

Re-creating Neerigen Brook

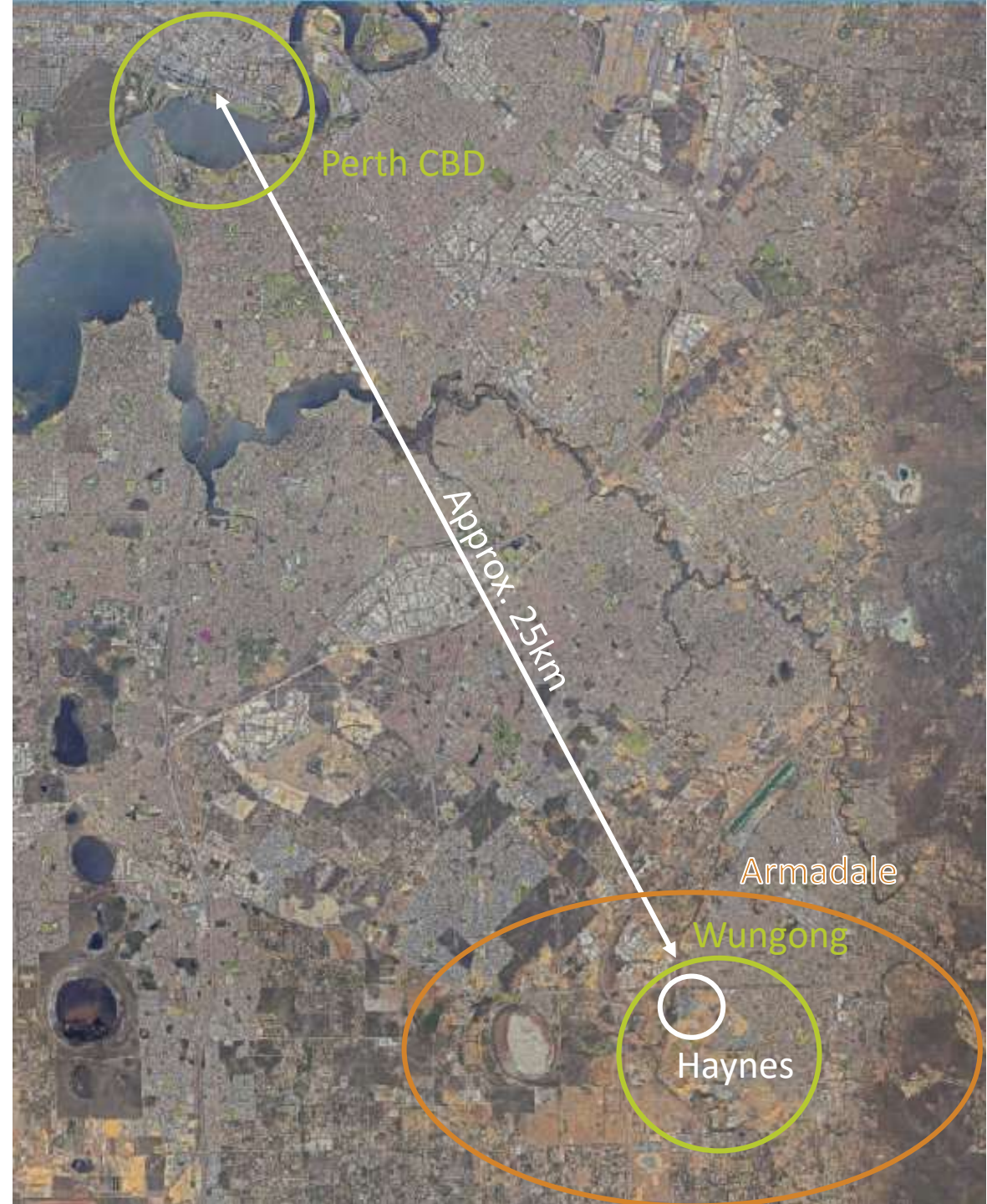
10 August 2023

The logo for urbauqua features the word 'urbauqua' in a white, lowercase, sans-serif font. A small leaf icon is positioned above the 'u'. Below the main text, the tagline 'land and water solutions' is written in a smaller, white, lowercase font. The logo is set against a background of overlapping green and teal circular shapes.

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land and water solutions



Where is Neerigen Brook?



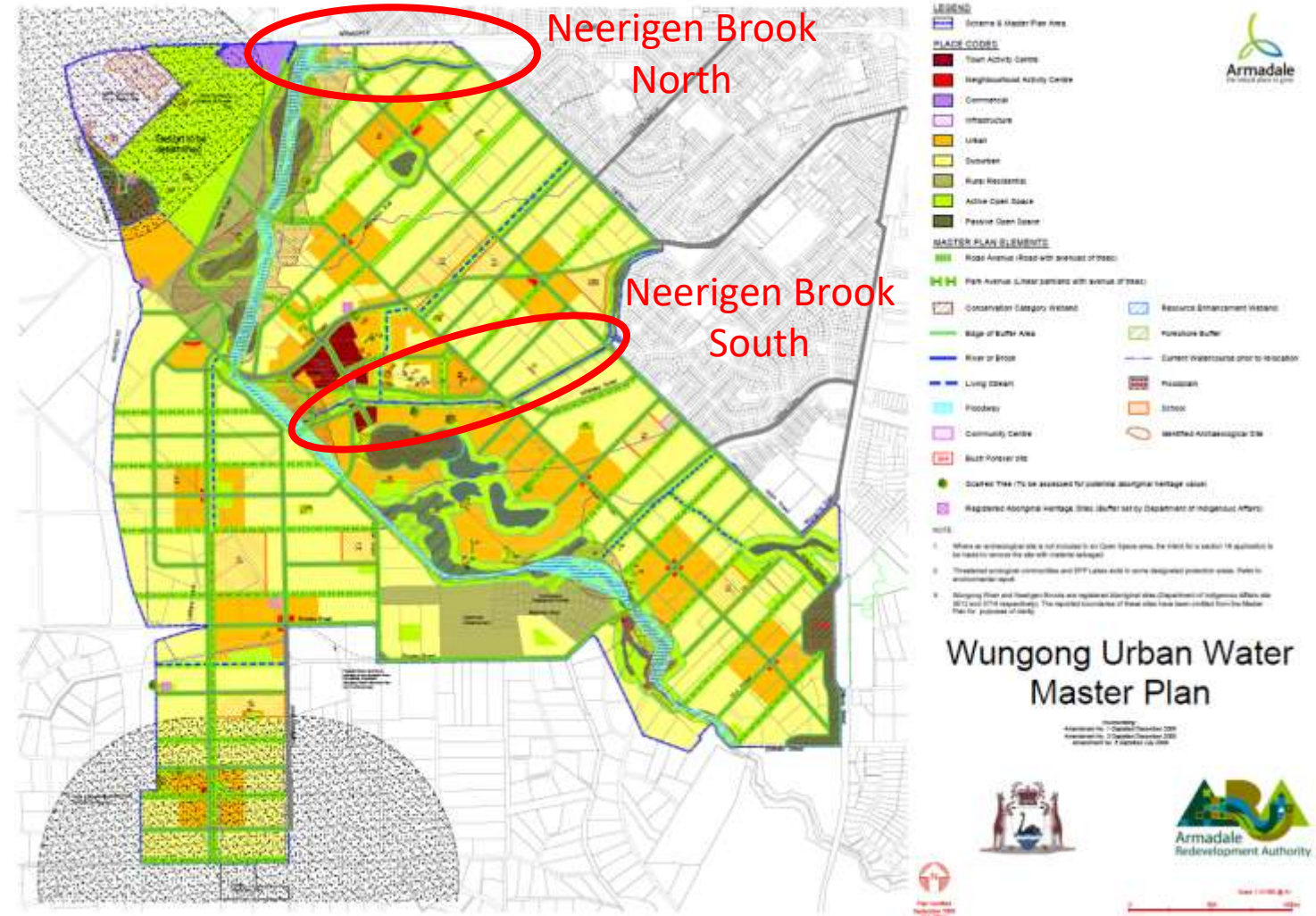
Design and approvals journey





Re-creating Neerigen Brook – a long journey

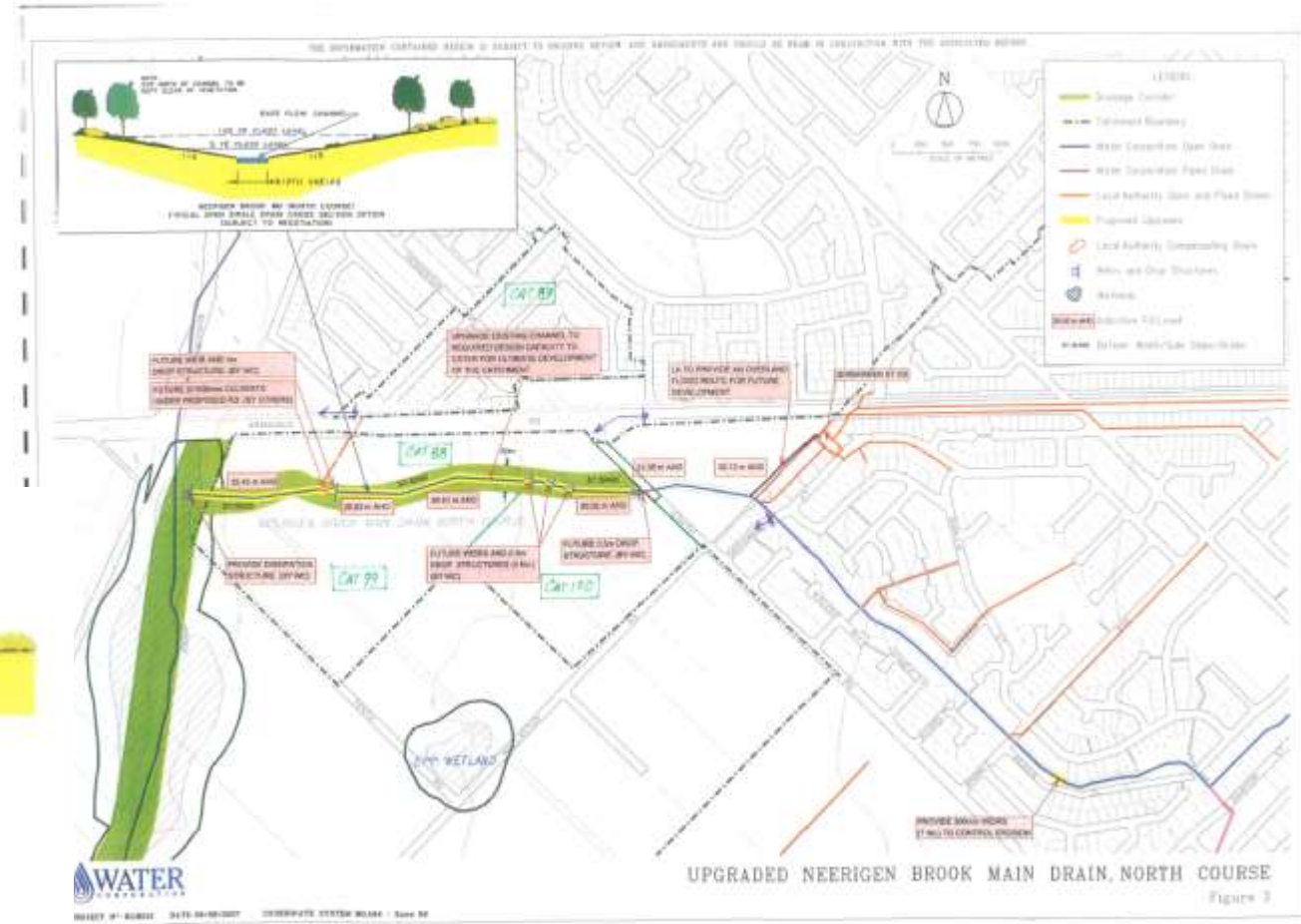
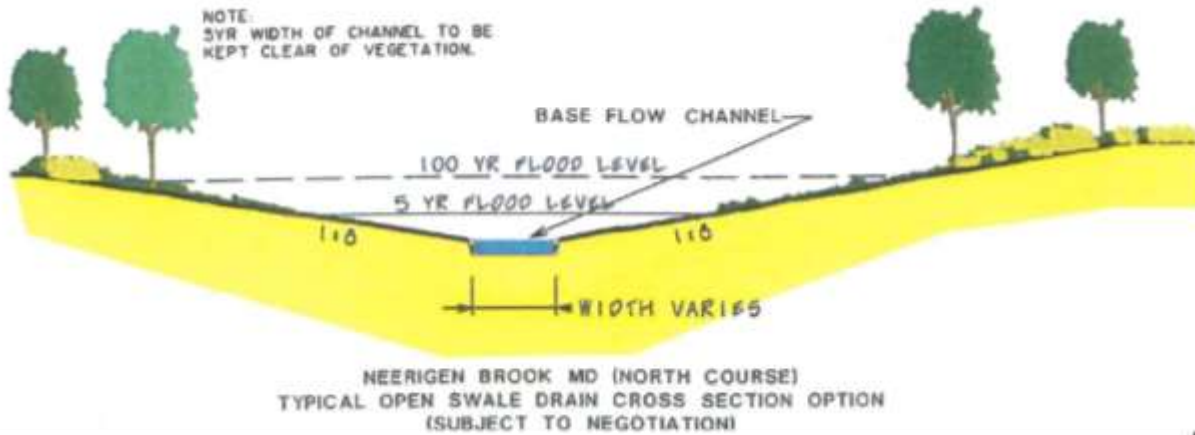
- 2006 – Wungong Urban Water Redevelopment Scheme and Master Plan





Re-creating Neerigen Brook – first draft

- 2007 – Water Corporation capacity review and concept for “open swale” cross section





Environmental objectives established

- 2008 – Ministerial Statement 762 sets environmental conditions for the redevelopment scheme including:
 - Operational Water Quality Objective
 - Preparation of water management reports aligned to stages of development:
 - District water management strategy
 - Local water management strategy
 - Urban water management plan

“Ensure that the quality of surface water post development is improved compared with pre-development surface water quality (the Operational Water Quality Objective)”

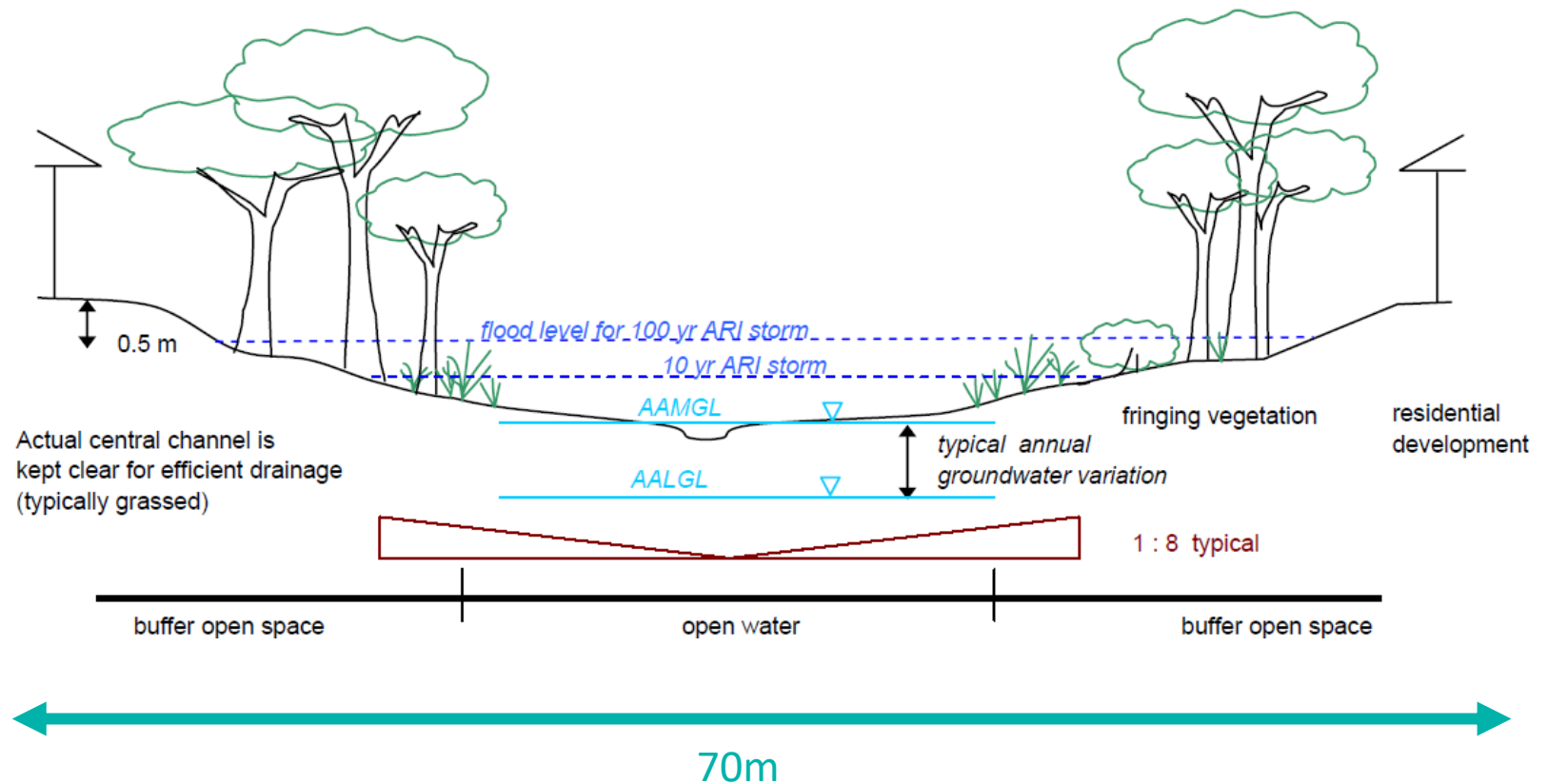


Living stream design philosophy

- 2009 – District Water Management Strategy

- Design philosophy:

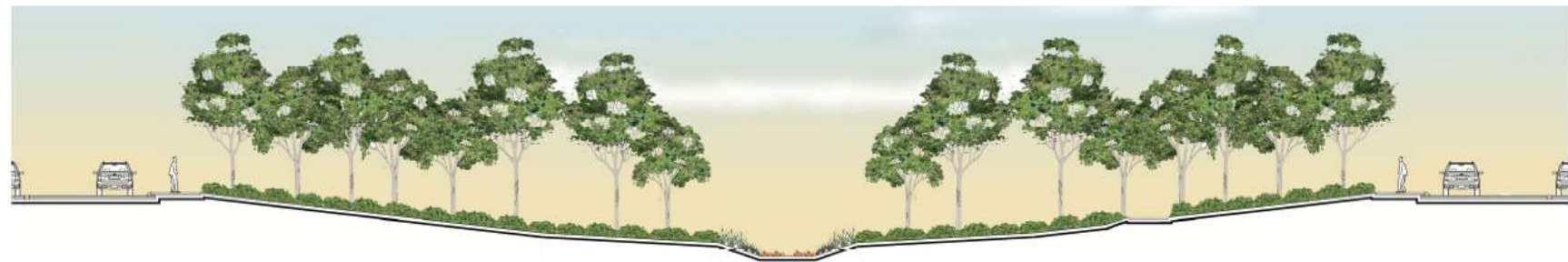
“Natural watercourses, with geomorphology and native vegetation typical of the local area”





Next steps

- 2009 – Cell C Structure Plan, Haynes
- 2010 – Haynes Cell C Local Water Management Strategy



60m



2012 – Urban Quarter acquire the site and commence subdivision planning



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Neerigen Brook North – 2012/13



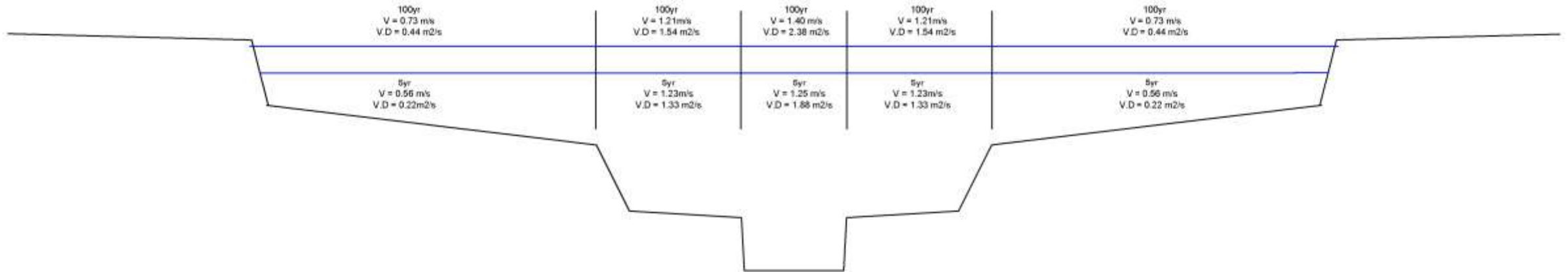


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2013 – design workshop (first of many)

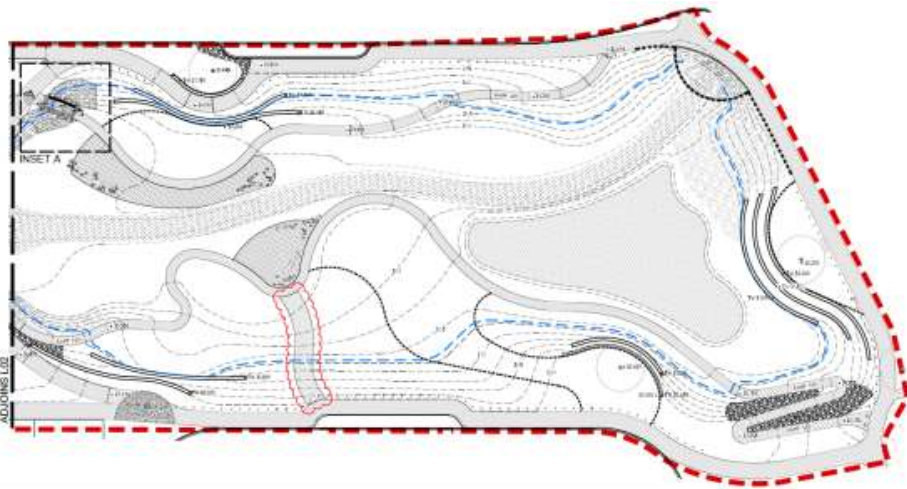
- Attended by all approvals agencies
- Identification of design criteria
- First significant modification to the proposed cross section





Neerigen Brook South Living Stream

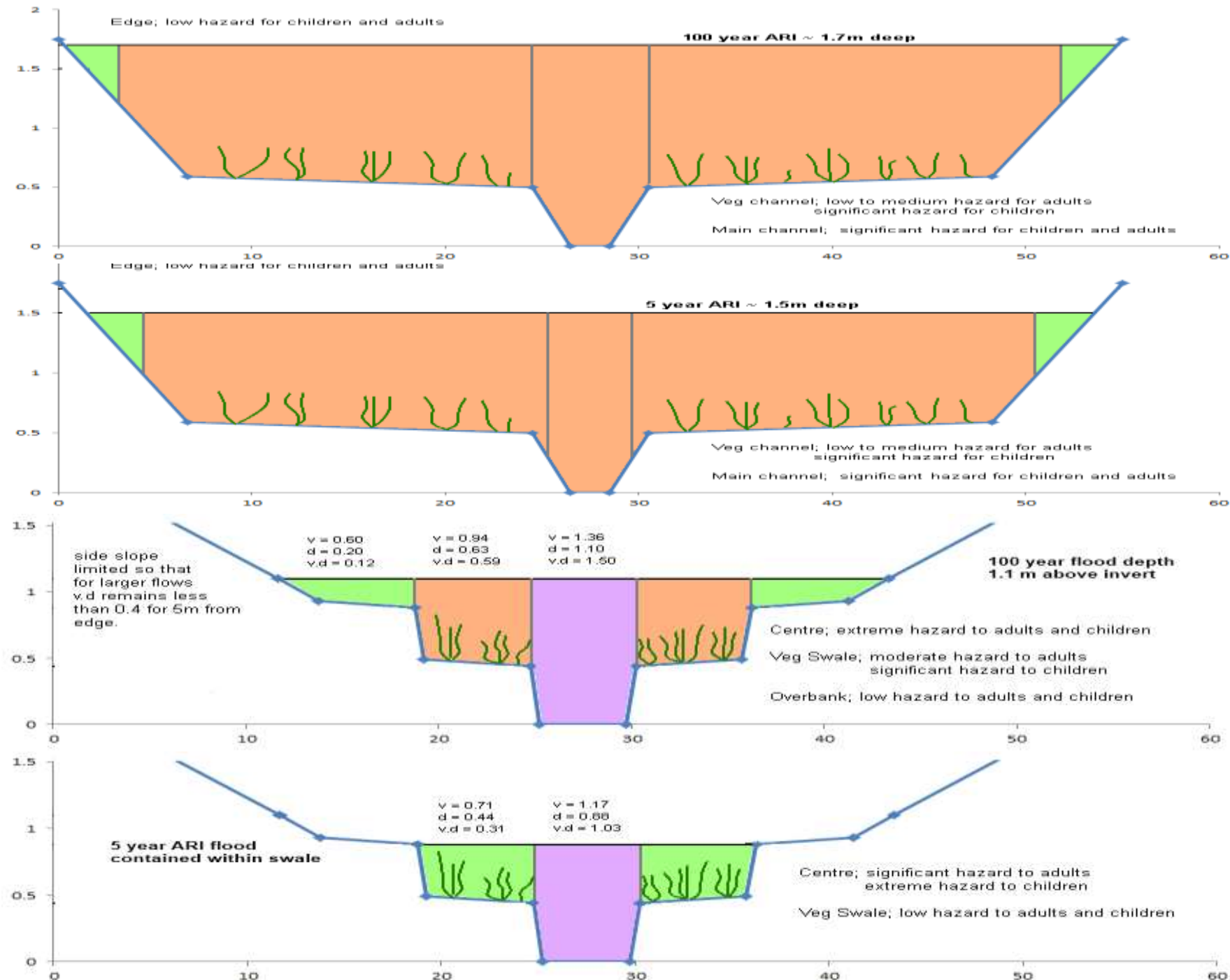
- Wide corridor and use of intermittent control structures to satisfy safety criteria across full width





Safety

- Hazard assessed for original and modified section and structures in 5 year and 100 year events





Approval process – it took a while

Lodged date	Document lodged	Agency	Comment/approval received	Days to comment/approval	
20/05/2013	Draft Riverside UWMP	CoA	21/06/2013		
		DoW	3/07/2013		
		MRA	None received - informal lodgement only	44	
26/09/2013	Riverside UWMP	Water Corp	29/11/2013		
		CoA	2/12/2013		
		DoW	11/12/2013		
		MRA	24/01/2014	Revisions required	120
21/03/2014	Revised Riverside UWMP	SRT	25/03/2014		
		CoA	4/04/2014		
		DoW	4/04/2014		
		SRT	8/04/2014		
		MRA	8/04/2014	Revisions required	18
13/05/2014	Revised Riverside UWMP	Water Corp	13/06/2014		
		SRT	13/06/2014		
		CoA	9/06/2014		
		DoW	25/06/2014		
		MRA	27/06/2014	Revisions required	45
4/07/2014	Revised Riverside UWMP	DoW	29/07/2014	Approved	
		CoA	4/08/2014	Approved	
		MRA	4/11/2014	Monitoring program T	123
20/01/2015	Revised Riverside UWMP	MRA	28/01/2015	Approved	8
				Total days to approval	489

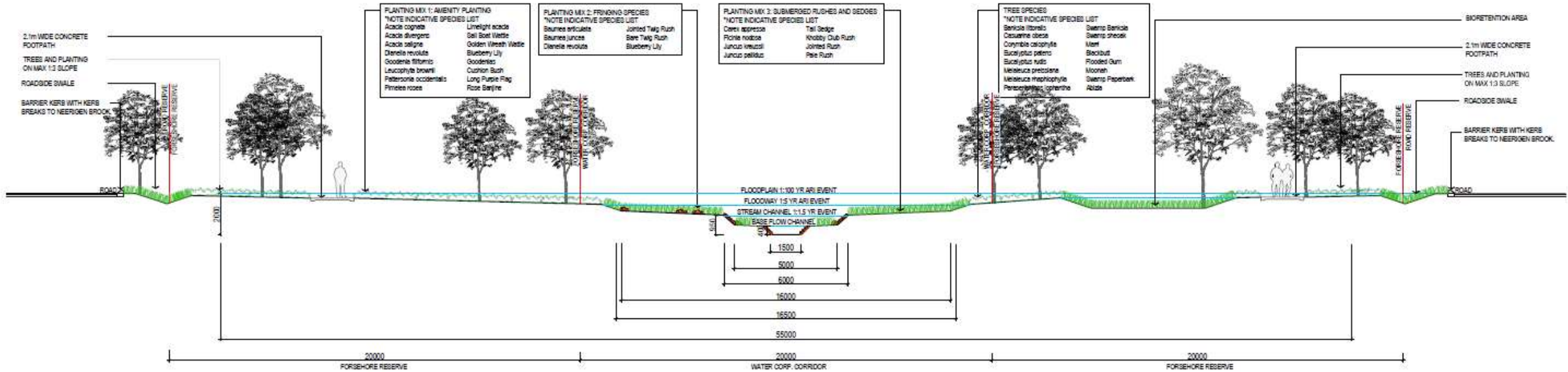
Final approved
design

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Final approved modelled cross section



1 NEERIGEN BROOK OVERALL SECTION
 08 1:200 SECTION



Approved features for detailed design

Modelling considered these as one element

- **Baseflow channel** – accommodating approx. 350 L/s which is estimated to be the peak winter baseflow
- **Stream channel** – sized to accommodate the 1 in 1.5-year ARI event (considered to be “channel-forming flow”).
- **Vegetated floodway** – sized to accommodate the 1 in 5-year ARI event within the Water Corporation’s landholdings.
- **Floodplain** – the remainder of the multiple use corridor safely accommodates the 100-year ARI event.
- **Vegetated biofilters** – for local drainage connections

Post-approval design
changes and other
matters



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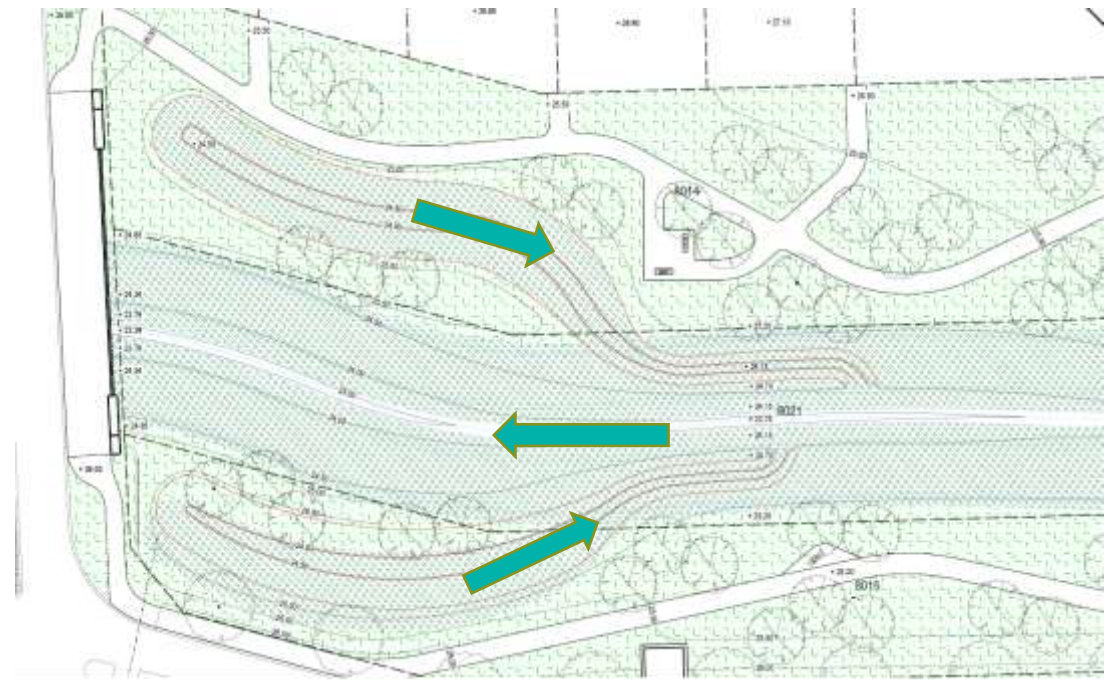
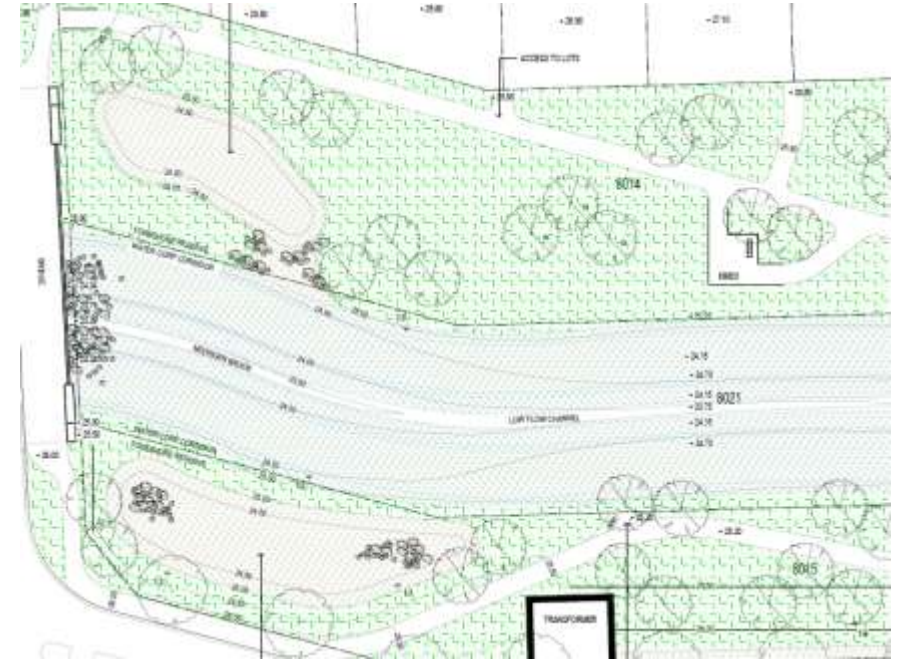
Vegetated overland flow connections

- Originally proposed as biofilters overtopping to the living stream
- Design modified to vegetated overland flowpaths
- Sufficient water quality treatment provided in combination:

Vegetated overland flowpaths

+

Living stream





Vegetated overland flow connections





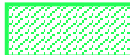
Baseflow / Streamflow channel detail

- From early site investigations:
 - Very little maintenance of the trapezoidal drain profile was evident
 - Geomorphology of the baseflow channel was **semi-natural** with re-established meandering present
 - Retain where possible





Land matters

- Neerigen Brook is on land privately owned by the Water Corporation
- Water Corp owned land 
- LG vested land 



Construction and
establishment



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2016 – initial site works

- Guidance to contractors:
 - Pull back the banks but...
 - Don't touch the bottom 0.5m of the channel!!





Don't touch the base/streamflow channel!



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2016/17 – Landscaping & revegetation





2017 – Landscaping complete





2019 – Handover to City of Armadale

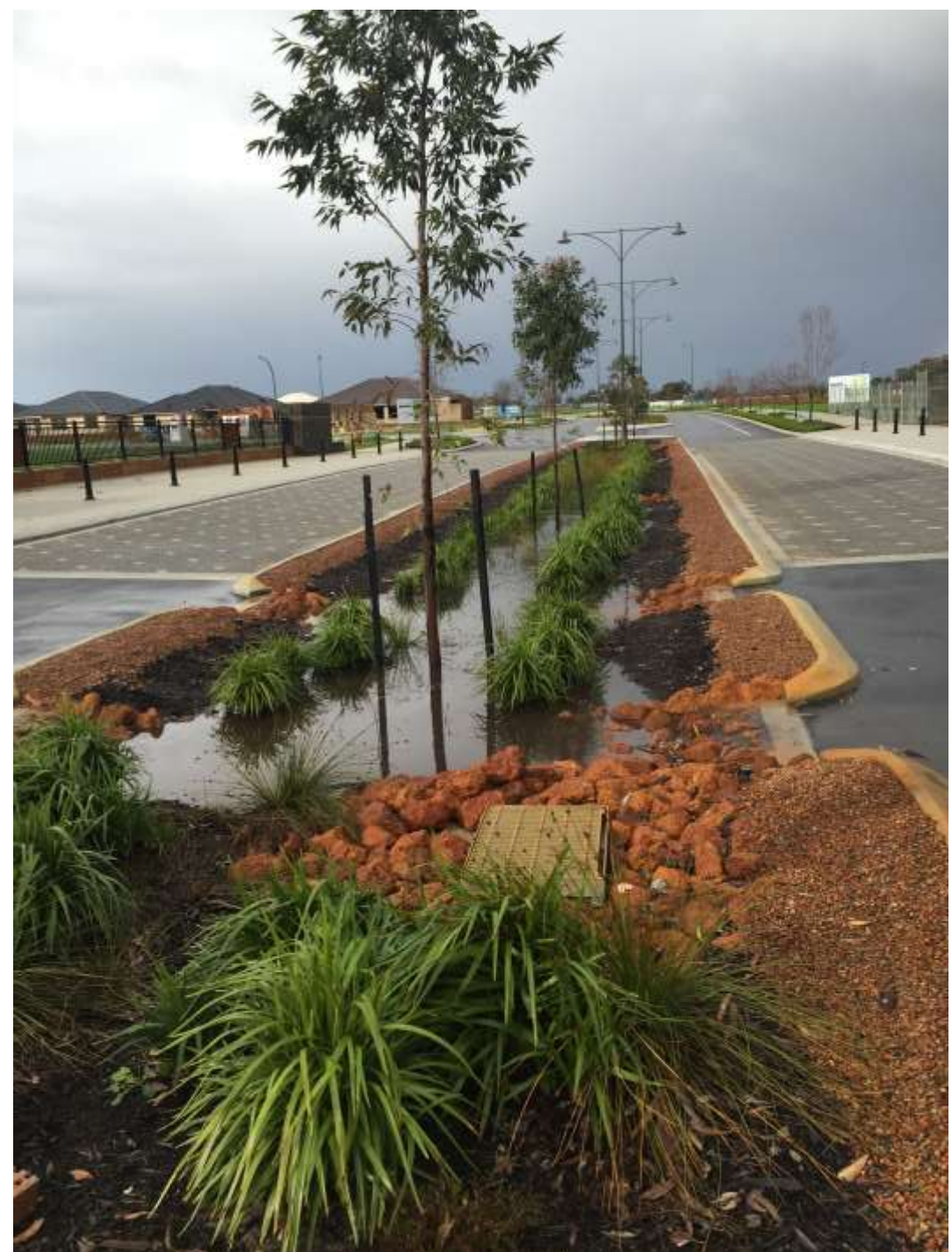




Not just a living stream



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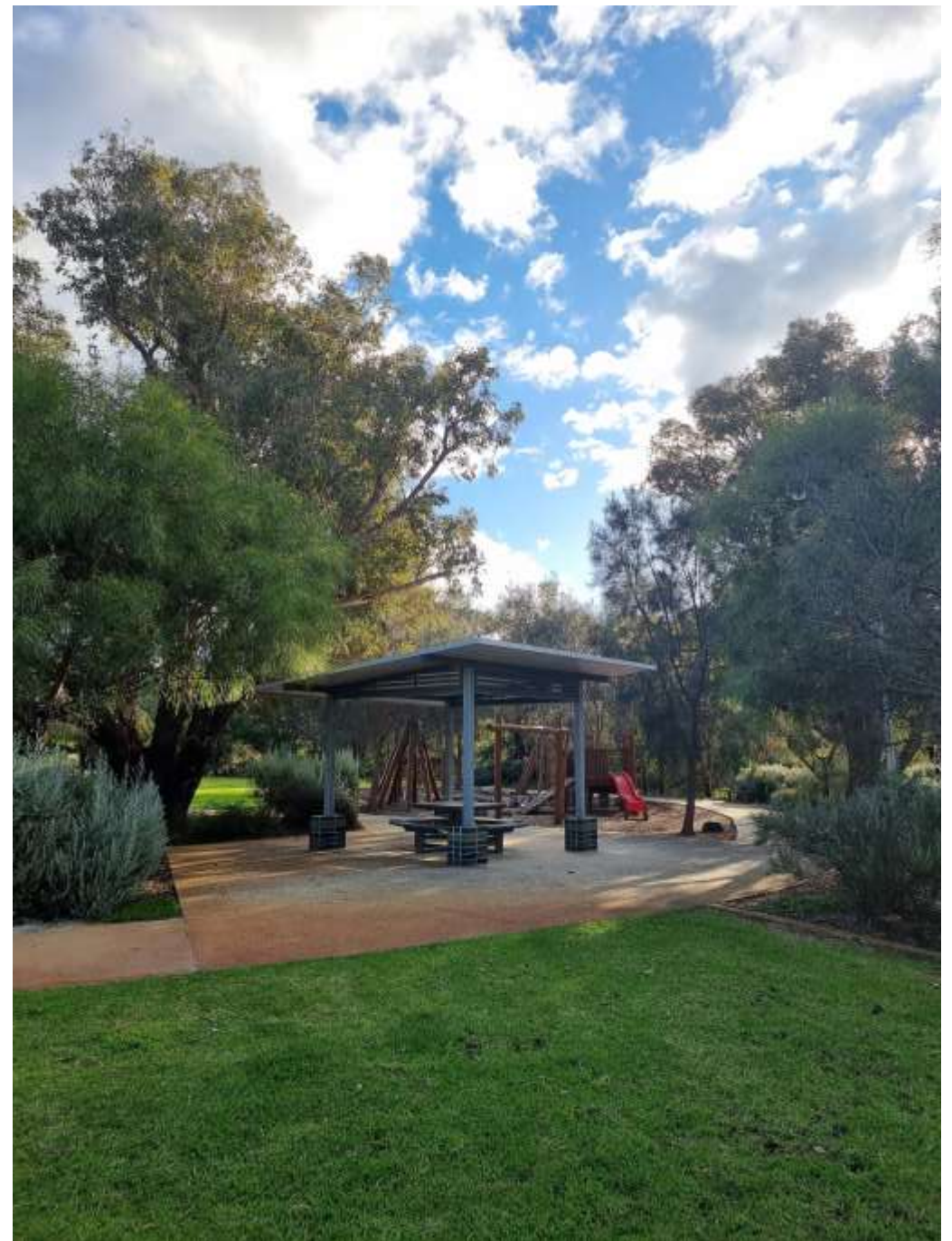




Not just a living stream



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2023 – Still going strong



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2013



2017



2023



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2016



2017



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2017



2023



urk



2019



urk

2023



Keys to success?



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Keys to success

- Early planning to establish design objectives
- Willing and engaged landowner and project team
- Flexible approvals agencies
- Design champion to carry through

Shared Vision



“Natural watercourses, with geomorphology and native vegetation typical of the local area”



Would we do anything different now?

- Short answer... No, but hopefully we'd get there a little faster
- The Journey was important but frustrating for the developer
- I'm not sure they would do it again unfortunately – but really only because of the timeframes
- Major sticking points were:
 - Safety criteria
 - Vegetation in the baseflow channel
 - Land tenure
 - Management arrangements

Thanks for listening



Neerigen Brook South – 2013 / 2019

