

EPA submission on IPART (NSW) Issues Paper

Prices for Sydney Water from 1 July 2020

The Environment Protection Authority (EPA) responses address the questions that relate directly to its area of regulatory responsibility and oversight.

Efficient capital expenditure

Q2. In future, should Sydney Water's customer engagement program focus more on environmental outcomes and performance?

Sydney Water identified environment protection as one of six customer priorities, however, the three phases of customer consultation did not include a focus on Sydney Water's environmental outcomes and performance. The Environment Protection Authority (EPA) strongly recommends that future customer engagement programs specifically address environment protection with a focus on the environmental impact of Sydney Water's operations and Sydney Water's performance.

Sydney Water's environmental performance could be assessed using: non-compliances with environment protection licence conditions; regulatory action by the EPA (such as penalty notices and prosecutions); and the numbers, volumes, locations and trends of dry and wet weather sewage overflows reaching waterways.

The EPA considers that if the community is aware of the environmental impacts of Sydney Water's activities and the areas where Sydney Water is non-compliant with its statutory obligations, they may be more willing to pay for continued investment in the maintenance, repair and replacement of Sydney Water assets.

Q4 Are there any other factors we should consider in deciding whether to accept Sydney Water's proposed discretionary expenditure? and;

Q5 Do you have any comments on Sydney Water's proposed discretionary projects?

Vaucluse Diamond Bay

One of the four projects proposed by Sydney Water for discretionary expenditure is new infrastructure to divert raw sewage currently being discharged from three outfalls at Vaucluse Diamond Bay to the Bondi Sewage Treatment Plant (STP). These are the last discharges in NSW where raw sewage is discharged directly to the ocean without treatment.

In 2016, the EPA required Sydney Water to undertake a Pollution Reduction Study to provide a contemporary assessment of the environmental and health risks of the untreated sewage discharges from these outfalls. Sydney Water's *Vaucluse Diamond Bay Ocean Discharges – Pollution Study Report (PRP 305)* dated 25 October 2017 found that the discharge of four million litres of raw sewage per day from these outfalls posed a high risk to the environment and a very high risk to the 2000 people/year who use the area for recreation. In November 2018, the Premier announced that Sydney Water would stop all discharges from Vaucluse Diamond Bay and divert sewage through a pipeline to Bondi STP by 2020 at a cost of \$86 million.

Wet weather overflow abatement

Wet weather sewage overflows pose a significant risk to the environment and human health. The EPA strongly supports Sydney Water's proposal to reduce illegal stormwater connections and

stormwater inflow from privately owned wastewater pipes. Undertaking source control by reducing the ingress of stormwater into the sewerage system will reduce the number and volume of wet weather overflows and bypasses at STPs, which will have positive environmental and public health benefits. The implementation of this proposal will also reduce the need for Sydney Water to invest in new pipes or increase the capacity of STPs to cope with the increased volumes during wet weather.

The funding of this discretionary project will assist Sydney Water to meet its statutory obligations under its environment protection licences for wet weather overflow abatement (see below for further information).

Q.7 Is Sydney Water's expected capital expenditure over the 2016 determination period efficient?

Over recent times there has been a number of significant dry weather sewage overflows that have impacted the environment and community. The increased frequency of these events has highlighted significant issues relating to capital works and maintenance of their system.

This is supported by the recent and significant regulatory action, including prosecutions, undertaken by the EPA in response to Sydney Water's non-compliances with the requirements of its environment protection licences.

The EPA notes that Sydney Water's wastewater assets incurred a capital expenditure overspend of \$476 million and the additional expenditure was incurred on major renewals of wastewater treatment plant assets, because these assets were assessed to be in poorer condition than previously expected. The EPA notes that Sydney Water overspent on meeting existing mandatory regulatory and statutory obligations by \$191 million compared with original forecasts, which Sydney Water states was driven by extremely dry soil conditions which resulted in an increase in sewer chokes caused by tree roots.

The EPA is also concerned that Sydney Water's lack of maintenance of its sewage treatment systems is resulting in an increase of dry weather sewage overflow incidents (see the heading Dry Weather Overflow Abatement below for further information).

Q.8 Has Sydney Water's capital expenditure over the 2016 period delivered appropriate levels of service?

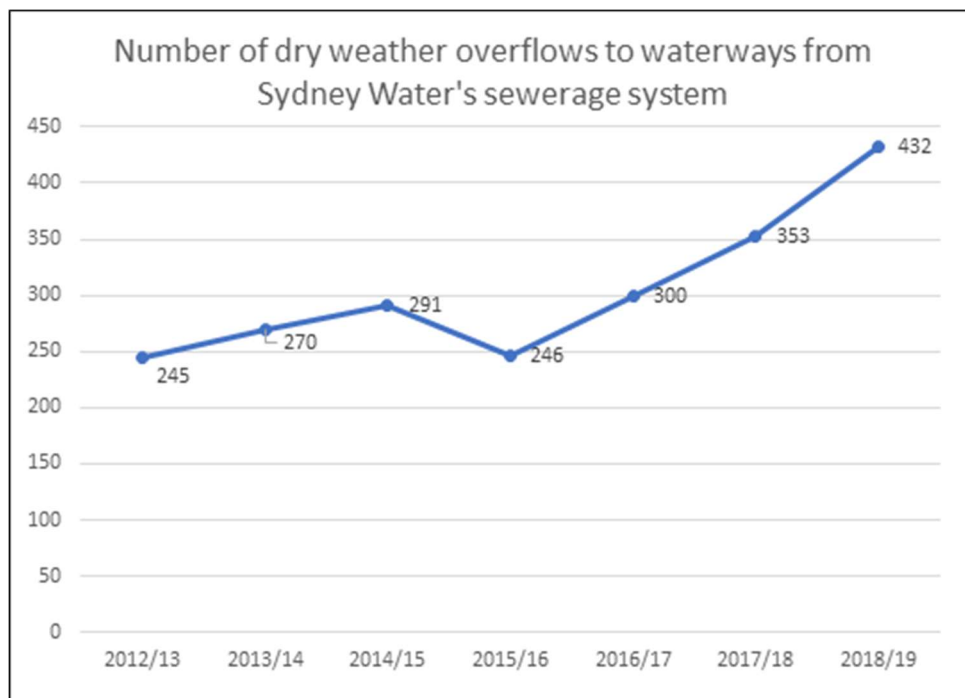
Sydney Water has not delivered an appropriate level of service over the 2016 period, particularly in relation to the increasing number of dry weather sewage overflows and Sydney Water's clean up response to these sewage overflows. This is evident in the significant regulatory action that the EPA has taken against Sydney Water over the 2016 period.

Of note are the outcomes of two EPA compliance campaigns undertaken over late 2017 and 2018 examining Sydney Water's clean up response to dry weather sewage overflows. The first campaign resulted in the issuing of eight penalty notices, one formal warning letter and two advisory letters in relation to Sydney Water's inadequate response; several of the sewage overflows had impacted National Parks. The second campaign resulted in five penalty notices including one sewage overflow which had impacted a creek in the front yards of nine residences; eight formal warnings and three advisory letters. In addition, the EPA issued two official cautions, a formal warning, and an advisory letter for other issues identified with Sydney Water's performance in responding to dry weather sewage overflows.

The EPA is also currently investigating numerous other incidents relating to Sydney Water operations for possible breaches of the environmental legislation which may result in further regulatory actions. The EPA has investigated Sydney Water's inadequate clean-up of dry weather overflows at North Epping and Bangor during July 2018 and September 2018. The EPA commenced proceedings for those incidents in the NSW Land and Environment Court.

The EPA notes an ongoing increase in the number of dry weather sewage overflows to waterways from Sydney Water's sewerage treatment system, as demonstrated in the graph below. The number of dry weather overflows reaching waterways shows an increasing trend from 246 in 2015/16 to 432 in 2018/19. The EPA is concerned that this increasing trend is not only due to drought conditions but is also a result of inadequate investment in the inspection, maintenance, repair and upgrade of Sydney Water's sewerage reticulation network.

Sewage overflows pose a risk to the environment and human health and Sydney Water requires adequate levels of funding to ensure that it meets its obligations under its environment protection licences to limit the number of dry weather sewage overflows that reach waterways each year.



The EPA notes that during the 2016 period, Sydney Water overspent \$476 million on major renewals of sewage treatment plants because these plants were found to be in poorer condition than previously expected. This finding aligns with the EPA's observations that Sydney Water's STPs are ageing and require investment. For example, Sydney Water is required by its environment protection licence to upgrade Winmalee STP to reduce the concentrations of nutrients being discharged from the STP. Sydney Water has determined that it needs to spend \$15-\$20 million addressing a number of issues at the STP before it can undertake the nutrient upgrade.

Q.9 Is Sydney Water's proposed capital expenditure including expenditure related to growth and existing mandatory standards over the 2020 determination period efficient?

Sydney Water has proposed a total capital expenditure of \$4.5 billion for the 2020 period. Expenditure on wastewater services accounts for the largest proportion of total capital expenditure

(\$3 billion of a total \$4.5 billion) and represents a 58% increase compared with forecast expenditure for the 2016 period. The EPA notes that over half of the expenditure on wastewater services relates to meeting existing mandatory standards required under Sydney Water's Operating Licence and environment protection licences. This additional expenditure is required as Sydney Water is currently not meeting the requirements of its environment protection licences and there is a trend towards poorer performance in a number of areas, which the EPA considers is due to inadequate capital investment.

Over the 2016 period, Sydney Water has been non-compliant with a number of the requirements of its sewage treatment system environment protection licences. The main non-compliances have been with the limits for dry weather sewage overflows which have been exceeded in a number of sewage treatment systems and with the requirements to undertake reasonable and feasible clean up actions following sewage overflows.

The EPA is also concerned about Sydney Water's ongoing ability to comply with load limits on its environment protection licences. For example, the loads of oil and grease being discharged from Northern Suburbs, Bondi and Malabar STPs are showing a statistically increasing trend with the Northern Suburbs exceeding its load limit for oil and grease during 2018/19 (Load Limit = 5,569,900kg and Actual Load = 6,203,179kg). Further investment by Sydney Water to address non-compliances with load and concentration limits during the 2020 period will be required.

The EPA is in the process of amending the environment protection licences to implement a new framework to regulate nutrients from STPs in the lower Hawkesbury Nepean River catchment. The objective is to manage nutrient load inputs to the river at a level that contributes to meeting the community's environmental values for the river. Due to population growth in the Hawkesbury Nepean River catchment, the load of total nitrogen is predicted to almost double by 2050 and total phosphorus to increase by approximately 20% over current levels. This heightens the risk and frequency of aquatic weed outbreaks and consequently impacts river health and amenity. This new framework seeks to protect the Hawkesbury Nepean River ecosystem and lead to a reduction in algal blooms and weed outbreaks by capping nutrient loads from STPs entering the lower Hawkesbury Nepean River from 2024. Works to enable STPs in the lower Hawkesbury Nepean catchment to achieve compliance with the revised nutrient concentration and load limits will need to be undertaken during the 2020 period (see below for further information).

Wet weather overflows pose a significant risk to the environment and human health. The top 100 wet weather overflow structures (based on volume) discharge an average of approx. 17 billion litres of raw sewage to Sydney's waterways per year. The EPA considers that Sydney Water allocated funds for wet weather overflow abatement during the 2016 period were insufficient. Sydney Water undertook investigations into wet weather sewage overflow abatement, however, on-the-ground abatement works during the 2016 period were extremely limited.

In relation to wet weather overflows, the EPA has been working with Sydney Water to improve its performance. The EPA proposes to vary the relevant environment protection licences to require Sydney Water to reach an improvement level of 60 points. This improvement level will likely result in abatement of approximately 50-65 wet weather overflows and is estimated to cost \$240 million. This equates to 12 to 16 wet weather overflows requiring abatement per year over the four year price path and represents abatement of 5-6% of the worst wet weather overflows. The EPA understands that Sydney Water has sought funding from IPART for \$172 million (an improvement level equating to 40 points). This amount will be insufficient for Sydney Water to meet the

requirements of its environment protection licence. Therefore, the EPA considers that Sydney Water should be allocated additional funding to meet its statutory requirements.

The EPA supports Sydney Water's proposal to move to a more proactive asset management strategy during the 2020 period. Sydney Water's current reactive asset management strategy of "plan to repair" for most of its assets has led to poor environmental outcomes during the 2016 period. The EPA considers that Sydney Water requires significant investment in the inspection, maintenance, repair and renewal of the sewerage reticulation system and major assets such as STPs, pumping stations and rising mains in order to return to and maintain compliance with its environment protection licences.

The EPA recommends that through this IPART price path Sydney Water is able to secure the funding that has been requested for the 2020 period plus additional funding to address wet weather overflow abatement.

Q.10 Do you have any comments on Sydney Water's approach to planning and forecasting costs associated with growth?

The EPA notes that Sydney Water has proposed total capital expenditure of \$4.5 billion for the proposed 2020 determination period and this represents an increase of \$1.3 billion (42%) compared with its forecast spend for the 2016 period and an increase of \$1.8 billion (68%) compared with the total capital expenditure used to set prices for the 2016 period.

The EPA understands that over half of the expenditure on wastewater services relates to meeting existing mandatory standards required under Sydney Water's Operating Licence and environment protection licences. Sydney Water's proposal details a program of works to meet environment protection licence standards including \$572 million on the rehabilitation and condition assessment of major sewers, and \$305 million on the replacement and renewal of wastewater treatment plants, partly driven by servicing new growth.

Sydney Water states that the current prolonged dry weather and an increase in urban density around existing wastewater pipes has resulted in an increase in blockages of pipes ('chokes') and the number of wastewater overflow incidents, reducing the resilience of Sydney Water's wastewater network and creating a growing backlog of reactive works. The EPA supports Sydney Water's proposal to invest in the rehabilitation and condition assessment of its wastewater services.

One aspect of Sydney Water's operations that is impacted by growth (particularly infill development) is wet weather overflows. The EPA understands that Sydney Water has sought funding through IPART for \$172 million (an improvement level of 40 points) for wet weather overflows. This amount will be insufficient for Sydney Water to meet the requirements of its environment protection licence. Therefore, the EPA considers that Sydney Water should be allocated additional funding to meet its statutory requirements (see below for further information).

Q.13 Do you have any comments about Sydney Water’s performance against the output measures in Appendix E?

Table E.1 Sydney Water’s activity against output measures, 2016-20

Output or activity measure	Output measure target (as detailed in 2016 Determination over 2016-20)	Output achieved (Sydney Water’s forecast over 2016-20)
Water services		
Renewal of critical water mains	47 km	31.3 km
Renewal of large valves	120	76
Reticulation water mains	180 km	96.1 km
Reservoir reliability program	33 reservoirs renewed	20 reservoirs renewed
System reliability	15 renewals	8 renewals
	16 HV upgrades	11 HV upgrades
Renewal of customer water meters	471,500 meters	94,000 meters ^a
Wastewater services		
Renew large wastewater mains	34 km	17.7 km
	80 manholes	57 manholes
	4 km pressure mains	0.1 km pressure mains
Rehabilitate sewers subject to dry weather overflows	112 km	76.1 km
Wastewater treatment plants renewals	163 project renewals	168 project renewals
	41 chemical system renewals	22 chemical system renewals
	11 odour control renewals	10 odour control renewals
	82 solids treatment renewals	80 solids treatment renewals
Wastewater pumping station renewals	19 major renewals	23 major renewals
	37 pump renewals	19 pump renewals
Stormwater services		
Conduit and Open Channel Renewal and Rehabilitation	7 km conduit renewal	2.1 km conduit renewal
	3 km open channel renewal	2.8 km open channel renewal
Stormwater Condition Assessment	160 km condition assessment	151.2 km condition assessment

^a Output achieved for this measure has only been reported for the year 2018-19 by Sydney Water. For comparative purposes, the output measure target averaged over four years would be equivalent to 117,875 customer water renewals per year.

Note: Variance between target indicators and output forecast will be discussed with Sydney Water.

Source: Sydney Water’s pricing proposal, July 2019, Attachment 9A Capital expenditure, Table 1.2, p 7-12; Sydney Water’s pricing proposal, July 2019, Output measures – Sydney Water 2018-19, p 1; IPART, Review of prices for Sydney Water Corporation’s water, wastewater, stormwater drainage and other services – From 1 July 2016 to 30 June 2016 – Final Report, June 2016, p 282.

The EPA notes that Sydney Water’s forecasted outputs in relation to water and wastewater services such as the renewal of critical water mains, large wastewater mains and the rehabilitation of sewers subject to dry weather overflows is poor, with these targets not met in the 2016-20 price path.

Of particular concern is the disparity between the rehabilitation of sewers subject to dry weather overflows output target of 112km and the forecasted output achieved of 76.1km, this is concerning as there is an increasing trend in dry weather overflows. This increase can be attributed to the drought (resulting in increased tree root invasion of the sewer and subsequent blockages) as well as the general deterioration of the Sydney Water sewerage system. The EPA has found dry weather

overflows repeatedly occurring in the same locations, and this is likely due to delays in investigating the cause of dry weather overflows and the required rehabilitation of the sewer network.

The EPA also notes that Sydney Water completed just 2.5% of the output target related to the renewal of pressure mains in the 2016-20 price path. The EPA is concerned that appropriate capital expenditure is not being spent by Sydney Water to achieve this target. The EPA notes that Sydney Water completed just 52% of renewal to large wastewater mains. Both large wastewater mains and pressure mains pose significant risks to the environment and human health when faults occur and the EPA strongly supports continuing expenditure for renewal and maintenance.

The EPA has noticed a recent increase in the number of water mains breaks, potentially due to drought. The EPA is concerned about Sydney Water's proposed renewal of critical water mains and large valves compared with Sydney Water's actual output for the 2016-20 period. Sydney Water proposed to renew 47km of critical water mains but only renewed 31.3km. Similarly, the renewal of large valves was proposed for 120km but was only undertaken on 76km. Further focus and investment is needed in this area which can also result in environmental impacts such as a major uncontrolled erosion and sediment reaching waterways.

Q.14 Do you have any comments on what output measures we should use for the 2020 determination period?

The EPA strongly supports the use of output measures to assess whether Sydney Water is delivering on its planned capital expenditure. The EPA recommends that IPART include additional output measures to assess Sydney Water's performance for the 2020 period. The EPA suggest the following additional output measures:

- the number of condition assessments undertaken of rising mains and large wastewater mains; and
- the number of water main breaks repaired per year.

Efficient operating expenditure

Q.15 Is Sydney Water's proposed operating expenditure over the 2020 determination period efficient?

The EPA notes that Sydney Water increased its expenditure on reactive maintenance over the 2016 determination period, and this was in part due to drier weather conditions. The EPA understands that there has been a deterioration in, and poorer performance of, Sydney Water's water and wastewater assets. In its pricing proposal, Sydney Water states that in its attempts to optimise operating costs it made too many efficiency reductions in the area of maintenance activities.

Sydney Water has seen an increased backlog of preventative maintenance works, which it intends to address over the 2020 determination period to catch up to a sustainable balance of reactive and preventative maintenance works. It has proposed an additional \$20 million each year on preventative maintenance works on water and wastewater assets and an additional \$12 million per year on environmental improvement works on wastewater assets. The EPA strongly agrees with the need for further expenditure in preventative maintenance and encourages IPART to consider sufficient funding to Sydney Water to address the backlog.

The EPA and Sydney Water have a number of upcoming environmental programs that require significant Sydney Water investment, including the Hawkesbury Nepean nutrient framework and the pollution reduction programs for dry weather overflow abatement (see below for further

information). The EPA notes that the budgets for these projects may come from both capital and operating expenditure.

Q.16 How should our review account for the risks of drought and support water conservation?

The EPA supports this IPART review accounting for the risks of drought and supporting water conservation.

The EPA notes that Sydney Water's proposed operating expenditure for the 2020 period does not factor in the costs of drought conditions based on its 'average weather conditions' assumption. In its response to EPA enquiries regarding non-compliances relating to dry weather overflows due to failure to maintain and operate reported in the annual returns for 2017/18, Sydney Water identified a key factor as extended periods of drought due to climate change. Sydney Water has identified that the level of soil moisture and number of chokes showed a very strong negative correlation in historical data, with lower soil moisture resulting in a higher number of chokes. Sydney Water overspent by \$191 million during the 2016 period which it says was driven by extremely dry soil conditions which resulted in an increase in sewer chokes caused by tree roots. This is supported by the total number of chokes in Sydney Water's reticulation system for 2018/19 of 21,000 which is an 80% increase compared with six years ago.

Sydney is currently experiencing drought conditions with the Bureau of Meteorology's climate outlook for October 2019 until January 2020 predicting continuing below average rainfall and warmer than average temperatures for Sydney. If these drought conditions continue through the 2020 period, Sydney Water will require revenue to respond to the additional chokes in the wastewater network and watermain breaks. Therefore, the EPA questions the appropriateness of Sydney Water's assumed 'average weather conditions' in its proposed costs for the 2020 period.

Q.18 Are Sydney Water's proposed pricing principles for the Hawkesbury Nepean offset scheme appropriate? For example, should the cost risks for R&D projects be passed on fully to customers, or appropriately shared between customers and Sydney Water?

The EPA considers that cost risks for the Hawkesbury Nepean offset scheme (further information below) may be shared appropriately between customers and Sydney Water.

The EPA notes that Sydney Water's proposed operating expenditure includes \$13 million on research and development for offsets schemes under the Hawkesbury Nepean nutrient framework. The EPA understands that Sydney Water proposes several principles for IPART to consider in the cost recovery of offset activities.

The EPA is of the opinion that the Hawkesbury-Nepean River supports a diverse range of ecosystems and is used by the greater Sydney and NSW community for recreation (swimming, fishing, boating) and drinking water purposes. Although the water quality in the catchment is affected by local sewage treatment plant discharges and by local pollution from urban and agricultural runoff, the EPA considers that the costs associated with the framework may be spread across the greater Sydney Water customer base as the river catchment is a metropolitan/regional asset.

Prices and price structures:

Q.26 Is Sydney Water's proposal to maintain the 2019-20 water usage charge reasonable?

The EPA reiterates the importance of Sydney Water investing in its deteriorated water and wastewater assets to improve its environmental performance and to ensure it meets the mandatory obligations of its environmental protection licences. The EPA emphasises that this will require significant capital and operational investment by Sydney Water to improve the environmental performance of its water and wastewater assets.

EPA Environmental Improvement Programs

Dry weather overflow abatement – Sydney Water

The EPA notes an ongoing increase in the number of dry weather sewage overflows to waterways from Sydney Water's sewage treatment system. The number of dry weather overflows reaching waterways shows an increasing trend from 246 in 2015/16 to 432 in 2018/19. The EPA is concerned that this increasing trend is not just due to drought conditions but is also a result of inadequate investment in the inspection, maintenance, repair and upgrade of Sydney Water's sewerage reticulation network.

Sewage overflows pose a risk to the environment and human health and Sydney Water requires adequate levels of funding to ensure that it meets its obligations under its environment protection licences to limit the number of dry weather sewage overflows that reach waterways each year.

Condition L7.4 of the environment protection licences for Sydney Water's sewage treatment systems contain a limit for the number of dry weather overflows that are permitted to reach waterways in any reporting period. These limits, placed on Sydney Water's licences in 2012, were based on the average number of dry weather overflows to waterways that occurred in each sewage treatment system from 2005/06 to 2008/09. The limits acknowledge that dry weather overflows from the sewerage reticulation system will occur, however, they seek to ensure that there is no deterioration in Sydney Water's environmental performance in the longer term.

During the 2016 determination period, there has been a trend of increasing numbers of dry weather overflows to waterways and increasing non-compliances with Condition L7.4 of Sydney Water's sewage treatment system environment protection licences. During the 2016/17 reporting period, three STSs were non-compliant with its licence limits with this increasing to four non-compliant STSs in 2017/18 and five non-compliant STSs in 2018/19. The EPA considers that this reflects Sydney Water's inadequate investment in the inspection, maintenance, repair and renewal of the sewerage reticulation network.

The EPA is currently negotiating the inclusion of a Pollution Reduction Program (PRP) on the STS licences that were non-compliant during the 2018/19 reporting period, to require Sydney Water to undertake activities and works to bring these STSs back into compliance as soon as possible. Details such as which licences will have this requirement and the timeframes to meet the licence condition are currently being negotiated with Sydney Water. This program is being implemented in line with increasing community expectations about the value of our waterways and the importance of undertaking measures to sustain and improve them. Sydney Water will require appropriate funding during the 2020 period to return to and maintain compliance with Condition L7.4.

To address the issue of Sydney Water's inadequate clean-up of dry weather sewage overflows that have impacted the environment and potentially human health, the EPA also recently amended Sydney Water's environment protection licences to require the engagement of independent experts to review and assess Sydney Water's management and operational framework for responding to dry weather sewage overflows. The review seeks to identify necessary improvements to systems and procedures to address Sydney Water's poor performance. The expert review is currently in progress. The EPA anticipates that Sydney Water will require sufficient funding to make necessary improvements to its approach to the clean up of dry weather sewage overflows.

Regulating nutrients from sewage treatment plants in the Lower Hawkesbury Nepean River catchment – Sydney Water

The EPA has developed a new framework to better manage nutrients (nitrogen and phosphorus) discharged from STPs in the lower Hawkesbury-Nepean River. The new framework is in response to predicted population growth in Western Sydney.

The objectives of the framework are to manage nutrient load inputs to the Hawkesbury Nepean River from STPs at a level that contributes to meeting the community's environmental values for the river while providing STP operators with alternate and potentially cost-effective options for meeting those nutrient load requirements. Concentration limits from STPs are also addressed. The proposed framework is due to commence in July 2024.

The framework has three main elements:

- interim caps on nutrient loads at today's levels;
- allowing trading of nutrient loads between STPs and offsetting of STP nutrient loads with other nutrient load reductions;
- limits on nutrient concentrations from STPs.

The new regulatory framework is effectively an expansion and upgrade of the successful South Creek Bubble Licensing Scheme. This Scheme imposes a single load limit (cap) across three STPs instead of individual load limits for each STP. The new framework divides the Lower Hawkesbury Nepean River into six zones which are the 'bubbles' within which load caps apply. Each 'bubble' has a different number of STPs in it and a different load cap.

The load caps will require action by Sydney Water to reduce its total nitrogen loads from its STPs and ensure its total phosphorus loads are kept to the appropriate levels. Options to achieve these reductions include plant upgrades, effluent reuse or offsets.

The framework provides STP operators with the ability to use alternate and the most cost-effective options for meeting the load requirements by allowing trading of loads between STPs and offsetting of STP loads with other load reductions. For example, an STP operator could implement measures in agreement with a farmer to reduce diffuse loads from agricultural runoff by establishing and managing buffers between farmland and the river (known as riparian buffer strips).

Concentration limits are proposed to minimise potential local impacts of nutrients on small waterways which receive STP effluent discharges. Existing STPs will be required to achieve 'good practice', acknowledging that there is a point of diminishing returns for improvements to sewage treatment, where achieving incremental reductions in effluent concentrations imparts a significant cost. For new STPs, these constraints are not present and a higher 'best practice' level of treatment is considered appropriate. The proposed concentration limits will result in the need to upgrade the Castle Hill STP (operated by Sydney Water) to reduce total nitrogen concentrations.

The framework is due to commence in July 2024. Sydney Water requires sufficient funding for preparation works, including operational expenditure for research and development of offset schemes and capital expenditure to upgrade several of its sewage treatment plants in anticipation of the required nutrient concentration and load limits.

Wet weather overflow abatement – Sydney Water

During wet weather, the ingress of stormwater into the sewerage reticulation system causes a large increase in the volume carried by the system. The inability of the sewerage system to contain the increased volume leads to wet weather sewage overflows. Wet weather sewage overflows pose a significant risk to the environment and human health as they cause pollution of waterways and result in areas such as beaches being unsuitable for swimming and other recreational activities. These discharges contain high concentrations of pollutants from domestic sewage and trade waste which impact negatively on human health and aquatic environments due the presence of pathogens, highly bioavailable nutrients, heavy metals, suspended solids, pesticides and more. At STPs, the increased volumes of sewage during wet weather lead to bypasses of treatment processes and the discharge of sewage to the environment that has not been fully treated.

The top 100 wet weather overflow structures (based on volume) discharge an average of approx. 17 billion litres of raw sewage to Sydney's waterways per year. The EPA considers that Sydney Water were allocated insufficient funds during the 2016 period for wet weather overflow abatement. Sydney Water undertook investigations into wet weather sewage overflow abatement, however, on the ground abatement works during the 2016 period were extremely limited.

The EPA and Sydney Water have been working closely on a new approach to wet weather overflow abatement involving the development of a new risk-based prioritisation tool for the Northern Suburbs, Bondi, Southern Suburbs and Cronulla sewage treatment systems. The risk-based approach seeks to achieve better and more cost effective environmental and community outcomes.

The EPA and Sydney Water have reached agreement on the risk-based prioritisation tool and the rules guiding the implementation of the framework (known as the regulatory measure). The new framework is a more sophisticated tool than the existing frequency-based approach as it assesses the overall impact of wet weather overflows by considering several factors (such as sensitivity of the receiving environment, and the type and level of community use of the receiving waterway).

The regulatory measure provides a balance of flexibility for Sydney Water whilst seeking to drive abatement in the areas where it is most needed. It is a point-based system whereby Sydney Water can achieve points for wet weather overflow abatement based on the volume or frequency reduction achieved.

The EPA is preparing to vary Sydney Water's four coastal environment protection licences to require Sydney Water to reach an improvement level of 60 points. This improvement level will likely result in abatement of approximately 50-65 wet weather overflows and is estimated to cost \$240 million. This equates to 12 to 16 wet weather overflows requiring abatement per year over the four year price path and represents abatement of 5-6% of the worst wet weather overflows. The commencement date for the new framework is 1 July 2020 with the compliance of the points attained examined at 30 June 2024.

The EPA recommends that IPART consider sufficient funding to Sydney Water for it to meet the new requirements for wet weather overflow abatement. In relation to the 2020 period, the EPA understands that Sydney Water has sought funding through this IPART price path for \$172 million. The EPA considers that this amount will be insufficient for Sydney Water to meet the requirements of its environment protection licences. The EPA considers that Sydney Water should be allocated additional funding to meet its statutory requirements.