

Resource Operations Licence

Water Act 2000



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 following watercourses for the distribution of supplemented water—

- (a) the impoundment of Hinze Dam (AMTD 36.4 km) on the Nerang River;
- (b) the impoundment of Little Nerang Dam (AMTD 16.1 km) on Little Nerang Creek; and
- (c) Little Nerang Creek downstream of Little Nerang Dam (AMTD 16.1 km) to AMTD 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.

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 Standards¹.
- 4.4. The licence holder must ensure that the transfer of data and reporting are consistent with the Water Monitoring Data Reporting Standards².

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 part 2 of Attachment 3.
- 5.2. The licence holder may in accordance with the process set out in Attachment 4, submit an interim program to the chief executive for approval.
- 5.3. Where there is conflict between the requirements of this licence and an approved program, the program prevails for the time it is in place.

Commencement of licence

The licence took effect on 7 December 2009

Granted on 7 December 2009,

Amended under section 1259 of the *Water Act 2000* on 23 December 2016

SIGNED

**Peter Burton
A/Executive Director, Water Policy**

¹ The Water Monitoring Data Collection Standards can be inspected at any of the department's offices or accessed online at: <www.dnrm.qld.gov.au>

² The Water Monitoring Data Reporting Standards can be inspected at any of the department's offices or accessed online at: <www.dnrm.qld.gov.au>

Attachment 1 Infrastructure details for Nerang Water Supply Scheme

Hinze Dam—Nerang River at AMTD 36.4 km

Description of water infrastructure	
Description	A 78.4 metre (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 metres 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	310 700 ML
Minimum Operating Volume	2180 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 4060 m ³ /s 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 1500 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 1440 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.

<p>Lower intake tower – Connection to Molendinar Water Treatment Plant</p>	<p>Description: The 1440 mm diameter outlet pipe from the lower intake tower transports raw water to the pump station. The pump station houses three pumps.</p> <p>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.</p> <p>Maximum outlet capacity: Pumped flow = 240 ML/day = 2778 L/s. Gravity flow = 120 ML/day = 1389 L/s.</p> <p>Minimum operating level: EL 45.6 m AHD.</p>
<p>Upper intake tower</p>	<p>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.</p> <p>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)</p> <p>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.</p>
<p>Upper intake tower – Connection to Mudgeeraba Water Treatment Plant</p>	<p>Description: Three electric pumps are located in the dry well of the upper intake tower.</p> <p>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.</p> <p>Maximum outlet capacity: Pumped flow from the upper intake tower to the break of head tank = 87.4 ML/day = 1012 L/s. Gravity flow from the Break of Head Tank to Mudgeeraba WTP = 74.0 ML/day = 856 L/s.</p> <p>Minimum operating level: EL 58.5 m AHD.</p>
<p>Emergency outlet</p>	<p>Description: An 800 mm diameter scour outlet pipe is connected to the lowest inlet.</p> <p>Provisions for selective release: Flow is regulated by a 600 mm diameter fixed cone regulating valve.</p> <p>Minimum control level: EL 43 m AHD.</p> <p>Emergency outlet gate: 3.4 m by 3.4 m at EL 75 m AHD.</p>

Little Nerang Dam—Little Nerang Creek at AMTD 16.1 km

Description of water infrastructure	
Description	<p>A 44.6 m high mass concrete gravity dam structure located at AMTD 16.1 km on Little Nerang Creek.</p> <p>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.</p> <p>A central gated overflow section, 36.576 m wide at crest, with a ‘ski-jump’ type flip bucket having a 4.572 m radius.</p> <p>The central overflow section has two 16.46 m x 3.58 m hydraulically operated drum gates—which are currently locked open*.</p> <p>A concrete parapet wall extends approx. 1.2 m above the deck level.</p> <p>(Reference: Gold Coast City Council, Drawing No. 60935A)</p>
Full supply level	<p>Full Supply Level: EL 168 m AHD (gates locked open)*</p> <p>Full Supply Level: EL 171.6 m AHD (gates operational)*</p>
Minimum operating level	139.3 m AHD.
Storage capacity	
Full supply volume	<p>Total storage capacity: 6670 ML (gates locked open)*</p> <p>Total storage capacity: 8400 ML (gates operational)*</p>
Minimum operating volume	203 ML
Storage curves	Reference: Department of Local Government plan number 13036.
Spillway arrangement	
Description of works	<p>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.</p> <p>The central overflow section has two 16.46 m x 3.58 m hydraulically operated drum gates, which are currently locked open*.</p>
Spillway level	Crest level EL 168 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	<p>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.</p> <p>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</p> <p>Location: The intake tower is located in monolith 11, immediately to the right of the spillway.</p>

<p>Connection to Mudgeeraba Water Treatment Plant</p>	<p>Description: An 850 mm diameter gravity raw water main, 7.845 km long, transports raw water to Mudgeeraba WTP.</p> <p>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.</p> <p>Maximum outlet capacity: 76 ML/day = 880 L/s.</p> <p>Minimum control level: EL 139.3 m AHD.</p>
<p>Outlet to Little Nerang Creek</p>	<p>Description: A 150 mm diameter offtake from the 850 mm diameter outlet pipe.</p> <p>Provisions for selective release: Flow is regulated by a sluice valve on the 150 mm diameter offtake.</p> <p>Maximum outlet capacity: 4.06 ML/day = 47 L/s.</p> <p>Minimum control level: EL 139.3 m AHD.</p>
<p>Emergency outlet</p>	<p>Description: A 600 mm diameter outlet, located in monolith 16, in the centre of the spillway.</p> <p>Provisions for selective release: Flow is regulated by dual 600 mm diameter sluice valve.</p> <p>Maximum outlet capacity: 5.1 m³/s at EL 168 m (FSL).</p> <p>Minimum control level: EL 131.9 m AHD.</p>

*Pending approval for safe operation by the chief executive under Chapter 3, Part 6 of the Water Act 2000, 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

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 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.

3 Change in rate of release from infrastructure

The licence holder must make minimise the occurrence of adverse environmental impacts by ensuring that any change in the rate of release of water from infrastructure storage into a watercourse occurs incrementally.

Attachment 3 Licence holder monitoring and reporting

Part 1 Monitoring requirements

Division 1 Water quantity

1 Stream flow and infrastructure water level data

- (1) The licence holder must record water level and volume and stream flow 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 stream flow data are required

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

- (a) the announced allocations for high priority allocation;

- (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.

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 of this licence.

8 Bank condition

- (1) The licence holder must inspect banks for evidence of collapse and erosion within the ponded areas and downstream of the relevant infrastructure listed in attachment 1 of this licence following instances of—

- (a) rapid water level changes;
 - (b) large flows through infrastructure; or
 - (c) other occasions when collapse 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 of this licence, 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—

- (a) quarterly reports;
- (b) annual reports for the previous water year;
- (c) operational or emergency reports.

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) stream flow 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; and
 - (e) the details and status of any programs implemented under Attachment 4 of this licence.

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 required under Division 1 of Part 1 of this Attachment;
 - (b) details of the impact of infrastructure operation on water quality as required under section 7;
 - (c) a discussion on any issues that arose as a result of operating in accordance with this licence.

13 Water quantity monitoring

The licence holder must include in the annual report 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 each 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 water taken;
 - (ii) the total volume of 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 stream flow.

14 Impact of infrastructure operation on natural ecosystems

The licence holder must include in the annual report 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 or erosion identified in ponded areas or downstream of infrastructure;

- (ii) results of investigations of fish stranding downstream of infrastructure; and
 - (iii) changes to the operation of infrastructure to reduce instances of bank slumping, erosion or fish stranding.
- (d) 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 reporting

The licence holder must—

- (a) notify the chief executive within one business day of becoming aware of any of the following operational incidents—
 - (i) a non-compliance by the licence holder with the operating and supply arrangements in the approved operations manual for this licence; and
 - (ii) instances of fish stranding or bank slumping downstream of the water infrastructure to which this licence relates;
- (b) provide to the chief executive a report which includes details of—
 - (i) the incident;
 - (ii) conditions under which the incident occurred; and
 - (iii) any responses or activities carried out as a result of the incident;
- (c) notify the chief executive upon commencement and cessation of critical water sharing arrangements; and
- (d) 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;
- (e) notify the chief executive upon making a decision relating to an initial announced allocation and/or its recalculation;
- (f) 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 (e); and
 - (ii) relevant supporting information used in making a decision under subsection (e).

16 Emergency reporting

Where the licence holder cannot comply with a rule in this plan as a result of an emergency, the licence holder must—

- (a) Notify the chief executive upon discovery of the emergency; and
- (b) Provide the chief executive a report that includes—
 - (i) details of the emergency;
 - (ii) conditions under which the emergency occurred;
 - (iii) any responses or activities carried out as a result of the incident or emergency; and
 - (iv) any rules requirements under this licence that the licence holder is either permanently or temporarily unable to comply with due to the emergency.

Attachment 4 Interim programs

1 Submission of interim program

- (1) Where an emergency or operational incident results in an inability to comply with the rules or requirements of this licence, the resource operations licence holder may 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) Where the submitted interim program relates to the Water Monitoring Data Collection Standards, the program must include the accuracy of methods currently used.

2 Requirement for additional information

The chief executive, in considering any submitted interim program, may request additional information.

3 Approving an interim program

- (1) The chief executive, in considering any submitted interim program, may either—
 - (a) approve the interim program with or without conditions;
 - (b) require the resource operations licence holder to submit a revised interim program.
- (2) Within 10 business days of making a decision on an interim program submitted under this section, the chief executive must notify the resource operations licence holder of the decision.

4 Implementing and publishing interim program

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

- (a) must implement and operate in accordance with the approved interim program; and
- (b) make public details of the approved interim program on its internet site.

5 Relationship between interim program and licence

- (1) Where there is conflict between the provisions of this licence and the provisions of an approved interim program, the approved interim program prevails for the time that the interim program is in place.
- (2) Where an interim program has been submitted under section 1, but not dealt with under section 3, the resource operations licence holder may operate under the interim program despite the conditions of this licence until a decision is made under section 3.

Attachment 5 Glossary

Term	Definition
AHD	The Australian Height Datum, which references a level or height to a standard base level.
AMTD	Adopted middle thread distance
EL	Elevation.