

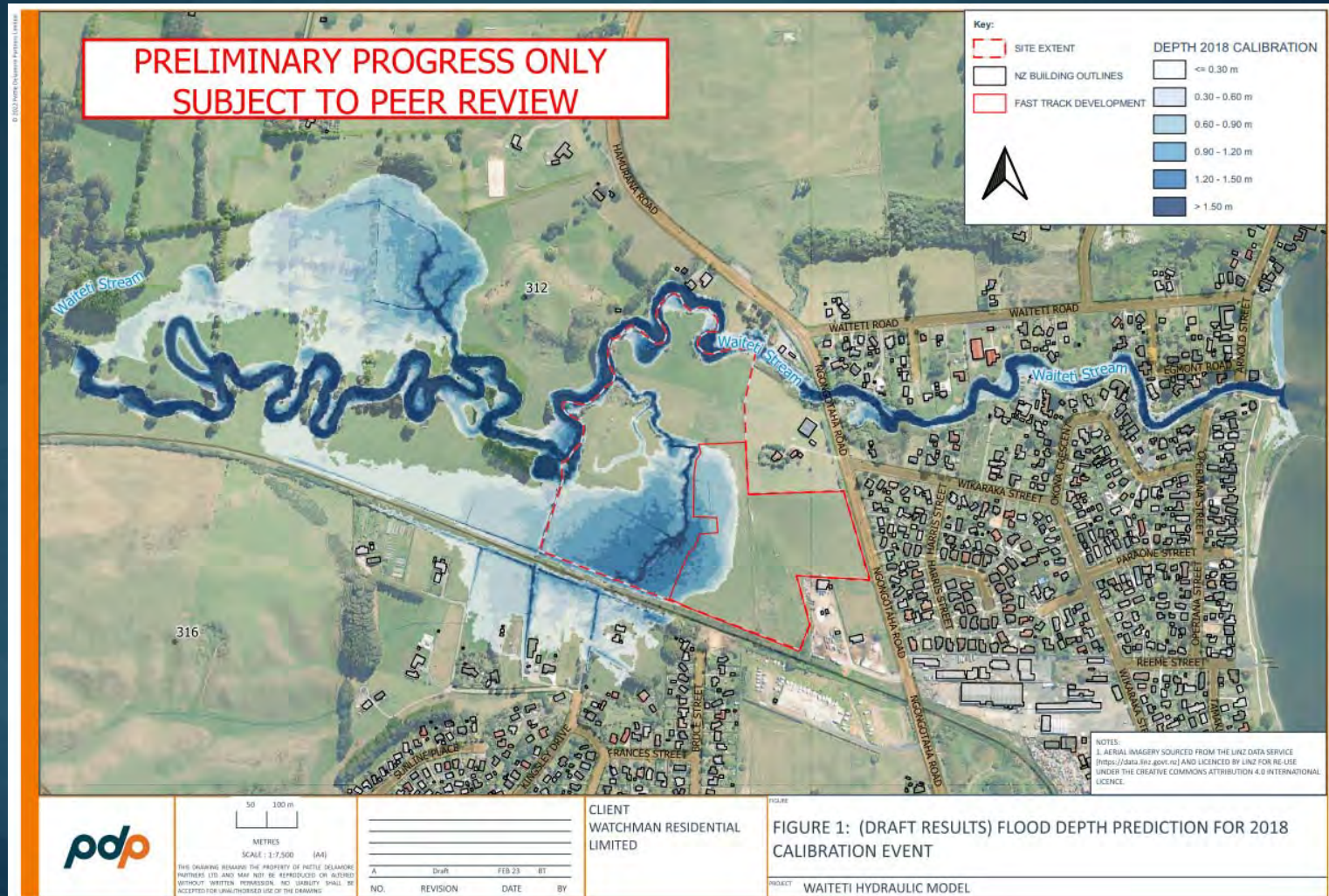
31 Ngongotahā Road Fast Track Application – Flood Modelling Progress for BOPRC

WATCHMAN RESIDENTIAL LTD

CONFIDENTIAL - COMMERCIAL SENSITIVE

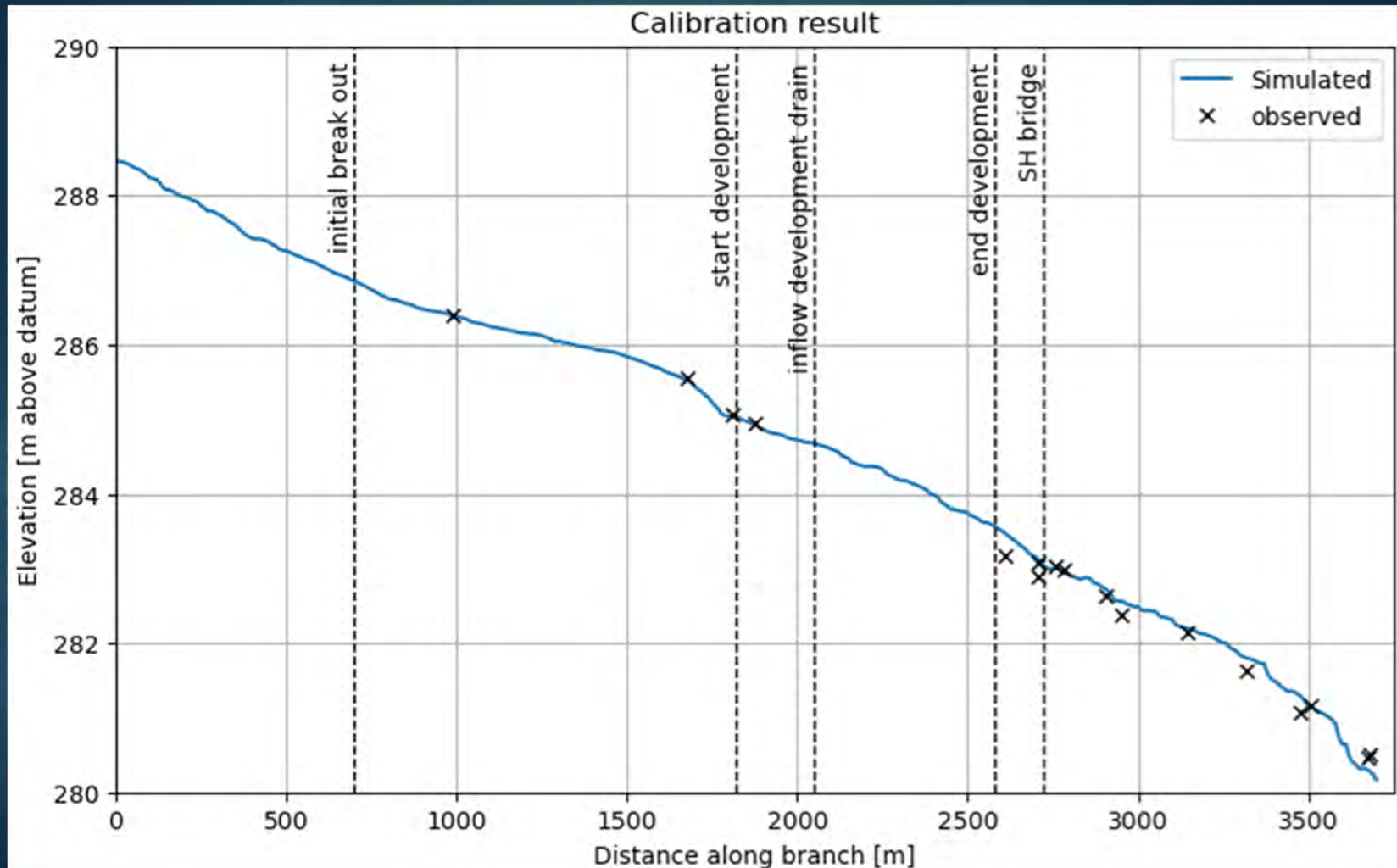
2018 Flood Event

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Calibration to 2018 event

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Risk Assessment: RPS Policy NH 9b

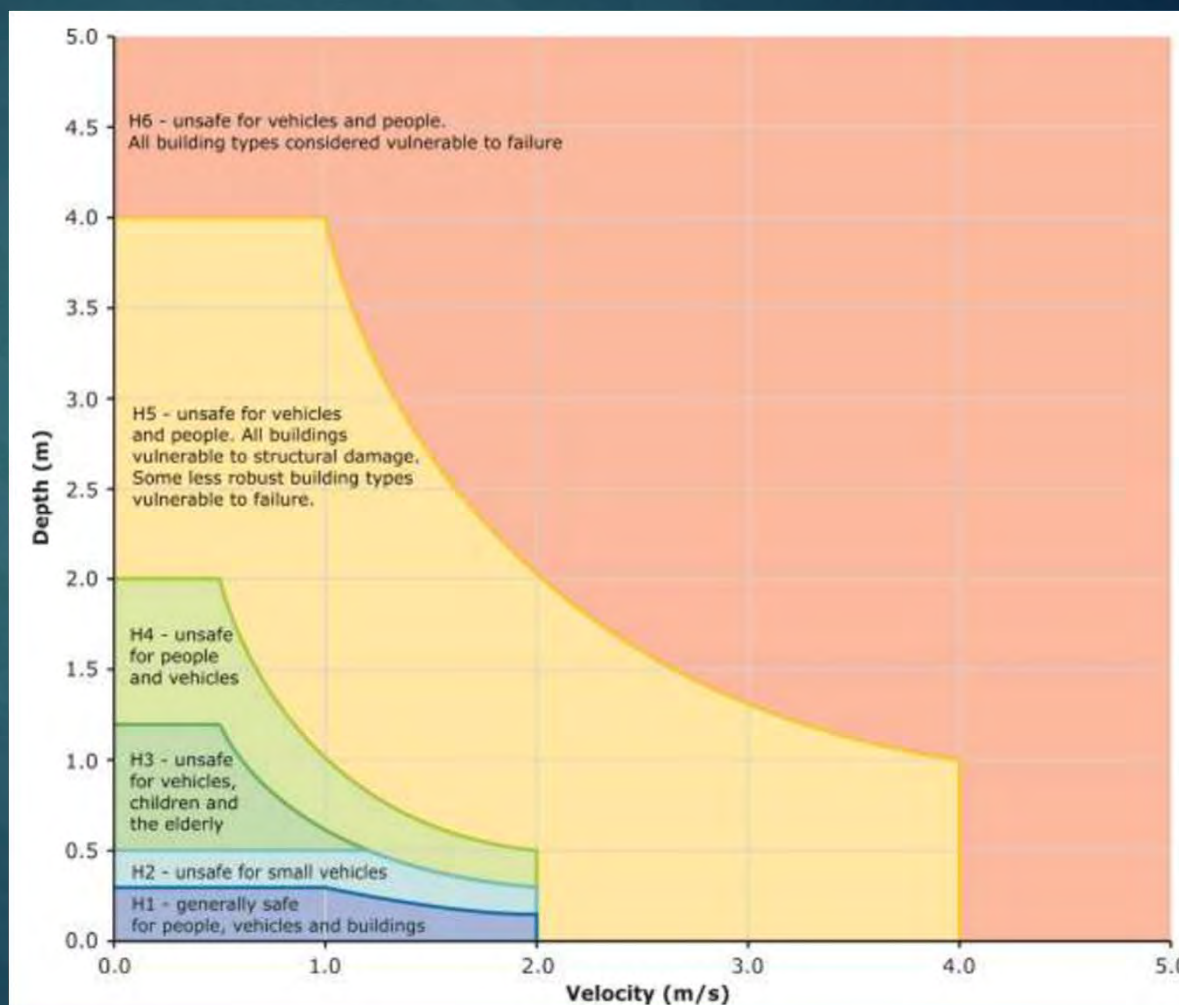
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Risk Screening Matrix

Likelihood ¹² (AEP %)	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
≥2	Low risk	Medium risk	Medium risk	High risk	High risk
<2-1	Low risk	Low risk	Medium risk	Medium risk	High risk
<1-0.1	Low risk	Low risk	Medium risk	Medium risk	High risk
<0.1-0.04	Low risk	Low risk	Low risk	Low risk	Medium risk
<0.04	Low risk	Low risk	Low risk	Low risk	Medium risk

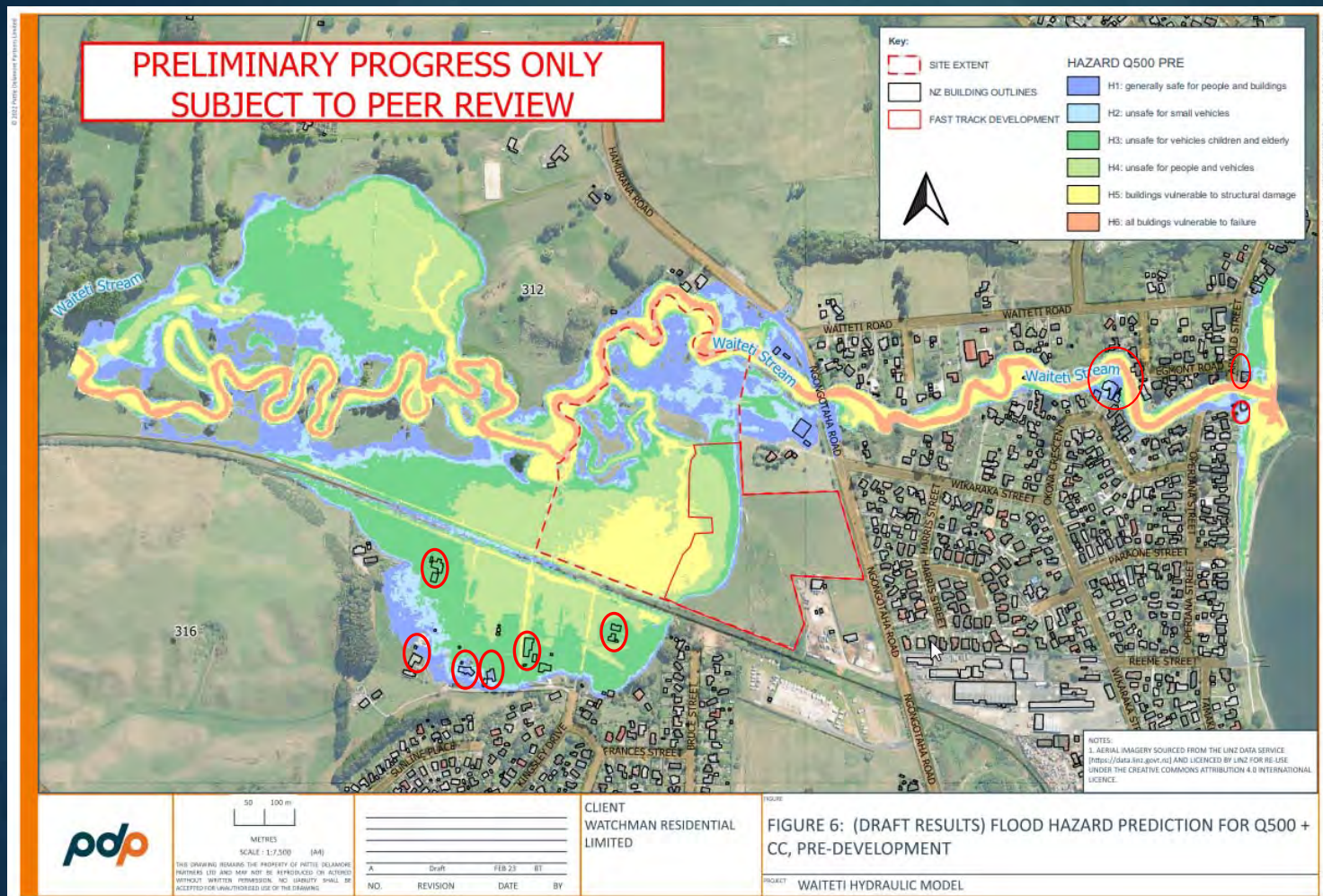
Key

High risk	High risk
Medium risk	Medium risk
Low risk	Low risk



Pre development: Flood Hazard

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Q100 PRE DEVELOPMENT	
HAZARD CLASSIFICATION	
H1: generally safe for people and buildings	4 dwellings
H2: unsafe for small vehicles	1
H3: unsafe for vehicles children and elderly	6
H4: unsafe for people and vehicles	0
H5: buildings vulnerable to structural damage	0
H6: all buildings vulnerable to failure	0

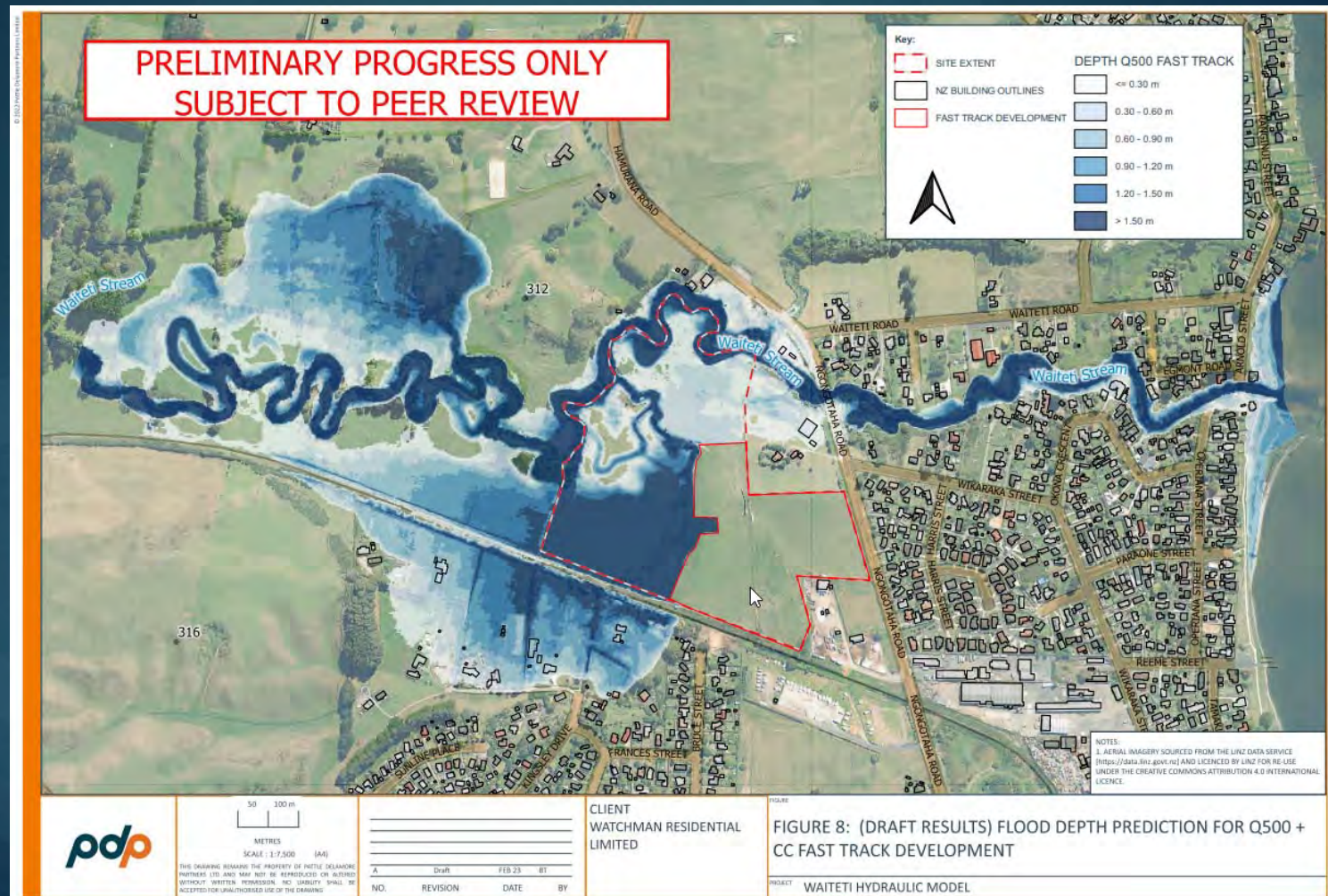
Q500 PRE DEVELOPMENT	
HAZARD CLASSIFICATION	
H1: generally safe for people and buildings	1 dwelling
H2: unsafe for small vehicles	4
H3: unsafe for vehicles children and elderly	6
H4: unsafe for people and vehicles	1
H5: buildings vulnerable to structural damage	0
H6: all buildings vulnerable to failure	0

Proposed Fast Track Development Layout

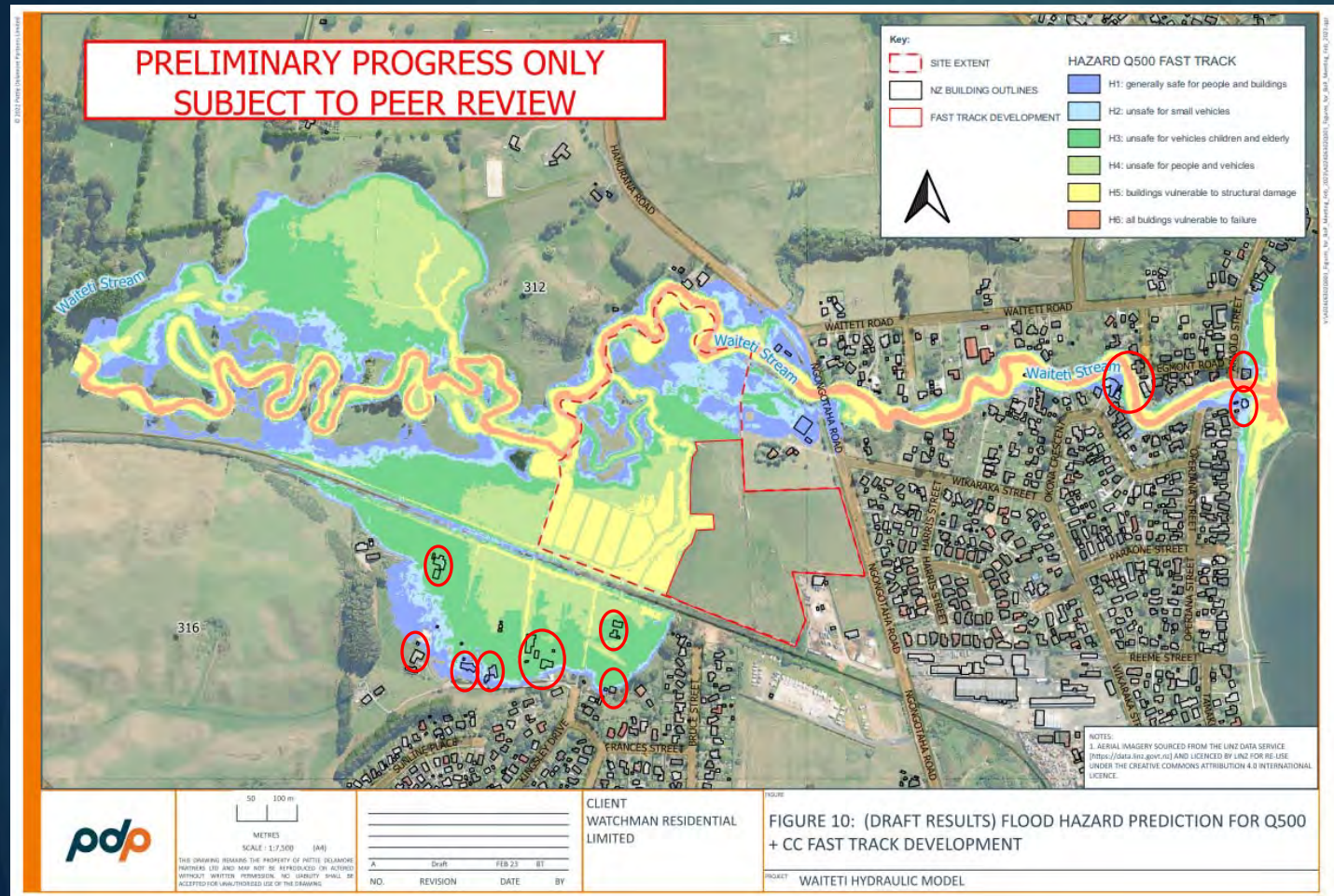


Fast Track: Floodplain depths

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Fast track: Hazard effects

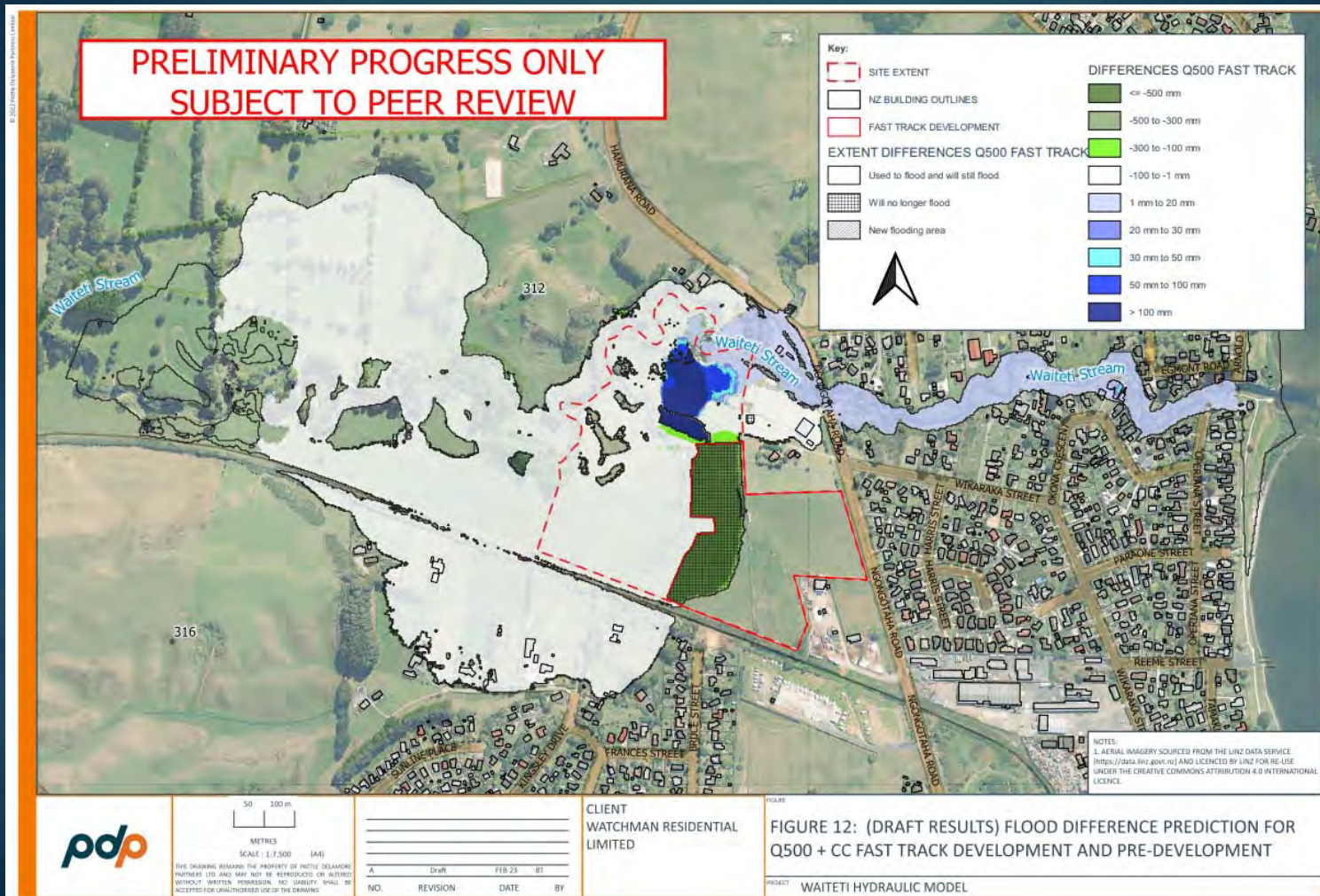


	Q100 PRE DEVELOPMENT	Q100 FAST TRACK
HAZARD CLASSIFICATION		
H1: generally safe for people and buildings	4 dwellings	3
H2: unsafe for small vehicles	1	1
H3: unsafe for vehicles children and elderly	6	6
H4: unsafe for people and vehicles	0	0
H5: buildings vulnerable to structural damage	0	0
H6: all buildings vulnerable to failure	0	0

	Q500 PRE DEVELOPMENT	Q500 FAST TRACK
HAZARD CLASSIFICATION		
H1: generally safe for people and buildings	1 dwelling	2
H2: unsafe for small vehicles	4	3
H3: unsafe for vehicles children and elderly	6	6
H4: unsafe for people and vehicles	1	1
H5: buildings vulnerable to structural damage	0	0
H6: all buildings vulnerable to failure	0	0

Fast track: Flood levels differences

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Previous Assessment (submitted to BoP 2021)

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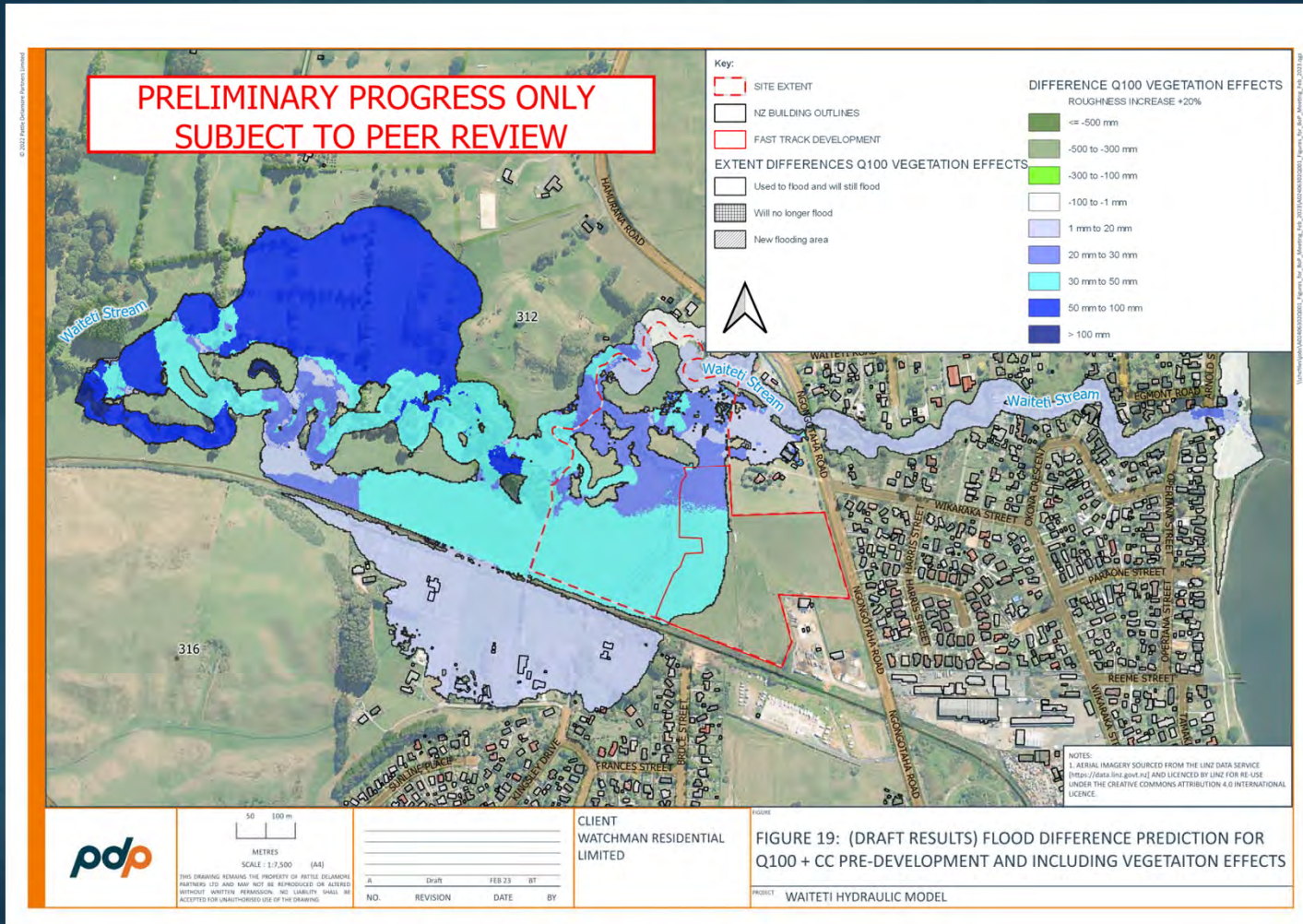


Sensitivities

- Effect of Floodplain earthworks vs increase in discharge
- Effect of flood timing – steady state flood flows
- Free board Requirements
- Extreme Event Consequences

Vegetation Effects

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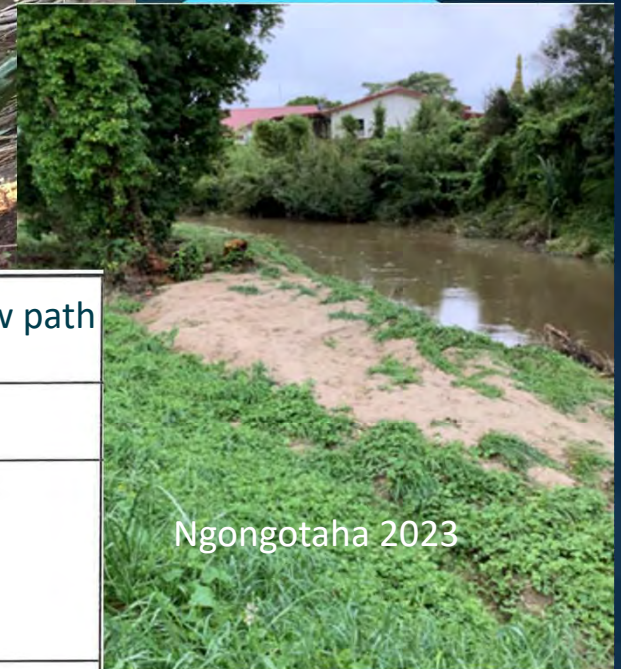
Summary

- Hazard fully mitigated on development site
- No increase in flooding off site
- No increase in Hazard clarification off site
- Decreases / less than minor increase in flood levels
- Consistent with policy NH 9B?

Sedimentation

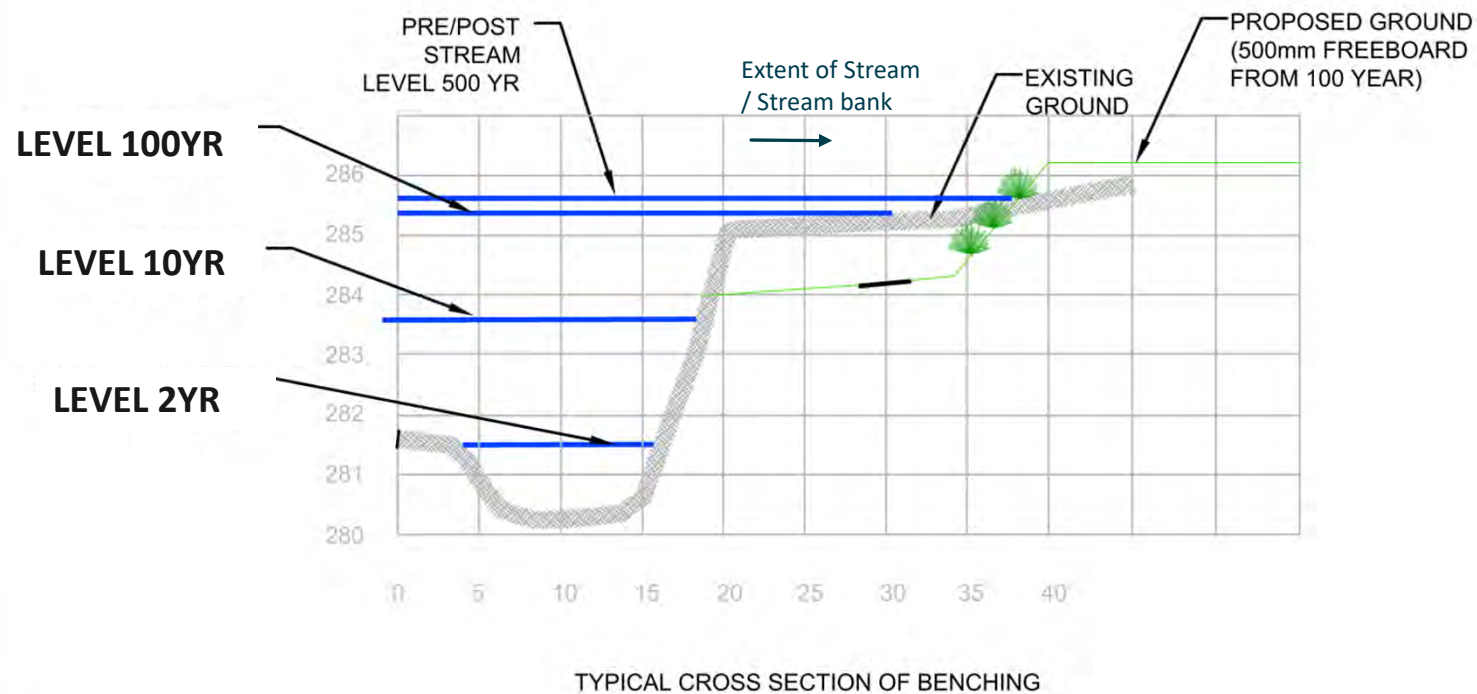


Depth (m)	Groundwater	Graphic Log	DESCRIPTIONS
0.0m			TOPSOIL.
0.5m		+++++	CLAY, creamy light brown, medium plastic, very moist.
	▼	+++++	
1.0m		+++++	Organic material
		+++++	
1.5m		+++++	CLAY, medium plastic, green, wet.
		+++++	CLAY, grey light brown, medium plastic, saturated.



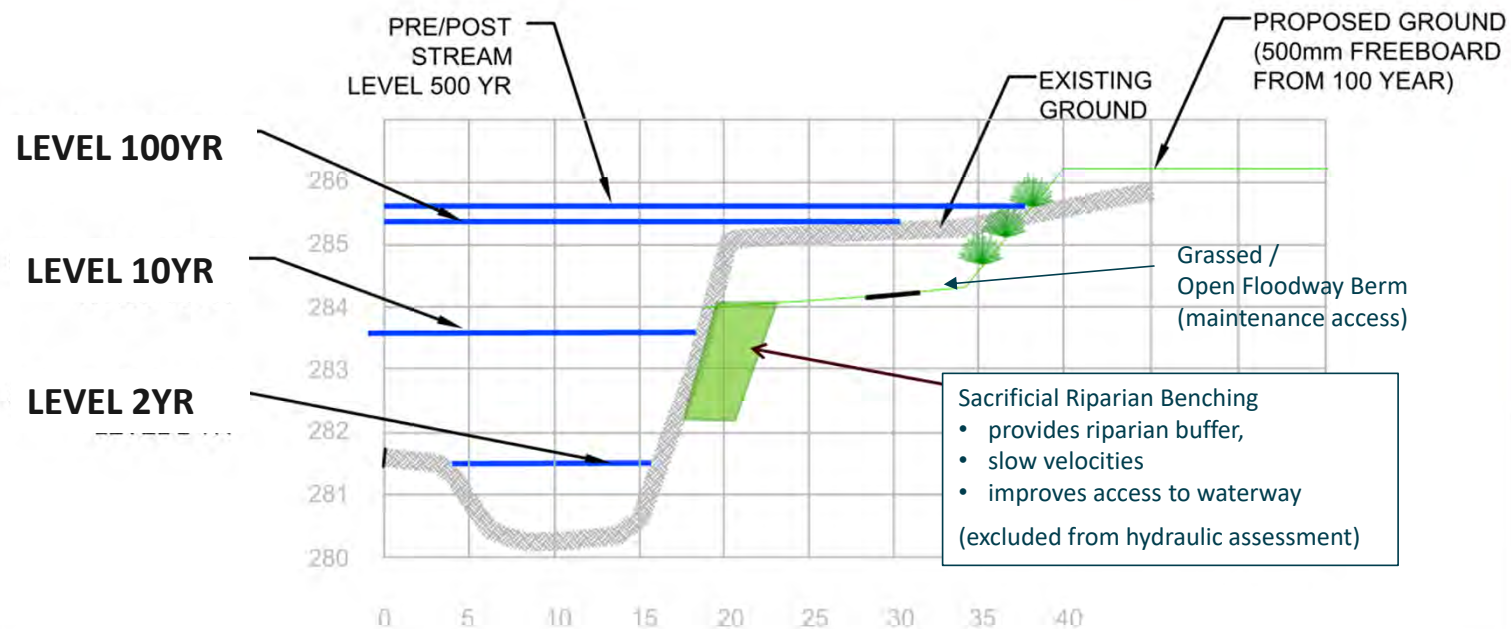
Floodway Provisions / Mitigation Stage 2

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Floodway provisions

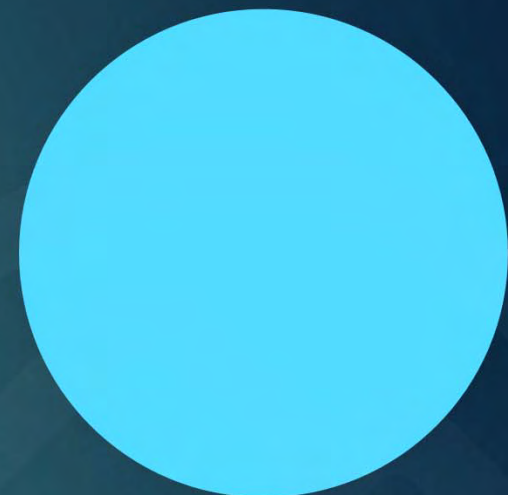
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Next steps

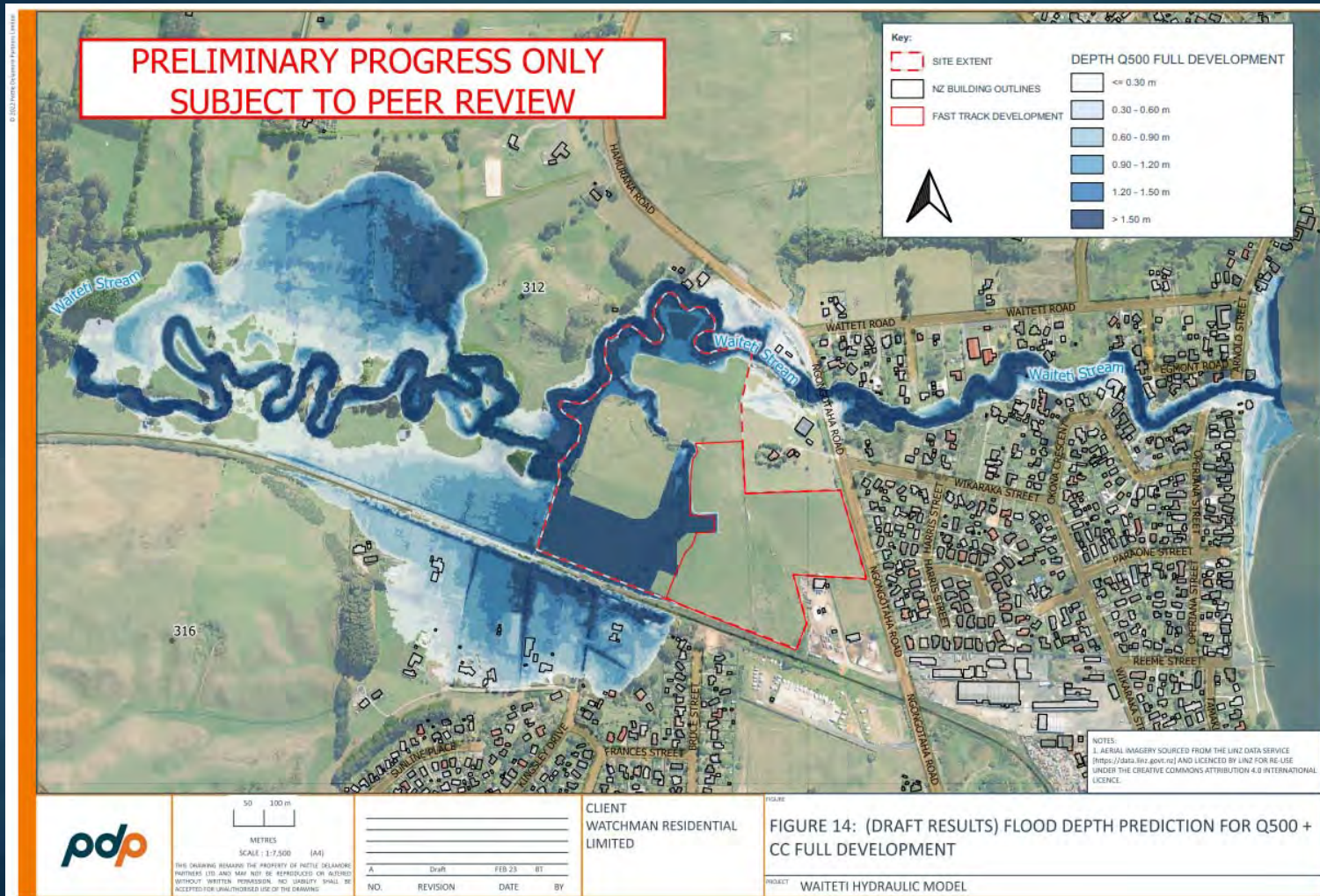
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- Any additional comments / suggestions from BOPRC
- Consideration of wetland sedimentation
- Inclusion of Lifelines effects in Risk assessment
- Sensitivity analyses
- Cumulative effects (upstream development)
- Quantify impact change in flood levels have on freeboard
- Peer review (Laddie Kuta E2 or otherwise agreed)
- Formal submission of assessment to BoPRC



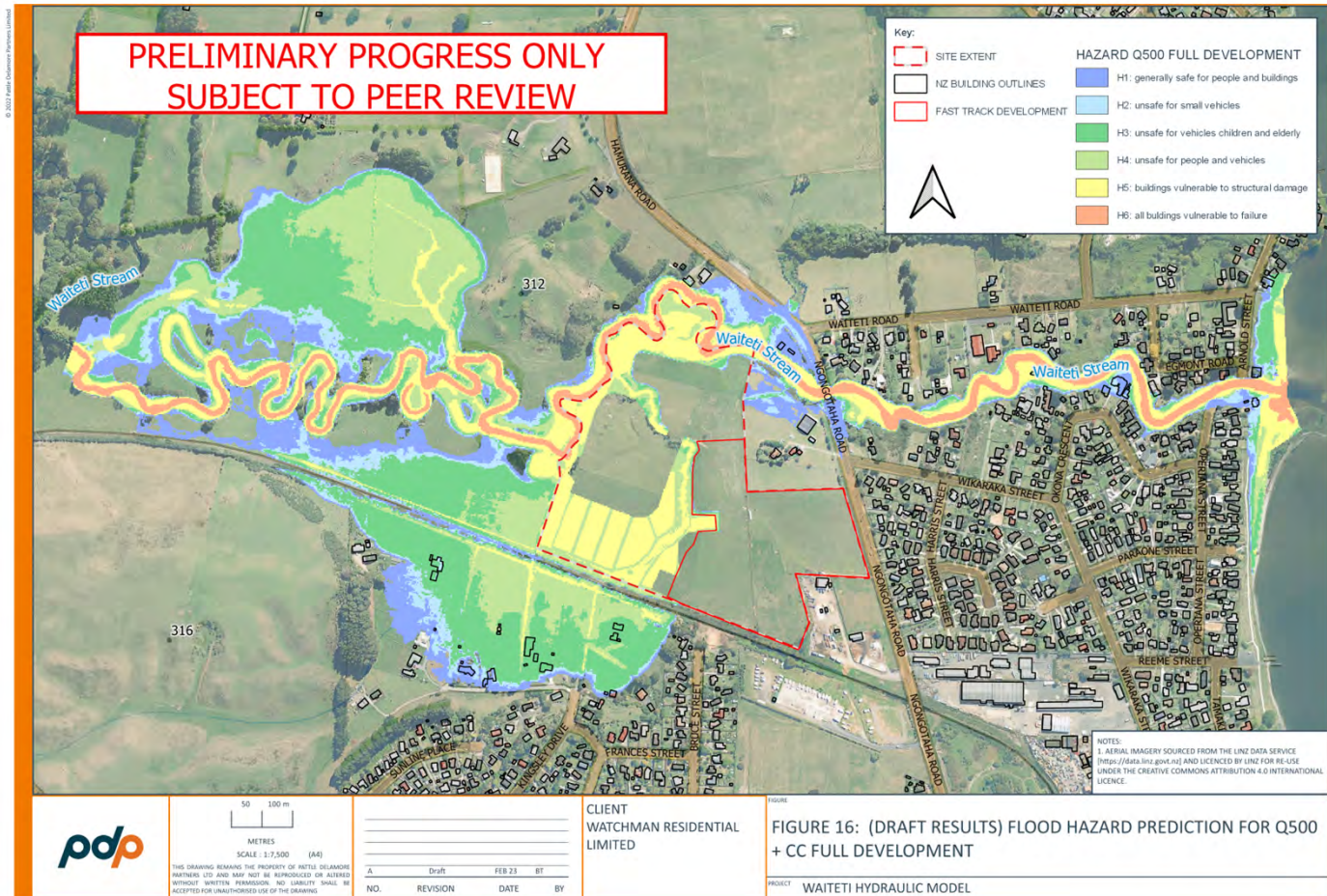
Full development: Floodplain depths

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Full development: Flood hazard effects

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HAZARD CLASSIFICATION	Q100 PRE DEVELOPMENT	Q100 FULL DEVELOPMENT
H1: generally safe for people and buildings	4	3
H2: unsafe for small vehicles	1	2
H3: unsafe for vehicles children and elderly	6	5
H4: unsafe for people and vehicles	0	0
H5: buildings vulnerable to structural damage	0	0
H6: all buildings vulnerable to failure	0	0

HAZARD CLASSIFICATION	Q500 PRE DEVELOPMENT	Q500 FULL DEVELOPMENT
H1: generally safe for people and buildings	1	3
H2: unsafe for small vehicles	4	2
H3: unsafe for vehicles children and elderly	6	6
H4: unsafe for people and vehicles	1	1
H5: buildings vulnerable to structural damage	0	0
H6: all buildings vulnerable to failure	0	0

Full development: Flood differences

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