



Government of **Western Australia**  
Department of **Water**

# Non drinking water approvals framework



James Yuen

A/Section Manager – Water and Land use  
Coordination Section



# Our role in NDW

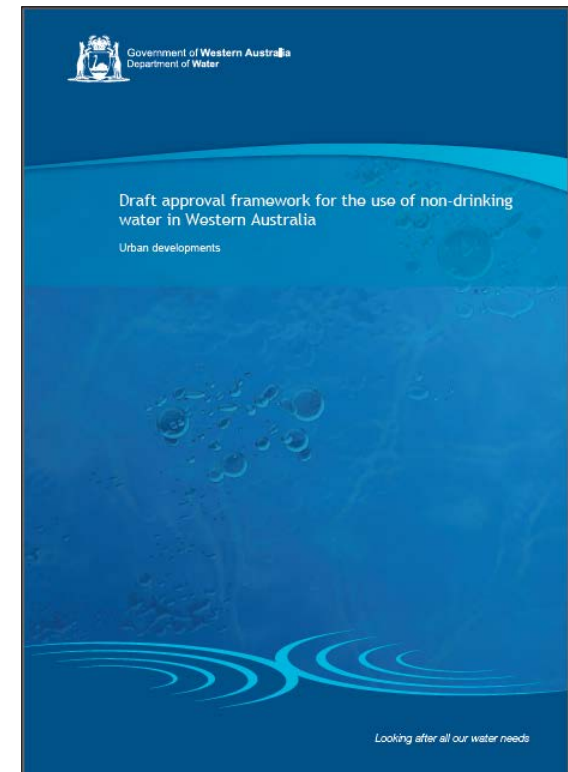
- Drive use of NDW sources
  - NDW Innovation Steering Committee
  - Address policy gaps and barriers
- Facilitate NDW projects
  - Approvals framework
  - Support specific projects
- Provide information and resources
  - WaterwiseCommunity Toolkit





# NDW approvals framework

- A streamlined, coordinated approval process for non-drinking water
- Prepared by a cross-agency Steering Committee
- DoW coordinating role – provide single point of contact for proponents





# What does the framework cover?

- New urban residential areas (can include commercial and industrial buildings)
- Non-drinking water sources – treated wastewater, stormwater, greywater
- Supply via third pipes or through MAR or direct supply for POS irrigation



# Across-agency approval process

- Four stages to approvals
  - Option evaluation and concept design
  - Preliminary design
  - Detailed design and applications for approval
  - Implementation and ongoing monitoring



# STATE GOVERNMENT PLANNING

## STATE WATER PLAN

Regional water plans  
(Department of Water)

*Department of Water plans*  
Statutory water management  
Drainage  
Drinking water source protection  
Floodplain management

Drainage and water  
management planning  
(Department of Water)

## STATE PLANNING STRATEGY

Region scheme, (sub) regional  
strategy, or (sub) regional  
structure plan

Includes  
regional water management strategy



District structure plan,  
local planning strategy or  
region scheme amendment

Includes  
district water management strategy



Local planning scheme  
amendment or  
local structure plan

Includes  
local water management strategy



Subdivision proposal

Includes  
urban water management plan



Development



COMPLETE STAGE 1  
(Option evaluation and  
concept design study)

COMPLETE STAGE 2  
(Preliminary design study)

COMPLETE STAGE 3  
(Detailed design study  
and obtain all approvals)

Implement non-drinking  
water project

PLAN MAKING

DEVELOPMENT ASSESSMENT

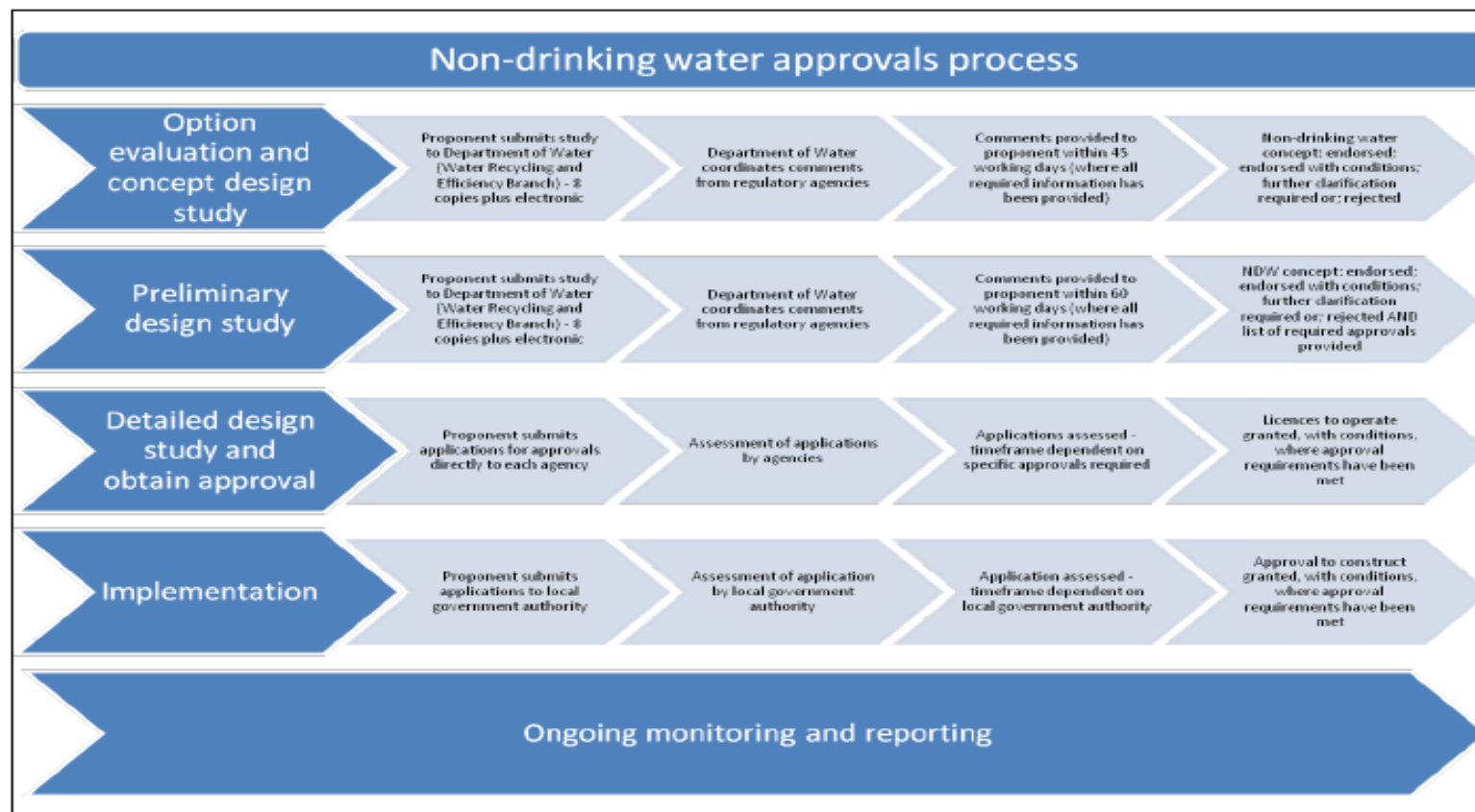
## LOCAL GOVERNMENT PLANNING

Note: The above diagram depicts the optimal process. In situations where there is existing zoning and a lack of guiding information, a flexible approach to implementation may be required. This is at the discretion of the WAPC on advice of the Department of Water.





# Overview of approval requirements





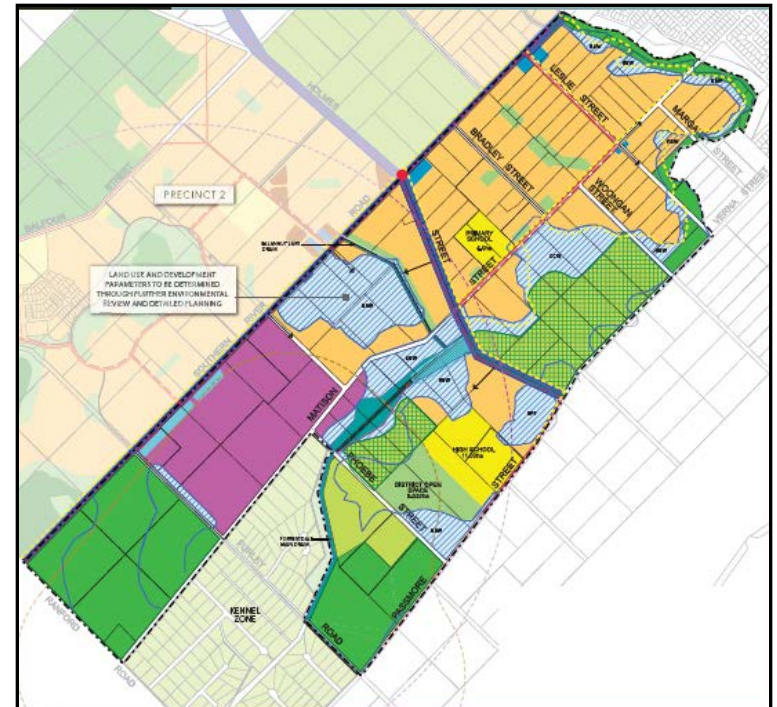
# NDW assessment process

- Each stage is assessed under stop-watch process
- Timeframes given for each stage  
(based on complexity)
- Consolidated agency response to proponent with or without endorsement





- Document was released as a draft in October 2010. To date used with a few proponents of NDW schemes, e.g.
  - Alkimos
  - Point Grey
  - Broome North
- Framework to be reviewed in 1 year





Thank you for your time  
Questions?



# Alternate and Recycled Waters

Water Unit



Government of **Western Australia**  
Department of **Health**  
Public Health

# When Should Alternate Water Resources be Used?



The use of non-drinking water:

- Should not:

- Present a risk to public health- can it be reliably managed in the long term?

- Lead to an increase in the overall amount of water used - i.e. maintain the water balance.

- But should:

- Reduce the demand for drinking water supply.

- Increase the volume of urban water that is recycled and reused.

- Deliver cost-effective solutions that take account of environmental and social factors.

- Be sustainable.

- Available and secure for the long-term.

- Only be provided when it can be demonstrated to deliver a net benefit to the community.



Government of **Western Australia**  
Department of **Health**  
Public Health

# Health Impact

- Water-related diseases:

*Waterborne* - directly from drinking contaminated water (ingestion exposure). E.g.: cholera, enteric fevers and diarrhoeal diseases.

*Water-washed* - indirectly by coming into contact with contaminated water (dermal exposure). E.g.: scabies, typhus, trachoma, louse infestation, Leishmaniasis, and amoebic meningitis from swimming pools.

*Water-based* - where a vector (aquatic organisms that spend part of their life-cycle in water and another part as parasites of animals) enters the intestines through contaminated drinking water and infection occurs internally (ingestion exposure). E.g.: Schistosomiasis and Dracunculiasis (guinea worm disease).

*Water-related* - mosquito vector-borne exposure.

E.g.: malaria, dengue fever and Ross River virus.



Government of **Western Australia**  
Department of **Health**  
Public Health

# Definitions



- Drinking Water  
water intended primarily for human consumption, either directly (tap), indirectly (beverages, ice, or foods) and other domestic purposes (bathing and showering)
- Sewage  
Sewage, nightsoil, faecal matter or urine and any waste composed wholly or in part of liquid. (grey, yellow, black, wastewater. Ex-human use.
- Recycled Water  
From sewage (including greywater, yellow, black and industrial wastewater) treated to provide fit for purpose water for its beneficial use.
- Alternate Water  
Roofwater, urban stormwater, borewater. Not Drinking water, not sewage, not ex-human use.
- Communal use  
Water service to more than one house, one family (sole occupancy), 6 persons\* or a single lot.



Government of **Western Australia**  
Department of **Health**  
Public Health



# Legislation



- Health Act 1911

- Drinking water

- Pollution of a Water Supply

- Closure of water supply

- Sewage/recycled water.

- Provides for Sewerage Schemes and connection/disposal requirements

- Head of power for design construct and install or apparatus

- Alternate water

- as a source for drinking water

- Construction and maintenance of drains

- drainage of stagnant water & low lying land

- Stormwater to be allowed its natural channel



Government of **Western Australia**  
Department of **Health**  
Public Health

# National Water Quality Guidelines

NWQMS Policies & Principles (1994)

Groundwater Protection (1995)

Water Quality  
Monitoring (2000)

Fresh and Marine  
Water Quality (2000)

Drinking Water (2004)

Water Recycling - Phase 1 (2006)  
Water recycled from effluent, greywater

Water Recycling - Phase 2 (2007/8)

Recycled Water  
for Drinking (2a)

Managed Aquifer  
Recharge (2c)

Storm Water (2b)



Government of **Western Australia**  
Department of **Health**  
Public Health

# Australian Guidelines for Water Recycling



- Phase 1 - using recycled water as a replacement for drinking water, surface and ground water but not addition. (Completed & endorsed by Min for Health)
- Phase 2 a/b/c - planned addition of either treated stormwater or sewage to augment drinking water supplies. Into: River, Stream, Reservoir or Aquifer to be abstracted, retreated and supplied as drinking water. (Completed & endorsed by Min for Health)
- Unplanned addition is covered by the 2004 Australian Drinking Water Guidelines.



Government of **Western Australia**  
Department of **Health**  
Public Health

# Alternate Water



- Not just Phase 2b Stormwater
- Roofwater, urban stormwater, borewater. (ASR, ASTR, WSUD)
- DoH is not immediately interested in single residential owner consumer use.
- DoH is interested in single residential collection, treatment systems design & build.
- DOH is interested in communal systems.
- Phase 1 and/or 2 ('Lite plus' risk version)



Government of **Western Australia**  
Department of **Health**  
Public Health



Source Uses	Rainwater (Roof Runoff)			Groundwater (Superficial Aquifers)			Stormwater (Roads/Impermeable Surfaces)		
	Health Risks Infection route	Single House	Public Use	Health Risks Infection route	Single House	Public Use	Health Risks Infection route	Single House	Public Use
<b>Potable Application s:</b> <b>Drinking water, shower, bath, basins, troughs, pools, evaporative air conditioner s.</b>	Dermal, nasal, oral Microbiologic al infecti on Poisoning	Like: Possib le Cons: Moder ate Risk: <b>High</b> <b>Note 1, 2</b>	Like: Possib le Cons: Major Risk: <b>Extrem e</b> <b>Note 3</b>	Dermal, nasal, oral Microbiologic al infectio n Poisoning	Like: Possib le Cons: Major Risk: <b>Extrem e</b> <b>Note 1, 4</b>	Like: Possib le Cons: Major Risk: <b>Extrem e</b> <b>Note 3</b>	Dermal, nasal, oral Microbiologic al infecti on Poisoning Potential carcin ogens	Like: Almost certain Cons: Major Risk: <b>Extrem e</b> <b>Do not use</b>	Like: Almost certain Cons: Major Risk: <b>Extrem e</b> <b>Do not use</b>
<b>Industrial use with potential human exposure</b>	Dermal, nasal Infection Microbiologic al infecti on	N/A	Like: Unlikely Cons: Moder ate Risk: <b>Moder ate</b> <b>Note 5, 6</b>	Dermal, nasal Infection Microbiologic al infectio n Poisoning	N/A	Like: Possib le Cons: Moder ate Risk: <b>High</b> <b>Note 5, 9</b>	Dermal, nasal Microbiologic al infecti on Poisoning Potential carcin ogens	N/A	Like: Likely Cons: Major Risk: <b>Extrem e</b> <b>Note 5, 7, 11</b>
<b>Industrial use with no human exposure - closed systems:</b>	Dermal Microbiologic al infecti on	N/A	Like: Unlikely Cons: Minor Risk: <b>Low</b> <b>Note 6, 8, 10</b>	Dermal Microbiologic al infectio n	N/A	Like: Unlikely Cons: Minor Risk: <b>Low</b> <b>Note 8, 10</b>	Dermal Microbiologic al infecti on	N/A	Like: Possib le Cons: Moder ate Risk: <b>High</b> <b>Note 7, 8, 10</b>
<b>Non-potable application s:</b> <b>Washing machine, spray irrigation, garden tap.</b>	Dermal, nasal Microbiologic al infecti on	Like: Unlikely Cons: Minor Risk: <b>Low</b> <b>Note 2</b>	Like: Possib le Cons: Minor Risk: <b>Moder ate</b>	Dermal, nasal Microbiologic al infecti on	Like: Unlikely Cons: Minor Risk: <b>Low</b> <b>Note 4</b>	Like: Possib le Cons: Minor Risk: <b>Moder ate</b>	Dermal, nasal Microbiologic al infecti on	Like: Possib le Cons: Moder ate	Like: Likely Cons: Moder ate Risk: <b>High</b>

# Standard Requirements for Schemes

- Risk Identification (HACCP) & Catchment Management.
- Alternate/Recycled Water Quality Management Plans.
- AS 3500 Compliance.
- Plumber/Operator competency/training.
- Failsafe systems/backflow prevention devices.
- Monitoring, management, maintenance and response systems.
- Distribution system maintenance.
- Crossover responsibility/contracts.
- Community Information packages (ongoing).



Government of **Western Australia**  
Department of **Health**  
Public Health



# Alternate Water Approval No 1

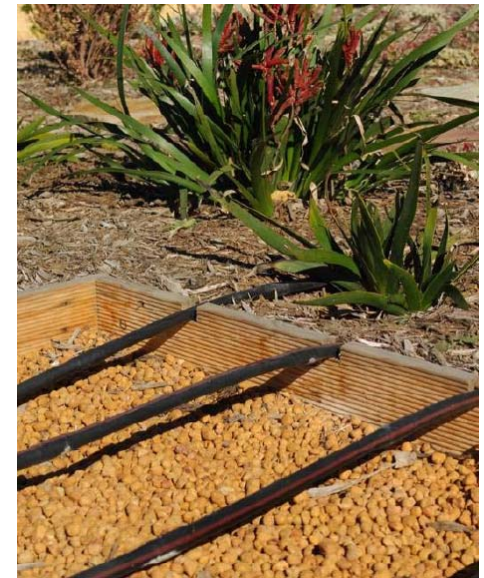
- Brighton
  - Centrally managed sub soil irrigation system (no CI)
  - Water abstracted from the Leederville aquifer
  - Water Corporation operated
  - Health Risk Management Plan

Catchment controls required

DoH notification when:

E.Coli +

Chemical (health) above 2004 ADWG



Government of **Western Australia**  
Department of **Health**  
Public Health

# Alternate/Recycled Water Schemes

- Brighton (A) ☒
- Kwinana Wastewater Recycling Plant (R) ☒
- Hopetown (R)
- Somerville Eco Village (A)
- Evermore (A)
- Banksia Grove (A)
- Leighton Beach (A)
- BHP Finucane Island (R) ☒
- Margaret River (R) ☒
- China Green Subiaco (R)
- Armadale Redevelopment Authority (A/R ?)
- WAMIA Livestock (A)
- Witchcliffe (R)
- Gracetown (R)
- Fremantle x2 (A) ☒
- Peppermint Grove Library (A/R) ☒
- Bishops See (R)
- Durack House (R)

A= Alternate. R= Recycled



Government of **Western Australia**  
Department of **Health**  
Public Health

# Other Thoughts

- Recycled/alternate water is a resource not a waste.
- It has value – but who owns it and who gains?  
E.g. Could/should suppliers be paid based on production of “waste water”?
- Will there be competition for supplies? Are supplies secure?
- Catchment Management requirements?
- Water balance – Climate change?
- Risk – (one mans risk is another's dare)



Government of **Western Australia**  
Department of **Health**  
Public Health

# Other thoughts



- Steady supply/delivery may be required for or limited by equipment/services.

Long term variations (reductions) due to future product efficiency gains may not be possible.

Commercial users of treated waste water may close suddenly. Are classic sewers & ocean outfalls still required?

- Do you need a plumber or an irrigator?
- Is there a budget for the lawnmower?



Government of **Western Australia**  
Department of **Health**  
Public Health

# Challenge for DoH (& Government)

- Diffuse supply systems - variety of (small) systems & uses located throughout the community.
- Varying levels of initial & ongoing operator competency/capacity to protect public health.
- Difficult to determine long term capability for start up organizations. Water supply systems sustainability.
- Novel systems usually add complexity / potential to fail.
- Reliance on alternate water systems that may not be controlled by Government but may still fall back in the event of collapse.
- Diminished capacity of 'classic systems' to supply or remove water.
- Increased standards, public knowledge, expectation & outrage in the event of failure.
- Inter agency definitions.



Government of **Western Australia**  
Department of **Health**  
Public Health

# More information

- [www.public.health.wa.gov.au](http://www.public.health.wa.gov.au)

Draft Alternate Water Supply Guidelines – Stormwater and Rainwater

Draft Guidelines for the Use of Recycled Water in Western Australia

- [www.ephc.gov.au](http://www.ephc.gov.au)



Government of **Western Australia**  
Department of **Health**  
Public Health