

AHC webinar series: Webinar 2: Water use in hydrogen production

Australian Hydrogen Council

20 OCTOBER 2022

Agenda

ITEM	Organisation	Speaker	Time	
1	Introduction	Australian Hydrogen Council	Fiona Simon	2.00pm - 2.10pm
2	Interim results on water use in hydrogen production	Net Zero Australia Project	Simon Smart/ Andrew Pascale/Michael Brear	2.10pm - 2.30pm
3	Water volumes for hydrogen	Australian Hydrogen Council	Fiona Simon	2.30pm - 2.50pm
4	Urban water supplies and potential hydrogen-based demand	University of NSW	Stuart Khan	2.50pm - 3.15pm
5	Water use on native title land: why you can't just go with the flow	Melbourne University	Lily O'Neill	3.15pm - 3.25pm
	BREAK			3.25pm - 3.30pm
6	Water utilities and planning	Water Services Association of Australia	Danielle Francis	3.30pm - 3.50pm
7	The national water grid	National Water Grid Authority	Stephanie Werner	3.50pm - 4.10pm
8	Hunter Water's water security plan	Hunter Water	Tony McClymont	4.10pm - 4.30pm
9	Manufactured water considerations	Veolia	Scott Murphy	4.30pm - 4.50pm
10	Next steps and meeting close	Australian Hydrogen Council	Fiona Simon	4.50pm - 5.00pm

Two basic production processes

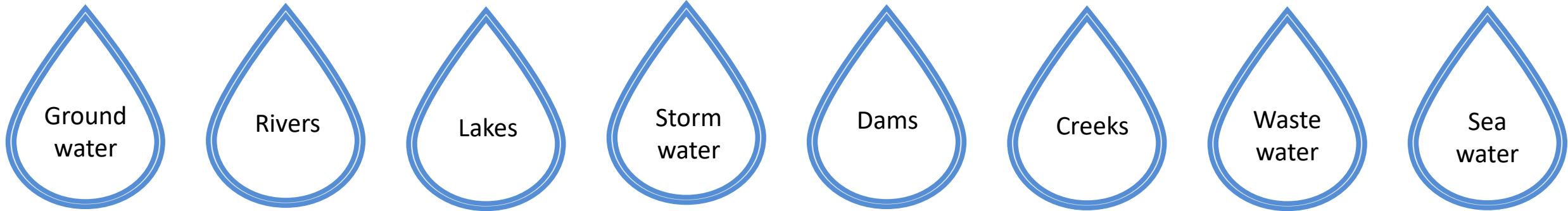
Hydrogen via electrolysis

Electrolyser feed water +	L/kg H ₂ ?
Process plant cooling water	L/kg H ₂ ?

Hydrogen via SMR, plus CCS

Boiler feed water for steam methane reformation +	L/kg H ₂ ?
Process plant cooling water +	L/kg H ₂ ?
Water for carbon capture and storage (CCS)	L/kg H ₂ ?

Raw water sources vary



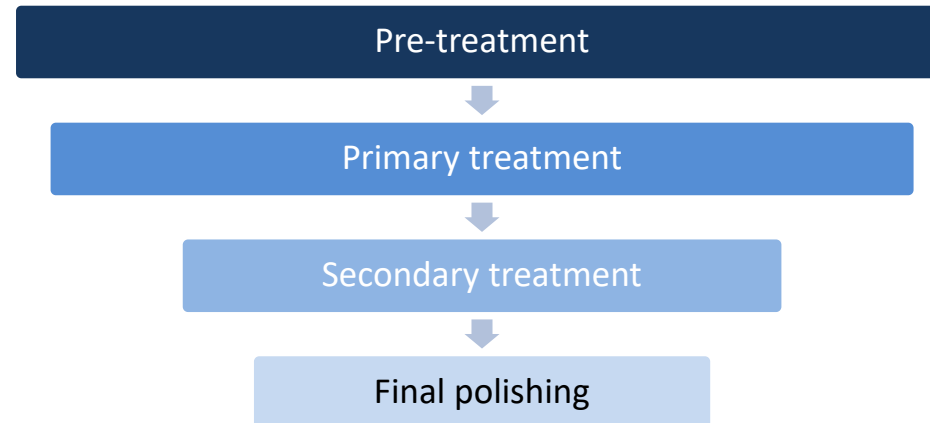
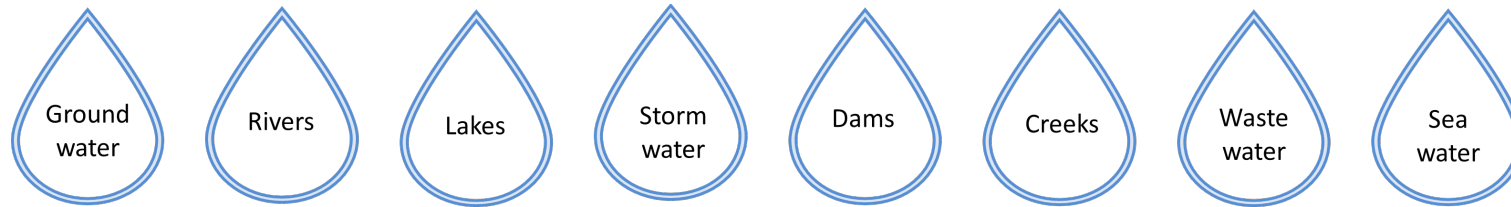
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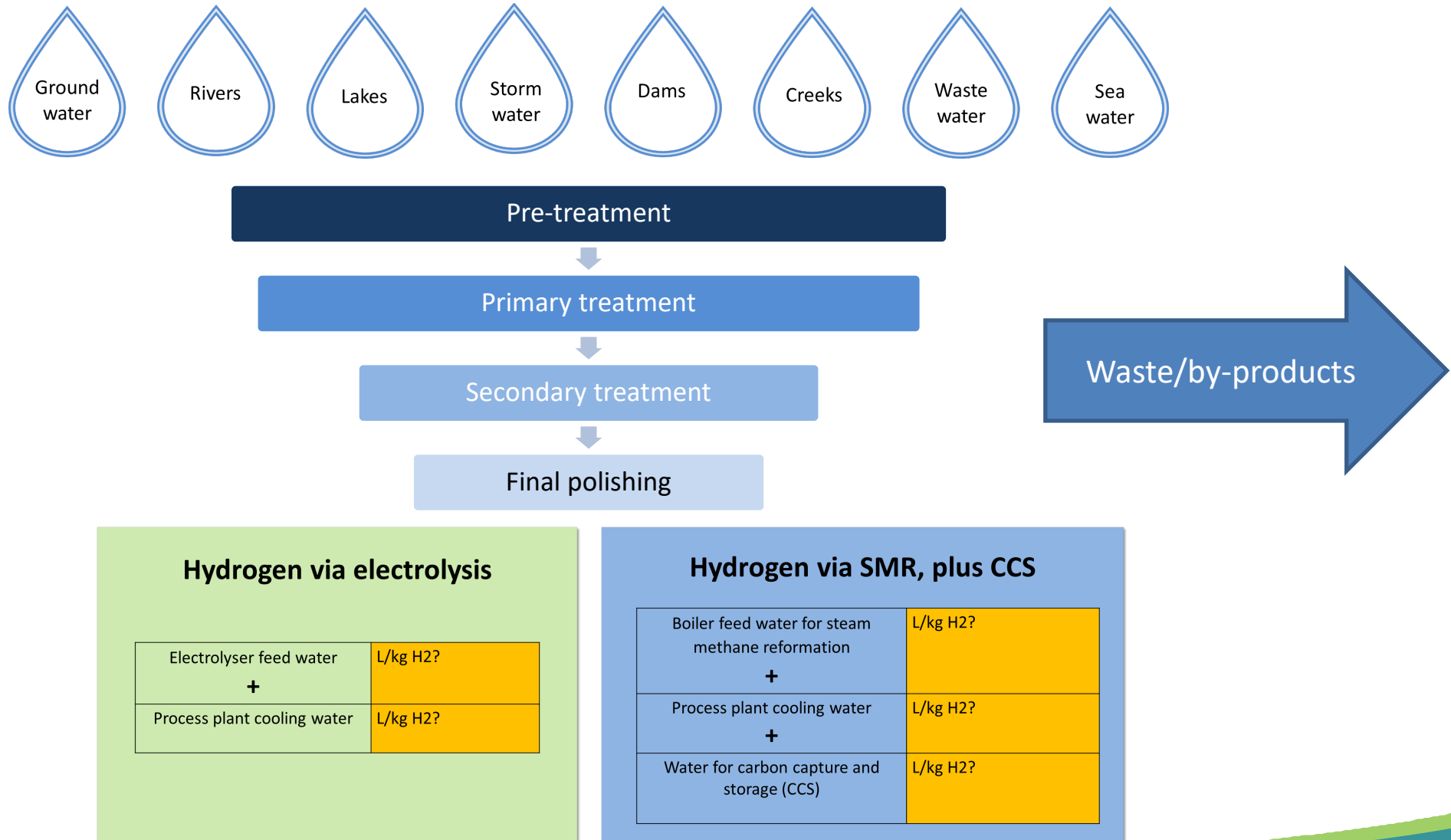
And treatment is required



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Cooling options

Once through cooling



Advantages

- Little or no water consumption
- No treatment of cooling water needed
- Low energy use

Disadvantages

- Large & continuously replenished total water requirement
- Siting must be adjacent to water body
- Potential env. impact high temp. return water
- High maintenance

Evaporative cooling



Advantages

- Less total water required than once through
- Lower energy use
- Higher efficiency in removing heat

Disadvantages

- Higher water consumption due to evaporation, higher in dry zone
- Treatment of cooling water required
- High maintenance

Air cooling



Advantages

- Zero water required
- Lower maintenance
- No waste stream discharge

Disadvantages

- High capital cost
- High energy use
- Large footprint
- Less effective in dry zone, high temp.
- Fan noise

What do we need to know?

