TWEED SHIRE COUNCIL

Integrated Water Cycle Management Strategy

Summary Report for Public Exhibition

January 2014

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Introduction

In 2006, Tweed Shire Council adopted an Integrated Water Cycle Management (IWCM) Strategy to guide resourcing and prioritise management actions for water supply, sewerage and stormwater systems. Minor updates to the IWCM Strategy were adopted in 2009 and 2011.

In 2012, a major independent six-year review of the IWCM Strategy commenced. This was to ensure the Strategy:

- Remained relevant to the current or emerging challenges facing Council
- Continued to reflect community desires for future water cycle management
- Adhered to the updated guidelines established by the NSW Office of Water (NOW)
- Provided input into Council's broader Environmental Sustainability Strategy (ESS), which is likely to be delivered in 2015
- Incorporated *catchment management* into IWCM planning, extending traditional focus of the NOW on urban water supply, wastewater and stormwater management, as shown in *Figure 1*. This is possible as the entire Tweed water supply catchment falls within the boundary of the Tweed local government area.

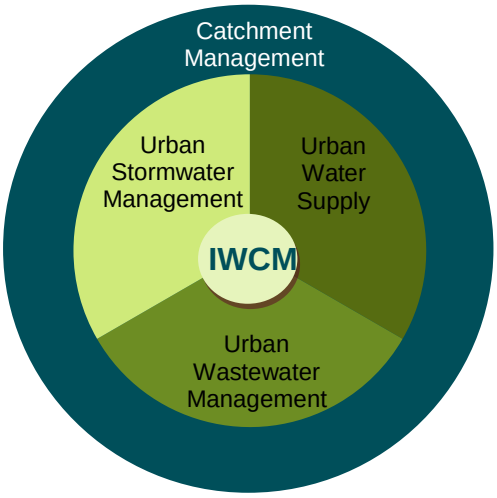

Figure 1: Extension of the IWCM

The independent review was conducted by Hydrosphere Consulting.

Through extensive consultation, Hydrosphere Consulting identified 26 current and emerging IWCM Issues that Council and the community will face over the next 30 years and 60 IWCM Actions (also referred to as Management Options) to address these issues. A framework was developed to prioritise the 60 IWCM Actions, which led to a draft ten year implementation program.

The proposed ten year implementation program has a total budget cost of $9.07 million (current dollars) with approximately $1.97 million required in the first three years.

A comprehensive consultation program was undertaken over 2012 and 2013. This was central to the IWCM Strategy Review, with a number of community suggestions, such as the increased use of recycled water and a rainwater tank rebate, being looked at. Stakeholder input was gathered through a range of methods, including:

- *Public exhibition:* Before being adopted, the community will have had three formal opportunities to provide feedback on the direction of the IWCM Strategy. Written submissions were encouraged on the consultants brief, the background paper and the Draft 2013 IWCM Strategy.
- *Telephone surveys:* 600 random telephone surveys were conducted by an independent research agency, representing a statistically relevant sample size for the Tweed.
- *Paper-based surveys:* Over 400 paper-based surveys were conducted.
- *Targeted engagement:* Consultation and liaison with state government agencies and community groups, including the Aboriginal Advisory Committee.
- *Internal Consultation:* An internal steering committee was established, drawing expertise from across Council, including Recreation Services, Natural Resource Management, Planning and Investment, Planning Reforms and Building and Environmental Health. Interviews were also conducted with the 16 members of the steering committee.

- *IWCM Strategy Information:* Stakeholders have had access to IWCM-specific information through traditional and digital media.
- *Councillor Workshops.*

Methodology

Figure 2 outlines the structured methodology used by Hydrosphere Consulting to conduct the IWCM Strategy Review.

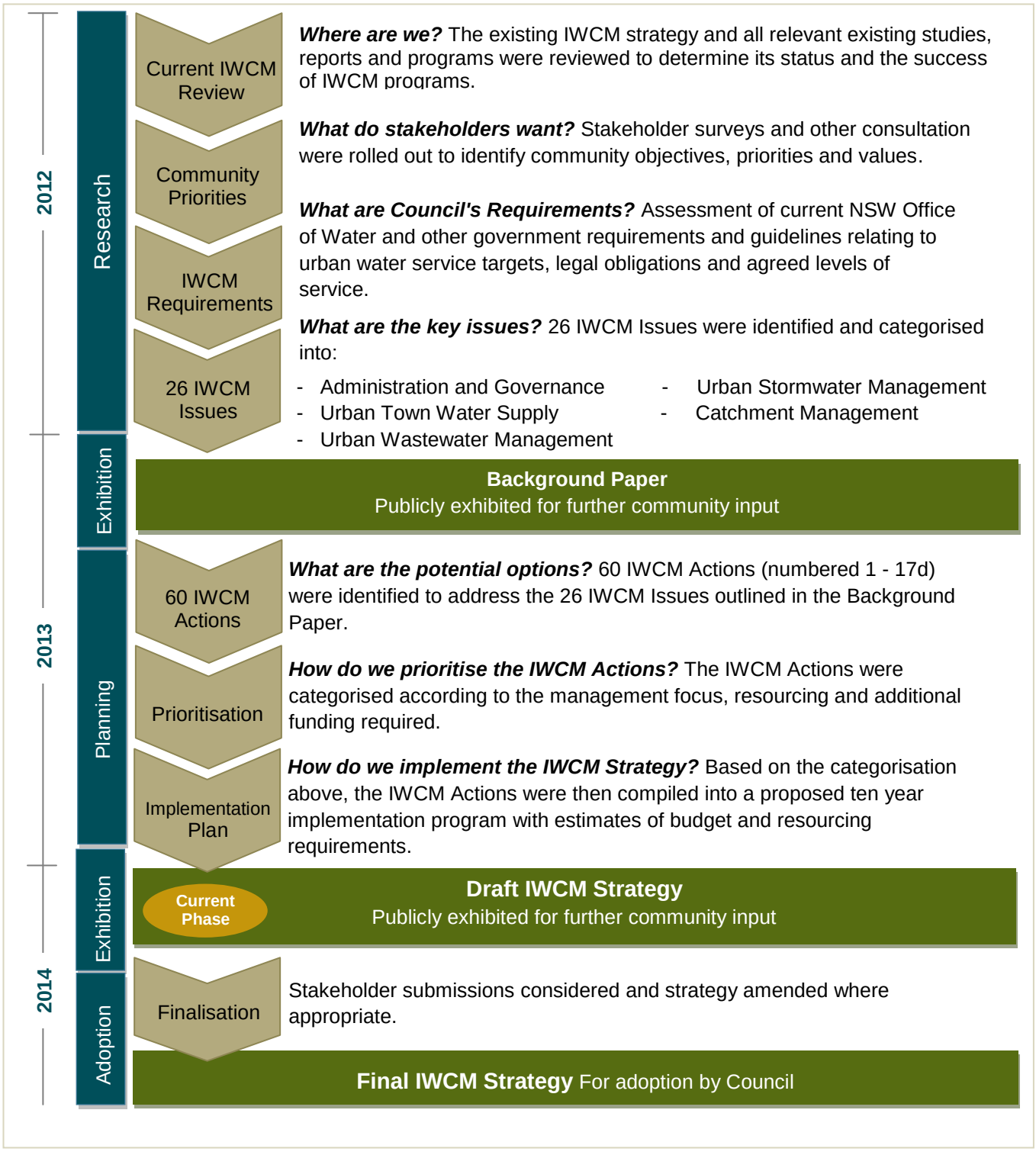

***Figure 2**:* Development of the IWCM Strategy

Key Findings

Extension of the IWCM approach beyond the traditional urban water focus

Community and Council expressed a desire for an IWCM approach which is broader than the original urban water focus.

There is a need for greater integration of the water cycle in Council's administrative arrangements. This includes the development of a total catchment management strategy to better integrate urban water supply, wastewater, stormwater, land-use planning and catchment management activities.

Demand management program highly successful

Council's demand management programs contributed to reduced household and commercial water use, despite population growth since the early 1990s. Demand management initiatives should continue to ensure ongoing efficient use of our water resources and achieve future targets for water use.

Increased use of recycled water

Community and Council expressed a desire to increase the use of recycled water. However, Council is limited in its ability to influence residential developments already approved at state government level but not yet constructed.

Council should consider future policy development in this area and opportunities for increased water recycling as an integral part of Council's servicing strategy for future developments.

Water supply augmentation

Considerable investigations have been conducted to identify augmentation options for the Tweed's water supply.

However, water supply augmentation will not be required as soon as initially predicted due to lower than expected population growth rate and successful demand management measures. As such, the recommended short-term focus is on:

- Updating and refining supply forecasting to address uncertainties and optimise the timing of the significant investment that will be required
- Monitoring population growth and reviewing demand projections
- Confirmation of secure yield, taking into account factors such as climate change and surface water availability.

Links to Council's Environmental Sustainability Strategy

The IWCM Strategy will be tied into the Council's broader Environmental Sustainability Strategy (ESS) and the overall resourcing, priorities and funding set by that program.

The ESS is still in the early stages of development and an initial framework isn't expected until 2015.

The ESS is likely to impact on the feasibility of currently unfunded IWCM Actions. As such, in the short to medium term the focus is likely to be on IWCM Actions that Council is able to fund, then on meeting the minimum NOW requirements. Any remaining outstanding IWCM Actions would be the focus in the medium to long term.

IWCM Issues

Hydrosphere Consulting identified 26 current and emerging IWCM Issues that Council and the community will face over the next 30 years.

The 26 IWCM Issues are outlined in *Table 3.* They were categorised into the following:

1. Administration and Governance
2. Urban Town Water Supply
3. Urban Wastewater Management
4. Urban Stormwater Management
5. Catchment Management

A number of the IWCM Issues relate to Council's desire to pursue greater integration of water cycle management responsibilities and interdepartmental co-operation. Others relate to future or emerging issues such as climate change and increasing regulation where information has become more available since previous IWCM reviews were undertaken.

The key challenges Council faces in addressing these issues are:

- Finding cost-effective ways to address these issues
- Assigning priorities, given the different perspectives and perceptions of the issues and competing demands for funds in an environment where costs need to be fully justified to a broad spectrum of interest groups
- Ensuring business continuity through changing circumstances (ie climate change)
- Increasing regulatory requirements

IWCM Actions

Hydrosphere Consulting identified 60 IWCM Actions to address the 26 IWCM Issues. These Actions focus on:

- Meeting regulatory requirements for water cycle management
- Building knowledge to inform future planning
- Integrating the development and delivery of management strategies

The proposed IWCM Actions are outlined in *Table 3*. Broadly speaking, they relate to:

- Ongoing reduction of water use
- Climate change adaptation planning
- Enhancing approaches to community engagement and data collection
- Achieving 'best-practice' in water cycle management
- Increasing the use of treated wastewater
- Implementing a total water cycle management framework and preparation of sub-catchment management plans
- Improving regulation of on-site sewerage systems
- Improving environmental monitoring, evaluation and reporting
- Improving management of drinking water catchments
- Ongoing development and implementation of a water sensitive urban design framework
- Improving management of sewer overflows
- A review of biosolids management approaches

Implementation Program

The 60 IWCM Actions were prioritised according to the management focus, funding and resourcing required for their implementation. This approach was largely driven by the fact that the ESS (which will not be delivered until 2015) will determine the management focus, resourcing and funding for new IWCM Actions.

The 60 IWCM Actions are numbered 1 - 17d and were classified as follows:

- **Level One Actions** are actions that are fully funded under Council's four-year delivery program. These actions are either already underway or planned through the existing 2006 IWCM Strategy. There are 25 IWCM Actions in this category.
- **Level Two Actions** are additional unfunded actions that relate to meeting NOW Guidelines. There are 20 IWCM Actions in this category.
- **Level Three Actions** are the additional unfunded actions which are designed to meet the wider catchment management objectives. These Actions would be the focus of a medium to longer term program (ie five to ten years), but would be reliant on sourcing additional funding and resourcing. There are 15 IWCM Actions in this category.

	Currently Funded*	Meets NOW Guidelines	Meets Catchment Management Objectives	Priority
Level 1 Current or outstanding IWCM Actions	Yes	No	No	Immediate
Level 2 Urban Water Cycle Management Actions	No	Yes	No	Short - medium term
Level 3 Total Water Cycle Management Actions	No	Yes[#]	Yes	Medium - long term

* Funded in Council's four-year delivery program

[#] Exceeds NOW minimum requirements

Table 1: Prioritisation of IWCM Actions

Using this prioritisation framework, a ten year implementation program was developed and costed.

The proposed ten-year implementation program has a total budget cost of $9.07 million (current dollars) with approximately $1.97 million required in the first three years. *Table 2* (below) summarises the breakdown of the budget according to the IWCM Issue category. Of the 60 IWCM Actions, 25 are Level One Actions (ie are already funded). These will remain an integral component of the strategy going forward.

IWCM Issue Category	Ten-Year Budget ($000's)
Improvements to Administration and Governance	2 045
Urban Town Water Supply	1 415
Urban Wastewater Management	610
Urban Stormwater Management	2 080
Catchment Management	2 920
TOTAL	**9 070**

Table 2: Ten-Year Budget by IWCM Issue Category

The 26 IWCM Issues and the 60 IWCM Actions are summarised in *Table 3* (below). Details on each of the IWCM Issues and Actions, as well as the budget are provided in the Draft 2013 IWCM Strategy.

Table 3: IWCM Strategy - Proposed Ten Year Implementation Program

26 IWCM Issues	25 Current IWCM Actions Level One	20 Urban Water Cycle Management Actions Level Two	15 Total Water Cycle Management Actions Level Three
Administration and Governance			
1 IWCM principles, responsibilities and priorities are not fully implemented across all Council units	**1a)** Urban Water Focus: IWCM activities are implemented through Council's Water Unit with input from other functional areas as required	Nil	**1b)** Integrated Council-Wide IWCM Delivery: Structural integration to improve coordination, delivery and success of water cycle management services and initiatives
2 There is a need for informed and transparent decision-making and better management of community expectations	**2a)** Community engagement in IWCM decision-making: Community engagement as part of the development and ongoing implementation of IWCM Strategy components	**2b)** Strengthened community engagement process: Future engagement activities are focussed, transparent and appropriately considered. Community expectations are managed, particularly regarding Council funding and resources.	**2c)** Community engagement covering the full water cycle 2b is also a key component of this level but would encompass a greater range of topics and issues.
3 There is a need for defendable and robust population forecasts	**3a)** Ongoing data collection and review: Review of population forecasts	**3b)** Improved data management: Improved understanding of customer numbers and types, demand, annual review of growth projections, longer-term demand forecasts	**3c)** Increased understanding of total water cycle 3b also applies to this level but would consider a broader range of data
4 Uncertainty regarding the preferred Tweed district water supply augmentation option creates confusion regarding land use planning	**2a)** Community engagement in IWCM decision-making	**2b)** Strengthened community engagement process	**2c)** Community engagement covering the full water cycle 2b is also a key component of this level but would encompass a greater range of topics and issues.
5 The implications of private industry involvement in town water supply and wastewater management are unclear, particularly with regard to regulation and Council responsibilities	**4a)** Participate in WIC Act Licensing for Private water utility schemes: Participate in the development of private utility schemes and resolution of the last resort arrangements	Nil	**4b)** Strengthened IWCM Policies: Application of IWCM objectives for private water utility schemes as part of the total water cycle planning approach

IWCM Issue	Current IWCM Actions (Level One)	Urban Water Cycle Management Actions (Level Two)	Total Water Cycle Management Actions (Level Three)
6 Asset management planning	**5a)** Asset Management planning as part of Integrated Planning and Reporting Framework: Ongoing development and review of asset management plans	**5d)** Review and Update Sewer Overflow Abatement Strategy: review the actions and update the strategy considering overflow containment targets and procedures for overflows to sensitive environments **5e)** Review and update water supply and wastewater Business Continuity Plans: Annual and 4-yearly reviews with consideration of other related strategies	**5f**) Management of natural assets: Natural assets (land, waterways and vegetation) are considered as part of the asset cycle
7 Climate change implications need to be integrated into planning for urban water services, catchment management and natural resource management	**6a)** Consideration of SLR Impacts: Coastline management and floodplain management strategies	**6c)** Climate change adaptation – flooding and tidal inundation: Develop adaptation strategies for increased risk of flooding and tidal inundation **6d)** Climate change adaptation – surface water availability: Increase knowledge and develop adaptation strategies for reduced surface water availability	Nil
8 High energy consumption and greenhouse gas emissions	**6b)** Energy Savings Action Plan: existing implementation with limited funding	**6e)** Reduction in energy consumption and greenhouse gas emissions: Through Council's broader sustainability initiatives	Nil
9 Best-Practice Compliance	**5b)** Substantial compliance with best-practice guidelines	**5c)** Full compliance with best-practice guidelines: Address requirements for trade waste, strategic business planning, water supply customer metering, non-potable water pricing and development servicing plans	Nil

	Issue	Current IWCM Actions (Level One)	Urban Water Cycle Management Actions (Level Two)	Total Water Cycle Management Actions (Level Three)
		Urban Town Water Supply		
10	Improved data collection and reporting procedures would facilitate adaptive demand forecasting and assist with community education	**3a)** Ongoing data collection and review **7a)** Adopted Demand Management Strategy: Ongoing communication and education and *Target 180* campaign	**3b)** Improved data management **7b)** Improved Community Understanding of Water Consumption Targets: Develop innovative ways to reinforce water saving message and targets **7c)** Targets for non-residential consumption: Develop medium-term targets for non-residential sector	The range of demand management measures in Level 2 is also appropriate as a component of a total water cycle management approach
11	There is currently no mechanism to promote retrofit of rainwater tanks or installation of large rainwater tanks in new development	**7a)** Adopted Demand Management Strategy: No rebate for rainwater tanks	**7e)** Review effectiveness of rainwater tanks: Prior to promoting any major expenditure on rainwater tanks, data on the actual water savings and rainwater tank costs is required to demonstrate value for money **7f)** Rainwater Tank Rebate: Review feasibility of a residential rebate program	Options 7e and 7f are also appropriate as a component of a total water cycle management approach
12	Council's 2013 target for non-revenue water is not likely to be achieved	**7a)** Adopted Demand Management Strategy (bulk meter program)	**7d**) Water Loss Management Program	7d is also appropriate as a component of a total water cycle management approach
13	Augmentation of the Tweed District Water Supply will be required in future due to population growth although the timing and additional supply required are unclear	**3a)** Ongoing data collection and review **7a)** Adopted Demand Management Strategy **8a)** Future Water Supply Augmentation: need for future augmentation is recognised and assessment of options has been undertaken	**3b)** Improved data management **6d)** Climate change adaptation – surface water availability **7b)** Improved community understanding of water consumption targets **7c)** Targets for non-residential consumption **7d)** Water Loss Management Program **7e)** Rainwater tank rebate **7g)** Implement permanent water conservation measures	**11c)** Identify opportunities for increased water recycling: Implement recycling in future developments supported by servicing strategies and development controls Climate change adaptation programs and demand management measures in Level 2 are also appropriate as a component of a total water cycle management approach

	Issue	Current IWCM Actions (Level One)	Urban Water Cycle Management Actions (Level Two)	Total Water Cycle Management Actions (Level Three)
14	The drinking water catchments are impacted by current and historical land use and development	**9a)** Development of a Drinking Water Quality Management Plan: Continue to develop the plan in accordance with the Australian Drinking Water Guidelines (ADWG) **9b)** Upgraded treatment facilities at Bray Park and Tyalgum: high quality drinking water supply through treatment upgrades	**9d)** Drinking water catchment planning: Develop a drinking water catchment management plan	**17g)** Total water cycle management framework and sub-catchment plans: Develop a total water cycle management framework for the Tweed Specific drinking water quality measures would be required to comply with the ADWG
15	As a precaution the Uki Water Treatment Plan (WTP) is shut down during dirty water events	**9a)** Development of a Drinking Water Quality Management Plan	**9c)** Business continuity planning for Uki water supply (as part of Option 5e)	**17g)** Total water cycle management approach
16	Drought contingency and water supply emergency management measures need to be further developed	**10a)** Adopted Drought Management Strategy and Restrictions Policy: Strategy developed in 2009 and Restrictions Policy reviewed in 2012	**10b)** Review and update Drought Management Strategy with consideration of increased knowledge and related strategies	Nil
		Urban Wastewater Management		
17	Opportunity for development (urban expansion) outside of the wastewater service areas is limited by the capacity of Council's infrastructure and the environment	**11a)** Ongoing water supply and wastewater servicing: Develop servicing strategies and upgrade infrastructure as required	Nil	**11b**) Integrated Servicing Strategies: Waterway health considerations in land use planning and servicing strategies **11c**) Identify opportunities for increased water recycling
18	Licence requirements for pH and suspended solids at Uki Wastewater Treatment Plant (WWTP) need to be reviewed.	**12a)** Uki WWTP modifications: Nutrient reduction	Nil	Nil

	Issue	Current IWCM Actions (Level One)	Urban Water Cycle Management Actions (Level Two)	Total Water Cycle Management Actions (Level Three)
19	Council and the community have a desire for increased water recycling but there are significant barriers to implementation of recycled water schemes in the Tweed	**7a)** Adopted Demand Management Strategy: Recycled water target of 15% not likely to be achieved	Nil	**11c)** Identify opportunities for increased water recycling
20	There is a high cost of sustainable biosolids management	**13a)** Farmland application of biosolids: Re-use on farms in Tweed Valley cane farms and Darling Downs	**13b)** Biosolids Management Strategy: Develop biosolids management strategy to improve water cycle outcomes and reduce costs	Increasing beneficial reuse of biosolids is also appropriate as a component of a total water cycle management approach
	Urban Stormwater Management			
21	Increased emphasis on water sensitive urban design (WSUD) will require more integrated Council responsibilities, increased community education and increased staff capabilities and funding	**14a)** Preliminary development of WSUD Policies: Draft Urban Stormwater Quality Management Plan	Nil	**14b**) Greater integration of WSUD across Council: Develop whole-of Council framework for WSUD covering full asset lifecycle **17g**) Total water cycle management
22	Existing Council development controls do not fully address the residual load of urban stormwater on downstream sensitive waterways	**14a)** Preliminary development of WSUD Policies **15a)** Review of Stormwater Development Controls: Review and update of D7	Nil	**14b)** Greater integration of WSUD across Council **15b)** Develop guidelines for compensatory measures – formalise policy for addressing impacts of urban development **17g)** Total water cycle management
23	Existing subdivision erosion and stormwater controls and resources are not adequate for the rainfall and rate of development experienced in the Tweed.	**16a)** Existing Erosion and Sediment Controls: D7 and C211	Nil	**16b)** Review and update erosion and sediment controls and provide increased resources: Improved coordination, education and enforcement and increased resources **17g)** Total water cycle management

	Issue	Current IWCM Actions (Level One)	Urban Water Cycle Management Actions (Level Two)	Total Water Cycle Management Actions (Level Three)
		Catchment Management		
24	There is a need for a holistic catchment management strategy for the Tweed	**17a)** Management of separate areas of catchments as part of existing local and regional programs undertaken by various stakeholders **17c)** Floodplain Management Planning: Flood studies and floodplain management plans are being prepared **17d)** Water Supply Catchment Stream Bank Protection Policy: River health grants scheme **17e)** Environmental monitoring programs: various	Nil	**17f**) Review of Stream Bank Protection Policy and River Health Grants Program: Improve delivery mechanism **17g)** Total water cycle management **17i)** Monitoring Evaluation and Reporting program: to support TWCM framework
25	There is limited integration between urban and rural strategic land use planning	**17b)** Preliminary development of Sustainable Agriculture Strategy: Development of a strategy to improve the viability and environmental capacity of farmland **17c)** Floodplain Management Planning: Flood studies and floodplain management plans are being prepared	Nil	**17g)** Total water cycle management **17h)** Upper catchment floodplain planning Sustainable agriculture strategies are also required as part of a total water cycle management approach
26	The effective management of on-site sewerage systems within the Tweed is limited by the available resources	**18a)** Review of On-site Sewerage Management (OSSM) Strategy: Insufficient resources to implement OSSM Strategy	**18b)** Provide increased resources for OSSM regulation: Identify resource requirements and funding	**17g)** Total water cycle management **18c)** Integration of OSSM with water cycle management: Risk-based approach considering catchment values and issues

Next Steps

Council is again welcoming feedback on the Final Draft IWCM Strategy, which is on exhibition until **21 March 2014**. Stakeholders are encouraged to read the draft 2013 IWCM Strategy and supporting documentation prior to making a submission. This is available from Council's Administration Office in Murwillumbah and Tweed Heads or by visiting http://www.tweed.nsw.gov.au/OnExhibition.

Written submissions can be made:

- By post to: Acting General Manager,
  Tweed Shire Council
  PO Box 816
  Murwillumbah NSW 2484
- By email to: tsc@tweed.nsw.gov.au.

In February 2014, a series of community information sessions will be held to support the final exhibition phase. These will be advertised in local print media, including the Tweed Link and on Council's website www.tweed.nsw.gov.au.

Definitions

Integrated Water Cycle Management (IWCM)
A holistic long-term management approach which incorporates water supply, wastewater (sewerage), stormwater and waterway health under a single management framework. IWCM is used to ensure safe and reliable water supplies without compromising the ecological function of the water catchment.

Integrated Water Cycle Management Actions
This summary report refers to 'IWCM Actions'. In the full report, these are also referred to as 'Management Options'. There are 60 IWCM Actions, which are numbered 1 - 17d.

New South Wales Office of Water Guidelines
The NSW Office of Water (NOW) in the Department of Primary Industries is responsible for the management of the State's surface water and groundwater resources. NOW reports to the NSW Government for water policy and the administration of key water management legislation, including the *Water Management Act 2000* and *Water Act 1912*.

IWCM is a key component of the NOW's *NSW Best-Practice Management of Water Supply and Sewerage Guidelines.*

Water Sensitive Urban Design (WSUD)
An approach to the planning, design, construction and retrofitting of urban development that aims to minimise negative impacts on the natural water cycle. It promotes the integration of stormwater, water supply and sewage management within a development precinct.

About Hydrosphere Consulting

Established in 2008 and based in Ballina NSW, Hydrosphere Consulting provides consulting services relating holistic and sustainable water resource and environmental management. For further information on Hydrosphere Consulting, visit www.hydropshpere.com.au

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