Resource Operations Licence

Water Act 2000

Queensland Government

Name of Licence
Nerang Water Supply Scheme Resource Operations Licence

Holder
Queensland Bulk Water Supply Authority

Water Plan
The licence relates to the Water Plan (Gold Coast) 2006.

Water Infrastructure
The water infrastructure to which the licence applies is detailed in Attachment 1.

Authority to interfere with the flow of water
The licence holder is authorised to interfere with the flow of water to the extent necessary to operate the water infrastructure to which the licence relates.

Authority to use watercourses to distribute water
The licence holder is authorised to use the watercourses listed in Table 1 for the distribution of supplemented water, including sections of tributaries where supplemented water is accessible.

Watercourse	Description
Nerang River	The impoundment of Hinze Dam (AMDT 36.4).
Little Nerang Creek	The impoundment of Little Nerang Dam (AMDT 16.1 km); and downstream of Little Nerang Dam (AMDT 16.1 km) to AMDT 0 km.

Conditions

1. Requirement for Operations Manual

1.1. The licence holder must operate in accordance with an approved operations manual.

1.2. The approved operations manual must include:

1.2.1. operating rules for water infrastructure;

1.2.2. water sharing rules; and

1.2.3. seasonal water assignment rules.

2. Environmental management rules

2.1. The licence holder must comply with the requirements as detailed in Attachment 2.

2.2. Environmental Releases – Banked Flow Trial:

2.2.1. The licence holder must make releases for environmental purposes under Attachment 2 section 2 for the duration of the Banked Flow Trial, from 22 December 2021 up until 22 December 2024.

2.2.2. Seqwater may end the Banked Flow Trial before the period set out in 2.2.1, by providing a notice of the end of the trial to the chief executive.

2.2.3. At the end of the Banked Flow Trial duration, the licence holder must make releases for environmental purposes under Attachment 2 section 1.

3. Metering

3.1. The licence holder must meter the taking of water under all water allocations and seasonal water assignments managed under this licence.

4. Monitoring and Reporting Requirements

4.1. The licence holder must carry out and report on the monitoring requirements as set out in Attachment 3.

4.2. The licence holder must provide any monitoring data required under 4.1 to the chief executive within a stated time on request.

4.3. The licence holder must ensure that the monitoring, including the measurement, collection, analysis and storage of data, is consistent with the Water Monitoring Data Collection Standards[1].

4.4. The licence holder must ensure that the transfer of data and reporting are consistent with the Water Monitoring Data Reporting Standards[1].

5. Other Conditions

5.1. The operating and supply arrangements, and the monitoring required under this licence do not apply in situations where implementing the rules or meeting the requirements would be unsafe to a person or persons. In these circumstances the licence holder must comply with the operational or emergency reporting requirements prescribed in Attachment 3.

5.2. The licence holder may at any time submit an interim program or an amendment to an existing program to the chief executive for approval in accordance with Attachment 4, if the holder proposes to operate in a way that does not meet the requirements of this licence.

5.3. Where there is conflict between the requirements of this licence and an interim program, the program prevails for the time it is in place.

5.4. The licence holder is required to collect and make publicly available through an industry accepted digital channel, updated at least monthly, details of each seasonal water assignment managed under this licence, including the sale price, the volume of water assigned and the location of where the water was assigned to and from.

5.5. The licence holder must provide the chief executive information about seasonal water assignments as directed by the chief executive within the stated time upon the request.

This Resource Operations Licence is subject to the conditions attached.

Commencement of licence

The licence took effect on 7 December 2009.

Granted on 7 December 2009
Amended under section 186 of the *Water Act 2000* on 17/10/2022

Bernadette McNevin
Director, Water Management and Use, South Region

[1] The Water Monitoring Data Collection Standards and the Water Monitoring Data Reporting Standards can be accessed online at www.business.qld.gov.au.

Attachment 1 Infrastructure details for Nerang Water Supply Scheme

Table 1 – Hinze Dam—Nerang River at AMTD 36.4 km

Description of water infrastructure	
Description	A 78.4 m high earth-rock fill embankment of 750 m in length with an impervious clay core. Saddle Dam—A 23.4 m high earth-rock fill embankment of 940 m length with an impervious clay core.
Full Supply Level	EL 94.5 m AHD
Minimum operating level	45.6 m AHD
Minimum control level	43 m AHD
Storage capacity	
Full supply volume	310 730 ML
Minimum Operating volume	2 180 ML
Storage curves	Derived by SKM, Based on 'Stage-Storage Curve from Hinze Dam– Little Nerang Dam Consolidated Report on Yield Reassessment Studies No 2' (Cardno MBK, 2004).
Spillway arrangement	
Description of works	An uncontrolled ogee slotted spillway on the left bank at AMTD 36.4 km on the Nerang River. Reference: Hinze Dam Alliance, Preliminary Design Report, HDA-RP/000218, Nov 2007.
Spillway level	EL 94.5 m (lower slot) EL 100.3 m (upper crest)
Spillway width	Approximately 75 m wide
Spillway length	Approximately 260 m
Spillway curve	Hinze Dam Alliance, Preliminary Design Report, HDA-RP/000218, Nov 2007.
Discharge characteristics	Peak outflow 4 060 m^3/second at PMF EL 108.15 m AHD.
Outlet works	
Lower intake tower	Description: A 76 m high dry well reinforced concrete tower housing eleven screened 1 500 mm diameter inlet pipes at EL 43.316 m, 48.316 m, 53.316 m, 58.316 m, 63.316 m, 68.316m, 73.316 m, 78.316 m, 83.316 m, 88.316 m and 93.316 m AHD. The pipes are arranged radially connecting to a central vertical riser pipe within the intake tower, which connects to a 1 440 mm diameter outlet pipe. (Reference: SKM, URS, Thiess, Gold Coast City Council), Drawing No. LOW-003) Location: The Lower Intake tower is located in Hinze Dam adjacent the main embankment.
Lower intake tower – Connection to Molendinar Water Treatment Plant	Description: The 1 440 mm diameter outlet pipe from the lower intake tower transports raw water to the pump station. The pump station houses three pumps. Provisions for selective release: Flow is regulated at the intake tower inlets by electrically actuated butterfly valves. The rate of pumped flow is controlled by the pump/s in operation. Maximum outlet capacity: Pumped flow = 240 ML/day = 2 778 L/second. Gravity flow = 120 ML/day = 1 389 L/second. Minimum operating level: EL 45.6 m AHD.

Upper intake tower	Description: A 58 m high dry well reinforced concrete tower housing nine 900 mm diameter inlet pipes at EL 92.548 m, 87.348 m, 82.148 m, 76.934 m, 71.713 m, 66.536 m, 61.337 m and 58.842 m AHD and 56.340 m AHD. The pipes are arranged radially connecting to a central vertical riser pipe within the intake tower, which connects to an 806 mm diameter outlet pipe. (Reference: SKM, URS, Thiess, Gold Coast City Council), Drawing No. UOW-003) Location: The upper intake tower is located 4.5 km upstream of the main embankment of Hinze Dam on the Little Nerang Creek arm of the impoundment.
Upper intake tower – Connection to Mudgeeraba Water Treatment Plant	Description: Three electric pumps are located in the dry well of the upper intake tower. Provisions for selective release: Flow is regulated on the intake tower inlets by electrically actuated butterfly valves. The rate of pumped flow is controlled by the pump/s in operation. Maximum outlet capacity: Pumped flow from the upper intake tower to the break of head tank = 87.4 ML/day = 1 012 L/second. Gravity flow from the Break of Head Tank to Mudgeeraba WTP = 74.0 ML/day = 856 L/second. Minimum operating level: EL 58.5 m AHD.
Emergency outlet	Description: An 800 mm diameter scour outlet pipe is connected to the lowest inlet. Provisions for selective release: Flow is regulated by a 600 mm diameter fixed cone regulating valve. Minimum control level: EL 43 m AHD. Emergency outlet gate: 3.4 m by 3.4 m at EL 75 m AHD.

Table 2 – Little Nerang Dam—Little Nerang Creek at AMTD 16.1 km

Description of water infrastructure	
Description	A 44.6 m high mass concrete gravity dam structure located at AMTD 16.1 km on Little Nerang Creek. Overall crest length between abutments of 201 m with 22 concrete segments—designated monoliths 1 to 22 respectively from the right to the left abutment. A central gated overflow section, 36.576 m wide at crest, with a 'ski-jump' type flip bucket having a 4.572 m radius. The central overflow section has two 16.46 m x 3.58 m hydraulically operated drum gates—which are currently locked open*. A concrete parapet wall extends approx. 1.2 m above the deck level. (Reference: Gold Coast City Council, Drawing No. 60935A)
Full supply level	Full Supply Level: EL 168.02 m AHD (gates locked open)* Full Supply Level: EL 171.6 m AHD (gates operational)*
Minimum operating level	139.3 m AHD
Storage capacity	
Full supply volume	Total storage capacity: 6 705 ML (gates locked open)* Total storage capacity: 8 460 ML (gates operational)*
Minimum operating volume	203 ML
Storage curves	Reference: Department of Local Government plan number 13036.
Spillway arrangement	
Description of works	The embankment has a central gated overflow section, 36.576 m wide at crest, with a 'ski-jump' type flip bucket having a 4.572 m radius. The central overflow section has two 16.46 m x 3.58 m hydraulically operated drum gates, which are currently locked open*.
Spillway level	Crest level EL 168.02 m AHD with gates locked open*
Spillway width	36.576 m
Discharge characteristics	Reference: GHD report for Gold Coast Water 2006. Report for Little Nerang Dam Cost Benefit Analysis Stage 1, April 2006.
Outlet works	
Intake tower	Description: A reinforced concrete intake tower housing five screened 450 mm diameter inlet pipes at EL 166.95 m, 161.39 m, 155.15 m, 148.90 m and 142.65 m AHD. The pipes are arranged radially connecting to a central vertical riser pipe within the intake tower, which connects to an 850 mm diameter outlet pipe. Location: The intake tower is located in monolith 11, immediately to the right of the spillway.
Connection to Mudgeeraba Water Treatment Plant	Description: An 850 mm diameter gravity raw water main, 7.845 km long, transports raw water to Mudgeeraba WTP. Provisions for selective release: Flow is regulated on the inlets by hand operated sluice valves. Flow is also regulated at the inlet to Mudgeeraba WTP by an electrically actuated butterfly valve. Maximum outlet capacity: 76 ML/day = 880 L/second. Minimum control level: EL 139.3 m AHD.
Outlet to Little Nerang Creek	Description: A 150 mm diameter offtake from the 850 mm diameter outlet pipe. Provisions for selective release: Flow is regulated by a sluice valve on the 150 mm diameter offtake. Maximum outlet capacity: 4.06 ML/day = 47 L/second. Minimum control level: EL 139.3 m AHD.
Emergency outlet	Description: A 600 mm diameter outlet, located in monolith 16, in the centre of the spillway. Provisions for selective release: Flow is regulated by dual 600 mm diameter sluice valve. Maximum outlet capacity: 5.1 m^3/second at EL 168 m (FSL). Minimum control level: EL 131.9 m AHD.

*Pending approval for safe operation by the chief executive under Chapter 4 of the *Water Supply (Safety and Reliability) Act 2008*, the Little Nerang drum gates are not to be operated and are to remain in a locked open position.

Attachment 2 Environmental management rules

1 Releases for environmental purposes

(1) The licence holder must only release from—

(a) Hinze Dam—12 ML/day when the flow rate at Numinbah gauging station 146015A on the Nerang River is greater than 100 ML/day and when the water level in Hinze Dam is above EL 45.6 m AHD; and

(b) Little Nerang Dam—3 ML/day when the water level in Little Nerang Dam is above EL 139.3 m AHD.

2 Hold and release water for Banked Flow Trial

(1) Hold Water - the licence holder—

(a) must bank 4.75ML/day when the flow rate at Numinbah gauging station 146015A on the Nerang River is 100 ML/day or greater, the Hinze Dam is not spilling and the water level is above EL 45.6 m AHD; and

(b) must only hold a maximum of 124ML of water for banked flow purposes at any one time during the Banked Flow Trial.

(2) Release Water - the licence holder—

(a) is permitted to release up to a maximum of 18 ML/day, from the water banked for banked flow purposes, which includes the standard daily release of 7.25 ML/day;

(b) must only release water when the water level in Hinze Dam is above EL 45.6 m AHD;

(c) must make releases from the water banked for banked flow purposes from the Hinze Dam if directed by the chief executive; and

(d) must release all water set aside for banked flow purposes upon cessation of the Banked Flow Trial.

3 Quality of water released

When releasing water from Hinze Dam or Little Nerang Dam, the licence holder must draw water from the inlet level that optimises the quality of water released.

4 Change in rate of release from infrastructure

The licence holder must minimise the occurrence of adverse environmental impacts by ensuring that any change in the rate of release of water occurs incrementally.

Attachment 3 Licence holder monitoring and reporting

Part 1 Monitoring requirements

Division 1 Water quantity

1 Streamflow and infrastructure water level data

(1) The licence holder must record water level and volume and streamflow data in accordance with Table 1.

(2) Infrastructure inflows may be determined based upon an infrastructure inflow derivation technique supplied by the licence holder and approved by the chief executive.

Table 1 – Locations where continuous time series water level and streamflow data are required

Infrastructure water level data	Streamflow data
—	Hinze Dam inflow
Hinze Dam headwater	—
	Hinze Dam tailwater
—	Little Nerang Dam inflow
Little Nerang Dam headwater	—
	Little Nerang Dam tailwater

2 Releases from infrastructure

(1) This section applies to Hinze Dam and Little Nerang Dam.

(2) The licence holder must measure and record for each release of water from infrastructure—

(a) the daily volume released;

(b) the release rate and for each change in release rate—

(i) the date and time of the change; and

(ii) the new release rate;

(c) the reason for each release; and

(d) the device used for each release.

3 Announced allocations

The licence holder must record details of announced allocation determinations including—

(a) the announced allocations for high priority allocations;

(b) the date announced allocations are determined; and

(c) the value of each parameter applied for calculating the announced allocation.

4 Water taken by water users

(1) The licence holder must record the daily volume of water taken, by each water user for the Nerang zone as follows—

(a) the lower intake tower of Hinze Dam;

(b) the upper intake tower of Hinze Dam; and

(c) the intake tower of Little Nerang Dam.

(2) The licence holder must record for each of the towers mentioned in subsection (1)(a)—

(a) the inlet level used for taking the daily volumes recorded under subsection (1); and

(b) the reason for taking water via a particular intake tower and inlet level.

5 Seasonal water assignment of a water allocation

The licence holder upon consent to a seasonal water assignment must record details of seasonal water assignment arrangements, including —

(a) the name of the assignee and the assignor;

(b) the volume of the assignment;

(c) the location—

(i) from which it was assigned; and

(ii) to which it was assigned;

(d) the effective date of the seasonal water assignment; and

(e) the sale price.

6 Critical water sharing arrangements

The licence holder must record details of critical water sharing arrangements including—

(a) the commencement date(s) and effective period of critical water sharing arrangements; and

(b) the effectiveness of critical water sharing arrangements.

Division 2 Impact of infrastructure operation on natural ecosystems

7 Water quality

The licence holder must monitor and record water quality data in relation to relevant infrastructure listed in Attachment 1 .

8 Bank condition

(1) The licence holder must inspect banks for evidence of collapse and/or erosion within the ponded areas and downstream of the relevant infrastructure listed in Attachment 1, following instances of—

(a) rapid water level changes;

(b) large flows through infrastructure; or

(c) other occasions when collapse and/or erosion of banks may be likely.

(2) For subsection (1), downstream of the relevant infrastructure means the distance of influence of infrastructure operations.

9 Fish stranding

The licence holder must record and assess instances of fish stranding in watercourses and ponded areas associated with the operation of the licence holder's infrastructure as listed in Attachment 1 , to determine if any instance is associated with the operation of that infrastructure.

Part 2 Reporting requirements

10 Reporting requirements

The licence holder must provide the following reports in accordance with this part—

(a) quarterly reports;

(b) annual reports for the previous water year;

(c) operational or emergency reports; and

(d) a report to be prepared on completion of the Banked Flow Trial summarising methods, outcomes and results.

Division 1 Quarterly reporting

11 Quarterly report

(1) The licence holder must submit a quarterly report to the chief executive within three months after the end of each quarter, of every water year.

(2) The report must include for each quarter—

(a) streamflow and infrastructure water levels—recorded under section 1;

(b) the total volume of water—

(i) taken for each zone; and

(ii) entitled to be taken for each zone;

(c) water quality—data recorded under section 7;

(d) a summary of bank condition monitoring and incidences of slumping, carried out in accordance with section 8;

(e) the daily volume of water held and released for the Banked Flow Trial purposes;

(f) each day the dam is spilling measured by the mean daily volume expressed as a percentage; and

(g) the details and status of any programs implemented under condition 5.2.

Division 2 Annual reporting

12 Annual report

(1) The licence holder must submit an annual report to the chief executive after the end of each water year.

(2) The annual report must include—

(a) water quantity monitoring results as required under section 13;

(b) details of the impact of infrastructure operation on natural ecosystems as required under section 14;

(c) a discussion on any issues that arose as a result of operating in accordance with this licence; and

(d) a summary of sale price disclosure information and other seasonal water assignment information as required under section 5.

13 Water quantity monitoring

The licence holder must include in the annual report made under section 12—

(a) a summary of announced allocation determinations, including—

(i) an evaluation of the announced allocation procedures and outcomes; and

(ii) the date and value for the initial announced allocation and for each change made to an announced allocation;

(b) instances where critical water supply arrangements have been implemented, including—

(i) an evaluation of the effectiveness of the arrangements and outcomes; and

(ii) the commencement date(s) and effective period of the arrangements;

(c) releases from infrastructure—records referred to in section 2;

(d) the total annual volume of water taken by all water users, specified by zone, namely—

(i) the total volume of supplemented water taken;

(ii) the total volume of supplemented water entitled to be taken; and

(iii) the basis for determining the volume entitled to be taken;

(e) details of seasonal water assignments, namely—

(i) the total number of seasonal water assignments; and

(ii) the total volume of water seasonally assigned;

(f) all details of changes to infrastructure or the operation of the infrastructure that may impact on compliance with rules in this licence and;

(g) details of any new monitoring devices used such as equipment to measure streamflow.

14 Impact of infrastructure operation on natural ecosystems

The licence holder must include in the annual report made under section 12—

(a) a summary of environmental considerations made by the licence holder in making operational and release decisions;

(b) a summary of the environmental outcomes of the decision including any adverse environmental impacts;

(c) a summary of bank condition and fish stranding monitoring and assessment, including—

(i) results of investigations of bank slumping and/or erosion identified in ponded areas and/or downstream of infrastructure undertaken in accordance with section 8;

(ii) results of investigations of fish stranding downstream of infrastructure; and

(iii) changes to the operation of infrastructure to reduce instances of bank slumping and/or erosion and/or fish stranding;

(d) a summary of the Banked Flow Trial monitoring and performance outcomes, including—

(i) results of investigations of the change in flow conditions; and

(ii) fish sampling data;

(e) a discussion and assessment of the following water quality issues—

(i) thermal and chemical stratification in each water storage;

(ii) contribution of the water storage and its management to the quality of water released;

(iii) cumulative effect of successive water storages associated with infrastructure on water quality;

(iv) cyanobacteria population changes in response to stratification in each storage; and

(v) any changes to the monitoring program as a result of evaluation of the data.

Division 3 Operational or emergency reporting

15 Operational or emergency reporting[2]

(1) The licence holder must notify the chief executive—

(a) within one business day of becoming aware of any of the following operational incidents—

(i) a non-compliance by the licence holder with the conditions of this licence;

(ii) instances of fish stranding or bank slumping downstream of the water infrastructure to which this licence relates; and

(iii) a decision being made to introduce a reduced full supply level under section 399B of the *water Supply (Safety and Reliability) Act 2008*;

(b) of an emergency, where as a result of the emergency, the licence holder cannot comply with the conditions of the licence.

(2) The licence holder must provide to the chief executive upon request, and within the timeframe requested, a report which includes details of—

(a) the incident or emergency;

(b) conditions under which the incident or emergency occurred;

(c) any responses or activities carried out as a result of the incident or emergency; and

(d) in relation to an emergency only, any requirements under this licence that the licence holder is either permanently or temporarily unable to comply with due to the emergency.

(3) The licence holder must—

(a) notify the chief executive upon commencement and cessation of critical water sharing arrangements;

[2] This does not preclude requirements for dam safety under the *Water Supply (Safety and Reliability) Act 2008*, *Water Act 2000* and any other applicable legislation.

(b) notify the chief executive on approval of any seasonal water assignment including—

(i) the name and location of the assignees and assignors; and

(ii) the zone or zones where water is being seasonally assigned to and from;

(c) notify the chief executive upon making a decision relating to an initial announced allocation and/or its recalculation; and

(d) transfer to the chief executive—

(i) details of any arrangements for addressing circumstances where the licence holder is unable to supply water allocations under subsection (c); and

(ii) relevant supporting information used in making a decision under subsection (c).

Attachment 4 Interim programs

1 Submission of interim program

The licence holder may, at any time, submit an interim program to the chief executive for approval, including a timetable for returning to full compliance with the licence and interim arrangements.

2 Implementing and publishing interim program

Following approval of the program by the chief executive, the licence holder—

(a) must implement and operate in accordance with the interim program; and

(b) make public details of the interim program on its internet site.

Glossary

Term	Definition
AHD	The Australian Height Datum, which references a level or height to a standard base level.
AMTD	Adopted middle thread distance
Announced allocation	For a water allocation managed under a water resource operations licence, means a number, expressed as a percentage, which is used to determine the maximum volume of water that may be taken in a water year under the authority of a water allocation.
Assignee	The person or entity to whom an interest or right to water is being transferred (e.g. seasonally assigned).
Assignor	The person or entity that transfers an interest or right in water to an assignee (e.g. a seasonal assignment).
Banked flow trial	Is an experimental application of varied flow rates, which requires environmental flows to be stored in the dam, then released as pulsed flows at the existing pipework's maximum discharge capacity to determine if an increased attraction velocity and depth of attractant flows will improve transfer rates for fish through the fishway transfer device.
EL	Elevation
Fish stranding	When fish are stranded or left out of the water on the bed or banks of a watercourse, on infrastructure such as spillways and causeways or left isolated in small and/or shallow pools, from which they cannot return to deeper water. This also applies to other aquatic species.
Full supply volume	The specified maximum volume of water within the ponded area of a dam, weir or barrage, which corresponds to the full supply level.
Headwater level	The level (or elevation) of the water immediately upstream of a dam, weir, or other hydraulic structure.
Infrastructure	A dam, weir or other water storage and any associated works for taking or interfering with water in a watercourse, lake or spring.
Interim program	The program by which the licence holder will operate the water supply scheme during the period of the emergency or operational incident in which licence holder cannot comply with the requirements of the resource operations licence
Inlet	Infrastructure comprised of an entrance channel, intake structure, and gate or valve, which allow for water to be taken from the storage and discharged into the watercourse downstream of the storage.
Location	For a water allocation, means the zone and/or place from which water under the water allocation can be taken. For a water licence, means the section of the watercourse, lake or spring abutting or contained by the land described on the water licence at which water may be taken.
Megalitre (ML)	One million litres
Minimum operating level	For a dam or weir, is the volume of water within the ponded area of a dam, weir or barrage below which water cannot be released or taken from the infrastructure under normal operating conditions.
Minimum operating volume	The specified minimum volume of water within the ponded area of a dam weir or barrage below which water cannot be released or taken from the infrastructure under normal operating conditions.
Outlet	Means an arrangement on a dam or weir that allows stored water to be released downstream.
Ponded area	Area of inundation at full supply level of a dam, weir or barrage.
Release	Water from a dam or weir that passes downstream from the dam or weir either through the dam or weir outlet works or over the dam spillway.
Release rate	Rate of release of water from a storage facility, for example, a dam or weir.
Streamflow	Includes flow of water resulting from tributary inflows, and does not include releases of supplemented water.
Tailwater	The flow of water immediately downstream of a dam, weir or barrage. Tailwater includes all water passing the infrastructure, for example controlled releases and uncontrolled overflows.