

## Heron Island Research Station (HIRS) Water Management Program

### 1. Objectives

The water streams at The University of Queensland Heron Island Research Station will be managed in order to comply with environmental, health and safety regulations and to ensure that all water is used economically. The water streams will be managed in such a way as to:

- Minimise the use of water at HIRS; and
- To ensure the effective and efficient operation of the waste water streams.

### 2. Scope

This operational procedure is limited to the water streams at HIRS.

### 3. Responsibility

#### 3.1 *Use of Water Streams*

It is YOUR responsibility to use water thoughtfully. There are appropriate uses for each of the supply water streams and discharges for the various waste water streams at HIRS.

It is YOUR responsibility to ensure that only appropriate waste waters are disposed of through the waste water streams. For example, don't mix laboratory liquid wastes with sewage waste and don't dispose of liquid chemical wastes through any of the waste water streams.

## WARNING

**DISPOSAL OF ANY WASTE WATERS ON HERON ISLAND IS STRICTLY PROHIBITED. OFFENDERS MAY BE PROSECUTED UNDER THE ENVIRONMENTAL PROTECTION ACT (1994) AND OTHER APPLICABLE QUEENSLAND LEGISLATION**

At HIRS, the different water streams come under the responsibility of the following:

Responsibility	Water Stream
Maintenance Manager	<ul style="list-style-type: none"> <li>• Freshwater</li> <li>• Reclaimed water</li> <li>• Sewage water</li> <li>• Grease traps</li> <li>• Wash down water</li> <li>• Aquarium return seawater</li> </ul>
Laboratory Manager	<ul style="list-style-type: none"> <li>• Laboratory waste water</li> </ul>

### **3.2 General Water Stream Handling Responsibility**

For each of the water streams at HIRS, the following responsibilities must be observed by HIRS staff:

- Supply a water management system for all staff and visitors to HIRS;
- Supply and maintain working fittings, connections and other requirements necessary to ensure effective use of the water streams;
- To perform all general plumbing of the water streams' systems;
- To perform all other general maintenance and environmental requirements to ensure effective operation of the systems; and
- To ensure, when necessary that any contractors required in handling or maintenance of water streams or water stream systems are licensed for that particular operation.

### **3.3 General Handling of Water Streams**

When working with any of the water streams, all appropriate safety precautions should be taken:

- All reasonable personal protective equipment should be worn when working with any of the waste water streams. For example, any equipment necessary for working on rooves or overalls, gloves and eye protection when working on the sewage line or pumps;
- Any personal safety equipment used while working on sewage wastes should be thoroughly cleansed after use. The operator should also wash themselves thoroughly; and
- When working on the freshwater supply (potable water), all measures should be taken to prevent contamination of the stream (taps, etc).

## **4. Users' Water Table**

The Users' Water Table is attached at the end of this document. Refer to this table if you have any queries in regard to the use of supply water, or what can be disposed of in the discarded water streams.

Special notes not covered in the Users' Water Table for each of these streams are included below.

## **5. Freshwater**

Freshwater is the only supply of potable water to HIRS. This means that freshwater is the only water supplied to HIRS that is fit for drinking.

When using the freshwater supply, use simple water consumption practices such as:

- Ensuring taps are turned off fully when you are finished; and
- Don't waste water (i.e. long showers).

**THINK BEFORE YOU USE**

**HIRS HAS A LIMITED SUPPLY OF FRESHWATER.  
USE ONLY WHAT YOU NEED.**

## **6. Sewage Water**

You have the responsibility to ensure that no contaminants enter the sewage system (refer to the Users' Table). Do not pour any chemicals, grease or oils down drains, sinks and toilets.

### **WARNING**

**UNDER NO CIRCUMSTANCES ARE CHEMICAL WASTES, OILS OR GREASE TO BE Poured DOWN DRAINS, SINKS OR TOILETS. ANY OFFENDERS WILL BE PROSECUTED.**

**ONLY DOMESTIC WASTE WATER SHOULD ENTER THE SEWAGE SYSTEM!**

## **7. Laboratory Waste Waters**

In each laboratory, there are two separate waste water streams;

- Laboratory waste water; and
- Return sea water

In each lab, there is/are sink/s designated for each of these streams. Ensure that you only dispose of appropriate wastes down each of the streams. (Colour coded)

### **BE AWARE!**

**A SEPARATE SYSTEM HAS BEEN DEVELOPED FOR THE COLLECTION OF CHEMICAL WASTES, OILS AND GREASE.**

## **8. Kitchen and Wash Down Area Grease and Oils**

All grease and oils washed off equipment during normal wash down passes through a grease trap before the water is passed onto the sewage treatment system.

### **WARNING!**

**DO NOT POUR BULK QUANTITIES OF OILS AND GREASE DOWN SINKS OR DOWN THE WASH SLAB DRAIN. THERE IS A SEPARATE SYSTEM FOR THE COLLECTION OF OILS AND GREASE.**

## **9. Procedures for Maintenance of Water Streams**

The general procedure for the water streams at HIRS are outlined in the Operators' Water Table. Additional special procedures for the handling of these streams are outlined below.

### **9.1 Sewage Water**

The two pump stations located at HIRS will be maintained and inspected at regular intervals.

In the advent of pump failure a visual alarm will be automatically activated. When an alarm is activated, the pumps should be attended immediately and the fault corrected.

If the P&O sewage treatment plant fails, HIRS will be notified by the P&O resort. On receiving this notification the contingency plan will be initiated.

### **9.2 Sea Water Return**

The sump for the sea water stream must be inspected on a 6 monthly basis for solids and residues. If the build up of solids is excessive, the sump shall be cleaned.

### **9.3 Grease Traps**

Grease traps are to be opened and inspected every two weeks. The levels of grease and oils should be noted and if build up is excessive, it must be pumped out. Grease and oils will be pumped into 44 gallon drums for transport to and disposal on the mainland.

The licensed contractor on the mainland is to dispose of the grease and oils at a premises licensed to handle this type of waste.

### **9.4 Wash Down Water**

The transpiration trenches that are part of the wash down water treatment must be inspected on a fortnightly basis to ensure water is infiltrating to the island's ground water system. If water levels are not lowering, investigation and rectification of the problem should be undertaken.

The in-line grease traps for the wash down slab will be inspected and maintained in accordance with the procedure for grease traps outlined above.

### **9.5 Laboratory Waste Water**

Method for treatment and disposal still to be decided.

## **10. Contacts**

For further questions in regard to what can and cannot be disposed of through the various waste water streams, contact:

Contact	Queries in Regard to:
Maintenance Manager	<ul style="list-style-type: none"><li>• Freshwater</li><li>• Reclaimed water</li><li>• Sewage water</li><li>• Grease traps</li><li>• Wash down water</li><li>• Return seawater</li></ul>
Laboratory Manager	<ul style="list-style-type: none"><li>• Laboratory waste water</li><li>• Aquarium Return seawater</li></ul>

## **11. References**

- Environmental Protection Act (1994)
- Environmental Protection Policy - Water
- Australian Water Quality Guidelines for Fresh and Marine Waters (1992)
- Guidelines for Sewerage Systems – Use of Reclaimed Water 2002

## Users' Water Table

### Supply Water

Water Stream	Supply	Acceptable Use	Unacceptable Uses
Freshwater	All internal taps are supplied with fresh water: <ul style="list-style-type: none"> <li>• Sinks in kitchens and bathrooms; and</li> <li>• Showers</li> </ul>	<ul style="list-style-type: none"> <li>• Drinking;</li> <li>• Cooking; and</li> <li>• Showering.</li> </ul>	<ul style="list-style-type: none"> <li>• Irrigation;</li> <li>• Toilet flushing; and</li> <li>• External washing (use on wash down slab, etc).</li> </ul>
Rain water	Supplied to external taps: <ul style="list-style-type: none"> <li>• Taps used for irrigation of HIRS;</li> <li>• Taps supplied at the wash down slab; and</li> <li>• Cisterns.</li> </ul>	<ul style="list-style-type: none"> <li>• Wash down of boats, machinery and wheelie bins;</li> <li>• Flushing of toilets; and</li> <li>• Irrigation.</li> </ul>	<ul style="list-style-type: none"> <li>• Drinking;</li> <li>• Showering;</li> <li>• Cooking.</li> </ul>
Reclaimed water	Supplied to cisterns only	<ul style="list-style-type: none"> <li>• Toilet flushing</li> </ul>	<ul style="list-style-type: none"> <li>• Drinking;</li> <li>• Showering</li> <li>• Cooking;</li> <li>• Irrigation;</li> <li>• External washing (use on wash down slab, etc).</li> </ul>

### Waste Water Streams:

Water Stream	Receptacles	Acceptable Discharges	Exclusions
Sewage water	<ul style="list-style-type: none"> <li>• Toilets;</li> <li>• Showers;</li> <li>• Sinks (kitchen and bathroom);</li> <li>• Internal drains.</li> </ul>	<ul style="list-style-type: none"> <li>• Freshwater;</li> <li>• Washing detergents;</li> <li>• Flushing toilets; and</li> <li>• Showering.</li> </ul>	<ul style="list-style-type: none"> <li>• Salt water;</li> <li>• Chemicals;</li> <li>• Oils and grease; and</li> <li>• External wash water (from wash slab, etc).</li> </ul>
Laboratory waste water	Designated sinks in laboratories.	<ul style="list-style-type: none"> <li>• Washing up water (used for the cleaning of glassware);</li> <li>• Contaminated salt water.</li> </ul>	<ul style="list-style-type: none"> <li>• Chemicals (including solvents and alcohols);</li> <li>• Salt water (uncontaminated);</li> <li>• Oils and grease;</li> <li>• Freshwater;</li> <li>• External wash down water.</li> </ul>
Return sea water (laboratories)	Designated sinks in laboratories.	<ul style="list-style-type: none"> <li>• Uncontaminated sea water only.</li> </ul>	<ul style="list-style-type: none"> <li>• Freshwater,</li> <li>• Chemicals,</li> <li>• Oils and grease,</li> <li>• Washing up water (either personal or glassware),</li> <li>• Hand washing water.</li> </ul>

Grease and oil (Wash down area through grease trap)	The banded area in the fuelling compound.	<ul style="list-style-type: none"> <li>• Trace amounts of oils and grease washed from equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Bulk quantities of oils and grease cannot be disposed of this way;</li> <li>• Chemicals</li> <li>• Bulk sea water (residue removed in washing process is acceptable)</li> </ul>
Grease and oil (kitchens through grease trap)	Kitchen sinks.	<ul style="list-style-type: none"> <li>• Oils and grease mixed with washing up water only.</li> </ul>	<ul style="list-style-type: none"> <li>• Bulk quantities of oils and grease cannot be disposed of this way;</li> <li>• Chemicals;</li> <li>• Saltwater.</li> </ul> <p>Containers provided.</p>

## Operator's Water Table

Water Stream	Source	Treatment	Environmental Requirements	Contractor/Other Respons.
Freshwater	<ul style="list-style-type: none"> <li>Desalination plant at the P&amp;O resort.</li> <li>HRS supplied with 5,000 litres per day.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>P&amp;O</li> </ul>
Reclaimed Water	<ul style="list-style-type: none"> <li>The treated water from the sewage treatment</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>Warning signs to be positioned and maintained in regard to non-consumption of rainwater.</li> </ul>	<ul style="list-style-type: none"> <li>P&amp;O</li> </ul>
Sewage water	<ul style="list-style-type: none"> <li>Toilets;</li> <li>Showers;</li> <li>Hand sinks;</li> <li>Kitchen sinks; and</li> <li>Drains.</li> </ul>	<ul style="list-style-type: none"> <li>Pumped to the P&amp;O treatment plant.</li> <li>Sewage water is treated and recycled as reclaimed water.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>P&amp;O</li> </ul>
Laboratory waste water	<ul style="list-style-type: none"> <li>Designated sinks located in the laboratories in the Roche Building and The Great Barrier Reef Building.</li> </ul>	<ul style="list-style-type: none"> <li>???? To be decided ????</li> </ul>	<ul style="list-style-type: none"> <li>???? To be decided ????</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
Grease	<ul style="list-style-type: none"> <li>From grease traps servicing the kitchen and wash down slab.</li> </ul>	<ul style="list-style-type: none"> <li>Grease is pumped from the grease traps into 44 gallon drums.</li> <li>The drums are transported to the mainland for disposal.</li> </ul>	<ul style="list-style-type: none"> <li>The grease trap to be checked.</li> <li>Grease is removed when trap required.</li> </ul>	<ul style="list-style-type: none"> <li>J.J. Richards</li> </ul>
Return sea water	<ul style="list-style-type: none"> <li>Designated sinks located in the laboratories in the Roche Building and The Great Barrier Reef Building.</li> </ul>	<ul style="list-style-type: none"> <li>Pipe return to ocean out fall.</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
Wash down water	<ul style="list-style-type: none"> <li>Water from wash down slab, after passing through the in-line grease trap.</li> </ul>	<ul style="list-style-type: none"> <li>Piped through grease traps;</li> <li>Piped to transpiration trenches for infiltration into the island ground-water system.</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>