Objectives and limit setting - revision of key points

Mary-Anne Baker, Joseph Thomas, Lisa McGlinchey

26 June 2015

NOF in a nutshell

1. What are we managing our water bodies for? (our values and our objectives)
2. What attributes are important for these?
3. What state do the attributes need to be?
4. What is the current state of these attributes?
5. How do our desired and current states compare?
6. What are the threats and risks?
7. How can we manage the threats/risks?
8. Can we afford it, will this be effective?

Values – what is important

- **What we are managing the rivers for?**
  - Management objectives already established
  - Attribute states and limits that are needed to meet the objectives are being developed
    - **Water flows** – how much water there needs to be to meet the management objectives is a key attribute
- **Minimum flows (and limits) are relevant for all management objectives;**

Ecosystems	Cultural and spiritual values
Fishing	Water abstraction (esp irrigation)
Swimming	Mahinga kai
Natural form and character	Domestic Water supply
Power generation	

Can this approach suit individual philosophy or aspirations?

- **Does this mix of values serve to protect any concepts/terms/outcomes that might not be specifically included?**
  - Have we got the right values?
  - Is there another “value” we need to manage the water bodies for?
- **Challenges in relation to compartmentalising values and focus on numbers and data**
  - Breaking down into details to make progress
  - Iterative process

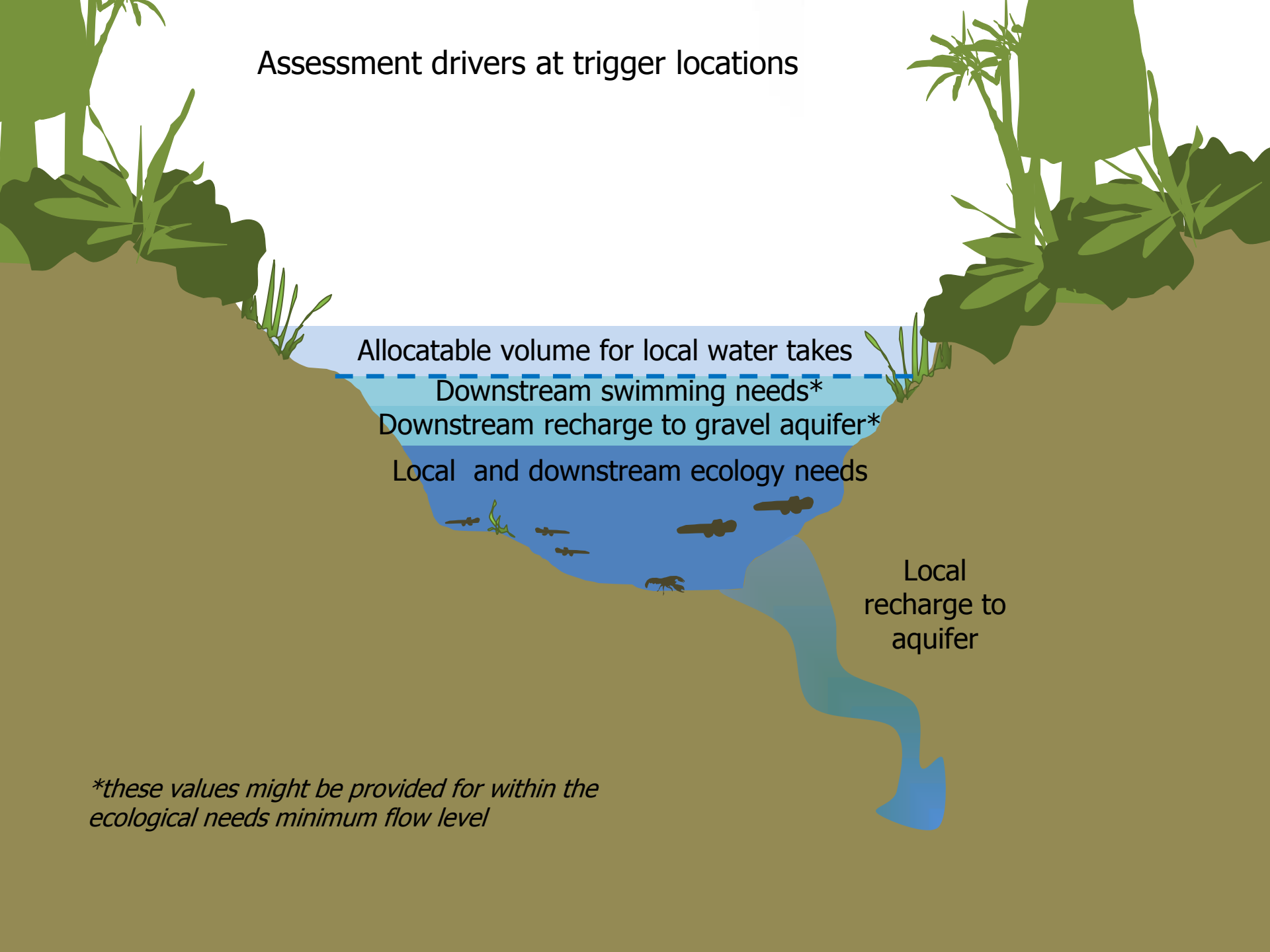
Suiting aspirations

- **How comfortable are you with the information so far?**
- **Are there concerns in relation to things like;**
  - Trust in the data, the science, the experts?
  - Uncertainty about risks and outcomes?
  - Complexity?
  - Presentation and explanation of data or process?
  - The methods we use to ensure objectives are met?

The Process - Selecting Attribute States

- **Flows and Levels**
  - Determining what state meets the objectives
    - Is there a critical value that drives the flow setting?
  - Does relative importance vary and should it be managed differently across rivers?
    - of values themselves and within each water body both;
      - *value by value and*
      - *river by river*

Assessment drivers at trigger locations



*these values might be provided for within the ecological needs minimum flow level

Value by Value

- **So far management objectives are the same for;**
  - Swimming during summer – all rivers
  - Healthy mauri – all rivers
  - Drinking water – no extra treatment, all water
  - Natural and physical characteristics – maintained for all water bodies

River by River

- **So far the management objectives for some values vary:**
  - Native fishery values – much higher in coastal catchments
  - Irrigation – where there is irrigable land
  - Fishing – where valued species are present
  - Mahinga kai – where valued species are present
  - Hydro-electric – especially where schemes currently
  - Cultural/spiritual – like the Springs, has many values

Attributes states - the flow regime

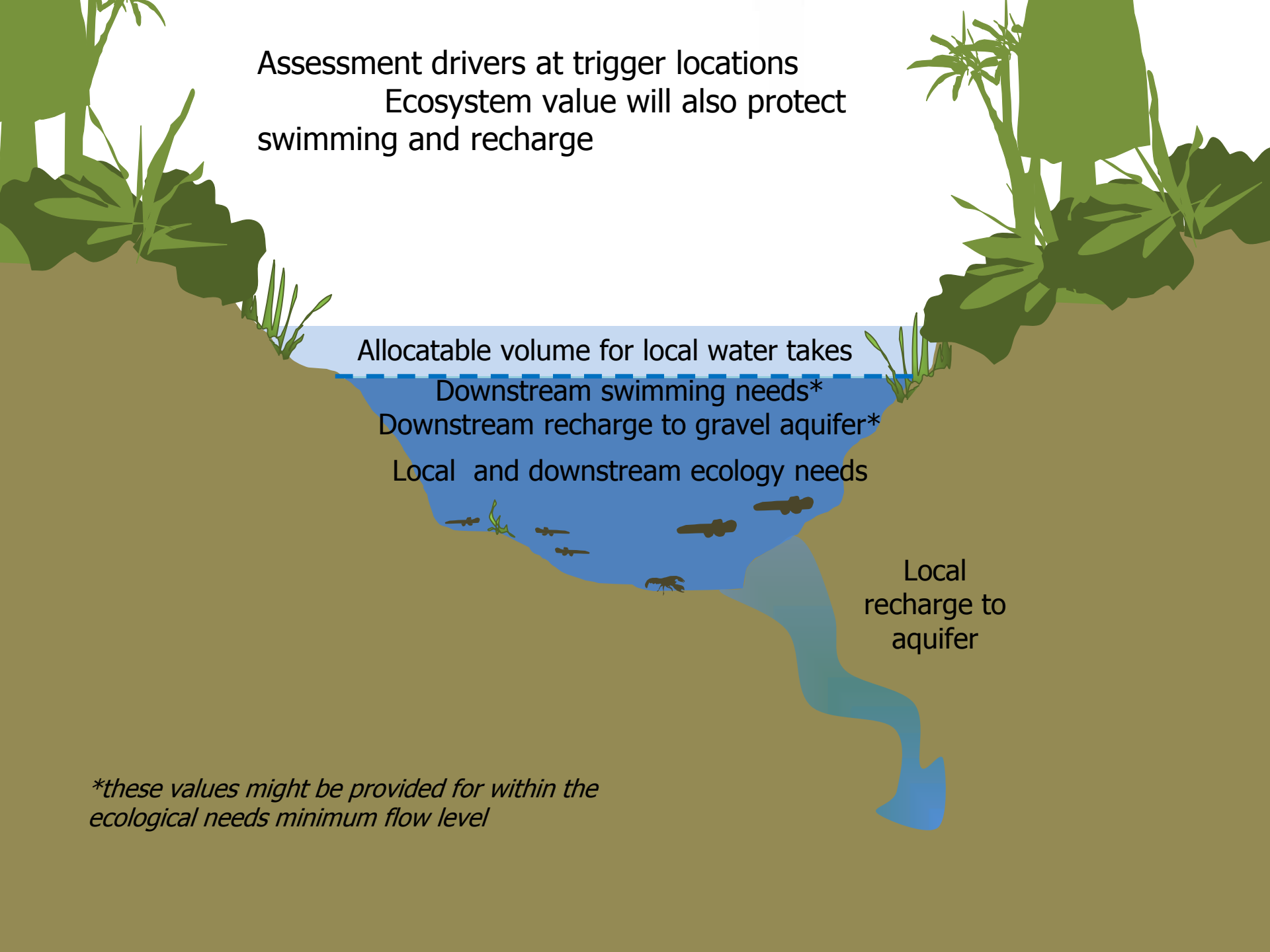
- **There is data to establish flow requirements for;**
  - Ecosystems
  - Water abstraction (esp irrigation)
  - Swimming
  - Domestic Water supply
  - Fishing – related to ecosystem
  - Mahinga kai – related to ecosystem
- **Harder to find data in relation to;**
  - Cultural and spiritual values
  - Natural form and character

How Significant is the Value?

- **A range of terms;**
  - Significant values of outstanding water bodies (NPS)
  - Locally, regionally, nationally or internationally significant
  - A lack of recognised methods to calculate and assign significance.
    - Some criteria for some values
    - RiVAS
    - National project for “outstanding”
      - *Outstanding in local context or national context?*

Manage attribute states for key 'critical" values

- **Protecting for swimming quality also protects for stock health**
- **Protecting flows for ecosystems also protects for fishing, mahinga kai, and (gravel) aquifer recharge**
- **Does protecting flows for ecosystems also protect flows for cultural, social values?**
  - Iterations to check impacts and effects.


Assessment drivers at trigger locations
Ecosystem value will also protect swimming and recharge
Allocatable volume for local water takes
Downstream swimming needs*
Downstream recharge to gravel aquifer*
Local and downstream ecology needs
Local recharge to aquifer
*these values might be provided for within the ecological needs minimum flow level

How significant is the ecosystem value?

- **Aquatic Ecosystem Values in Golden Bay;**
  - Can be ranked in order of importance according to a number of methods including;
    - Expert assessment of fish data/habitat
    - RiVAS (multiple attributes incl diversity, abundance, presence of threatened species)
    - Use of data sets such as IBI, MCI
    - Recreational fishing data (angler surveys, drift dives etc)
    - DoC threatened species
    - National/international recognition

Key decision point – for flow setting

- **Should selection of (different) flow regimes be based on relative significance of values?**
  - In-stream values as well as abstractive values?
  - account for existing as well as potential
    - *E.g improve water quality such as in the Motupipi R or allow for new water use*

Options for decision making

- **If not significant ranking, what other approach could be used?**
  - Standard or default (minimum flow) level for all rivers ?
    - *may not reflect what is present or what is possible.*
    - *may result in need to manage over-allocation*
  - CBA would need to identify costs of missed opportunities, or restrictions on current economic activity.
- **Advice so far based on premise that ranking is appropriate**

Aquatic Species Habitat Protection

Attribute State	% Habitat retention	Risk of change to fish* populations	Expected outcome	Example for use
A	>90%	Low	Should maintain existing populations. Unlikely that this change to habitat would cause a noticeable reduction in fish abundance or other instream values given the high natural temporal and spatial variability in fish populations.	High quality fishery of national significance or Threatened species of national or international conservation status.
B	80 - 90%	Low-Moderate	?	Moderately valued fishery of regional significance.
B	70 – 80%	Moderate	?	Low valued fishery of local significance.
C	60 – 70%	Moderate-High	High risk of reducing life supporting capacity.	Species with intrinsic value, but no direct fishery value or special conservation significance. This might be acceptable for widespread species with only intrinsic value. For these species ecosystem functioning should also be taken into consideration (e.g. some species are prey for fish with fisheries value (ie trout and eels) and for birds, some of which have threatened conservation status (eg. black-fronted terns and wrybills).
D	<60%	High	Detrimental effects on populations, especially where densities are high.	

** High flow fish species*

Habitat Protection

- **Room for debate about what the boundaries for the A – D states should be if % habitat retention is put in a banding framework.**

- **We are using a historic flow approach based on mean annual low flow (MALF) in these Takaka Rivers**
  - for simplicity and cost effectiveness in relation to risks and threats
  - Routinely used

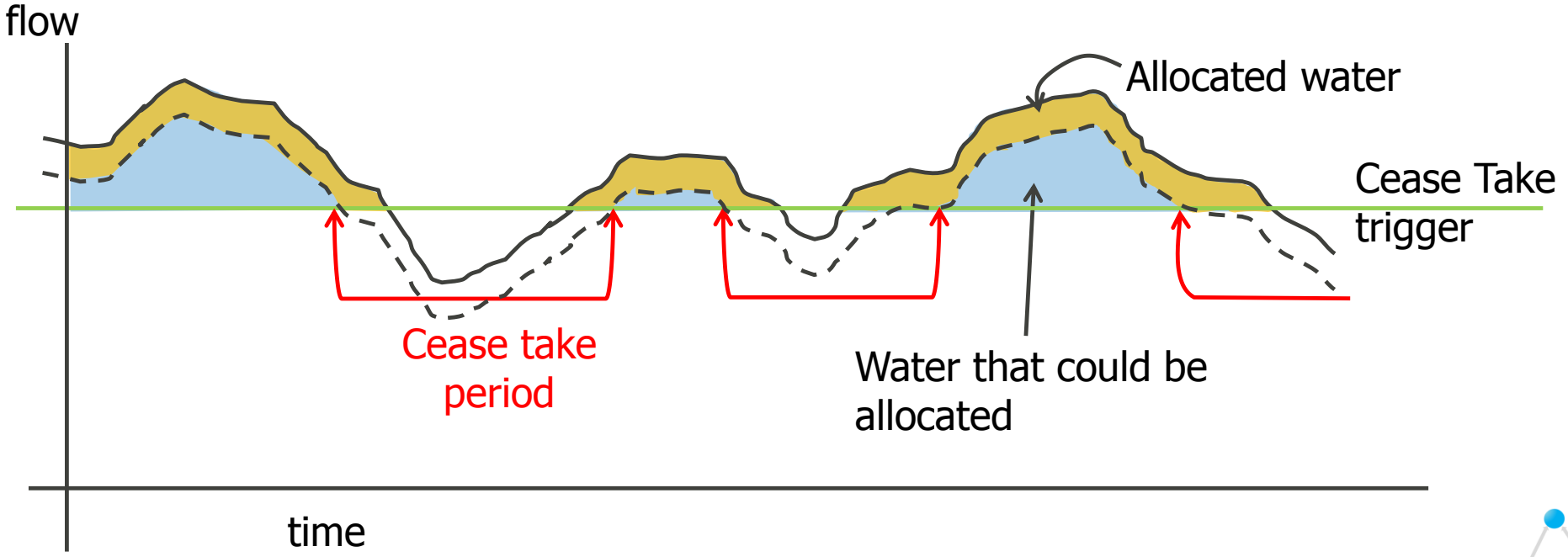
- **% MALF doesn't necessarily equal % habitat**
  - it assumes a linear relationship between flow and habitat, but
  - in reality a non-linear relationship would be expected and the slope of the line is unlikely to be 1:1 between flow and habitat
  - Other things affect fisheries health

What does the limit setting process do?

1. Uses the values we want to protect to determine minimum flows
   - The minimum flow determines ‘what the fish see’ using the selected level of habitat protection
2. Looks at scenarios to identify the amount of water to allocate to water users in a way that gives them a desired security of supply
   - Looking at the record of flow data and making predictions about levels of restrictions for users
3. Identifies mechanisms to manage how water takes are restricted or ceased during dry periods to protect the values
   - Flow triggers for rationing/cease take
   - Conditions on consents

Identifying an allocation limit

- **Potential Methodology**
  - Allocates at a portion of the water available above the minimum flow
  - Considers security of supply needs
  - Sets the allocation amount to meet the security level




Questions?