# Water Efficiency Management Plan — Pinjarra Hills site

## G *General Business Information*

| **Account Data** | |
|---|---|
| **Account Number** | 1010 3351 8300 004 |
| **Water Service Provider** | Brisbane City Council |
| **Business Name** | The University of Queensland |
| **Address of Site** | 2436 Moggill Road, Pinjarra Hills, 4069 |
| **Telephone** | 336 55797 |
| **Date Account opened** | Not known |
| **Water connection size** | 100 mm – There are 6 connections to the site |
| **Organisation Data** | |
| Site Description | University |
| Organisation Description | Education and Research |
| Industry Sector Name | Education |
| Commercial Activity | Higher Education |
| ANZICC Code | 8431 |
| Commercial Activity Measure | Student (Based on student numbers at Pinjarra Hills this is not the best measure of efficiency for the site. Property & Facilities would like to use students + staff as well as head of stock as the measures) |
| Nominated WEMP Officer | Leigh Burgess |
| **Current Water Source** | |
| Reticulated Potable<br>Dams- stormwater<br>Dams stormwater + small animal effluent | <br>Stormwater is used for irrigation, aquaculture ponds<br>Water is used for irrigation |
| Summary of Water using activities | See section 7 *Description of Activities* |
| **Contact** | |
| Organisation Contact | Mr |
| Given Name (s) | Stuart |
| Surname | Green |
| Job Title | Environmental Engineer |
| Department | Property and Facilities Division |
| Telephone Number | 07 3365 1587 |
| Fax Number | 07 3365 1900 |
| **Water Efficiency Management Policy** | |
| Policy Number (if applicable) | See p.3 of WEMP for Water Management Policy |
| No. of Employees (2006) | 93 staff (including 45 CRC Mining staff) |
| No. of Students (2006) | Approximately 7 students daily |

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

# Water Efficiency Management Plan — Pinjarra Hills site

## *WEMP Submission Form*

| | |
|---|---|
| Name | The University of Queensland |
| ABN | 63942912684 |
| **Contact Details** | |
| Primary Contact for WEMP | Mr Stuart Green |
| Position in Company | Environmental Engineer, Property and Facilities Division |
| Mobile Phone Number | 0411 235 932 |
| WEMP Author | Leigh Burgess |
| Authorisation | Alasdair McClintock |
| Authority's Signature | |
| Position | Director, Property and Facilities Division |
| Date | April 2007 |

### *Checklist*

| Tick all that apply | WEMP Action Plan No. | University WEMP Action Plans | Includes SEQ Water Requirements for | Savings (ML) |
|---|---|---|---|---|
| ☑ | 1 -1 | Buildings Section 1- Potable Water | WEMP Part 1A: Taps & Showers<br>WEMP Part 1B: Toilets & Urinals | 1.1.ML |
| ☑ | 1 - 2 | Buildings Section 2 Alternate Water | No SEQ Water Requirements for this Action Plan | |
| ☑ | 2 | Process and Other Uses Stock watering and research<br>Potable and Alternate Water | WEMP 4 Processes and other water uses | 0.8ML (Approximately) |
| ☑ | 3 | Leak Detection and Maintenance | No SEQ Water Requirements for this Action Plan | 49 ML (It is assumed that this saving can be attributed to leak detection and repairing and more efficient work practices, however it is difficult to assess accurately as comprehensive sub metering is yet to be installed.) |

**50.9ML (78% reduction to June 2008) based on 2006 Figures**

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# Water Management Policy

**Policy Number:** 7.50.4
**Policy Name:** Water Management Policy
**Contact Officer:** Environmental Engineer, Property and Facilities Division
**Date Approved by Senate:** 27/3/2008
**Date of Next Review:** 27/3/2011
**Related Policies:** 7.50.2

## 1. Overview

The University of Queensland acknowledges the importance of water as an essential resource for successfully meeting its operational objectives. The University also realises the need to use this resource responsibly in a manner that is sustainable and complementary to its Environmental Management Policy.

## 2. The Policy

In addressing this statement, the University will:

- Incorporate water efficiency measures into all new and refurbished facilities through best practice in water efficient design, the selection and sizing of plant and equipment, systems and other water infrastructure;
- Maintain all plant and equipment, and control and manage systems and water infrastructure in such a way as to maximise efficiency;
- Monitor and report on the University's water consumption at micro and macro levels and identify and implement opportunities for improved water efficiency;
- Promote awareness of the responsibility for water conservation to faculties, institutes, schools, centres, divisions, sections and individuals;
- Pursue the use of alternate water sources to supplement potable water use;
- Strive to meet our obligations as a member of the Global Community including legislative requirements and minimising environmental impact; and
- Strive to procure, distribute and maintain water resources at the lowest cost while addressing the items above.

The Property and Facilities Division has the additional responsibilities of:

- Acquisition of water;
- Design and construction of new, and maintenance of existing facilities and their fixed water infrastructure;
- Identification, development and implementation of awareness programs and
- Making available funding to support water conservation measures.

**Faculties, Institutes, Schools, Centres and Divisions**

UQ Business Units within their area of influence are encouraged to:

- Purchase water efficient plant and equipment;
- Consume water responsibly and within the South East Queensland Water restrictions;
- Ensure that every individual within the Business Unit is aware of this policy and their responsibilities to conserve water;
- Ensure that any third parties are accountable for the use of any water within The University of Queensland;
- Support, where appropriate, courses and programs, and research of alternate water sources, treatment, plant and equipment, systems and other water infrastructure; and
- Make available funding to support water conservation measures.

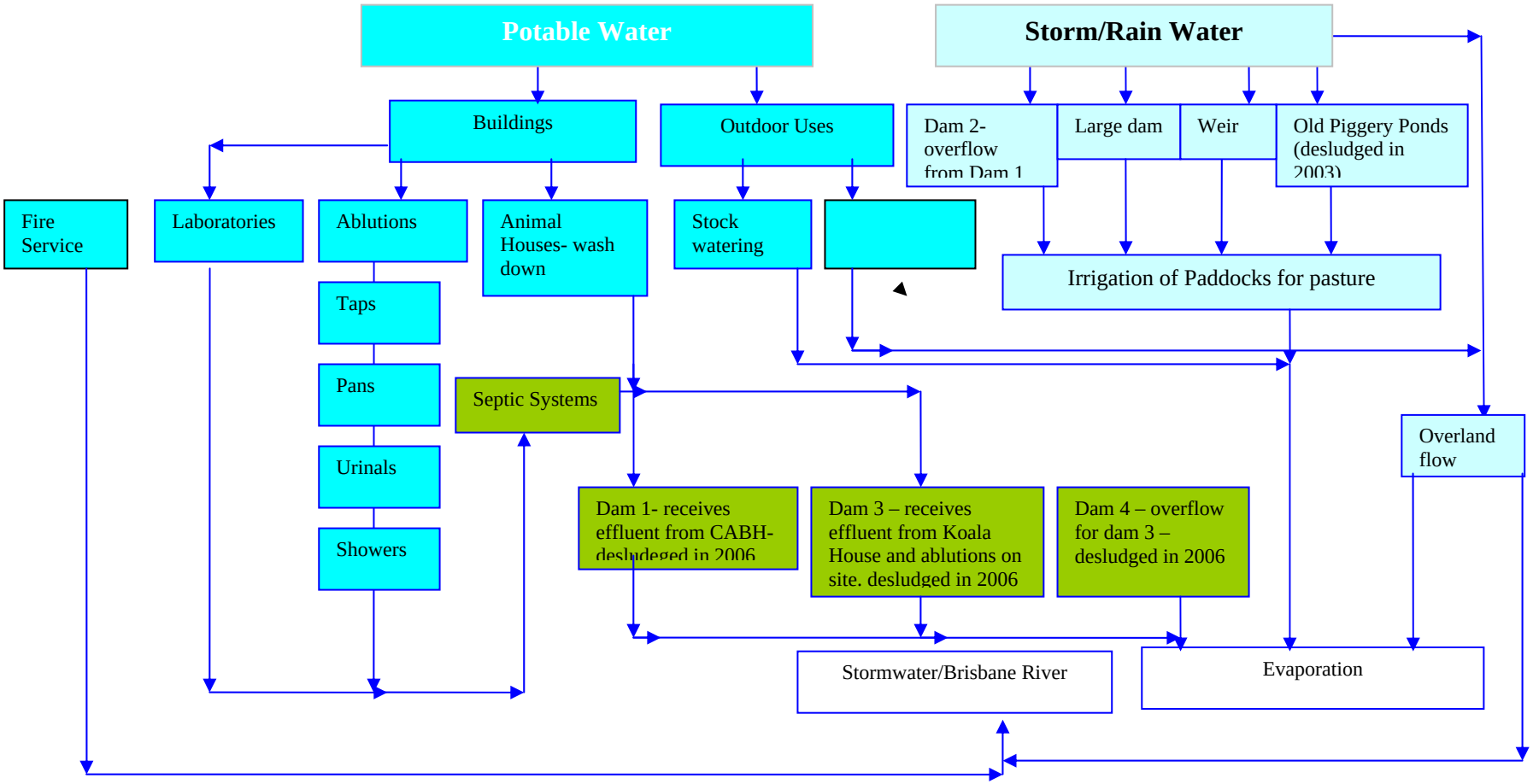
**Individuals**

The University Community is encouraged to:

- Use water in an efficient manner, including the operation of personal equipment and environment;
- Report any water leaks to the Property & Facilities Works Control Centre; and
- Comply with any policies and procedures for water management university wide and in their local area.

# Water Flow Diagram The University of Queensland

# Pinjarra Hills 2006-2007



THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

# Water Efficiency Management Plan — Pinjarra Hills site

## 1. Introduction

This document is the Water Efficiency Management Plan (WEMP) for The University of Queensland Pinjarra Hills site. The Action Plans in section 9.0 of this document outline water efficiency measures to be progressively implemented by the University. The plan complements the University's Environmental Management System (EMS).

The Water Efficiency Management Plan for the 2006/2007 year is the 1st edition of the plan. The Utilities Management Committee (water) has been operating since May 2002 at the St Lucia campus. Total water consumption at Pinjarra Hills site has been recorded since 1999. From 2007 all meter data will be recorded and monitored. The data and water efficiency initiatives at the Pinjarra Hills site will be monitored through the Utilities Management Committee (water).

The targets listed in the plan directly relate to the EMS objectives and are measured using Key Performance Indicators (KPI's). Targets and actions documented in the WEMP Action Plans are measured and monitored through the Utilities Management Committee (UMC).

The University recognises its responsibility to the community and to the environment and has allocated resources to ensure that water is managed in an efficient and sustainable manner. The University has an Environmental Policy endorsed and signed by the Vice Chancellor.

### 1.1 *Background*

The University Pinjarra Hills site has dams, aquaculture ponds, animal units, mining activity, teaching and research facilities, and a main office building.

Areas within the University that wish to operate outside the SEQ Water Restrictions must seek permission from Brisbane City Council and will be required to submit a Water Efficiency Management Plan specific to the area of operation. Relevant permission signs will be required to be displayed. A template for the Water Efficiency Management Plan is available on the EMS website http://www.pf.uq.edu.au/html .

All contractors who use the University's water supply (regardless of source) for any project or job are required to fill in a Water Efficiency Management Plan and submit to the Project Manager with a copy to the Environmental Engineer. A template for the Water Efficiency Management Plan is available on the EMS website at www.pf.uq.edu.au/ems.html or at the end of this document.

### 1.2 *WEMP Purpose*

The WEMP is written to ensure that water at The University of Queensland Pinjarra Hills site is used in an efficient manner and that strategies are implemented to ensure a reduction in potable water consumption in accordance with The University of Queensland Water Management Policy and Brisbane City Council and South East Queensland Guidelines. The University will;

- Ensure that all environmental legislation and regulations are met and ensure all relevant approvals are gained;

- Regulate water use through auditing and monitoring to identify any potential problems with the network ; and
- Apply “Best Environmental Practices” in the overall management of water.

## 1.3 *WEMP Scope*

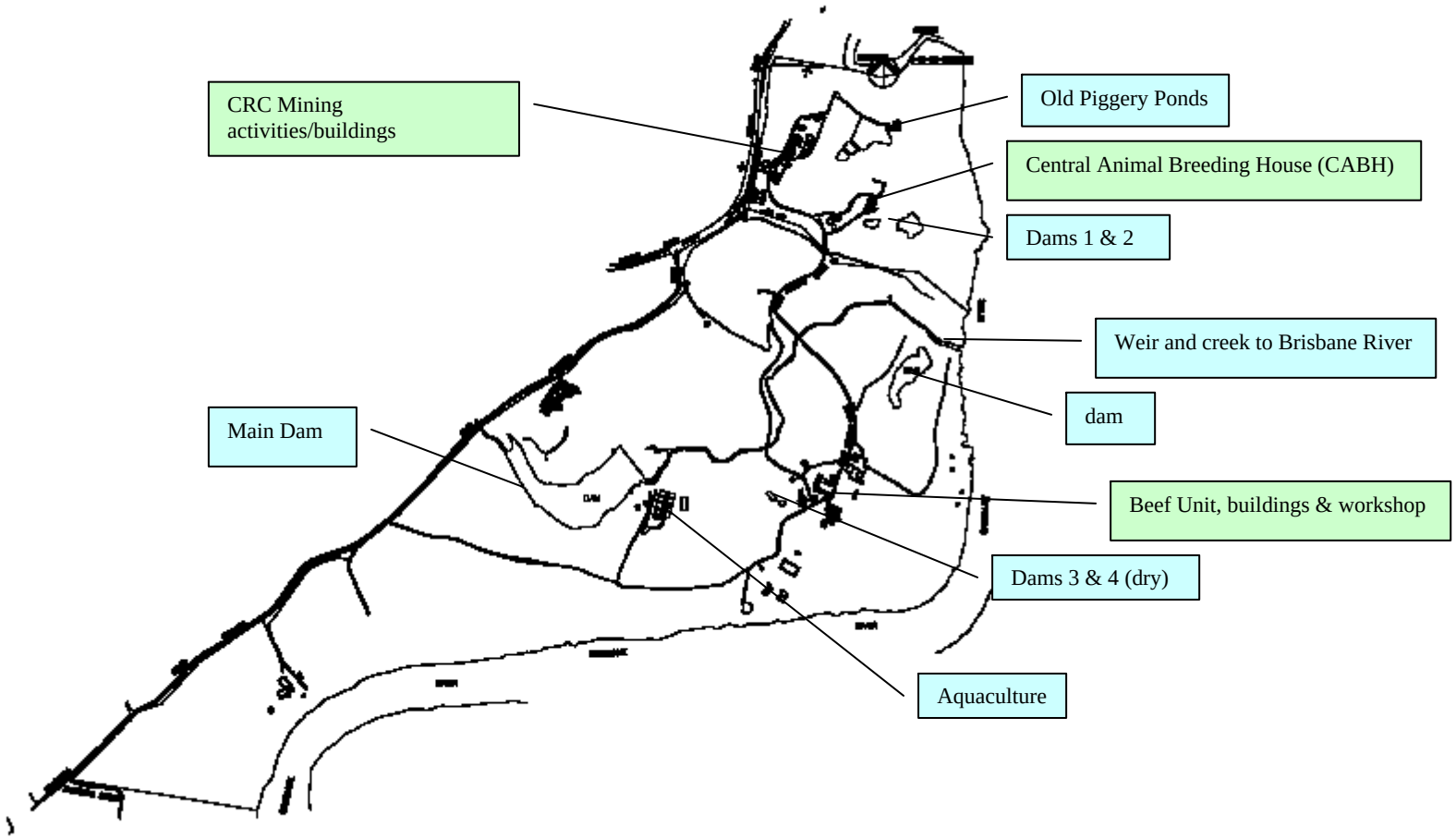
The WEMP scope is the University of Queensland Pinjarra Hills site and considers all of the areas listed in the table below;

The University of Queensland has developed WEMP action plans based on site areas where water is used. Uses identified by SEQ Water are included in the WEMP action plans listed in table 1.0.

**Table 1.0 WEMP Action Plans**

| WEMP ACTION PLAN | AREA COVERED | USES COVERED- (including SEQ Water requirements) |
|---|---|---|
| WEMP Action Plan No. 1. Section 1 | Buildings – Potable Water | Taps and showers<br>Toilets and Urinals<br>Animal House Wash Down |
| WEMP Action plan No. 1 Section 2 | Buildings –Alternate Water | Rain and Storm water harvesting for use in buildings as wash down water |
| WEMP Action Plan No.2 Section 1 | Processes and other Water Uses- Stock watering & Research | Potable, rain and storm water for stock watering. |
| WEMP Action Plan No. 3 | Leak detection and maintenance | Potable water reduction through leak detection and maintenance |

**Figure 1.0 The University of Queensland Pinjarra Hills Site Plan**



## 1.4 *Goals*

Provision of water, associated infrastructure and monitoring of consumption at the University of Queensland is the responsibility of the Property and Facilities Division. It is the goal of The University of Queensland to determine what the baseline water consumption is at the site based on the current 2007 activities.

Late in 2006, a significant leak was detected at the site and rectified. It is unknown how long the leak was there. Water consumption at the site has decreased significantly since the leak was repaired. However, several factors, undertaken prior to the leak being repaired, mean it is impossible to determine the base consumption (i.e. consumption prior to any water conservation measures being taken without the leak) on which to base a 25% reduction. These factors include:

- Retrofitting of basins, taps, showers and pans (completed in May 2007)
- Change to more efficient washing down practices for animal houses.
- Identification and rectification of leaks.

A reduction in water consumption of 77% was achieved from 2006 to 2007.

As the three measures dot pointed above constitute part of the WEMP then the improvement in consumption (leak detection and rectification included) can be based on the metered levels of 2006. Though this is not the most accurate representation it does provide a basis on which to base the WEMP as required by the current tools and criteria.

It will be the University's goal for 2008 to reduce consumption further by installing water tanks at the beef unit to replace potable water for washing down and supplementing stock watering at the same facility. The savings for this project are still to be calculated when catchment areas are optimised and tanks sized accordingly. The investigations and the installation are scheduled to occur before June 2008.

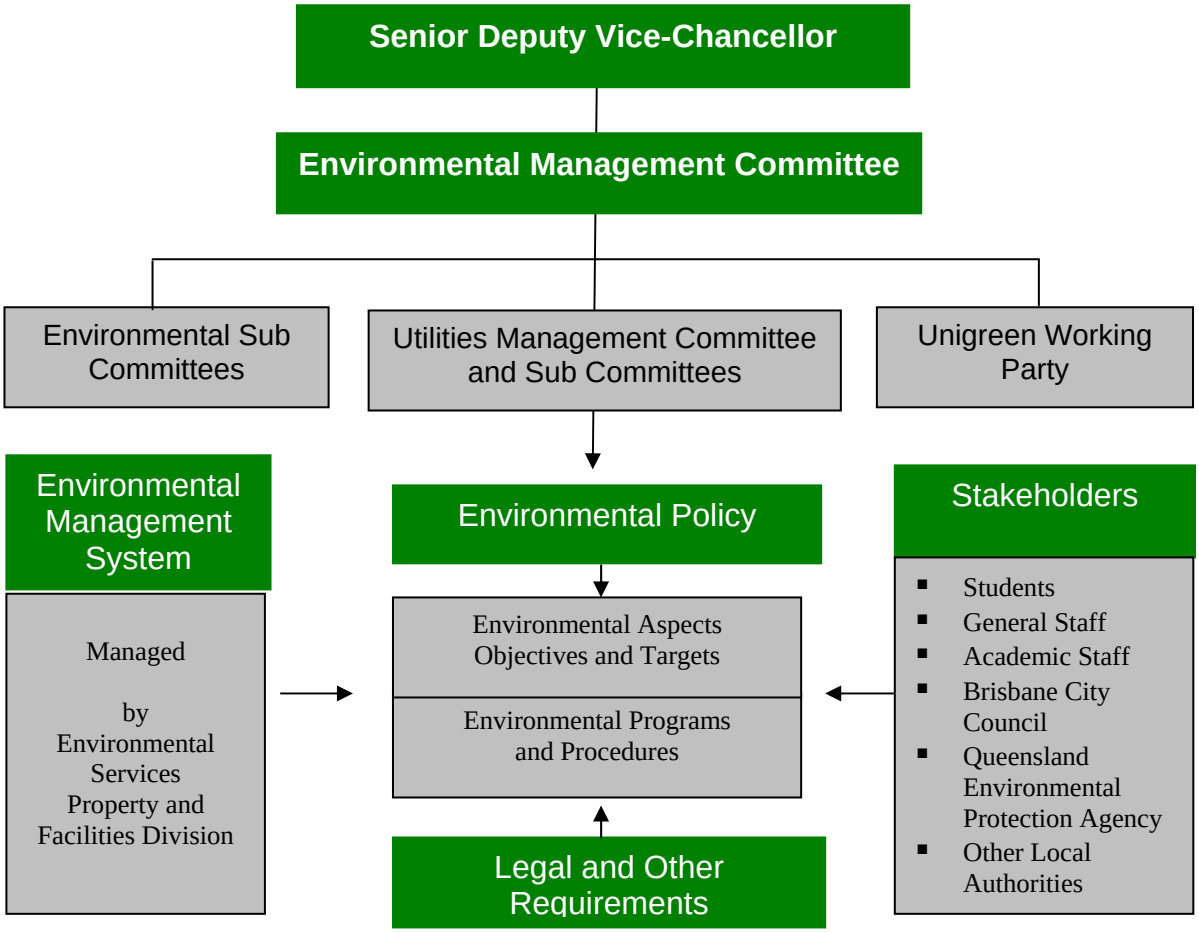
# 2. Management Review

## 2.1 *Committee Roles & Responsibilities*

The Environmental Management Committee (EMC) has overall responsibility for the implementation of The University of Queensland Environmental Management System (EMS) and other environmental activities. Composition of the committee includes Senior Deputy Vice Chancellor, four Executive Deans, Director; Occupational Health & Safety & Property and Facilities Division representatives. There are environmental management sub committees at St Lucia and Gatton which are responsible for developing awareness of the EMS at Faculty and School levels and monitoring of EMS objectives and targets and training programs.

The Utilities Management Committee and Sub Committees are responsible for utilities management including monitoring water and energy projects. The composition of the committees includes Property and Facilities representatives from Engineering and Operations Sections and a representative from Finance and Business Services. The University also has a Unigreen Working Party which is responsible for promoting environmental management issues to and from the University community as well as external stakeholders.

**Figure 2.0 Committee Structure**



## 2.2 *Water Management and Resources*

Property & Facilities Division has made water management a priority at The University of Queensland with the following measures being implemented and resources being allocated during 2006 and 2007;

- A Water Project Officer was appointed to ensure that compliance with SEQ water restrictions are achieved by the specified dates and to manage specific water efficiency projects for the University;
- A Water Management Policy was developed;
- Water awareness is now included in contractor inductions;
- A WEMP for contractors was developed and is now being used by contractors using UQ water;
- Apprentice plumbers have been employed to expedite the retrofit program;
- Additional funding has been made available for compliance with water restrictions and implementation of WEMP initiatives.

***Brisbane Water Rating***

Brisbane water uses a diagnostic tool to evaluate the management systems of the top water users. A report which combines the outcomes and the benchmarking of the results with the industry sector (the University has been classified as commercial for the use of this tool) found that the University of Queensland currently achieves a rating of two out of five for its water management systems. The main areas for improvement were identified as;

- Understanding our performance and opportunities;
- Demonstrated corporate commitment;
- Operating procedures;
- Reporting, feedback and control systems.

To address these issues the University will;

- Continue to meter and monitor water consumption and use the data to identify opportunities for reduction in all areas;
- Submit the Water Management Policy to the Environmental Management Committee with the intent to get full Senate approval and the Vice Chancellors signature;
- Develop Operating Procedures for Water Management;
- Provide detailed reports on water management projects to the Utilities Management Committee and the Environmental Management Committee;
- Provide appropriate feedback to the University Community on water consumption and progress of the WEMP.

## 2.3 *Financing WEMP Actions*

The actions outlined in the WEMP Action Plans will be funded from various sources to ensure that they can be implemented. The majority of the funding for water management at the University of Queensland is the Property and Facilities Division. The Finance and Business Services Section of the University is responsible for paying the utility bills and has in the past made extra funding available to Property and Facilities Division for water efficiency initiatives. This source of funding will continue to be sought. Other sources of funding from the University include the University Improvement Fund and other Works Programs.

Funding opportunities are sometimes gained from Government Grants and the Property and Facilities Division has received a Community Water Grant for $50,000. The funding is currently being used to help retrofit buildings with water saving devices. These funding sources will continue to be sought. The University was informed that it is illegible for the BWEMP funding available through Brisbane City Council.

## 2.4 *Stakeholder Inclusion*

The University of Queensland Pinjarra Hills site is an educational facility with approximately 48 University staff and 45 Researchers from CRC Mining. Vet Students attend the site as required for practical classes. The University recognises the importance of being a community leader in water efficiency and has put strategies in place to achieve the goals and targets that have been set. Property and Facilities Division realises the importance of stakeholder involvement in the management of water on campus and has identified key stakeholders across the campus and held a water forum to gain input into how to achieve efficiencies in all areas. Stakeholders in water management at the University include staff and students as well as the larger community.

## 2.5 *Awareness & Incentives*

### 2.5.1 Unigreen

The Property & Facilities Division is responsible for the delivery of awareness programs through the Unigreen Working Party. A Unigreen Training and Awareness Management Plan has been developed to deliver a more comprehensive and effective training and awareness program in 2007.

The Training and Awareness Management Plan includes improving awareness of water efficiency, expanding the Green Office Program which includes water efficiency and promoting the Water Efficiency Management Plan to the University community. Water awareness materials are available to Schools and Centres by download at www.pf.uq.edu.au/unigreen.html. Schools and Centres are encouraged to print section 3, post it on message boards and send to colleagues.

## 3. Improving Water Efficiency in Schools and Centres

The following strategies when implemented will help to ensure water efficiency at the University of Queensland continues to improve. Reducing water consumption helps to ensure that the University can continue to provide a sustainable working, teaching, research and recreational environment for staff, students and the local community.

- Include Water Awareness in Staff and Student Training &/or inductions
- Be aware of current water restrictions

  See www.qwc.qld.gov.au for more information
- Report water leaks to Property & Facilities Division Works Control Centre on 52222 or email wcc@pf.uq.edu.au
- Be Water Wise and encourage others to be Water Wise too
- Ensure that new equipment is water efficient
- Replace old inefficient technologies with new water efficient technology
- When planning a new project, ensure that water efficiency is considered
- Download water awareness posters from www.pf.uq.edu.au/unigreen.html & post on notice boards
- Become a Green Office Representative and help to improve environmental awareness in your area
- Contact Environmental Service Section- Property & Facilities Division to find out how much water your building or campus uses

**Contacts:** Environmental Services Section, Property & Facilities Division Unigreen@pf.uq.edu.au

Environmental Engineer 51587, Environmental Project Officer 57580,

Environmental Coordinator 52076

# 4. WEMP Management

## 4.1 *Review and Update of the WEMP*

The WEMP will be reviewed as required to ensure that it addresses issues and changes in legislation, policies, guidelines and other requirements. This will be the responsibility of the Property and Facilities Division.

The WEMP has been developed as a document that will undergo periodic change in response to changes in the site operation, environmental legislation, water restrictions and/or environmental management procedures and policies of the University of Queensland.

Awareness of these changes and the requirement to update for superseded legislation and policy is the responsibility of the Property and Facilities Division.

## 4.2 *Emergency Situations*

Emergency situations other than what is addressed in this WEMP are addressed using the emergency procedure listed in the Environmental Contingency program within the University's EMS. The list of emergency contacts is also shown in the Contingency program. It can be accessed at **http://www.pf.uq.edu.au/ems.html**

## 4.3 *Reporting*

It is important that all personnel are familiar with the procedures for the reporting of issues that may result in environmental degradation whether the incident has occurred or may occur in the future. An environmental incident notification form is available on the EMS website **www.pf.uq.edu.au/ems.html** for the recording of such events. The issue is to be investigated with corrective actions assigned and implemented.

To report leaks please contact the Works Control Centre at **wcc@pf.uq.edu.au** or telephone 3365- 2222.

## 4.4 *Complaints*

Complaints can be registered on the incident form discussed in 4.3. The complaint is then to be treated as an incident and investigated with corrective actions provided and implemented.

## 4.5 *Responsibilities*

The Environmental Engineer (EE) of the Property and Facilities Division oversees the requirements of the university's environmental responsibilities and will oversee implementation of the WEMP.

The Environmental Engineer:
(1) Ensures that the plan is established and implemented;
(2) Reports on its performance over time; and
(3) Works with others to modify the plan as needed.

## 4.6 *Enquiries*

Any queries about the water management should be directed to;

| **Area** | **Contact Person** | **Contact Number** |
|---|---|---|
| Overall Operations | Environmental Engineer | 07 336 51587 |
| Water Efficiency Management Plan | Environmental Project Officer | 07 336 57580 |
| Awareness & Training | Environmental Coordinator | 07 3365 2076 |
| Farm Manager | Tom Connolly | 07 3365 5797/55715 |

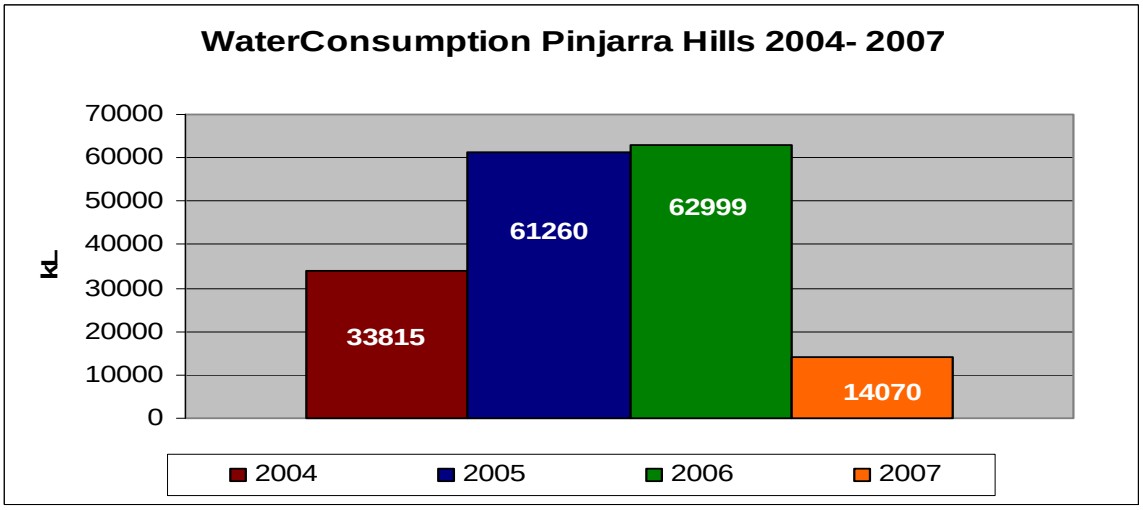
# 5. Water Consumption Audit

## 5.1 *Potable Water Consumption*

The graph in Figure 3.0 shows the water consumption for the period 2004 to 2007. Pinjarra Hills water meters are read quarterly by Brisbane Water.

It is difficult without sub metering in place to determine the exact cause for the variation in consumption over the years. It is assumed that the increase in consumption experienced in the 2006 year was due to a water leak in one of the pipes at the Farm, but there may have been other causes. The fault was picked up by water meter readings and rectified as soon as it was isolated. The Pinjarra Hills Farm site is used for research and education. Water requirements for research projects will be varied both in quality and quantity required. The nature of the University site makes it difficult to determine a normal consumption pattern over the years. One year there may be numerous projects being conducted and at other times projects can be limited. Stock numbers are also highly variable and Pinjarra Hills Farm is used for grazing livestock from the University's Gatton Campus.

**Figure 3.0 Annual Water Consumption The University of Queensland Pinjarra Hills Site**




### 5.1.1 Water Consumption Breakdown

An accurate breakdown of water consumption is not currently available for the Pinjarra Hills site however end use consumption has been calculated for stock watering, toilets, taps, basins, showers, pans and urinals based on certain assumptions. A meter was placed at CRC Mining in June of 2007 and consumption for the year is estimated based on three months of meter readings. The following table lists all end uses, the current consumption, water saving actions and expected water savings after the actions are implemented. All actions are listed in the Action Plans in section 9.0 of this document with expected time frames and responsibilities.

**Table 2.0 End Uses at Pinjarra Hills Site 2007**

| End Uses | | | ML/yr | % of total (13.8ML) | Water Reduction Actions | Expected Annual Savings (ML) |
|---|---|---|---|---|---|---|
| **Taps, Basins, Showers Pans and Urinals** | The water use and savings have been calculated individually<br>See Appendix 1A and 1B for assumptions used for calculations. | **hand basins**<br>**Showers**<br>**taps**<br>**pans**<br>**urinals** | .13<br>1.20<br>.13<br>.14<br>.23 | .94<br>8.7<br>.94<br>1<br>1.7<br>total = 13.28% | Retrofit existing pans, tap & shower fixtures with water saving alternatives compliant with qwc guidelines. | .11<br>.74<br>.09<br>.09<br>.10<br>**Total Savings 1.1ML annually** |
| **Wash down of animal facilities** (it is assumed the usage requirement for washing down would be over and above the normal water consumption from taps included above) | Central Animal Breeding House (CABH)<br>Koala Unit<br>Quail house<br>Beef Unit<br>Equine Unit<br>Sheep Unit<br>(Consumption for wash down is assumed based on the total expected consumption for 2007 minus all other water use calculations in this table) | **Quail House CABH**<br>**Koala Unit**<br>**Beef Unit**<br>**Equine Unit**<br>**Sheep Unit** | 1.65 | 11.88 | A rainwater tank will be installed at the Central Animal Breeding House as part of a scheduled roof replacement project in 2008. There are currently no animals at this facility. | Harvesting potential for the CABH roof catchment is approximately **0.3ML annually** |
| **Stock Watering** | Beef Unit<br>Equine Unit<br>Sheep Unit<br>See Appendix 3 for assumptions used for calculations | **Beef Unit**<br>**Equine unit**<br>**Sheep Unit** | 7.9<br>.8<br>.2 | 56.9<br>5.76<br>2.16 | Options are being investigated for suppling water troughs with rainwater where feasible. | Harvesting potential for the Beef Unit Roof catchment is approximately **0.5ML annually** |
| **Research Activities** | CRC Mining - Drilling Rig<br>**Meter Number**<br>ARAD – WST-2-06-12028 | **CRC Mining – Drilling Rig** | 1.4 | 10 | Research groups are encouraged to source alternate sources of water and to recycle where possible. | |
| **Fire Service** | | | .0006ML/yr | | | |

## 5.1.2 Water Consumption Predictions

It is very difficult to predict water consumption for the Pinjarra Hills site as all parameters are variable. Table 3.0 shows actual water consumption from 2004 to 2007. It is not yet known if these figures are representative of normal consumption for the site. This will be better determined as more consumption data is collected. Figure 4.0 shows the approximate breakdown of consumption at the site while figure five shows the expected savings to be achieved from the actions outlined in section 9.0 of this WEMP.

**Table 3.0 Water Consumption and Predictions Pinjarra Hills Site 2007-2010**

| **GFA** | **15392** | **15392** | **15392** | **15392** |
|---|---|---|---|---|
| **Billing Period** | **2007 Actuals** | **2008** | **2009** | **2010** |
| | 4034 | *4797* | *3505* | *2371* |
| | 2599 | *6524* | *5083* | *3812* |
| | 3779 | *4956* | *3758* | *2704* |
| | 3658 | *3906* | *2668* | *1586* |
| **kL** | **14070** | ***20182*** | ***15014*** | ***10473*** |
| **% Change** | **-77.67** | **43.44** | **-25.61** | **-30.24** |
| **kL/GFA** | **0.91** | **1.31** | **0.98** | **0.68** |
| **kL/Student** | **2010.00** | **2883.20** | **2144.88** | **1496.20** |
| **kL/student + staff** | **140.70** | **201.82** | **150.14** | **104.73** |

*Note: GFA= Gross Floor Area kL= Kilolitres

**Figure 4.0 Breakdown of Water Consumption at Pinjarra Hills Site 2007**

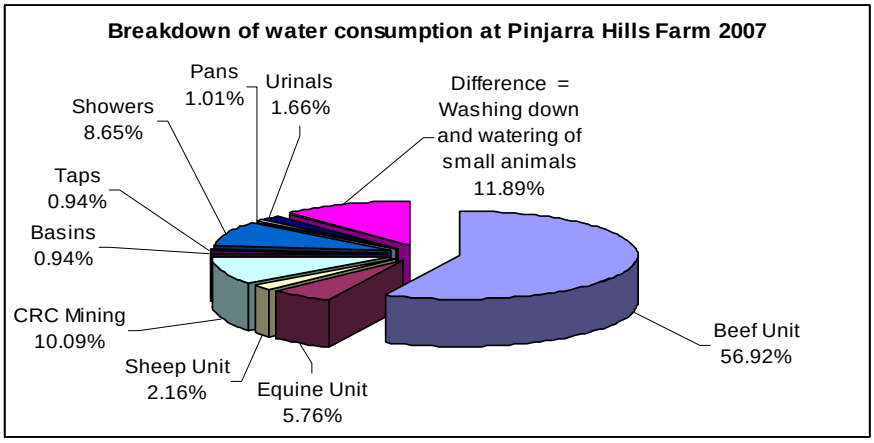
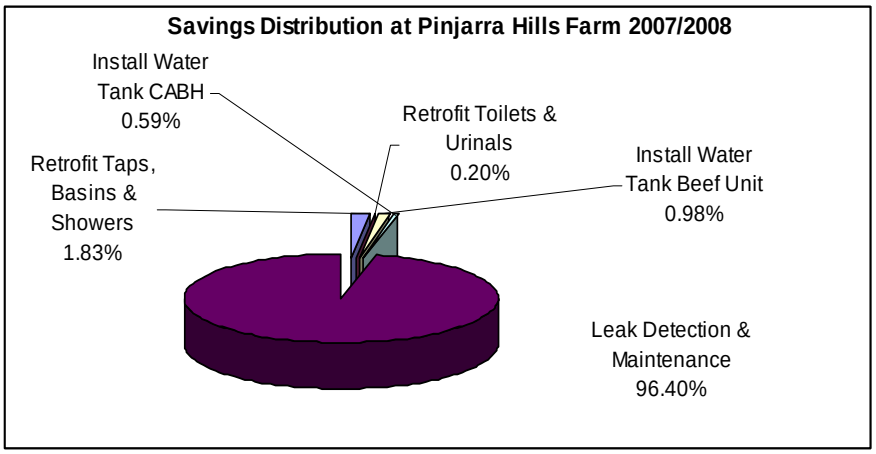



**Figure 5.0 Predicted reductions resulting from actions listed in action plans**




### 5.1.3 WEMP Compliance Audits

Property and Facilities Division have conducted audits in buildings on all sites and developed spreadsheets with detailed information on current fittings and fixtures, current water consumption and requirements for new/updated fittings and fixtures, expected water savings and costs of installation. The audit was carried out by Property & Facilities staff and plumbing contractors and the calculations of expected savings to be achieved by retrofitting all showers, taps, hand basins, toilets and urinals (WEMP 1A & 1B) can be found in Appendix 1.

There are no cooling towers at the Pinjarra Hills site.

## 5.2 *Alternate Water Consumption*

### 5.2.1 Rain and Storm Water

There are seven dams at the Pinjarra Hills site and a weir, some of which are used for stormwater harvesting and reuse and some are used to collect animal effluent from buildings and animal wash down areas. The smaller dams on the site have been desludged and are currently dry. It is currently not known how much water from the dams is irrigated however Property and Facilities Division will liaise with farm management to record pump run times and flow rates so that we can calculate water consumption for pastures.

The main stormwater catchment is used for irrigating the paddocks for pasture for stock feed. Rainwater tanks are being installed at the beef unit where roof area is available for the capture of the water. The rainwater will be used for washing out the beef unit area floors and for stock watering in the area.

### 5.2.2 Fire Testing

Pinjarra Hills has six hydrants throughout the site. These are tested every six months for flow. The contractor will fit a stand pipe and open the valve until water flows. This is approximately five to ten seconds for each outlet. There are six hydrants at the site.

At a flow rate of 10 litres per second, it is estimated that about 75 litres maximum would be used at each hydrant per test.

### 5.2.3 Leak Detection

A leak detection program has been established in 2007 and from September all water meters will be read on a monthly basis. There is currently one sub-meter at the site for CRC mining research activities. There are six city council meters on the site also which are read by council quarterly.

Because the sites water consumption is likely to be variable due to differences in stock numbers and research activities a monthly regime of checking the farm for water leaks has been implemented. This involves the Farm Manager using a vehicle or motorbike to access and physically check all areas of the farm.

# 6. Monitoring, Measuring and Reporting

## 6.1 *Monitoring*

There are six council connections to the Pinjarra Hills site which are read by council quarterly. A sub metering program has been developed and will be implemented over several years. Approximately 12 meters will form stage one of the program. A meter reading procedure and program has been implemented and water meters will be read on a monthly basis from September 2007. Metering data will be provided in future WEMP's.

## 6.2 *Measuring*

The data collected by P&F staff is entered into a spreadsheet by the Environmental Project Officer. The spreadsheet has been designed to highlight entries outside a pre-determined margin of error and generate graphs for each meter.

## 6.3 *Reporting*

Any anomalies in the data collected by P&F staff are discussed with the Pinjarra Hills Maintenance Supervisor and reported to the Works Control Centre where necessary so that work orders can be generated to ensure that any problems are followed up. If the problem is ongoing it is reported to the Utilities Management Committee (water) and if required to the Utilities Management Committee for further action. Leaks will be treated as a priority and fixed as soon as possible.

The Utilities Management Committee (water) meets monthly and discusses water management. Results of monitoring and measuring are reported to this committee. The committee reports to the Utilities Management Committee bi-monthly. Representatives of the committees are from the Property and Facilities Division and Finance and Business Services Section. The Utilities Management Committee reports to the Environmental Management Committee quarterly. An Environmental Report is generated annually which includes a report on activities of the Utilities Management Committees. For further information about the Environmental Management System and to view the report see www.pf.uq.edu.au/ems.html

## 6.4 *Benchmarking/ Commercial Activity Measure*

The University of Queensland is a member of the Tertiary Education Facilities Management Association (TEFMA). TEFMA conduct a benchmarking survey annually for all members which looks at all aspects of facilities management including water consumption. Key performance indicators such as kilolitres/gross floor area/annum (kL/GFA) and kL/EFTSU/annum (Equivalent full time student units) are recorded and the results are sent out to members so that they can benchmark against each other.

Brisbane Water has recommended students as the commercial activity measure (CAM) that the higher education sector should adopt for reporting purposes. The Pinjarra Hills site has an average of 7 students attending the site daily and 93 staff. Based on our current calculations stock are the largest users of water at the site and none of these measures take stock into account. The University

proposes therefore that the CAM for Pinjarra Hills be head as for the Agriculture, Forestry and Fishing Industry.



# 7. Description of Activities- Performance & Opportunity Assessment

The current Pinjarra Hills site operations are described below. The aim of reviewing these activities is to determine potential impacts and ensure that management strategies and corresponding action plans are put in place to manage them. Research Projects and activities at Pinjarra Hills are usually short term and as a result a constant review of activities is required. The University leases some of the areas at the Pinjarra Hills site to other organisations such as Cooperative Research Centres and Government Organisations for research. These research activities are usually under the control of the individual organisation and in these cases, water consumption will be the responsibility of the organisation.

## 7.1 *Buildings*

### 7.1.1 Toilets, Urinals, Taps and Showers

Pinjarra Hills site has a small number of buildings that include offices, laboratories and some housing facilities.

Flow restrictors have been placed on all hand basins and showerheads have been replaced with water efficient alternatives.

The water from the reticulated (town) supply system is not permitted to be used for bathroom, laundry, ablution or kitchen fittings except where:

- in relation to the premises it can be demonstrated that the internal water fittings on the premises comply with the following water efficiency standards being:
    - all the taps are water efficient taps; and
    - all the showerheads are water efficient showerheads; and
    - all the trigger sprays are water efficient trigger sprays;

All toilets at the Pinjarra Hills site have 6/3 flush cisterns in place and the urinals will be retrofitted to comply with water restrictions. Hand basins are being retrofitted with water efficient aerators which will reduce flow to 3L/minute.

## 7.2 *Animal Facilities*

The University has a number of animal facilities at Pinjarra Hills site for teaching and research activities including:

- The Beef Unit utilises 10 buildings and associated storage sheds and class rooms for teaching purposes and administrative offices. There are approximately 310 head kept on site. The crush area is hosed out twice a week in accordance with Brisbane City Council requirements. As a guide to drinking water requirements, a 450 kg beast requires about 35 L/day in cold weather

and 70 L/day in hot weather.(*Department of Primary Industries and Fisheries, Beef cattle feedlot series: Site selection accessed at http://www2.dpi.qld.gov.au/environment/5270.html)*

- The Equine Unit utilises 3 buildings, as well as horse yards and associated facilities such as stables and isolation yards. There are approximately 33 head on site.
- The Koala Unit utilises 1 building. Animal droppings are hosed down into drains and sent to the waste ponds.
- The Sheep Unit utilises two buildings. There are approximately 40 sheep on site. The yards are hosed out weekly.
- Quails are housed in 1 building. Approximately 300 quail are currently housed.
- The Central Animal Breeding House Unit is located in 2 buildings. All cages are washed periodically using a cage-wash facility. The wash water is recycled and then discharged to effluent ponds with some minor dilution using fresh water. There is currently no activity in the CABH.

## 7.3 *PJ Aquatic Research Station*

The PJ Aquatic Research Station contains seven freshwater ponds – six being approximately 20 m long by 5 m wide, and one 50 m long by 8 m wide – all up to 2 metres deep. The ponds are clay lined and seepage is small. Fresh water is supplied from the adjacent dam located immediately to the west of the facility, identified in Figure 1.0 as the main dam.

## 7.4 *CRC Mining*

The CRC Mining facility operates in a number of buildings on site. With 40 staff members on site, research projects range from Smart Longwalls, Coal and Gas Systems and Digging Technologies, through to Planning and Production Control.

The Drilling Rig uses potable water in a high pressure water pump which becomes wastewater going into a 10000 litre tank. The waste is mainly made up of coal and lime with the solids settling prior to the wastewater being discharged to land.

CRC Mining is responsible for water consumption in their areas of operations. Property & Facilities Division has installed a meter on the activities in this area to monitor consumption.

## 7.5 *High temperature Incinerator*

The high temperature incinerator uses gas as its energy source. The ash and condensate generated by the incinerator is collected by a licensed waste removalist. The operation is licensed by the EPA and licensed personnel have been trained to operate the facility.

## 7.6 *Site Workshop*

The site workshop is located in one building. The facility is used for welding, oxy cutting, general workshop activities (eg drilling, cutting), and the minor storage of cleaning materials. All mechanical repairs are undertaken at this facility. Liquid waste from the sink is piped (in conjunction with other local building sink wastes) to the northern dams.

## 7.7 *Dams and Ponds*

### 7.7.1 Stormwater Dam

A stormwater dam is located in the south-western section of the site. The dam collects stormwater from the local catchment areas to the north and west. A concrete weir is located at the downstream

location of the dam. Overflow from the dam passes over the weir and heads downstream before ultimately discharging into the Brisbane River. The dam is used to irrigate the local pastures and to supply water to the Aquatic Research Station. In order to irrigate the local pastures, a 300mm deep open ditch has been established across the southern and south-eastern sections of the site. The trench is flooded by pumping water from the dam (using pump station 260) and in turn overflows downhill irrigating local paddocks.

Pump station unit 154 is used to pump water to the pastures located to the north of the site. The system operates by means of pumping water through an underground main which sprays water through numerous risers to irrigate the pastures. As can be seen in Figure 2, the pump station is located on the inlet to the creek which discharges into the Brisbane River. As the creek is a tidal creek, and in order to prevent the fresh water becoming contaminated with salty river water, an earthen dam barrier has been placed across the creek mouth fresh water supply.

### 7.7.2 Northern Effluent Ponds

There are two sets of effluent ponds located at the northern end of the site. The first consists of two ponds located to the south of the Central Animal Breeding House (CABH) unit. This pond captures CABH waste water. This pond does not overflow under normal circumstances due to the low volume of effluent reportedly sent to this pond. In the event that a significant rain event or otherwise causes the pond to overflow, then the overflow would enter the larger second pond located further down gradient. This second pond normally collects stormwater from the local catchment area and is used as a water supply for stock grazing in the surrounding paddocks.

Further to the north, a three tier dam arrangement exists. The upgradient (smallest) dam acted as a settling dam for effluent received from the Piggery. The piggery has not been in operation for a number of years and the smaller two dams have been desludged and stormwater is diverted around these dams into the larger dam at the bottom. Pump station (site 141) is used to pump water from the dam to the underground water main system (described earlier) for the irrigation of surrounding pastures.

## 7.8 *Landscape and Lawns*

The University has minimal landscaped gardens and lawns around the site.

Potable water is not permitted to be used for the watering of newly established gardens unless in strict accordance with current water restrction guidelines.

All new landscaping should incorporate water sensitive design.

### 7.8.1 Cleaning

Property and Facilities Cleaning Section is responsible for ensuring that the University is cleaned to appropriate standards. There are minimal requirements for external cleaning at Pinjarra Hills.

Water restrictions are in place for external cleaning and cleaners and cleaning contractors should be familiar with current water restriction guidelines.

Cleaning contractors will be required to submit a Water Efficiency Management Plan (see Appendix 2) before undertaking any work. Alternative water sources should be used where feasible.

# *8.* Legal Requirements

## 8.1 *Environmental Aspects, Potential Impacts and Assessment*

An impact assessment has been carried out on those activities listed in Section 7.The outcome is shown in Table 4.0 below.

**Table 4.0 Environmental Aspects, Potential Impacts and Assessment**

| Activity/Description | Aspects | Potential Impact | Assessment |
|---|---|---|---|
| Particular activity that could result in an on-site or off-site environmental impact | A listing of the elements of the site's activities which could have an adverse impact on the environment | Impacts refer to the potential change that could take place in the environment as a result of the aspects | The determination of any actual or likely environmental impact as identified from monitoring or complaints received by the site |
| Building Operation | Taps, Basins, Showers Pans and Urinals | Potential unnecessary loss of a natural resource. | Water efficient pans, urinals, taps and showerheads are being installed. Storm water is being investigated to be harvested in some areas for use in cisterns and urinals. |
| | Animal Houses | Potential unnecessary loss of a natural resource. | Rainwater tanks are being installed in some areas to replace potable water use. All areas are to comply with water restrictions guidelines. |
| | Cleaning activities | Potential unnecessary loss of a natural resource | Contractors are required to submit a WEMP before starting any work. Contractor inductions include water efficiency. Alternate water should be used where available. |
| Outdoor Uses | Stock Watering | Potential unnecessary loss of a natural resource | Options are being investigated for suppling water troughs with rainwater where feasible. |
| Research | Research Activities | Potential unnecessary loss of a natural resource | Research groups are encouraged to source alternate sources of water and to recycle where possible. |

The table above lists the aspects specific to water consumption at the University of Queensland Pinjarra Hills site. The Environmental Engineer records all aspects and impacts for the University of Queensland and keeps a register. It is the responsibility of the Environmental Engineer to ensure that all staff are aware of current water restriction guidelines.

## 9. WEMP Action Plans

The WEMP Action Plans are designed to address potential impacts. The WEMP & its Action Plans complement the University of Queensland EMS which can be accessed at **http://www.pf.uq.edu.au/ems.html**

The following lists environmental issues that require WEMP Action Plans based upon the potential impacts of the activities outlined in Section 7;

- Buildings (internal)
  - Potable Water
  - Alternate Water
- Processes and Other Water Uses - Outdoor areas and Research
  - Potable Water
  - Alternate Water
- Leak detection and Maintenance

To ensure the objectives of this WEMP are achieved, the WEMP Action Plans will be established as follows based upon the identification of potential impacts established in Section 8.

- Performance Objectives;
- Management Strategies;
- Water Saving Actions;
- Performance Indicators;
- Monitoring and Reporting;
- Corrective Actions.

## 9.1 *Buildings*

### 9.1.1 Potable Water

This management plan is designed to help reduce water consumption in buildings. It gives consideration to, showers and taps, toilets and urinals.

| | | | |
|---|---|---|---|
| **Performance Objective(s)** | To meet the water restriction requirements of the Queensland Water Commission.<br>To meet the requirements of the Water Management Program in the University's Environmental Management System.<br>To meet the requirements of the *Environmental Protection (Water) Policy* 1997.<br>To meet the requirements of the *Plumbing and Drainage Act* 2002.<br>To meet the requirements of the *Water Act* 2000. | | |
| **Management Strategies** | The performance objectives above will be achieved by the following management strategies:<br>**Awareness**<br>Distribute water awareness materials and display signs in strategic areas in all buildings.<br>**Monitoring and Measurement**<br>Install water meters where technically and economically feasible to do so.<br>**Reducing Water Usage**<br>Use of improved technology where economically feasible to replace less efficient equipment<br>Improve practices to reduce water consumption. | | |
| **Water Saving Actions** | **Actions** | **Completion Date/Frequency** | **reduction expected** |
| | **Awareness** | | |
| | Design & install water awareness posters and plaques for bathrooms, animal houses and common office areas. | July 2007 | 0% |
| | Distribute water awareness packs to schools and centres in National Water Week. | Annually | 0% |
| | Publish articles promoting water efficiency in Property Press and Unigreen Newsletters and UQ Update. | Quarterly | 0% |
| | **Monitoring and Measuring** | | |
| | Read and record water meter readings on a regular basis. | Monthly From September 2007 | 0% |
| | **Reducing Water Usage** | | |
| | Retrofit existing pans, tap & shower fixtures with water saving alternatives compliant with water restriction guidelines. | June 2007 | 2.01% (1ML) |
| | Retrofit all urinals to be water efficient compliant with water restriction guidelines. | September 2007 | 0.20% (0.10ML) |
| **Performance Indicator** | kL/Head of stock/annum and kL/Student + Staff /annum | | 2.21%<br>1.1ML |
| **Monitoring and Reporting** | Regularly report on water usage and the financial savings associated with water efficiency initiatives to the UMC (water) and the Utilities Management Committee.<br>Report Water consumption to TEFMA annually as part of the benchmark report. | | |
| **Corrective Actions** | All complaints or incidents should be reported to the Environmental Engineer at the Property and Facilities Division on an Environmental Incident Notification Form available on the EMS website. | | |

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# WEMP Action Plan 1 Section 2 — Pinjarra Hills site

***Buildings***

## 9.1.2 Alternate Water

This management plan is designed to help reduce water consumption in buildings by supplementing or replacing potable water. It gives consideration to, toilets and in particular Washing down Animal Houses at the Pinjarra Hills site.

| | | | |
|---|---|---|---|
| **Performance Objective(s)** | To meet the water restriction requirements of the Queensland Water Commission.<br>To meet the requirements of the Water Management Program in the University's Environmental Management System.<br>To meet the requirements of the *Environmental Protection (Water) Policy* 1997.<br>To meet the requirements of the *Plumbing and Drainage Act* 2002.<br>To meet the requirements of the *Water Act* 2000.<br>To reduce potable water consumption by 25% from June 2007 to June 2008. | | |
| **Management Strategies** | The performance objectives above will be achieved by the following management strategies:<br>**Awareness**<br>Distribute water awareness materials and display signs in strategic areas in all buildings where alternative water sources are used.<br>**Monitoring and Measurement**<br>Install water meters where technically and economically feasible to do so or implement other measuring and monitoring processes to ensure water is accounted for.<br>**Reducing Water Usage**<br>Harvest & reuse rainwater and storm water where technically & economically feasible to do so, substituting potable water where possible. | | |
| **Water Saving Actions** | **Actions** | **Completion Date/Frequency** | **Reduction expected** |
| | **Awareness** | | |
| | Design & install water awareness posters for areas alternate water is being used. | As required | 0% |
| | Publish articles promoting non-potable water used in Property Press and Unigreen Newsletter and UQ Update. | Quarterly | 0% |
| | **Monitoring and Measuring** | | |
| | Develop and implement a measuring and monitoring procedure for alternate water sources where possible. | June 2007 | 0% |
| | **Reducing Water Usage** | | |
| | Install rainwater tanks on the Beef Unit to replace potable water being used for washing down | June 2008 | 0.98% (0.5ML) |
| | CABH Roof replacement is to include a water tank. | Dec 2008 | 0.59% (0.3ML) |
| **Performance Indicator** | kL/Head of stock/ annum and kL/students + Staff/annum | | 1.57%<br>0.8ML |
| **Monitoring and Reporting** | Regularly report on water usage and the financial savings associated with water efficiency initiatives to the UMC (water) and the Utilities Management Committee.<br>Report Water consumption to TEFMA annually as part of the benchmark report. | | |
| **Corrective Actions** | All complaints or incidents should be reported to the Environmental Engineer at the Property and Facilities Division on an Environmental Incident Notification Form available on the EMS website. | | |

## 9.2 *Processes and Other Water Uses Outdoor Uses & Research*

### 9.2.1 Potable and Alternate Water

This action plan is designed to identify actions that will help to reduce potable water for stock watering as this is the largest area of potable water consumption in outdoor areas.

| | | | |
|---|---|---|---|
| **Performance Objective(s)** | To meet the water restriction requirements of the Queensland Water Commission.<br>To meet the requirements of the Water Management Program in the University's Environmental Management System.<br>To meet the requirements of the *Environmental Protection (Water) Policy 1997.*<br>To meet the requirements of the *Plumbing and Drainage Act* 2002.<br>To meet the requirements of the *Water Act* 2000<br>To reduce potable water consumption by 50% from June 2004 to June 2007. | | |
| **Management Strategies** | The performance objectives above will be achieved by the following management strategies:<br>**Awareness**<br>Distribute water awareness materials to all areas at Pinjarra Hills.<br>**Monitoring and Measurement**<br>Install water meters where technically and economically feasible to do so.<br>**Reducing Water Usage**<br>Use of improved technology where economically feasible to replace less efficient equipment.<br>Use alternative water sources where feasible. | | |
| **Water Saving Actions** | **Action** | **Completion Date/Frequency** | **% Reduction Expected** |
| | **Awareness** | | |
| | Ensure that staff are aware of the different sources of water used and are familiar with water quality issues and how much potable water can be saved by replacing potable water supplies. | As water sources are changed | 0% |
| | **Monitoring and Measurement** | | |
| | Investigate the feasibility of measuring water consumption from pumping sites and other alternate water sources at Pinjarra Hills. | June 2008 | 0% |
| | Install a water meter at CRC Mining and monitor water consumption regularly. | Monthly from June 2008 | 0% |
| | **Reducing Water Usage** | June 2008 | (Small % of that included on p.26) |
| | Harvest rainwater from roof areas where appropriate for stock watering. (Beef Unit) | June 2008 | 0%in investigation stage |
| | Investigate the feasibility of supplementing the stock water troughs not attached to buildings with an alternate water supply. | | |
| **Performance Indicator** | kL/Head of Stock/ annum and kL/students + Staff/annum | | 0% |
| **Monitoring and Reporting** | Regularly report on water usage and the financial savings associated with water efficiency initiatives to the UMC (water) and the Utilities Management Committee. | | |
| **Corrective Actions** | All complaints or incidents should be reported to the Environmental Engineer at the Property and Facilities Division on an Environmental Incident Notification Form available on the EMS website. | | |

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# WEMP Action Plan 4 — Pinjarra Hills site

## 9.3 *Leak Detection and Maintenance*

This management plan is designed to help reduce water consumption through infrastructure leaks and maintenance activities.

| | |
|---|---|
| **Performance Objective(s)** | To meet the water restriction requirements of the Queensland Water Commission.<br>To meet the requirements of the Water Management Program in the University's Environmental Management System.<br>To meet the requirements of the *Environmental Protection (Water) Policy* 1997.<br>To meet the requirements of the *Plumbing and Drainage Act* 2002.<br>To meet the requirements of the *Water Act* 2000.<br>To reduce potable water consumption through leaks in water infrastructure.<br>To reduce potable water use through maintenance activities. |
| **Management Strategies** | The performance objectives above will be achieved by the following management strategies:<br>**Awareness**<br>Distribute water awareness materials to University areas which encourage people to report leaks.<br>**Monitoring and Measurement**<br>Use of leak detection equipment where technically and economically feasible.<br>**Reducing Water Usage**<br>Use of improved technology where economically feasible to detect leaks in the system. |

**Water Saving Actions**

| Actions | Completion Date/Frequency | Reduction Expected |
|---|---|---|
| **Awareness** | | |
| Distribute water awareness which includes information on reporting leaks during National Water Week. | Annually in October | 0% |
| **Monitoring and Measuring** | | |
| Record meter data and ensure anomalies are investigated. (Procedure in P&F Maintenance Workbook) | Monthly from September 2007 | 96.4% (49ML) |
| Install sub meters at the Pinjarra Hills site to measure consumption and identify leaks. | Stage 1 – 11 meters to be installed by Dec 2007 | 0% |
| Physically monitor the Farm site for leaks and record details on a spreadsheet. Report leaks immediately to Property and Facilities Division. | Monthly from September 2007 | 0% |
| **Reducing Water Usage** | Ongoing | 0% |
| Identify and prioritise infrastructure replacement. | Ongoing | 0% |
| Maintain infrastructure. | | |

| | | |
|---|---|---|
| **Performance Indicator** | kL/Head of stock/ annum and kL/students + Staff/annum | 96.4% 49ML |
| **Monitoring and Reporting** | Regularly report on water usage and the financial savings associated with water efficiency initiatives to the UMC (water) and the Utilities Management Committee. | |
| **Corrective Actions** | All complaints or incidents should be reported to the Environmental Engineer at the Property and Facilities Division on an Environmental Incident Notification Form available on the EMS website. | |

## Appendix 1 PINJARRA HILS SITE WEMP 1A & 1B Taps & Showers and Toilets and Urinals

| **Background information** | |
|---|---|
| total equivalent full time student load | 7 |
| total full time equivalent staff load | 93 |
| total staff and students | 100 |
| total number of buildings on campus | 81 |
| number of buildings included in audit | 38 |
| calculations below are based on 360 working days per annum | |

| WEMP 1A | flow rate l/min | convert to litres/second | number | number of persons | uses per day | minutes per use | convert to seconds/use | litres/day | Litres/annum (litres*360days) | kL annum | ML annum |
|---|---|---|---|---|---|---|---|---|---|---|---|
| showers | | | | | | | | | | | |
| total current use | 19 | 0.32 | 35 | 25 | 1 | 7 | 420 | 3325 | 1197000 | 1197 | 1.20 |
| total future use | 9 | 0.15 | 35 | 20 | 1 | 7 | 420 | 1275.75 | 459270 | 459 | 0.46 |
| expected savings | | | | | | | | | | | 0.74 |
| hand basins | | | | | | | | | | | |
| | 19 | 0.32 | 24 | 47 | 2 | 0.20 | 12 | 357.2 | 128592 | 129 | 0.13 |
| | 3 | 0.05 | 27 | 53 | 2 | 0.20 | 12 | 63.6 | 22896 | 23 | 0.02 |
| total current use | | | | | | | | | | | 0.15 |
| total future use | 3 | 0.05 | 51 | 100 | 2 | 0.20 | 12 | 120 | 43200 | 43 | 0.04 |
| expected savings | | | | | | | | | | | 0.11 |
| Taps | | | | | | | | | | | |
| | 19 | 0.32 | 79 | 9 | 1 | 2 | 120 | 345.8 | 124488 | 124 | 0.12 |
| | 6 | 0.10 | 81 | 1 | 1 | 2 | 120 | 10.8 | 3888 | 4 | 0.00 |
| total current use | | | | | | | | | | | 0.13 |
| total future use | 6 | 0.10 | 160 | 10 | 1 | 2 | 120 | 120 | 43200 | 43 | 0.04 |
| expected savings | | | | | | | | | | | 0.09 |
| Totals WEMP 1A | | | | | | | | | | | |
| total current use | | | | | | | | | | | 1.48 |
| total future use | | | | | | | | | | | 0.55 |
| **total savings WEMP 1A** | | | | | | | | | | | **0.93** |

| WEMP 1B | flow rate l/min | convert to litre/seconds | number | number of persons | uses per day | minutes per use | convert to seconds/use | litres/day | Litres/annum (litres*360days) | kL annum | ML annum |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pans | | | | | | | | | | | |
| current use | 11 | | 18 | 42 | 2.00 | | | 396 | 142560 | 143 | 0.14 |
| 4/9 flush | 6.5 | | 7 | 16 | 2.00 | | | 91 | 32760 | 33 | 0.03 |
| 6/3 flush | 4.5 | | 18 | 42 | 2.00 | | | 162 | 58320 | 58 | 0.06 |
| total current use | | | | | 2.00 | | | | | | 0.23 |
| total future use | 4.5 | | 43 | 100 | 2.00 | | | 387 | 139320 | 139 | 0.14 |
| expected savings | | | | | | | | | | | 0.09 |
| Urinals | | | | | | | | | | | |
| 10-12litre flush | 11 | | 1 | 1 | 2.00 | | | 22 | 7920 | 8 | 0.01 |
| 7-9 litre flush | 8 | | | | 2.00 | | | 0 | 0 | 0 | 0.00 |
| 4-6 litre flush | 5 | | 6 | 29 | 2.00 | | | 290 | 104400 | 104 | 0.10 |
| 0-1.5 litre flush | 0.75 | | | | 2.00 | | | 0 | 0 | 0 | 0.00 |
| total current use | | | | | | | | 0 | | | 0.11 |
| total future use | 0.75 | | 7 | 30 | 2 | | | 45 | 16200 | 16 | 0.02 |
| expected savings | | | | | | | | | | | 0.10 |
| Totals WEMP 1B | | | | | | | | | | | |
| total current use | | | | | | | | | | | 0.25 |
| total future use | | | | | | | | | | | 0.16 |
| **total savings WEMP 1B** | | | | | | | | | | | **0.10** |
| total expected savings WEMP 1A & 1B | | | | | | | | | | | 1.03 |

**Appendix 2 Water consumption calculations for Stock Water, Research and Ablutions**

| **Stock** | **Head** | **Litres per day (365 days/yr)** | **ML/yr** |
|---|---|---|---|
| Beef Unit | 310 | 21700 (70 l/head) | 7.9 |
| Equine Unit | 33 | 2310 (70l/head) | .8 |
| Sheep Unit | 41 | 820 (20l/head) | .3 |
| **Research** | | **Kilolitres per day (360 days/yr)** | |
| CRC Mining | | 3.95 | 1.4 |
| **Ablutions** | | See appendix 1 for detail | |
| Basins | | | .13 |
| Taps | | | .13 |
| Showers | | | 1.20 |
| Pans | | | .14 |
| Urinals | | | .23 |
| **Total Consumption for activities described** | | | 12.23 |
| **Total Consumption 2007** | based on consumption from the first three quarters of 2007 and an average for the fourth quarter. | | **13.88** |
| **Difference = Washing down and watering of small animals** | | | **1.65** (12%) |
| It is assumed that a large proportion of the difference between the total consumption for activities described and the total consumption 2007 will be used in the washing down of animal houses and for watering small animals. | | | |

## Appendix 3.0 WATER EFFICIENCY MANAGEMENT PLAN TEMPLATE

*The University of Queensland is required to reduce water consumption at all sites. All contractors should use water responsibly and under the current water restriction guidelines.*

### Important Information regarding the use of this Water Efficiency Management Plan template

This template has been developed for contractors who plan to use the University of Queensland's water for work on any University sites, regardless of water type.

Please complete and forward a copy to the Property and Facilities Project Manager responsible for the work or project that the plan relates to.

If completing more than one job/project that will require the use of the University's water, please fill out a plan for each job/project.

The author of the plan is responsible for all actions within the plan.

The information within the plan is intended for internal use within the Property and Facilities Division of the University to ensure that water is used safely and efficiently.

Water Restrictions are currently being enforced throughout south east Queensland and contractors should be aware of their responsibilities under the current restrictions.

For further information on current water restrictions please refer to the Queensland Water Commission website @ www.qwc.gov.au

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All breaches of the *Environmental Protection Act* or other relevant environmental legislation are required to be reported to the Environmental Engineer on 3365 1587 and an Environmental Incident Notification Form is required to be completed and forwarded to the Environmental Engineer, Property and Facilities Division.

Environmental Incident Notification Forms are available at www.pf.uq.edu.au/ems.html

Report leaks or other infrastructure problems to the Property and Facilities Works Control Centre at wcc@pf.uq.edu.au or telephone;

| | | |
|---|---|---|
| St Lucia | 3365 2222 | internal 52222 |
| Gatton and Ipswich | 546 01226 | internal 50226 |

---

***This form is to be completed and signed by the contractor***

| **Water Efficiency Management Plan** | *Project*_____<br><br>*P&F Project Manager*_____ |
|---|---|

### *1.0 Declaration*

I declare that the information given in the Water Efficiency Management Plan is true & correct.

| | |
|---|---|
| Name | |
| Position: | |
| Signature: | |
| Date: | |

### *2.0 Business Information*

| | |
|---|---|
| Name of Business | |
| Contact Person | |
| Position | |
| Mobile | |
| Fax | |
| Email | |
| No. of Employees working on site | |

### *3.0 Baseline Information*

Project Description_____

Project Start Date_____ Project Completion Date_____

Indicate the source/s of water you will be using

☐ Mains ☐ Treated wastewater ☐ Bore water
☐ Stormwater ☐ Rainwater tank ☐ River/stream
☐ Dam Other_____

Indicate the type of equipment or specific areas where water will be used, how it is used and known or estimated consumption per unit of production or per day.

| **Water Source** (e.g. mains, rainwater) | **How will the water be used?** (e.g. high pressure unit with trigger hose) | **L/unit of production or L/day** |
|---|---|---|
| | | |
| | | |
| | | |

If known, indicate total expected water consumption for the project _____Litres

Will you be recycling water used in the project? ☐ Yes ☐ No
If yes what % _____

Can the project be completed without the use of water? ☐ Yes ☐ No
Comments_____
Please indicate if you require water to be tested for appropriate reuse. (This may be the case if you are using water from rainwater tanks or from the lakes) ☐ Yes ☐ No