



# Understanding barriers to WSUD in 2021

New WAter Ways Inc

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**New WAter Ways**

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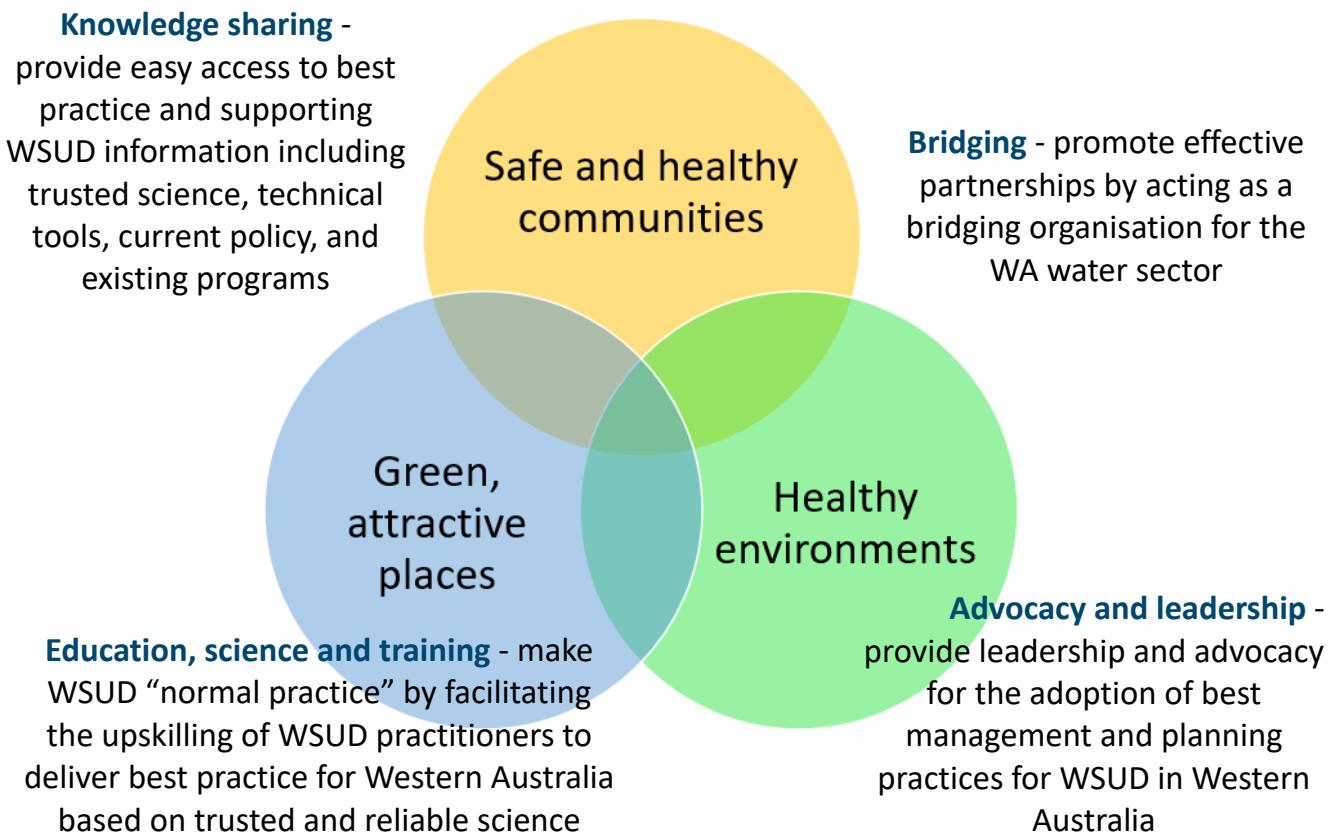
Department of **Planning, Lands and Heritage**  
Department of **Biodiversity, Conservation and Attractions**  
Department of **Water and Environmental Regulation**





***Building the water sensitive urban design capacity of Government and industry to improve the delivery of urban water management and water sensitive cities.***

***Our objective areas are:***



## 1 INTRODUCTION

The delivery of water sensitive urban design (WSUD) in Western Australia has come a long way since the gazettal of State Planning Policy 2.9: Water Resources in 2006 and the release of Better Urban Water Management in 2008 (WAPC, 2008). Although it is felt that many barriers to the delivery of WSUD have been addressed, it is likely that others have arisen, particularly in response to current economic conditions, the pandemic and new climate change predictions.

This report provides a summary of the outcomes of a series of interviews of senior development managers, consultant hydrologists and regulators in 2021. The interviews sought to identify and explore the barriers to the delivery of WSUD in a 2021-context from the perspectives of the development industry and regulators. The findings will be used to inform the New WAtter Ways work program for 2022/23.

### 1.1 Project delivery

A series of interviews were held with ten (10) senior development managers of consultant hydrologists and ten (10) State and Local Government regulators. The names of the interviewees have been withheld from this report to support candid responses.

The questions each stakeholder was asked are:

1. What comes to mind when you think of water sensitive urban design?
2. What is your most favourite WSUD achievement? Why?
3. What is your biggest WSUD failure? Why?
4. What do you think are the key drivers for whether WSUD gets proposed/ implemented?
5. How should we try to “sell” WSUD? And to who?
6. Where should we be trying to implement WSUD?
7. Are there areas you don’t think WSUD is appropriate/ doesn’t work?
8. What are the biggest barriers to getting WSUD designs approved and/or implemented?
9. What thing would make the most difference in your ability or desire to deliver water sensitive development?

The discussion, key messages and recommendations to improve the delivery of WSUD are outlined in the following sections and the summary of responses is provided in Appendix 1.

## 2 DISCUSSION

In most instances, when asked “What comes to mind when you think of water sensitive urban design?”, most interviewees mentioned something associated with stormwater management and water quality treatment. While some people did refer to the total water cycle, improved amenity and ecological health, and fit for purpose water sources, other people had to be prompted to consider these aspects. But, after discussion, all agreed that WSUD was more than just stormwater management.

*“Water sensitive urban design is managing drainage and groundwater in environmentally sustainable way and way that enhances development” – Developer*

It was also widely recognised that doing WSUD well is not easy. It requires cross-disciplinary knowledge and must be specific to site and built form context. It also requires long term commitment to a vision, that is carried through many stages of planning and design, to construction and maintenance.

*“Works best when the hydrologist is in the project from the beginning and not just asked to do the reports after the civil engineers have designed everything” – Consultant.*

Due to the length of time of the approvals process and the large number of people and disciplines involved, the creation and maintenance of trusted relationships between industry and regulators is also an important element.

There are many stages where the delivery of good WSUD outcomes can be jeopardised; however. These include:

- At concept development – a lack of support may occur if the developer can't see the value. Costs and benefits are generally not well communicated by project engineers (although there are some exceptions!). In addition, the review of local water management strategies undertaken by the Department of Water and Environmental Regulation (DWER) may not consider aspects that are important to a local government or understand those that are not supported. This can lead to significant difficulties in the ability to deliver the desired outcomes at subdivision stage.
- During detailed design – the engineering consultant needs a wide range of skills and experience to design outcomes that optimise functionality and amenity while meeting water management criteria. The balance between engineering and landscape is critical as a design can achieve the water management criteria but still be a poor outcome. It is also critical that consideration is given to the resources and skills required by the local government to maintain the proposed landscapes and that the designs and resources required are supported.
- Construction – there is a need to ensure the contractor understands the importance of levels and the direction the water is supposed to be flowing in. Many examples were provided by interviewees where retrofits were required to parks and streets to ensure water was flowing into the right places as the drainage features were not originally constructed as per the design.
- Maintenance - Many comments were made in relation to maintenance. Some developers were disappointed with the levels of maintenance undertaken by local governments after handover. This was acknowledged by some local governments, where it was suggested that the level of service (maintenance) should be agreed prior to detailed design. Comments were also made from local governments that some developers design systems without asking the local government if they have sufficient resources/ expertise available to maintain them. Agreeing a level of service prior to construction would allow local

governments to plan for future resource needs and manage community expectations. Some interviewees also noted that the degree of maintenance often correlated with the condition of the assets at handover. Significant issues often arose where the assets were not well maintained during house construction stage, which often resulted in clogged assets where the plants failed to thrive, or infiltration became an issue.

*"For maintenance, simplicity is the key. Less frequent maintenance is more appealing, but also knowing that the contractors and/or local government staff know how to maintain/clean the structures." - Consultant*

The importance of regional and district-level water management planning was identified by the majority of interviewees, particularly for district drainage networks and alternative sources of water for public open space. There was a significant level of support from industry for the State Government to take the lead in these areas, as this provided certainty for future development in terms of infrastructure costs and reduced approval timelines.

*"Very hard for developers to balance all competing issues but there is nothing harder than hydro at a district level" – Developer.*

Many people also commented on the difficulties associated with the large number of agencies with overlapping responsibilities. It was noted that the different areas of focus of each agency made it hard to satisfy the sometimes-competing objectives and the need for compromises often resulted in poorer outcomes.

*"Pick your battles and resolve what is easiest. Approval is a constant juggle and the need to de-risk means we often will do what is easiest, not necessarily what is the best" – Developer.*

It was noted that opposition often comes from a personal experience where something went wrong or the misconception (often just a perception) that something won't work. This may be the result of insufficient technical knowledge or experience, and/or a lack of trust between industry and regulators. It was also noted that marginal sites are more likely to fail than unconstrained sites when they are designed by people with a lack of experience and that this is where most development is now located.

*"Need more land given up for water management, particularly in marginal areas" – Regulator*

Certainty of approvals is a key driver for industry, due to the cost associated with the time required to negotiate and revise designs, and the subsequent impact on development timeframes and holding costs to the developer. This can lead to poor outcomes as industry tries to anticipate what will be supported by the local government. This is often based on what was approved the last time or the advice of consultants, both of which may be incorrect at times. It also impacts on the ability and desire by industry to deliver innovative or unusual solutions.

*"It actually becomes a deterrent for implementing innovative WSUD as it makes the approvals take longer." - Developer*

These difficulties notwithstanding, all interviewees supported the need for WSUD, particularly in relation to WSUD's ability to support the creation of sustainable, healthy communities, combat climate change and improve environmental health. All interviewees could point to good examples of WSUD outcomes, with many noting both the visible and intangible benefits to communities across the city.

There was broad recognition that better outcomes were likely to arise if there was more support from the community. Some local governments recognised that a key driver for them was reacting

to what their community wants. While some interviewees thought the community were ready to support the benefits and pay for it ("Many buyers look for the closest park and trees."), others recognised the difficulty in looking beyond the cost of the house, particularly in greenfield (first homebuyer) areas. It was suggested that more work should be undertaken to educate and engage the community in WSUD.

*"Link to a theme that is supported by the community. Water supports the delivery of cool, green, lower power, walkable, safe etc communities. Combine with energy and health outcomes."* - Regulator

A review of the interview notes (appendix 1) revealed a number of aspects that were common to most interviewees, and only a few areas where differences of opinion remain.

## 2.1 Things that everyone agrees

The aspects that were acknowledged by the majority of interviewees are:

- WSUD can (and should) be implemented everywhere – as long as it is appropriate to site and urban context.
- Implementation of WSUD is more difficult in flat landscapes, areas of shallow groundwater and infill situations.
- Need to start the planning and design process as early as possible, particularly with State Government led regional water planning.
- The number of agencies involved makes it difficult – hard to please everyone when they have slightly different objectives.
- Collaboration and involvement of all disciplines is critical, including trusted relationships between industry and regulators.
- The main perception of WSUD is stormwater management but the need to consider total water cycle management and sustainable irrigation for public open space is also recognised.
- Need to increase the community's awareness and level of support. This will help with the marketability of WSUD.

## 2.2 Differences of opinion

The areas where differences in opinion were observed were:

- Maintenance – some people felt this was a significant barrier but others (even some of the local governments) didn't.
- Community support for WSUD and trees – some felt the community was more aware and supportive than others.
- The reasons for poor outcomes – most respondents suggested other disciplines or agencies (other than themselves) were responsible.

### 3 KEY MESSAGES

The interviews with senior development managers, representatives from State and local government agencies and urban water management consultants reveals that the practice of WSUD has advanced considerably since the gazettal of the Water Resources State Planning Policy in 2006 and release of Better Urban Water Management in 2008.

*"Conversations used to be about why and trying to convince people not to do pit and pipe. Now it is about choosing the right WSUD solution" – Regulator.*

All interviewees supported the need for WSUD, noting that the outcomes were broader than just better management of water resources. While this was seen as valuable, it also increased the level of difficulty in obtaining support from the large number of regulatory agencies involved in the process, particularly where there were small conflicts in agency goals and objectives.

*"About getting a large group of people to buy into a shared vision. Need to know how everyone's part feeds into the vision and why it is important" - Developer*

It was noted that sufficient requirements are contained in existing policy, but implementation is challenging as each solution or strategy needs to be tailored to the specific site and development context. There needs to be a focus on delivering multiple outcomes which benefit the community and the environment and are economically viable and sustainable. This is difficult to achieve if the only assessment criteria relate to stormwater.

*"Get away from box ticking" - Developer*

*"Should be flexible and adaptable in all situations. Don't need 100% compliance in some instances" - Regulator*

Effective solutions need to be fit for purpose and consider a number of variables. Good WSUD outcomes are therefore most easily achieved where all parties in the process have a broad range of skills and lots of practical knowledge which provides a better understanding of what works in a range of circumstances.

*Good WSUD is much harder than design and pit and pipe. Need to consider all variables – urban form and environmental characteristics – no 'one size fits all' approach. Need skills to understand environment and urban form differences - Consultant*

Good outcomes are also more easily achieved where there is a level of trust and respect between industry and government.

*"Often consultants need regulators to push so they can get support from their client for better outcomes" - Regulator*

*"We need engagement and respect between industry and Government leaders and recognition everyone wants good outcomes for the community and environment." – Regulator.*

### 3.1 Barriers in 2021

The key barriers to implementation of WSUD in 2021 are considered to be:

- the high number of agencies involved in the process and the need to address and deliver sometimes competing objectives;
- the lack of regional and district-level water management planning;
- the focus on meeting stormwater criteria in isolation of other aspects including amenity and sustainability;
- the increased amount of land likely to be required in marginal sites to provide sufficient room for adjustments of natural systems;
- the need for bespoke responses to site and urban form conditions rather than standard responses. This requires a significant breadth and complexity of skills to design, deliver and approve WSUD solutions, which often relies on locally-relevant experiences. The multi-layered process and need for integration of many disciplines also provides multiple opportunities for failure;
- costs associated with the timing for approvals and need for certainty of approval by industry to reduce this cost. This is compounded where there are outdated or ill-informed perceptions of what a local government will support;
- skills and resources required for maintenance of WSUD assets in the landscape; and
- the need for more information to support business cases by industry due to a lack of understanding of the marketability of WSUD and willingness to pay, particularly in greenfield areas.

### 3.2 Recommendations

The following recommendations are proposed to address the barriers to the planning, design, delivery and maintenance of WSUD in WA.

1. Emphasise the importance of local context and that solutions must respond to site context. This is likely to require more guidance on best practice approaches in a range of site conditions and urban contexts.
2. Increase the baseline so that it is an even playing field and provide criteria/requirements for other aspects such as tree retention/establishment, public open space functionality, landscape maintainability and ecological health. These should be applied flexibly (not a tick box approach) to enable outcomes to be optimised rather than compromised.
3. Prepare district-scale water plans covering all aspects of water holistically and in the context of climate change. This will support innovative solutions and reduce uncertainty for developers and local governments.
4. Support the approval of local water management strategies by local government rather than the Department of Water and Environmental Regulation. This would support the consideration of liveability and sustainability, increasing the degree of ownership by local government in the endorsed strategy and reduces the number of regulatory agencies and minimises conflicting advice.
5. Encourage collaborative delivery of projects that integrate the consideration of all disciplines to facilitate an open dialogue with state and local government. Obtain early collective agreement on the Vision for the site and demonstrate how this is being achieved at each stage of decision-making.

6. Develop a WSUD auditing program that can be undertaken as part of handover. The process should ensure the 'as constructed' WSUD features are in line with the design drawings (eg. inlet levels), and that maintenance/ protection during the construction period has been undertaken as per the UWMPs (eg. photos of sediment protection, or infiltration testing of filter media pre handover).
7. Open up dialogue between industry and regulators to increase the awareness of some of the drivers and competing issues that officers need to deal with in their roles to improve relationships and encourage collaborations/ discussions between industry and regulators. Possibly in the form of 'water industry night' talks and networking.
8. Develop a clearer understanding of the economic drivers and level of community support for the range of costs and benefits from WSUD including maintenance.
9. Link WSUD to Net Zero and circular economy principles, providing some "killer facts" to support optimisation of outcomes.

## APPENDIX 1: SUMMARY OF RESPONSES

### 1. What comes to mind when you think of water sensitive urban design?

- At source treatment, water in the landscape, improved amenity and ecological health, fit for purpose water sources.
- Everything – total water cycle - ecological health, liveable neighbourhoods, aesthetics, safety.
- Infrastructure for management of runoff in urban areas in an environmental sensitive way. But broader than that – policies and practices that support infrastructure ie. Design and construction as well as maintenance and how interacts with urban form.
- Nutrient stripping and water quality treatment
- Rain gardens, swales, flush kerbs tree pits.
- Sustainable sources of irrigation for POS
- Functionality of managing stormwater in an environmentally sustainable way for community benefit
- BUWM seems to focus on groundwater discharge and stormwater. Really only look broader if clear opportunity – lots of other things to consider. It is hard to get it right.
- Pain
- Concepts and pictures that don't get delivered on the ground.
- Headaches and disappointment. People talk the talk but don't want to make the big steps required to make a quantum difference.
- Constraint on how we develop but an opportunity to incorporate into the landscape in a sustainable way.
- Lack of consistent objectives, expectations, application and too many agencies involved.
- Very focused on stormwater but will agree it is total water cycle management when pushed – don't generally think of recycling and reuse as WSUD.
- Developers particularly saw WSUD as stormwater management only (specifically swales, raingardens etc)
- But local government (LG) and "key water players" recognised as more total water cycle and making cities greener
- "One where we deal with water as a resource rather than a waste product"
- Local Government and State Government recognise amenity but need to link more strongly back to the receiving environment i.e. the health of the River and wetlands. There is still some disconnection between thinking about where the rainfall goes and what it feeds.

### 2. What is your most favourite WSUD achievement? Why?

- Getting good stuff on the ground, and in appropriate settings, to demonstrate it does work.
- Taking conventional designs and negotiating a best practice outcome which actually gets built.
- Building trusted relationships to improve outcomes. Need to recognise that opposition often comes from a personal experience which needs to be recognised and addressed.
- Good strategic planning and a district scale which is embedded into the planning system with scheme provisions
- Piara Waters was a system that considered total water cycle balance and replenished Forestdale Lake. Ie. Using stormwater as a resource for depleting water levels.
- Mosman Park total water cycle project – it was holistic and all of town.
- Nearly getting recycled water to Alkimos. It de-bunked a lot of myths.

- Jungle Park in Whiteman – well loved by the community. Has a stream. Community values it as it gives multiple values/outcomes.
- Local governments do car park design well.
- MAR process at Rivergums Estate in Baldivis. City-led project.
- Eliza ponds – a good example of WSUD being used to remediate and protect environmental assets (old abattoir).
- Vale and Avely – great when you get it right. Amazing to see wildlife in these places. They become an asset to the community, creating a beautiful environment, supporting people getting out into the environment which is good for wellbeing and the community.
- Rosehill
- Heron Park waterways and swales
- Works best when the hydrologist is in the project from the beginning and not just asked to do the reports after the civil engineers have designed everything.
- Unfortunately mostly lost opportunities as it was hard to get support to pay for innovative solutions.

### 3. What is your biggest WSUD failure? Why?

- WSUD used in WA isn't always designed appropriately for WA – needs to consider what water management aspects are important for each individual site.
- Some engineers still pushing pit and pipe solutions as these are easier to design. Policy is just a guide.
- Poor design (something wrong in the assumptions) resulting in too much standing water. Bad for mosquitoes and not maintained. Looks awful and smells.
- Marginal sites are more likely to fail than easy sites when they are designed by people with a lack of experience. This also stems from a hesitancy to look outside the site. In water, everything is linked.
- Even around different parts of WA, design should vary to site conditions and often it doesn't (one size fits all). Eg. Design and implementation of raingardens – not always appropriate with our rainfall patterns or groundwater condition as plants die and they become littler traps. Diffuse and point source management need different solutions.
- Having to retrofit areas that didn't function properly as a result of subsoil drains being clogged with fines. Areas where infiltration isn't as good as expected often result in problems. But don't want to sterilise land because of conservative estimates either.
- Can be failure of process, but often it is a lack of understanding and translation of the design into an on-ground outcome (practical implementation and building).
  - Eg. Designed to allow flow into a swale but then the grass is planted too high and blocks the inflow.
  - Eg. Alkimos beach – two different developers, same designs. one maintained well before handover (ie. During construction/ building), one did not. The one that was maintained and implemented well thrived (less clogging of cement fines etc).
- Site where local government were not supportive of getting the best WSUD outcome. Developer also didn't see value in it. Ended up with bare minimum to get approvals. Doesn't look good now.
- Bramham – one government Department needs to take the lead. There are so many players and no one wants to take responsibility after the developers leave.
- Wungong – long drawn-out process.
- Not getting recycled water to Alkimos.
- Sienna Wood and the whole project (Wungong) because the waterways in the original plan go in the wrong way – needed to do more earthworks than if we followed natural topography. Masterplan embedded in planning scheme so can't change it.

- Baldivis low grade subsoils don't work. Same problems in North Forrestdale. Grades of 1:1000 don't work.
- Heron Park – seeing all the sediment transport and damage to environment. Too much groundwater transport.
- Concern that failures make people more conservative. But this might be appropriate in high risk sites.
- There is conflicting advice/ misalignment from government and/or no one wants to make a decision which makes it hard for developers to deliver.
- Local government asking for 20% AEP in vegetated area/basin/biofilter needs to stop.
- Just a lack of implementation of current policy. The words are there.
- Also political pressure for fast development doesn't' result in good outcomes.
- Lots of little things go wrong along the journey – need to learn from all.

#### **4. What do you think are the key drivers for whether WSUD gets proposed/ implemented? Are they different for different stakeholders or the community?**

- Maintenance is a critical aspect – particularly in regional and low rate-base LGs, or growth councils that have a lot of assets. For maintenance, simplicity is key – less frequent maintenance is more appealing, but also knowing that the contractors and/or LG staff know how to maintain/clean the structures.
- Local government – engineering and landscape, water quality treatment to protect groundwater/irrigation source. Also needs to be safe and create amenity.
- Commercial/financial decision for developers – nice landscapes and infrastructure is critical, especially away from beach – seeking more diverse/different/unique landscapes. Also the closer a site is to the discharge point the more likely to implement non pit and pipe as less fill requirements.
- Environmental protection – been around for a while and now recognised as mainstream best practice. Community is also supporting the aesthetics so much better than big basins with cyclone mesh fencing. Public unlikely to want to go back to old practice.
- Reasonable consistency at planning stage because of DWER and setting aside the space. Designing the urban form to be ready for WSUD. But at UWMP stage, it can go either way. Might be driven by developer, consultant or local government. Need all three on board. Have seen it fail as a result of each type of stakeholder.
  - Local government might not understand sufficiently, or their structure also is a factor. If driven by operations/landscape this often fails
  - Developer fail if can't see value – costs and benefits not well communicated by engineers
  - Engineer consultant – needs skills and experience to deliver it. Balance between engineer and landscape is critical as can achieve criteria but still look awful. Some don't have landscape consultant.
- Depends on consultant knowledge and passion.
- Belief of the landowner and a commitment to make a difference.
- But generally, developers becoming more accepting of the fact that in order to get the approvals required, it is just the way things need to be done now. Factored into feasibility for all developments now – particularly unzoned land.
- Marketability – will do it if it becomes a feature that is saleable. Also needs to be value for money. Won't do it if there is a cheaper option.
- Accreditation e.g. UDIA EnviroDevelopment
- Depends on the technical knowledge of the assessors (including the planners looking at POS and streetscape landscape plans). They need to be able to review the pictures and see when the suggested outcomes are unable to be delivered and know the reasons why.

- Ability to address the competing interests – do you deliver a wetland or trees or a park? Can't always do it all.
- Fastest approvals are a key incentive - usually that involves implementing "usual" WSUD to some degree. It actually becomes a deterrent for implementing innovative WSUD as makes the approvals longer (eg. Bramham).
- Case by case approval incentives – eg. No groundwater source for irrigation? Then need to focus on that.
- Community feedback/ complaints – this is a key driver for Water Corporation retrofits/ action etc.
- Need to also recognise that sometimes the perception of what a LG will support is outdated, ill-informed or based on assumption rather than up-to-date knowledge.

## 5. How should we try to “sell” WSUD? To who? Who would benefit most from the “sell”?

- Need to sell it mostly to LGs under guise of community benefit - cool, green, high amenity communities, include more case studies of it done well and appropriate to WA conditions.
- Need to sell to community/customer but hard, particularly when the spaces are not well maintained after handover. Customers still have zero interest in environment and liveability. Developers are more interested. But community is still drive so much by affordability. First homebuyers and new migrants just not interested. Have more success with trees. But hard to get the link with environment.
- Better messaging for the community.
- Planners. They don't seem interested or understand WSUD. Also often think it is too hard and not critical/a “nice to have”.
- Also think about climate change and carbon sequestration from trees and vegetation.
- Focus on the benefits beyond water management.
- Go back to basic principles of WSUD and don't sell the “cookie cutter” or “one size fits all”.
- Good WSUD isn't detectable in most instances.
- Need to understand the costs and the market and what you can pass on.
- Demonstrate the capital cost is lower in some circumstances (e.g. reduced pipe networks). Equating things to dollars makes it easier for people to understand.
- Really need local government – the approver – educate operations and maintenance as well as skills and experience in engineering team to know the difference between good WSUD and bad WSUD.
- Maintenance teams – have a “how to maintain” sheet for individual developments. Like a “hazardous materials data sheet”. What problems to look out for, how to resolve etc.
- Address the failures. More of a “dummy's guide” for wet vs dry areas to make sure people get it right.
- Need consistency in advice across different state departments and LGs.
- Engineers in both private industry and government – want to carry on doing what they know, often not pushing the envelope on WSUD designs.
- Community are ready to support the benefits and pay for it. Many buyers look for closest park and trees.
- Industry and developers have accepted it as best practice so don't really need to sell it to them. Probably need to advocate to the consumer and show them what it means for the future.
- Community don't really care so need to sell it to the agencies so they support you doing something innovative.
- Link to theme that is supported by the community – i.e. Net Zero or Circular economy. It supports the delivery of a cool, green, lower power, walkability, safety etc. Combine with energy and health outcomes. Water should support the outcomes.

## 6. Where should we be trying to implement WSUD?

- Everywhere – as long as it is fit for purpose and fits the landscape needs and characteristics!
- Wherever people live. But make sure it is different for different places.
- Small stuff can be done anywhere but the big stuff to make a real difference is around reuse and wastewater treatment plants.
- Start as early in the planning process as possible.
- Commit to a Vision early and work collaboratively with regulators (at both levels) from the start. Also needs a flexible and rational approach. This achieves the best outcomes.
- Demo projects are good for all parties ie. Local government, community and industry. Share the financial and technical details – how we got to that solution – how much it costs and the benefits interns of property values.
- More effort to try and encourage in infill and apartments. Eg. New apartment guidelines in Design WA. Often forgotten there.
- Move away from water quality and focus on liveability and functionality of POS (except in close proximity to really important environments).
- Make sure it adds value. Don't do it to tick a box.
- Need more land "given up" for water management – particularly in the marginal areas.
- Roadside swales, road serves and POS – keep in higher use areas so it gets maintained more. Can get lost in residential areas.
- Agree optimal road reserve widths to fit WSUD into streets and incorporate into policy.
- Co-locate with parks or service corridors so community not confused by the purpose and park on things.

## 7. Are there areas you don't think WSUD is appropriate/ doesn't work?

- No. Should be able to be put in WSUD to some extent in all locations, as the WSUD design changes/ modifies depending on environment. But deliver on amenity and function first within a risk-based framework. But recognise these are lower margins for error in some landscapes.
- Not really except where design is wrong. Principles are ok but people need to understand it better. Government planners still don't understand it.
- No but needs to respond to the site circumstances. Shouldn't try to enforce the same thing across the board.
- It can be more difficult to implement in infill. Not that it shouldn't be used, just that it is trickier, or less scope for applicable options.
- Density provides an opportunity for reuse as more wastewater is generated which should be reused.
- Small road reserves make it really hard to fit median swales in. Also probably not optimal in low lying areas with shallow groundwater or in quiet residential streets.
- Activity centres are more difficult due to space constraints.
- In highly dense city environments it is harder but can still achieve some benefits. Varying degrees of ability to deliver benefits but can do it everywhere. Planning guidance needs more acknowledgement of difficulties.
- May need to be more conservative in areas of shallow groundwater due to increases in recharge which may not be well understood. But also need to accept that the landscape will contain boggy areas in winter. Design use and function appropriately.
- Be careful of in-situ sands that are silty. Ok permeability when tested but loose it when compacted. Creates flooding in back gardens. Compounded by large house/roof sizes.
- Using soak wells to force rainfall in is wrong. Didn't run off before. Now super-charging the mound.

- Hard in private spaces/buildings as the private building certification system doesn't understand it. Only get 10 days to approve buildings. This doesn't give any time for redesign so really need the information (space and layout) before conditional approval.

## 8. What are the biggest barriers to getting WSUD designs approved and/or implemented?

- Lack of regional drainage management plans – makes it harder to get individual developments approved.
- Landscape staff and maintenance costs. Need to show how good systems don't need much maintenance. Also need maintenance crew to enjoy looking after the new landscapes including the added complexity.
- Managing/ getting budgets for blue-green infrastructure in LG.
- Examples of systems "failing" when installed (due to maintenance or poor installation). Then all WSUD examples get tarred with the same brush.
- Misalignment in advice from different government departments and/or LG. Fragmented decision making. Overlapping roles/responsibilities of State agencies. Lots of agencies wanting different things. Makes it hard to make everyone happy.
- Dealing with different local governments (who have different requirements/ interpretations/rules) and their conservatism/reluctances particularly with something new or resulting from past experience or perceptions. But if you explain early you can get them on board.
- Preferences for "standard" responses – stifles innovation.
- Internal business case – need to clearly package how it adds value to the project. Doesn't need to be in \$\$ but that helps.
- Initial developer approach – particularly when they don't want to change to get a better outcome.
- Perception of risk and perception of ongoing costs from LG making approvals harder.
- Lack of training and knowledge leading to poor design. Need to not allow "cookie cutter" designs that don't respond to the site conditions.
- Flat topography – really hard to get the water to move.
- For approval – best water quality design might not perform best in terms of maintenance so often need to compromise to get approvals.
- We lack a clear deemed to comply approach like music. But it is noted that Queensland and Victoria are now looking for a more comprehensive compliance pathway. We need a liveability index that includes
  - Groundwater sustainability for irrigation
  - Targets for UNDO (eg. 6750 or based on POS type)
  - Stormwater criteria
- Resistance from Water Corporation to accept anything not standard. We need different solutions for different circumstances.
- Used to be local governments and resistance to new things. This has shifted now and they acknowledge the 'why' and the amenity it brings to community.
- Can have some issues with State Government as decision maker – particularly where it means going back to ask for more information. Don't want to be seen as being difficult.
- Local structure plans approved with small road reserve widths. These wont be changed by developers later (at subdivision) so you cant fit the water in the streets and it all ends up in the parks.

## 9. What thing would make the most difference in your ability or desire to deliver water sensitive development?

- Regional water plans covering all aspects of water holistically and in the context of climate change. This would also reduce uncertainty for developers.
- Raising the bar so there is an even playing field. Need a better minimum standard.
- More power by Local Government to ask for the necessary information earlier in the process.
- An intergovernmental panel to support, promote, fund and operate infrastructure for water reuse. Developers can still pay but this would put the local government and community at ease – manage perceptions of risk.
- Local government support for final landscape outcome and their involvement earlier in the process.
- Breaking down pre-conceived ideas that relate to a bad experience. Need more videos like Kwinana, more WA examples of good designs.
- Clearer understanding/ education of the “other benefits” of WSUD outside of good water management. Understand the economic drivers more – what are people willing to pay for – include maintenance costs.
- A mechanism to pay for maintenance. Often depends on the priority of the LG officers' priorities who is allocating the funds. A “user manual” for maintenance staff per development.
- Some way to ensure that installation is as per design – bad examples ruin WSUDs reputation.
- Stronger legislation and statutory timeframes for approvals.
- Certainty for approvals. Clear understanding of approval processes timeframes and performance criteria.
- Remove the conflicts between State and local governments.
- Consistency in interpretation and application of policy – by everyone. Develop better guidance on rules and local government differences.
- Also want to know what best practice is. Need more monitoring of performance to see how well things work. Possibly a star rating?
- Standards have to go across the board – in all agencies – even to the extent of turf and irrigation, Health, Education and independent schools, MRWA, local governments, golf courses
- Engagement and respect between industry and Government leaders and recognition everyone wants good outcomes for the community and environment.
- DPLH need to ask for more land for water conveyance and treatment. Can't just occur in POS as still need active and passive POS
- More resources at DWER and senior executive support for DWER advice to;
  - support planning and development (to undertake regional water management plans, catchment level planning).
  - Update policy and guidance to incorporate learnings from the last 10 years.
  - And get them done promptly (not 3 years for approval).
- Improve street design guidance in liveable neighbourhoods. So can then quote a road type
- Better information for residents on what they can do.

## 10. Other comments

- Need better guidance on subsoil management to stop people focusing on surface water and more on groundwater. Where are the risks? Focus on that.
- Need DWER to understand the value of providing support to the planning system. This is where the corporate outcomes can be delivered via planning.
- Can/does reduce developable land but can argue increased price. But housing affordability not liveability still an issue
- But a single criteria doesn't fit all the typologies. Need different criteria for different places and settings but want certainty as this makes it too complex
- Competing issues are critical – how do we resolve and how do we give proponents some choice.
- Link with carbon and net zero. Include in landscape plans.

**Client: New WAtter Ways Inc**

Report	Version	Prepared by	Reviewed by	Submitted to Client	
				Copies	Date
Draft report	V1	SSh	REp	Electronic	26 October 2021
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