



## MANUFACTURING

ANZSIC	SECTOR
1111	Meat processing
1112	Poultry processing
1113	Bacon, ham and small good manufacturing
1131	Milk and cream processing
1132	Ice-cream manufacturing
1133	Dairy product manufacturing
1150	Oil and fat manufacturing
1171	Bread manufacturing
1173	Biscuit manufacturing
1181	Sugar manufacturing
1181	Confectionary manufacturing
1199	Food manufacturing not elsewhere classified
1211	Soft drink, cordial and syrup manufacturing
1212	Beer and malt manufacturing
1220	Tobacco product manufacturing
1311	Wool scouring
1334	Textile finishing
1331	Textile floor covering manufacturing
1334	Textile product manufacturing
1340	Hosiery manufacturing
1351	Clothing manufacturing not elsewhere classified
1320	Leather tanning and fur dressing
1510	Pulp, paper and paperboard manufacturing
1521	Solid and corrugated paperboard container manufacturing
1811	Industrial gas manufacturing
1821	Synthetic resin manufacturing
1812	Organic industrial chemical manufacturing not elsewhere classified
1813	Inorganic industrial chemical manufacturing not elsewhere classified
1841	Medicinal and pharmaceutical product manufacturing
1832	Pesticide manufacturing
1852	Cosmetic and toiletry preparation manufacturing
1921	Plastic blow moulded product
1919	Plastic injection moulded product manufacturing
2010	Glass and glass product manufacturing
2034	Concrete slurry manufacturing
2110	Basic iron and steel manufacturing

2293	Metal coating and finishing
2299	Fabricated metal product manufacturing not elsewhere classified
2311	Motor vehicle manufacturing
2319	Automotive component manufacturing not elsewhere classified
2469	Food processing machinery manufacturing
2499	Industrial machinery and equipment not elsewhere classified

## **WHOLESALE TRADE**

<b>ANZSIC</b>	<b>SECTOR</b>
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3319	Farm produce and supplies wholesaling not elsewhere classified
3501	Car wholesaling
3601	Grocery wholesaling
3720	Pharmaceutical and toiletry wholesaling
3739	Wholesaling not elsewhere classified

## **RETAIL TRADE**

<b>ANZSIC</b>	<b>SECTOR</b>
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1174	Bread and cake retailing
4260	Department stores
4232	Garden supplies retailing
9419	Automotive repair and services not elsewhere classified

## **ACCOMMODATION, CAFES AND RESTAURANTS**

<b>ANZSIC</b>	<b>SECTOR</b>
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4400	Accommodation
4520	Pubs, taverns and bars
4511	Cafes and restaurants
4530	Clubs (hospitality)

## **TRANSPORT AND STORAGE**

<b>ANZSIC</b>	<b>SECTOR</b>
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5520	Services to air transport
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## **PROPERTY AND BUSINESS SERVICES**

<b>ANZSIC</b>	<b>SECTOR</b>
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6712	Commercial property operators
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## GOVERNMENT ADMINISTRATION AND DEFENCE

ANZSIC	SECTOR
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7530	Local government administration
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## EDUCATION

ANZSIC	SECTOR
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8021	Primary school
8022	Secondary school
8102	Higher education

## HEALTH AND COMMUNITY SERVICES

ANZSIC	SECTOR
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8401	Hospitals (except psychiatric hospitals)
8613	Nursing homes
8511	General practice medical services
6970	Veterinary services
8601	Accommodation for the aged
8609	Non-residential care services

## CULTURAL AND RECREATIONAL SERVICES

ANZSIC	SECTOR
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8910	Museums
9001	Music and theatre
9121	Horse and dog racing
9113	Sportsgrounds
9201	Casinos

## PERSONAL AND OTHER SERVICES

ANZSIC	SECTOR
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9531	Laundries and dry cleaners
9520	Funeral directors, crematoria and cemeteries
9540	Religious organisations
7714	Corrective centres



<b>Sector -</b>	<b>Meat processing</b>
<b>ANZSIC Code -</b>	<b>1111</b>
<b>ANZSIC Descriptor -</b>	This class consists of units mainly engaged in slaughtering animals (except poultry), boning, freezing, preserving or packing meat (except poultry) or canning meat (except poultry, seafood, bacon, ham and corned meat). Units mainly engaged in manufacturing meat from abattoir by-products (except from products of poultry slaughtering) and rendering lard or tallow are also included.

**Industry overview**

*The primary activities of firms in this industry are:*

- Abattoir operation (except poultry)
- Animal meat packing and freezing
- Animal oil or fat, unrefined, manufacturing
- Lard or tallow rendering
- Meat extract or essence manufacturing
- Meat manufacturing (except bacon, ham and poultry)
- Meat or bone meal manufacturing (except fish or poultry meal)
- Meat packing (except poultry)
- Meat, canned, manufacturing (except poultry, bacon, ham and corned meat)
- Meat, dehydrated, manufacturing (except poultry)
- Meat, frozen, manufacturing (except poultry)

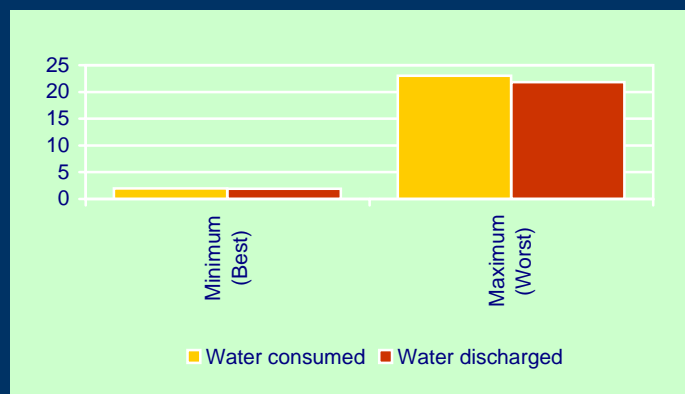
*The major products and services in this industry are:*

- Beef and veal
- Pig meat
- Sheep meats
- Lard and tallow
- Meal from abattoir by-products

**Key Statistics (kL/tonne product)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	2	1.9
<i>Maximum (Worst)</i>	23	21.85

(Crabb, 1997)





**Sector - Meat processing**

**ANZSIC Code - 1111**

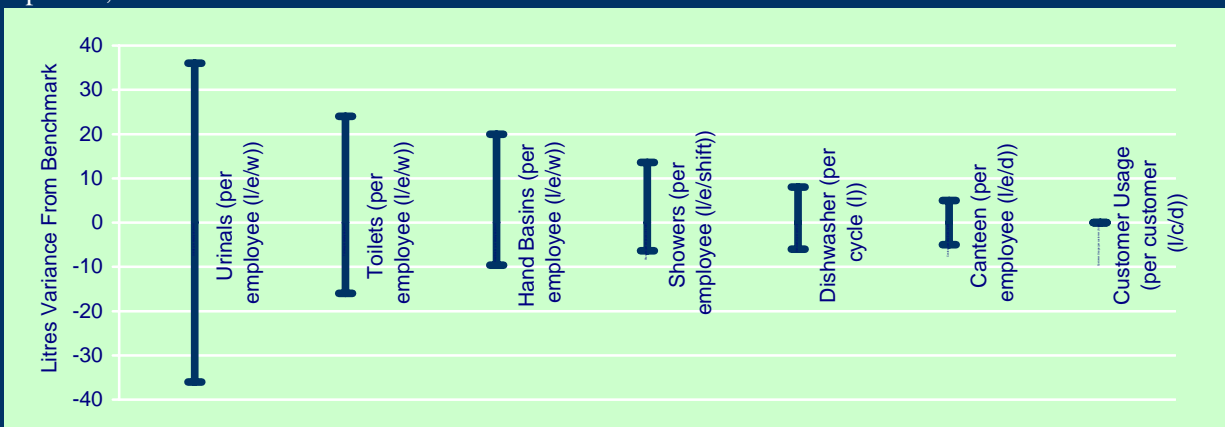
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Cooling operations on-site
- Type of processing involved
- Number of employees
- Water efficiency of equipment

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on installing water-efficient devices on taps and basins to ensure efficient use and re-use of water in cleaning processes.

Other specific elements of best practice require the organisations to:

- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Shut off water-cooled air conditioning / freezing units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Develop a culture of water conservation.
- \* Recycle water across proximate uses of water, where the water is not heavily contaminated in process.



**Sector - Poultry processing**

**ANZSIC Code - 1112**

**ANZSIC Descriptor -** This class consists of units mainly engaged in slaughtering and dressing birds (including poultry and game birds) and/or preparing and processing, boning, chilling, freezing or packaging (including canning) the whole or selected parts of bird carcasses.

**Industry overview**

*The primary activities of firms in this industry are:*

- Frozen poultry manufacturing
- Game bird (e.g. pheasant, quail) slaughtering
- Poultry abattoir operation
- Poultry croquette manufacturing
- Poultry meat or bone meal manufacturing
- Poultry meat packing
- Poultry meat processing (including canning)

*The major products and services in this industry are:*

- Chicken meat
- Other poultry (duck, turkey etc)
- Game birds (quail, pheasant etc)

**Key Statistics (kL/1000 birds)**

Water consumed      Water discharged

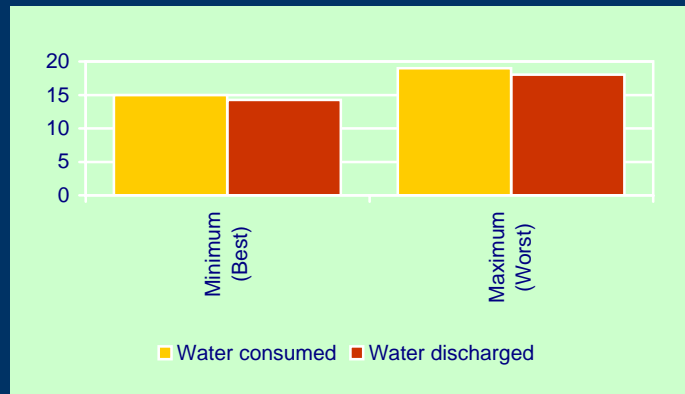
*Minimum (Best)*

15	14.25
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*Maximum (Worst)*

19	18.05
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(UNEP Working Group for Cleaner Production in the Food Industry, 2004)





Sector - Poultry processing

ANZSIC Code - 1112

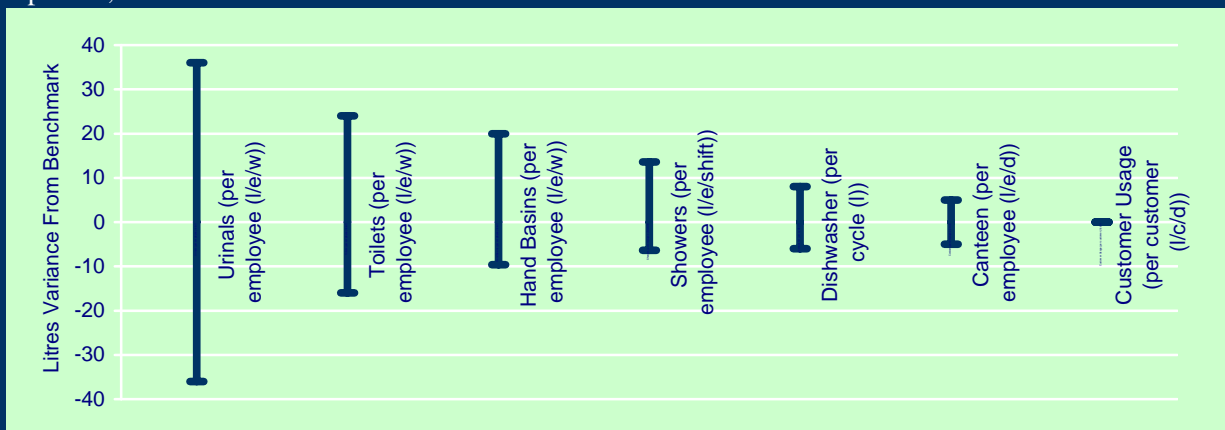
**Variance**

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Specific areas of variance are attributable to:

- Volume of production
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- Type of processing involved
- Number of employees
- Water efficiency of equipment

Specific, measurable areas of variance are:



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- \* Shut off water-cooled air conditioning / freezing units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Recycle water across proximate uses of water, where the water is not heavily contaminated in process.
- \* Develop a culture of water conservation.



**Sector -** Cured Meat and Smallgoods Manufacturing

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**ANZSIC Code -** 1113

**ANZSIC Descriptor -** This class consists of units mainly engaged in manufacturing cured and preserved meats, such as bacon or ham, and in manufacturing smallgoods or prepared meat products not elsewhere classified. Units cure the meat by salting, drying, pickling or smoking.

**Industry overview**

*The primary activities of firms in this industry are:*

- Bacon manufacturing
- Corned meat manufacturing (including canned)
- Croquettes manufacturing n.e.c.
- Ham, canned, manufacturing
- Meat speciality manufacturing
- Pate manufacturing (except fish)
- Poultry smallgoods manufacturing
- Smallgoods manufacturing

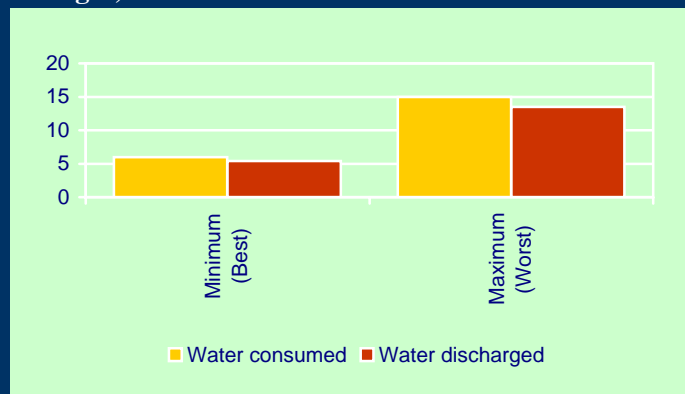
*The major products and services in this industry are:*

- Ham
- Smallgoods
- Bacon

**Key Statistics (kL/tonne hot standard carcass height)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	6	5.4
<i>Maximum (Worst)</i>	15	13.5

(UNEP Working Group for Cleaner Production in the Food Industry, 2004)





Sector - Cured Meat and Smallgoods Manufacturing

ANZSIC Code - 1113

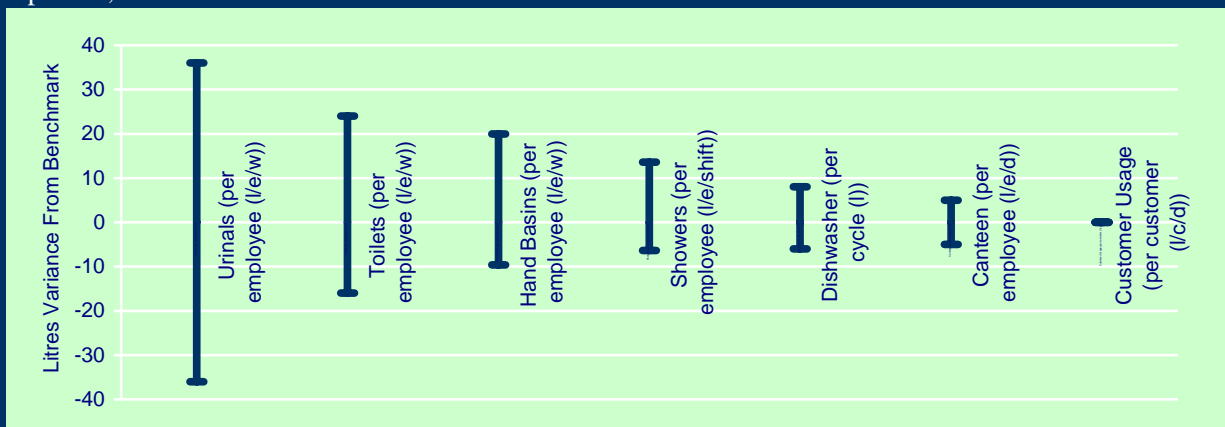
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Cooling operations on-site
- Processes involved
- Number of employees
- Water efficiency of equipment

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on installing water-efficient devices on taps and basins to ensure efficient use and re-use of water in cleaning processes.

Other specific elements of best practice require the organisations to:

- \* Instruct cleaning crews to use water efficiently.
- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Shut off water-cooled air conditioning / freezing units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector - Milk and cream processing**

**ANZSIC Code - 1131**

**ANZSIC Descriptor -** This class consists of units mainly engaged in processing raw milk. Processes include pasteurisation of milk and separation to produce milk and cream with varying fat content.

**Industry overview**

*The primary activities of firms in this industry are:*

- Cream, pasteurised, manufacturing (except canned)
- Milk, low fat, manufacturing
- Milk, pasteurised, manufacturing
- Processed liquid milk manufacturing (except condensed, concentrated or evaporated milk, or liquid buttermilk)
- Skim milk manufacturing
- Standard milk manufacturing
- Ultra heat treatment milk manufacturing

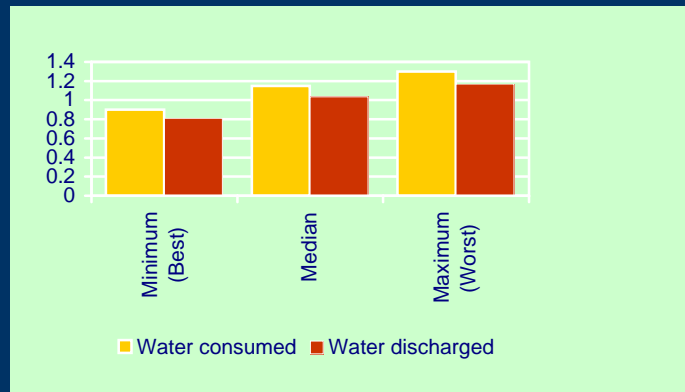
*The major products and services in this industry are:*

- Fresh milks
- Cream
- Skim Milk
- UHT Milk

**Key Statistics (kL/kL product)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	0.90	0.81
<i>Median</i>	1.15	1.035
<i>Maximum (Worst)</i>	1.3	1.17

(Deloitte Survey, 2006) &  
(Sydney Water, 2004)



Sector - Milk and cream processing

ANZSIC Code - 1131

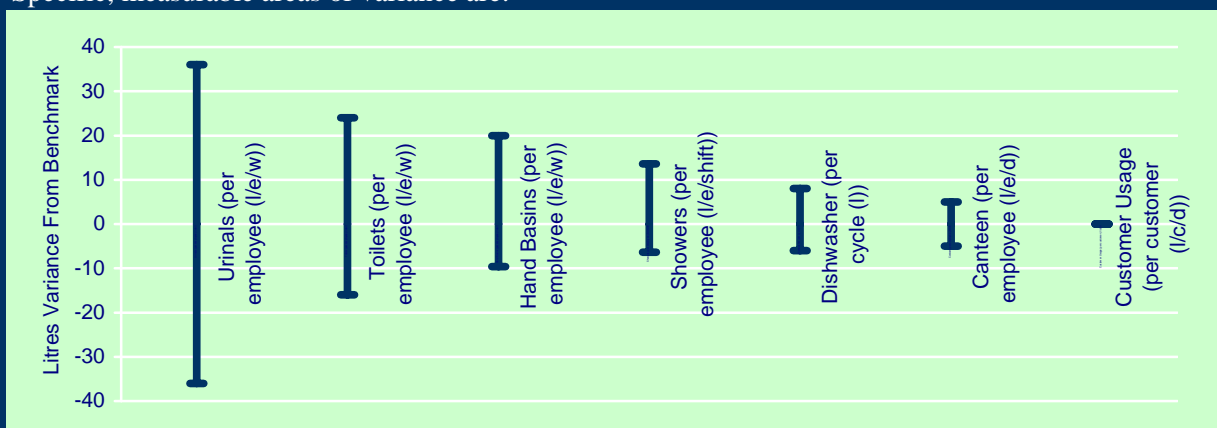
### Variance

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Number of employees

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Instruct cleaning crews to use water efficiently.
- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Shut off water-cooled air conditioning / freezing units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).



**Sector -** Ice cream manufacturing

**ANZSIC Code -** 1132

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing ice cream or frozen confectionery.

**Industry overview**

*The primary activities of firms in this industry are:*

- Confections, frozen manufacturing
- Fruit ice, frozen, manufacturing
- Gelato manufacturing
- Ice cream manufacturing

*The major products and services in this industry are:*

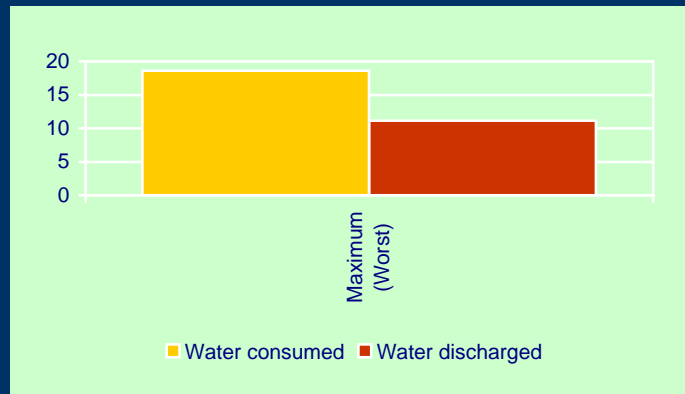
- Take home ice cream tubs
- Take home multipacks
- Non-packaged impulse scoop and serve
- Take home premium tubs
- Individually packaged impulse

**Key Statistics (kL/kL product)**

*Water consumed      Water discharged*

<i>Maximum (Worst)</i>	18.6	11.16
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(Crabb, 1997)



Sector - Ice cream manufacturing

ANZSIC Code - 1132

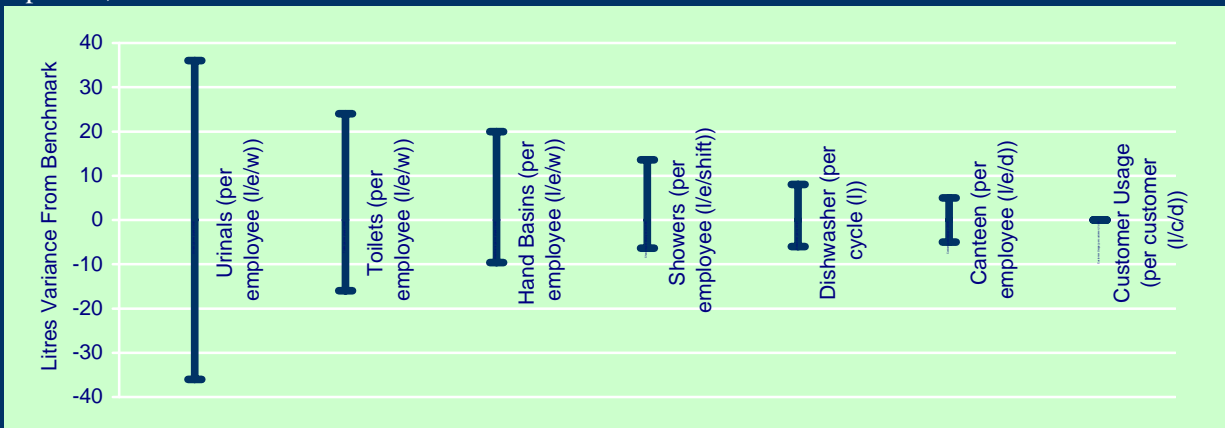
### Variance

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Culture of water conservation
- Number of employees

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Instruct cleaning crews to use water efficiently.
- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Shut off water-cooled air conditioning / freezing units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector - Dairy product manufacturing**  
**ANZSIC Code - 1133**  
**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing butter, cheese, milk powder, dairy products and condensed, concentrated or evaporated milk.

**Industry overview**

*The primary activities of firms in this industry are:*

- Cheese manufacturing
- Condensed milk manufacturing
- Cream, canned, manufacturing
- Dairy product manufacturing n.e.c.
- Whey or whey powder manufacturing
- Evaporated milk manufacturing
- Buttermilk manufacturing
- Infants' milk-based formula and food manufacturing
- Lactose manufacturing
- Butter manufacturing

*The major products and services in this industry are:*

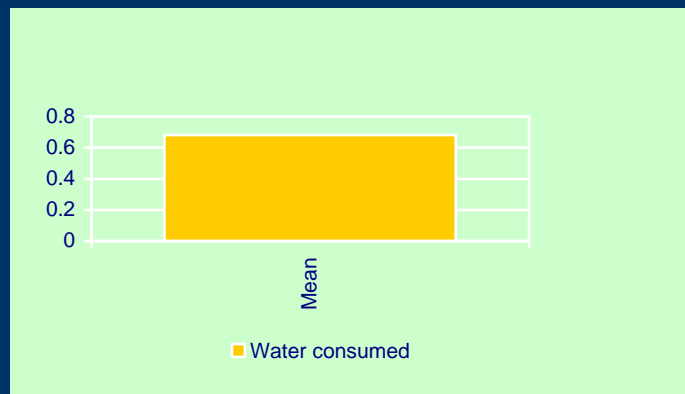
- Butter milk powder
- Skim milk powder
- Whole milk powder
- Cheese
- Butter oil
- Whey powder
- Butter

**Key Statistics (kL/\$ revenue)**

Water      Water  
consumed    discharged

Mean	0.68	0.459
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(ABS)



Sector - Dairy product manufacturing

ANZSIC Code - 1133

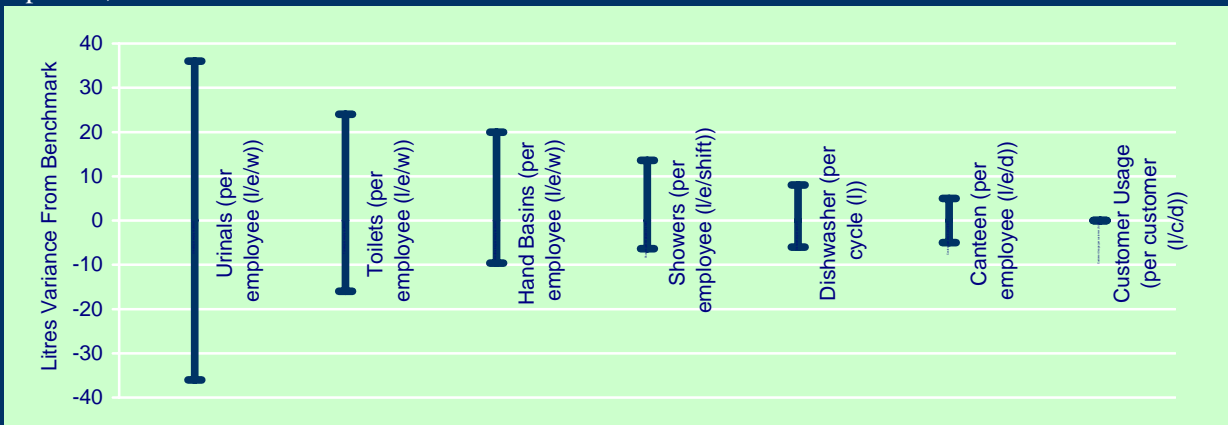
### Variance

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Volume of production
- Cooling operations on-site
- Processes involved
- Number of employees
- Water efficiency of equipment

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Instruct cleaning crews to use water efficiently.
- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Shut off water-cooled air conditioning / freezing units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector - Oil and fat manufacturing**

**ANZSIC Code - 1150**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing crude vegetable or marine oils, fats, cake or meal, margarine, compound cooking oils or fats, blended table or salad oils and refined or hydrogenated oils or fats not elsewhere classified.

**Industry overview**

*The primary activities of firms in this industry are:*

- Animal oil, refined, manufacturing
- Cotton seed oil manufacturing
- Deodorised vegetable oil manufacturing
- Edible oil or fat, blended, manufacturing
- Fish or other marine animal oil or meal manufacturing
- Lard, refined, manufacturing
- Margarine manufacturing
- Olive oil manufacturing
- Tallow, refined, manufacturing

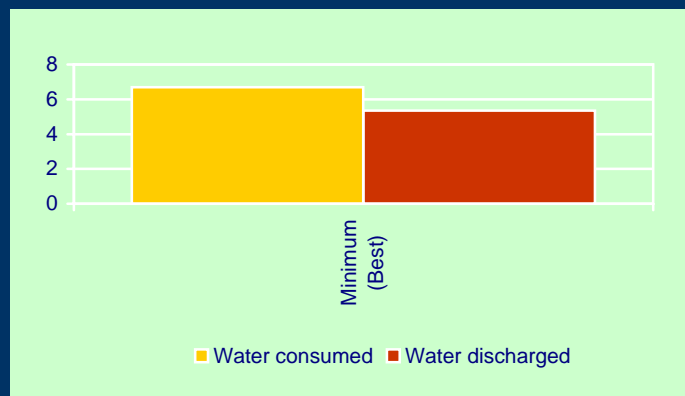
*The major products and services in this industry are:*

- Margarine
- Cooking oils
- Salad dressing
- Lard
- Oilseed crushing and refining

**Key Statistics (kL/tonne product)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	6.7	5.36

(Deloitte Survey, 2006)





**Sector - Oil and fat manufacturing**

**ANZSIC Code - 1150**

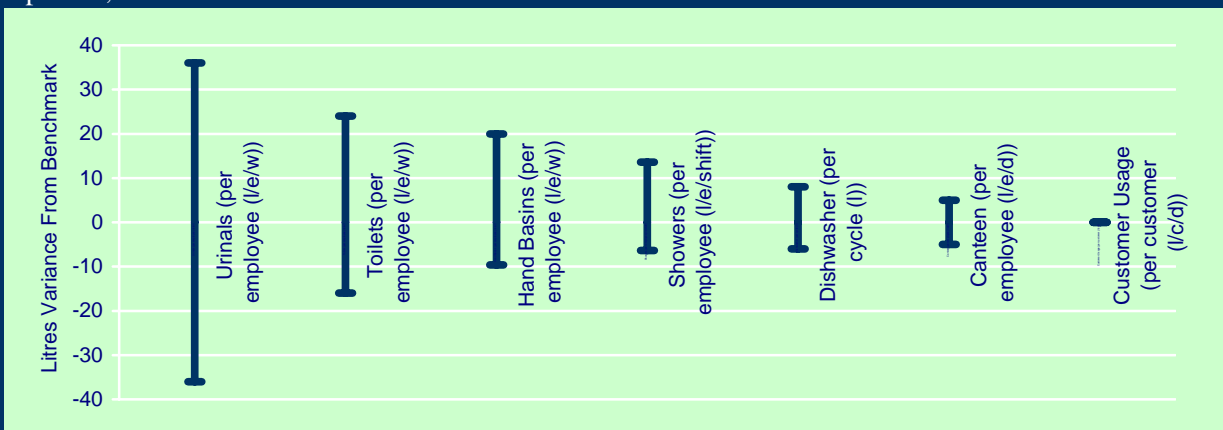
**Variance**

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Volume of production
- Cooling operations on-site
- Number of employees
- Processes involved
- Age of technology
- Water efficiency of equipment
- Age of sanitary equipment

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Conduct regular and effective maintenance of heating and cooling towers to minimise water loss and leakage.
- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



<b>Sector -</b>	<b>Bread manufacturing</b>
<b>ANZSIC Code -</b>	<b>1171</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in manufacturing bread and bread products such as muffins, crumpets and breadcrumbs.

### Industry overview

*The primary activities of firms in this industry are:*

- Bagel manufacturing (factory based)
- Bread bakery operation (factory based)
- Bread dough, frozen, manufacturing (factory based)
- Bread roll manufacturing (factory based)
- Bread, leavened or unleavened, manufacturing (factory based)
- Breadcrumb manufacturing (factory based)
- English muffin manufacturing (factory based)
- Fruit loaf manufacturing (factory based)
- Panini manufacturing (factory based)
- Pita bread manufacturing (factory based)

*The major products and services in this industry are:*

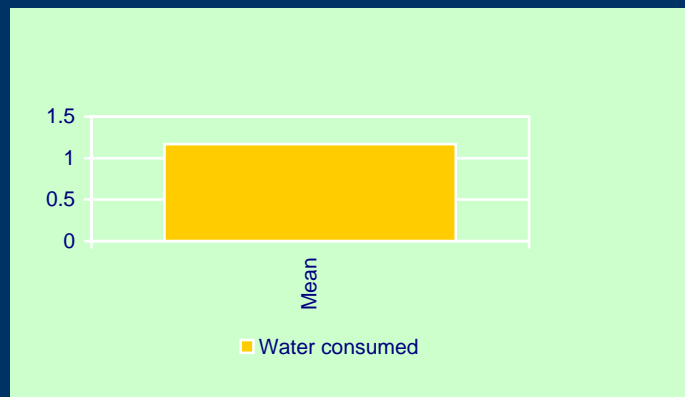
- Bread
- Rolls
- Muffins
- Crumpets

### Key Statistics (kL/tonne product)

*Water consumed*
*Water discharged*

<i>Mean</i>	1.17	0.468
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(ABS) & (Deloitte Survey, 2006)





Sector - Bread manufacturing

ANZSIC Code - 1171

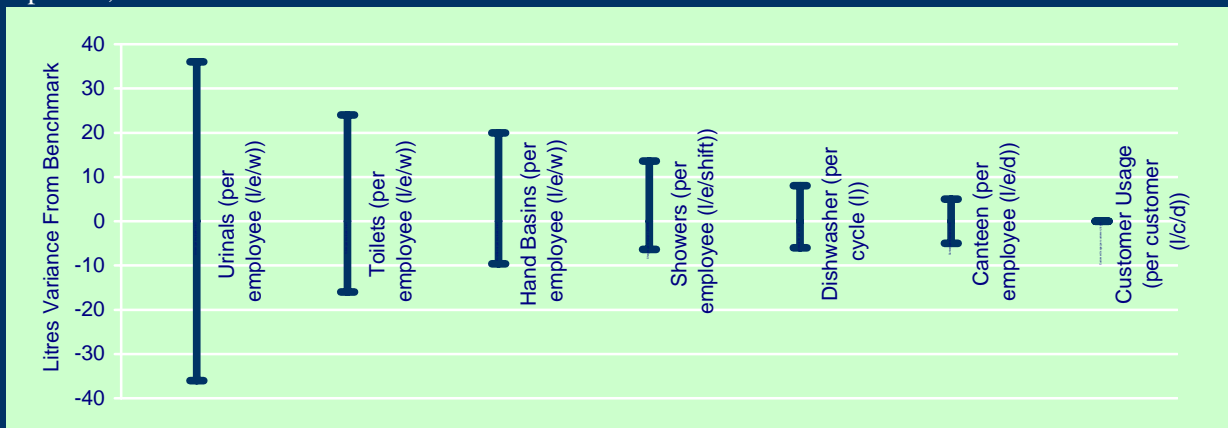
### Variance

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Instruct cleaning crews to use water efficiently.
- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Use automatic shut-off taps at sinks.
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector -** Biscuit manufacturing

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**ANZSIC Code -** 1173

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing biscuits (sweet and savoury), crispbreads, cones and wafers.

**Industry overview**

*The primary activities of firms in this industry are:*

- Biscuit dough manufacturing (factory based)
- Biscuit manufacturing (except pet food biscuits; factory based)
- Ice cream cone or wafer manufacturing (factory based)

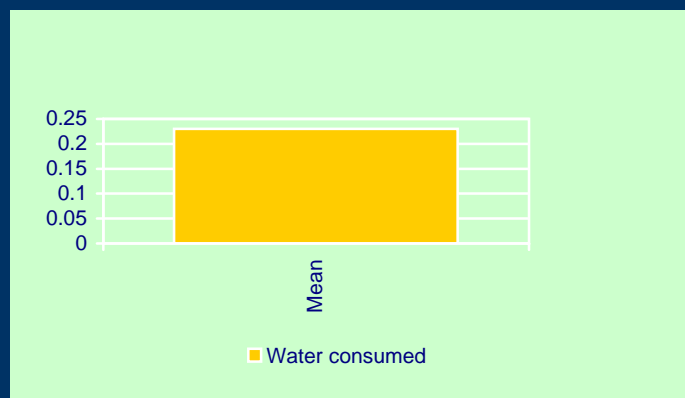
*The major products and services in this industry are:*

- Crackers and crisp breads
- Plain and creams
- Chocolate
- Flavoured snacks

**Key Statistics (kL/tonne product)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Mean</i>	0.23	0.184

(ABS)





Sector - Biscuit manufacturing

ANZSIC Code - 1173

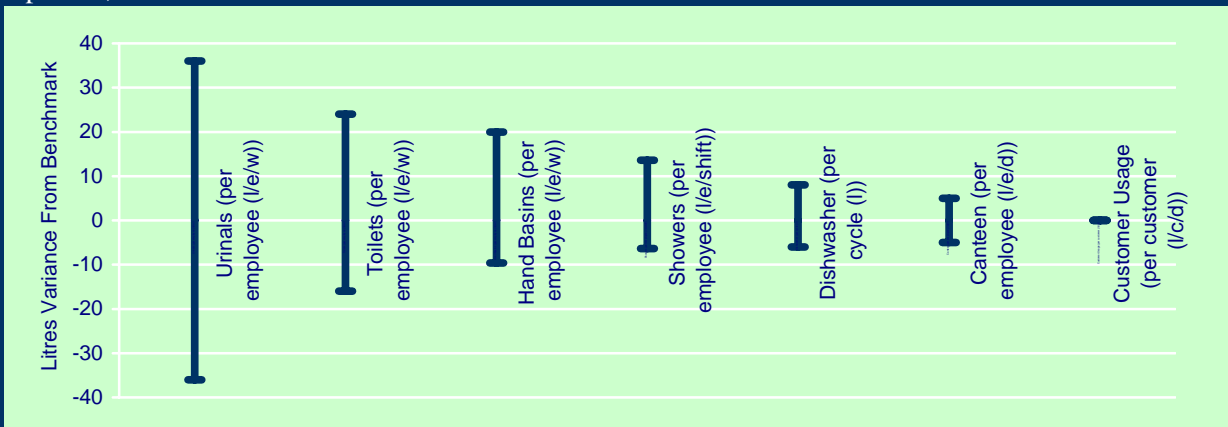
### Variance

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



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- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector - Sugar manufacturing**

**ANZSIC Code - 1181**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in milling and refining sugar, and manufacturing sugar (brown, cane, caster, icing), treacle and molasses.

**Industry overview**

*The primary activities of firms in this industry are:*

- Brown sugar manufacturing
- Cane syrup manufacturing
- Caster sugar manufacturing
- Icing sugar manufacturing
- Molasses manufacturing
- Sugar manufacturing
- Treacle manufacturing

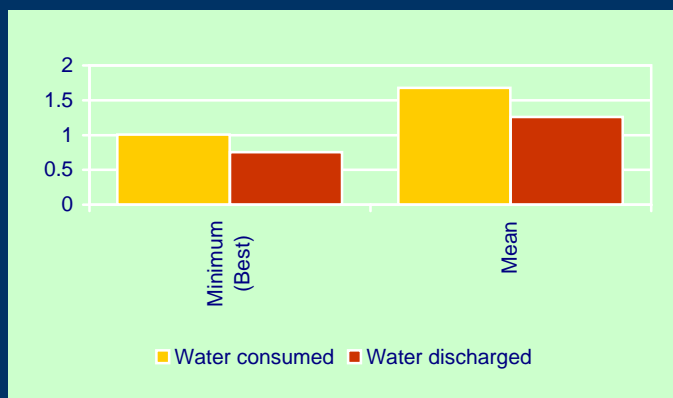
*The major products and services in this industry are:*

- Sugar milling
- Sugar refining

**Key Statistics (kL/tonne product)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	1.01	0.7545
<i>Mean</i>	1.68	1.26

(ABS) & (Deloitte)





Sector - Sugar manufacturing

ANZSIC Code - 1181

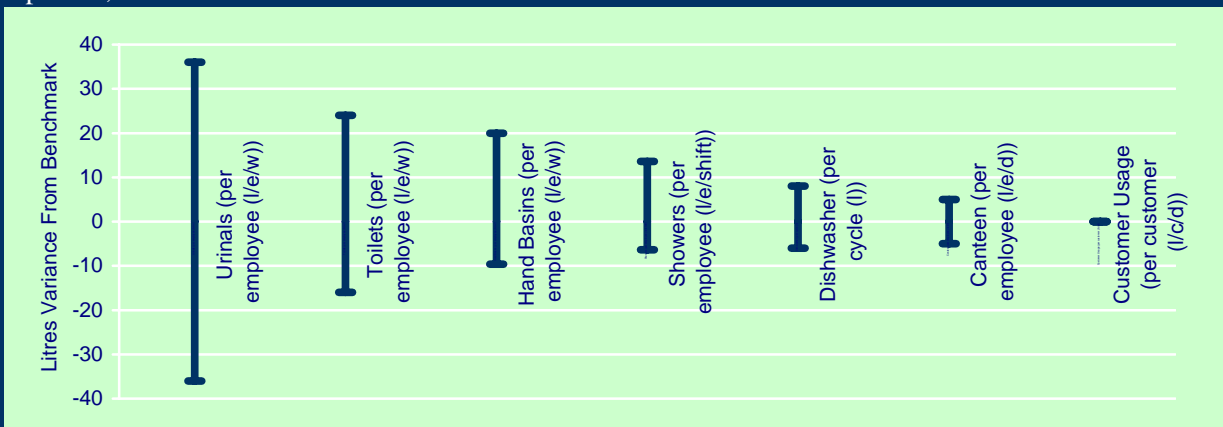
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Age of technology
- Number of employees

Specific, measurable areas of variance are:



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- \* Instruct cleaning crews to use water efficiently.
- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



<b>Sector -</b>	<b>Confectionery manufacturing</b>
<b>ANZSIC Code -</b>	<b>1182</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in the manufacturing of confectionery such as chewing gum, sugar confectionery and candied nuts, as well as chocolate and chocolate products.

**Industry overview**

*The primary activities of firms in this industry are:*

- Chewing gum manufacturing
- Chocolate manufacturing
- Cocoa product manufacturing
- Popcorn, candied, manufacturing
- Crystallised or glace fruit manufacturing
- Drinking chocolate manufacturing
- Liquorice manufacturing
- Marshmallow manufacturing
- Marzipan manufacturing
- Nut, candied, manufacturing
- Confectionary manufacturing

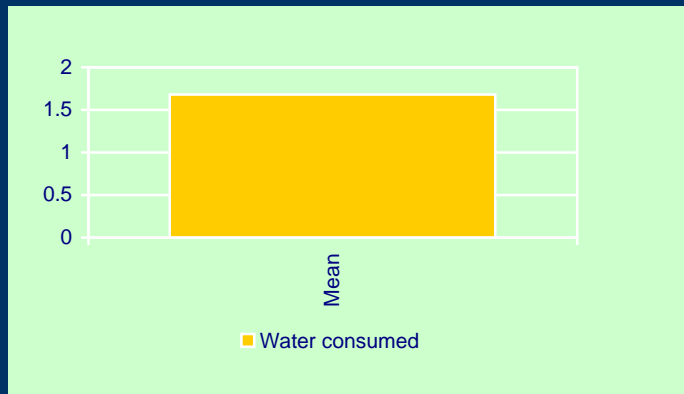
*The major products and services in this industry are:*

- Chocolate
- Sugar confectionery
- Chewing gum

**Key Statistics (kL/tonne product)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Mean</i>	1.68	1.008

(ABS)



**Sector - Confectionery manufacturing**

**ANZSIC Code - 1182**

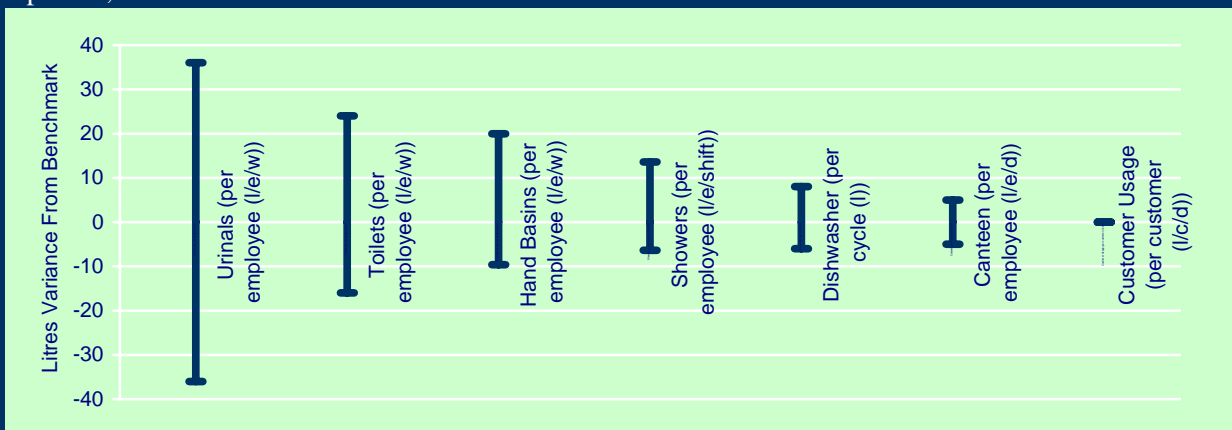
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Cooling operations on-site
- Processes involved
- Number of employees
- Water efficiency of equipment

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Instruct cleaning crews to use water efficiently for mopping.
- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Use automatic shut-off taps at sinks.
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector -** Food manufacturing not elsewhere classified

**ANZSIC Code -** 1199

**ANZSIC Descriptor -** This sector consists of units mainly engaged in the manufacturing of food such as coffee and teas, herbs and seasonings, potato crisps and snacks, and pre-prepared meals.

**Industry overview**

*The primary activities of firms in this industry are:*

- Coffee and tea manufacturing
- Potato chip manufacturing
- Herb and seasoning manufacturing
- Pre-prepared meals manufacturing
- Nut foods manufacturing (except candied)
- Cooking or table salt manufacturing
- Ice manufacturing
- Soya bean concentrates, isolates or textured protein manufacturing
- Yeast or yeast extract manufacturing
- Food manufacturing

*The major products and services in this industry are:*

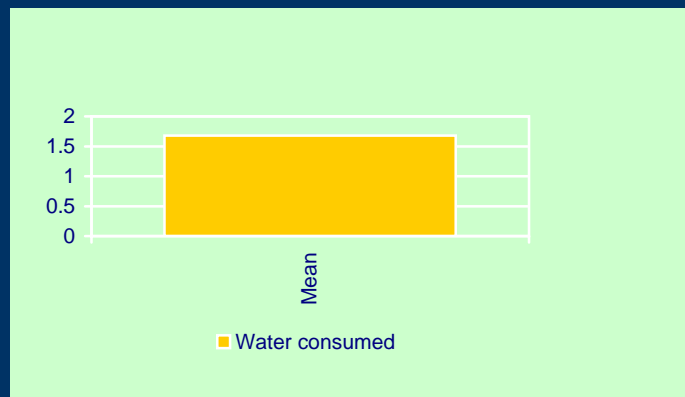
- Potato crisps and salty snacks
- Tea and coffee
- Pre-prepared meals
- Salt
- Yeast and yeast extracts
- Herbs and spices
- Industrial flavour essences
- Sauces and salad dressings
- Nuts

**Key Statistics (kL/tonne product)**

*Water consumed      Water discharged*

<i>Mean</i>	1.68	1.344
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(Deloitte Survey, 2006) &  
(ABS, 1997)





**Sector - Food manufacturing not elsewhere classified**

**ANZSIC Code - 1199**

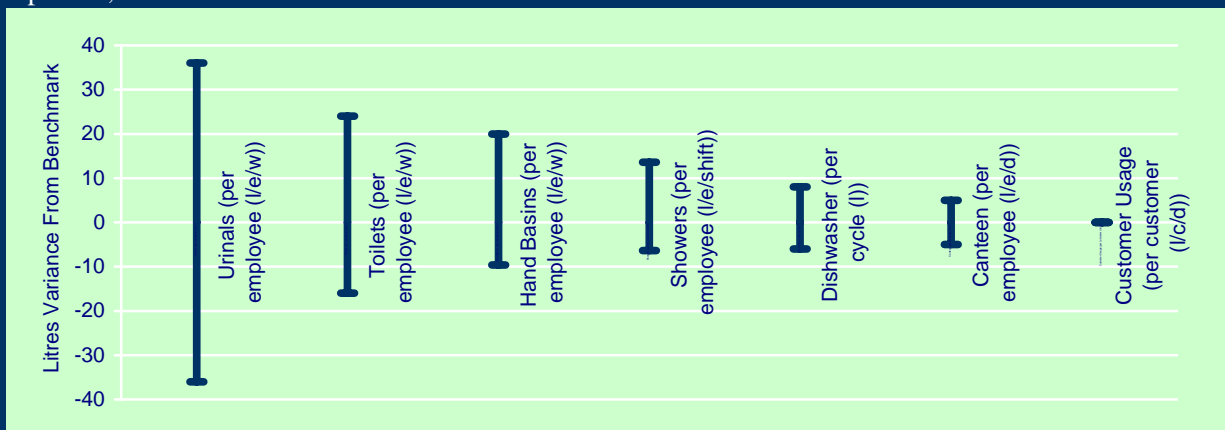
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Instruct cleaning crews to use water efficiently for mopping.
- \* Replace automatic shut-off spray nozzles with low-volume nozzles.
- \* Use automatic shut-off taps at sinks.
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



<b>Sector -</b>	<b>Soft drink, cordial and syrup manufacturing</b>
<b>ANZSIC Code -</b>	<b>1211</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in the manufacturing of soft drinks, carbonated drinks, mineral waters, cordials, fruit juices and other beverage syrups.

**Industry overview**

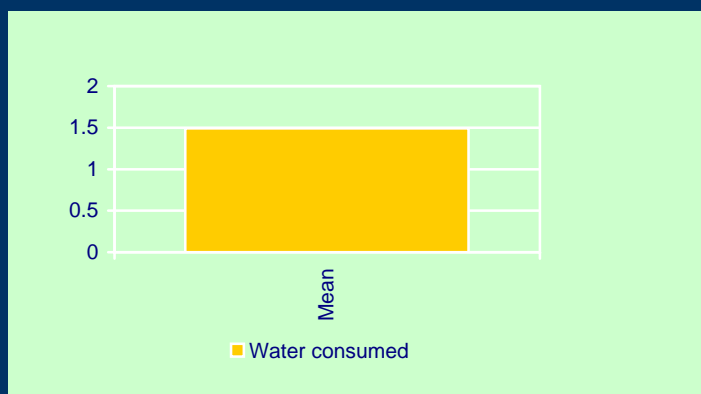
*The primary activities of firms in this industry are:*      *The major products and services in this industry are:*

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>- Cider, non-alcoholic, manufacturing</li> <li>- Cordial manufacturing</li> <li>- Energy drink manufacturing</li> <li>- Fruit drink, less than 100 percent pure juice,</li> <li>- Ginger beer, non-alcoholic, manufacturing</li> <li>- Ice manufacturing (except dry ice)</li> <li>- Mineral, soda, tonic and purified water</li> <li>- Powder flavour manufacturing (for soft drinks)</li> <li>- Syrup, fruit, manufacturing</li> <li>- Soft drink manufacturing</li> </ul> | <ul style="list-style-type: none"> <li>- Flavoured or sweetened aerated waters and mineral waters</li> <li>- Fruit juice drinks</li> <li>- Still water</li> <li>- Energy and sport drinks</li> <li>- Cordials and syrups, powder flavours for soft drinks</li> <li>- Non-sweetened natural and artificial mineral water</li> </ul> |
|---|--|

**Key Statistics (kL/tonne product)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Mean</i>	1.49	0.894

(ABS)





**Sector -** Soft drink, cordial and syrup manufacturing

**ANZSIC Code -** 1211

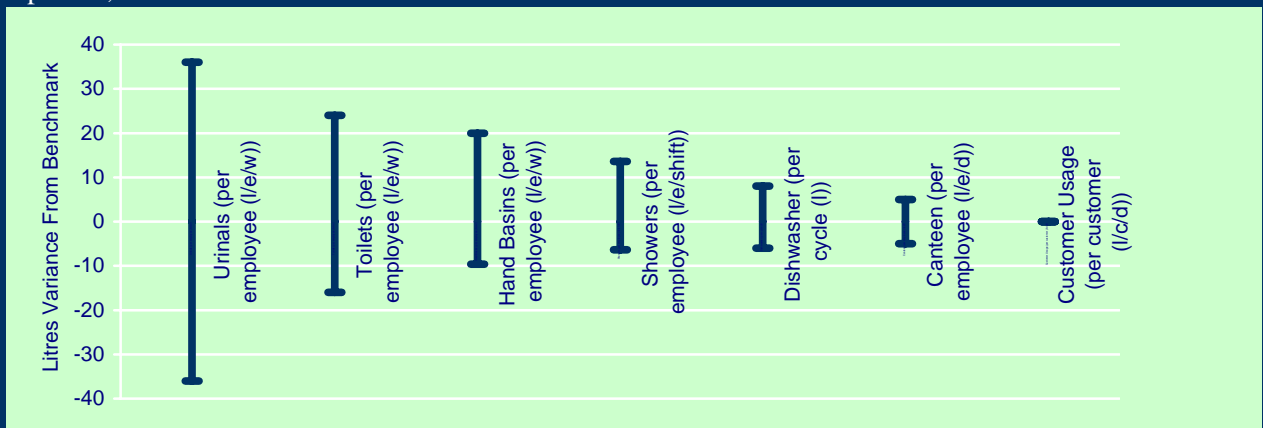
**Variance**

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Age of technology
- Number of employees
- Quality of water into process

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Develop efficient cleaning practices which minimise the use of water. For example, sweeping instead of mopping, where appropriate. Devices to manage flow in cleaning can also be used.
- \* Train employees to maximise utilisation of machinery by managing batches. For example, only use machinery where there is a minimum number of batches to produce. This both improves capital productivity and minimises water wastage.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector -** Beer and malt manufacturing

**ANZSIC Code -** 1212 and 1161

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing beer (bottled, canned, etc.) and malt (barley, oaten and wheaten).

**Industry overview**

*The primary activities of firms in this industry are:*

- Barley malt manufacturing
- Beer manufacturing (except non-alcoholic beer)
- Malt manufacturing (except malt extract)
- Oaten malt manufacturing
- Porter manufacturing
- Wheaten malt manufacturing

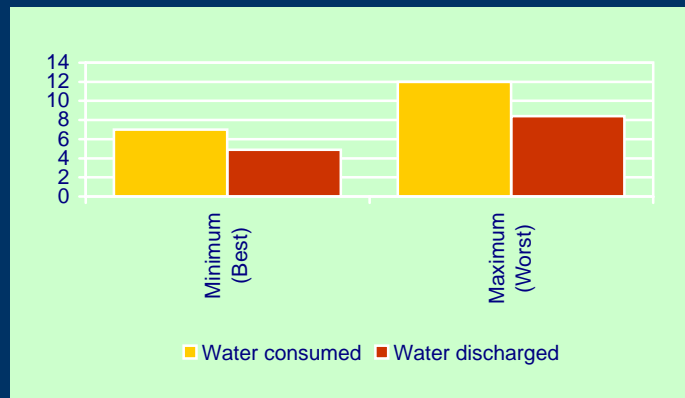
*The major products and services in this industry are:*

- Bottled beer
- Canned beer
- Draught beer
- Malt

**Key Statistics (kL/kL product)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	7.0	4.9
<i>Maximum (Worst)</i>	12.0	8.4

(Crabb, 1997)





**Sector - Beer and malt manufacturing**

**ANZSIC Code - 1212 and 1161**

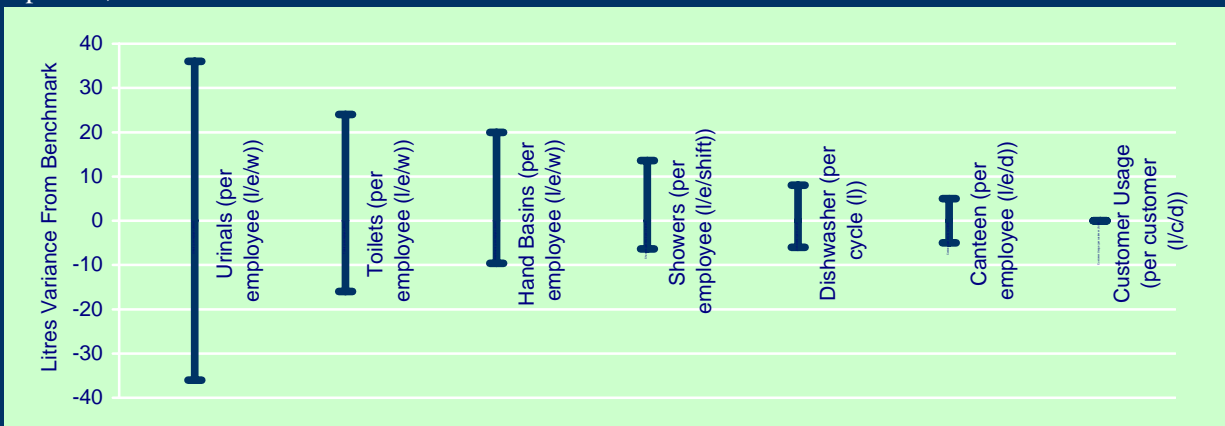
**Variance**

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Extent of recycling waste water
- Quality of water into process
- Age of facilities
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Develop efficient cleaning practices which minimise use of water. For example, sweeping instead of mopping, where appropriate. Devices to manage flow in cleaning can also be used.
- \* Train employees to maximise utilisation of machinery by managing batches. For example, only use machinery where there is a minimum number of batches to produce. This both improves capital productivity and minimises water wastage.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector -** Cigarette and tobacco product manufacturing

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**ANZSIC Code -** 1220

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing cigarettes, cigars and tobacco products (chewing, pipe, snuff).

**Industry overview**

*The primary activities of firms in this industry are:*

- Chewing tobacco manufacturing
- Cigar manufacturing
- Cigarette manufacturing
- Pipe tobacco manufacturing
- Snuff manufacturing
- Tobacco leaf redrying
- Tobacco manufacturing

*The major products and services in this industry are:*

- Cigarettes
- Pipe tobacco
- Cigars

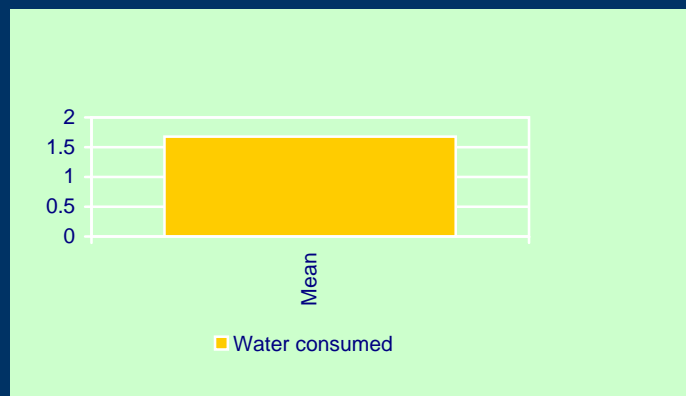
**Key Statistics (kL/tonne product)**

*Water consumed      Water discharged*

Mean 

1.68
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(Deloitte Survey, 2006)





**Sector - Cigarette and tobacco product manufacturing**

**ANZSIC Code - 1220**

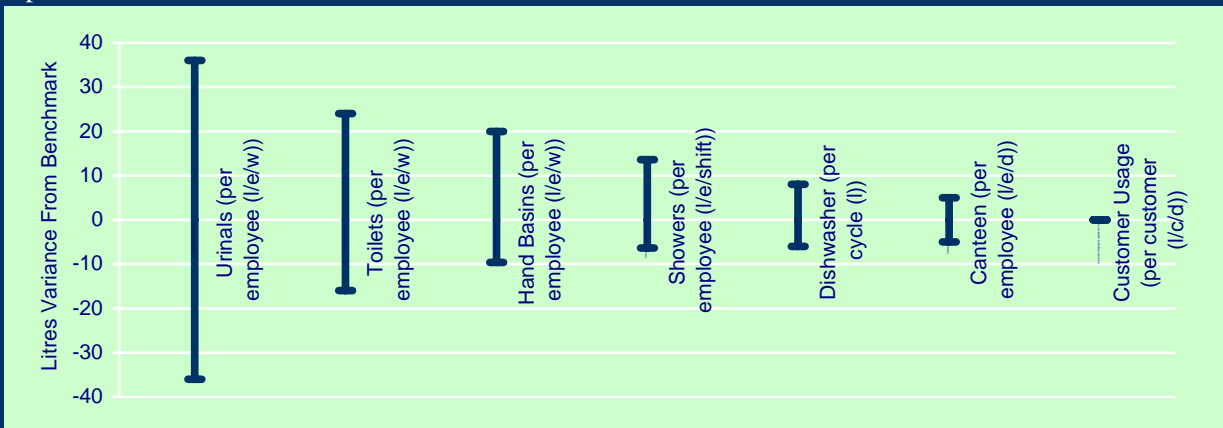
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production - Number of employees
- Processes involved
- Water efficiency of equipment

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on good training, education and support of technical personnel in charge of programming, to ensure the most efficient production process is used.

Other specific elements of best practice require the organisations to:

- \* Develop efficient cleaning practices which minimise use of water. For example, sweeping instead of mopping, where appropriate. Devices to manage flow in cleaning can also be used.
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).



**Sector - Wool scouring**

**ANZSIC Code - 1311**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in scouring and carbonising wool and manufacturing wool products and by-products, such as lanolin, noils and wool (including carded and combed).

**Industry overview**

*The primary activities of firms in this industry are:*

- Lanolin manufacturing
- Noil, wool, manufacturing
- Scoured wool manufacturing
- Slag wool manufacturing
- Tops, unspun wool, manufacturing
- Wool grease manufacturing
- Wool wax manufacturing
- Wool, carded or combed, manufacturing

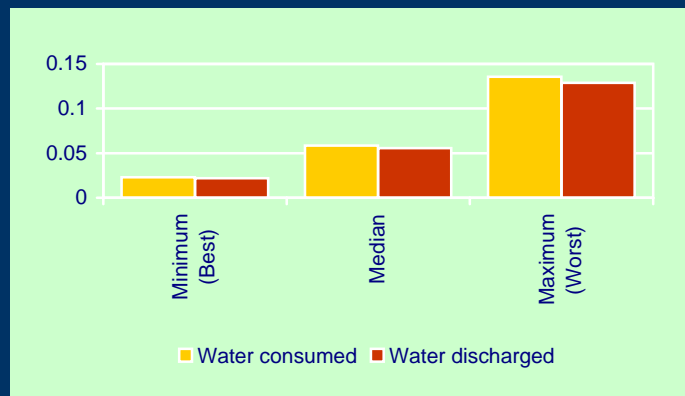
*The major products and services in this industry are:*

- Scoured wool
- Carbonised wool
- Wool tops
- Lanolin

**Key Statistics (kL/kg product)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	0.02288	0.021736
<i>Median</i>	0.05867	0.055737
<i>Maximum (Worst)</i>	0.13575	0.128963

(Water Efficiency Manual, 1998)



**Sector - Wool scouring**

**ANZSIC Code - 1311**

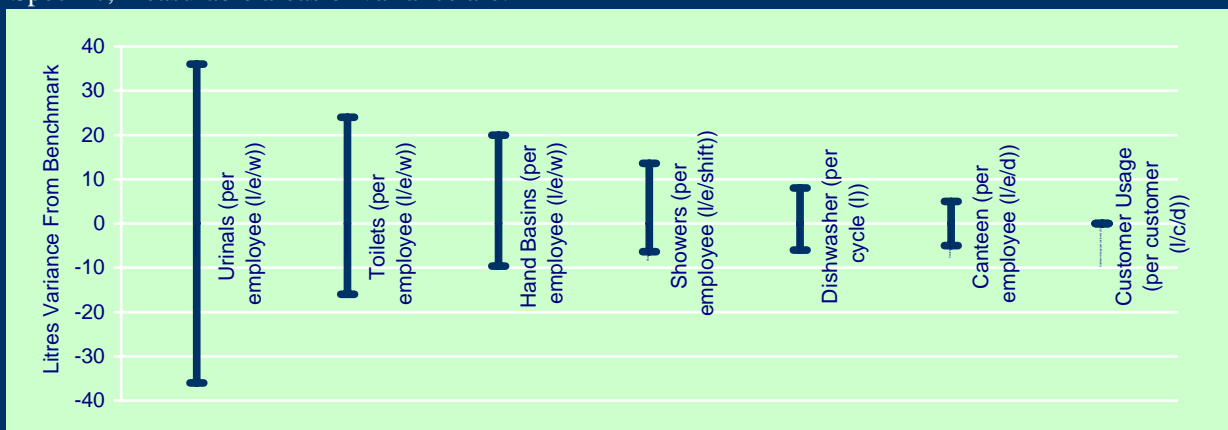
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Counter-current washing - least contaminated water from final wash is re-used for the next-to-last wash and so on until the water reaches the first wash stage, after which it is discharged.
- \* Reduce carryover - proper draining in batch drop/fill washing and proper extraction between steps in continuous washing process.
- \* Re-use wash water for cleaning purposes.
- \* Implement more efficient work practices - avoid careless chemical handling and poor housekeeping to prevent excessive cleanup.



**Sector -** Textile finishing and other textile product manufacturing

**ANZSIC Code -** 1334

**ANZSIC Descriptor -** This sector consists of units mainly engaged in bleaching, dyeing, printing, pleating or other finishing of yarns, threads, fabrics or other textiles. Work is charged on a fee or commission basis, using client supplied materials or materials which are pur

**Industry overview**

*The primary activities of firms in this industry are:*

- Badge, woven, manufacturing
- Binding, textile, manufacturing
- Embroidered apparel manufacturing
- Embroidered fabric manufacturing
- Felt manufacturing
- Label, printed cloth, manufacturing
- Label, woven cloth, manufacturing
- Textile printing, dyeing and fabric coating
- Textile product manufacturing n.e.c.
- Underfelt manufacturing

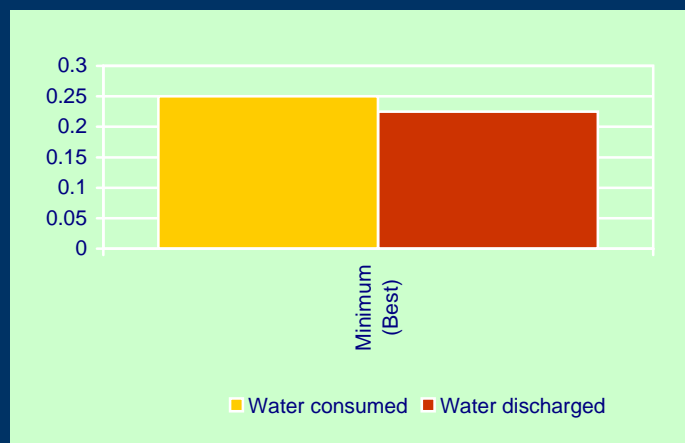
*The major products and services in this industry are:*

- Dyeing of materials
- Printing of materials
- Fireproofing, rot-proofing, waterproofing
- Coating and laminating of materials

**Key Statistics (kL/kg product)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	0.25 (wool)	0.225

(Australian Country Spinners,  
1997)





**Sector -** Textile finishing and other textile product manufacturing

**ANZSIC Code -** 1334

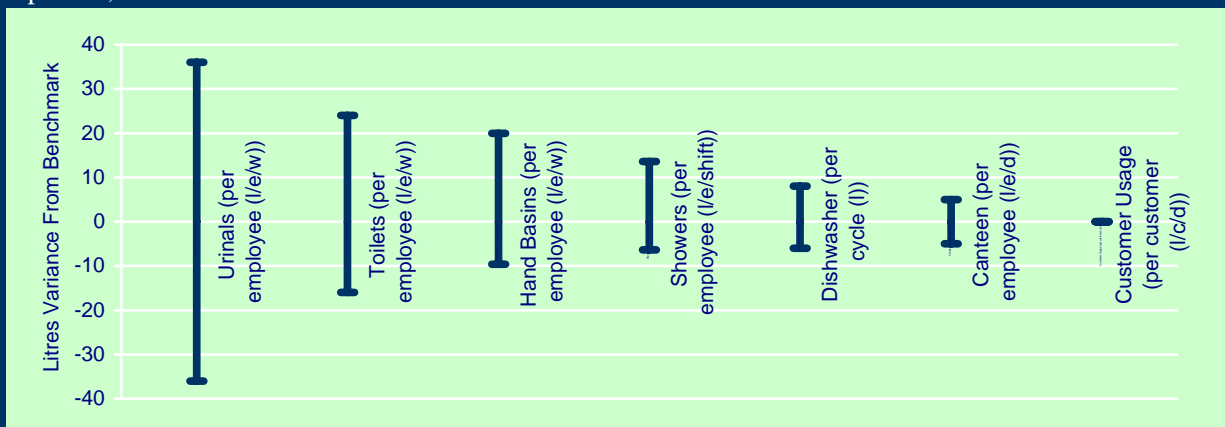
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Type of equipment used
- Type of fabric produced
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on good training, education and support of technical personnel in charge of programming, to ensure the most efficient production process is used.

Other specific elements of best practice require the organisations to:

- \* Counter-current washing - least contaminated water from final wash is re-used for the next-to-last wash and so on until the water reaches the first wash stage, after which it is discharged.
- \* Reduce carryover - proper draining in batch drop/fill washing and proper extraction between steps in continuous washing process.
- \* Re-use wash water for cleaning purposes.
- \* Implement more efficient work practices - avoid careless chemical handling and poor housekeeping to prevent excessive cleanup.



**Sector -** Textile floor covering manufacturing

**ANZSIC Code -** 1331

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing floor coverings including felt, woven and tufted carpets and rugs.

**Industry overview**

*The primary activities of firms in this industry are:*

- Carpet manufacturing
- Carpet tile manufacturing
- Floor covering, textile, manufacturing n.e.c.
- Floor rug, textile, manufacturing
- Hard fibre floor covering manufacturing (including manufacturing)
- Jute matting manufacturing

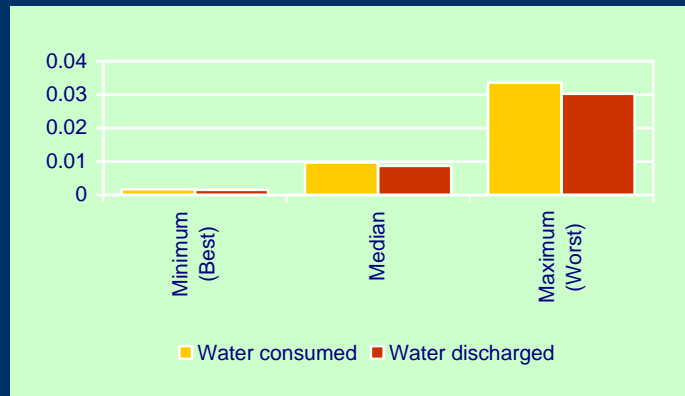
*The major products and services in this industry are:*

- Tufted carpets
- Woven carpets
- Modular
- True and needle felts
- Fusion-bonded carpets

**Key Statistics (kL/kg product)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	0.00172	0.00155
<i>Median</i>	0.00963	0.008667
<i>Maximum (Worst)</i>	0.03355	0.030195

(Water Efficiency Manual, 1998)





**Sector - Textile floor covering manufacturing**

**ANZSIC Code - 1331**

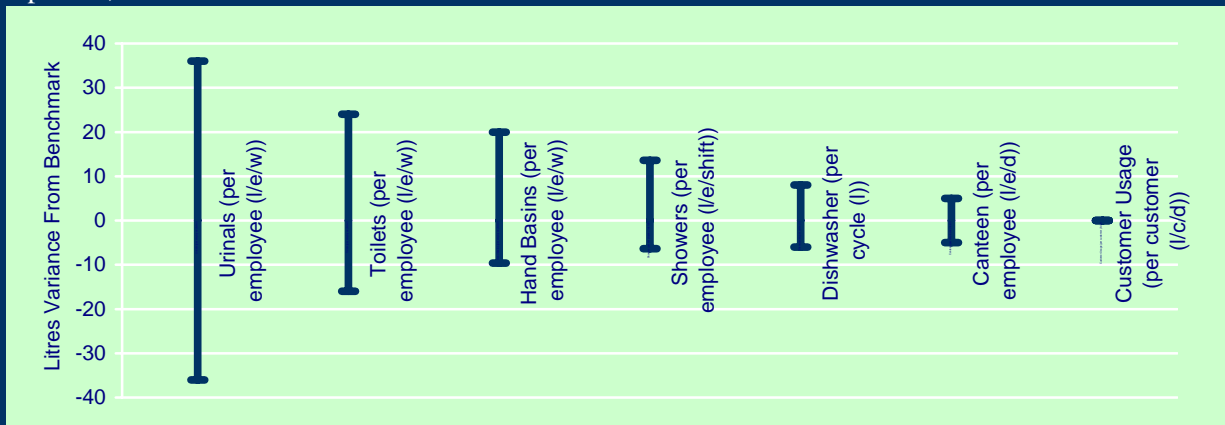
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Type of equipment used
- Type of fabric produced
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Counter-current washing - least contaminated water from final wash is re-used for the next-to-last wash and so on until the water reaches the first wash stage, after which it is discharged.
- \* Reduce carryover - proper draining in batch drop/fill washing and proper extraction between steps in continuous washing process.
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement more efficient work practices - avoid sloppy chemical handling and poor housekeeping to prevent excessive cleanup.



**Sector -** **Cut and Sewn Textile product manufacturing**

**ANZSIC Code -** **1333**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing textile products such as fabrics, bags, cloths, medical bandages and embroidering fabrics.

**Industry overview**

*The primary activities of firms in this industry are:*

- Animal blanket/cover manufacturing
- Awning, textile, manufacturing
- Bag or sack, textile or canvas, manufacturing (for
- Bed linen manufacturing
- Blind, textile, manufacturing (including plastic coated)
- Canvas goods manufacturing n.e.c.
- Cotton textile furnishing manufacturing
- Curtain manufacturing
- Textile furnishing manufacturing n.e.c.
- Woollen textile furnishing manufacturing

*The major products and services in this industry are:*

- Wadding for furniture and bedding
- Embroidery
- Fabric
- Flock
- Fabric bags or sacks (for packaging)
- Cleaning cloths
- Medical products (bandages, gauze)

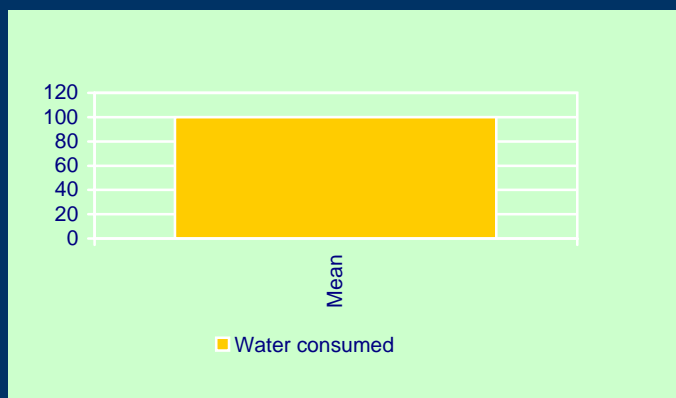
**Key Statistics (kL/mwh)**

Water consumed      Water discharged

Mean 

100
-----

(To Use or Misuse)



Sector - Cut and Sewn Textile product manufacturing

ANZSIC Code - 1333

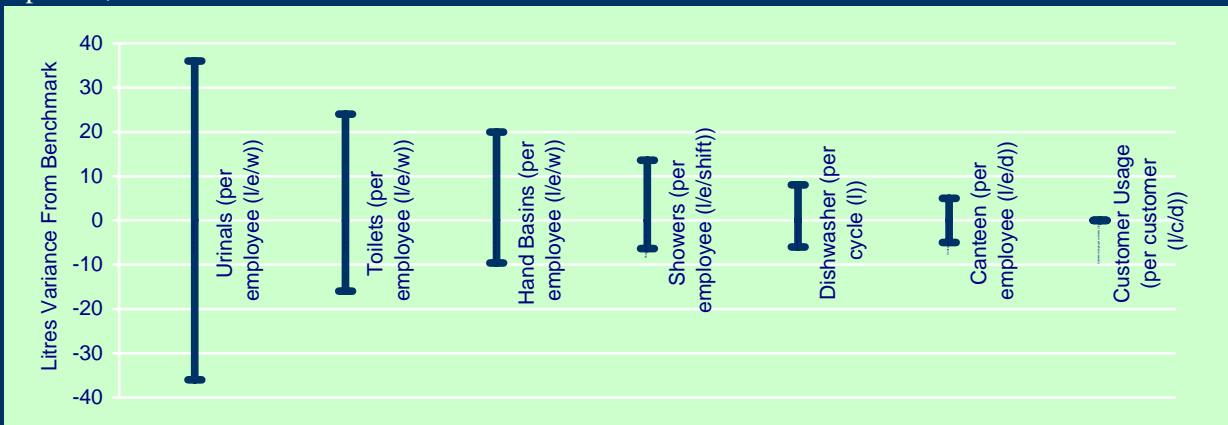
### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Type of equipment used
- Type of fabric produced - eg wool and felted fabrics processes are more water intensive than processes for woven, knit, stock and carpet fabrics
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Counter-current washing - least contaminated water from final wash is re-used for the next-to-last wash and so on until the water reaches the first wash stage, after which it is discharged.
- \* Reduce carryover - proper draining in batch drop/fill washing and proper extraction between steps in continuous washing process.
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement more efficient work practices - avoid sloppy chemical handling and poor housekeeping to prevent excessive cleanup.



**Sector -** Knitted product manufacturing

**ANZSIC Code -** 1340

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing hosiery (socks, panty hose, stockings, tights) for men, women and children.

**Industry overview**

*The primary activities of firms in this industry are:*

- Clothing, knitted, manufacturing
- Crocheted fabric manufacturing
- Custom knitting of pullovers or cardigans
- Hosiery manufacturing
- Jacket, knitted, manufacturing
- Jersey, knitted, manufacturing
- Knitted fabric manufacturing
- Panty hose manufacturing
- Sock manufacturing
- Stocking manufacturing

*The major products and services in this industry are:*

- Women's pantyhose and half hose
- Men's socks
- Children's and infant's socks

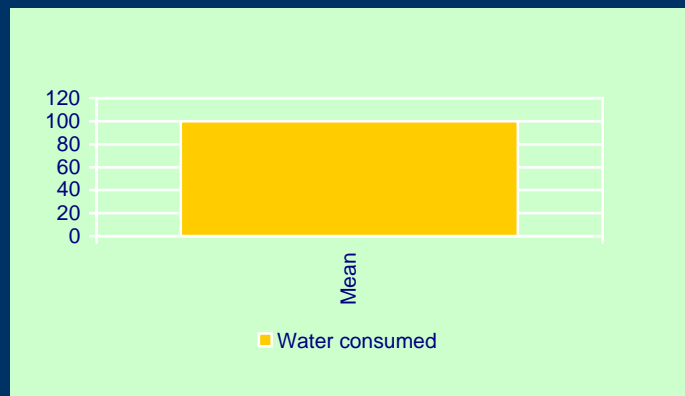
**Key Statistics (kL/mwh)**

Water consumed      Water discharged

Mean 

100
-----

(Sector 2229 Textile Product Manufacturing used as proxy)





**Sector - Knitted product manufacturing**

**ANZSIC Code - 1340**

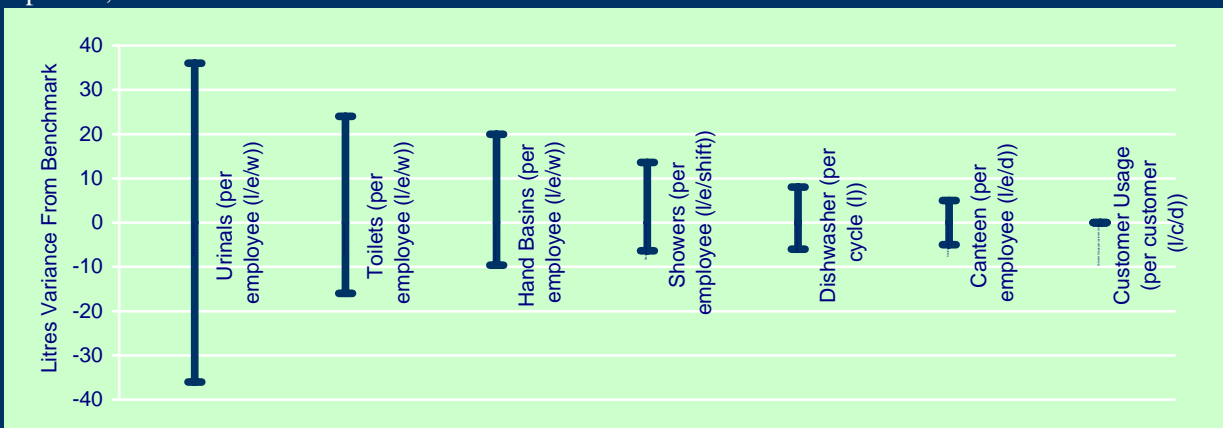
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on good training, education and support of technical personnel in charge of programming, to ensure the most efficient production process is used.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement more efficient work practices - avoid sloppy chemical handling and poor housekeeping to prevent excessive cleanup.
- \* Develop a culture of water conservation.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).



<b>Sector -</b>	<b>Clothing manufacturing not elsewhere classified</b>
<b>ANZSIC Code -</b>	<b>1351</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in manufacturing clothing and clothing accessories such as belts, gloves and headwear.

### Industry overview

*The primary activities of firms in this industry are:*

- Belt manufacturing (for clothing)
- Clothing accessory manufacturing n.e.c.
- Clothing manufacturing n.e.c.
- Clothing, fur, laces, leather, plastic or rubber,
- Glove manufacturing (except rubber)
- Handkerchief manufacturing
- Headwear manufacturing
- Infants' clothing manufacturing
- Jeans manufacturing
- Sleepwear and underwear manufacturing
- Swimwear and waterproof clothing
- Tie manufacturing
- Uniform manufacturing

*The major products and services in this industry are:*

- Clothing
- Clothing accessories

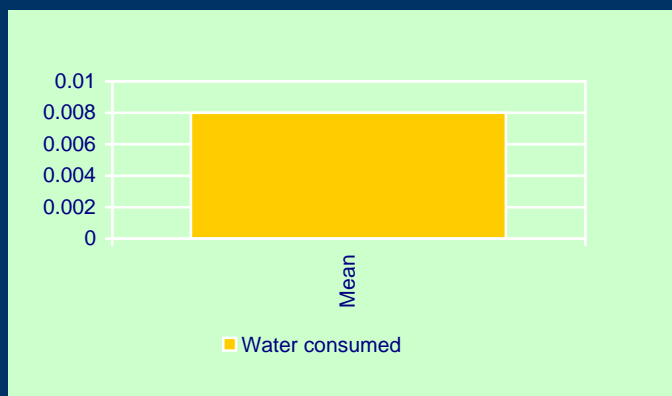
### Key Statistics (kL/\$ revenue)

*Water*
*Water*  
*consumed*
*discharged*

Mean 

0.008
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(ABS)





**Sector - Clothing manufacturing not elsewhere classified**

**ANZSIC Code - 1351**

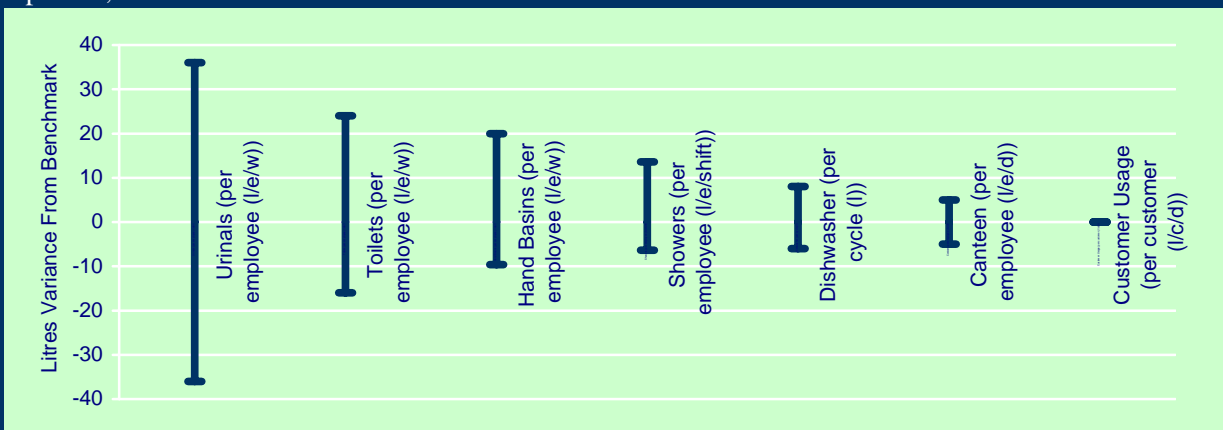
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on good training, education and support of technical personnel in charge of programming, to ensure the most efficient production process is used.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Develop a culture of water conservation.



**Sector -** **Leather tanning and fur dressing**

**ANZSIC Code -** **1320**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in tanning, finishing, dyeing and manufacturing leather and dressing and dyeing fur.

**Industry overview**

*The primary activities of firms in this industry are:*

- Finishing or dyeing slipe or skin wool
- Fellmongered wool manufacturing
- Fur skin dressing or dyeing and rug manufacturing
- Hand pickling, wet blueing, tanning, currying dressing, finishing or dyeing
- Leather manufacturing (including bags, wallets, belts,
- Leather tanning
- Skin pickling, tanning, currying, dressing, finishing, or dyeing
- Slipe or skin wool manufacturing

*The major products and services in this industry are:*

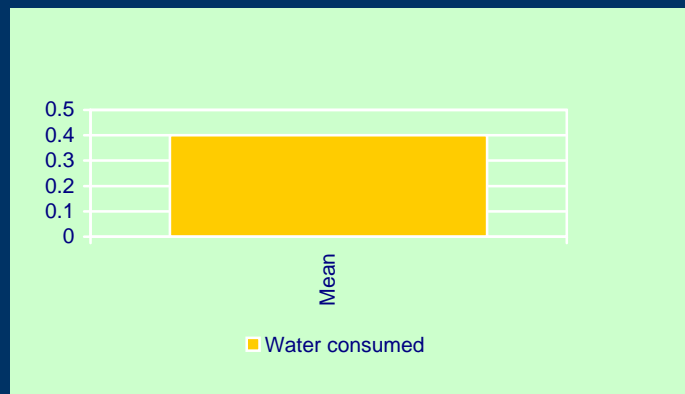
- Bovine hides
- Sheep skins

**Key Statistics (kL/skin)**

*Water consumed      Water discharged*

Mean 0.4

(Department of Environment & Heritage, 2001)





Sector - **Leather tanning and fur dressing**

ANZSIC Code - **1320**

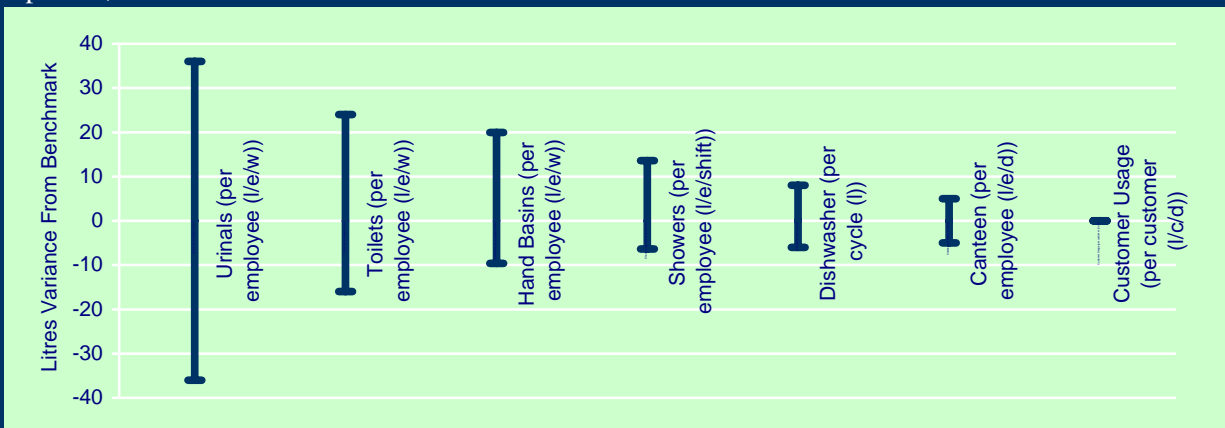
### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Number of employees
- Processes involved
- Water efficiency of equipment

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Develop a culture of water conservation.



**Sector -** Pulp, paper and paperboard manufacturing

**ANZSIC Code -** 1510

**ANZSIC Descriptor -** This sector consists of units mainly engaged in the manufacturing of paper, pulp and paperboard products, including cardboard, packaging and writing papers.

**Industry overview**

*The primary activities of firms in this industry are:*

- Newsprint manufacturing
- Paper manufacturing
- Paper pulp manufacturing
- Paperboard manufacturing
- Wood pulp manufacturing

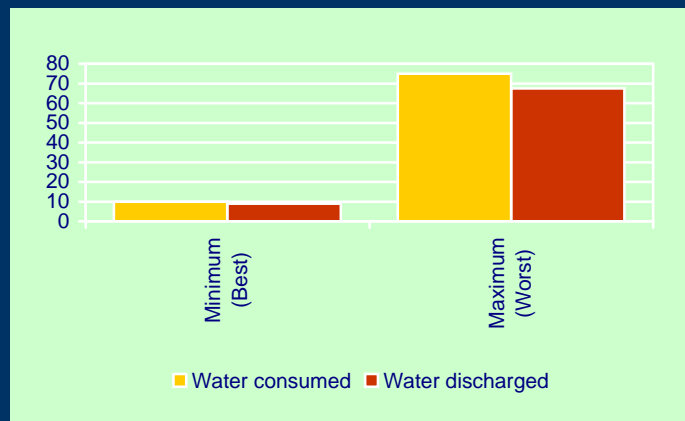
*The major products and services in this industry are:*

- Packaging and industrial papers
- Pulp (mechanical and chemical)
- Printing and writing papers
- Newsprint

**Key Statistics (kL/tonne product)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	10	9
<i>Maximum (Worst)</i>	75	67.5

(To Use or Misuse)





**Sector - Pulp, paper and paperboard manufacturing**

**ANZSIC Code - 1510**

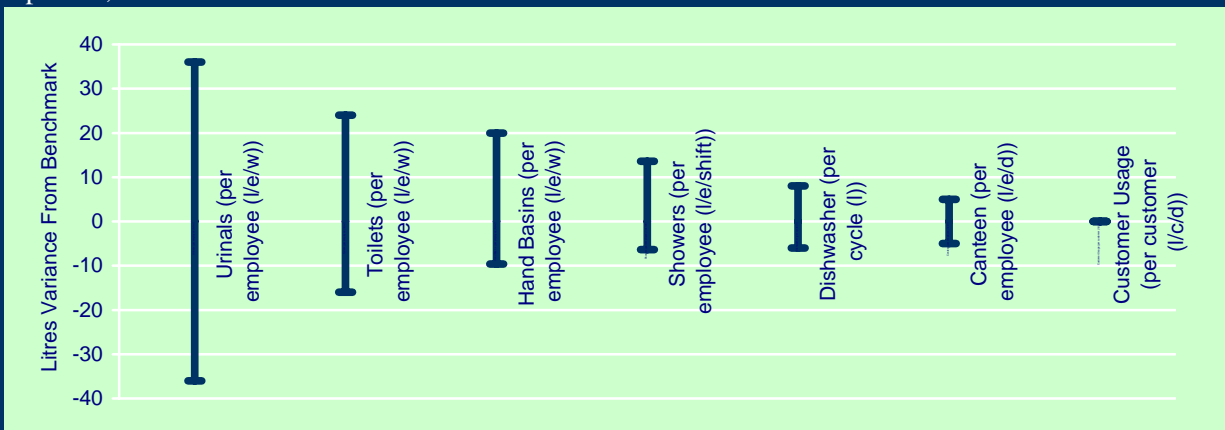
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Age of technology
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on updating of production technology. Older technology required significant water use in industrial boilers, whereas new production technology uses nil water, instead relying on chemical-based heating and cooling systems.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Develop a culture of water conservation.



**Sector - Corrugated Paperboard and Paperboard Container Manufacturing**

**ANZSIC Code - 1521**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in the manufacture of corrugated and solid paper and paperboard and of containers of paper and paperboard.

**Industry overview**

*The primary activities of firms in this industry are:*

- Corrugated paperboard container manufacturing
- Corrugated paperboard manufacturing
- Paperboard container manufacturing

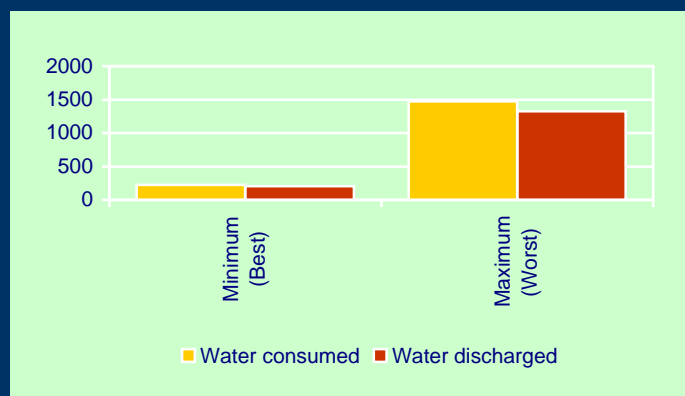
*The major products and services in this*

- Corrugated paper and paperboard containers
- Solid paper and paperboard containers

**Key Statistics (kL/employee/year)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	226	203.4
<i>Maximum (Worst)</i>	1474	1326.6

(Deloitte Survey, 2006)





**Sector - Corrugated Paperboard and Paperboard Container Manufacturing**

**ANZSIC Code - 1521**

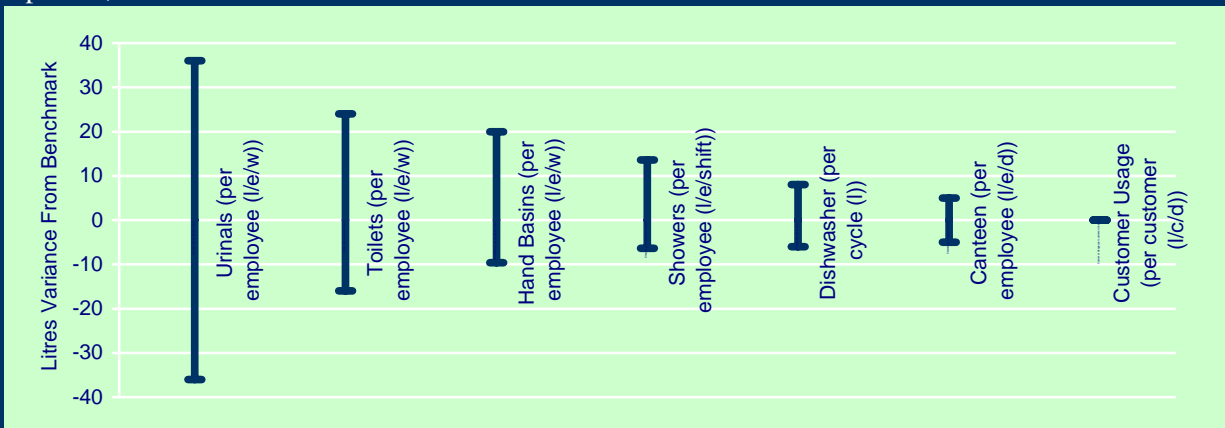
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Age of technology
- Processes involved
- Number of employees
- Water efficiency of equipment

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on updating of production technology. Older technology required significant water use in industrial boilers, whereas new production technology uses nil water, instead relying on chemical-based heating and cooling systems.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Develop a culture of water conservation.



**Sector -** Industrial gas manufacturing

**ANZSIC Code -** 1811

**ANZSIC Descriptor -** This sector consists of units mainly engaged in the manufacturing of gases such as carbon dioxide, carbon monoxide, nitrogen, oxygen and nitrous oxide.

**Industry overview**

*The primary activities of firms in this industry are:*

- Acetylene gas manufacturing
- Carbon dioxide gas manufacturing
- Carbon monoxide gas manufacturing
- Dry ice manufacturing
- Hydrogen manufacturing
- Nitrogen manufacturing
- Nitrous oxide manufacturing
- Oxygen manufacturing
- Inorganic gas manufacturing
- Organic gas manufacturing

*The major products and services in this industry are:*

- Oxygen and nitrogen
- Other atmospheric and non-atmospheric gases

**Key Statistics (kL/employee/year)**

Water consumed      Water discharged

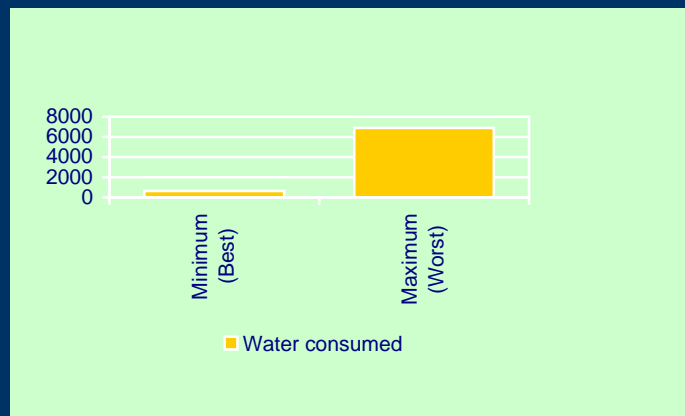
Minimum (Best) 

625	
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Maximum (Worst) 

6900	
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(Deloitte Survey, 2006)





**Sector - Industrial gas manufacturing**

**ANZSIC Code - 1811**

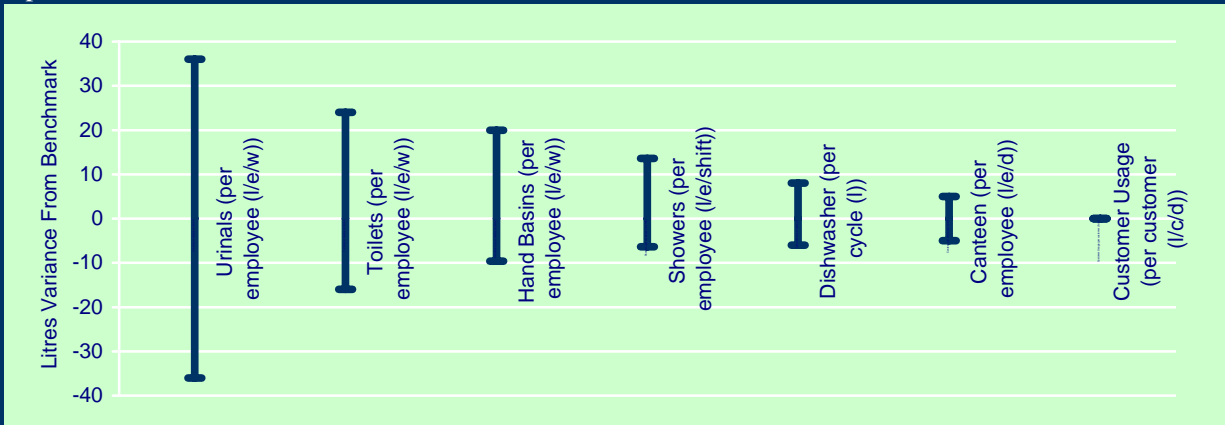
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Develop effective recycling programs for water used in production process.
- \* Effectively manage key water devices, such as industrial cooling and heating towers, to minimise wastage and leaks.
- \* Develop a culture of water conservation.



**Sector -** Synthetic Resin and Synthetic Rubber manufacturing

**ANZSIC Code -** 1821

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing synthetic resins. This Class also includes units mainly engaged in manufacturing synthetic rubber.

**Industry overview**

*The primary activities of firms in this industry are:*

- Cellulose nitrate manufacturing
- Cellulosic resin manufacturing
- Gelatin (chemically hardened) manufacturing
- Gun-cotton manufacturing
- Plastic raw material manufacturing
- Plastic and rubber recycling
- Polystyrene, polyethylene and polypropylene
- Synthetic resin manufacturing (except adhesives)
- Polyvinyl acetate and chloride manufacturing
- Synthetic rubber manufacturing

*The major products and services in this industry are:*

- Polyethylene, PVC and polypropylene
- Polyvinyl acetate and synthetic resins
- Synthetic rubber
- Polystyrene
- Carbon black
- Resin acids

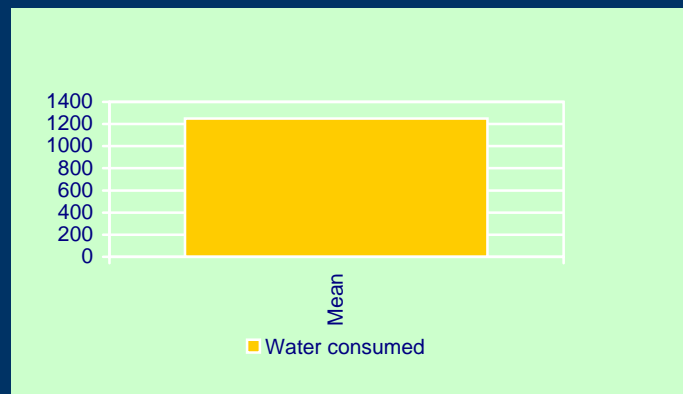
**Key Statistics (kL/employee/year)**

Water consumed      Water discharged

Mean 

1250
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(Deloitte Survey, 2006)



**Sector - Synthetic Resin and Synthetic Rubber manufacturing**

**ANZSIC Code - 1821**

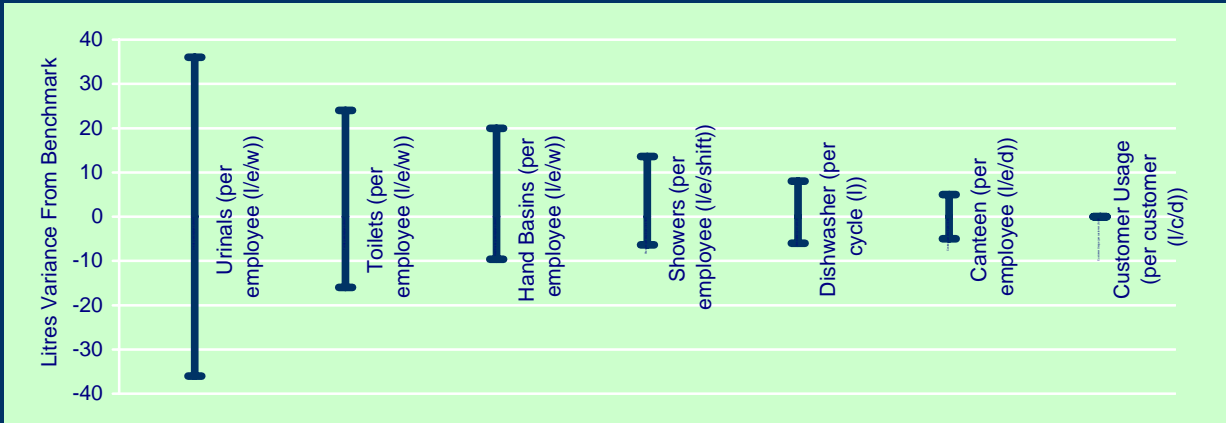
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Develop effective recycling programs for water used in production process.
- \* Effectively manage key water devices, such as industrial cooling and heating towers, to minimise wastage and leaks.
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Develop a culture of water conservation.



**Sector -** **Basic Organic Chemical Manufacturing**  
**ANZSIC Code -** **1812**  
**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing organic industrial chemicals such as chloroform, chemical colours and chlorine etc.

**Industry overview**

*The primary activities of firms in this industry are:*

- Organic acid manufacturing
- Organic chemical colour manufacturing (except prepared tinting colour for paints)
- Activated carbon/charcoal manufacturing
- Organic dye or pigment manufacturing
- Ether, ethanol and methanol manufacturing
- Organic industrial chemical manufacturing
- Industrial alcohol manufacturing
- Formaldehyde manufacturing
- Tanning extract, organic manufacturing
- Turpentine manufacturing (except mineral turpentine)

*The major products and services in this industry are:*

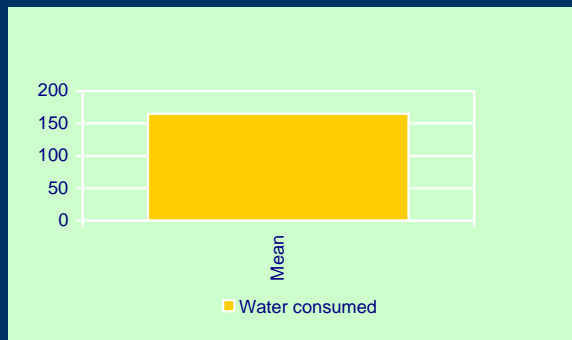
- Ethylene and ethylene oxide
- Propylene and propylene oxide
- Other alcohols, phenols, fatty acids etc
- Other organic chemicals
- Ethers
- Compound plasticisers
- Synthetic organic colouring matter

**Key Statistics (kL/employee/year)**

Water consumed      Water discharged

Mean 165

(Deloitte Survey, 2006)





**Sector - Basic Organic Chemical Manufacturing**

**ANZSIC Code - 1812**

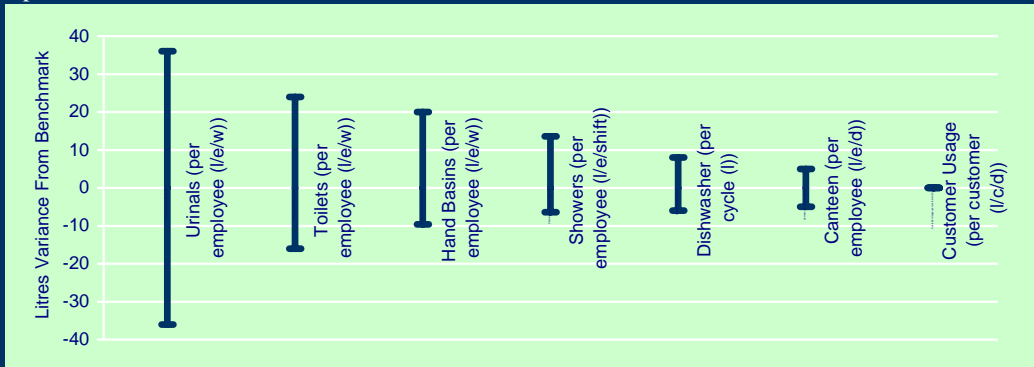
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Age of technology
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on updating of production technology. Older technology required significant water use in industrial boilers, whereas new production technology uses nil water, instead relying on chemical-based heating and cooling systems.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Effectively manage key water devices, such as industrial cooling and heating towers, to minimise wastage and leaks.
- \* Recycle water across proximate uses of water, where the water is not heavily contaminated in process.
- \* Develop a culture of water conservation.



<b>Sector -</b>	<b>Basic Inorganic chemical manufacturing</b>
<b>ANZSIC Code -</b>	<b>1813</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in manufacturing inorganic industrial chemicals such as ammonia, calcium chloride and hydrochloric acid, etc.

**Industry overview**

*The primary activities of firms in this industry are:*

- Inorganic acid manufacturing
- Aluminium hydroxide manufacturing
- Ammonia manufacturing (except fertiliser grade)
- Calcium chloride manufacturing
- Chromium sulphate manufacturing (for application in
- Hydrochloric acid manufacturing
- Industrial salt manufacturing
- Sulphur compounds manufacturing
- Sulphuric acid manufacturing (other than smelter by-product)
- Zinc peroxide and oxide manufacturing

*The major products and services in this industry are:*

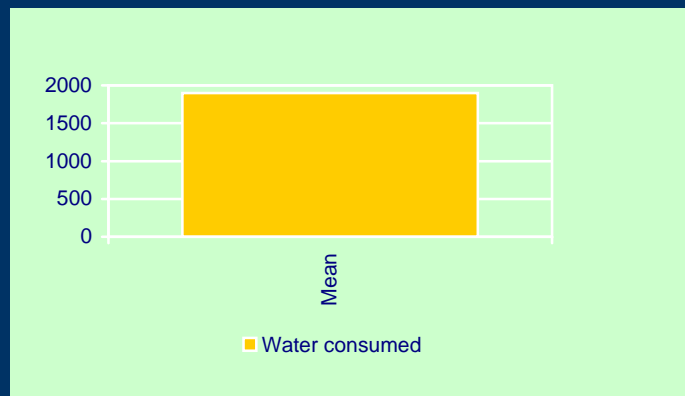
- Titanium dioxide
- Sodium cyanide
- Ammonia (industrial)
- Caustic soda
- Soda ash
- Chlorine
- Sulphuric acid

**Key Statistics (kL/employee/year)**

Water consumed      Water discharged

<i>Mean</i>	1900
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(Deloitte Survey, 2006)





**Sector - Basic Inorganic chemical manufacturing**

**ANZSIC Code - 1813**

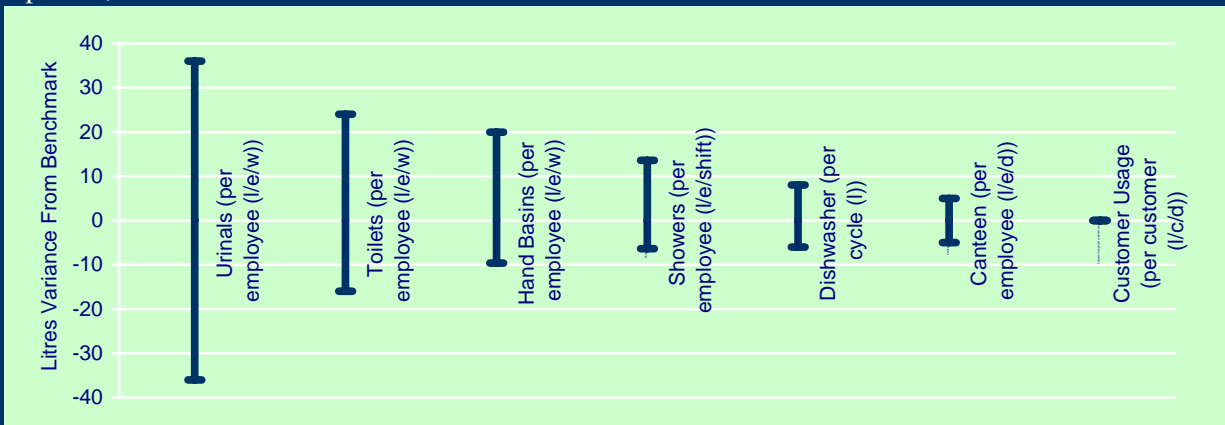
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Cooling operations on-site
- Processes involved
- Age of technology
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on updating of production technology. Older technology required significant water use in industrial boilers, whereas new production technology uses nil water, instead relying on chemical-based heating and cooling systems.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Effectively manage key water devices, such as industrial cooling and heating towers, to minimise wastage and leaks.
- \* Develop effective recycling programs for water used in production process.
- \* Develop a culture of water conservation.



**Sector -** Human Pharmaceutical and Medicinal Product Manufacturing

**ANZSIC Code -** 1841

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing medical and pharmaceutical products including antibiotics, contraceptives, morphine, ointment, vaccines and other medicines.

**Industry overview**

*The primary activities of firms in this industry are:*

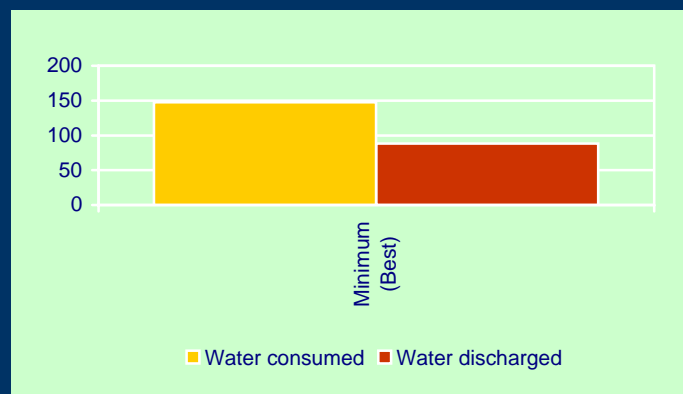
*The major products and services in this industry are:*

- Antibacterial manufacturing
- Antibiotic manufacturing
- Contraceptive, medicinal, manufacturing (except rubber
- Drug manufacturing (except veterinary)
- Medicinal capsule manufacturing
- Medicinal chemical manufacturing
- Medicinal ointment manufacturing
- Medicine manufacturing (except veterinary)
- Blood serum manufacturing
- Hormone manufacturing (except veterinary)
- Ethical pharmaceuticals
- Over the counter pharmaceuticals
- Veterinary products

**Key Statistics (kL/employee/year)**

	Water consumed	Water discharged
Minimum (Best)	147.4	88.44

(Deloitte Survey, 2006)





Sector - Human Pharmaceutical and Medicinal Product Manufacturing

ANZSIC Code - 1841

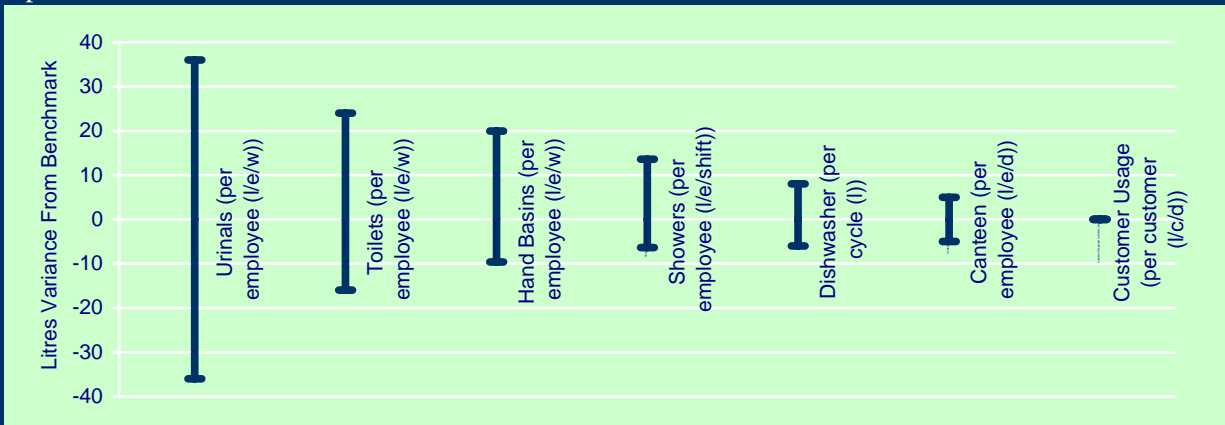
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on updating of production technology. Older technology required significant water use in industrial boilers, whereas new production technology uses nil water, instead relying on chemical-based heating and cooling systems.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Develop effective recycling programs for water used in production process.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Develop a culture of water conservation.



**Sector - Pesticide manufacturing**

**ANZSIC Code - 1832**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in the manufacturing of pesticides for plants and animals (herbicides, fungicides and insecticides).

**Industry overview**

*The primary activities of firms in this industry are:*

- Animal dip and spray manufacturing
- Fly spray manufacturing
- Formulated pest control product manufacturing
- Fungicide manufacturing
- Insect repellent manufacturing
- Insecticide manufacturing
- Pesticide manufacturing n.e.c
- Soil fumigant manufacturing
- Rat poison manufacturing
- Weedkiller manufacturing

*The major products and services in this industry are:*

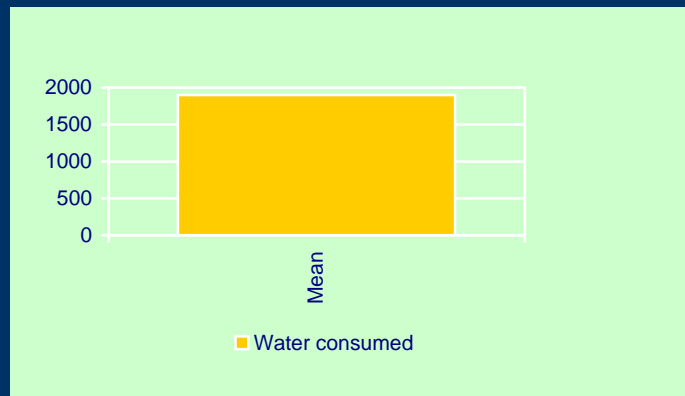
- Herbicides
- Insecticides
- Other - rat poison, soil fumigants and other agricultural and pastoral chemicals
- Fungicides

**Key Statistics (kL/employee/year)**

Water consumed      Water discharged

Mean 1900

(Sector 2535 - Inorganic Industrial Chemical Manufacturing used as proxy. Deloitte Survey, 2006)



**Sector - Pesticide manufacturing**

**ANZSIC Code - 1832**

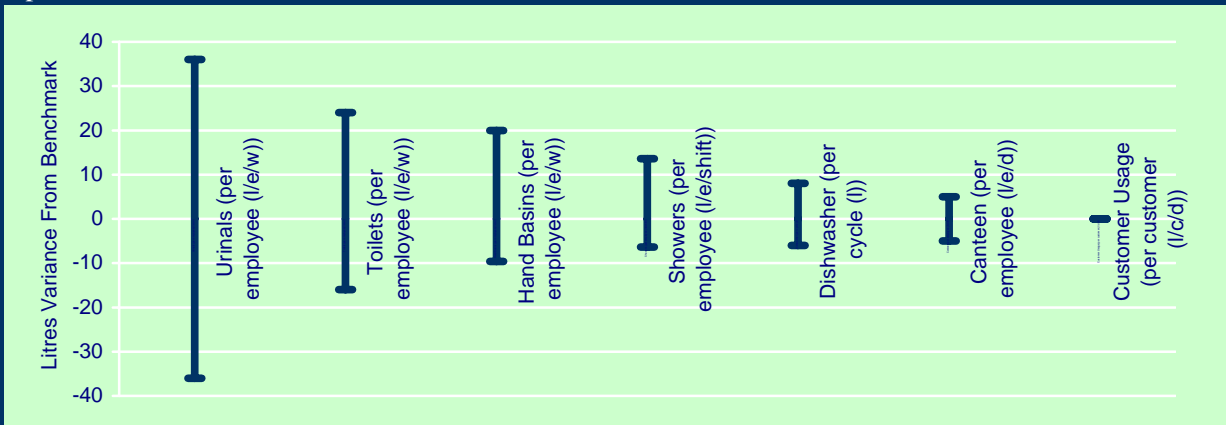
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on updating of production technology. Older technology required significant water use in industrial boilers, whereas new production technology uses nil water, instead relying on chemical-based heating and cooling systems.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Recycle water across proximate uses of water, where the water is not heavily contaminated in process.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Develop a culture of water conservation.



<b>Sector -</b>	<b>Cosmetic and toiletry preparation manufacturing</b>
<b>ANZSIC Code -</b>	<b>1852</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in the manufacturing of toiletry preparation and cosmetics such as make-up, deodorants, after shaves, shampoos and conditioners, and perfumes.

**Industry overview**

*The primary activities of firms in this industry are:*

- After shave lotion manufacturing
- Barrier cream manufacturing
- Cosmetic deodorant manufacturing
- Cosmetics manufacturing
- Depilatory manufacturing
- Hair preparation manufacturing
- Nail polish manufacturing
- Perfume manufacturing
- Shaving preparation manufacturing
- Sunscreen preparation manufacturing

*The major products and services in this industry are:*

- Hair care products
- Deodorisers
- Body and bath products
- Perfumes and fragrances
- Male grooming products
- Cosmetics

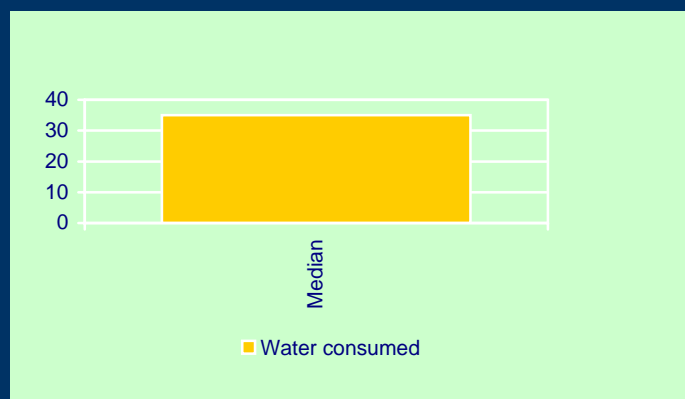
**Key Statistics (kL/employee/year)**

*Water consumed*
*Water discharged*

Median 

35
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(Deloitte Survey, 2006)





Sector - **Cosmetic and toiletry preparation manufacturing**

ANZSIC Code - **1852**

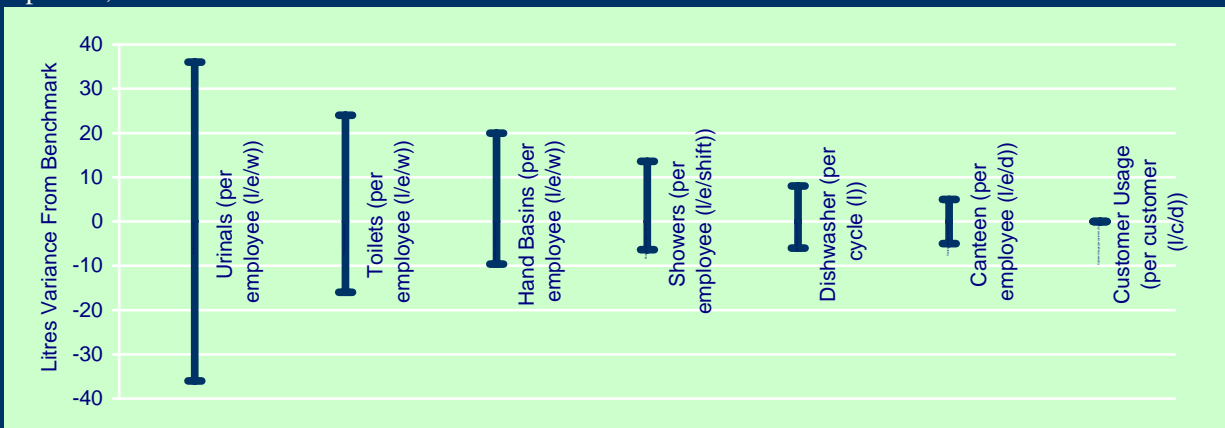
**Variance**

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Volume of production
- Cooling operations on-site
- Processes involved
- Number of employees
- Water efficiency of equipment

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Recycle water across proximate uses of water, where the water is not heavily contaminated in process.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).
- \* Develop a culture of water conservation.



**Sector -** Rigid and Semi-Rigid Polymer Product Manufacturing  
**ANZSIC Code -** 1912  
**ANZSIC Descriptor -** This sector consists of units mainly engaged in the manufacturing of plastics products including blown bottles and mouldings.

**Industry overview**

*The primary activities of firms in this industry are:*

- Blow mouldings and plastic manufacturing
- Bottles and plastic manufacturing
- Drinking fountain, plastic, manufacturing
- Electrical insulation box, polymer, manufacturing
- Gutter and spout, plastic, manufacturing
- Light switch and plug, polymer, manufacturing
- Polymer container manufacturing n.e.c.
- Profile shapes, plastic, manufacturing n.e.c.
- Rod or tube, plastic, manufacturing
- Watering can, plastic, manufacturing

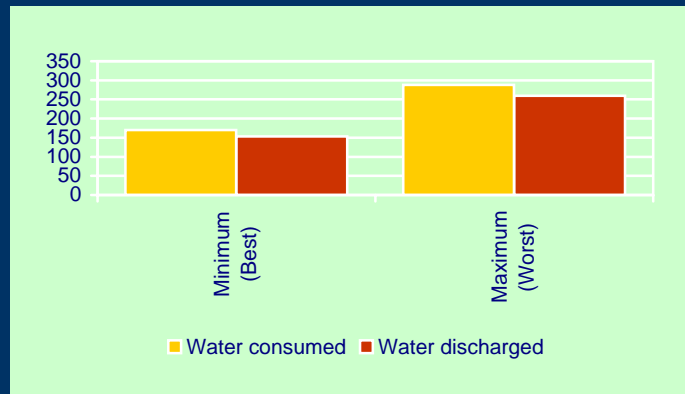
*The major products and services in this industry are:*

- Beverage containers (PET)
- Food and other containers
- Household cleanser and detergent containers
- Milk containers (HDPE)
- Paints and chemical containers
- Beer containers (PET)

**Key Statistics (kL/employee/year)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	170	153
<i>Maximum (Worst)</i>	288	259.2

(Sector 2561 - Plastic Injection Moulded Product Manufacturing used as proxy. Deloitte Survey, 2006)





Sector - Rigid and Semi-Rigid Polymer Product Manufacturing

ANZSIC Code - 1912

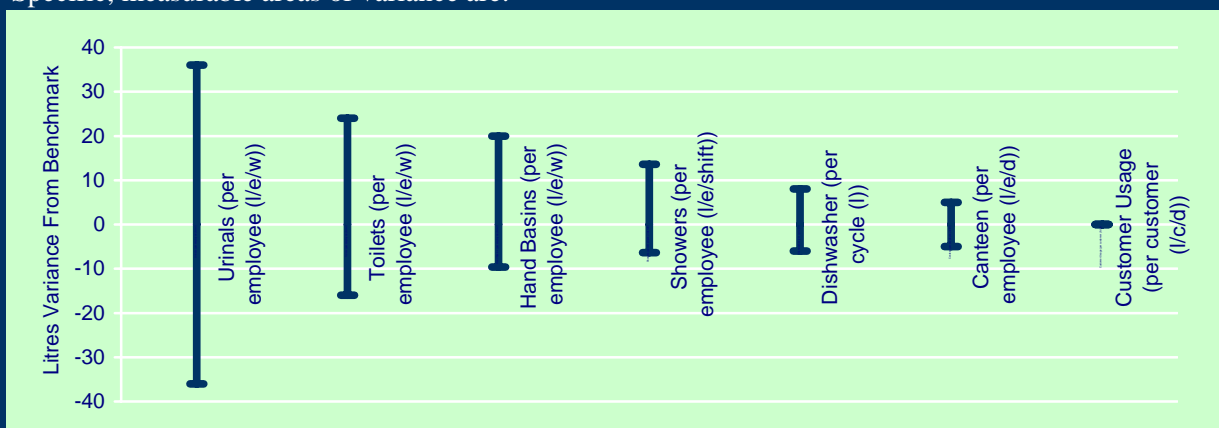
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Number of employees

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on updating of production technology. Older technology required significant water use in industrial boilers, whereas new production technology uses nil water, instead relying on chemical-based heating and cooling systems.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Recycle water across proximate uses of water, where the water is not heavily contaminated in process.
- \* Develop a culture of water conservation.



**Sector - Other Polymer Product Manufacturing**

**ANZSIC Code - 1919**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in the manufacturing of injection moulded plastic products including bins and buckets, automotive products, kitchenware and other plastic goods.

**Industry overview**

*The primary activities of firms in this industry are:*

- Awning, fibreglass, manufacturing
- Conveyor belt, plastic or composite, manufacturing
- Floor covering, resilient polymer, manufacturing
- Garbage bin, plastic, manufacturing
- Garden hose, plastic or composite, manufacturing
- Gloves, plastic, manufacturing
- High-density safety equipment manufacturing (e.g.
- Hose, plastic or composite, manufacturing
- Motor vehicle and boat parts, fibreglass, manufacturing
- Polymer product manufacturing n.e.c.

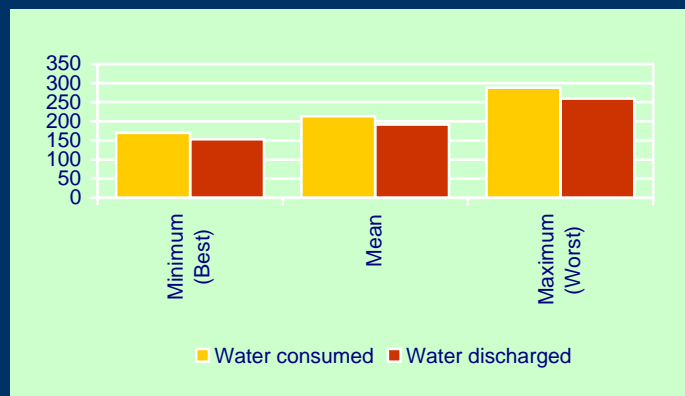
*The major products and services in this industry are:*

- Transport applications
- Housewares
- Packaging
- Electrical appliances
- Garbage bins
- Pipe fittings
- Furniture
- Toys

**Key Statistics (kL/employee/year)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	170	153
<i>Mean</i>	213.5	192.15
<i>Maximum (Worst)</i>	288	259.2

(Deloitte Survey, 2006)



Sector - Other Polymer Product Manufacturing

ANZSIC Code - 1919

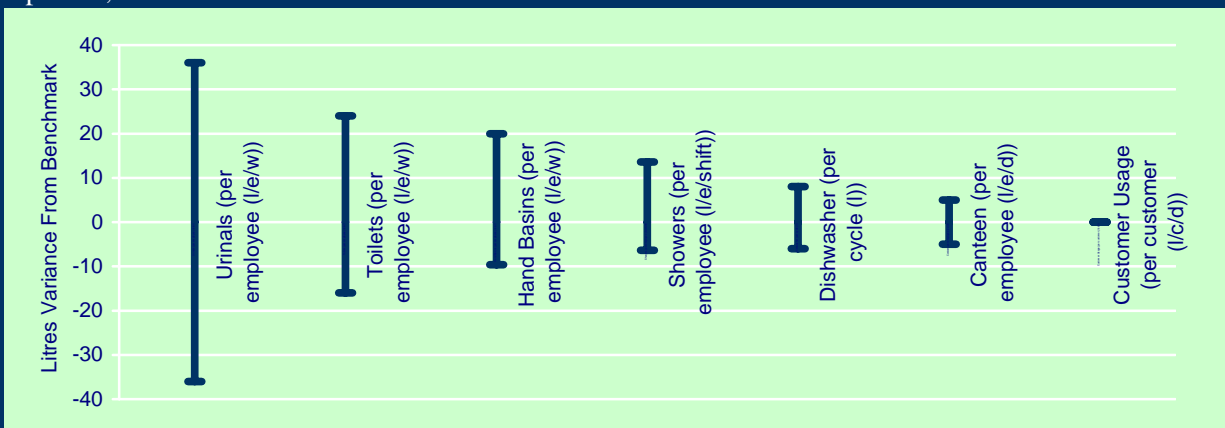
### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production
- Processes involved
- Water efficiency of equipment
- Cooling operations on-site
- Number of employees

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on updating of production technology. Older technology required significant water use in industrial boilers, whereas new production technology uses nil water, instead relying on chemical-based heating and cooling systems.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Recycle water across proximate uses of water, where the water is not heavily contaminated in process.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing and auto-flushing).



**Sector -** Glass and glass product manufacturing

**ANZSIC Code -** 2010

**ANZSIC Descriptor -** This sector consists of units mainly engaged in the manufacturing of glass and glass products including jars, mirrors, bottles and sheeting, etc.

**Industry overview**

*The primary activities of firms in this industry are:*

- Automotive glass manufacturing
- Beads and glass manufacturing
- Bottles and glass manufacturing
  
- Domestic glassware manufacturing
- Glass and sheet manufacturing
- Jars, glass, manufacturing
- Laboratory glassware manufacturing
- Mirrors manufacturing
- Optical glass manufacturing
- Scientific glassware manufacturing

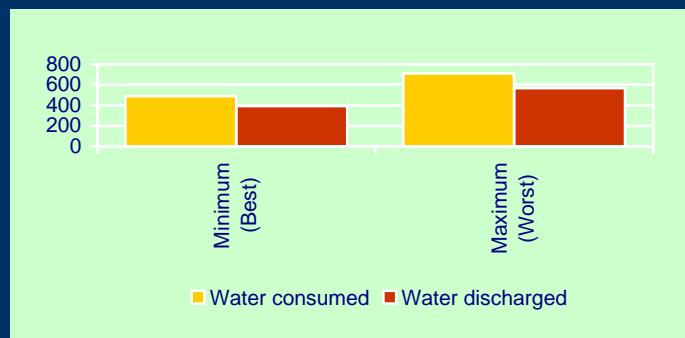
*The major products and services in this industry are:*

- Glass containers (bottles, jars etc.)
- Flat glass (window glass and glass walls)
- Household and scientific glass (i.e. kitchenware)

**Key Statistics (kL/employee/year)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	490	392
<i>Maximum (Worst)</i>	709	567.2

(Deloitte Survey, 2006)



Sector - Glass and glass product manufacturing

ANZSIC Code - 2010

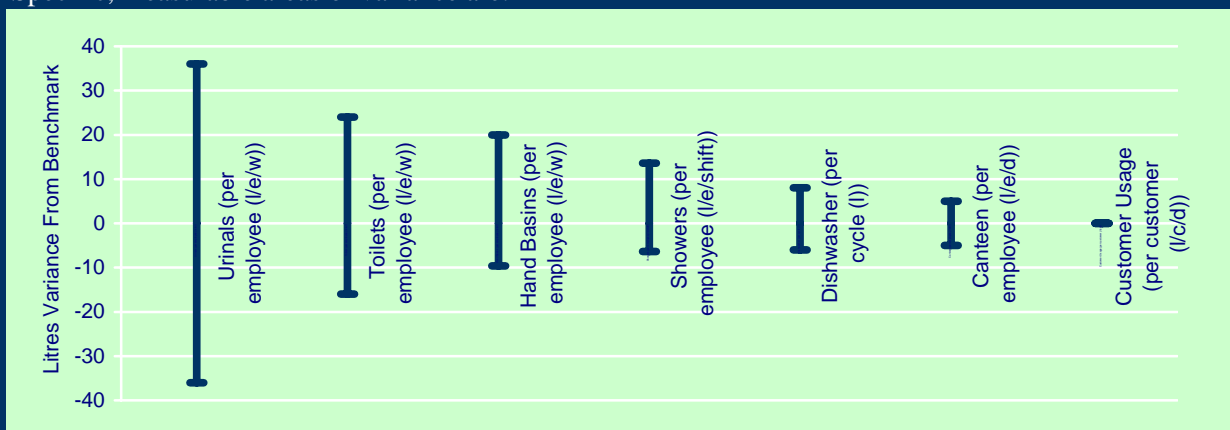
### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Volume of production - Number of showers
- Canteen/kitchen facilities
- Number of toilets

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on updating of production technology. Older technology required significant water use in industrial boilers, whereas new production technology uses nil water, instead relying on chemical-based heating and cooling systems.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



**Sector -** Ready-Mixed Concrete Manufacturing

**ANZSIC Code -** 2033

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing concrete slurry ready for pouring, ready mixed concrete or mortar.

**Industry overview**

*The primary activities of firms in this industry are:*

- Concrete slurry manufacturing
- Dry mix concrete manufacturing
- Mortar, dry mix, manufacturing
- Ready-mixed concrete manufacturing

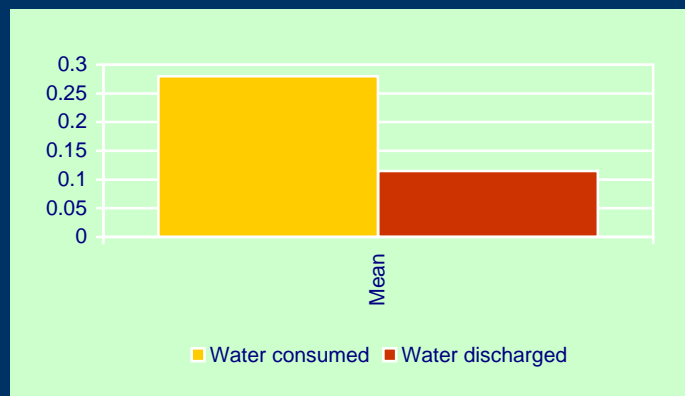
*The major products and services in this industry are:*

- Concrete slurry (various strengths and attributes)
- Steel concrete

**Key Statistics (kL/m3)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Mean</i>	0.28	0.1148

(Pacific Air and Environment, 2003)



Sector - Ready-Mixed Concrete Manufacturing

ANZSIC Code - 2033

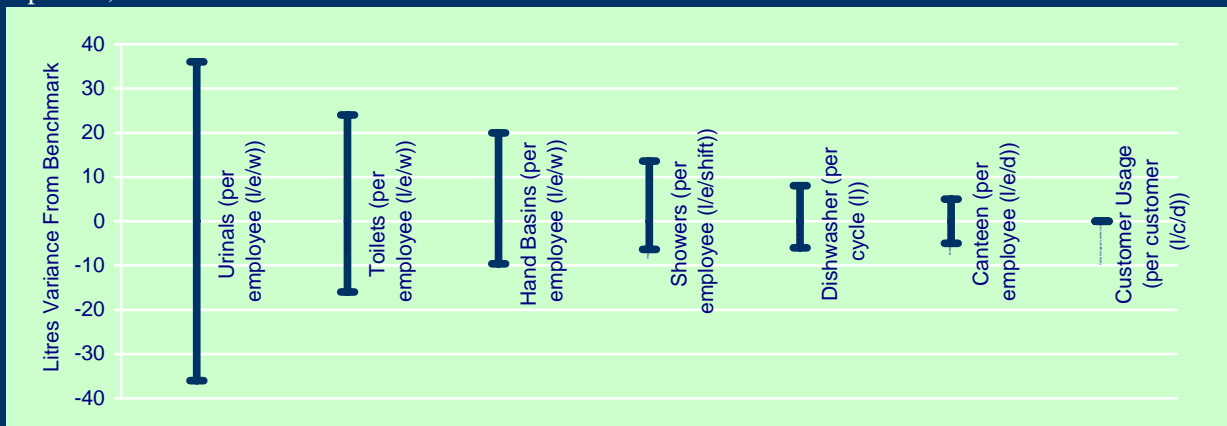
### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Culture of water conservation
- Volume of production
- Number of employees
- Canteen/kitchen facilities
- Number of showers
- Number of toilets

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Ensure maximum use of recycling of water - such as water used in truck wash down and water collected in waste.
- \* Ensure maximum use of rainwater catchment, beyond minimum legal requirements.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector - Iron Smelting and Steel Manufacturing**

**ANZSIC Code - 2110**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing basic steel products including iron bars, pig iron and other structural products.

**Industry overview**

*The primary activities of firms in this industry are:*

- Iron or steel bars manufacturing
- Ferro-alloy manufacturing (including, manganese,
- Iron or steel flat-rolled products
- Pig iron manufacturing
- Rail, steel, manufacturing
- Semi-finished product, iron or steel, manufacturing
- Spring steel and stainless steel manufacturing
- Roof decking, steel, manufacturing
- Structural steel shape manufacturing (not fabricated)
- Tinplate sheet or strip manufacturing

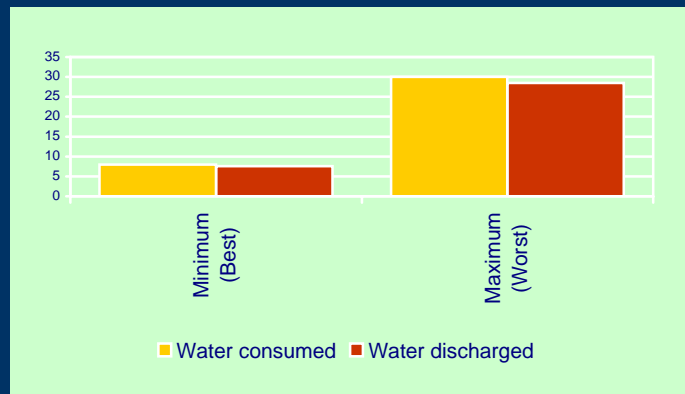
*The major products and services in this industry are:*

- Steel
- Ferroalloys

**Key Statistics (kL/tonne)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	8	7.6
<i>Maximum (Worst)</i>	30	28.5

(Crabb, 1997)



Sector - Iron Smelting and Steel Manufacturing

ANZSIC Code - 2110

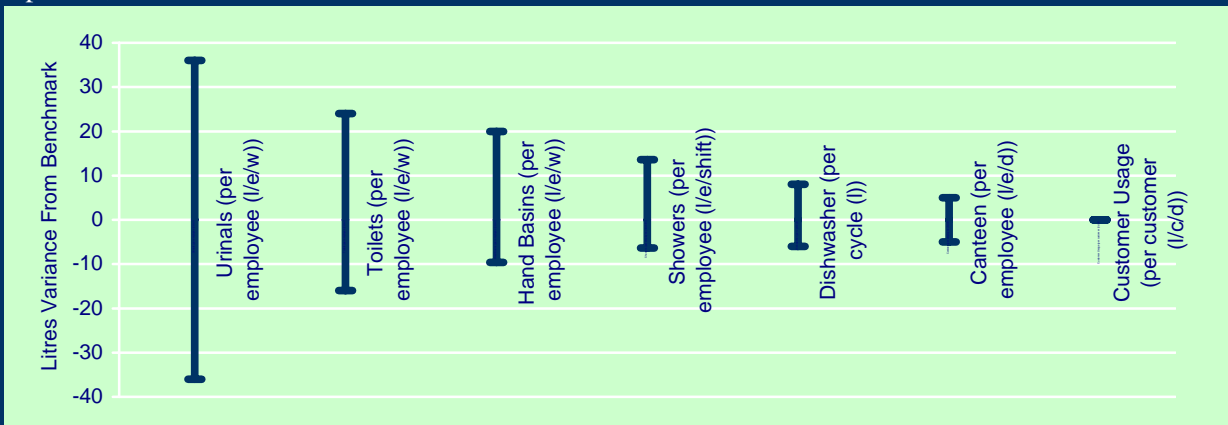
### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Number of employees
- Canteen/kitchen facilities
- Number of toilets

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



**Sector -** Metal coating and finishing  
**ANZSIC Code -** 2293  
**ANZSIC Descriptor -** This sector consists of units mainly engaged in coating and finishing metal (anodising, brass finishing, powder coating, plating).

**Industry overview**

*The primary activities of firms in this industry are:*

- Anodising
- Boron nitride coating of machine tool parts
- Brass finishing or plating
- Cadmium, Chromium and Copper plating
- Heat treating metal or metal products
- Engraving on metals (except process or photographic)
- Galvanising of client supplied materials
- Gold plating
- Painting of manufactured metal products
- Powder coating of metal and metal products

*The major products and services in this industry are:*

- Painting
- Galvanising
- Powder coating
- Anodising
- Thermal spraying
- Electrostatic coating
- Electro-plating

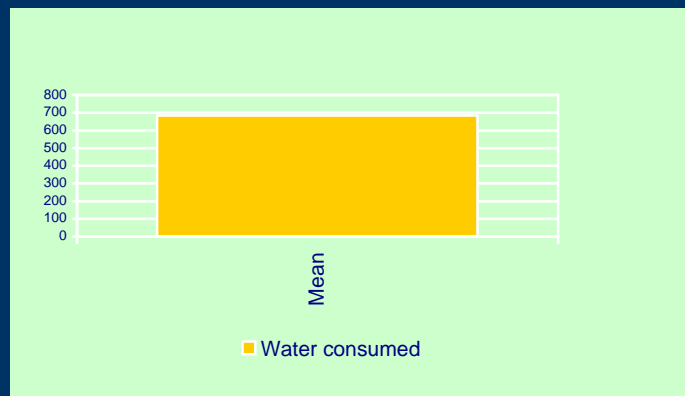
**Key Statistics (kL/employee/year)**

Water consumed      Water discharged

Mean 

685
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(Deloitte Survey, 2006)



Sector - Metal coating and finishing

ANZSIC Code - 2293

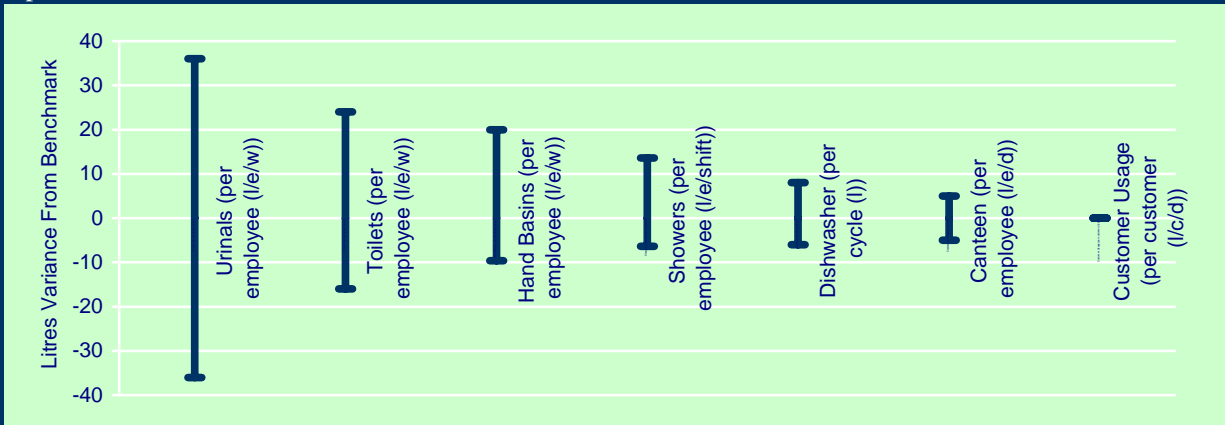
### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Number of showers
- Canteen/kitchen facilities
- Number of toilets

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Implement water saving devices for employee use (eg. low water toilets, lower flow taps, etc).
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.
- \* Minimise waste from overflows, such as electro-plating, maximise recycling of water and effectively manage trade waste to allow for recycling.



<b>Sector -</b>	<b>Other Fabricated Metal Product Manufacturing n.e.c.</b>
<b>ANZSIC Code -</b>	<b>2299</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in the manufacturing of fabricated metals such as ammunition, cabinetry, keys, boilers and freight crates, etc.

**Industry overview**

*The primary activities of firms in this industry are:*

- Ammunition manufacturing
- Bathroom or toilet fittings, metal, manufacturing
- Coupling, metal, manufacturing
- Knife, hand held, manufacturing (except power)
- Pipe fittings, non-ferrous metal, manufacturing
- Platework n.e.c.
- Razor or razor blade manufacturing (except power)
- Steel wool manufacturing
- Tackle block, metal, manufacturing
- Valve or valve parts, steam, gas or water,

*The major products and services in this industry are:*

- Boilers and plate work
- Door and window furniture
- Blinds and awnings
- Clothes hoists and antennae
- Ammunition

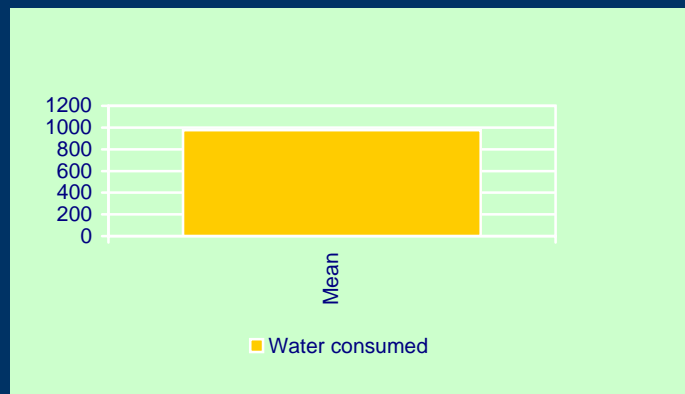
**Key Statistics (kL/employee/year)**

Water consumed      Water discharged

Mean 

975
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(Deloitte Survey, 2006)





**Sector - Other Fabricated Metal Product Manufacturing n.e.c.**

**ANZSIC Code - 2299**

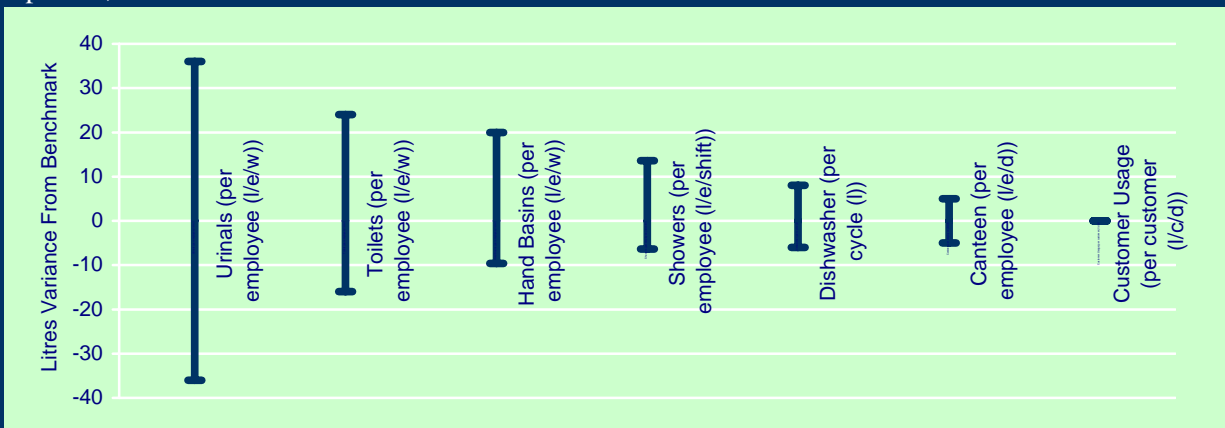
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Number of toilets
- Canteen/kitchen facilities
- Number of showers

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



**Sector -** Motor vehicle manufacturing

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**ANZSIC Code -** 2311

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing motor vehicles, motor vehicle engines or parts.

**Industry overview**

*The primary activities of firms in this industry are:*

- Bus manufacturing
- Hydrogen, fuelcell, hybrid or electric vehicle
- Motor car manufacturing
  
- Motor vehicle assembling
- Motor vehicle engine manufacturing
- Truck manufacturing (except off-highway)
- Van manufacturing

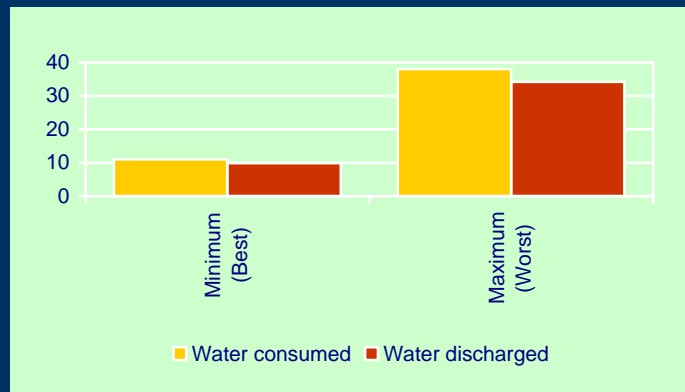
*The major products and services in this industry are:*

- Passenger motor vehicle
- Freight and buses

**Key Statistics (kL/unit)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	11.0	9.9
<i>Maximum (Worst)</i>	38.0	34.2

(Crabb, 1997)





**Sector - Motor vehicle manufacturing**

**ANZSIC Code - 2311**

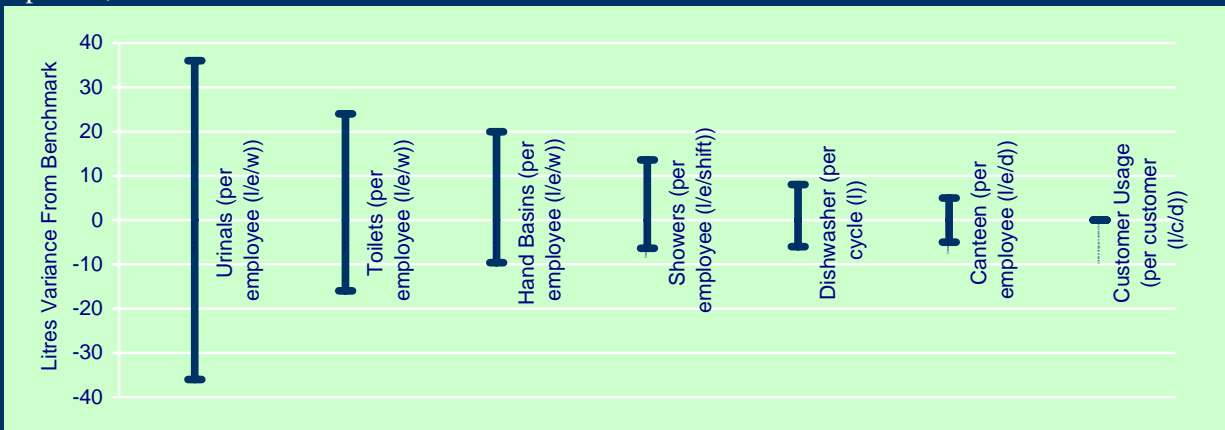
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Culture of water conservation
- Number of employees
- Canteen/kitchen facilities
- Number of toilets
- Number of showers

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of paint technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Minimise waste from overflows, such as electro-plating, maximise recycling of water and effectively manage trade waste to allow for recycling.
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.
- \* Implement water saving devices for process use (lower flow taps, filters, etc) and for employee use (low water toilets, lower flow taps, etc).
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector -** Other Motor Vehicle Parts Manufacturing

**ANZSIC Code -** 2319

**ANZSIC Descriptor -** This sector consists of units mainly engaged in manufacturing automotive components such as gearboxes, child restraints, mufflers, suspension and other automotive parts.

**Industry overview**

*The primary activities of firms in this industry are:*

- Automotive parts manufacturing n.e.c.
- Car accessory manufacturing
- Child car restraint manufacturing
- Clutch assembly manufacturing
- Factory reconditioning of changeover motors
- Gearbox manufacturing
- Muffler manufacturing
- Transmission manufacturing
- Roof rack manufacturing
- Seat belt manufacturing

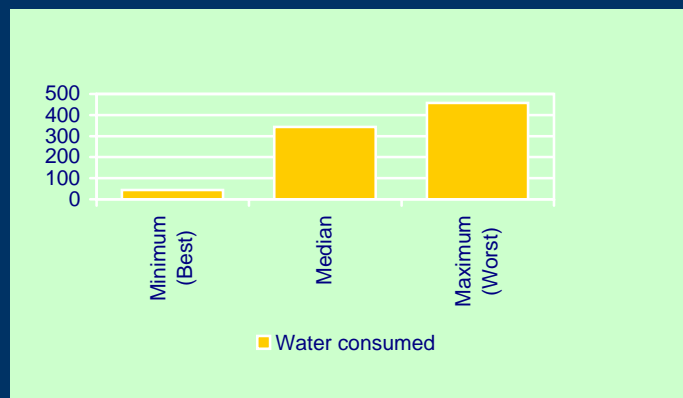
*The major products and services in this industry are:*

- Automotive parts
- Car accessories
- Motor reconditioning
- Marine engine conversion

**Key Statistics (kL/employee/year)**

	Water consumed	Water discharged
Minimum (Best)	43.5	
Median	343	
Maximum (Worst)	457	

(Deloitte Survey, 2006)



Sector - Other Motor Vehicle Parts Manufacturing

ANZSIC Code - 2319

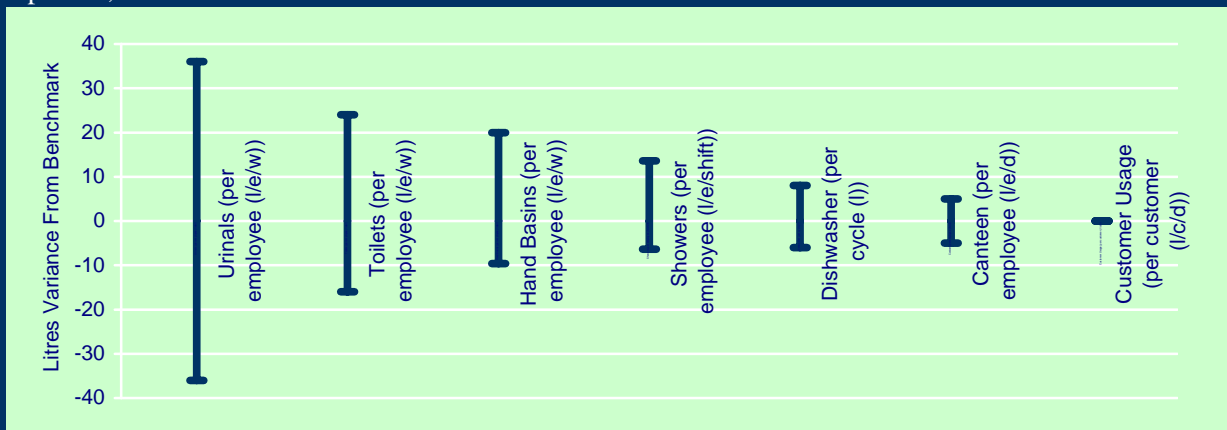
#### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Number of toilets
- Canteen/kitchen facilities
- Number of showers

Specific, measurable areas of variance are:



#### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Minimise waste from overflows, such as electro-plating, maximise recycling of water and effectively manage trade waste to allow for recycling.
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



<b>Sector -</b>	<b>Other Specialised Machinery and Equipment Manufacturing</b>
<b>ANZSIC Code -</b>	<b>2469</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in the manufacturing of food processing equipment used in baking, canning, juicing, filtering, etc. for both household and industrial use.

**Industry overview**

*The primary activities of firms in this industry are:*

- Bakery machinery manufacturing
- Bottling machine, food or drink, manufacturing
- Canning machinery, food or drink, manufacturing
- Crushing machinery manufacturing (food processing)
- Distilling equipment, beverage, manufacturing
- Food packing machinery manufacturing
- Food processing machinery, commercial, manufacturing
- Ironing or pressing machinery, industrial, manufacturing
- Juice extractor, fruit or vegetable, commercial, manufacturing
- Toaster, commercial electric, manufacturing

*The major products and services in this industry are:*

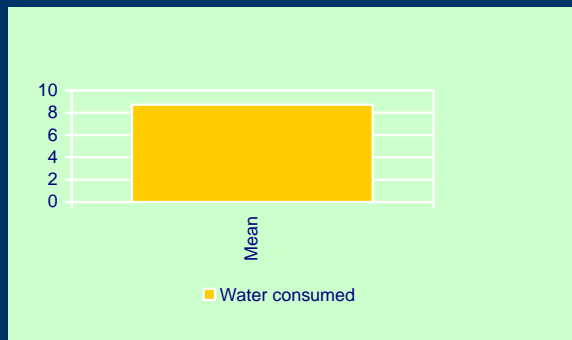
- Machinery with industrial applications
- Machinery with household and food preparation applications

**Key Statistics (kL/employee hour)**

Water consumed      Water discharged

Mean 8.71

(Village of Sturtevant, Wisconsin, 2006)





Sector - Other Specialised Machinery and Equipment Manufacturing

ANZSIC Code - 2469

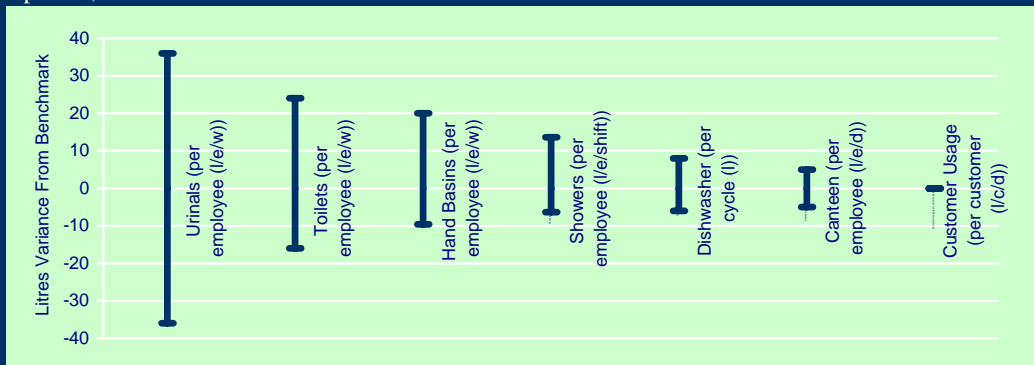
### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Number of toilets
- Canteen/kitchen facilities
- Number of showers

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



<b>Sector -</b>	<b>Other Machinery and Equipment Manufacturing n.e.c.</b>
<b>ANZSIC Code -</b>	<b>2499</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in the manufacturing of industrial equipment and machinery (bearings, motors, fans, etc.).

### Industry overview

*The primary activities of firms in this industry are:*

- Bearing manufacturing
- Diesel engine manufacturing n.e.c.
- Furnace, industrial, manufacturing (except electric)
- Gas burner, industrial, manufacturing
- Marine jet unit manufacturing
- Oil burner, industrial, manufacturing
- Oven, industrial, manufacturing (except electric)
- Pressure gauge manufacturing
- Sporting machinery manufacturing n.e.c.
- Vending machine manufacturing (except refrigerated)

*The major products and services in this industry are:*

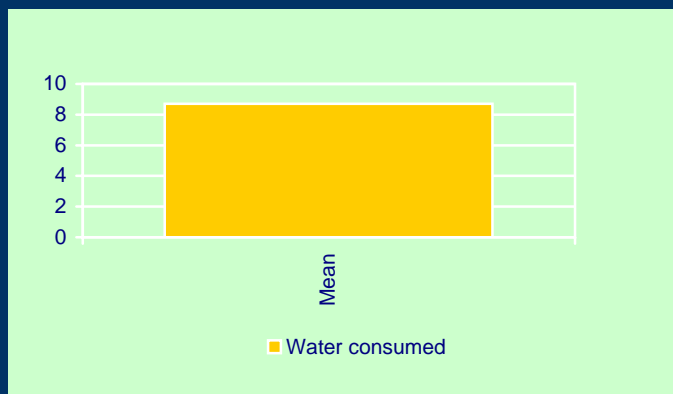
- Gaming and vending machines
- Water treatment equipment
- Bearings
- Industrial furnaces
- Diesel and gas generators
- Fans, industrial
- Paper making machine parts and repairs

### Key Statistics (kL/employee hour)

Water      Water  
consumed    discharged

Mean 8.71

(Village of Sturtevant,  
Wisconsin, 2006)





Sector - Other Machinery and Equipment Manufacturing n.e.c.

ANZSIC Code - 2499

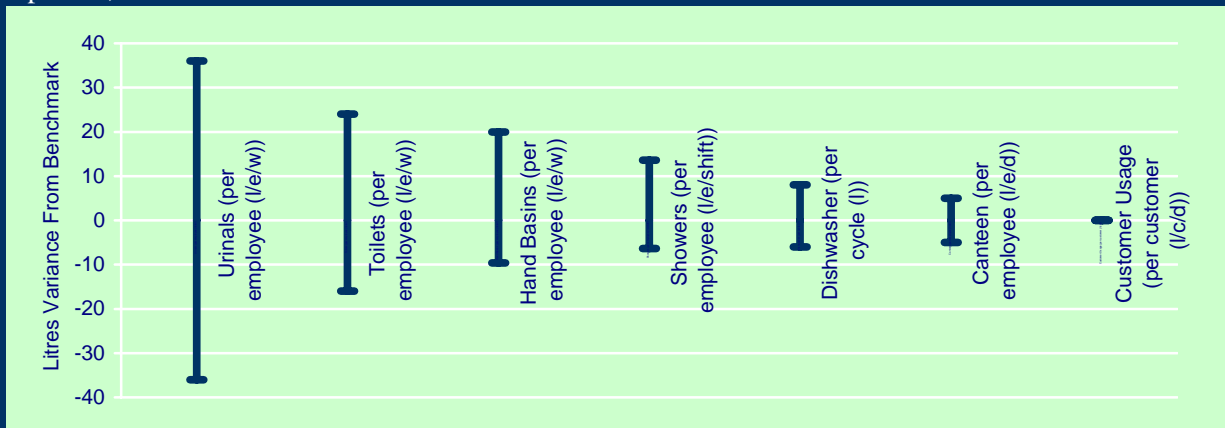
**Variance**

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Number of toilets
- Canteen/kitchen facilities
- Number of showers

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on relatively frequent updating of production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



<b>Sector -</b>	<b>Other Agricultural Product Wholesaling</b>
<b>ANZSIC Code -</b>	<b>3319</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in the wholesale sales of farm produce and supplies (including veterinary drugs, fertilisers, livestock and nursery stock, seeds, pesticides and agricultural chemicals).

**Industry overview**

*The primary activities of firms in this industry are:*

- Farm produce wholesaling n.e.c.
- Feed wholesaling
- Flower, cut, wholesaling
- Hide wholesaling
- Leather wholesaling
- Livestock wholesaling
- Meat meal wholesaling
- Nursery stock, horticultural, wholesaling
- Seed, farm or garden, wholesaling
- Tree or shrub, potted, wholesaling

*The major products and services in this industry are:*

- Wholesaling rural merchandise
- Wholesaling rural produce

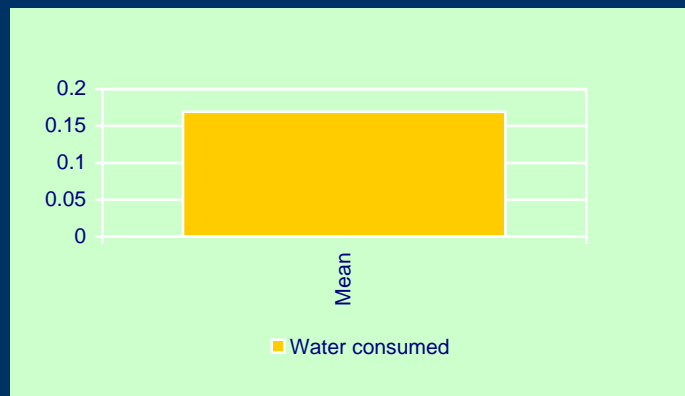
**Key Statistics (kL/employee/day)**

*Water consumed*
*Water discharged*

Mean 

0.169
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(Deloitte Survey, 2006)



Sector - Other Agricultural Product Wholesaling

ANZSIC Code - 3319

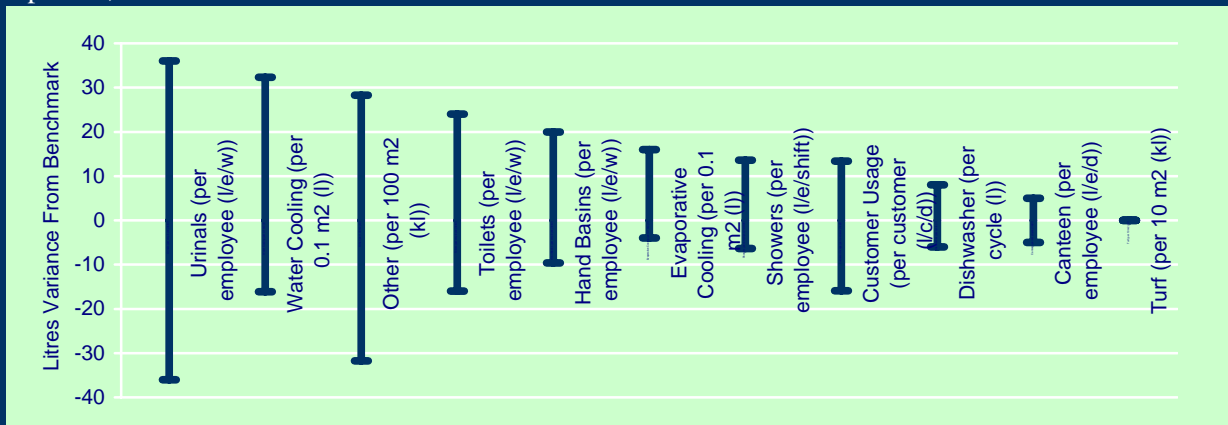
### Variance

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of toilets - Age/type of cooling equipment
- Canteen/kitchen facilities
- Extent of perishable products

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on ensuring cooling towers are well maintained. Upgrading the dosing equipment of the towers reduces water usage.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



**Sector -** Car Wholesaling

**ANZSIC Code -** 3501

**ANZSIC Descriptor -** This sector consists of units mainly engaged in the wholesale sales of passenger, commercial and industrial vehicles.

**Industry overview**

*The primary activities of firms in this industry are:*

- New car wholesaling
- Used car wholesaling

*The major products and services in this industry are:*

- Local car manufacturers / distributors / importers
- Pure importers

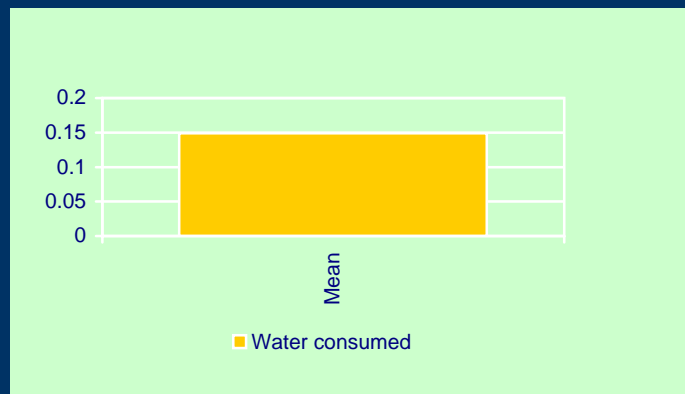
**Key Statistics (kL/employee/day)**

Water consumed      Water discharged

Mean 

0.149
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(AWWA Research Foundation, 2000)



Sector - Car Wholesaling

ANZSIC Code - 3501

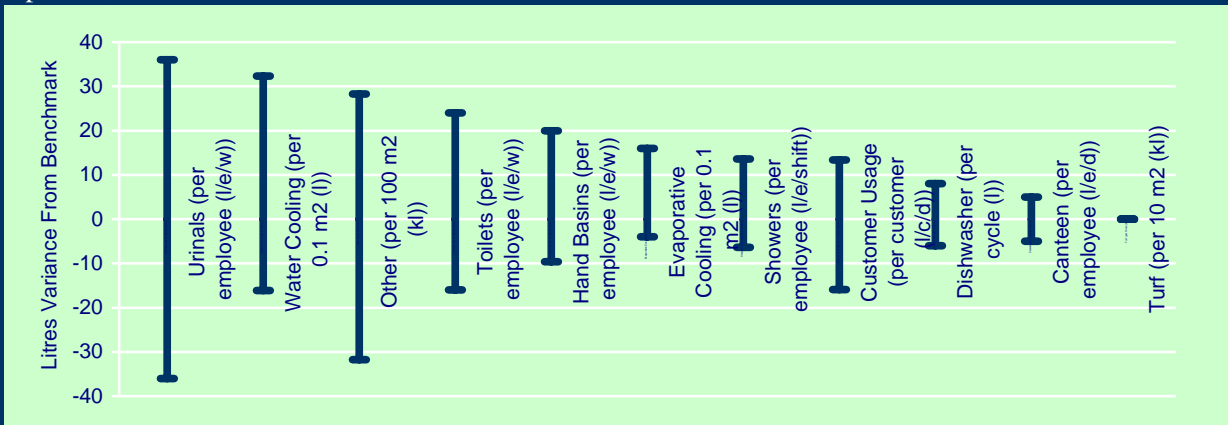
### Variance

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of toilets
- Canteen/kitchen facilities

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on ensuring cooling towers are well maintained. Upgrading the dosing equipment of the towers reduces water usage.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Implement water saving devices for employee use (low water toilets, lower flow taps, etc).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



**Sector -** General Line Grocery Wholesaling

**ANZSIC Code -** 3601

**ANZSIC Descriptor -** This sector consists of units mainly engaged in wholesaling groceries or food, blending or repacking tea, or in repacking flour, cereal foods, dried fruits or other groceries, the wholesaling of which is primary to this class.

**Industry overview**

*The primary activities of firms in this industry are:*

*The major products and services in this industry are:*

- General line grocery wholesaling
- Meat, poultry and smallgoods
- Dairy produce
- Fish and seafood
- Fruit and vegetables
- Liquor or tobacco
- Confectionery or soft drink

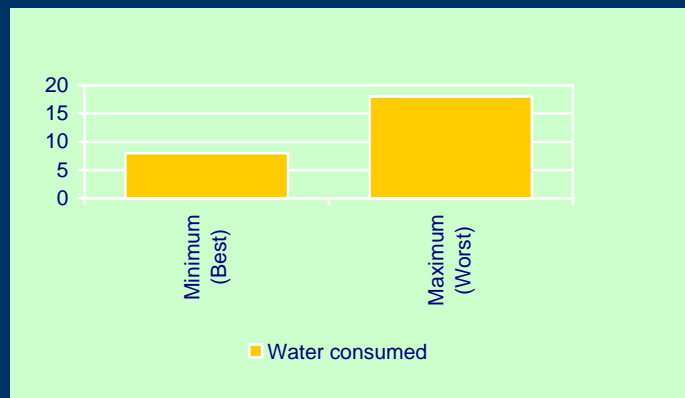
- Various durable and non-durable foodstuffs

**Key Statistics (kL/m2/year)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	8	

<i>Maximum (Worst)</i>	18	
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(AWWA Research Foundation, 2000)



Sector - General Line Grocery Wholesaling

ANZSIC Code - 3601

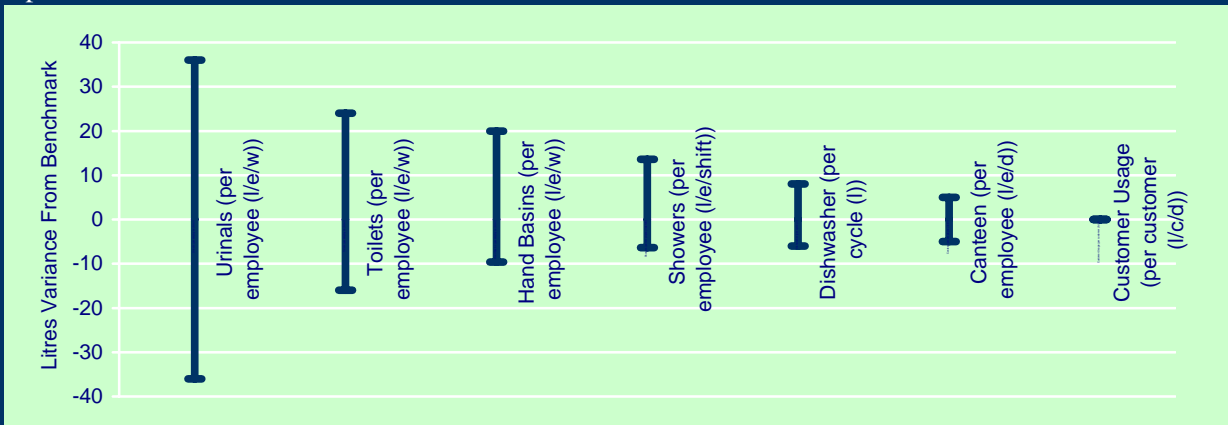
#### Variance

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Culture of water conservation
- Number of toilets
- Number of employees
- Canteen/kitchen facilities

Specific, measurable areas of variance are:



#### Best Practice

Evidence suggests that best practice usage relies heavily on ensuring cooling towers are well maintained. Upgrading the dosing equipment of the towers reduces water usage.

Other specific elements of best practice require the organisations to:

- \* Conduct regular maintenance on key water devices (cooling towers and process machinery) to minimise leakage and wastage of water.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



**Sector -** Pharmaceutical and Toiletry Goods Wholesaling

**ANZSIC Code -** 3720

**ANZSIC Descriptor -** This sector consists of units mainly engaged in wholesaling pharmaceuticals and toiletries, including detergents, drugs and cosmetics.

**Industry overview**

*The primary activities of firms in this industry are:*

- Cosmetic wholesaling
- Drug wholesaling
- Medicine wholesaling
- Perfume wholesaling
- Toiletry wholesaling
- Veterinary drug wholesaling
- Veterinary medicine wholesaling

*The major products and services in this industry are:*

- Medical and pharmaceutical products
- Toiletries, perfumes and cosmetics
- Other commodities
- Soap and detergents
- Paper and paper products
- Pesticides, insecticides and fungicides
- Scientific, medical and professional equipment
- Veterinary supplies

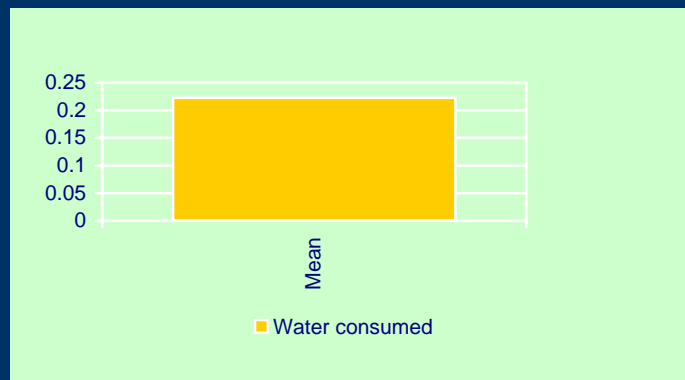
**Key Statistics (kL/employee/day)**

Water consumed      Water discharged

Mean 

0.223
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(AWWA Research Foundation, 2000)





Sector - Pharmaceutical and Toiletry Goods Wholesaling

ANZSIC Code - 3720

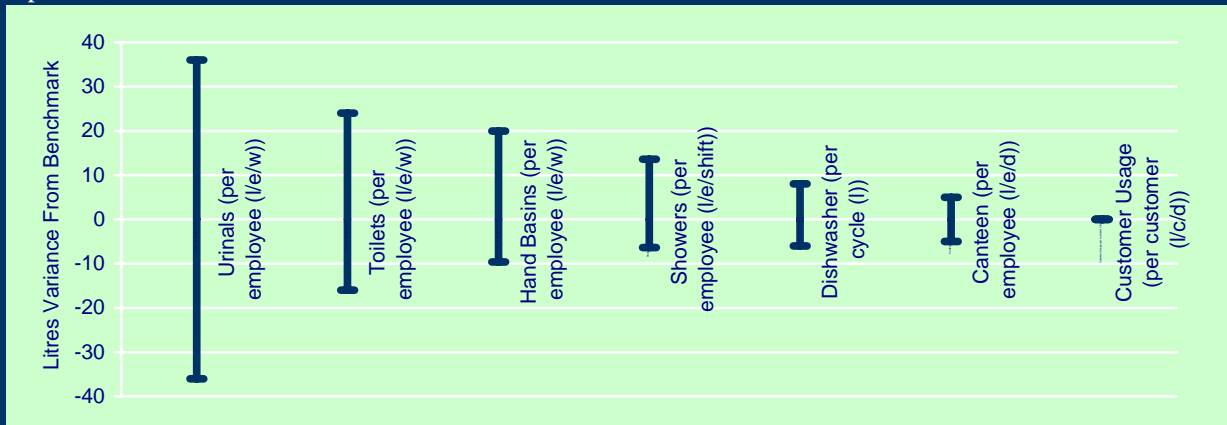
### Variance

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Number of toilets
- Canteen/kitchen facilities

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on ensuring cooling towers are well maintained. Upgrading the dosing equipment of the towers reduces water usage.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



Sector - Other Goods Wholesaling n.e.c.

ANZSIC Code - 3739

ANZSIC Descriptor -

### Industry overview

The primary activities of firms in this industry are:

- Artists' supplies wholesaling
- Can, metal, wholesaling
- Cask wholesaling
- Fur, dyed or dressed, wholesaling
- Glass container wholesaling
- Leather good wholesaling (except clothing or footwear)
- Musical instrument wholesaling
- Pet food wholesaling
- Pre-recorded audio media wholesaling
- Second-hand goods wholesaling n.e.c.

The major products and services in this industry are:

### Key Statistics (kL/employee/year)

Water consumed      Water discharged

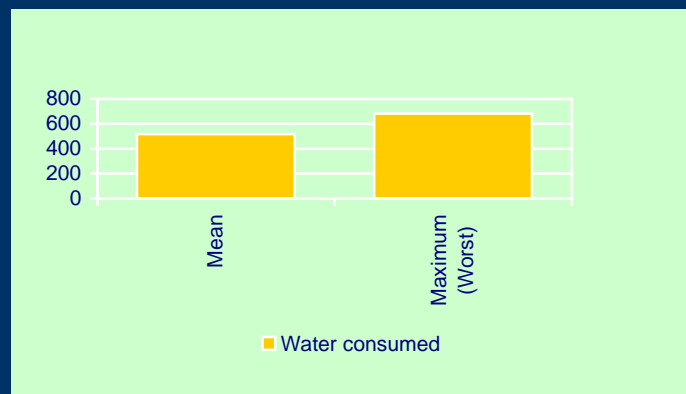
Mean 

516
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Maximum (Worst) 

681
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(Deloitte Survey, 2006)





Sector - Other Goods Wholesaling n.e.c.

ANZSIC Code - 3739

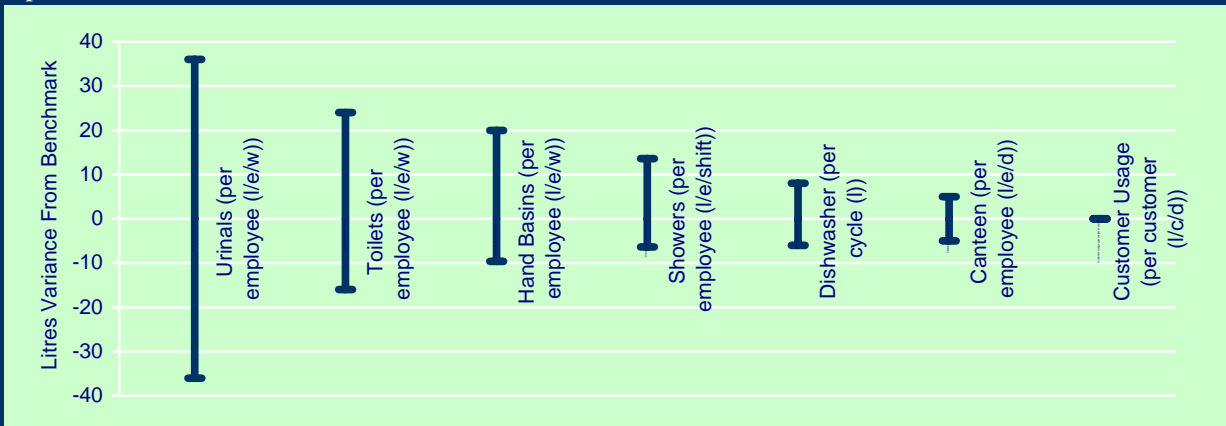
**Variance**

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Number of toilets
- Canteen/kitchen facilities

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on ensuring cooling towers are well maintained. Upgrading the dosing equipment of the towers reduces water usage.

Other specific elements of best practice require the organisations to:

- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).
- \* Maximise use of large roof-space in production facilities to collect run-off water for irrigation use.



**Sector -** Bakery Product Manufacturing (Non-factory based)

**ANZSIC Code -** 1174

**ANZSIC Descriptor -** This sector consists of units mainly engaged in retailing bread, cakes, pastries or biscuits. This class includes units which bake bread, cakes, pastries or biscuits on the premises for sale to the final consumer.

**Industry overview**

*The primary activities of firms in this industry are:*

- Manufacturing and selling bread from the same
- Manufacturing and selling other bakery products from based)

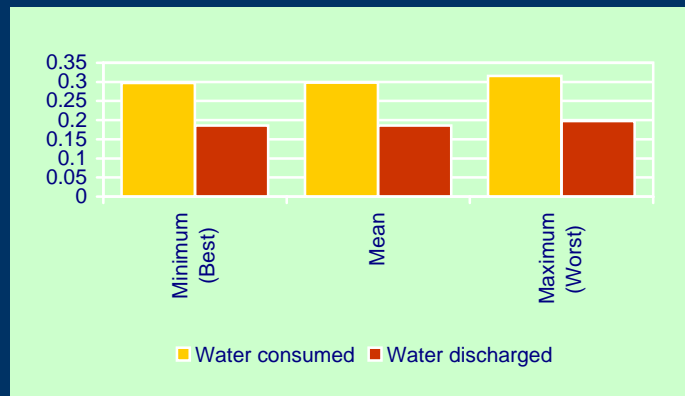
*The major products and services in this industry are:*

- Bread
- Cakes, tarts or puddings
- Biscuits
- Mixes
- Flour

**Key Statistics (kL/employee/day)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	0.29700	0.18563
<i>Mean</i>	0.29800	0.18625
<i>Maximum (Worst)</i>	0.31580	0.19738

(AWWA Research Foundation, 2000)



Sector - Bakery Product Manufacturing (Non-factory based)

ANZSIC Code - 1174

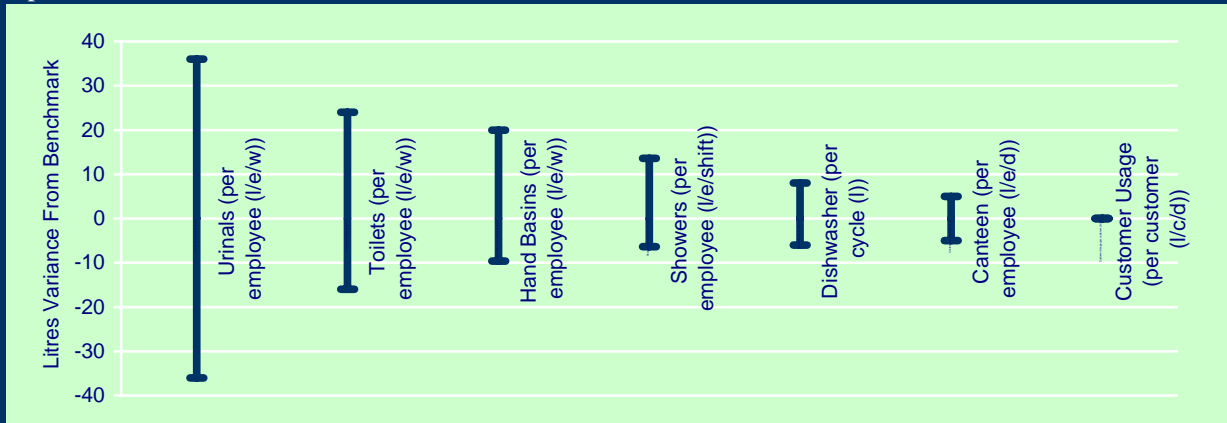
#### Variance

This sector is included in the larger group of sectors, known as Heavy Process.

Specific areas of variance are attributable to:

- Specific product type
- Water absorption in yeast
- Cooling tower efficiency
- Number of toilets
- Number of employees
- Number of customers
- Canteen/kitchen facilities

Specific, measurable areas of variance are:



#### Best Practice

Evidence suggests that best practice usage relies heavily on maximising water absorption in product, while minimising wasteful water usage, such as cleaning.

Other specific elements of best practice require the organisations to:

- \* Relatively frequently update production technology. Given that the majority of water use is fixed by the technology of the process, more frequent updates of technology ensure best practice is achieved.
- \* Conduct regular maintenance on key water devices (cooling towers and process machinery) to minimise leakage and wastage of water.
- \* Manage large devices, such as washing equipment for returnable containers.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).



<b>Sector -</b>	<b>Department stores</b>
<b>ANZSIC Code -</b>	<b>4260</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in the operations of department stores.

**Industry overview**

*The primary activities of firms in this industry are:*

- Department store operation

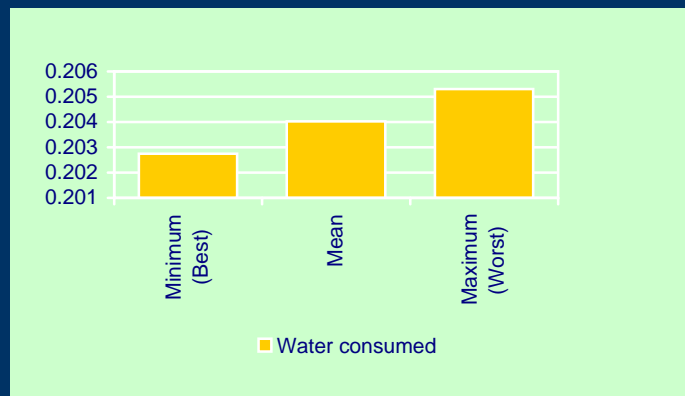
*The major products and services in this industry are:*

- Clothing and footwear
- Consumer electronics and household appliances
- Furniture and haberdashery
- Cosmetics and beauty products
- Toys, games and sporting products
- Books, greeting cards and stationery
- Cutlery and crockery

**Key Statistics (kL/employee/day)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	0.20275	
<i>Mean</i>	0.20403	
<i>Maximum (Worst)</i>	0.20531	

(AWWA Research Foundation, 2000)





Sector - Department stores

ANZSIC Code - 4260

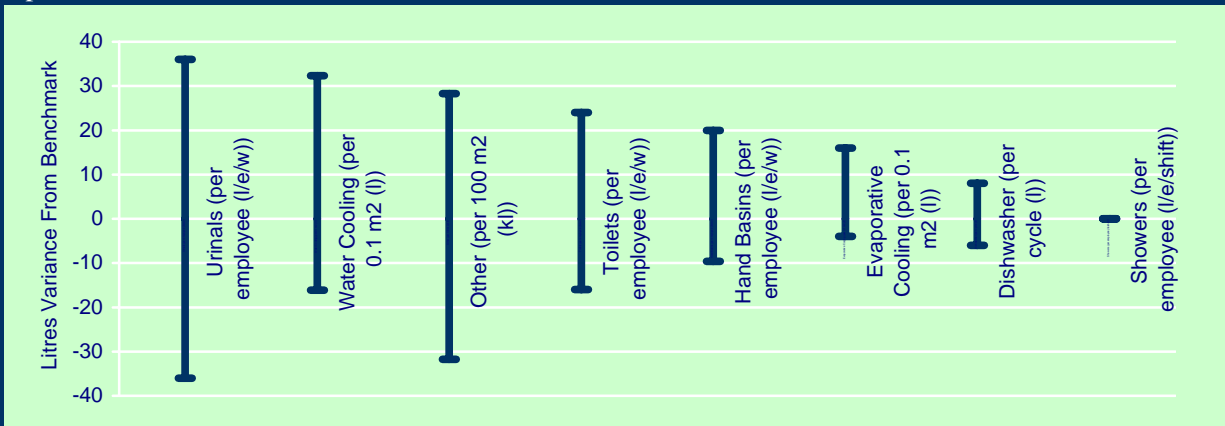
**Variance**

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Number of customers
- Number of toilets
- Building area
- Number of food outlets
- Number of cooling towers

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on efficient management and maintenance of existing water devices and regular refurbishment of key devices, particularly customer sanitation.

Other specific elements of best practice require the organisations to:

- \* Minimise the level of waste, leakage and unaccounted water, eg. apply conductivity controls in cooling towers.
- \* Implement audit programs to address water conservation opportunities.
- \* Replace older toilets with 1.6 gallon per flush toilets.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.



**Sector -** Garden supplies retailing

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**ANZSIC Code -** 4232

**ANZSIC Descriptor -** This sector consists of units mainly engaged in retailing garden supplies including plants, equipments and pesticides.

**Industry overview**

*The primary activities of firms in this industry are:*

- Bulb, flower, retailing
- Fertiliser retailing
- Garden supplies retailing n.e.c.
- Nursery stock retailing
- Pesticide retailing
- Plant, garden, retailing
- Pot plant retailing
- Seedlings retailing
- Shrub or tree retailing
- Tuber, flower, retailing

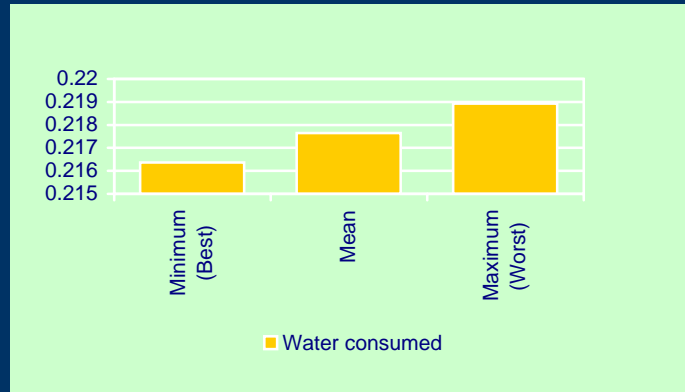
*The major products and services in this industry are:*

- Trees, shrubs and plants
- Other gardening products
- Garden tools

**Key Statistics (kL/employee/day)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	0.21637	
<i>Mean</i>	0.21765	
<i>Maximum (Worst)</i>	0.21893	

(AWWA Research Foundation, 2000)





**Sector - Garden supplies retailing**

**ANZSIC Code - 4232**

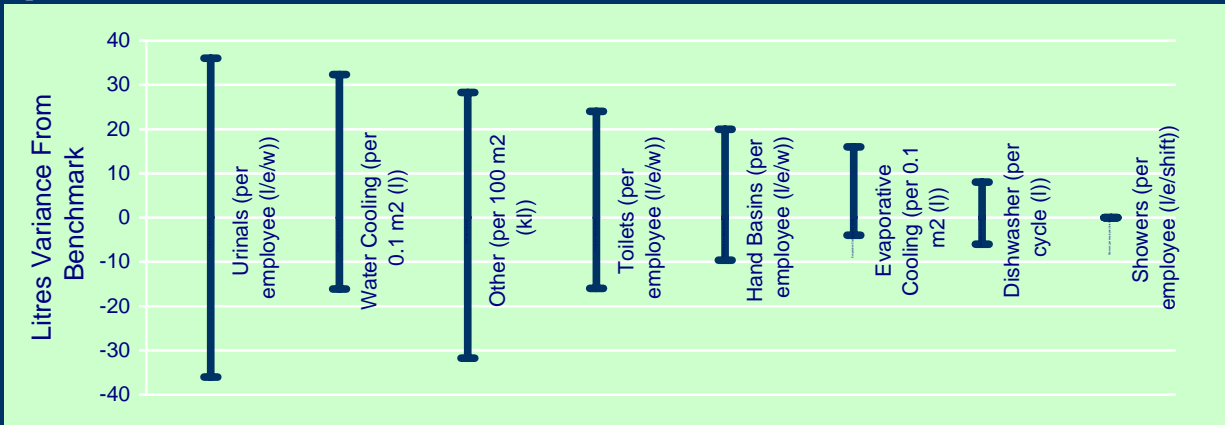
**Variance**

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Number of customers
- Building area
- Number of toilets
- Use of air-conditioning
- Irrigated area
- Canteen/kitchen facilities

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on efficient management and maintenance of existing water devices and regular refurbishment of key devices, particularly customer sanitation.

Other specific elements of best practice require the organisations to:

- \* Implement landscaping conservation programs - fine tune irrigation systems, adjust water schedules and use low-water plantings.
- \* Maximise cycles per use by practicing internal recycling procedures or using reclaimed water.
- \* Adopt water efficient irrigation equipment such as pressure regulation valves, pressure compensating spray nozzles and drip irrigation.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.



**Sector -** **Other Automotive Repair and Maintenance**

**ANZSIC Code -** **9419**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in the repair and service of automotives, including engine reconditioning, motor vehicle repairs and general servicing.

**Industry overview**

*The primary activities of firms in this industry are:*

- Automotive conversion (including non-factory based)
- Automotive repair garage operation
- Brake and clutch repair
- General automotive, motor cycle, scooter and truck
- Muffler repair (automotive)
- Trailer repair (boat or box)
- Transmission repair (automotive)
- Exhaust system or muffler repair (automotive)
- Gearbox repair (automotive)

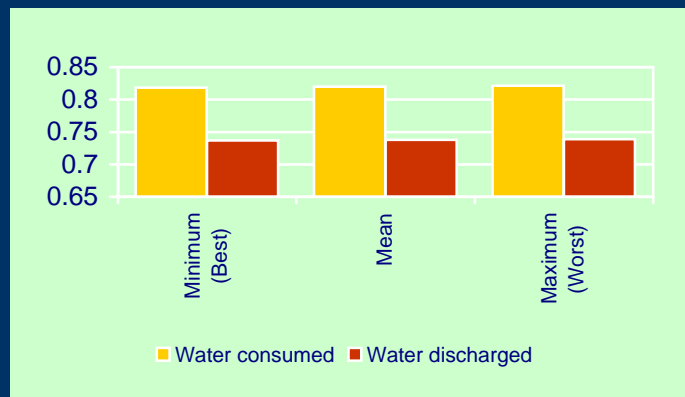
*The major products and services in this industry are:*

- General motor vehicle servicing and tuning
- Air conditioning and brake servicing
- Automatic transmission servicing
- LPG and steering conversions

**Key Statistics (kL/employee/day)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	0.819	0.737
<i>Mean</i>	0.820	0.738
<i>Maximum (Worst)</i>	0.821	0.739

(AWWA Research Foundation, 2000)





**Sector - Other Automotive Repair and Maintenance**

**ANZSIC Code - 9419**

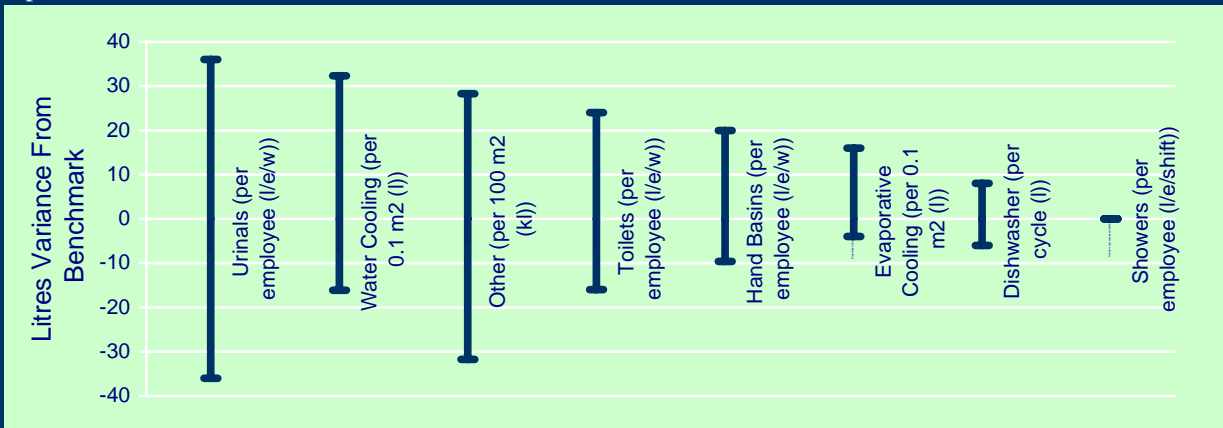
**Variance**

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Number of repairs
- Number of repairs and services
- Type of repairs performed
- Canteen/kitchen facilities
- Number of toilets

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on installing water-conservation fittings to taps, toilet and shower facilities.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Implement audit programs to address water conservation opportunities.
- \* Plumbing fixture rebate program.
- \* Low interest loan programs to compensate the large investment needed to convert to efficient technology.



**Sector -** Accommodation

**ANZSIC Code -** 4400

**ANZSIC Descriptor -** This sector consists of hotels, motels and similar units mainly engaged in providing short term accommodation.

**Industry overview**

*The primary activities of firms in this industry are:*

- Camping ground operation
- Caravan park operation (visitor)
- Holiday house and flat operation
- Hotel operation
- Motel operation
- Resort operation
- Serviced apartments
- Ski-lodge operation
- Student residence operation (except boarding schools)
- Youth hostel operation

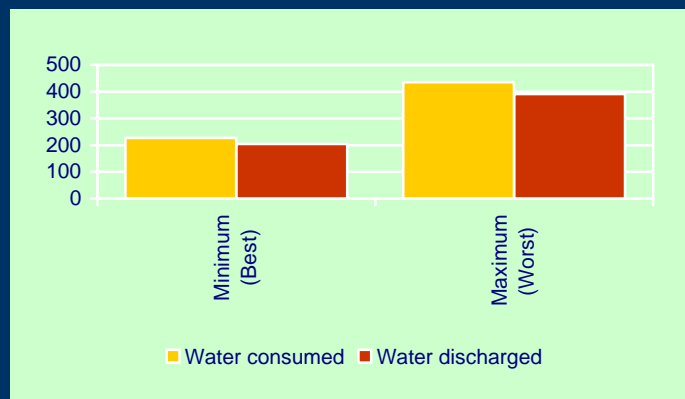
*The major products and services in this industry are:*

- Motels
- Guest houses and private hotels
- Hotels with facilities
- Serviced apartments
- Caravan parks
- Holiday flats and units
- Hostels
- Student residences

**Key Statistics (kL/bed)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	227	204.3
<i>Maximum (Worst)</i>	435	391.5

(AWWA Research Foundation, 2000)



Sector - Accommodation

ANZSIC Code - 4400

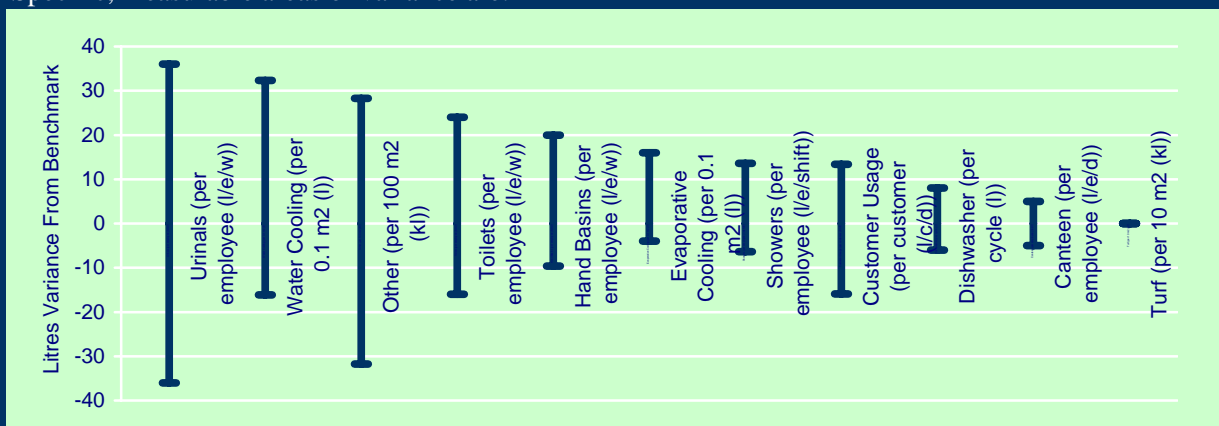
### Variance

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Grade of hotel
- Conference & function facilities
- Number of employees
- Customer: room ratio
- In-house laundering
- Swimming pool
- Extent of irrigation
- Restaurants & room service

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on installing water-conservation fittings to taps, toilet and shower facilities.

Other specific elements of best practice require the organisations to:

- \* Manage water consumption of customers through customer awareness programs such as the option of having towels washed every few days as opposed to every day and alerting customers to the possibility of over-filling baths and spas.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).
- \* Engage in landscaping conservation programs - fine tune irrigation systems, adjust water schedules and use low-water plantings.
- \* Appropriately manage and maintain large devices, such as sprinklers, water cooling towers and boilers.



<b>Sector -</b>	<b>Pubs, taverns and bars</b>
<b>ANZSIC Code -</b>	<b>4520</b>
<b>ANZSIC Descriptor -</b>	This sector consists of businesses operating as licensed pubs, taverns and bars.

**Industry overview**

*The primary activities of firms in this industry are:*

- Bar operation
- Hotel bar operation
- Night club operation
- Pub operation
- Tavern operation
- Wine bar operation

*The major products and services in this industry are:*

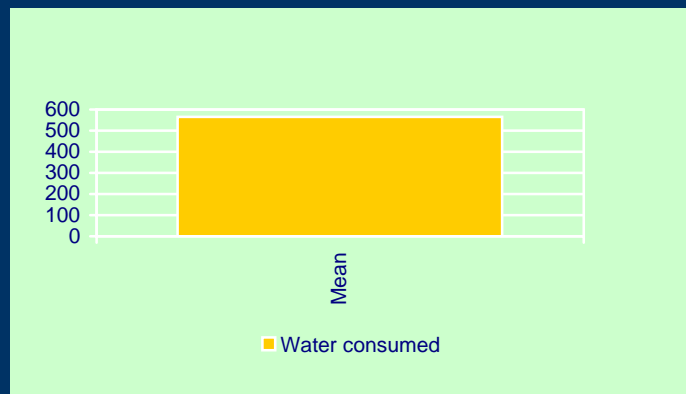
- Hotels with gaming machines
- Traditional hotels and pubs

**Key Statistics (kL/employee/year)**

Water consumed      Water discharged

Mean	565	
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(Deloitte Survey, 2006)





Sector - Pubs, taverns and bars

ANZSIC Code - 4520

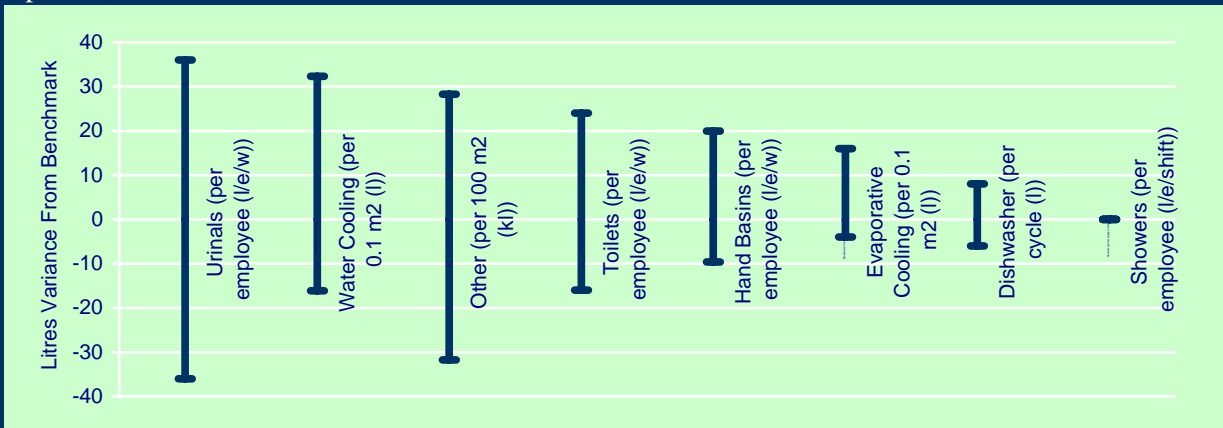
**Variance**

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Building area
- Irrigated area
- Number of customers
- Accommodation facilities
- Number of toilets
- Use of air-conditioning
- Venue capacity
- Restaurant/café facilities
- Hours of operation

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on installing water-conservation fittings to taps and toilet facilities.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Plumbing fixture rebate programs.
- \* Upgrade to newer, more water-efficient washing machines.
- \* Low interest loan programs to compensate the large investment needed to convert to efficient technology.



**Sector -** Cafes and restaurants

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**ANZSIC Code -** 4511

**ANZSIC Descriptor -** This sector consists of businesses operating primarily as restaurants and cafes (licensed and unlicensed).

**Industry overview**

*The primary activities of firms in this industry are:*

- Cafe operation
- Restaurant operation

*The major products and services in this industry are:*

- Licensed cafes and restaurants
- Unlicensed cafes and restaurants
- Licensed and BYO cafes and restaurants
- BYO cafes and restaurants

**Key Statistics (kL/m<sup>2</sup>/year)**

Water consumed      Water discharged

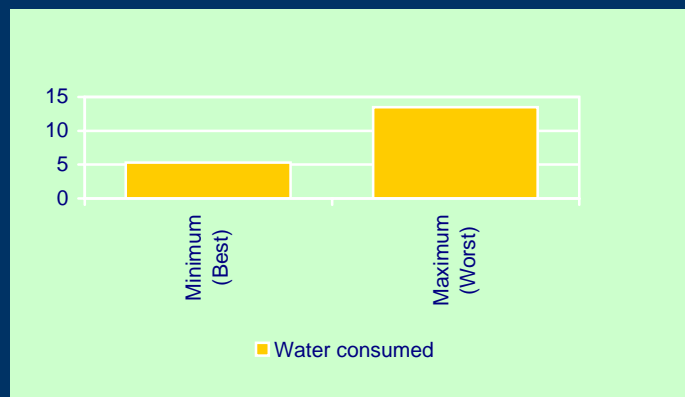
Minimum (Best) 

5.296	
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Maximum (Worst) 

13.487	
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(AWWA Research Foundation, 2000)





**Sector - Cafes and restaurants**

**ANZSIC Code - 4511**

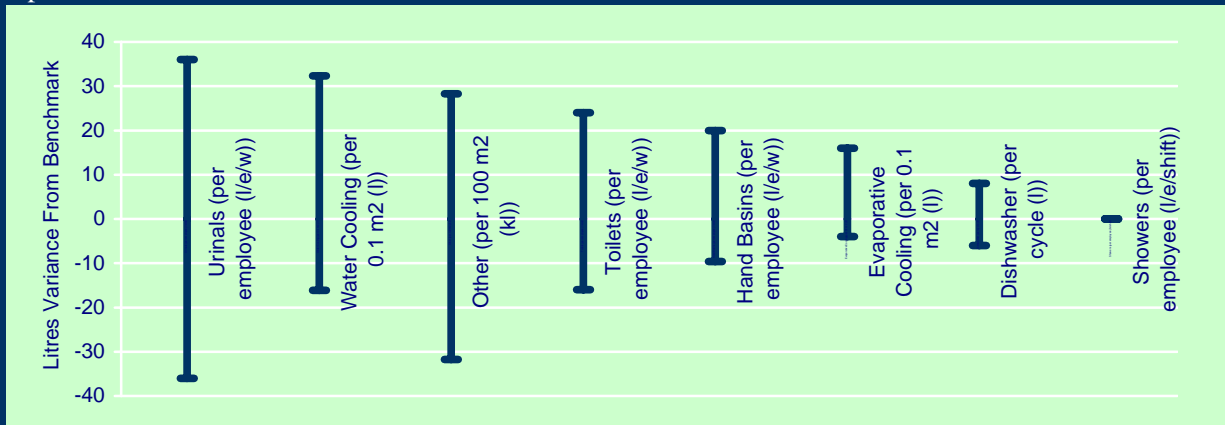
**Variance**

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Irrigated area
- Number of customers
- Number of meals served
- Number of toilets
- Venue capacity
- Use of air-conditioning
- Hours of operation

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on fitting water saving nozzles to taps prevent water from constantly flowing when hand-washing dishes.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Encourage customers to operate water-using fixtures to the optimal and efficient level.
- \* Upgrade to newer, more water-efficient washing machines.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.



<b>Sector -</b>	<b>Clubs (hospitality)</b>
<b>ANZSIC Code -</b>	<b>4530</b>
<b>ANZSIC Descriptor -</b>	This sector consists of businesses operating primarily as licensed clubs (including both nightclubs and other).

**Industry overview**

*The primary activities of firms in this industry are:*

- Hospitality club operation

*The major products and services in this industry are:*

- Gambling revenues
- Liquor and other beverage sales
- Meals

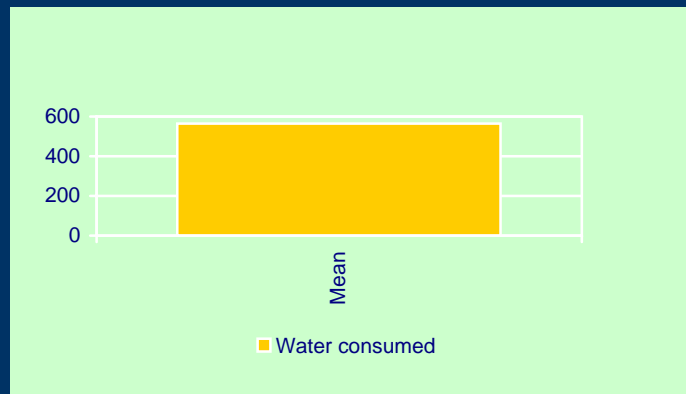
**Key Statistics (kL/employee/year)**

*Water consumed      Water discharged*

Mean 

565
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(Sector 5720 - Pubs, Taverns & Bars used as proxy. Deloitte Survey, 2006)



Sector - Clubs (hospitality)

ANZSIC Code - 4530

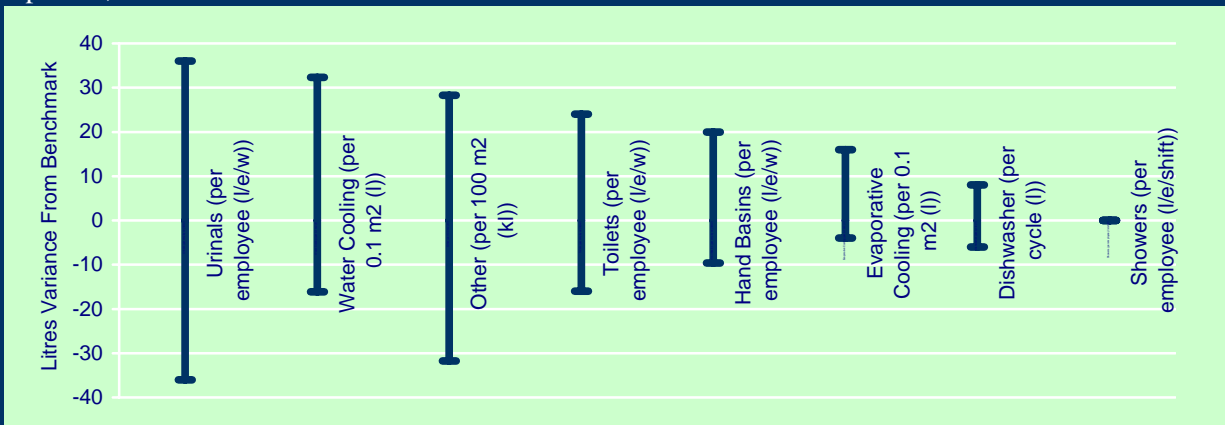
### Variance

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Number of customers
- Building area
- Number of toilets
- Use of air-conditioning
- Venue capacity
- Hours of operation

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on installing water-conservation fittings to taps and toilet facilities.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Encourage customers to operate water-using fixtures to the optimal and efficient level.
- \* Upgrade to newer, more water-efficient washing machines.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.



**Sector -** Airport Operations and Other Air Transport Support Services  
**ANZSIC Code -** 5220  
**ANZSIC Descriptor -** This sector consists of units mainly engaged in providing civil airport and space port facilities, aerospace navigation and other services to air or space transport units.

**Industry overview**

*The primary activities of firms in this industry are:*

- Air traffic control service
- Air transport navigation service
- Aircraft support service n.e.c.
- Airport baggage handling service
- Airport operation
- Airport terminal operation

*The major products and services in this industry are:*

- Airport services
- Navigation service, air transport

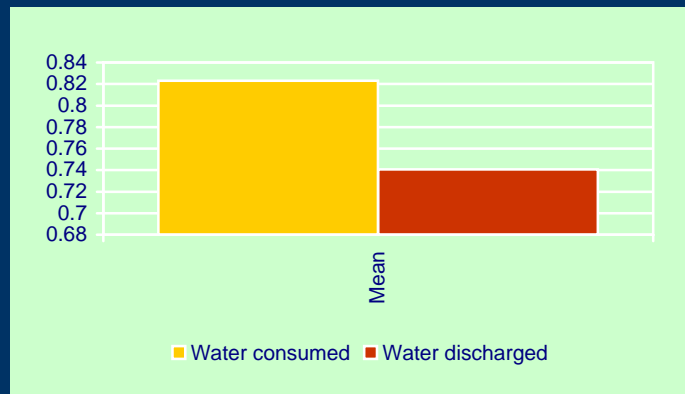
**Key Statistics (kL/employee/day)**

Water consumed      Water discharged

Mean 

0.82292	0.740628
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(AWWA Research Foundation, 2000)



**Sector -** Airport Operations and Other Air Transport Support Services

**ANZSIC Code -** 5220

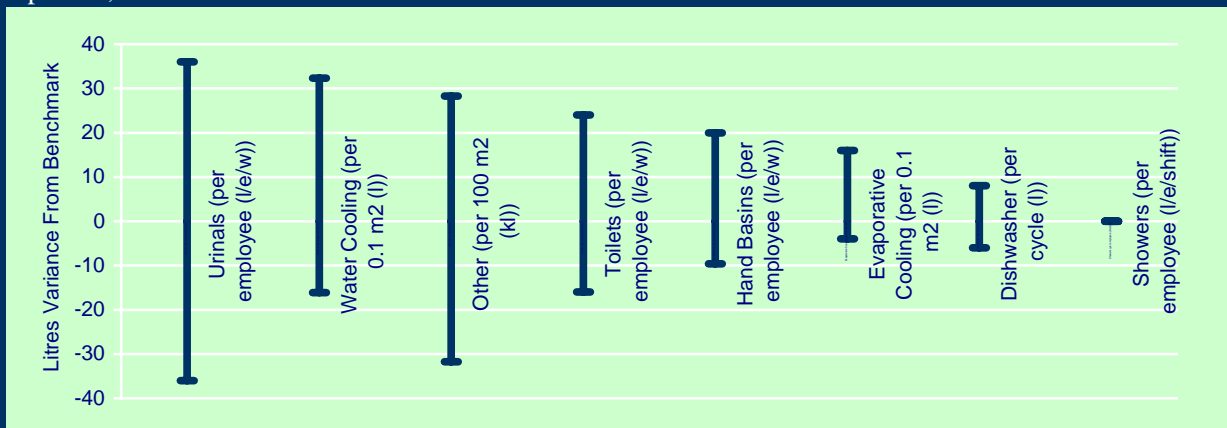
### Variance

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Extent of irrigation
- Age of sanitary facilities
- Culture of water conservation
- Number of customers
- Number of retail/food outlets
- Number of toilets

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on efficient management and maintenance of existing water devices and regular refurbishment of key devices, particularly customer sanitation.

Other specific elements of best practice require the organisations to:

- \* Appropriately meter and manage tenants' water usage.
- \* Minimise the level of waste, leakage and unaccounted water eg. apply conductivity controls in cooling towers.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).
- \* Maximise opportunities for rainwater gathering and reuse of stormwater.



**Sector -** Non-Residential Property Operators

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**ANZSIC Code -** 6712

**ANZSIC Descriptor -** This sector consists of units mainly engaged in operating commercial property and land development (excluding construction).

**Industry overview**

*The primary activities of firms in this industry are:*

- Agricultural land renting or leasing
- Commercial or industrial property renting or leasing
- Commercial property body corporation
- Commercial property strata corporation
- Factory renting or leasing
- Office space renting or leasing
- Self-storage renting or leasing
- Shopping centre renting or leasing
- Warehouse renting or leasing

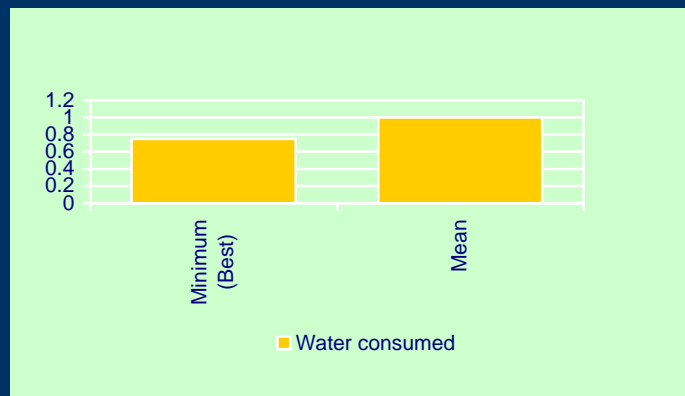
*The major products and services in this industry are:*

- Office
- Retail
- Industrial

**Key Statistics (kL/m2/year)**

	Water consumed	Water discharged
Minimum (Best)	0.75	
Mean	1.00	

(Deloitte Survey, 2006)



Sector - Non-Residential Property Operators

ANZSIC Code - 6712

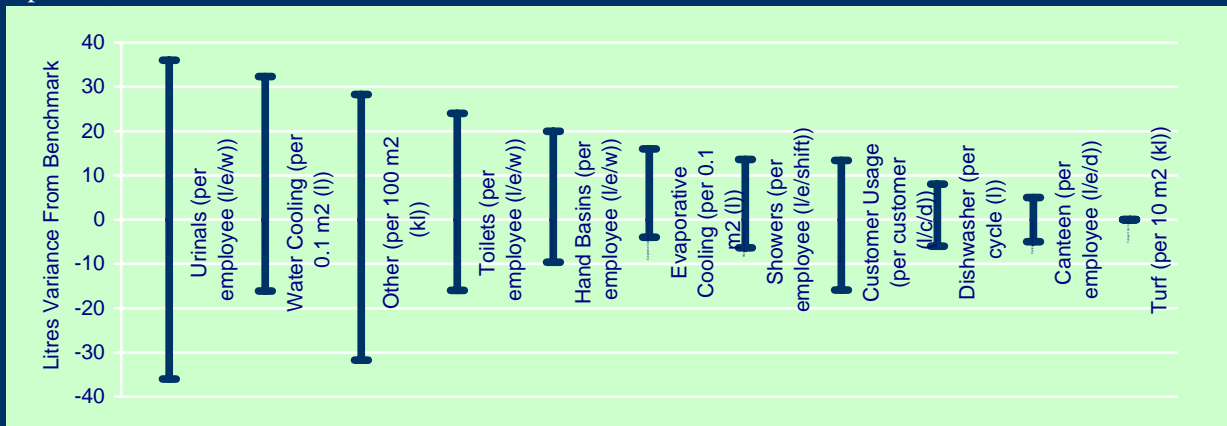
### Variance

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of customers
- Number of employees
- Number of food outlets

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on ensuring cooling towers are well maintained. Upgrading the dosing equipment of the towers reduces water usage.

Other specific elements of best practice require the organisations to:

- \* Fit water restrictors to all taps.
- \* Use waterless urinals and replacing older toilets with dual flush toilets.
- \* Place signage near all taps to remind people of the need to conserve water.
- \* Annually adjust intensity targets for water usage, eg. x litres of water per square metre.



**Sector -** Local government administration

**ANZSIC Code -** 7530

**ANZSIC Descriptor -** This sector consists of units mainly engaged in Local Government administration.

**Industry overview**

*The primary activities of firms in this industry are:*

- Financial and economic management except banking
- Local government administration (except justice)
- Policy formulation and administration (local
- Regulation enactment and enforcement (local

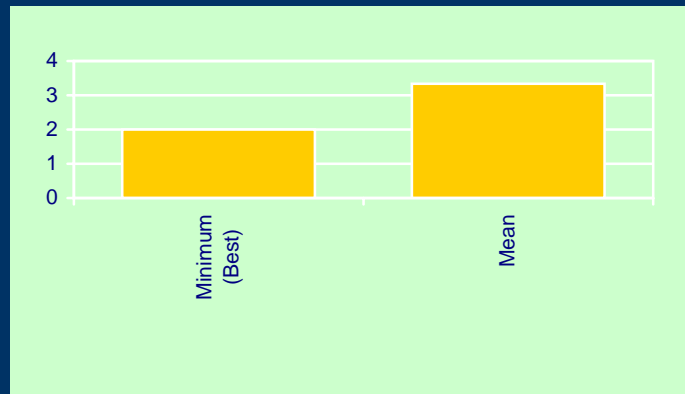
*The major products and services in this industry are:*

- Housing and community amenities
- General public service
- Recreation and culture
- Social security and welfare

**Key Statistics (kL/m<sup>2</sup>/year)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	2	
<i>Mean</i>	3.34	

(Department of Environment and Heritage, 2005)





**Sector -** Local government administration

**ANZSIC Code -** 7530

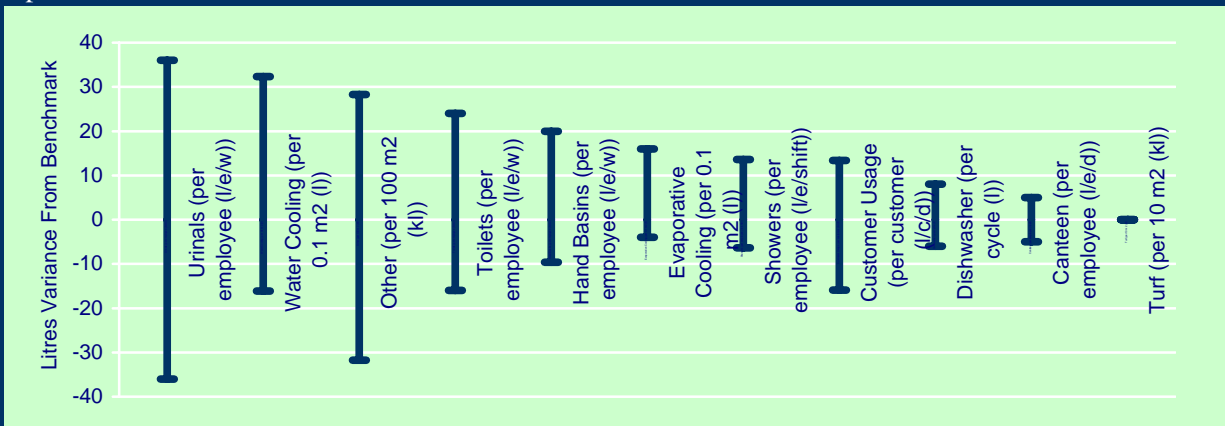
**Variance**

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Extent of irrigation
- Culture of water conservation
- Co-location of facilities
- Number of employees
- Conference/function facilities
- Canteen/kitchen facilities

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on the age of existing employee use water devices, such as taps, toilets and showers.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Adopt water efficient devices for employee use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).
- \* Engage in landscaping conservation programs - fine tune irrigation systems, adjust water schedules and use low-water plantings.
- \* Conduct regular maintenance on key water devices (cooling towers and process machinery) to minimise leakage and wastage of water.



**Sector -** Primary school

**ANZSIC Code -** 8021

**ANZSIC Descriptor -** This sector consists of units mainly engaged in providing primary school education (except combined primary/secondary school education).

**Industry overview**

*The primary activities of firms in this industry are:*

- Boarding school operation (primary school; except
- Intermediate school operation (NZ only)
- Primary school operation (except combined

*The major products and services in this industry are:*

- Education services

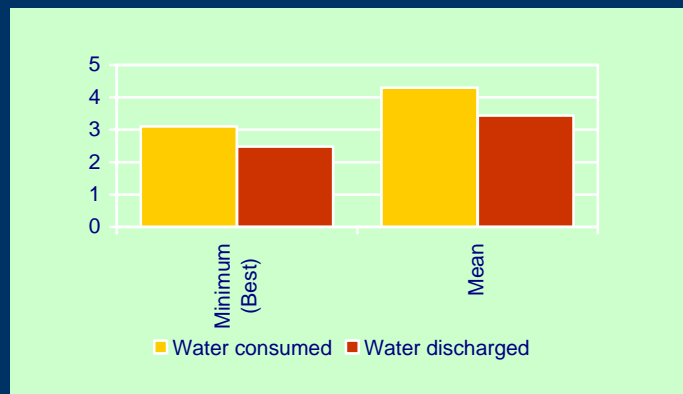
The industry is concentrated. The largest organisations include:

- Victorian Department of Education and Training
- Catholic Education Office Melbourne
- Catholic Education Office Sale
- Catholic Education Office Ballarat
- Catholic Education Office Sandhurst
- Association of Independent Schools of Victoria

**Key Statistics (kL/student)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	3.1	2.48
<i>Mean</i>	4.3	3.44

(AWWA Research Foundation, 2000)



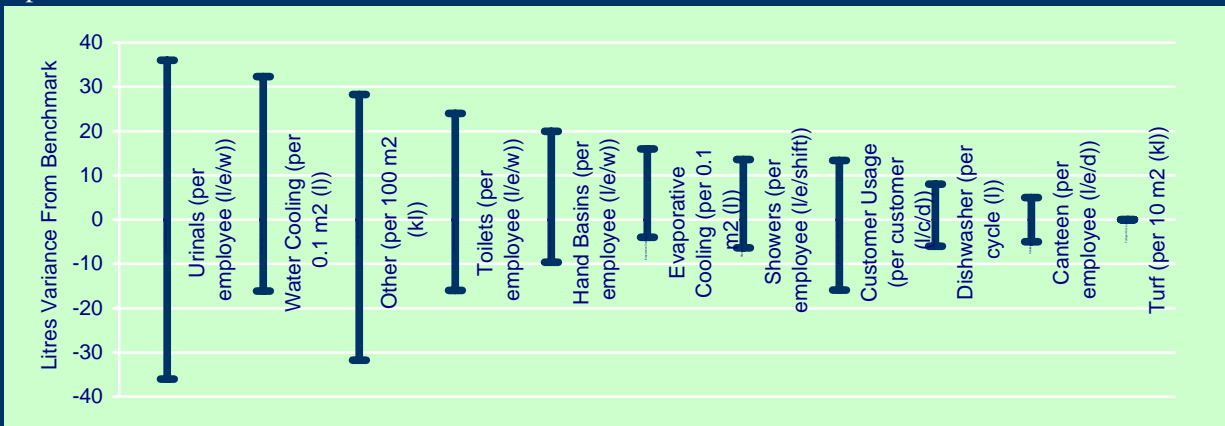
Sector - Primary school

ANZSIC Code - 8021

### Variance

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on ensuring sanitary facilities use minimal water and by developing sports fields and gardens that require nil or low levels of irrigation.

Other specific elements of best practice require the organisations to:

- \* Adopt water efficient devices in sanitary facilities (toilets, taps, etc).
- \* Adopt water efficient landscaping, including nil/low irrigation and hardy plants.
- \* Develop a culture of water conservation amongst students and staff which discourages wasteful behaviour (including student pranks).
- \* Collect rainwater in appropriate water tanks given the available land and roof space.



**Sector -** Secondary school

**ANZSIC Code -** 8022

**ANZSIC Descriptor -** This sector consists of units mainly engaged in providing secondary school education (except combined primary/secondary school education).

**Industry overview**

*The primary activities of firms in this industry are:*

- Agricultural high school operation (except combined)
- Boarding school operation (secondary school primary/secondary school)
- Matriculation college operation (except combined)
- Secondary college operation (except combined)
- Secondary school operation (except combined primary/

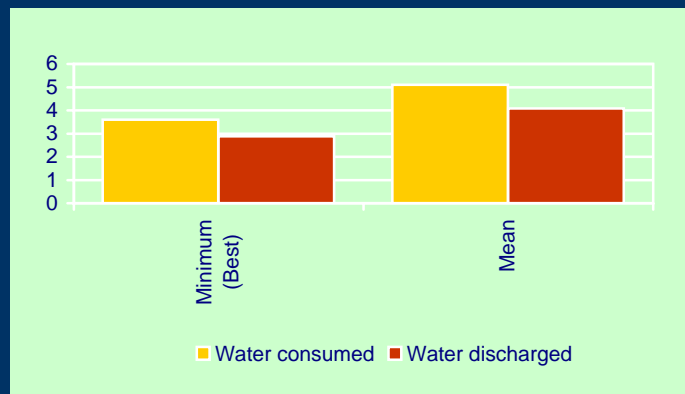
*The major products and services in this industry are:*

- Education services

**Key Statistics (kL/student)**

	Water consumed	Water discharged
Minimum (Best)	3.6	2.88
Mean	5.1	4.08

(AWWA Research Foundation, 2000)



Sector - Secondary school

ANZSIC Code - 8022

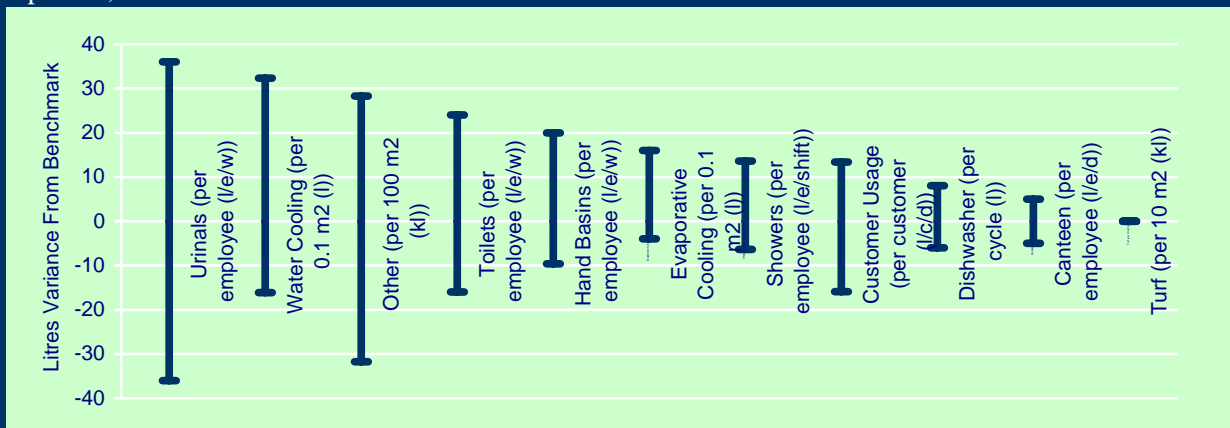
### Variance

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Student: teacher ratio
- Extent of irrigation
- Use of air-conditioning
- Sporting program
- Co-educational status
- Culture of water conservation
- Sporting Facilities
- Age of sanitary facilities
- Canteen/kitchen facilities

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on ensuring sanitary facilities use minimal water and by developing sports fields and gardens that require nil or low levels of irrigation.

Other specific elements of best practice require the organisations to:

- \* Adopt water efficient devices in sanitary facilities (toilets, taps, etc).
- \* Adopt water efficient landscaping, including nil/low irrigation and hardy plants.
- \* Develop a culture of water conservation amongst students and staff which discourages wasteful behaviour (including student pranks).
- \* Collect rainwater in appropriate water tanks given the available land and roof space.



**Sector -** Higher education

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**ANZSIC Code -** 8102

**ANZSIC Descriptor -** This sector consists of units mainly engaged in providing university undergraduate or post graduate teaching or research.

**Industry overview**

*The primary activities of firms in this industry are:*

- Colleges of education operation
- Postgraduate school, university operation
- Research school, university operation
- Specialist institute or college
- Teachers' college operation
- Undergraduate school, university operation
- University operation

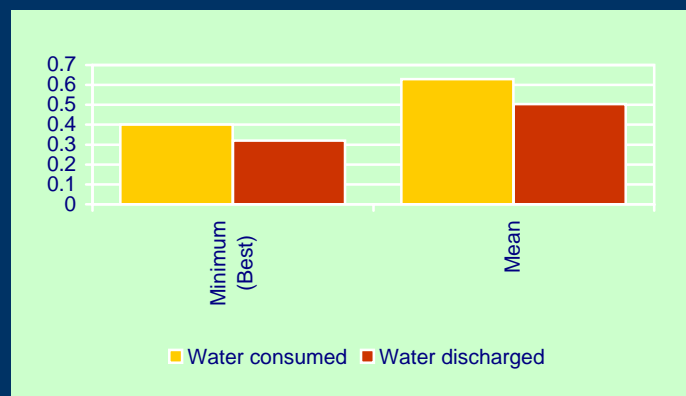
*The major products and services in this industry are:*

- Education services

**Key Statistics (kL/m2/year)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	0.40	0.32
<i>Mean</i>	0.63	0.50

(TEFMA, 2004)





**Sector - Higher education**

**ANZSIC Code - 8102**

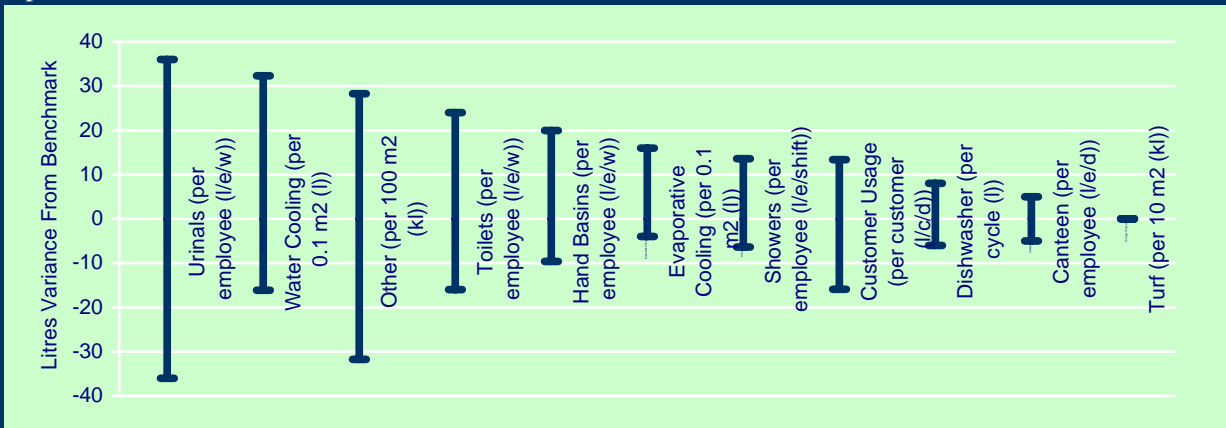
**Variance**

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Student: teacher ratio
- Full-time: part-time ratio
- Extent of air conditioning
- Age of facilities
- Extent of gardens
- Extent of playing fields
- Culture of water conservation
- Number of food outlets

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on ensuring sanitary facilities use minimal water and by developing sports fields and gardens that require nil or low levels of irrigation.

Other specific elements of best practice require the organisations to:

- \* Minimise the level of waste, leakage and unaccounted water eg. apply conductivity controls in cooling towers.
- \* Engage in landscaping conservation programs - fine tune irrigation systems, adjust water schedules and use low-water plantings.
- \* Adopt water efficient irrigation equipment such as pressure regulation valves, pressure compensating spray nozzles and drip irrigation.
- \* Adopt water efficient devices for personal use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).



**Sector - Hospitals (except psychiatric hospitals)**

**ANZSIC Code - 8401**

**ANZSIC Descriptor -** This sector consists of hospitals (children's, ear nose and throat, general, etc., excluding psychiatric).

**Industry overview**

*The primary activities of firms in this industry are:*

- Children's hospital
- Day hospital
- Ear, nose and throat hospital
- Eye hospital
- General hospital
  
- Hospital (except psychiatric or veterinary hospitals)
  
- Infectious diseases hospital (including human)
- Maternity hospital
- Obstetric hospital
- Women's hospital

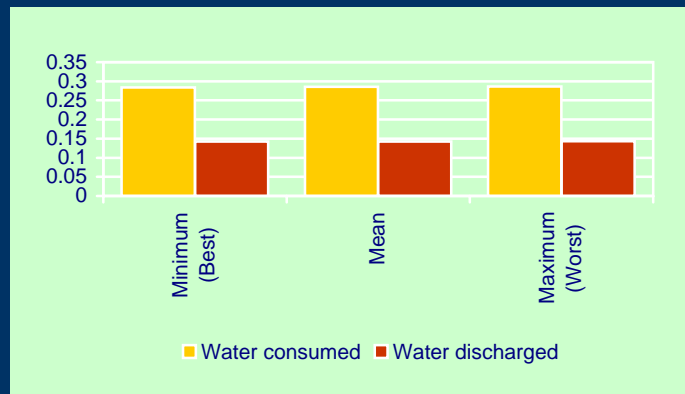
*The major products and services in this industry are:*

- Public hospitals
- Private hospitals

**Key Statistics (kL/employee/day)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	0.28413	0.142065
<i>Mean</i>	0.28541	0.142705
<i>Maximum (Worst)</i>	0.28669	0.143345

(AWWA Research Foundation, 2000)





**Sector - Hospitals (except psychiatric hospitals)**

**ANZSIC Code - 8401**

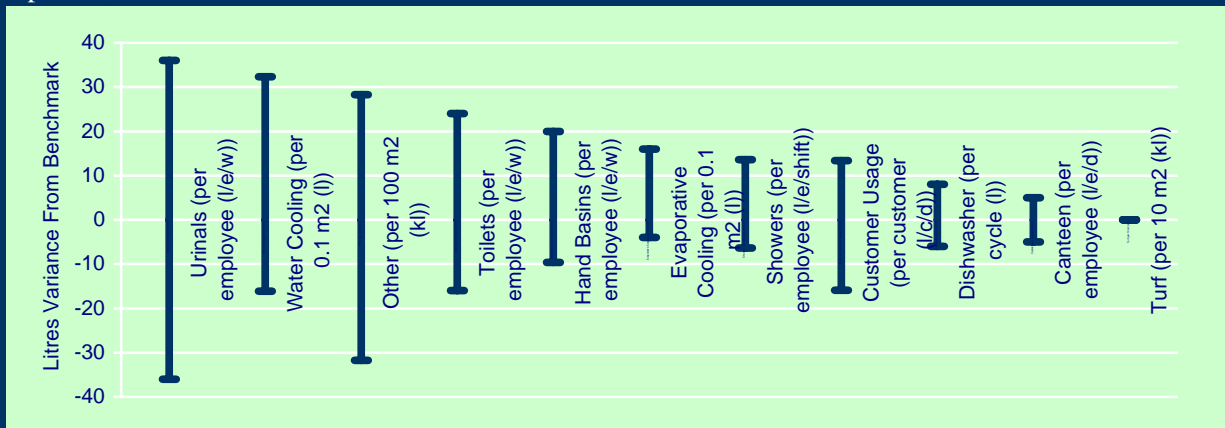
**Variance**

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of patients
- building area
- Irrigated area
- Number of cooling towers
- Number of toilets
- Number of showers
- Volume of procedures/surgery
- Number of departments
- Number of meals produced

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on ensuring process machinery is up-to-date. The majority of water efficiency is fixed at the time of plant acquisition. Significant improvements in efficiency require working with the organisation on its capital acquisition policies and program.

Other specific elements of best practice require the organisations to:

- \* Minimise the level of waste, leakage and unaccounted water eg. apply conductivity controls in cooling towers.
- \* Implement audit programs to address water conservation opportunities.
- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Replace older toilets with 1.6 gallon per flush toilets.



**Sector -** Nursing homes

**ANZSIC Code -** 8601

**ANZSIC Descriptor -** This sector consists of nursing homes and hospices.

**Industry overview**

*The primary activities of firms in this industry are:*

- Accommodation for the aged operation
- Aged care hostel operation
- Nursing home operation
- Residential care for the aged operation

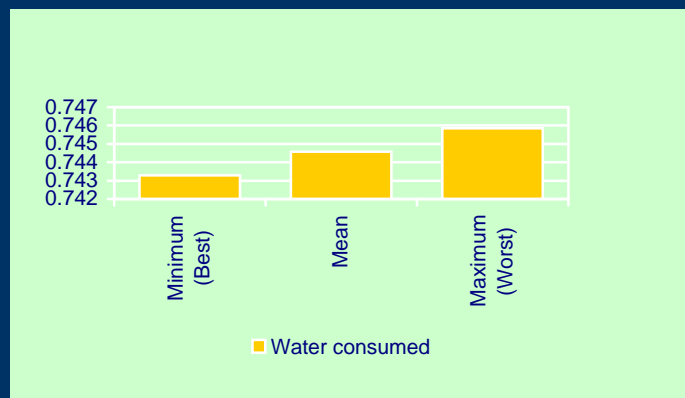
*The major products and services in this industry are:*

- Nursing accommodation

**Key Statistics (kL/employee/day)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	0.74329	
<i>Mean</i>	0.74457	
<i>Maximum (Worst)</i>	0.74585	

(AWWA Research Foundation, 2000)



Sector - Nursing homes

ANZSIC Code - 8601

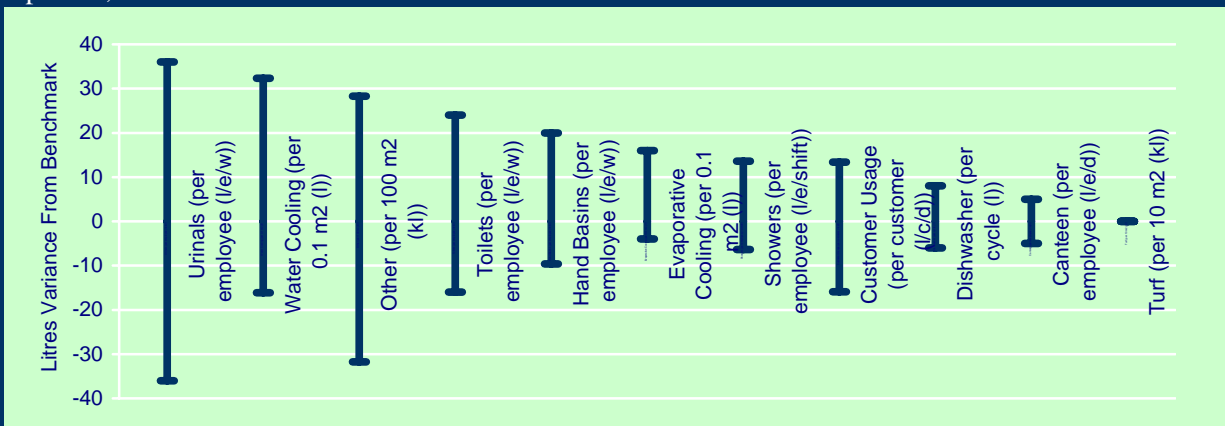
### Variance

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of residents
- Building area
- Irrigated area
- Number of cooling towers
- Number of toilets
- Number of showers
- Number of meals produced

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on ensuring process machinery is up-to-date. The majority of water efficiency is fixed at the time of plant acquisition. Significant improvements in efficiency require working with the organisation on its capital acquisition policies and program.

Other specific elements of best practice require the organisations to:

- \* Minimise the level of waste, leakage and unaccounted water eg. apply conductivity controls in cooling towers.
- \* Implement audit programs to address water conservation opportunities.
- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Replace older toilets with 1.6 gallon per flush toilets.



<b>Sector -</b>	<b>General practice medical services</b>
<b>ANZSIC Code -</b>	<b>8511</b>
<b>ANZSIC Descriptor -</b>	This sector consists of general practice medical services (clinics, GPs, etc.).

**Industry overview**

*The primary activities of firms in this industry are:*

- Flying doctor service
- General medical practitioner service
- General practice medical clinic service
- Rural general medical practice service

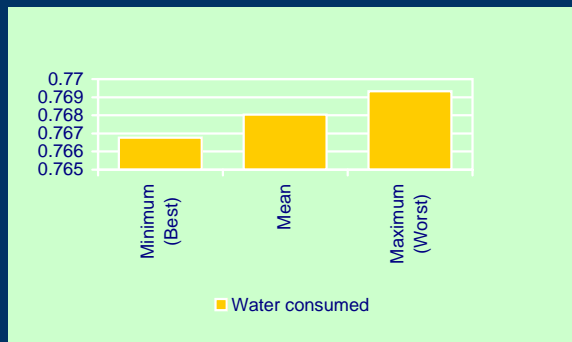
*The major products and services in this industry are:*

- Private general medical practice
- Multi-practice, special interest clinics

**Key Statistics (kL/employee/day)**

	Water consumed	Water discharged
Minimum (Best)	0.76676	
Mean	0.76804	
Maximum (Worst)	0.76932	

(AWWA Research Foundation, 2000)





Sector - General practice medical services

ANZSIC Code - 8511

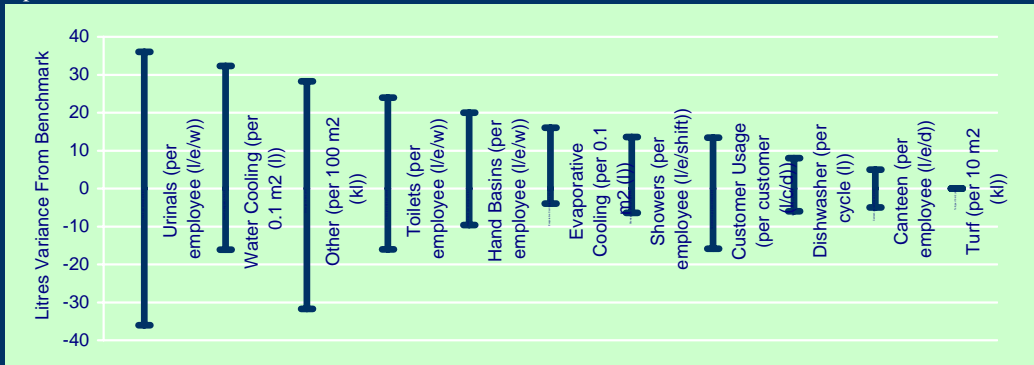
**Variance**

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of patients
- Number of toilets
- Canteen/kitchen facilities
- Building area
- Use of air-conditioning
- Irrigated area
- Volume of procedures

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on installing water-conservation fittings to taps and toilet facilities.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Replace older toilets with 1.6 gallon per flush toilets.
- \* Plumbing fixture rebate programs.
- \* Low interest loan programs to compensate the large investment needed to convert to efficient technology.



**Sector -** **Veterinary Services**  
**ANZSIC Code -** **6970**  
**ANZSIC Descriptor -** This sector consists of veterinary services.

**Industry overview**

*The primary activities of firms in this industry are:*

- Animal clinic operation
- Animal hospital operation
- Animal pathology service
- Animal quarantine station operation
- Spaying service
- Veterinary clinic operation
- Veterinary service

*The major products and services in this industry are:*

- Professional services income from companion animals
- Sale of merchandise
- Professional services income from farm/production animals
- Professional services income from racehorses and racing dogs

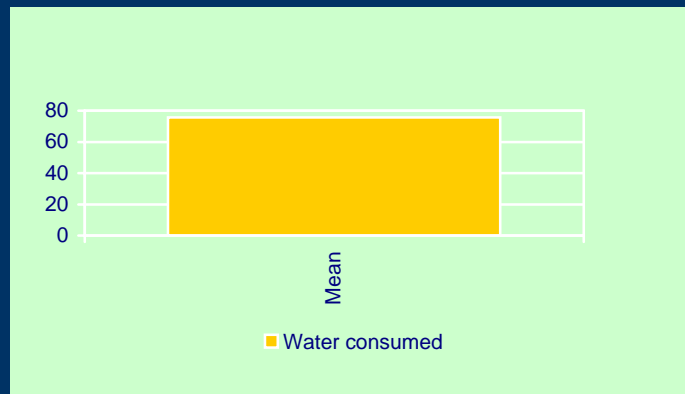
**Key Statistics (kL/employee hour)**

*Water consumed*      *Water discharged*

Mean 

75.71
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(Village of Sturtevant, Wisconsin, 2006)





Sector - **Veterinary Services**

ANZSIC Code - **6970**

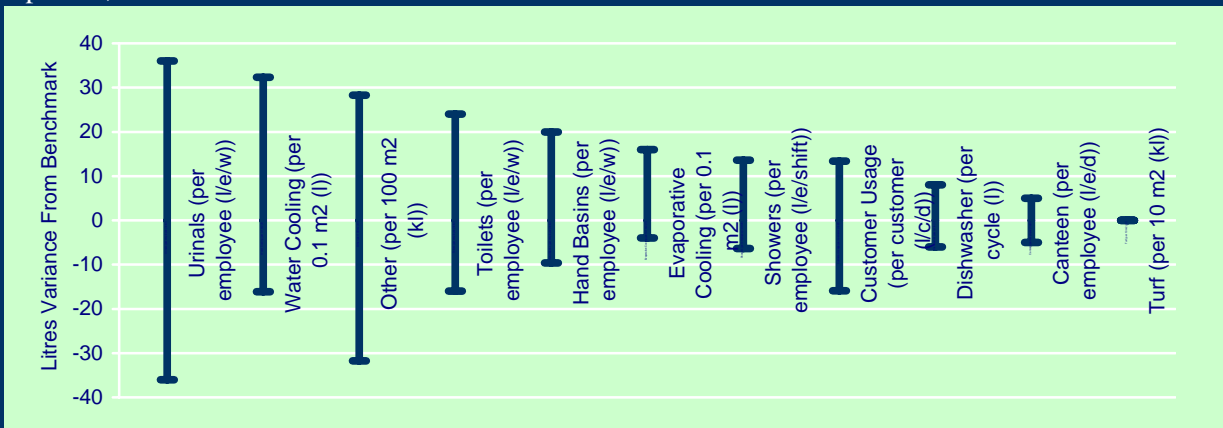
**Variance**

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of patients
- Number of toilets
- Number of patients
- Volume of procedures/surgery
- Boarding facilities
- Canteen/kitchen facilities
- Building area
- Use of air-conditioning

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on installing water-conservation fittings to taps and toilet facilities.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Plumbing fixture rebate programs.
- \* Low interest loan programs to compensate the large investment needed to convert to efficient technology.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.



<b>Sector -</b>	<b>Accommodation for the aged</b>
<b>ANZSIC Code -</b>	<b>8601</b>
<b>ANZSIC Descriptor -</b>	This sector consists of units mainly engaged in providing long term care accommodation or homes for senior citizens where nursing or medical care is not provided as a major service.

**Industry overview**

*The primary activities of firms in this industry are:*

- Accommodation for the aged operation
- Aged care hostel operation
- Nursing home operation
- Residential care for the aged operation

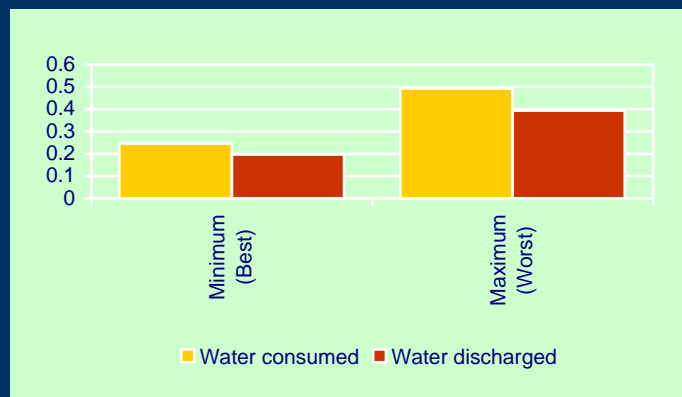
*The major products and services in this industry are:*

- Low care accommodation for the aged
- High care accommodation for the aged

**Key Statistics (kL/unit/day)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	0.25	0.20
<i>Maximum (Worst)</i>	0.49	0.39

(Friedman, 2006)





Sector - Accommodation for the aged

ANZSIC Code - 8601

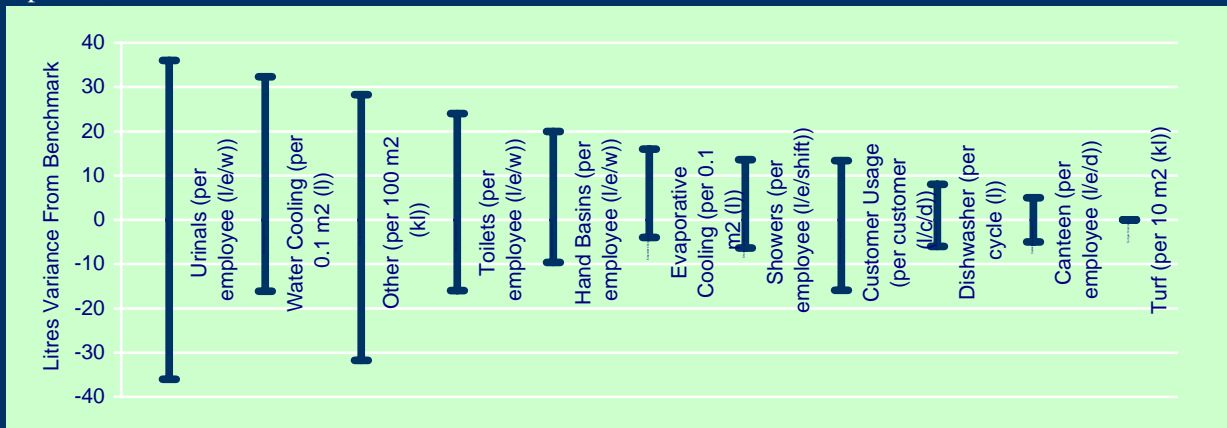
**Variance**

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Occupancy per unit
- Utilisation (% full)
- Common Facilities
- Total garden area
- Extent of irrigation
- Time between unit refurbishments
- Culture of water conservation
- Number of meals produced

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on developing awareness of the use of water by the end user. Most water usage comes from individuals in their own independent living space residents provide most of their own water devices. As such, developing awareness by end users is critical.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee and customer awareness programs.
- \* Adopt water efficient devices for personal use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).
- \* Engage in landscaping conservation programs - fine tune irrigation systems, adjust water schedules and use low-water plantings.
- \* Plumbing fixture rebate programs.



**Sector - Non-residential care services**

**ANZSIC Code - 8609**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in providing non-residential care services (including welfare, charity, support and daycare).

**Industry overview**

*The primary activities of firms in this industry are:*

- Children’s home operation
- Community mental health hostel
- Crisis care accommodation operation
- Home for the disadvantaged operation n.e.c.
- Hospice operation
- Residential refuge operation
- Respite residential care operation

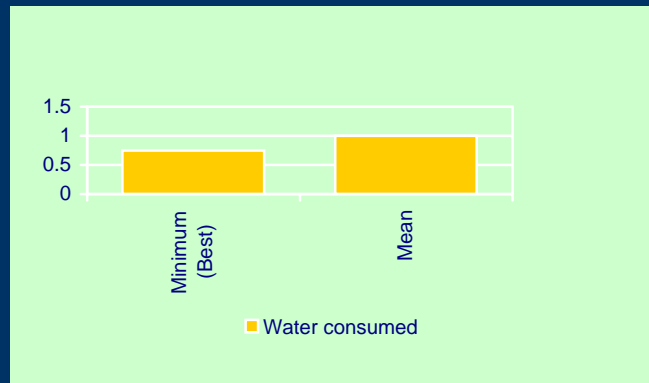
*The major products and services in this industry are:*

- Support in the home
- Individual and family support
- Training and employment
- Independent and community living support
- Information and referral services
- Statutory protection
- Foster care placement

**Key Statistics (kL/m2/year)**

	Water consumed	Water discharged
Minimum (Best)	0.75	
Mean	1.00	

(Sector 7712 - Commercial Property Operators used as proxy. Deloitte Survey, 2006)



Sector - Non-residential care services

ANZSIC Code - 8609

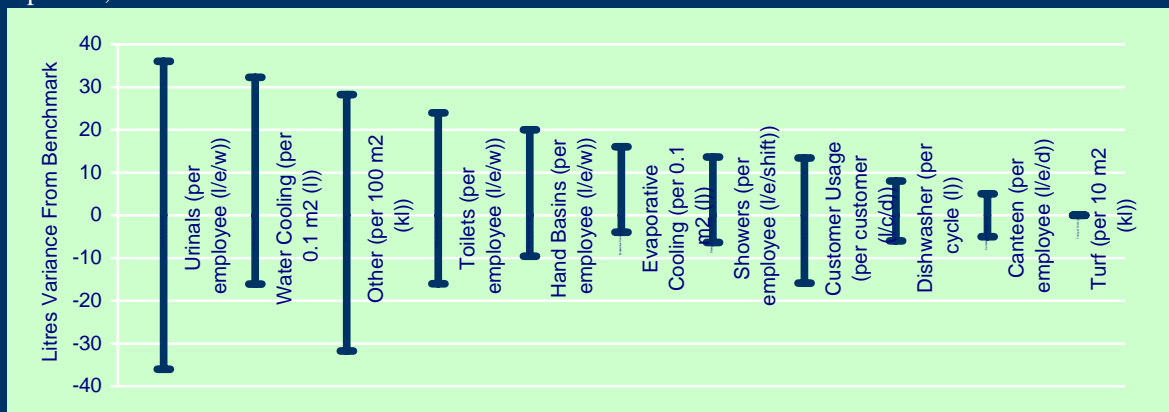
### Variance

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of toilets
- Irrigated area
- Number of customers
- Use of air-conditioning

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on efficient management and maintenance of existing water devices and regular refurbishment of key devices, particularly customer sanitation.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.
- \* Plumbing fixture rebate programs.
- \* Low interest loan programs to compensate the large investment needed to convert to efficient technology.



<b>Sector -</b>	<b>Museums</b>
<b>ANZSIC Code -</b>	<b>8910</b>
<b>ANZSIC Descriptor -</b>	This sector consists of museums including art museums, historic houses and war memorials.

**Industry overview**

*The primary activities of firms in this industry are:*

- Art gallery operation (except retail)
- Art museum operation (except retail)
- Historic or heritage place, site or house operation
- Museum operation n.e.c.
- Natural history and science museum operation
- Transport and maritime museum operation
- War memorial museum operation

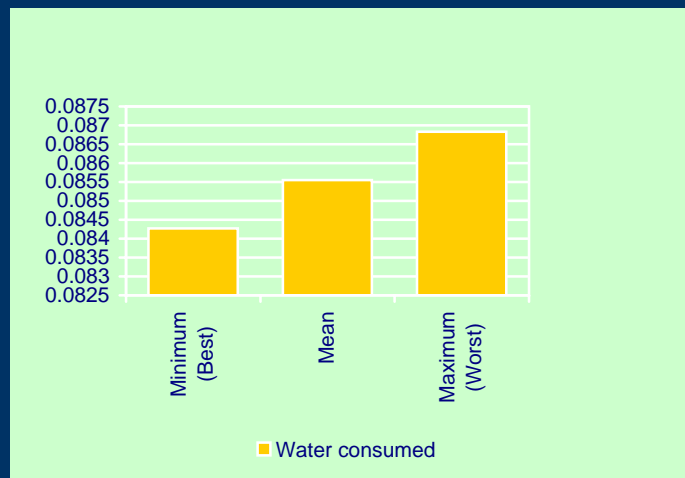
*The major products and services in this industry are:*

- Social history museums
- Historic properties/sites
- Art museums/galleries
- Other museums

**Key Statistics (kL/employee/day)**

	Water consumed	Water discharged
Minimum (Best)	0.08427	
Mean	0.08555	
Median		
Maximum (Worst)	0.08683	

(AWWA Research Foundation, 2000)



Sector - Museums

ANZSIC Code - 8910

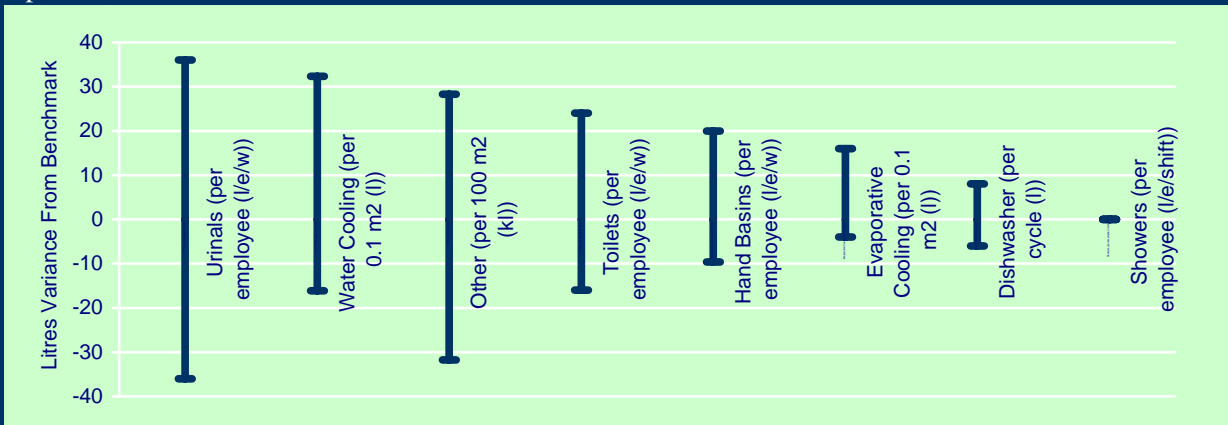
### Variance

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Number of customers
- Restaurant/café facilities
- Number of food outlets
- Building area
- Use of air-conditioning
- Number of toilets
- Number of patrons

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on efficient management and maintenance of existing water devices and regular refurbishment of key devices, particularly customer sanitation.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Replace older toilets with 1.6 gallon per flush toilets.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.
- \* Minimise the level of waste, leakage and unaccounted water eg. apply conductivity controls in cooling towers.



**Sector - Performing Arts Operation**

**ANZSIC Code - 9001**

**ANZSIC Descriptor -** This sector consists of units engaged in music and theatre productions.

**Industry overview**

*The primary activities of firms in this industry are:*

- Circus operation
- Dance and ballet company operation
- Musical comedy company operation
- Musical productions
- Opera company operation
- Orchestra operation
- Performing arts operation n.e.c.
- Theatre restaurant operation (mainly entertainment)
- Theatrical company operation

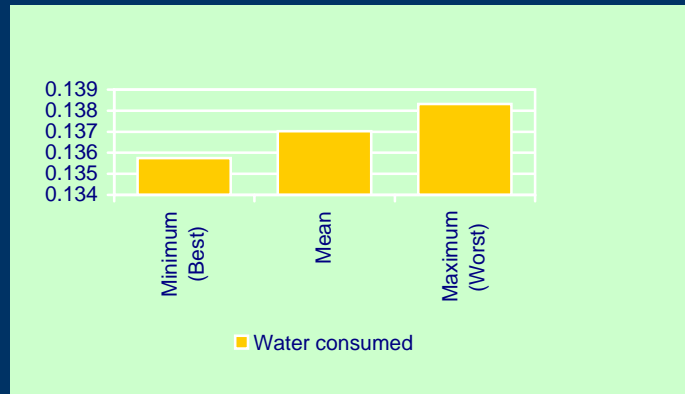
*The major products and services in this industry are:*

- Musical theatre productions
- Symphony and choral productions
- Drama productions
- Popular music productions
- Opera productions
- Dance productions

**Key Statistics (kL/employee/day)**

	Water consumed	Water discharged
Minimum (Best)	0.13575	
Mean	0.13703	
Maximum (Worst)	0.13831	

(AWWA Research Foundation, 2000)





**Sector - Performing Arts Operation**

**ANZSIC Code - 9001**

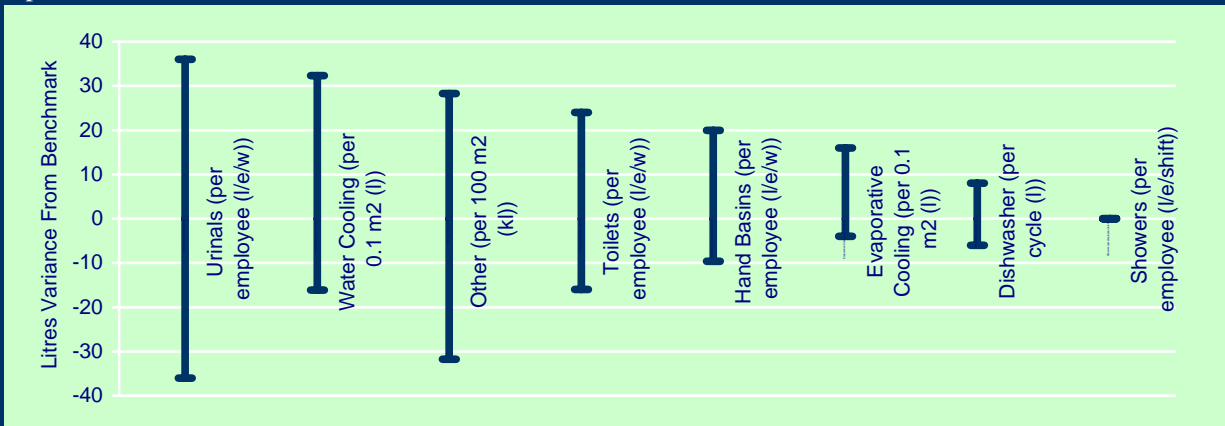
**Variance**

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Number of shows staged
- Use of air-conditioning
- Restaurant/café/snack bar
- Building area
- Number of toilets
- Number of dressing rooms
- Irrigated area
- Seating capacity

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on efficient management and maintenance of existing water devices and regular refurbishment of key devices, particularly customer sanitation.

Other specific elements of best practice require the organisations to:

- \* Replace older toilets with 1.6 gallon per flush toilets.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.
- \* Encourage individuals to improve existing water use efficiency through employee awareness programs.
- \* Plumbing fixture rebate programs.



**Sector - Sports and Physical Recreation Venues, Grounds and Facilities Operation**

**ANZSIC Code - 9113**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in operating any kind of indoor or outdoor sports facility other than those for horse or dog racing. This class also includes separately located grounds of sporting clubs which are treated as separate units.

**Industry overview**

*The primary activities of firms in this industry are:*

- Athletics field or stadium operation
- Basketball court or stadium operation
- Billiard, snooker or pool hall operation
- Bowling alley, tenpin, operation
- Bowling green operation
- Boxing stadium operation
- Cricket ground operation
- Football field or stadium operation
- Golf course or practice range operation
- Ice or roller skating rink operation

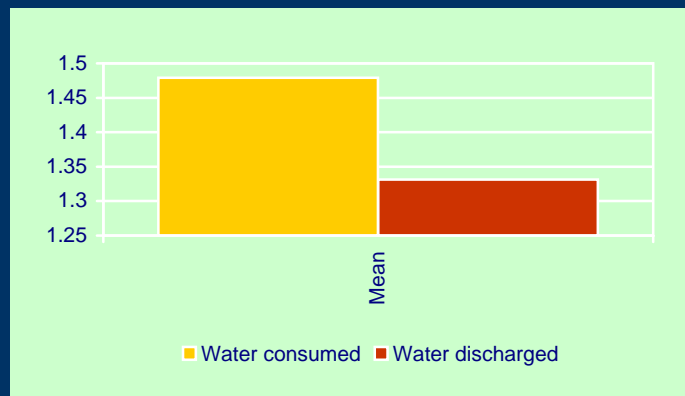
*The major products and services in this industry are:*

- Health and fitness centres
- Tennis
- Cricket
- Golf
- Soccer
- Netball
- Australian Rules Football
- Rugby- Union and League
- Squash
- Basketball

**Key Statistics (kL/employee/day)**

	Water consumed	Water discharged
Mean	1.4793	1.33137

(AWWA Research Foundation, 2000)



Sector - Sports and Physical Recreation Venues, Grounds and Facilities Operation

ANZSIC Code - 9113

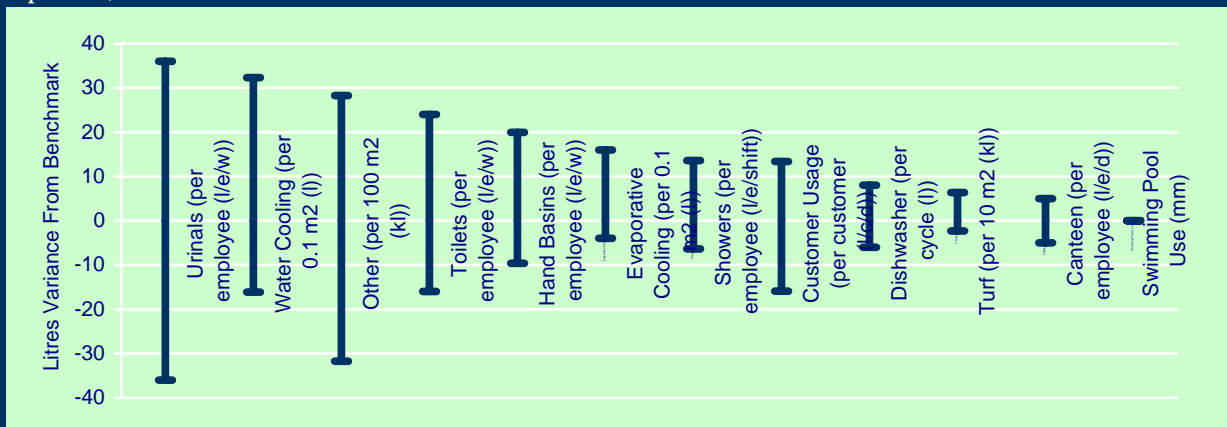
### Variance

This sector is included in the larger group of sectors, known as Irrigation.

Specific areas of variance are attributable to:

- Capacity and utilisation
- Nature of sport
- Food and beverage facilities
- Events per year
- Age of facilities
- Long-term management
- Conference/function facilities
- Extent of air-conditioning
- Number of patrons

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on appropriate use of technology/water devices focussing on sanitary uses of water. Users typically engage with venues on an irregular and infrequent basis and are less likely to adjust behaviour.

Other specific elements of best practice require the organisations to:

- \* Adopt water efficient devices for personal use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.
- \* Adopt water efficient irrigation equipment and practices, such as targeted sprinkling. Consider pressure regulation valves, pressure compensating spray nozzles and drip irrigation.
- \* Adopt waterless cleaning where appropriate.



**Sector -** Horse and Dog Racing Administration and Track Operation

**ANZSIC Code -** 9121

**ANZSIC Descriptor -** This sector consists of units engaged in horse and dog racing and training for racing.

**Industry overview**

*The primary activities of firms in this industry are:*

- Dog race course or track operation
- Horse race course or track operation
- Racing authority or board

*The major products and services in this industry are:*

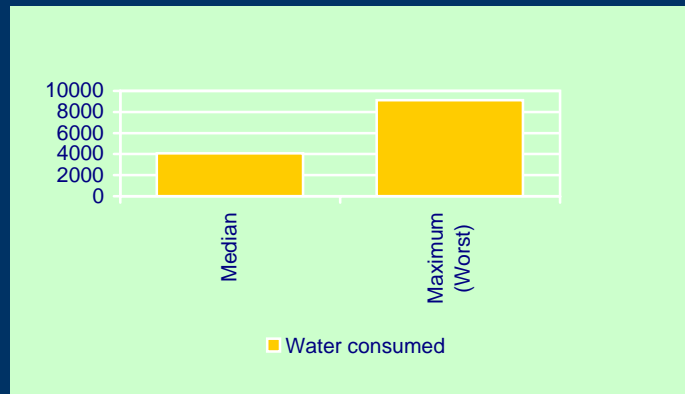
- Horse racing
- Horse and greyhound training
- Greyhound racing
- Harness racing

**Key Statistics (kL/Irrigated hectare/year)**

*Water consumed      Water discharged*

<i>Median</i>	4058	
<i>Maximum (Worst)</i>	9107	

(Deloitte Survey, 2006)



**Sector - Horse and Dog Racing Administration and Track Operation**

**ANZSIC Code - 9121**

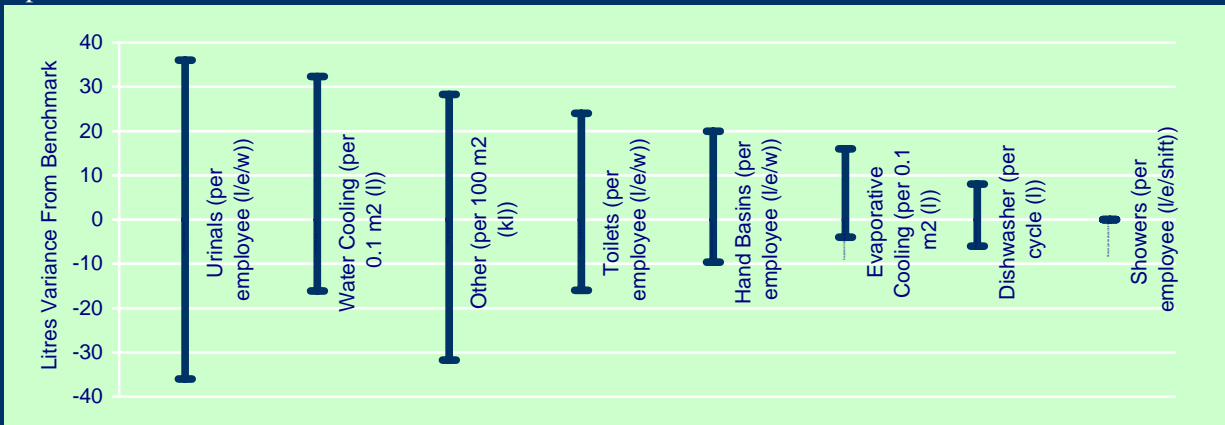
### Variance

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Number of races held
- Café/snack bar facilities
- Number of patrons
- Building area
- Number of toilets
- Number of employees

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on installing water-conservation fittings to taps and toilet facilities.

Other specific elements of best practice require the organisations to:

- \* Replace older toilets with 1.6 gallon per flush toilets.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.
- \* Adopt water efficient irrigation equipment such as pressure regulation valves, pressure compensating spray nozzles and drip irrigation.
- \* Landscaping conservation programs - fine tune irrigation systems, adjust water schedules and use low-water plantings.



**Sector - Casino Operation**

**ANZSIC Code - 9201**

**ANZSIC Descriptor -** This sector consists of units mainly engaged in providing a range of gambling services, in a building to which the general public have access. Units providing food, liquor and accommodation services are also included.

**Industry overview**

*The primary activities of firms in this industry are:*

- Casino operation

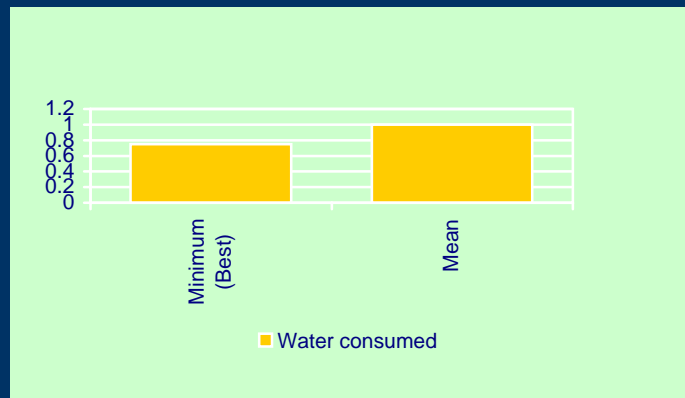
*The major products and services in this industry are:*

- Casino gaming tables
- Gaming/poker machines
- Accommodation
- Facility leasing
- Conference function centres

**Key Statistics (kL/m2/year)**

	Water consumed	Water discharged
Minimum (Best)	0.75	
Mean	1.00	

(sector 7712 - Commercial Property Operators used as proxy. Deloitte Survey 2006)



Sector - Casino Operation

ANZSIC Code - 9201

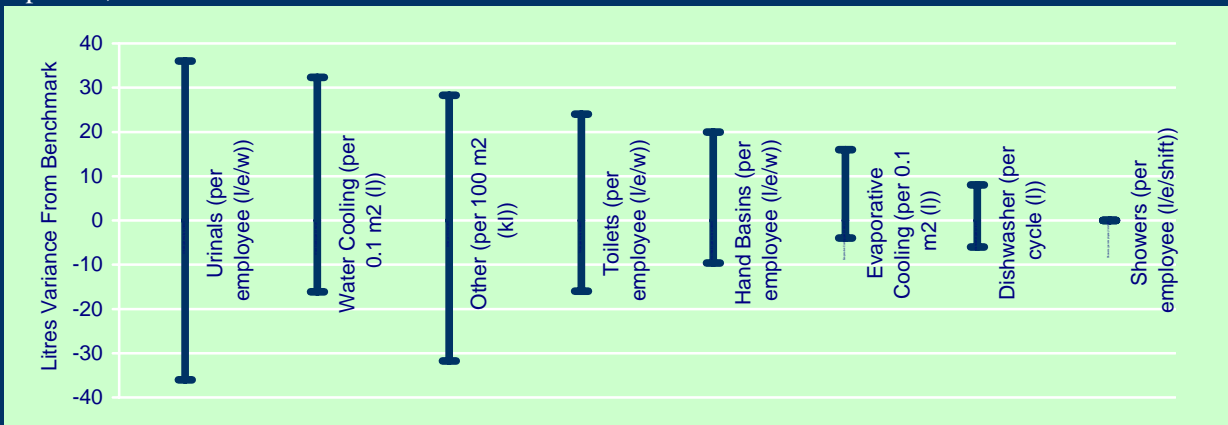
### Variance

This sector is included in the larger group of sectors, known as Retail.

Specific areas of variance are attributable to:

- Number of patrons
- Number of showers
- Number of cooling towers
- Irrigated area
- Number of restaurants/cafes/bars
- Number of employees
- Number of toilets
- Number of retail stores

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on managing the water usage on the components of a casino separately. That is, adopting best practice in the hotel, in the restaurants and cafes and in retail shopping centres, etc.

Other specific elements of best practice require the organisations to:

- \* Implement audit programs to address water conservation opportunities.
- \* Minimise the level of waste, leakage and unaccounted water eg. apply conductivity controls in cooling towers.
- \* Adopt water efficient devices for personal use (toilets, showers, taps, etc) and adopt water efficient processes (such as low-water cleaning, reviewing auto-flushing).
- \* Shut off water-cooled air conditioning units when not needed or replace water-cooled equipment with air-cooled systems.



**Sector - Laundry and Dry-Cleaning Services**

**ANZSIC Code - 9531**

**ANZSIC Descriptor -** This sector includes establishments mainly engaged in providing laundry or dry cleaning services (including baby napkin or linen hire services).

**Industry overview**

*The primary activities of firms in this industry are:*

- Baby napkin hire
- Carpet, upholstery and rug cleaning
- Clothing, hat or garment (including leather), cleaning
- Dry-cleaning agency operation
- Dry-cleaning
- Dyeing service for clothes
- Laundry agency operation
- Laundry and dry-cleaning service
- Linen hire
- Self service laundry operation

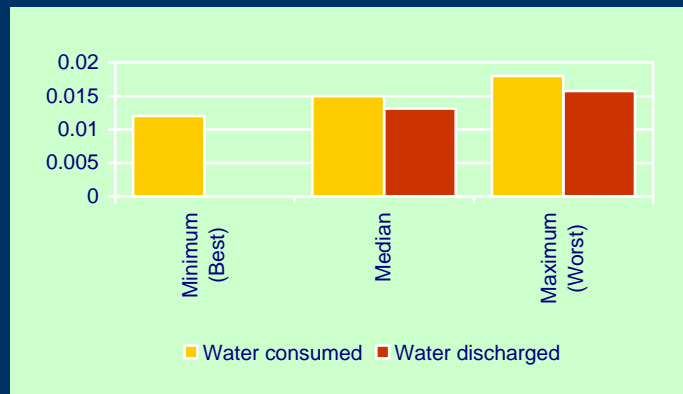
*The major products and services in this industry are:*

- Laundering - including linen and uniform rental and cleaning
- Dry cleaning
- Laundrettes - coin operated
- Carpet cleaning services

**Key Statistics (kL/kg linen)**

	Water consumed	Water discharged
<i>Minimum (Best)</i>	0.01200	0.00001
<i>Median</i>	0.01500	0.01313
<i>Maximum (Worst)</i>	0.01800	0.01575

(Sydney Water, 2001)



Sector - Laundry and Dry-Cleaning Services

ANZSIC Code - 9531

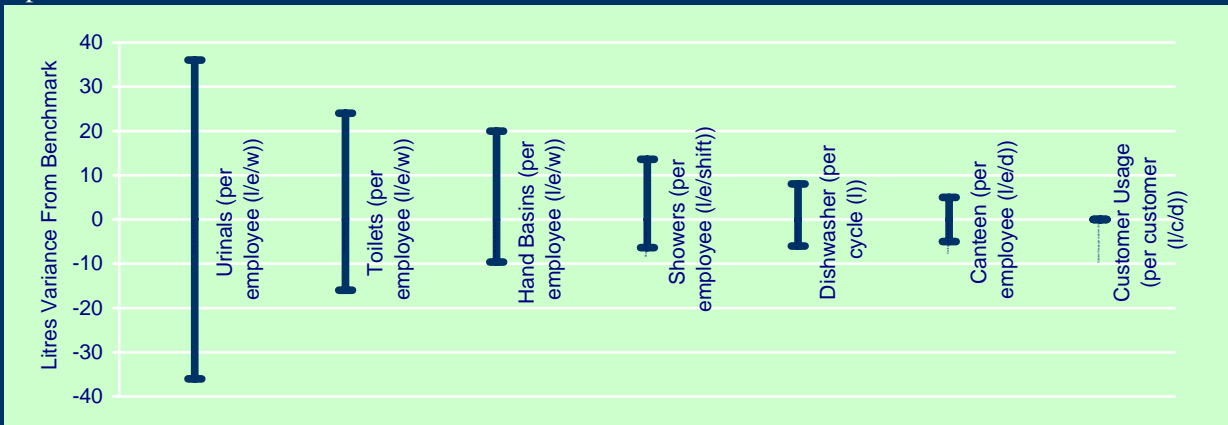
#### Variance

This sector is included in the larger group of sectors, known as Light Process.

Specific areas of variance are attributable to:

- Extent of water reuse
- Type of garments washed
- Other services offered
- Age of facilities
- Capacity utilisation
- Type of cleaning processes
- Culture of water conservation

Specific, measurable areas of variance are:



#### Best Practice

Evidence suggests that best practice usage relies heavily on ensuring process machinery is up-to-date. The majority of water efficiency is fixed at the time of plant acquisition. Significant improvements in efficiency require working with the organisation on its capital acquisition policies and program.

Other specific elements of best practice require the organisations to:

- \* Adopt efficient water re-use until the water cannot be used for further cleaning.
- \* Train employees to maximise the utilisation of machinery by managing loads. This both improves capital productivity and minimises water consumption and wastage.
- \* Adopt accurate management accounting to identify true cost of water and waste to organisation and value of water management.



**Sector - Funeral, Crematorium and Cemetery Services**

**ANZSIC Code - 9520**

**ANZSIC Descriptor -** This sector includes units mainly engaged in providing funeral services, including crematoria and cemeteries.

**Industry overview**

*The primary activities of firms in this industry are:*

- Cemetery operation
- Columbarium operation
- Crematorium operation
- Embalming service
- Funeral directing
- Mausoleum operation
- Memorial garden (i.e. burial place) operation
- Mortician service
- Pet cemetery operation
- Undertaking service

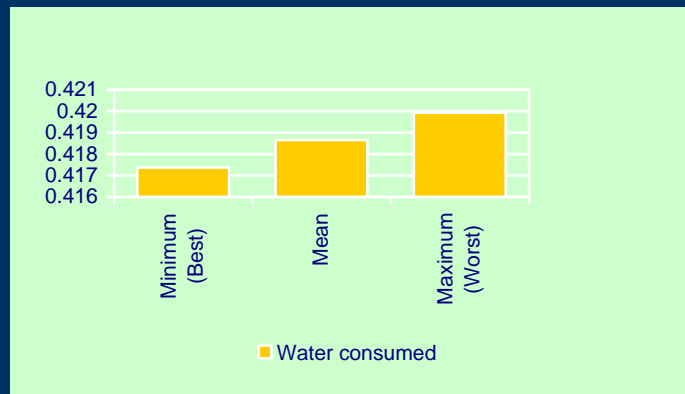
*The major products and services in this industry are:*

- Funeral directors
- Cemeteries and crematoria

**Key Statistics (kL/employee/day)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	0.41737	
<i>Mean</i>	0.41865	
<i>Maximum (Worst)</i>	0.41993	

(AWWA Research Foundation, 2000)





**Sector - Funeral, Crematorium and Cemetery Services**

**ANZSIC Code - 9520**

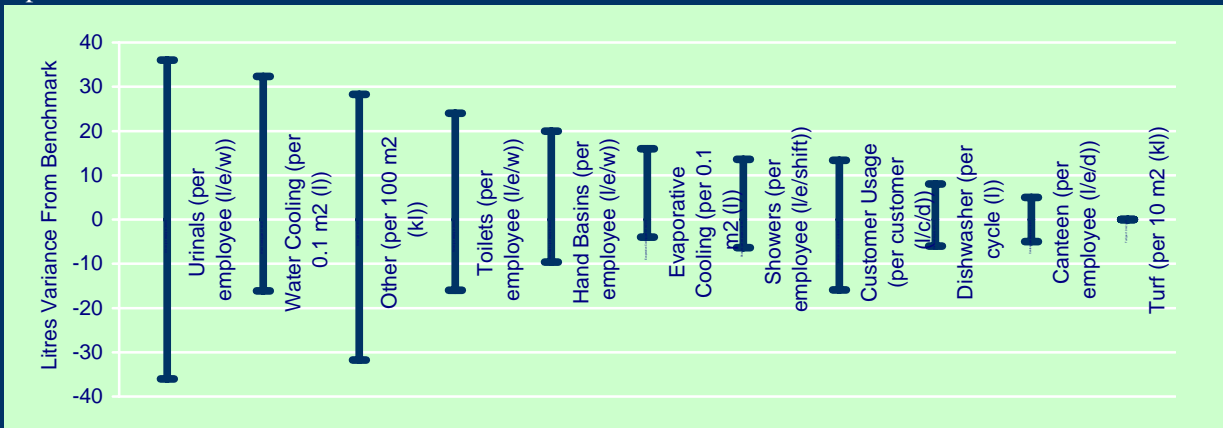
**Variance**

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of funerals held
- Building area
- Number of cremations held
- Number of toilets
- Irrigated area

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on installing water-conservation fittings to taps and toilet facilities and minimising use of potable water in irrigation.

Other specific elements of best practice require the organisations to:

- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.
- \* Implement landscaping conservation programs - fine tune irrigation systems, adjust water schedules and use low-water plantings.
- \* Conduct regular maintenance on key water devices (cooling towers and process machinery) to minimise leakage and wastage of water.



Sector - Religious services  
 ANZSIC Code - 9540  
 ANZSIC Descriptor - This sector includes religious organisations.

**Industry overview**

*The primary activities of firms in this industry are:*

- Bible society operation
- Church operation
- Convent operation (except schools)
- Diocesan registry operation
- Missionary society operation
- Monastery operation (except schools)
- Mosque operation
- Religious organisation operation
- Religious temple and shrine operation
- Synagogue operation

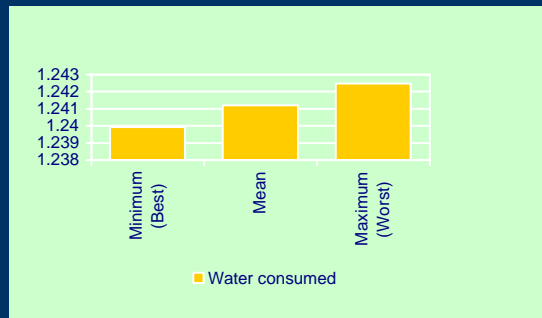
*The major products and services in this industry are:*

- Contributions/donations
- Bequests
- Contributions (for specific purposes)
- Investment income

**Key Statistics (kL/employee/day)**

	Water consumed	Water discharged
Minimum (Best)	1.2	
Mean	1.2	
Median		
Maximum (Worst)	1.2	

(AWWA Research Foundation, 2000)



Sector - Religious services

ANZSIC Code - 9540

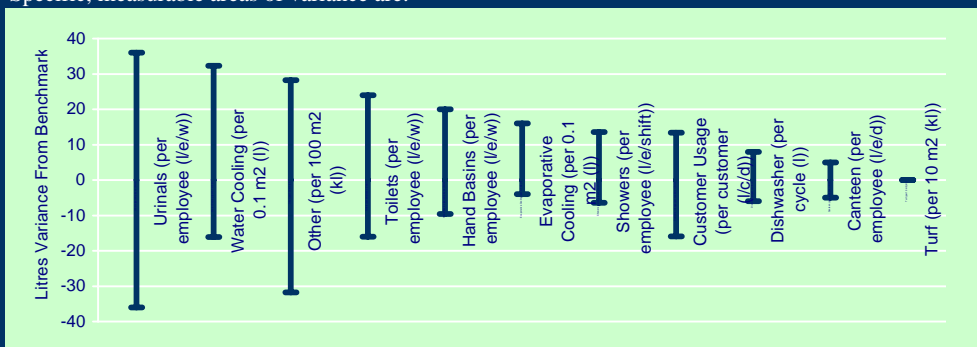
**Variance**

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of parishioners
- Kitchen facilities
- Number of toilets

Specific, measurable areas of variance are:



**Best Practice**

Evidence suggests that best practice usage relies heavily on installing water-conservation fittings to taps and toilet facilities.

Other specific elements of best practice require the organisations to:

- \* Encourage individuals to improve existing water use efficiency through employee awareness programs
- \* Minimise water quantity per usage event by utilising conservation technologies - eg. replace water-using fixtures with water-conserving fixture.
- \* Plumbing fixture rebate programs.
- \* Low interest loan programs to compensate the large investment needed to convert to efficient technology.



**Sector - Correctional and Detention Services**

**ANZSIC Code - 7714**

**ANZSIC Descriptor -** This sector includes correction centres such as gaols, prison farms, remand centres and prisons.

**Industry overview**

*The primary activities of firms in this industry are:*

- Correctional centre operation
- Detention centre operation
- Gaol operation
- Juvenile detention centre operation
- Operating correctional facility on a contract or fee basis
- Prison farm operation

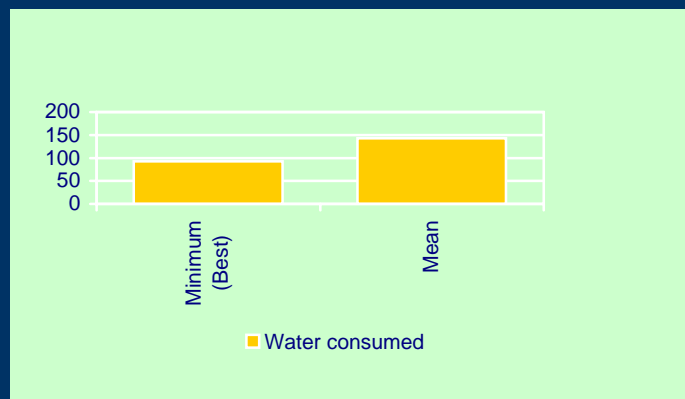
*The major products and services in this industry are:*

- Government operated prison
- 24-hour court cell centre
- Periodic detention centre
- Privately operated prison
- Government operated community custodial facility
- Privately operated community custodial facility

**Key Statistics (kL/prisoner/year)**

	<i>Water consumed</i>	<i>Water discharged</i>
<i>Minimum (Best)</i>	92.4	
<i>Mean</i>	143.0	

(Environment Agency 2003)



Sector - Correctional and Detention Services

ANZSIC Code - 7714

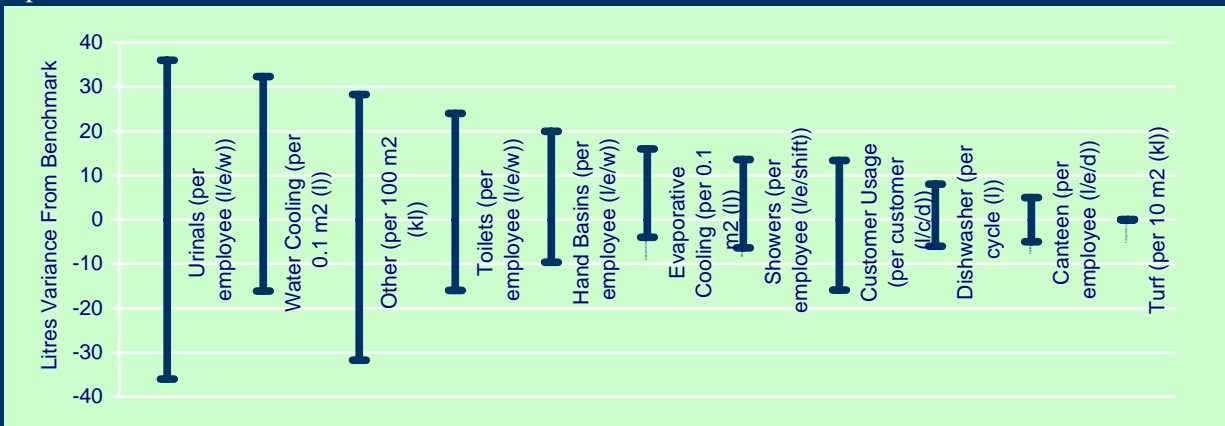
### Variance

This sector is included in the larger group of sectors, known as Employee and Customer Use.

Specific areas of variance are attributable to:

- Number of inmates
- Number of toilets
- Number of showers
- Pool/spa facilities
- Irrigated area
- Building area
- Number of cooling towers
- Other facilities offered
- Number of meals produced

Specific, measurable areas of variance are:



### Best Practice

Evidence suggests that best practice usage relies heavily on replacing older, less water efficient washing machines with newer more water efficient models.

Other specific elements of best practice require the organisations to:

- \* Use swimming pool covers to decrease the amount of water lost through evaporation.
- \* Use grey water in toilet and shower facilities.
- \* Minimise water quantity per usage event by utilising conservation technologies - eg replace water-using fixtures with water-conserving fixture.
- \* Implement landscaping conservation programs - fine tune irrigation systems, adjust water schedules and use low-water plantings.