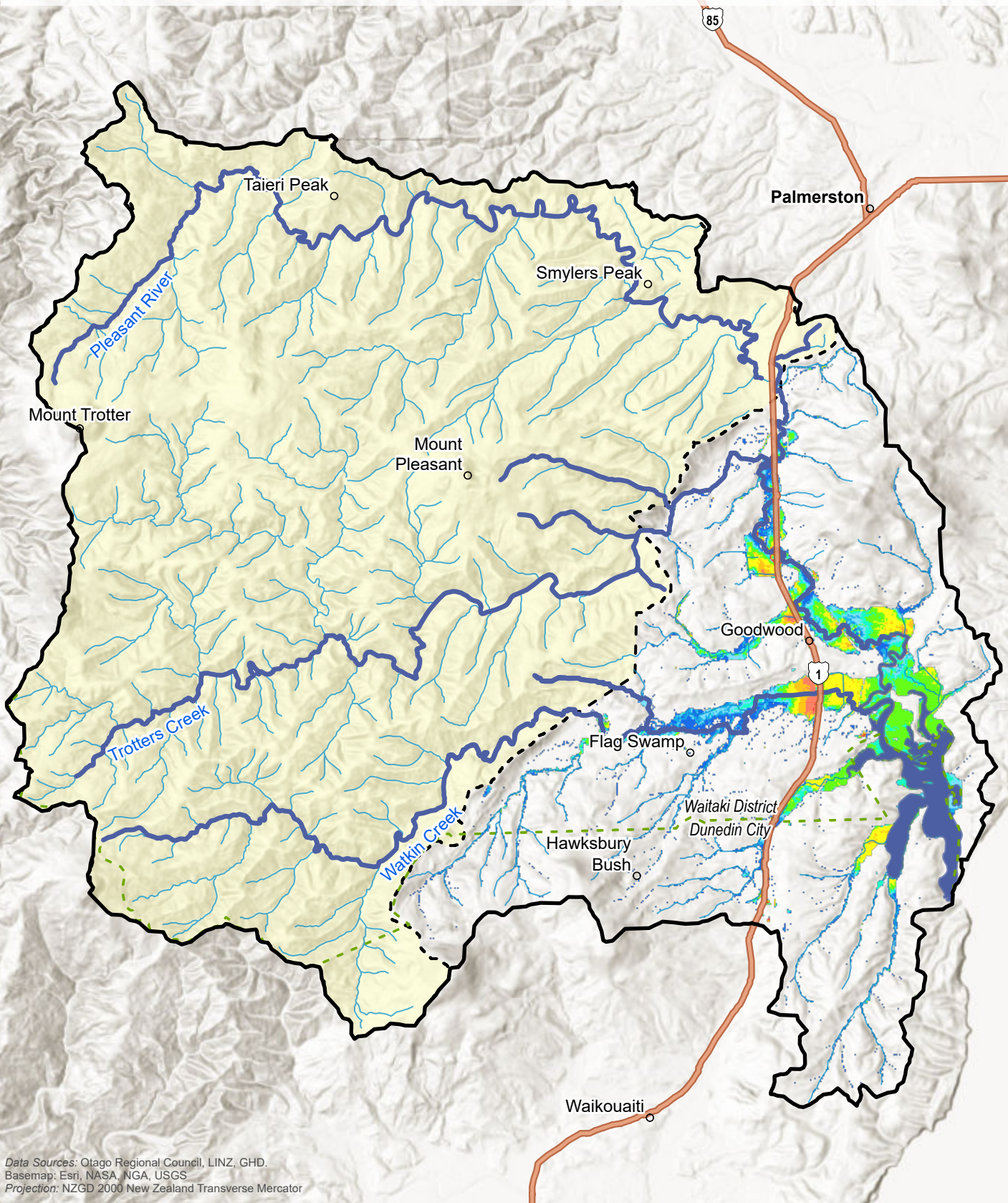
Project Manager: Rachael.Eaton@boffamiskell.co.nz | Drawn: LJA | Checked: SPa

MAP 5

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LEGEND

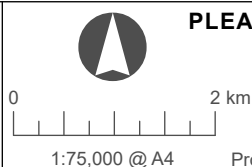
	Mt Pleasant / Te Hikapupu catchment		Flood Depth (m)		1.5 - 2
	Tributaries		0.06 - 0.3		2 - 2.5
	River / Waterway		0.3 - 0.5		2.5 - 3
	Pleasant River / Te Hikapupu Estuary		0.5 - 0.75		3 - 5.09
	Upper catchment		0.75 - 1		
	Territorial Authority boundary		1 - 1.5		



Data Sources: Otago Regional Council, LINZ, GHD.
 Basemap: Esri, NASA, NGA, USGS
 Projection: NZGD 2000 New Zealand Transverse Mercator



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PLEASANT RIVER / TE HAKAPUPU CATCHMENT NATURE-BASED SOLUTIONS

Flood Depth

Date: 05 December 2024 | Revision: 0







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Project Manager: Rachael.Eaton@boffamiskell.co.nz | Drawn: LJa | Checked: SPa






MAP 6




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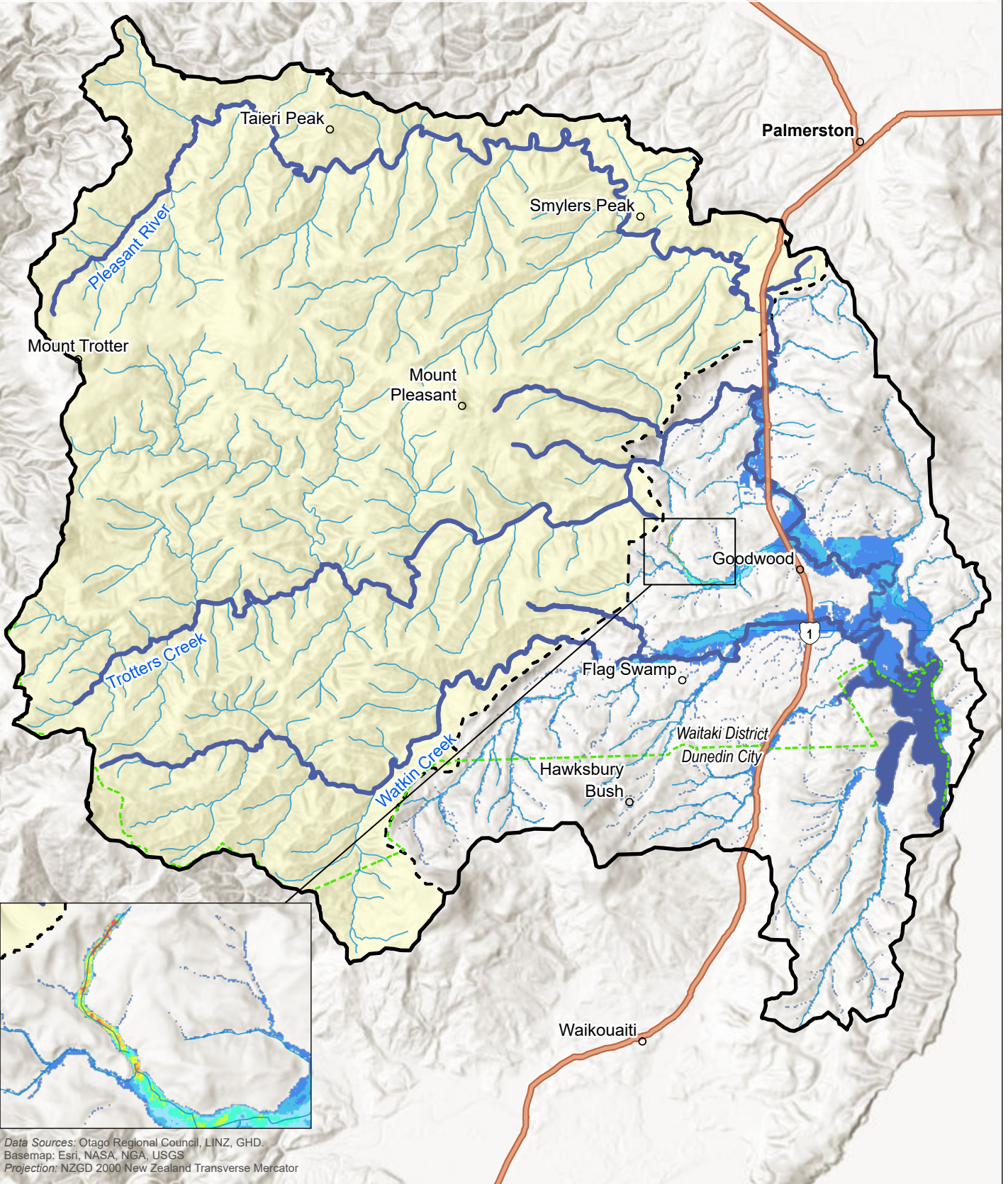
LEGEND

-  Mt Pleasant / Te Hakapupu catchment
-  Tributaries
-  River / Waterway
-  Pleasant River / Te Hakapupu Estuary
-  Upper catchment
-  Territorial Authority boundary

Flood Velocity (Maximum Speed) (m/s)

-  0.112 - 0.5
-  0.501 - 1
-  1.001 - 1.5
-  1.501 - 2
-  2.001 - 2.5

-  2.501 - 3
-  3.001 - 3.5
-  3.501 - 5.623

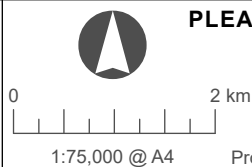


Data Sources: Otago Regional Council, LINZ, GHD.
 Basemap: Esri, NASA, NGA, USGS
 Projection: NZGD 2000 New Zealand Transverse Mercator

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PLEASANT RIVER / TE HAKAPUPU CATCHMENT NATURE-BASED SOLUTIONS

Flood Velocity

Date: 05 December 2024 | Revision: 0







Plan prepared for Otago Regional Council by Boffa Miskell Limited

Project Manager: Rachael.Eaton@boffamiskell.co.nz | Drawn: LJA | Checked: SPa





MAP 7

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LEGEND

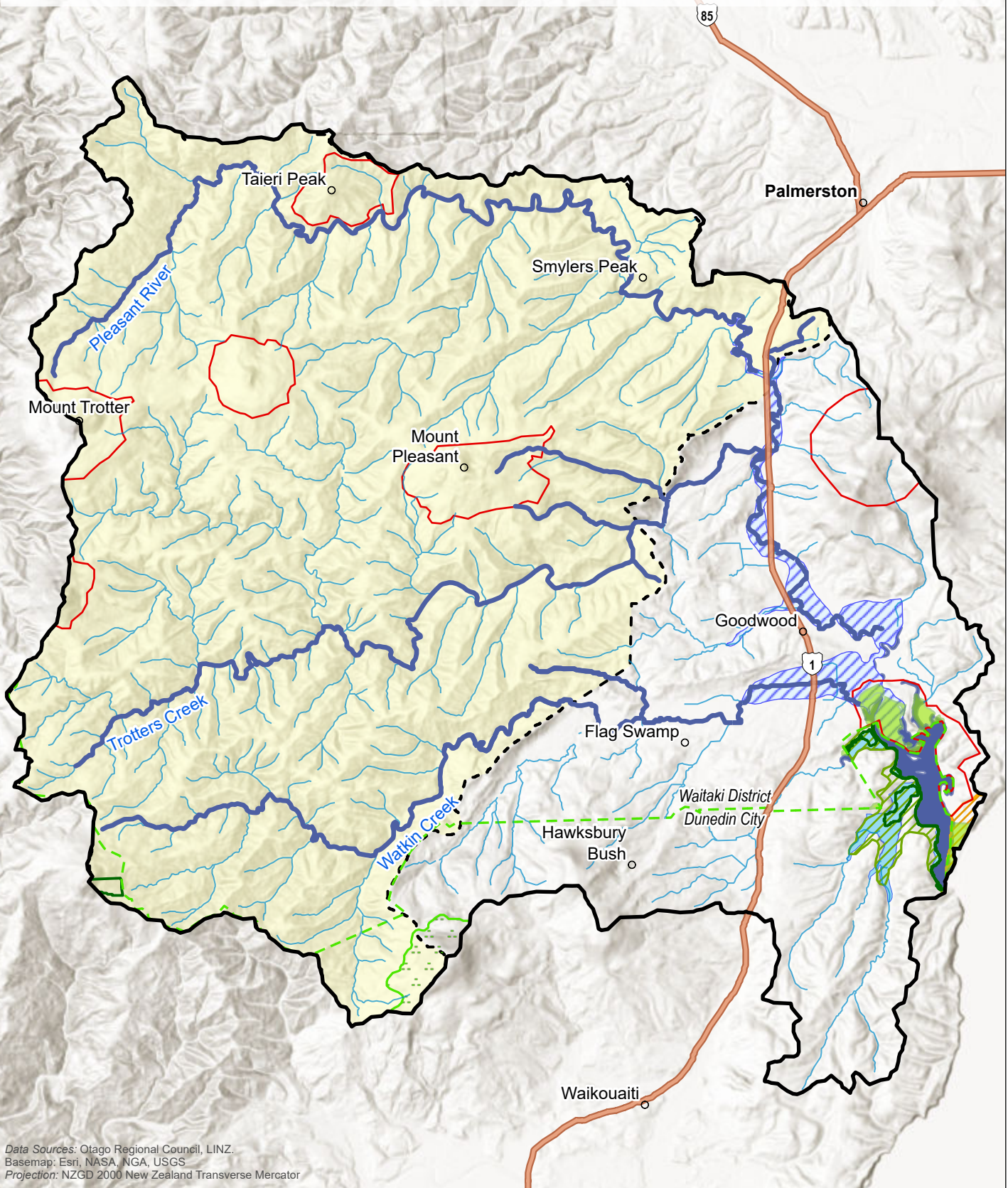
-  Mt Pleasant / Te Hākapupu catchment
-  Tributaries
-  River / Waterway
-  Pleasant River / Te Hākapupu Estuary
-  Upper catchment
-  Territorial Authority boundary

Waitaki District Council

-  Significant Natural Feature
-  Significant Coastal Landscape
-  Natural Significance
-  Flood Zone

Dunedin City Council

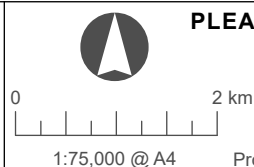
-  Areas of Significant Biodiversity Value
-  Natural Coastal Character
-  Significant Natural Landscape (SNL)
-  Hazard 2 (flood)



Data Sources: Otago Regional Council, LINZ.
 Basemap: Esri, NASA, NGA, USGS
 Projection: NZGD 2000 New Zealand Transverse Mercator



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PLEASANT RIVER / TE HAKAPUPU CATCHMENT NATURE-BASED SOLUTIONS

Dunedin City and Waitaki District Plans

Date: 05 December 2024 | Revision: 0














Plan prepared for Otago Regional Council by Boffa Miskell Limited

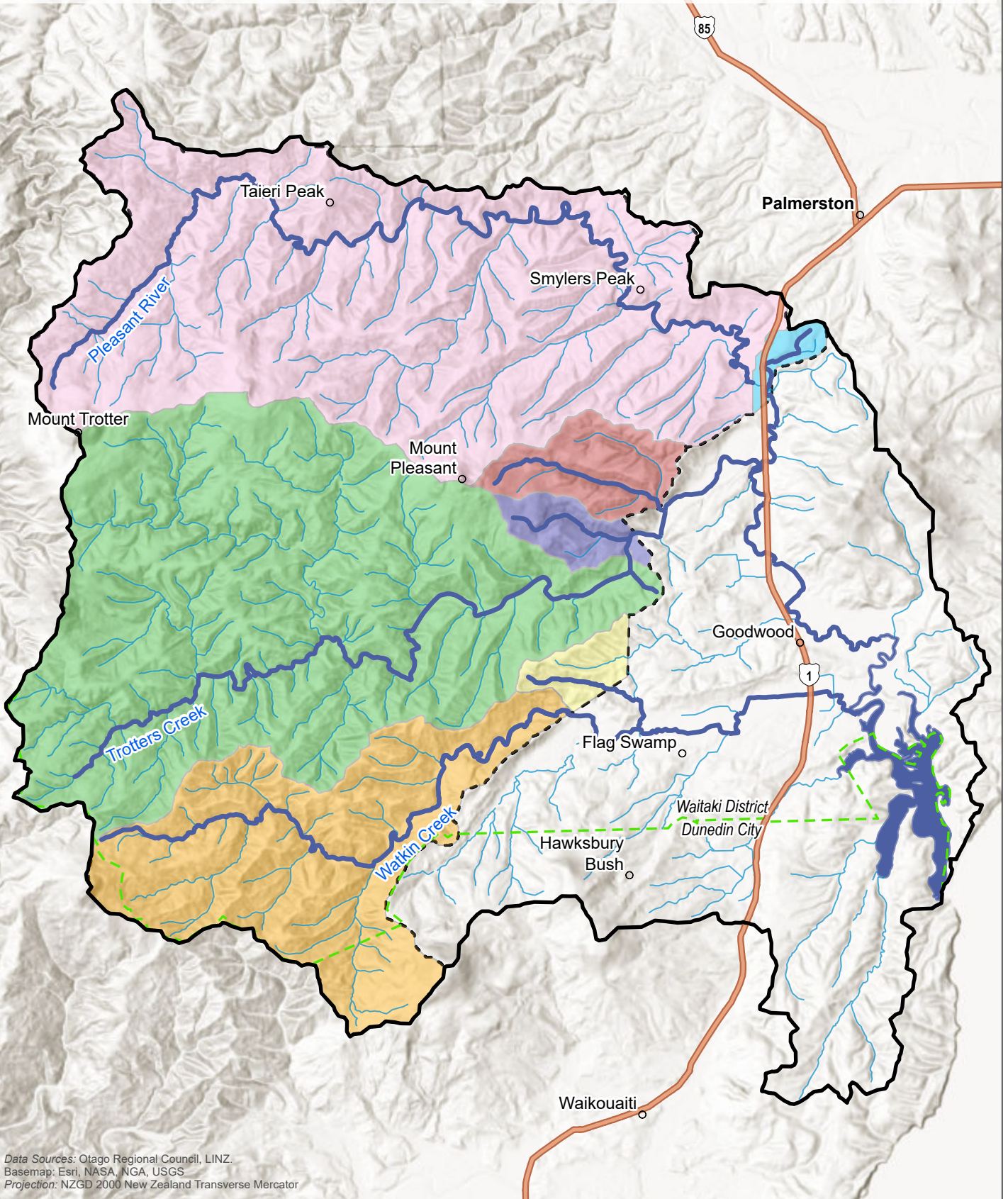
Project Manager: Rachael.Eaton@boffamiskell.co.nz | Drawn: LJa | Checked: SPa

MAP 8

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LEGEND







- | | | |
|--|--|--|
|  Mt Pleasant / Te Hikapupu catchment |  Territorial Authority boundary |  Sub-catchment 3 |
|  Tributaries | Upper sub-catchments |  Sub-catchment 4 |
|  River / Waterway |  Sub-catchment 0 |  Sub-catchment 5 |
|  Pleasant River / Te Hikapupu Estuary |  Sub-catchment 1 |  Sub-catchment 6 |
|  Upper catchment boundary |  Sub-catchment 2 | |








Data Sources: Otago Regional Council, LINZ.
 Basemap: Esri, NASA, NGA, USGS
 Projection: NZGD 2000 New Zealand Transverse Mercator

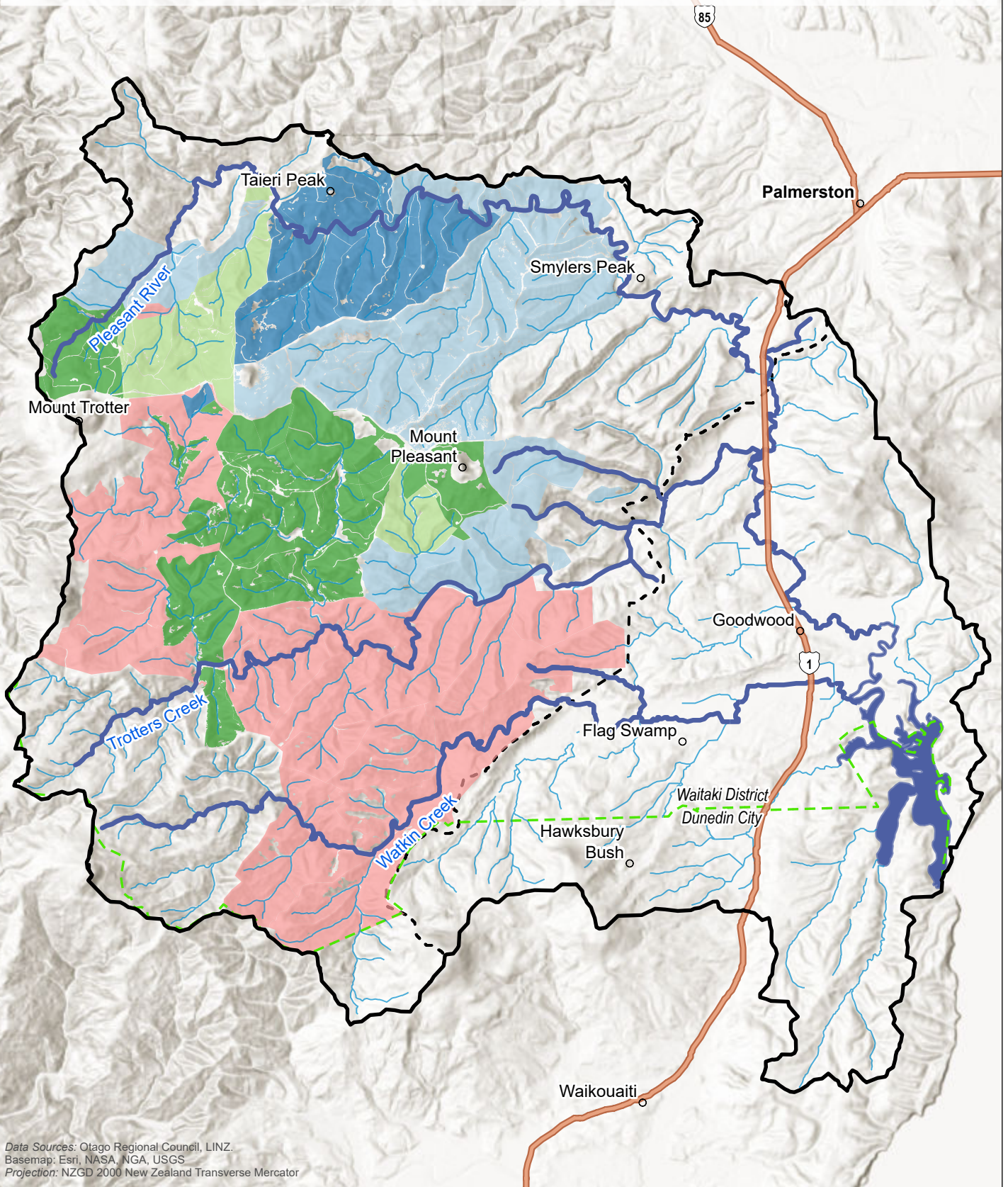
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LEGEND

-  Mt Pleasant / Te Hākapupu catchment
-  Tributaries
-  River / Waterway
-  Pleasant River / Te Hākapupu Estuary
-  Upper catchment boundary
-  Territorial Authority boundary

Years until forestry harvest

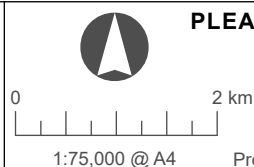
-  0-5
-  6-10
-  11-15
-  16-20
-  21-25



Data Sources: Otago Regional Council, LINZ.
 Basemap: Esri, NASA, NGA, USGS
 Projection: NZGD 2000 New Zealand Transverse Mercator



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PLEASANT RIVER / TE HAKAPUPU CATCHMENT NATURE-BASED SOLUTIONS

Forestry Harvest Timing

Date: 05 December 2024 | Revision: 0

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Project Manager: Rachael.Eaton@boffamiskell.co.nz | Drawn: LJa | Checked: SPa

MAP 10