

Option 1D

170m wide

- Stopbanks lower
- Lowering land full length

Option 1C

250m wide

- Stopbanks higher
- Lowering land at floodway entrance

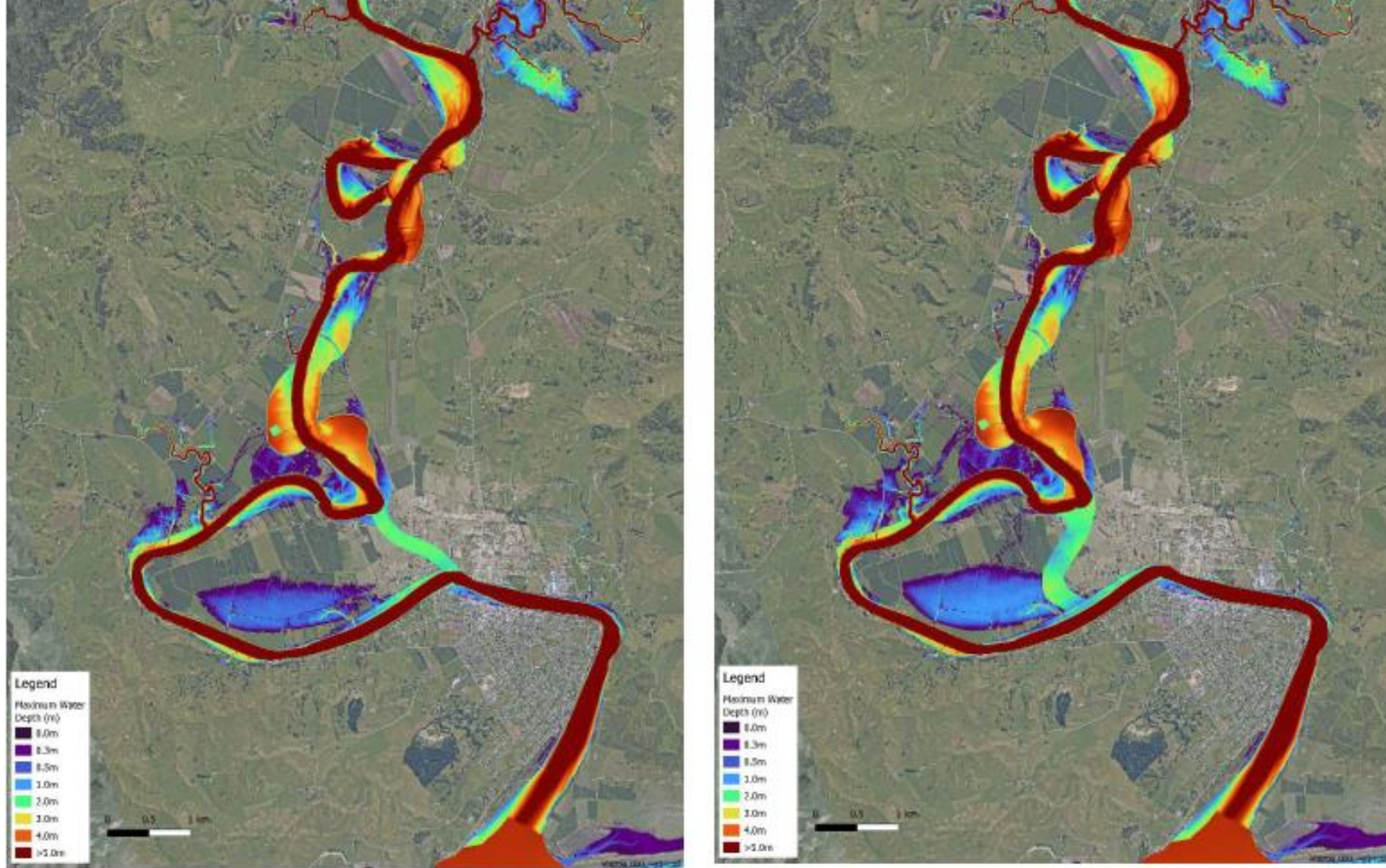


Figure 3.2 - Comparison of maximum water depth for Option 1C (left) and Option 1D (right) for 1% AEP existing climate

Option 1D Houses

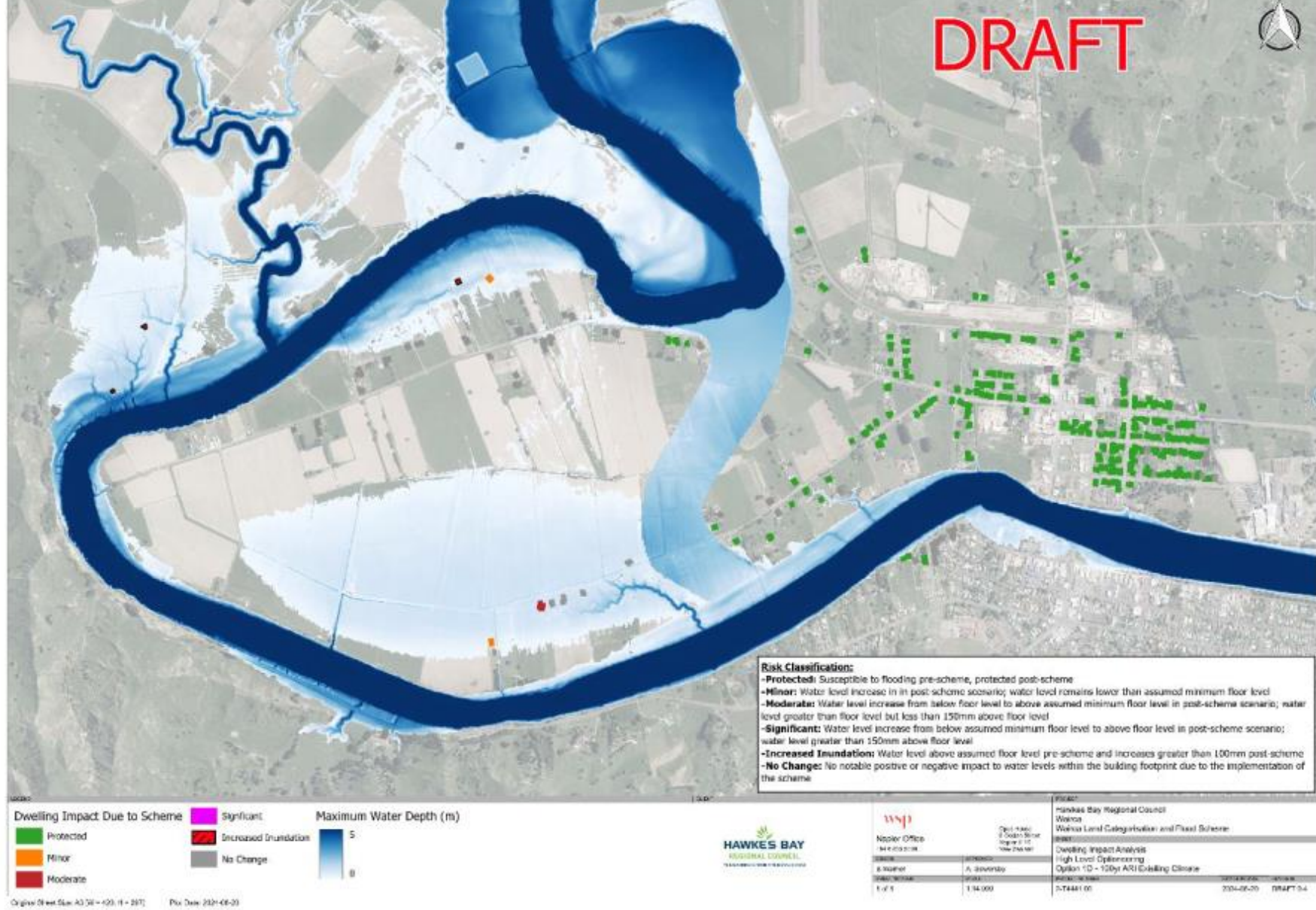


Figure 3.7 – Dwelling Impact analysis for Option 1D, 1% AEP. 1 dwelling experiences moderate impacts, 3 are subject to increased inundation, and 1 dwelling experiences minor impacts.

Option 1C Buildings

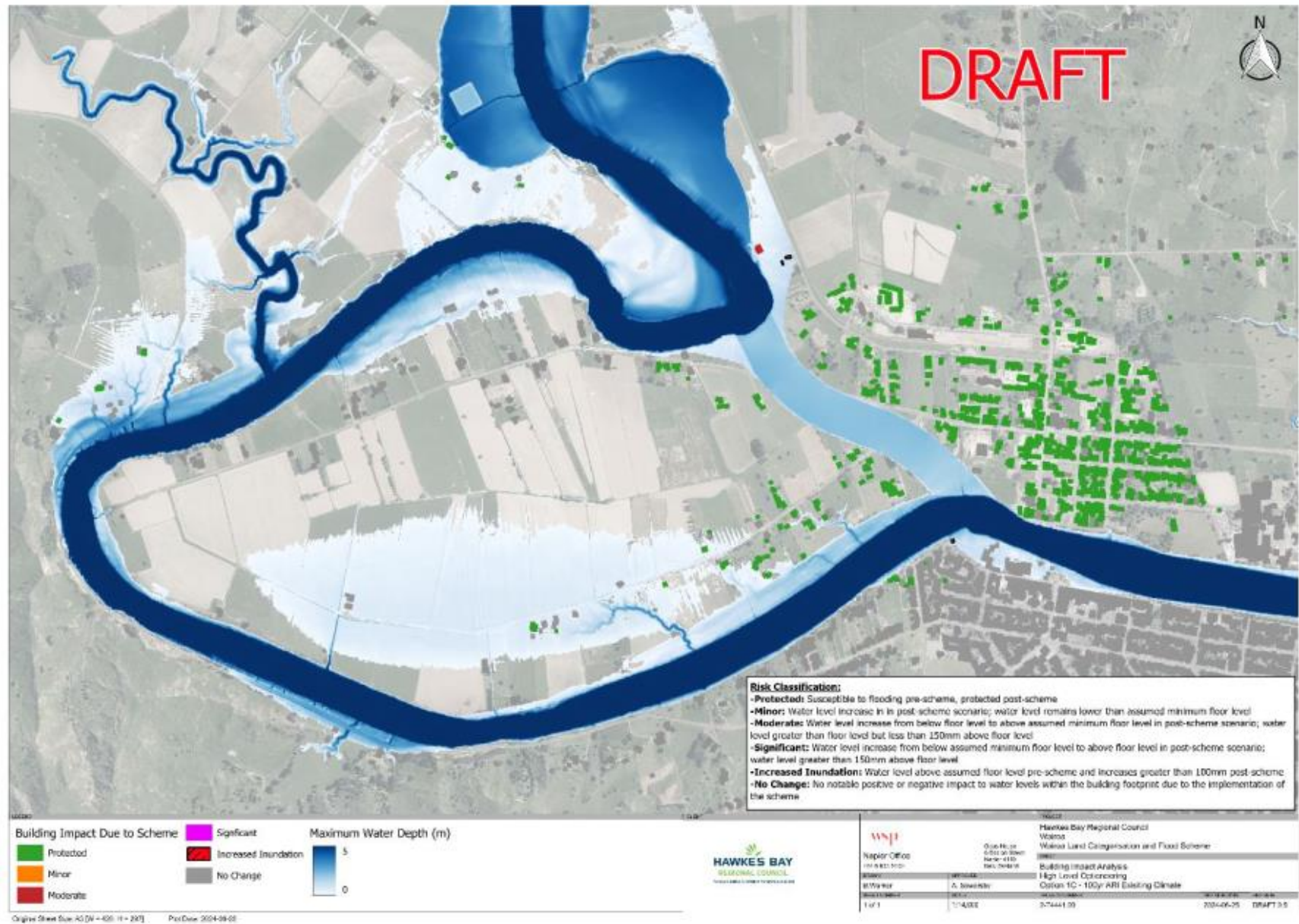


Figure 3.8 – Building Impact analysis for Option 1C, 1% AEP flood. 1 total building is moderately impacted.

Option 1D Buildings

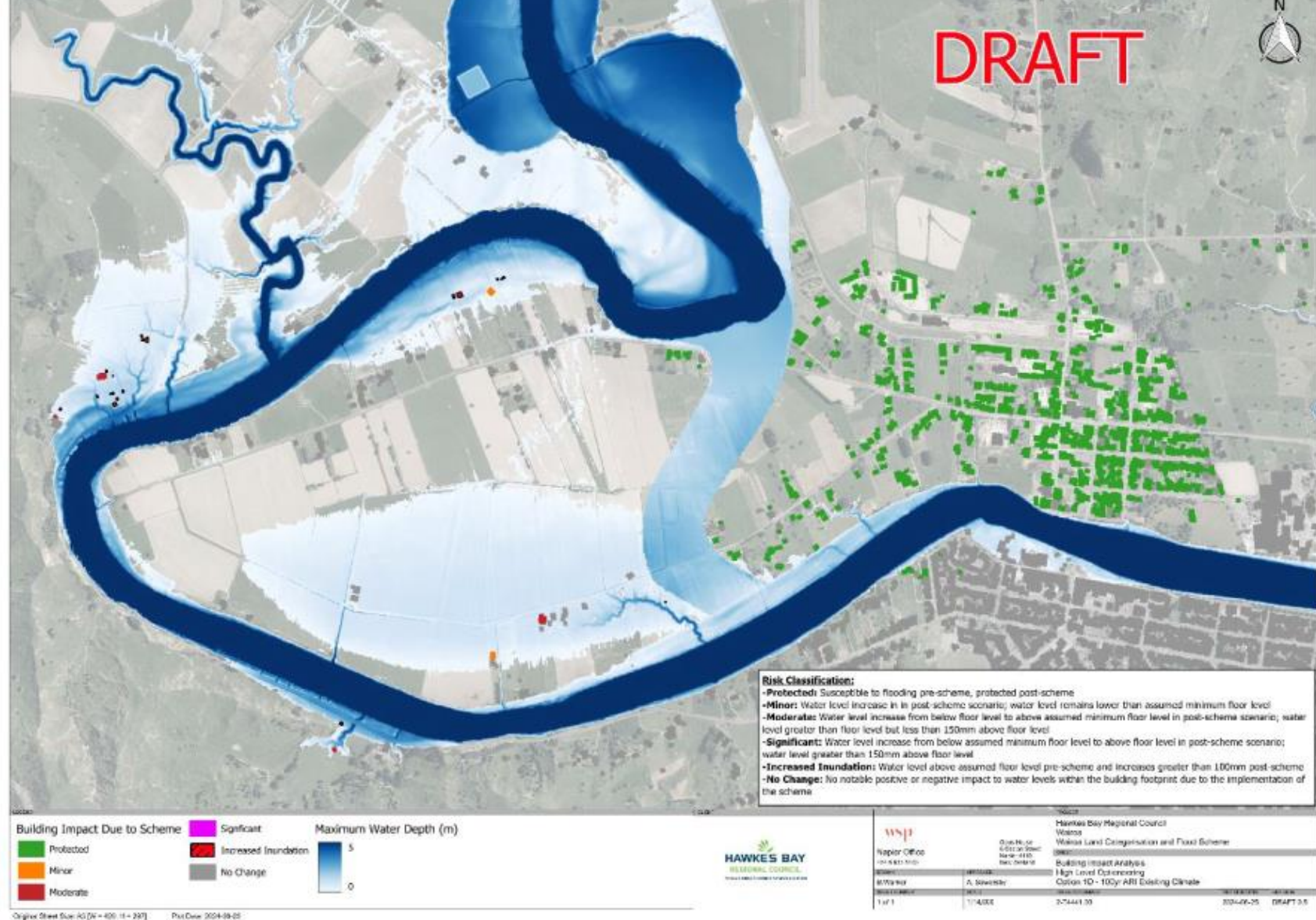


Figure 3.9 – Building Impact analysis for Option 1D, 1% AEP. 4 total buildings experience moderate impact 19 experience increased inundation, and 2 buildings subject to minor impact.

Overdesign Option 1C

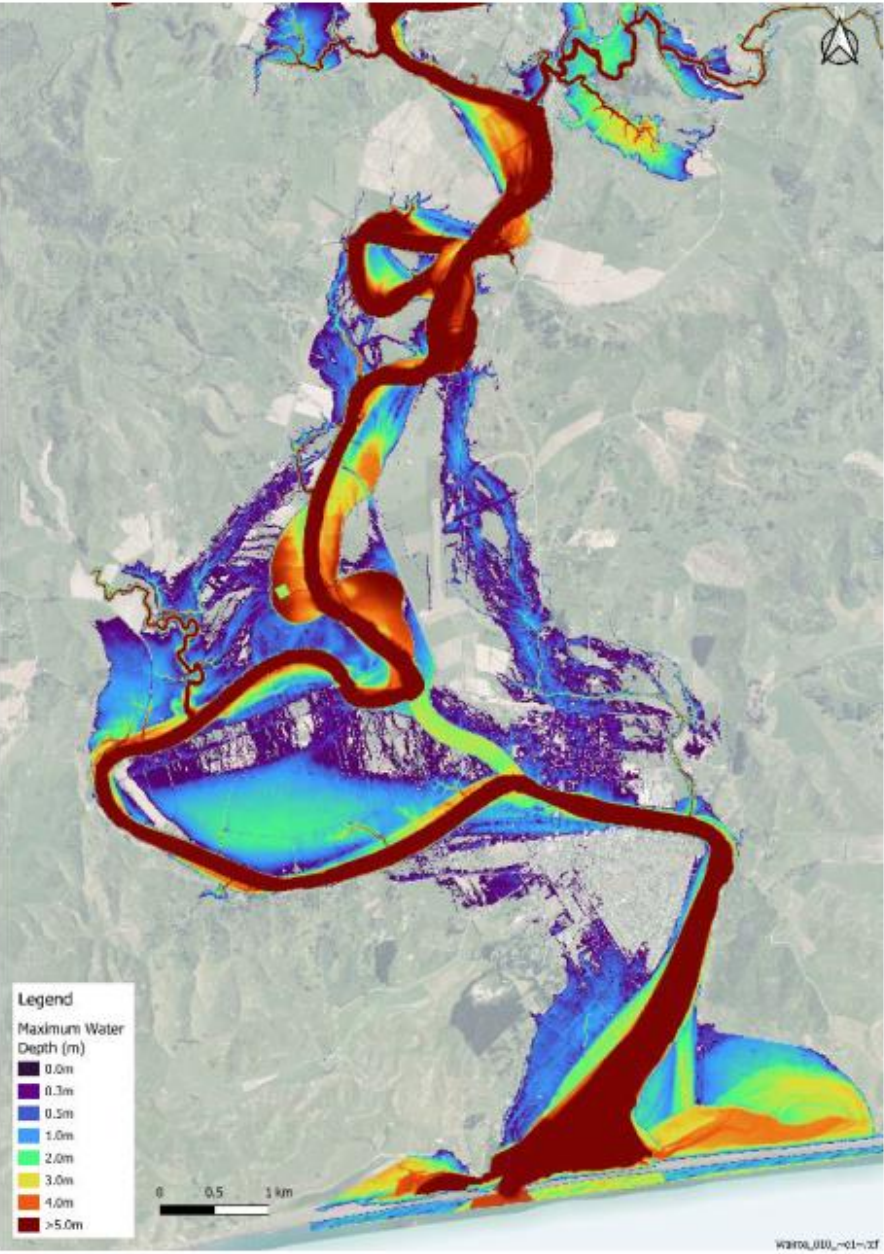
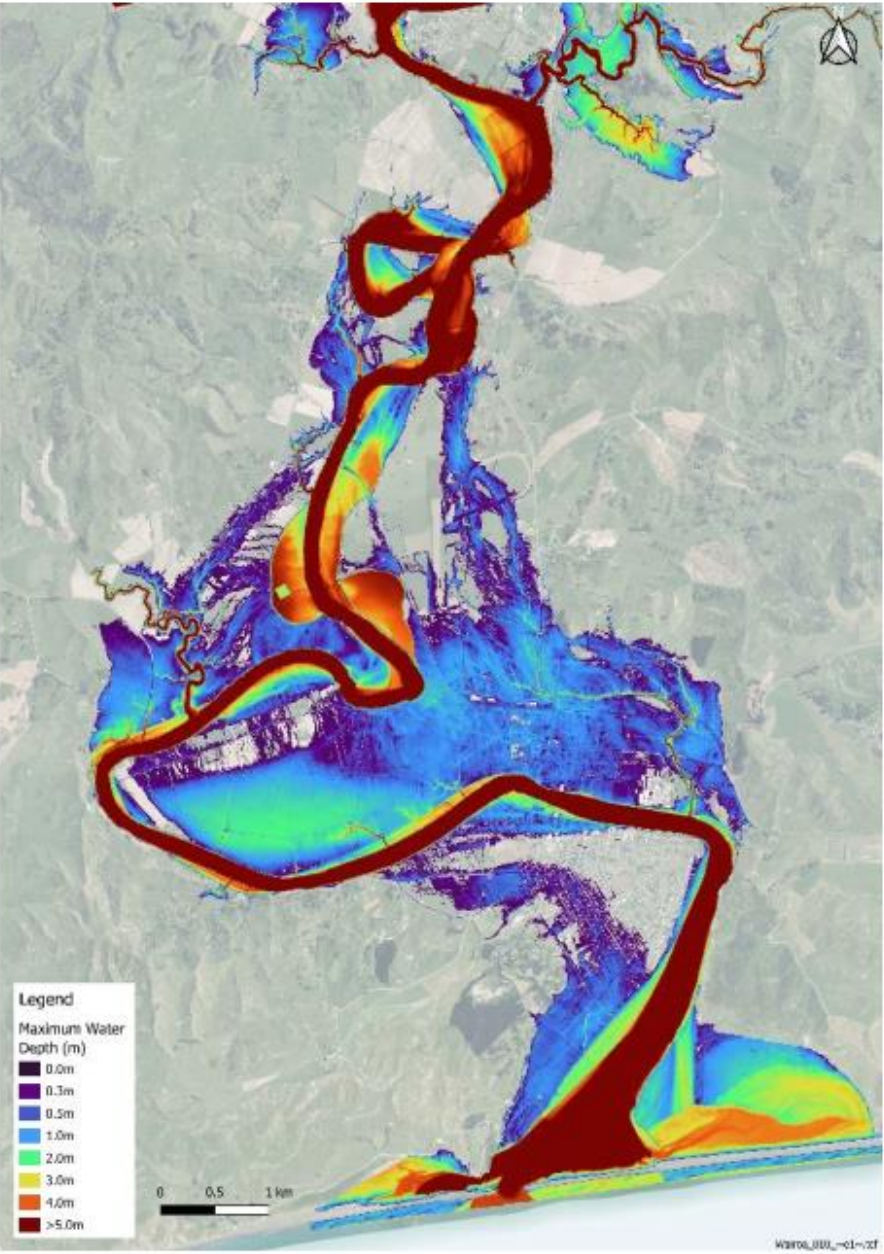


Figure 4.1 – Comparison of Do-Nothing flood depth (left) and Option 1C flood depth (right) for 1% AEP RCP6.0



Overdesign Option 1D

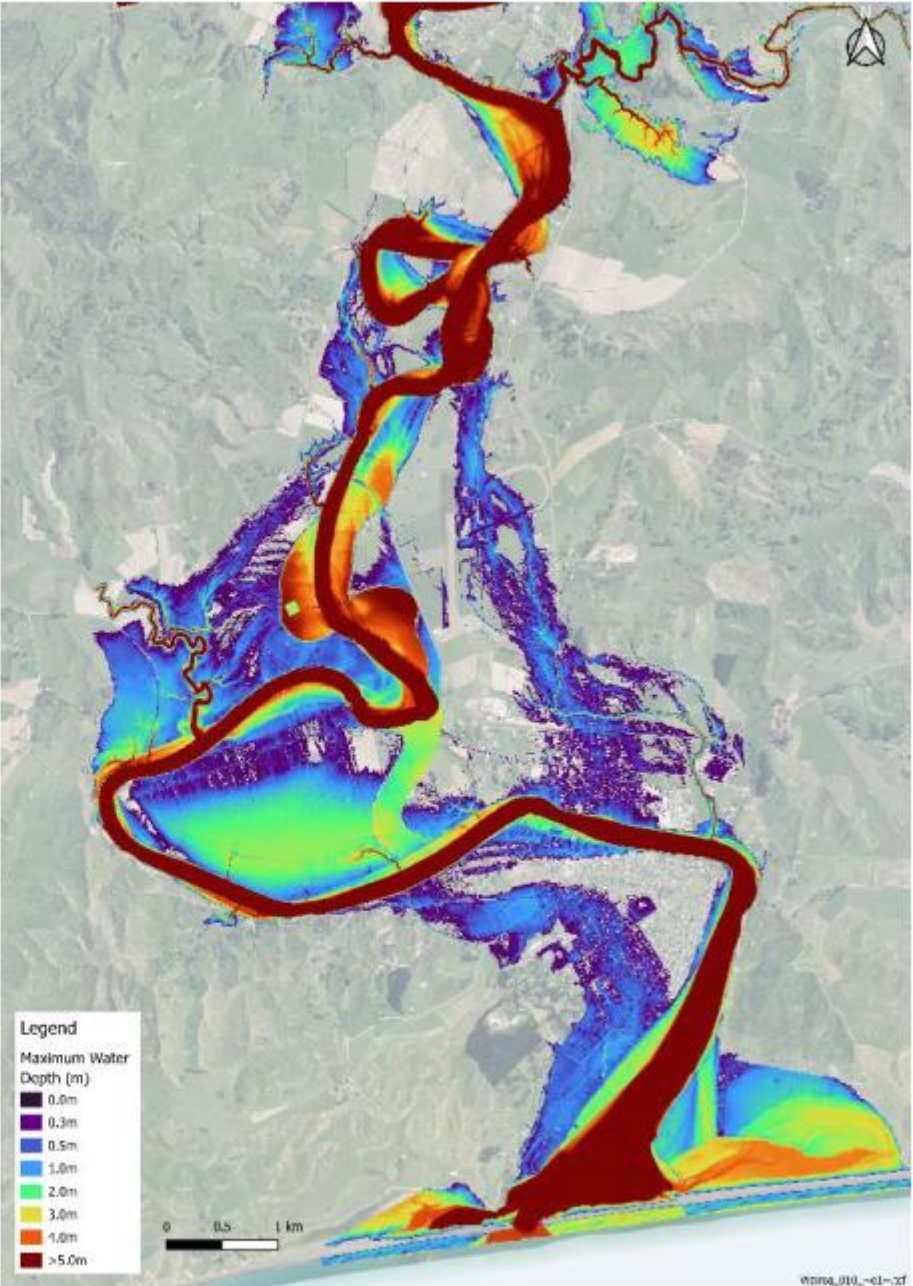
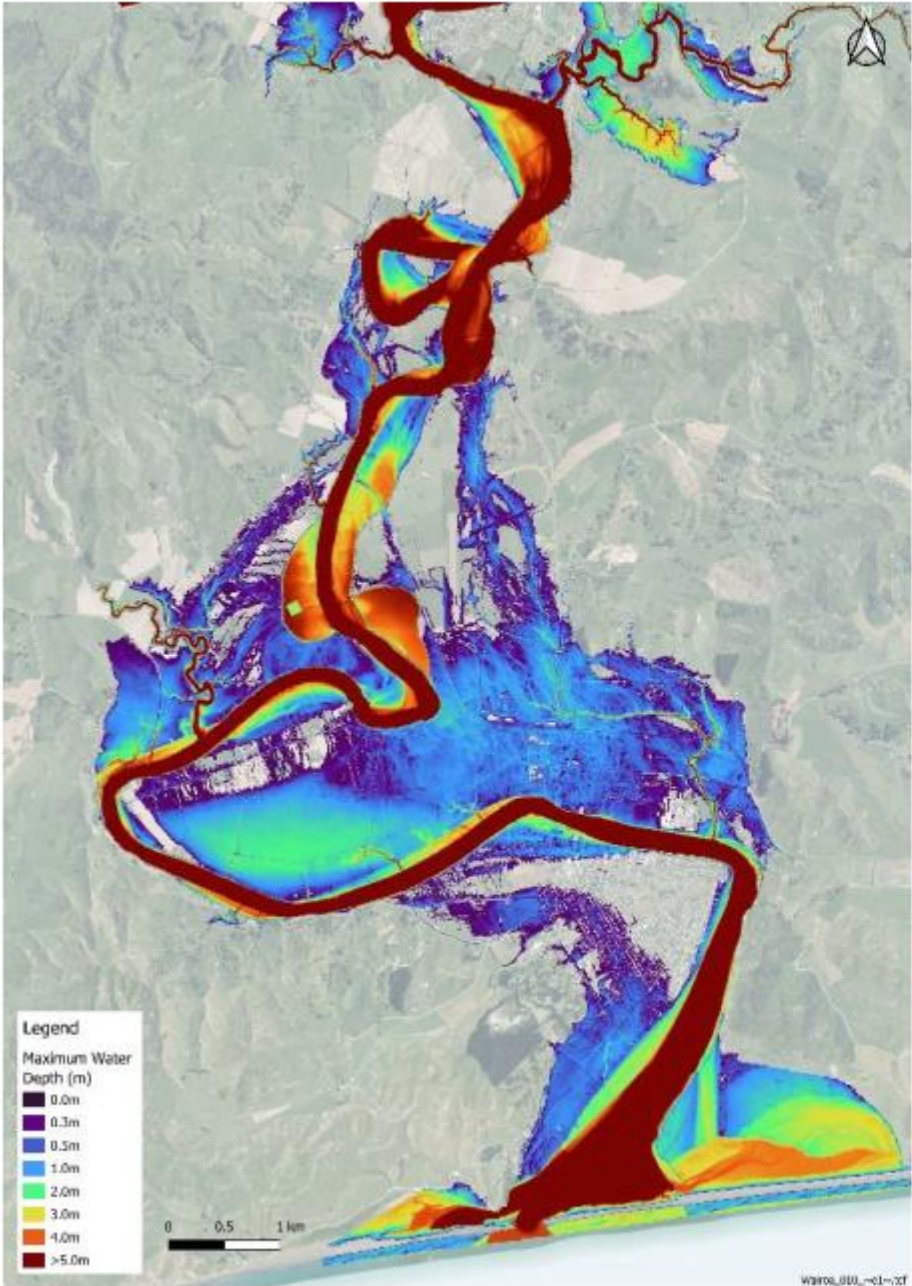


Figure 4.2 – Comparison of Do-Nothing flood depth (left) and Option 1D flood depth (right) for 1% AEP RCP6.0

Stopbank 5D

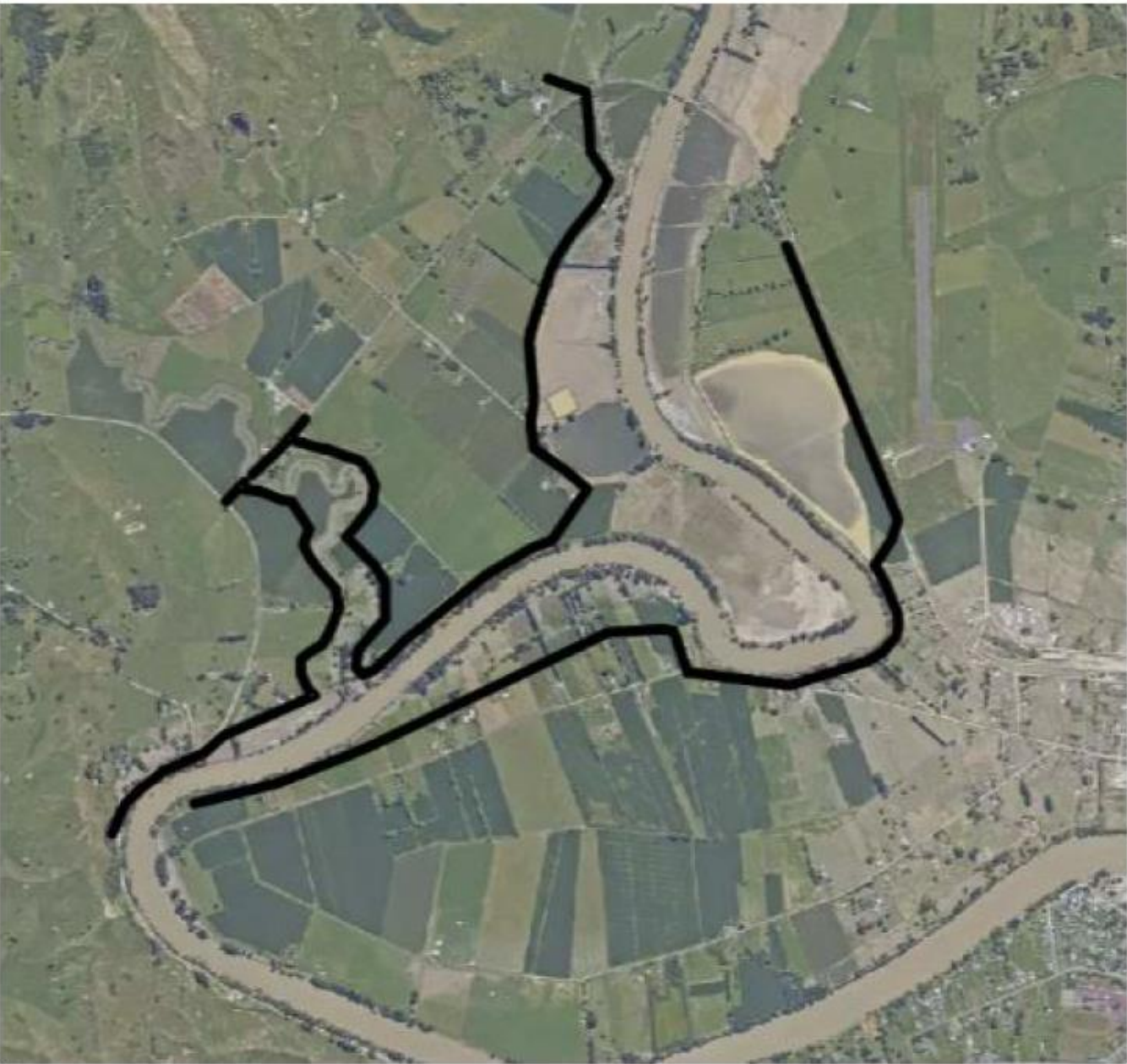
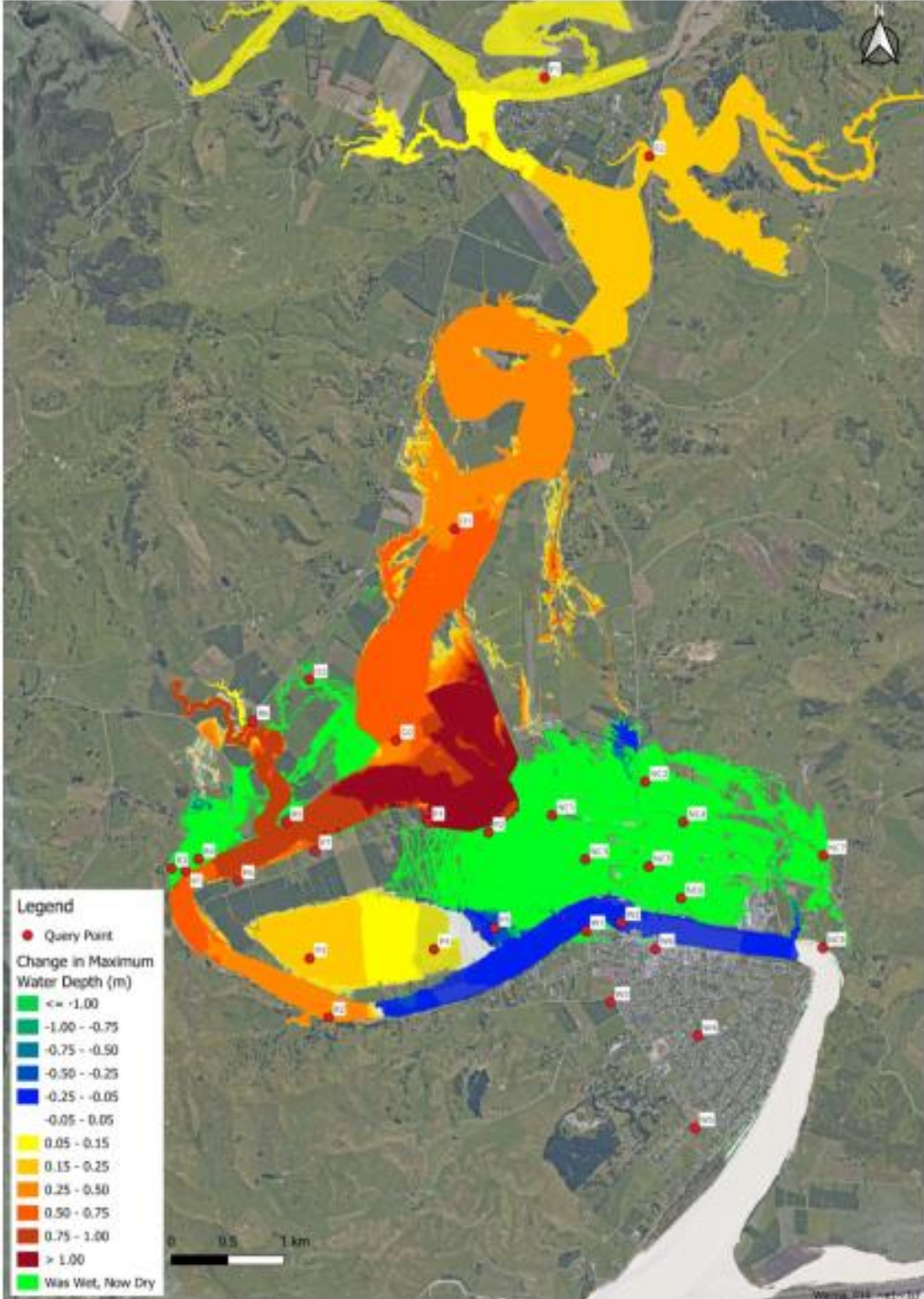


Figure 5.1 – Stopbank Option 5D alignment (black)

Stopbank ID (compared to do-nothing)



Māori Freehold Land



Figure 6.2 - Option 1C overlaid on North Clyde Māori land parcels.



Figure 6.3 - Option 1D overlaid on North Clyde Māori land parcels.

Maori Freehold Land



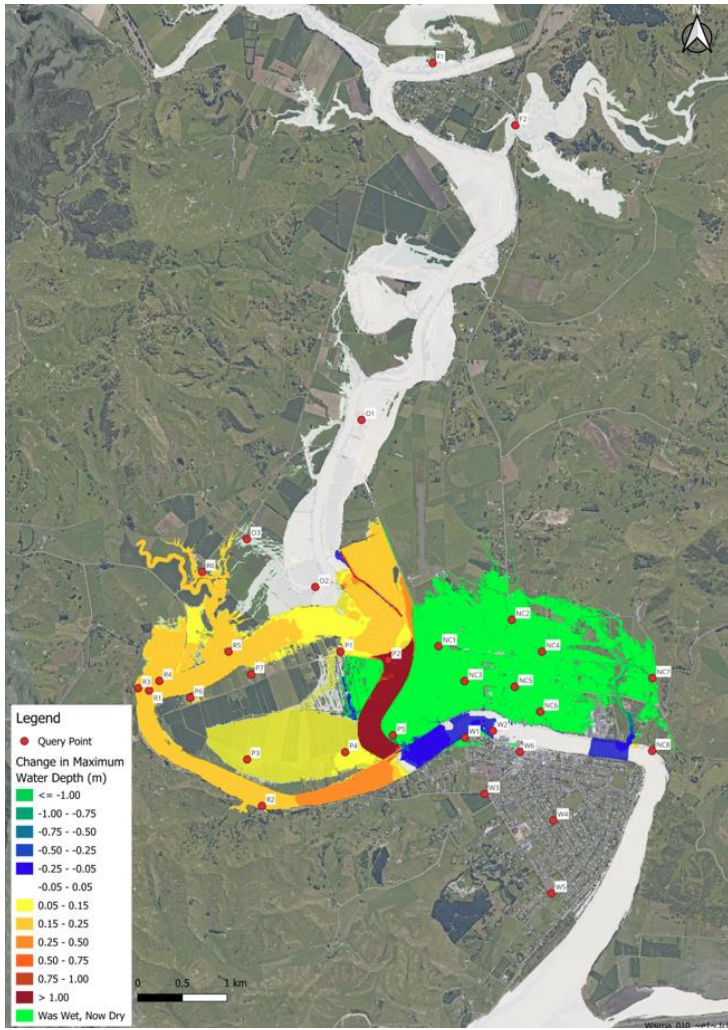
Figure 6.4 - Option 5C overlaid on North Clyde Māori land parcels

7 OVERALL OPTIONS COMPARISON

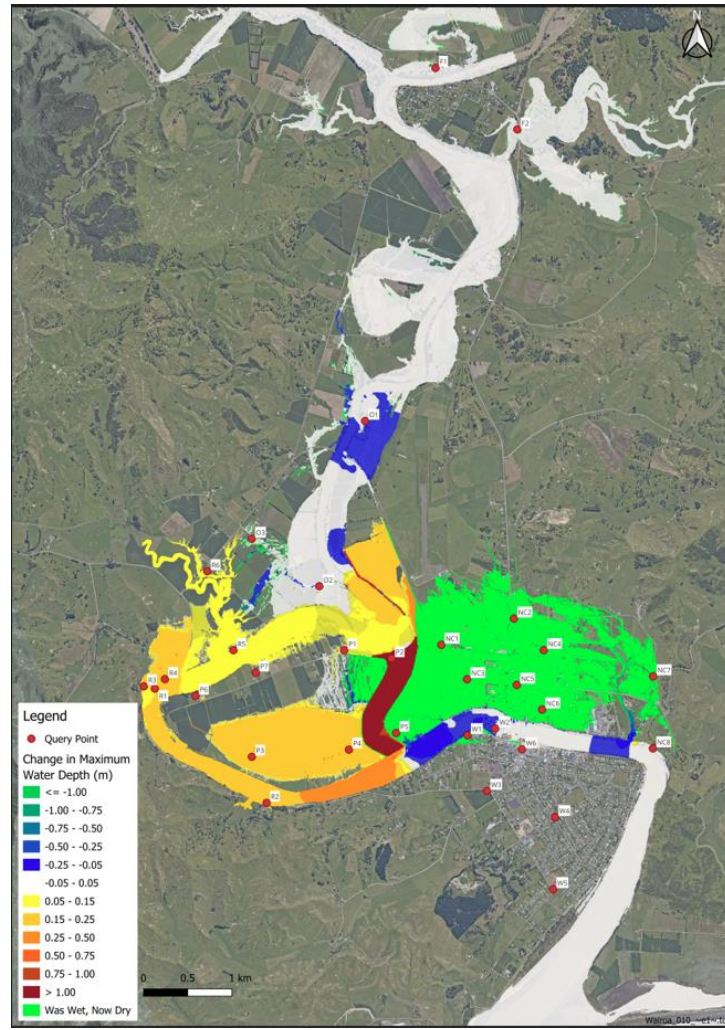
Table 7-1 – Option Comparison

Performance Criteria	Option 1B	Option 1C	Option 1D (new option)	Option 5C	Option 5D (new option)
Estimated scheme cost (low cost estimate) \$millions	\$30.1	\$26.3	\$25.7	\$15.9	\$41.1
Approx number of houses that need to be demolished/relocated to construct option (within option footprint)	17	16	5	2	2
Approx number of other buildings (garages, and sheds etc) that need to be demolished to construct option (within option footprint)	8	8	7	12	>12 (yet to be determined)
Approx number of properties impacted by option construction (Title that intersects with footprint)	86	62	59	56	77
Approx area of land to be acquired/leased – (option footprint)	23ha	24ha	45ha	11ha	25ha
Community buildings that need to be relocated /rebuilt to construct option (within option footprint)	Tawhiti A Maru Marae Buildings Church (24 Ruataniwha Road)	N/A	N/A	Ruataniwha Marae Wharekai and chapel need to be relocated on-site or lifted onto a raised platform.	Ruataniwha Marae Wharekai and chapel need to be relocated on-site or lifted onto a raised platform.
Approx area of land negatively affected (worse off) by flooding compared to do nothing as a result of the implementation of the option. (Does not include option landform or primary river channel).	5ha	10ha	220ha	930ha	>800ha Note this does not include water from Awamate catchments
Number of houses where hazard risk classification has increased as a result of the option (compared to do-nothing) ^a	0	0	9	18	9
Number of 'other buildings' where the hazard risk classification has increased as a result of the option (compared to do-nothing)	0	0	10	53	22
Overdesign performance (all modelled areas)	Not simulated but likely benefit	Benefit	Some negative Impacts	Negative Impacts	Not simulated but likely negative impacts
Number of Māori land titles impacted by scheme.	35	22	22	31	32
Area of Māori land impacted (score based on total area)	6.6 ha	6 ha	18.4ha	3.3ha	3.3

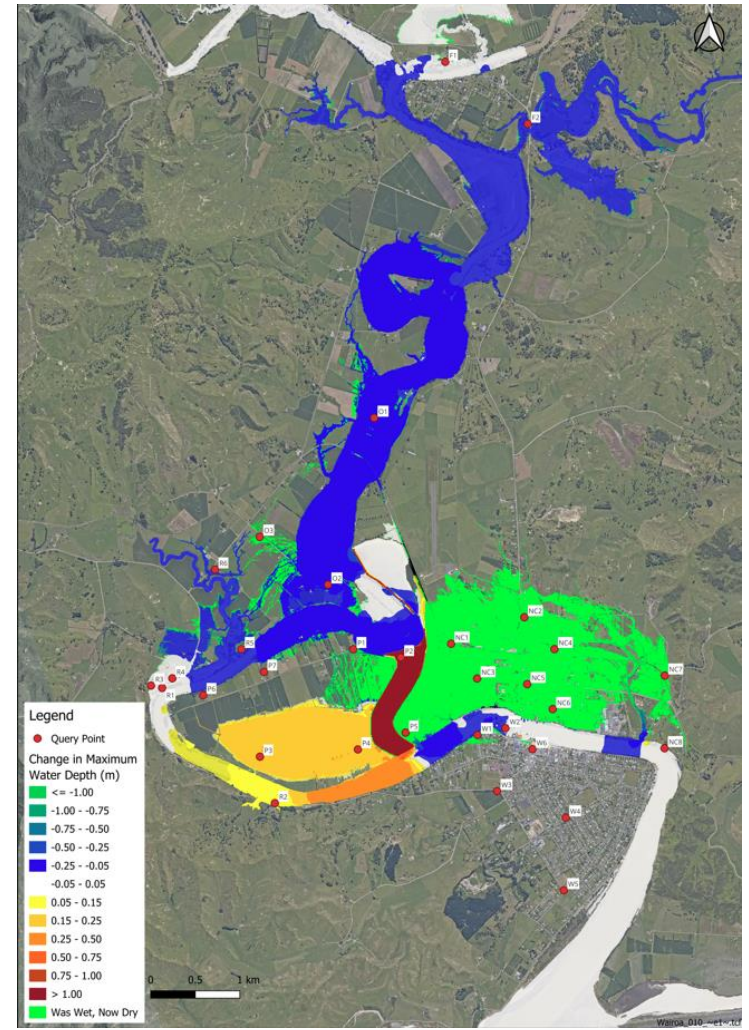
Green presents best outcomes and red presents worst outcome.



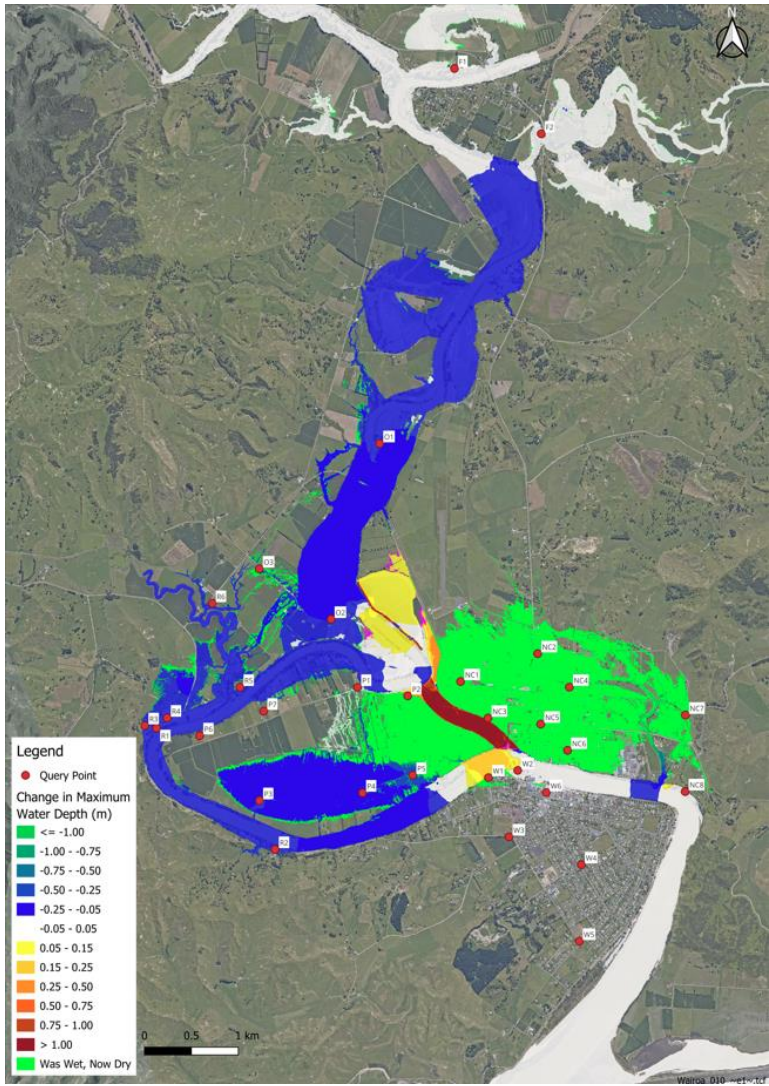
Option 1D



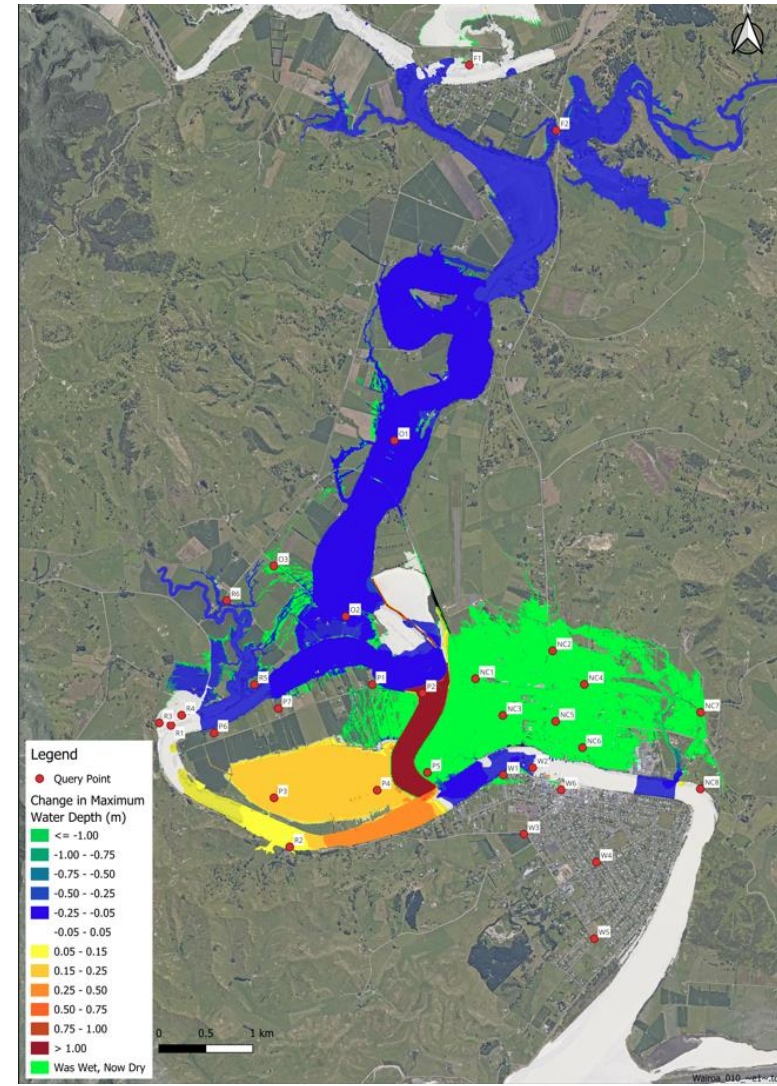
Option 1D2
(August)



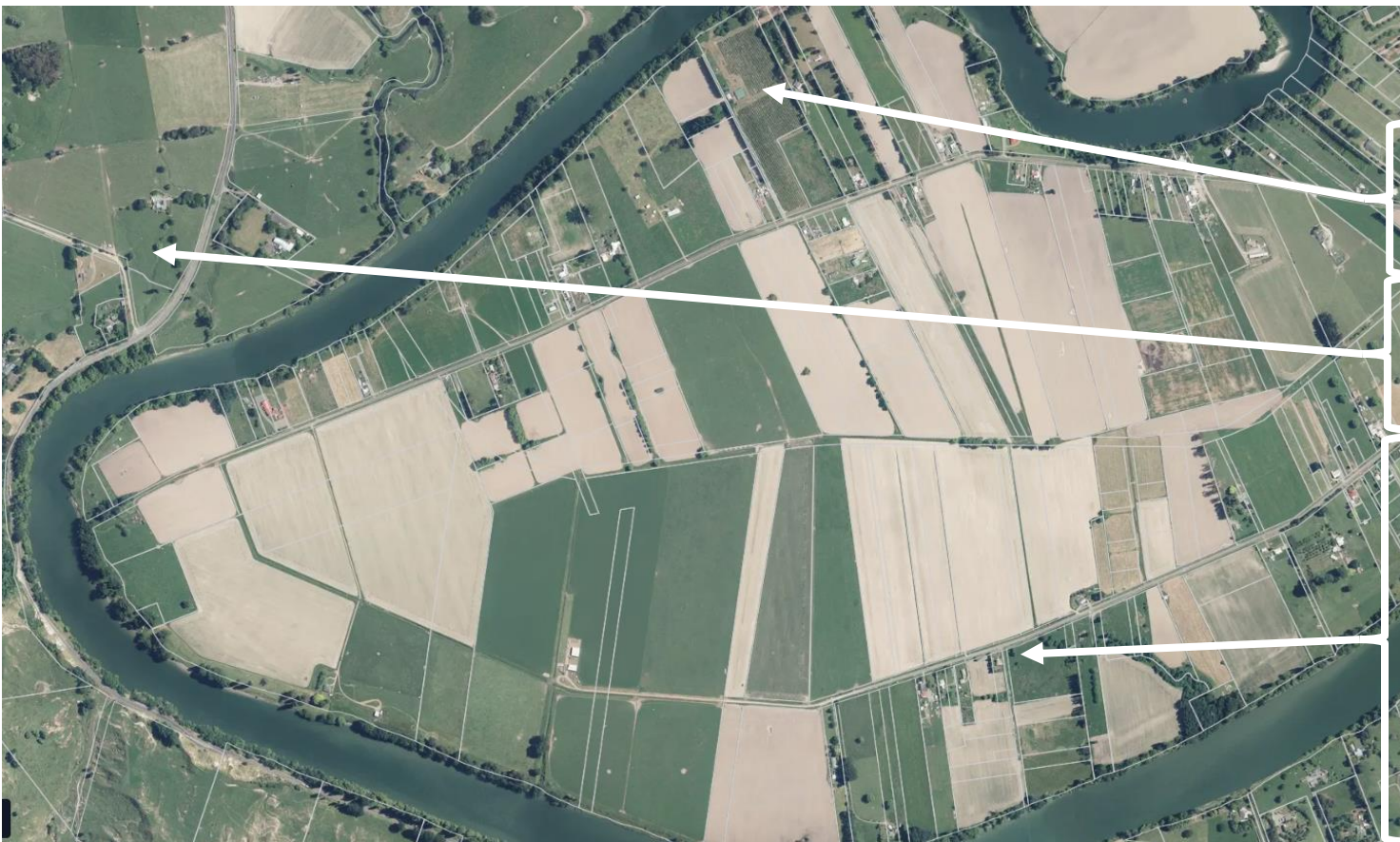
Option 1D3
(August)



Option 1C



Option 1D3



	Depth flood (m)				
	Do-Nothing	1C	1D	1D2	1D3
178 Ruataniwha Road, Wairoa	0	0	0	0	0
194 Ruataniwha Road, Wairoa	0.08	0	0.24	0.2	0
551 State Highway 2, Wairoa	1.05	0.97	1.24	1.2	1
591 State Highway 2, Wairoa	0.08	0	0.3	0.26	0.02
150 Waihirere Rd	0	0	0	0.13	0.14
Taumataoteo 5B1 & 5B2B1D Block (No. 171)	0.5	0.3	0.6	0.72	0.73
Taumataoteo 5B1 & 5B2B1B Block (No. 179)	0.57	0.38	0.66	0.78	0.78
Taumataoteo 5X Block (No. 181)	0.52	0.34	0.61	0.73	0.74
211 Waihirere Road, Wairoa	0	0	0	0	0
189 Waihirere Road, Wairoa	0	0	0.05	0.16	0.17

Priced Work	Option					
	Option 1C	Option 1D.1	Option 1D.2	Option 1D.3	Option 5C	Option 5D
Land purchase ¹	\$ 2,067,200	\$ 3,541,360	\$ 3,541,360	\$ 3,541,360	\$ 880,000	\$ 2,843,728
Relocation of community buildings	\$ -	\$ -	\$ -	\$ -	\$ 750,000	\$ 750,000
House purchase (excludes land cost) ²	\$ 8,000,000	\$ 2,500,000	\$ 2,500,000	\$ 2,500,000	\$ 1,000,000	\$ 1,000,000
Civil works ³	\$ 14,574,189	\$ 12,735,717	\$ 14,844,417	\$ 17,405,097	\$ 9,453,952	\$ 24,716,656
Other costs ⁴	\$ 9,674,163	\$ 9,462,377	\$ 10,688,231	\$ 15,718,194	\$ 4,850,050	\$ 12,751,685
Total inc. house purchase	\$ 34,315,552	\$ 28,239,454	\$ 31,574,008	\$ 39,164,651	\$ 16,934,002	\$ 42,062,069
Total exc. house purchase	\$ 26,315,552	\$ 25,739,454	\$ 29,074,008	\$ 36,664,651	\$ 15,934,002	\$ 41,062,069
Land purchase area assumed (ha)	25.8	44.3	44.3	44.3	11.0	35.5
House purchases assumed (no.)	16	5	5	5	2	2

Notes:

¹ Land purchase budgetted at \$80,000 / ha. It is assumed that the stopbank footprint will be purchased rather than constructed under an easement for pricing purposes. Floodway areas, including stopbanks are assumed to be purchased. Stopbank land purchases includes an allowance for a maintenance access corridor.

² Actual costs to be determined at a later date.

³ Civil works includes site clearance, temporary works, earthworks, erosion protection, landscaping, modification of existing services, construction and realignment of roads. Earthworks rates assume \$15/m³ for cut to stockpile and \$15/m³ for placement assuming suitable local material is available.

⁴ Other costs includes contractors overheads and profit, consenting, consultancy fees, risk and contingency

Note these cost estimates are for option comparison purposes only