

Natural Resources Access Regulator

Water take in horticulture in the Hawkesbury–Nepean basin

Campaign report—July 2020



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Introduction

The Natural Resources Access Regulator (NRAR) is an independent regulator established under the *Natural Resources Access Regulator Act 2017*. NRAR is responsible for compliance and enforcement measures for natural-resources management legislation, which currently includes the *Water Management Act 2000* and the *Water Act 1912* and associated regulations.

NRAR's legislative objectives are to:

- ensure effective, efficient, transparent and accountable compliance and enforcement measures for the natural-resources management legislation
- maintain public confidence in the enforcement of the natural-resources management legislation.

To do this, we will:

- ensure compliance with the *Water Act 1912* and the *Water Management Act 2000*
- promote best-practice management and regulation of surface water and groundwater
- take a risk-based and outcome-focused approach to regulation
- guide decision-making and action by our people, through the adoption of a graduated and proportionate response to noncompliance
- ensure decisions on enforcement action are transparent to the community.

NRAR's proactive compliance programs

The monitoring-and-audit function in NRAR is responsible for:

- ensuring compliance with NSW water-management laws
- enabling secure and sustainable sharing of the water between users and the environment.

NRAR regulates all water users to resolve compliance problems at a regional level, by water-sharing-plan area, by industry sector or some combination of these.

The monitoring-and-audit function uses discrete proactive campaigning or routine monitoring programs that are self-generated and informed by intelligence streams, policy actions, cross-functional actions and NRAR regulatory priorities. Their aim is to achieve on-the-ground presence and improve public confidence. These programs include:

- monitoring water use at a regional scale, industry scale or both to identify emerging compliance issues and applying broadscale strategies to improve region- or industry-wide compliance rates
- undertaking compliance and audit programs on NRAR compliance priorities in targeted geographic areas of NSW or high-risk businesses
- engaging with water users and their representative bodies to solve compliance problems at a regional level, industry level or both
- providing data to inform policy development and the ongoing management of regulatory settings and operational policy.



Figure 1. Hawkesbury vegetable farm

Executive summary

The campaign, *Water take in horticulture in the Hawkesbury–Nepean basin*, assessed the level of compliance with conditions in water-access licences (WALs) and approvals within the horticulture sector in the Hawkesbury–Nepean region.

We found that more work needs doing for transparency of water take

NRAR inspected properties in the Hawkesbury–Nepean basin as part of its focus on compliance with water take and use in horticulture in the region. The regulator individually informed all landholders of the outcome of their property inspections; properties with identified noncompliance issues had to report to WaterNSW. The following infographic summarises the campaign results:



Project outcomes: Pumping out the numbers

Water take in horticulture in the Hawkesbury–Nepean basin



Figure 2. Campaign outcomes

Why transparency of water take is important: reliable water monitoring leads to fair water use and public confidence, which benefit industry

Water users need to know and understand how much water they are using to be confident that they operate within the law. Not knowing the quantity of water they use can unintentionally impact other water users downstream.

This is unfair.

Reliable and consistent measurement of water take is key to fair allocation between water users, especially in times of drought, when demand for water is high and supplies are scarce. Water users clearly understanding how much water they are using, knowing what they are legally entitled to take and recognising that an independent regulator is likely to check their use usually drive compliance levels. A highly compliant operating environment creates a level playing field across the industry, which only benefits the industry, as it builds public confidence in that industry. But it all starts with transparency of water take, with all industry players being aware of and confident in their water use and that it complies with the law, with the oversight of an independent and proactive regulator.

The pathways to compliance – options for water users to proactively know their use and comply with water laws

The outcome here is to achieve greater transparency of water use. A number of options are available to water users for monitoring and knowing their water take. NRAR engaged with water-user and turf-farmer associations as well as with WaterNSW and discussed the findings of the campaign. At these events, NRAR offered a range of options for water users to become compliant: the pathways to compliance. NRAR encourages water users to actively select the option or options that best suit their situation and take control over complying with water laws.

The pathways to compliance are:

- water users now install a new, privately owned meter to measure water take (in consultation with WaterNSW)
- water users now repair and take ownership of the state-owned meter on their property (in consultation with WaterNSW)
- water users now manually record daily water use, either in a paper-based log book or by submitting records electronically to WaterNSW using the [online S91i template](#)
- water users now manually use the WaterNSW online [Water Accounting System \(iWAS\)](#) to track and record their water use
- water users wait for WaterNSW to repair the state-owned meter on their property.

Water users must monitor water take at all times. For any option that takes time to implement and does not have an immediate effect, NRAR expects water users to measure, track and keep records of their water take during the interim period until their chosen option takes effect.

NRAR also deems that options relating to functional metering are much more robust and reliable than human-reliant, manual forms of monitoring. NRAR is a risk-based regulator and considers the higher risk methods of monitoring water use when designing future campaigns. NRAR wants users to choose the most reliable and efficient method for measuring and recording their water use.

Most properties inspected in this campaign will need to meet requirements of the NSW non-urban water-metering framework in December 2023, which requires water users with certain-sized pumps to have fitted pattern meters (some requiring telemetry).

Background

The campaign, *Water take in horticulture in the Hawkesbury–Nepean basin*, assessed the level of compliance with water laws within the horticulture sector in the nominated region.

The campaign focused on the Windsor–Richmond area, including Bushells Lagoon, as this is where most turf farms in the Sydney Basin are located. The area also supports a high number of horticultural enterprises.

In total, NRAR inspected and assessed 43 properties against the conditions listed on their WALs and associated approvals.

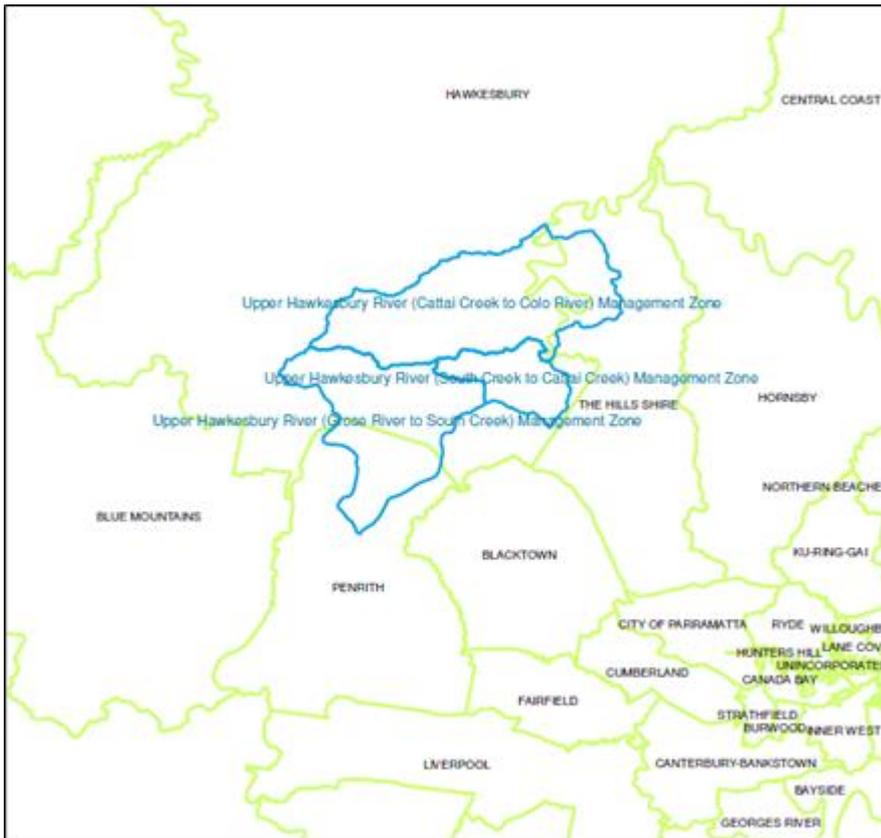


Figure 2. Study area for the campaign (in blue)



Objectives

- Assess the level of compliance with water take through inspections of selected properties
- Communicate the results of the inspections to water users and relevant stakeholders
- Outline practical options that water users can adopt to address noncompliance
- Inform future policy settings



Goal

To ensure fair sharing of scarce water resources and compliance with water regulations

Why did NRAR do this work?

This campaign aligns with NRAR regulatory priorities for 2019–21 and NRAR common strategic objectives. The campaign delivers:

- on-ground material outcomes that benefit a fair sharing of water between users and protect the surface-water source
- regulatory outcomes by upholding the integrity of water laws and shifting accountability and ownership of water use
- public trust and confidence outcomes resulting from an improved awareness about the horticulture industry’s compliance performance with water-take regulations
- stakeholder-management outcomes; engagement with various stakeholders on this campaign will result in increased public, industry and government participation in water regulation and management in the region.

What was targeted, where and when?

- **Temporal scope:** water-take records for the 12 months before a site inspection
- **Activity and statutory scope:** NRAR targeted water take from turf farms and fruit-and-vegetable market gardens. This included surface water WALs and water-management work approvals in the Upper Hawkesbury River management zones: Grose River to South Creek, South Creek to Cattai Creek and Cattai Creek to Colo River
- **Geographical scope:** irrigated landholdings in the vicinity of the Hawkesbury River, in Windsor and Richmond, and in the area surrounding Bushells Lagoon



Figure 3. An irrigated turf farm



Figure 4. A submersible pump in the Hawkesbury River



Figure 5. A citrus horticulture operation



Figure 6. Planted seedlings at a horticulture operation

How did NRAR collect evidence to assess compliance?

The regulator collected evidence using a range of methods, including:

- undertaking desktop assessments
- performing site inspections
- conducting interviews with property holders or occupants during site inspections
- gathering photos, videos and geolocation data.

NRAR's auditors collect evidence using a standardised template to ensure the quality and integrity of findings.

How were operations selected for inspection?

NRAR identified an initial list of properties consisting of those holding WALs of varying allocation amounts within the targeted geographical area. The regulator then selected properties from this list; the total numbers inspected were subject to the availability of resources during the campaign.

Due to increased compliance investigations in the area in recent years, NRAR inspected all properties with access to Bushells Lagoon.

In the vicinity of the Hawkesbury River, in Windsor and Richmond, NRAR selected 34 properties. These properties held 41 WALs and included a range of allocation sizes, including:

- less than 100 megalitres
- 100–200 megalitres
- more than 200 megalitres.

These 41 WALs had a total combined allocation of 5,418.5 megalitres.

NRAR selected nine properties holding 12 WALs within the Bushells Lagoon area, with a total combined allocation of 922 megalitres.

What were the key findings of the campaign?

Level of compliance

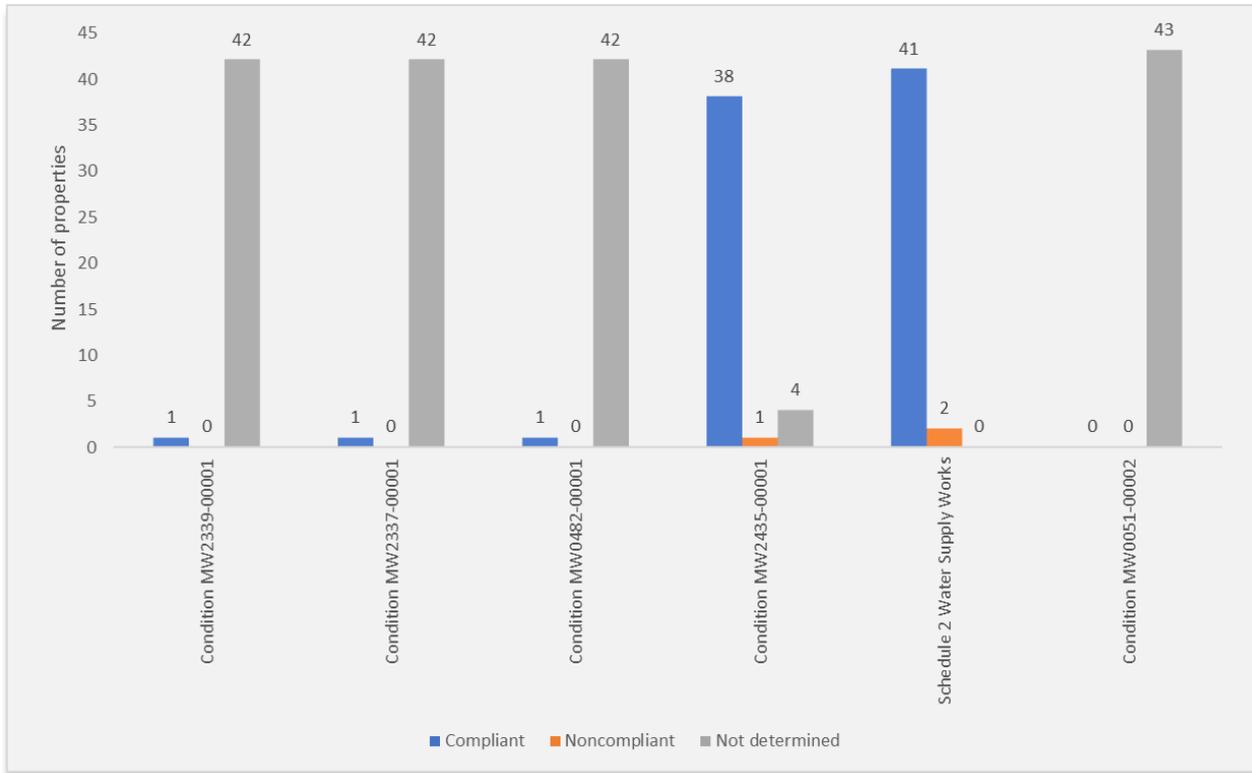


Figure 7. Graph showing compliance levels for each WAL condition inspected

Compliant: NRAR collected sufficient verifiable evidence to demonstrate that the water user complied with all requirements of the condition.

Noncompliant: NRAR collected sufficient verifiable evidence to demonstrate that the water user had not complied with one or more of the requirements of the condition.

Not determined: NRAR collected insufficient verifiable evidence to demonstrate that the water user had complied with all requirements of the condition. (Refer to the next section for more information about not-determined results.)

What were the details of those findings?

Contradictory conditions on WALs and approvals

Most WALs and approvals in the Hawkesbury–Nepean region contain conditions MW2339-00001, MW2337-00001 and MW0482-00001.

Condition MW2339-00001 states that a logbook is not required when a meter with a data logger is installed. However, conditions MW2337-00001 and MW0482-00001 outline specific information, including meter readings, that water users must record in a logbook for each period they take water. As these three conditions are contradictory and therefore non-enforceable, NRAR lists the compliance status of these properties as ‘not determined’ in Figure 8.

Missing conditions on WALs and approvals

Two WALs and approvals had no conditions imposed on measuring water take. This is inconsistent with other WALs and approvals issued in the study area, where mandatory and discretionary conditions are clearly outlined.

Metering equipment not operating or not maintained in a proper and efficient manner

Of the 43 properties inspected in the study area, 38 had state-owned meters installed. Of these meters, 26 were not operating properly.



Figure 8. An example of a poorly situated flow meter with the solar panel shaded by a tree



Figure 9. A state-owned meter working properly



Figure 10. A state-owned meter not working

Inaccurate contact details to report breaches of licence conditions

Condition MW0051-00002 requires holders to report any breach of licence conditions to the minister as soon as is practicable. The telephone number and email address recommended in the condition have both now changed. This may have impacted the holders' ability to report breaches to WaterNSW.

Other administrative issues

Further issues include expired approvals, pumps slightly larger than the approved standard, pumps located on different properties and additional pumps.

What regulatory action did NRAR take?

Of the inspected properties, 12 were fully compliant – the water supply worked and the approved use of water were in accordance with the conditions on the approval documentation.

The regulator issued 26 official cautions to approval holders with faulty meters, requesting them to report faulty meters using the WaterNSW S91i [online](#) self-reporting form within a specified time frame.

NRAR issued eight formal warnings to properties with administrative-related offences.

The regulator required noncompliant properties to provide evidence of compliance, such as communications with WaterNSW, evidence of logbooks or updated approvals by 30 April 2020. Currently, six properties require further follow-up.

What are the next steps?

The monitoring and recording of water take is the primary compliance and regulatory issue that this campaign identified. WaterNSW, which is responsible for maintaining faulty meters, and water users, who must record water take, share responsibility for this issue.

Changes must occur to improve transparency into monitoring and recording water take in the region. NRAR has identified several options, including:

- installing a new private meter to measure water take
- repairing and taking ownership of state-owned meters (in consultation with WaterNSW)
- keeping records of water use and submitting them electronically to WaterNSW using the [online](#) S91i template
- using WaterNSW's online [Water Accounting System](#) (iWAS) to track their water use
- accounting for water use by measuring water take in the interim, until meter repair or installation occurs.

Water users and WaterNSW will decide the most suitable option, which they may base on individual circumstances.

NRAR will continue to engage with the turf, fruit and vegetable farmers more broadly to ensure they take accountability for and ownership of their water monitoring and recording.

Appendix 1. Inspection criteria

NRAR gathered evidence against the following licence conditions:

MW2339-00001: Water users must keep a logbook, unless the work is metered and fitted with a data logger. The user must produce the logbook for inspection when the relevant licensor requests it.

MW2337-00001: Water users must record the following information in the logbook for each period of time they take water:

- A. date, volume of water, start and end time when they took water as well as the pump capacity per unit of time
- B. the access licence number under which the water is taken
- C. the approval number under which the water is taken
- D. the volume of water taken for domestic consumption, stock watering or both.

MW2435-00001: Users must take water through the approved metering equipment installed on the water-supply work authorised by this approval.

MW0482-00001: In cases in which a water meter is installed on a water-supply work authorised by this approval, users must record the meter reading in the logbook before taking water. They must record this reading every time they take water.

MW0655-00001: Any water-supply work authorised by this approval must take water in compliance with the conditions of the access licence under which water is being taken.

MW0051-00002: Once the licence holder becomes aware of a breach of any condition on this access licence, the licence holder must notify the minister as soon as practicable. The licence holder must notify the minister by one of the following two options:

- A. email at water.enquiries@dpi.nsw.gov.au
- B. telephone on 1800 353 104.

A licence holder must also confirm in writing any notification by telephone within seven business days of the telephone call.

Appendix 2. Assessment of noncompliance

Risk-assessment-criteria matrix

The level of environmental impact encompasses both the risk of harm arising from individual noncompliance and the cumulative impact of similar noncompliances within the same water source. The likelihood of environmental harm is similarly defined.

High: This level indicates a noncompliance with potential for significant environmental consequences, regardless of the likelihood of occurrence. The issue should be dealt with as a matter of priority.

Medium: This level indicates a noncompliance with a) potential for serious environmental consequences but that is unlikely to occur, or b) potential for moderate environmental consequences but that is likely to occur. The issue is of considerable significance but can be dealt with at a lower priority.

Low: This level indicates a noncompliance with a) potential for moderate environmental consequences but that is unlikely to occur, or b) potential for low environmental consequences but that is likely to occur. The noncompliance is still important and should be addressed.

	Likelihood of environmental harm			
		High	Moderate	Low
Level of environmental impact	High	High	High	Medium
	Moderate	High	Medium	Low
	Low	Medium	Low	Low

Table 1. Risk-assessment-criteria matrix

Appendix 3. Findings

Compliance with condition MW2339-00001 – water users must keep a logbook, unless the work is metered and fitted with a data logger.

Compliance with condition MW2337-00001 – recording the required information in a logbook.

Compliance with condition MW0482-00001 – recording of meter readings.

Tables 2, 3 and 4 below summarise compliance with conditions MW2339-00001, MW2337-00001 and MW0482-00001, respectively.

A total of 38 out of 43 properties had state-owned meters fitted with telemetry units that record time and event incidents; however, 26 of these meters were not operating properly.

Compliance with conditions to keep a logbook under MW2339-00001 and MW2337-00001 could not be determined, as the conditions themselves are contradictory. Condition MW2337-00001 requires water users to keep a logbook at all times, whereas condition MW2339-00001 requires a logbook only if a work is not fitted with a meter and data logger.

Only one property has maintained a logbook since the meter was installed and was determined to be compliant.

Assessment	Number of properties (Hawkesbury–Nepean)	Number of properties (Bushells Lagoon)	Overall
Compliant	1	0	1
Noncompliant—High	0	0	0
Noncompliant—Medium	0	0	0
Noncompliant—Low	0	0	0
Not determined	33	9	42
Total	34	9	43*

*One property had two meters installed

Table 2. Compliance with condition MW2339-00001

Assessment	Number of properties (Hawkesbury–Nepean)	Number of properties (Bushells Lagoon)	Overall
Compliant	1	0	1
Noncompliant—High	0	0	0
Noncompliant—Medium	0	0	0
Noncompliant—Low	0	0	0
Not determined	33	9	39
Total	34	9	43*

*One property had two meters installed

Table 3. Compliance with condition MW2337-00001

Assessment	Number of properties (Hawkesbury–Nepean)	Number of properties (Bushells Lagoon)	Overall
Compliant	1	0	1
Noncompliant—High	0	0	0
Noncompliant—Medium	0	0	0
Noncompliant—Low	0	0	0
Not determined	33	9	42
Total	34	9	43

Table 4. Compliance with condition MW0482-00001

Compliance with condition MW2435-00001 – taking water through an installed meter.

Assessing compliance against the condition to take water through an installed meter, 26 out of 38, or 68%, of the state-owned meters were noncompliant, as they were not operating property.

NRAR could not determine compliance of four properties, as these had no associated meter. However, no irrigation had occurred in several years, and no pumping infrastructure was installed.

Assessment	Number of properties (Hawkesbury–Nepean)	Number of properties (Bushells Lagoon)	Overall
Compliant	33	5	38
Noncompliant—High	1	0	1
Noncompliant—Medium	0	0	0
Noncompliant—Low	0	0	0
Not determined	0	4	4
Total	34	9	43

Table 5. Compliance with condition MW2435-00001

Compliance with authorised water-supply works – pump size as described in the approval documents.

Most of the inspected properties were compliant, with 41 out of 43 properties having pump outlets of approved size or smaller, or no pumping infrastructure installed.

NRAR found two water users to be noncompliant for having pumps with outlets larger than the approved size.

Assessment	Number of properties (Hawkesbury–Nepean)	Number of properties (Bushells Lagoon)	Overall
Compliant	32	9	41
Noncompliant—High	0	0	0
Noncompliant—Medium	0	0	0
Noncompliant—Low	2	0	2
Not determined	0	0	0
Total	34	9	43

Table 6. Compliance with authorised water-supply works

Compliance with condition MW0051-00002 – notifications of licence breaches

NRAR could not determine compliance with this condition, as the notifications process in the condition notice is no longer current due to changes in departmental structure.

WaterNSW must be notified of meter problems through the Water Accounting System (iWAS) web portal; however, the condition does not list this requirement, and the telephone number listed in the condition is no longer operational. The email address listed in the condition still functions, and approval and access licence holders can use it to report metering problems to the department.

Assessment	Number of properties (Hawkesbury–Nepean)	Number of properties (Bushells Lagoon)	Overall
Compliant	0	0	0
Noncompliant—High	0	0	0
Noncompliant—Medium	0	0	0
Noncompliant—Low	0	0	0
Not determined	34	9	43
Total	34	9	43

Table 7. Compliance with condition MW0051-00002

Appendix 4. Regulatory response

Compliance

NRAR deemed 12 properties compliant, with water-supply works and the approved use of water being in accordance with the conditions on the approval documentation.

Noncompliance

Faulty meters

Of the 38 properties with state-owned meters installed, 26 were not working properly. These properties received caution letters advising approval holders they were required to report the faulty meters to WaterNSW and to provide evidence of same to NRAR.

Pump size larger than approved

Two properties had pump sizes larger than what the approval documentation specifies. Approval holders received caution letters with due dates for reporting to NRAR and providing evidence from WaterNSW that the required corrective actions outlined in the letter have been completed.

Other administrative issues

Eight properties received a final warning and caution letter for administrative-related issues. These properties were required to amend the existing approvals through WaterNSW and provide evidence to NRAR that the required changes have been completed.

Appendix 5. Selected sites

Water access licence	Approval	Location
10AL104264	10CA104265	Grose Vale
10AL104923	10CA104924	Grose Vale
10AL104560	10CA104561	Grose Vale
10AL117764	10CA117765	North Richmond
10AL104233	10CA104234	Agnes Banks
10AL117237	10CA117238	Agnes Banks
10AL117239	10CA117240	Agnes Banks
10AL117233	10WA117234	Richmond
10AL118006	10WA118007	Richmond
10AL117521	10CA117522	Freemans Reach
10AL105653	10CA105654	Richmond Lowlands
10AL117178	10CA117179	Richmond Lowlands
10AL117054	10CA117055	Richmond Lowlands
10AL117152	10CA117153	Richmond Lowlands
10AL122464	10CA122361	Richmond
10AL122465	10CA122362	Richmond
10AL122467	10CA122364	Richmond
10AL122471	10CA122368	Richmond
10AL104786	10CA104787	Cornwallis
10AL117078	10CA117079	Cornwallis
10AL118740	10CA117333	Richmond
10AL117121	10CA117122	Cornwallis
10AL104205	10CA104206	Cornwallis
10AL104194	10CA104195	Cornwallis
10AL104044	10CA104045	Cornwallis
10AL104340	10CA104341	Cornwallis
10AL104718	10CA104719	Cornwallis
10AL117303	10CA117304	Cornwallis
10AL119255	10CA119082	Wilberforce
10AL105263	10CA105264	Wilberforce
10AL116438	10CA116439	Wilberforce
10AL105176	10CA105177	Wilberforce
10AL104104	10CA104105	Wilberforce

Water access licence	Approval	Location
10AL119255	10CA119082	Wilberforce
10AL105263	10CA105264	Wilberforce
10AL116438	10CA116439	Wilberforce
10AL105176	10CA105177	Wilberforce
10AL104104	10CA104105	Wilberforce
10AL105335	10CA105336	Wilberforce
10AL104047	10CA104048	Agnes Banks
10AL104225	10CA104226	Agnes Banks
10AL116428	10CA116429	Richmond
10AL117249	10CA117250	Richmond
10AL105544	10CA105545	Freemans Reach
10AL112784	10CA112785	Freemans Reach
10AL112776	10CA112777	Freemans Reach
10AL118559	10CA118560	Freemans Reach
10AL105300	10CA105301	Freemans Reach
10AL104358	10CA104359	Freemans Reach
10AL121803	10CA105365	Freemans Reach
10AL104537	10CA104538	Freemans Reach
10AL105776	10CA105777	Freemans Reach
10AL121802	10CA105777	Freemans Reach
10AL121801	10CA105777	Freemans Reach
10AL105408	10CA105409	Freemans Reach