

**THE PENETRATION OF WSUD IN SYDNEY AND INITIATIVES TO FURTHER SUPPORT WSUD**

**Location: Quarry Room**

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**Abstract**

This paper assesses the extent to which WSUD can be implemented in Sydney. The assessment uses landuse as a lens by which to establish which policies, programs and other initiatives are effective in implementing WSUD within a Local Government Area (LGA).

Based on this assessment pathways and methods for further uptake of WSUD are discussed. This includes methods to activate WSUD in all of local government activities, policies to target development and redevelopment, and initiatives to address existing development.

This paper highlights the need for more holistic approach to WSUD policy and programs by decision makers and explores the use of incentives which can be used by councils to target existing dwelling stock. Examples of incentives for WSUD in private property are presented, which can be applied by other councils to hasten the uptake of WSUD within their LGA.

**1 Introduction**

To date the implementation of Water Sensitive Urban Design (WSUD) in Sydney has focused on Greenfield development and retrofits in response to State and local government policies and programs, respectively. The Growth Centres State Environmental Planning Policy (SEPP), as well as Landcom's WSUD Policy (Landcom 2009), requires WSUD as part of development in north-west and south-western Sydney, and all Landcom projects. Examples of WSUD in these developments include Rouse Hill Town Centre, Oran Park, Edmondson Park, Second Ponds Creek and Prince Henry Hospital redevelopment.

Local government programs have focused on the incorporation of WSUD elements into retrofits of streets and footpaths, redevelopment of town centres, upgrading of council buildings, as well as stormwater harvesting as a component of park upgrades. Many of these projects are presented in the proceedings of this and previous conferences of the Stormwater Industry Association (SIA).

To further the uptake of WSUD many councils are developing WSUD planning provisions within their Development Control Plan (DCP). While ideally these provisions would create a policy framework which would require all of council development projects (road park and footpath upgrades) to meet the same targets, it is more often the case that the provisions focus solely on private development.

Key considerations with this mechanism for WSUD uptake are two-fold and include the fact that Development Applications which require WSUD impact on a very small portion of land within the LGA, as well as the lack of supporting information provided by councils for proponents to adequately apply WSUD in a consistent manner across the LGA.

This paper focuses on the former issue and seeks to answer the question to what extent do WSUD provisions within a council DCP facilitate the penetration of WSUD in a typical LGA. Alternatives for mechanisms to further the WSUD uptake across an LGA are presented with incentives used as a key mechanism which can be applied by councils.

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**2 Landuse within Local Government Areas in Sydney**

An assessment of the landuse of six actual LGAs around Sydney was undertaken to determine an appropriate proportion of roads, open space, commercial and industrial, and residential areas. Table 1 identifies these six LGAs, providing a general guide as to their location within the Sydney Metropolitan Area. This broad assessment shows that based on this sample, average landuse within a typical LGA is approximately 15% roads, 15% open space, 45% residential and 15% commercial and industrial and 10% special use (including rail and community lands).

**Table 1: Urban landuse breakdown of six local government areas in Sydney**

Council	Road	Open Space	Commercial / Industrial	Residential	Other
South West	17.0%	16.6%	16.7%	48.2%	
Southern	1.7%	16.6%	7.8%	68.9%	5%
Inner west	24.4%	8.6%	11.4%	40.9%	11.4%
Western	17.1%	9.2%	16%	38%	17%
Inner City	22.3%	16%	42%	20%	
Eastern	13.0%	16.9%	1.4%	70.6%	
Average	14.4%	14.0%	15.9%	46.4%	11.1%

When considering each of these landuses, councils have varying responsibilities and therefore ability to influence WSUD outcomes. For example and based on the broad assessment in Table 1 and as presented in Table 2, council has direct responsibility for non-arterial roads, open space and a small number of community and commercial buildings (amongst others), which may total 30% of the landuse within the LGA. State Government departments are responsible for approximately 10% (other uses) through arterial roads, railways, buildings. Privately owned residential, commercial and industrial property represents 60% of the LGA.

**Table 2: The application of WSUD on private and public lands**

Local Government Area					
Land use	Other ~ 10%	Road ~ 15%	Open Space ~ 15%	Residential ~ 45%	Commercial / Industrial ~ 15%
Owner-ship	State Government	Council		Private	
Typical use	<ul style="list-style-type: none"> <li>Arterial Roads</li> <li>Railways</li> <li>Buildings</li> </ul>	<ul style="list-style-type: none"> <li>Town Centres</li> <li>Parks</li> <li>Roads and footpaths</li> <li>Buildings</li> </ul>		<ul style="list-style-type: none"> <li>Residential</li> <li>Commercial</li> <li>Retail</li> <li>Mixed Use</li> </ul>	
WSUD	Limit ability to influence WSUD	<ul style="list-style-type: none"> <li>Opportunistic WSUD implementation in Projects</li> <li>Retrofits</li> </ul>		<ul style="list-style-type: none"> <li>WSUD DCP Provisions and Policy (DA applicants)</li> <li>Incentives</li> </ul>	

Table 2 also shows that council only has the ability to directly influence WSUD outcomes on approximately 30% of the land which it owns (roads and open space), with the remainder being either state owned or

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privately owned. While there is limited ability for Council to influence State Government buildings and development practices, a key focus of Councils is influencing private properties, which represent the majority of an LGA to implement WSUD through planning controls. But how effective is this really?

### **3 Development Assessment as a Portion of Private Property within Sydney**

To determine the extent to which the development assessment activates the renewal of private property and therefore the extent to which provisions within a DCP can be used as a mechanism for WSUD implementation, an assessment of DAs in Sydney was undertaken.

According to the NSW Department of Local Government (DLG 2009), in 2008-09 there were 1,379,028 rateable residential properties and a further 100,019 business properties in the Sydney Metropolitan Region (Table 3). In 2009 there were 26,173 development applications (DAs) (Department of Planning 2010a), representing 1.9% of the total number of residential dwellings and businesses. The DAs were 50% alterations and additions to existing residential dwellings, 22% new residential dwellings and 28% businesses. In 2008-09, the Department of Planning assessed 148 projects under Part 3A ("major projects") (Department of Planning 2010b).

Of the 18,949 DAs for residential dwellings in 2009, 1% was for alterations and additions (13,119) and 0.4% for new dwellings (5,830). DAs were also submitted for 7.2% of business properties (7,224). Councils typically apply WSUD provisions to larger developments including:

- medium and high density residential;
- commercial and industrial development or additions to commercial and industrial land, where the impervious area of new or additional driveways, vehicle parking areas or vehicle manoeuvring areas, either individually or in total exceeds 150m<sup>2</sup>;
- all subdivisions of 6 or more lots and/or an area of greater than 2,500m<sup>2</sup>;
- all development types with ten or more carparks, either covered or uncovered.

This means that even if a council required WSUD as a DA, it would not address alterations and additions (including knock down and rebuilds), and many new residential dwellings (eg single or detached dwellings), as well as some business / commercial properties.

Based on the development within Sydney, the penetration of WSUD through existing planning provisions and the DA process is relatively minor compared to the existing housing stock. It needs to be noted that for residential properties, new dwellings add to the number of houses, while alterations and additions generally renew the existing stock through alteration, enlargement and/or extension of an existing dwelling (e.g. first floor additions, ground floor extensions, new kitchens), and ancillary developments such as new swimming pools.

The need for alternative methods to engage WSUD in the private domain is apparent, as WSUD DCP planning provisions will apply to a small percentage of DA proponents.

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**Table 3: Development Applications for residential and business properties in Local Government Areas across Sydney (DLG 2009, Department of Planning 2010a)**

Council	Residential Properties					Business Properties		
	Number	Alterations and addition DAs		NEW Dwelling DAs		Number	Business Property DAs	
		No.	% of residential properties	No.	% of residential properties		No.	% of business properties
Ashfield	14,887	151	1.0%	17	0.1%	875	64	7.3%
Auburn	22,002	126	0.6%	87	0.4%	2,296	181	7.9%
Bankstown	56,761	173	0.3%	226	0.4%	4,446	272	6.1%
Blacktown	94,491	998	1.1%	879	0.9%	4573	364	8.0%
Botany Bay	12,862	121	0.9%	42	0.3%	1,614	188	11.6%
Burwood	10,658	80	0.8%	11	0.1%	806.7	78	9.7%
Campbelltown	50,099	264	0.5%	132	0.3%	2,742	327	11.9%
Canada Bay	28,422	339	1.2%	93	0.3%	1,426	110	7.7%
Canterbury	44,015	300	0.7%	111	0.3%	2,801	150	5.4%
Fairfield	56,032	459	0.8%	284	0.5%	3,968	420	10.6%
Hawkesbury	22,152	270	1.2%	70	0.3%	1,543	63	4.1%
Hills Shire	55,089	720	1.3%	310	0.6%	2936.3	179	6.1%
Holroyd	32,719	156	0.5%	214	0.7%	1,960	131	6.7%
Hornsby	53,500	713	1.3%	253	0.5%	2,469	121	4.9%
Hunters Hill*	4,556	0	0.0%	0	0.0%	195	0	0.0%
Hurstville	27,743	216	0.8%	161	0.6%	2,024	116	5.7%
Kogarah	20,295	154	0.8%	96	0.5%	975.2	50	5.1%
Ku-ring-gai	36,323	529	1.5%	370	1.0%	898.1	90	10.0%
Lane Cove	12,537	204	1.6%	46	0.4%	1427	50	3.5%
Leichhardt	22,018	357	1.6%	38	0.2%	1,834	93	5.1%
Liverpool	53,989	222	0.4%	344	0.6%	3,078	252	8.2%
Manly	16,854	305	1.8%	53	0.3%	1,117	87	7.8%
Marrickville	29,004	298	1.0%	36	0.1%	3,100	164	5.3%
Mosman	12,317	179	1.5%	21	0.2%	583.6	28	4.8%
North	32,249	248	0.8%	36	0.1%	3,701	173	4.7%
Parramatta	54,290	298	0.5%	213	0.4%	4,310	318	7.4%
Penrith	60,480	726	1.2%	184	0.3%	3,146	233	7.4%
Pittwater	22,137	353	1.6%	102	0.5%	1,673	43	2.6%
Randwick	46,595	433	0.9%	121	0.3%	1,945	127	6.5%
Rockdale	36,679	191	0.5%	101	0.3%	1,741	98	5.6%
Ryde	37,832	294	0.8%	174	0.5%	1,662	209	12.6%
Strathfield	11,476	100	0.9%	69	0.6%	985	65	6.6%
Sutherland	78,216	569	0.7%	367	0.5%	4,061	167	4.1%
Sydney City	81,119	536	0.7%	50	0.1%	17,545	1,491	8.5%
Warringah	50,767	679	1.3%	212	0.4%	3,466	134	3.9%
Waverley	27,120	490	1.8%	53	0.2%	1,731	122	7.0%
Willoughby	26,455	455	1.7%	70	0.3%	3,034	349	11.5%
Woollahra	24,289	413	1.7%	184	0.8%	1,331	117	8.8%
Sydney Metro	1,379,028	13,119	1.0%	5,830	0.4%	100,019	7,224	7.2%

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\* No data was identified for Hunters Hill Council.

DCP provision are important and can act as an overall vision for council, which then can facilitate the consistent application of WSUD into all activities in the LGA. To support these provisions to is necessary to:

1. ensure there are locally specific guidelines to support the DCP. This could be specific guidelines and / or linkages to guidelines such as South East Queensland Water by Design Program Guidelines (see <http://waterbydesign.com.au/guidelines/>).
2. ensure that the WSUD DCP planning provisions are adhered to all sections of Council when undertaking upgrades of roads and footpaths, council buildings and public open space, as well as town centre renewal.
3. Investigate mechanisms to further the implementation of WSUD into those areas not adequately addressed at current, ie private property.

Incentives can be used by councils to target existing private properties, and are discussed in detail in the sections below.

#### **4 Incentives for WSUD**

Incentives for WSUD complement regulations including DCP provisions, and can be offered by local government and other organisations to facilitate the uptake of WSUD within their area of operation. Examples of the incentives for WSUD include:

- financial incentives such as rebates for the installation of rainwater tanks or water efficient appliances. Financial incentives can also include discounts on other charges such as a council's stormwater service charge if a resident has installed any WSUD elements. Financial incentives for elements such as rainwater tanks are offered by the Australian Government, Sydney Water and number of councils in Sydney.
- non-financial incentives for the installation of WSUD elements such as increases in the floor-space ratio allowed for commercial development, or increasing the impervious area of a residential allotment. An example of a non-financial incentive is the increase of floor-space ratio for commercial development if the development includes sustainability initiatives such as WSUD.
- education programs to provide knowledge and skills to the community to foster behaviour changes. Education programs include information kits and workshops offered by councils complementing rainwater tank rebates, and workshops on how to install stormwater quality WSUD elements on a property.
- assistance programs whereby residents are given free design advice, materials, or construction support to install WSUD elements. Examples of these types of programs include Sydney Water Programs – WaterFix, Toilet Replacement Service, Love Your Garden Service and DIY Water Saving Kit.

In the case of WSUD, incentives are typically linked to existing dwellings, or retrofit situations, where opportunities for inputting WSUD or other sustainability elements are not readily enabled, or required, such as through a Development Application process.

Examples of WSUD incentives for councils build on the types of incentives outlined above and are included in the following sections.

## **5 Case Study – Rainwater Tank Rebate Programs**

A number of rainwater tank rebates offered by federal, state and local governments. These rebates are typically for existing houses, with the rebates determined by both the size of the rainwater tank and uses for the captured rainwater (laundry and/or toilets and/or hot water). Typically, the rebates are not exclusive and a building owner can apply for multiple rebates. For example, a home owner in Lane Cove who installs a 5,000 litre rainwater tank plumbed to toilets and laundry can receive \$2,450 in rebates (\$500 Australian Government, \$1,400 Sydney Water, and \$550 Council). Examples of rainwater tank rebates include:

- The Australian Government provides Rebates of \$400-\$500 to existing dwellings for either the installation of a new rainwater tank which is connected for internal reuse (toilet and/or laundry); or for the installation of a permanent greywater treatment system (Australian Government 2010).
- Sydney Water provides rebates of up to \$1,500 for new tanks to existing dwellings.
- Lane Cove Council – provides up to \$550 for residents to install a rainwater tank, provided that the tanks are plumbed-in to either the toilet and/or the washing machine.
- Parramatta Council offers discounted tanks for residents in Parramatta, with a “rainwater tank kit” provided for download by residents on council’s website (Parramatta Council 2010). The rainwater tank kit provides a step-by-step process on how to choose a tank supplier, how get a loan and how apply for a rebate through Sydney Water; preferred rainwater tank suppliers guide; information for a ‘green loans’; and frequently asked questions about rainwater tanks.
- Marrickville Council - provides rebates based on both the capacity of the tank and the internal uses to which the rainwater tank is plumbed. The rebate is supported by three initiatives: An information pack; free technical workshops; and a list of preferred rainwater tank suppliers.

## **6 Case Study – Education (WSUD on your Property)**

Run for several hours on a Saturday morning, Marrickville Council delivers a series of regular workshops, to interested residents to encourage the implementation of WSUD on their private properties. The workshops include the following topics (Marrickville 2010):

- Neighbourhood Tour – visiting local dwellings to see how residents have installed WSUD on their property. Participants ask questions on the experience of installation, thereby gaining an understanding of how the elements may apply to their situations.
- Rainwater Tank Workshop – outlining key elements of sizing rainwater tanks for the intended uses and roof area draining to the tank, and maintenance of the tank.
- Introductory WSUD Workshop – where participants can learn about WSUD and identify what may be appropriate on their property.
- Design WSUD Workshop – providing detail on individual elements that participants may have identified for their property.
- Greywater Reuse – how to use greywater safely on a private property.

Building on the success of these workshops, Marrickville Council sought expressions of interest from residents, to have a WSUD elements designed and installed on their property for free. In November 2009, Council assisted in the design and then built a small stormwater treatment wetland for a house in Marrickville.

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## **7 Case Study – Incentives for the Adoption of WSUD in new development**

Councils and other Consent Authorities can provide incentives to developers for the incorporation of WSUD into their development.

### **Floor Space for Sustainability Initiatives (The City of Ryde Council)**

The City of Ryde Development Control Plan 2006, s4.5 Macquarie Park, which along with Ryde LEP 2008 Amendment 1 allows for Incentive Floor Space. Incentive Floor Space (City of Ryde Council 2010) is that which “makes provision for the infrastructure, facilitates public domain improvements and other community benefits..in a form that is satisfactory to Council”. Under the LEP, Council “*may consider granting development consent to a development where the building height and the Floor Space Ratio are in excess of the controls contained in the Ryde Planning Ordinance if the development provide community benefit such as:*

- *Treatment and/or other features in public places,*
- *Environmental management improvements such as water and energy minimizing devices*
- *Water quality devices”.*

The incentive floor space provisions complement the City of Ryde developing a WSUD policy and planning provisions, and undertaking on-ground WSUD works.

### **Public Open Space Credits for WSUD (Western Australia Planning Commission)**

The Western Australian Planning Commission (2009) *Liveable Neighbourhoods Policy* applies to subdivision of greenfield sites and for the redevelopment of large urban infill sites in WA. The policy provides direction on the design of “good neighbourhoods” according to a range of themes including community design, lot layout, movement, public parkland and urban water management. WSUD requirements are consistent with the provisions contained with Australian Rainfall Quality and call for both best planning and management practices.

Provisions R4 and R5, “Amount of Public Open Space”, require a minimum contribution of 10% of the gross area of the subdivision of infill to be provided as Public Open Space. Developers are granted a 2% credit to this 10% Public Open Space requirement for the adoption of WSUD.

## **8 Case Study – Melbourne Water Stormwater Quality Offsets**

WSUD is a requirement of new residential subdivision development within Melbourne. Melbourne Water’s Stormwater Quality Offsets Program, provides an option for developers to fund Melbourne Water to undertake regional water quality works within the catchment, which offset pollution loads that are not treated within a development.

Where regional water quality elements exist within subdivisions, developers have the option of receiving a reduction in their water quality contribution based on the percent to which best practice objectives have been met on-site (Melbourne Water 2006).

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## 9 Conclusions

WSUD planning provisions in a Council DCP only target large new developments, involving subdivision and medium to high density residential, as well as commercial and industrial developments. Existing housing stock, such as alterations and additions are not addressed and are only required to install water efficient fittings under the BASIX Scheme. Alternate mechanisms need to be identified to facilitate the uptake of WSUD in existing dwelling stock.

Incentives have been proposed as a mechanism to facilitate WSUD uptake in those areas not currently addressed by WSUD. Incentives include a range of programs such as financial incentives, non-financial incentives, education programs, and assistance programs whereby residents. Examples and information on each of these incentive types has been presented.

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