



## Irrigation Design Australia

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### **IRRIGATION WATER USAGE, CATCHMENT & IRRIGATION STRATEGY**

**457 Adelaide Street**

**23.04.2026**

Please see below the Irrigation Design / Strategy Information. We have provided the report based on the information provided. The methods of calculating water usage, and irrigation sustainability we have provided are based on this information. Calculations have been carried out based on landscaped areas supplied to IDA. **Irrigation applications will be by sub surface Drip.**

We have utilised two methods of calculating water usage. Using a mathematical method of multiplying the landscaped area by the nominated required volumes.

**Method A** used is as per Brisbane City Council requirements, BCC has recently advised that their preferred allowance is 30-35mm per week for Native Planting & 35-45mm per week for Exotic Planting

**Method B** used is as per average Industry standard applications these rates are:

Summer 25mm per week, Autumn 15mm per week, Winter 10mm per week, Spring 20mm per week. Seasonal Calculations have been based on 13 weeks.

#### **PROVIDED DATA**

*Containerised Planting Area – 553.5m<sup>2</sup>, Catchment Area – 220m<sup>2</sup>*

#### **IRRIGATION WATER USAGE – Method A – BCC requirements**

*BCC Volume required Lower Range is 30mm per week. – 16,605 Litres per week.*

**Total Annual Water Usage 863,460 Litres**

*BCC Volume required Median Range is 35mm per week. – 19,373 Litres per week.*

**Total Annual Water Usage 1,007,370 Litres**

*BCC Volume required Upper Range is 45mm per week. – 24,908 Litres per week.*

**Total Annual Water Usage 1,295,190 Litres**

#### **IRRIGATION WATER USAGE – Method B – Industry Standards**

Application rates based on industry averages x area.

SUMMER 25mm per week = 13,838Litres – Season requirement 179,888Litres

AUTUMN 15mm per week = 8,303Litres – Season requirement 107,933Litres

WINTER 10mm per week = 5,535Litres – Season requirement 71,955Litres

SPRING 20mm per week = 11,070Litres – Season requirement 143,910Litres

**Total Annual Water Usage 503,685 Litres**

## IRRIGATION WATER CAPTURE AND STORAGE:

South-East Queensland's climate is volatile. There are no sureties as to the volume of rainfall that will fall in a season. We have utilised the available historical BOM data to try to forecast potential issues and the figures below depict possible water catchment for comparison to irrigation requirements.

## RAINFALL AND CATCHMENT CALCULATIONS ANNUAL AVERAGE:

Using a mathematical method of multiplying the Average Annual Rainfall provided by the Bureau of Meteorology by the supplied catchment area.

Rainfall minus 24mm per year to cover inefficiencies.

Catchment adjusted to 80% to cover inefficiencies.

**CATCHMENT:** AREA 220m<sup>2</sup> (Adjusted by 80% 176m<sup>2</sup>)

**BRISBANE AVERAGE ANNUAL RAINFALL** 1200mm (Adjusted by 24mm annually 1176mm)

1176mm per Year x a Catchment area of 176m<sup>2</sup> equals a catchment volume of 206,976 Litres.

## RAINFALL AND CATCHMENT CALCULATIONS SEASONAL:

Using a mathematical method of multiplying the **seasonal** rainfall provided by the Bureau of Meteorology by the supplied catchment area.

**SUMMER** rainfall seasonal average 176m<sup>2</sup> = Capture of 62,445 Litres

**AUTUMN** rainfall seasonal average 176m<sup>2</sup> = Capture of 43,982 Litres

**WINTER** rainfall seasonal average 176m<sup>2</sup> = Capture of 19,254 Litres

**SPRING** rainfall seasonal average 176m<sup>2</sup> = Capture of 31,750 Litres

Utilising this method Total Annual Catchment from Seasonal figures is 157,432 Litres.

Regardless of the calculation method as the catchment area far outweighs the size of the Landscaped area should average rainfall occur then there will be an excess of Harvested water available for irrigation.

*Irrigation Design Australia*

## CATCHMENT v IRRIGATION REQUIREMENT SUMMARY:

Allowing that average rainfall is received then the annual data is as follows:

Annual catchment figures based on BOM data is **157,432 Litres**.

Annual Irrigation requirements BCC Lower Range is **863,460 Litres**

Giving us a shortfall of Harvested water of 706,028 Litres.

Annual Irrigation requirements BCC Upper Range is **1,295,190 Litres**

Giving us a shortfall of Harvested water of 1,137,758 Litres.

Annual Irrigation requirements Industry Standard is **503,685 Litres**

Giving us a shortfall of Harvested water of 346,253 Litres.

### **TANK SIZING (WATER STORAGE):**

Tank sizing requires consideration of potential harvest volumes as well as irrigation water requirements. The highest average rainfall in Brisbane is 37.6mm a week, therefore the highest volume of water that can potentially be harvested over the project catchment is **6,618 Litres** in a week. The suggestion is for 5,000, 10,000 or 15,000 Litres of storage.

#### **5,000 Litre Storage would hold enough water for:**

Approximately 0.30 weekly applications of irrigation at the BCC Lower Range of 30mm  
Approximately 0.26 weekly applications of irrigation at the BCC Median Range of 35mm  
Approximately 0.20 weekly applications of irrigation at the BCC Upper Range of 45mm  
Approximately 0.52 average weekly applications of irrigation at the Industry Standard application rate.  
This size tank will require **28.4mm** of Rain over the nominated catchment area to fill the Tank.

#### **10,000 Litre Storage would hold enough water for:**

Approximately 0.60 weekly applications of irrigation at the BCC Lower Range of 30mm  
Approximately 0.52 weekly applications of irrigation at the BCC Median Range of 35mm  
Approximately 0.40 weekly applications of irrigation at the BCC Upper Range of 45mm  
Approximately 1.03 average weekly applications of irrigation at the Industry Standard application rate.  
This size tank will require **56.8** of Rain over the nominated catchment area to fill the Tank.

#### **15,000 Litre Storage would hold enough water for:**

Approximately 0.90 weekly applications of irrigation at the BCC Lower Range of 30mm  
Approximately 0.77 weekly applications of irrigation at the BCC Median Range of 35mm  
Approximately 0.60 weekly applications of irrigation at the BCC Upper Range of 45mm  
Approximately 1.55 average weekly applications of irrigation at the Industry Standard application rate.  
This size tank will require **85.2mm** of Rain over the nominated catchment area to fill the Tank.

Should Tank size selection be larger than **5,000** Litres there will be periods where the tank will require top up from an external supply. Due to the small catchment area large volumes of rain will be required to refill the Tank.

## **ALTERNATE WATER SUPPLY**

In periods of low rainfall or when tank levels are below requirements an alternative water supply may be required. The discrepancy between potential harvested catchment and water requirements will be met by alternative water when required. To service irrigation requirements the Tank may require multiple top ups, this should be considered when locating the Tanks as refill from Tanker at Ground Level may be an issue if the Water Tanker pumps do not have sufficient pressure to pump to high level Tank storage. Currently water for irrigation is available for approximately \$350 for a 13,500-litre tanker delivered. This could be utilised for tank fill if / when rainfall is not available. The locating of the tanks in an accessible location on the property will assist with access for Tanker fill. Alternatively, a fill line could be installed with an external connection point for a tanker to fill from.

**Potable back up** could be utilized (if required) at a 10-25% Tank level. This would safeguard the system should there be an issue with the alternative supply or nil rainfall in periods of demand.

## **SUMMARY**

Allowing that "Average Rainfall" occurs then 5,000 litres of storage would hold each season's highest catchment volumes. Any shortfall in the Irrigation requirements can be addressed by plant selection and or additional irrigation requiring external Tank fill to cover the shortfall. All planters will require free draining soil and very good drainage, if possible, this should be drained back to the storage Tank. Should plant demand be less than the applied volumes this would ensure water is not wasted.

We trust this information, calculations and stated strategy meets requirements and assists with planning for the required project.

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Regards

Rick Freeman



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**457 Adelaide Street**

**CATCHMENT & IRRIGATION WATER USAGE**

Containerised Planting Landscape Area (m2): 553.5 Catchment 220 Adjusted Catchment 176

**WATER USAGE METHOD - BCC REQUIRED APPLICATIONS (30,35,45mm)**

	Weekly Irrigation Application	Weekly Irrigation Requirements	Weeks in Season	Seasonal Irrigation Requirements	Weeks in Season	Annual Irrigation Requirements
553.50	mm	litres	qty	litres	qty	litres
<b>BCC WEEKLY REQUIREMENT Lower Range (Natives)</b>	30	16,605	13	215,865	52	863,460
<b>BCC WEEKLY REQUIREMENT Upper Range (Natives) Lower Range (Exotics)</b>	35	19,373	13	251,843	52	1,007,370
<b>BCC WEEKLY REQUIREMENT Upper Range (Exotics)</b>	45	24,908	13	323,798	52	1,295,190
				791,505		

**WATER USAGE METHOD - INDUSTRY STANDARD APPLICATIONS (25,20,15,10mm)**

	Weekly Irrigation Application	Weekly Irrigation Requirements	Weeks in Season	Seasonal Irrigation Requirements	Weeks in Season	Annual Irrigation Requirements
SUMMER		25	13,838	13		179,888
AUTUMN		15	8,303	13		107,933
WINTER		10	5,535	13		71,955
SPRING		20	11,070	13		143,910
Average		18	9,686	52		503,685

**CATCHMENT CALCULATION METHOD - BOM DATA ANNUAL RAINFALL**

	AREA	Annual Rainfall	Cunliffe	Adjusted Annual	Catchment
	m2	mm	mm	m2	litres
ROOF CATCHMENT AREA	176	1200	24	1,176	206,976
ANNUAL CATCHMENT					206,976

**CATCHMENT CALCULATION - BOM DATA SEASONAL RAINFALL**

		BOM Data 2024				
Month	Season	Average Monthly Rainfall	Average Weekly Rainfall	Average Weekly Catchment	Average Monthly Catchment	Season Totals
		mm	mm	litres	litres	
December	Summer	107.00	24.16	4252	18,832	62,445
January		127.40	28.77	5063	22,422	
February		120.40	27.19	4785	21,190	
March	Autumn	124.40	28.09	4944	21,894	43,982
April		53.20	12.01	2114	9,363	
May		72.30	16.33	2873	12,725	
June	Winter	35.60	8.04	1415	6,266	19,254
July		40.00	9.03	1590	7,040	
August		33.80	7.63	1343	5,949	
September	Spring	33.00	7.45	1311	5,808	31,750
October		73.50	16.60	2921	12,936	
November		73.90	16.69	2937	13,006	
<b>ANNUAL TOTAL</b>						<b>157,432</b>

	Weeks Harvest	
Highest Average Rainfall (BOM Data)	37.60	6.618

**AVERAGES**

**IRRIGATION REQUIREMENT 30mm**

CATCHMENT

% provide by Rainfall

**DIFFERENCE**

Annually	Summer	Autumn	Winter	Spring
863,460	215,865	215,865	215,865	215,865
157,432	62,445	43,982	19,254	31,750
18%	29%	20%	9%	15%
-706,028	-153,420	-171,883	-196,611	-184,115

**IRRIGATION REQUIREMENT 35mm**

CATCHMENT SEASONAL

% provide by Rainfall

**DIFFERENCE**

Annually	Summer	Autumn	Winter	Spring
1,007,370	251,843	251,843	251,843	251,843
157,432	62,445	43,982	19,254	31,750
16%	25%	17%	8%	13%
-849,938	-189,398	-207,860	-232,588	-220,092

**IRRIGATION REQUIREMENT 45mm**

CATCHMENT SEASONAL

% provide by Rainfall

**DIFFERENCE**

Annually	Summer	Autumn	Winter	Spring
1,295,190	323,798	323,798	323,798	323,798
157,432	62,445	43,982	19,254	31,750
12%	19%	14%	6%	10%
-1,137,758	-261,353	-279,815	-304,543	-292,047

**METHOD B**

IRRIGATION REQUIREMENT (Industry Standards)

CATCHMENT SEASONAL

% provide by Rainfall

**DIFFERENCE**

Annually	Summer	Autumn	Winter	Spring
503,685.0	179,888	107,933	71,955	143,910
157,432	62,445	43,982	19,254	31,750
31%	35%	41%	27%	22%
-346,253	-117,443	-63,950	-52,701	-112,160

**Tank Sizing**

**STORAGE**

APPLICATIONS OF IRRIGATION BCC Lower Range

APPLICATIONS OF IRRIGATION BCC 35mm

APPLICATIONS OF IRRIGATION BCC Upper Range

Applications of Industry Standard - Summer

Applications of Industry Standard - Autumn

Applications of Industry Standard - Winter

Applications of Industry Standard - Spring

Applications of Industry Standard - Average 18mm

Tank holds mm over total area of 1514m2

mm OF RAIN TO FILL TANK

**Average Weekly Application**

Application	TANK SIZE	TANK SIZE	TANK SIZE	TANK SIZE
	5,000	10,000	15,000	20,000
16,605	0.30	0.60	0.90	1.20
19,373	0.26	0.52	0.77	1.03
24,908	0.20	0.40	0.60	0.80
13,838	0.36	0.72	1.08	1.45
8,303	0.60	1.20	1.81	2.41
5,535	0.90	1.81	2.71	3.61
11,070	0.45	0.90	1.36	1.81
9,686	0.52	1.03	1.55	2.06
mm	9.0	18.1	27.1	36.1
mm	28.4	56.8	85.2	113.6



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**Irrigation Design Australia RAINFALL/ E.TR./ IRRIGATION SUMMARY BASED ON MEDIAN RAINFALL DATA FROM BOM.**

457 Adelaide Street

REGIONAL AREA: Brisbane

INDUSTRY STANDARDS FOR APPLICATION

Landscape Area (m2): **554** Total Catchment Area: (m2) **220** Adjusted Catchment Area: (m2-80%) **176**

Irrigation Application Rates for

Irrigation Application Rates for Seasons after estab. (mm) **Industry Standards**

SUMMER	AUTUMN	WINTER	SPRING
25.0	15.0	10.0	20.0

Statistic Element	December	January	February	March	April	May	June	July	August	September	October	November
<b>Rainfall (Median 1994-2022)</b>												
Monthly (mm) [Data from BOM]	121.30	123.80	161.60	120.20	71.20	100.90	64.20	31.20	34.40	32.20	82.40	94.10
Weekly (mm)	30.33	30.95	40.40	30.05	17.80	25.23	16.05	7.80	8.60	8.05	20.60	23.53
Seasonal Average (mm)	33.89			24.36			10.82			17.39		

<b>Potential Catchment for defined roof area, less other usages i.e. Toilet flushing</b>												
Monthly Rainfall Catchment (L)	21,349	21,789	28,442	21,155	12,531	17,758	11,299	5,491	6,054	5,667	14,502	16,562
Weekly Rainfall Catchment (L)	5,337	5,447	7,110	5,289	3,133	4,440	2,825	1,373	1,514	1,417	3,626	4,140
Season Average (L)	5964.93			4287.07			1903.73			3060.93		
Average Weekly Rainfall Catchment (L)	3,804											

<b>Evapotranspiration (Median 2000-2019)</b>												
Monthly (mm)	204.40	201.60	193.20	162.40	128.80	98.00	81.20	89.60	114.80	151.20	179.20	196.00
Weekly (mm)	51.10	50.40	48.30	40.60	32.20	24.50	20.30	22.40	28.70	37.80	44.80	49.00
Daily (mm) [Data from BOM]	7.30	7.20	6.90	5.80	4.60	3.50	2.90	3.20	4.10	5.40	6.40	7.00
Seasonal Average (mm)	7.13			4.63			3.40			6.27		

<b>Adjusted Irrigation Appl. Rate comparing ETvsRainfall - VE indicates irrigation IS required + VE indicates irrigation NOT required</b>												
Adjusted Monthly ETvsRain (mm)	-83.10	-77.80	-31.60	-42.20	-57.60	2.90	-17.00	-58.40	-80.40	-119.00	-96.80	-101.90
Adjusted Weekly ETvsRain (mm)	-20.78	-19.45	-7.90	-10.55	-14.40	0.73	-4.25	-14.60	-20.10	-29.75	-24.20	-25.48
Irrigation Required 1=Yes 0=No	1	1	1	1	1	0	1	1	1	1	1	1

<b>Irrigation Supplement</b>												
Weekly Irrigation Required (L)	-11,499	-10,766	-4,373	-5,839	-7,970	0	-2,352	-8,081	-11,125	-16,467	-13,395	-14,100

Irrigation for 1 wk during Summer (during no rain) (L)	13,838
Irrigation for 1 wk during Autumn (during no rain) (L)	8,303
Irrigation for 1 wk during Winter (during no rain) (L)	5,535
Irrigation for 1 wk during Spring (during no rain) (L)	11,070





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**Irrigation Design Australia RAINFALL/ E.TR./ IRRIGATION SUMMARY BASED ON MEDIAN RAINFALL DATA FROM BOM.**

457 Adelaide Street

REGIONAL AREA: Brisbane

BCC 30mm WEEKLY APPLICATION

Landscape Area (m2): **554** Total Catchment Area: (m2) **220** Adjusted Catchment Area: (m2-80%) **176**

Irrigation Application Rates for

Irrigation Application Rates for Seasons after estab. (mm) **BCC Lower Range**

SUMMER	AUTUMN	WINTER	SPRING
30.0	30.0	30.0	30.0

Statistic Element	December	January	February	March	April	May	June	July	August	September	October	November
<b>Rainfall (Median 1994-2022)</b>												
Monthly (mm) [Data from BOM]	121.30	123.80	161.60	120.20	71.20	100.90	64.20	31.20	34.40	32.20	82.40	94.10
Weekly (mm)	30.33	30.95	40.40	30.05	17.80	25.23	16.05	7.80	8.60	8.05	20.60	23.53
Seasonal Average (mm)	33.89			24.36			10.82			17.39		

<b>Potential Catchment for defined roof area, less other usages i.e. Toilet flushing</b>												
Monthly Rainfall Catchment (L)	21,349	21,789	28,442	21,155	12,531	17,758	11,299	5,491	6,054	5,667	14,502	16,562
Weekly Rainfall Catchment (L)	5,337	5,447	7,110	5,289	3,133	4,440	2,825	1,373	1,514	1,417	3,626	4,140
Season Average (L)	5964.93			4287.07			1903.73			3060.93		
Average Weekly Rainfall Catchment (L)	3,804											

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Adjusted Weekly ETvsRain (mm)	-20.78	-19.45	-7.90	-10.55	-14.40	0.73	-4.25	-14.60	-20.10	-29.75	-24.20	-25.48
Irrigation Required 1=Yes 0=No	1	1	1	1	1	0	1	1	1	1	1	1

<b>Irrigation Supplement</b>												
Weekly Irrigation Required (L)	-11,499	-10,766	-4,373	-5,839	-7,970	0	-2,352	-8,081	-11,125	-16,467	-13,395	-14,100

Irrigation for 1 wk during Summer (during no rain) (L)	16,605
Irrigation for 1 wk during Autumn (during no rain) (L)	16,605
Irrigation for 1 wk during Winter (during no rain) (L)	16,605
Irrigation for 1 wk during Spring (during no rain) (L)	16,605





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Irrigation Application Rates for

Irrigation Application Rates for Seasons after estab. (mm) **BCC Lower Range**

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35.0	35.0	35.0	35.0

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Irrigation Required 1=Yes 0=No	1	1	1	1	1	0	1	1	1	1	1	1

<b>Irrigation Supplement</b>												
Weekly Irrigation Required (L)	-11,499	-10,766	-4,373	-5,839	-7,970	0	-2,352	-8,081	-11,125	-16,467	-13,395	-14,100

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Irrigation for 1 wk during Winter (during no rain) (L)	19,373
Irrigation for 1 wk during Spring (during no rain) (L)	19,373





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**Irrigation Design Australia RAINFALL/ E.TR./ IRRIGATION SUMMARY BASED ON MEDIAN RAINFALL DATA FROM BOM.**

457 Adelaide Street

REGIONAL AREA: Brisbane

BCC 45mm WEEKLY APPLICATION

Landscape Area (m2): **554** Total Catchment Area: (m2) **220** Adjusted Catchment Area: (m2-80%) **176**

Irrigation Application Rates for

Irrigation Application Rates for Seasons after estab. (mm) **BCC Upper Range**

SUMMER	AUTUMN	WINTER	SPRING
45.0	45.0	45.0	45.0

Statistic Element	December	January	February	March	April	May	June	July	August	September	October	November
<b>Rainfall (Median 1994-2022)</b>												
Monthly (mm) [Data from BOM]	121.30	123.80	161.60	120.20	71.20	100.90	64.20	31.20	34.40	32.20	82.40	94.10
Weekly (mm)	30.33	30.95	40.40	30.05	17.80	25.23	16.05	7.80	8.60	8.05	20.60	23.53
Seasonal Average (mm)	33.89			24.36			10.82			17.39		
<b>Potential Catchment for defined roof area, less other usages i.e. Toilet flushing</b>												
Monthly Rainfall Catchment (L)	21,349	21,789	28,442	21,155	12,531	17,758	11,299	5,491	6,054	5,667	14,502	16,562
Weekly Rainfall Catchment (L)	5,337	5,447	7,110	5,289	3,133	4,440	2,825	1,373	1,514	1,417	3,626	4,140
Season Average (L)	5964.93			4287.07			1903.73			3060.93		
Average Weekly Rainfall Catchment (L)	3,804											
<b>Evapotranspiration (Median 2000-2019)</b>												
Monthly (mm)	204.40	201.60	193.20	162.40	128.80	98.00	81.20	89.60	114.80	151.20	179.20	196.00
Weekly (mm)	51.10	50.40	48.30	40.60	32.20	24.50	20.30	22.40	28.70	37.80	44.80	49.00
Daily (mm) [Data from BOM]	7.30	7.20	6.90	5.80	4.60	3.50	2.90	3.20	4.10	5.40	6.40	7.00
Seasonal Average (mm)	7.13			4.63			3.40			6.27		
<b>Adjusted Irrigation Appl. Rate comparing ETvsRainfall - VE indicates irrigation IS required + VE indicates irrigation NOT required</b>												
Adjusted Monthly ETvsRain (mm)	-83.10	-77.80	-31.60	-42.20	-57.60	2.90	-17.00	-58.40	-80.40	-119.00	-96.80	-101.90
Adjusted Weekly ETvsRain (mm)	-20.78	-19.45	-7.90	-10.55	-14.40	0.73	-4.25	-14.60	-20.10	-29.75	-24.20	-25.48
Irrigation Required 1=Yes 0=No	1	1	1	1	1	0	1	1	1	1	1	1
<b>Irrigation Supplement</b>												
Weekly Irrigation Required (L)	-11,499	-10,766	-4,373	-5,839	-7,970	0	-2,352	-8,081	-11,125	-16,467	-13,395	-14,100

Irrigation for 1 wk during Summer (during no rain) (L)	24,908
Irrigation for 1 wk during Autumn (during no rain) (L)	24,908
Irrigation for 1 wk during Winter (during no rain) (L)	24,908
Irrigation for 1 wk during Spring (during no rain) (L)	24,908

