Rounding out of objectives

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Aim

- To look at the draft objectives in a number of different ways to:
  - Identify any inconsistencies/contradictions
  - Identify any risks to the objectives being met from uncertainties in the modelling
- Note: not all attributes were part of this analysis

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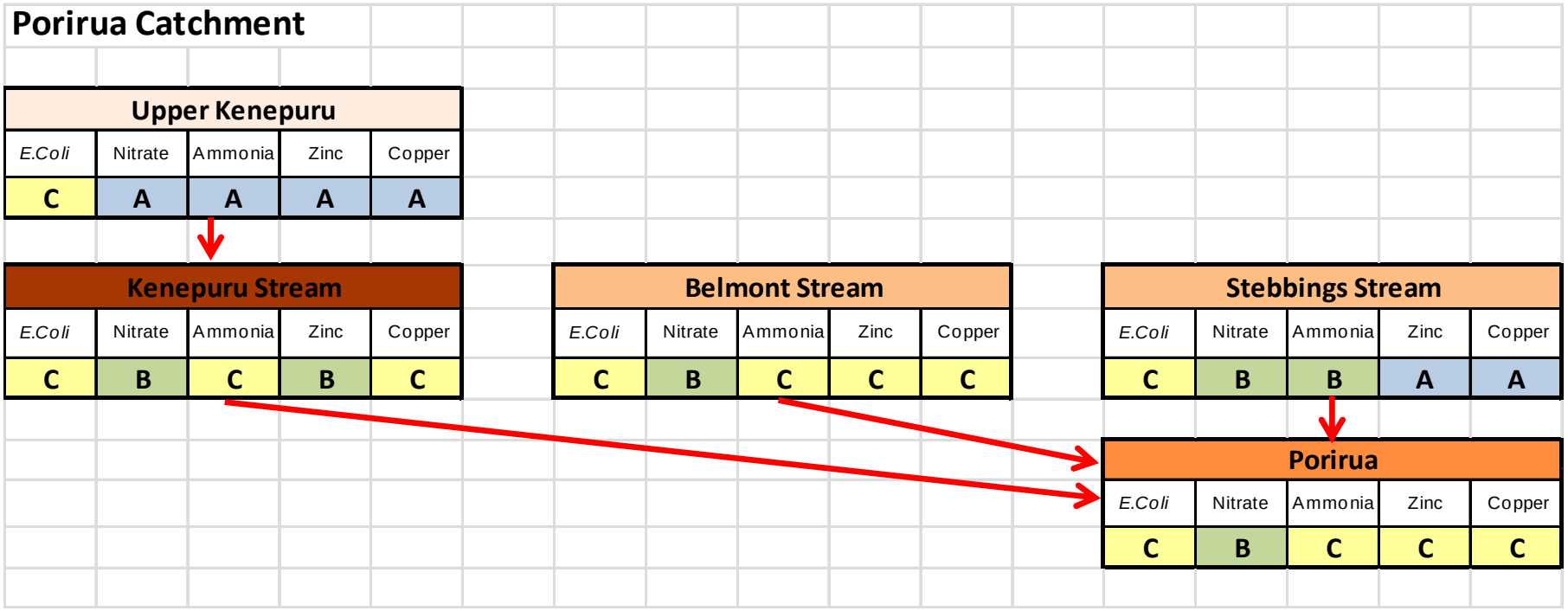
Upstream/downstream comparison by objective (Table 1)



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Upstream/downstream comparison by level of effort (Table 2)

Porirua Catchment

Upper Kenepuru				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	WS+	Imp	WS	WS+

Kenepuru Stream				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	BAU	Imp	Imp	Imp

Belmont Stream				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	BAU	BAU	BAU	Imp

Stebbings Stream				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS	BAU	BAU	WS+	WS+

Porirua				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	BAU	WS	Imp	Imp

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Level of effort comparison to the Harbour (Table 3)

Pauatahanui Arm

Zinc	Copper	
A/B (Imp)	**A (Imp)**	Intertidal
B↑ (WS)	**A (Imp)**	Subtidal

WMU

Upper Duck Creek	
Dissolved zinc	Dissolved Copper
WS+	WS+

Judgeford Stream	
Dissolved zinc	Dissolved Copper
BAU	Imp

Horikiri and Motukaraka	
Dissolved zinc	Dissolved Copper
WS+	WS+

Kakaho Stream	
Dissolved zinc	Dissolved Copper
Imp	Imp

Pauatahanui Stream	
Dissolved zinc	Dissolved Copper
Imp	WS

Ration Creek	
Dissolved zinc	Dissolved Copper
WS+	WS+

Lower Duck Creek	
Dissolved zinc	Dissolved Copper

Pauatahanui fringe stream	
Dissolved zinc	Dissolved Copper

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Level of effort comparison to the Harbour (Table 3)

Onepoto Arm

Zinc	Copper	
A (BAU)	**A (BAU)**	Intertidal
C↑ (WS+)	**B↑ (WS)**	Subtidal

WMU

Rangituhi Stream	
Dissolved zinc	Dissolved Copper
BAU	BAU

Upper Kenepuru	
Dissolved zinc	Dissolved Copper
WS	WS+

Whitireia	
Dissolved zinc	Dissolved Copper
Imp	WS+

Takapu Stream	
Dissolved zinc	Dissolved Copper
Imp	BAU

Stebbings Stream	
Dissolved zinc	Dissolved Copper
WS+	WS+

Belmont Stream	
Dissolved zinc	Dissolved Copper
BAU	Imp

Hukarito Stream	
Dissolved zinc	Dissolved Copper
WS	WS+

Mahinawa Stream	
Dissolved zinc	Dissolved Copper
Imp	WS+

Kenepuru Stream	
Dissolved zinc	Dissolved Copper
Imp	Imp

Porirua	
Dissolved zinc	Dissolved Copper
Imp	Imp

Onepoto Fringe	
Dissolved zinc	Dissolved Copper
WS+	WS+

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Level of effort comparison within WMU groups(Table 4)

Rural

Horikiri and Motukaraka				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS	Imp	Imp	WS+	WS+

Kakaho Stream				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	WS	WS	Imp	Imp

Judgeford Stream				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	Imp	WS	BAU	Imp

Upper Duck Creek				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	Imp	Imp	WS+	WS+

Pauatahanui Stream				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS	Imp	Imp	Imp	WS

Ration Creek				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
Imp+	WS	WS+	WS+	WS+

Urban

Hukarito Stream				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	BAU	WS+	WS	WS+

Mahinawa Stream				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	BAU	BAU	Imp	WS+

Onepoto Fringe				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
Imp	BAU	WS	WS+	WS+

Titahi				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
Imp	Imp	WS	WS	Imp

Kenepuru Stream				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	BAU	Imp	Imp	Imp

Porirua				
E.Coli	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
WS+	BAU	WS	Imp	Imp

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Belmont Stream Zinc objective

	Belmont Stream				
Attribute	*E.Coli*	Nitrate toxicity	Ammonia Toxicity	Dissolved zinc	Dissolved Copper
Current State	E	B	C	C	C
Draft Objective	**C**	**B**	**C**	**C**	**C**
Scenario	WS+	BAU	BAU	BAU	Imp

	Stebbings Stream				
Attribute	*E.Coli*	*Nitrate toxicity*	*Ammonia Toxicity*	*Dissolved zinc*	*Dissolved Copper*
Current State	E	C	B	A	A
Draft Objective	**C**	**B**	**B**	**A**	**A**
Scenario	WS	BAU	BAU	WS+	WS+

Belmont Stream				
Attribute	Current state	BAU	Imp	WS
Zinc	**C**	**C↑**	**B**	**A**

Recommendation

Consider changing the zinc objective from C to B

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Modelling and data quirks

- *E.Coli* overestimation in the upper parts of rural WMUs
- Ammonia overestimation in rural WMUs
- Zinc and copper overestimation in Onepoto fringe

Recommendation

Retain draft objectives but note the effort required to achieve the objective might not be so high

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Conclusions

- The draft objectives are looking good
- Further reviews of the objectives will need to be undertaken as we get more information e.g. economics, harbour modelling, contaminant loads
- Some key themes can be drawn out which will help with the development of the policy packages
  - Greenfield development areas are likely to require water sensitive efforts
  - In existing urban areas stormwater efforts generally require an improve effort and a water sensitive+ effort for wastewater
  - In rural WMUs a high level of effort is required to achieve the harbour objectives for sedimentation rate and % area with soft mud

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