Water Neutrality Proposal at Jacaranda, Whitehall Drive Crawley RH11 0LP

Introduction

In response to your request to illustrate Water Neutrality to build a swimming pool at Jacaranda, Whitehall Drive Crawley RH11 0LP, we propose the below for your consideration.

Baseline Calculations

Evidence of current usage at the property are shown in the provided water bills.

-Southern Water Statement November included on pages 4&5
-Southern Water Statement May included on pages 6&7

- 22nd November 2023 to 15th November 2024 = 102m^3 so 102,000 or 286.6 l/d

Jacaranda is a 4 bed property with an average of 3 occupants. Based on extrapolated 2011 census data for Horsham District, using the average occupancy rate of 2.86 this would calculate to 100.18l/p/d.

Proposal

- By choosing to install a Desjoyaux Swimming Pool & Associate Filtration System at the property there is no net increase in water demand from the mains supply compared to a traditional system.
- By carrying out steps 1 & 2 this will further reduce the usage of water coming from the mains and in turn the Sussex North Water Zone.

The Desjoyaux Unique Filtration has no backwashing and no wastewater - therefore compared to a traditional system requiring 20000-25000L of water per season for backwash, a Desjoyaux filter will require 1500L per season (6 months or 183 days) for cleaning.[1] This calculates to 8.19L/d.

Reduce pipe runs and no underground pipework joins - removes all potential leaks from the filter system compared to a traditional filtrations system.[1]

Heat Retention Cover - Installation of a heat retention cover reducing evaporation from the pool but also allows for net gain of water through the slat cover.[2]

Evaporation water loss is affected by several factors, air temperature, wind speed, water level and water temperature. A typical uncovered pool in the UK can lose up to 0.5cm per day. On an average 10x4m family pool this relates to 40L per day. We are installing a slatted heat retention cover therefore eliminating water loss from evaporation completely when the pool is not in use.

Typically, automatic pool covers are impermeable fabric type material with a pump on the top to discharge to waste to be able to open the cover, therefore they cannot take advantage of rainfall. A Desjoyaux Pool Cover is made from a PVC slat material that lets the rainfall through to make the most out of rainfall gain.[2]
The South East on average has 794.7mm^3 of rainfall per year. This equates to 794.7L per m^2, so the proposed pool of 9m x 3m equates to 21,456L or average of 58.78L per day.[3]

Bather Loss

Water loss from bathers jumping into and coming out of the pool is an inevitable by product of using a swimming pool. SPATA estimates that water loss per bather is 0.75L[4]

While we can't eliminate total water loss from bathers, we estimate that we reduce some of this splash out by 20% through the use of an overhanging coping stone around the perimeter of the pool

No Draining of the Pool - A Desjoyaux Pool should only be drained for repair purposes. When this is required, the pool is drained into a portable balance tank (or 2), the pool repaired and refill with the same water. This is primarily done for speed but does mean that no new water is required.

Winterising - A traditional concrete pool during the winter has approximately ⅖ of its water volume drained in order to stop pipes freezing above the frost layer. This could be up to 20'000L. A Desjoyaux Pool filtration has a winter thermostat to circulate the water when the weather gets cold. By doing this the water level can be maintained without the need for draining.

In summary by installing a Desjoyaux Swimming Pool & Associate Filtration System there is no net increase in water demand from the mains supply.
Evaporation -1200 / Bathing Loss -60/ Cleaning -1500L / Rainfall Potential Capture +21,465 = Net gain 18,705.

[1] https://www.desjoyaux.co.uk/swimming-pools/compare/
[2] https://www.desjoyaux.co.uk/automatic-safety-pool-covers/
[3] https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/u100y2zh2
[4] https://www.spata.co.uk/wp-content/uploads/2018/10/Water-Losses-C7.pdf

Step 1 - Initial Pool Fill Option by Tankered Water
The pool at Jacaranda requires a once only fill of 25.7 cubic meters or 25,700 litres this will be achieved in one of two ways. The initial fill of the pool is either done with mains water, over the course of a few days or with tankered in water. While tankered in water is less environmentally friendly due to the HGVS used to transport, this could be proposed on this occasion where tankered water can be brought in, in an area where water neutrality is of importance. As described through this paper this is the first and only time the pool is filled.

Step 2 - Reuse Water by Rainwater Harvesting (RWH)
Harvesting of Rainfall at the Property to move all garden watering from the house supply to harvested rainwater thus reducing the existing amount of water usage at the property.

ANALYSIS: Attached Data[3] shows the calculations for the Southeast and the feasibility of this option Annual Rainfall 794.7 mm per year. The square metres for harvesting water at Jacaranda are approximately 215 Square Metres. Therefore, the capacity of RWH at Jacaranda is 215 sqm x .794 mm = 170.71 cubic m divided by 12 = 14.22 Cubic meters per month or 14,225.83 litres = 170,709 litres per year. This is Calculated by EORI: G and the CALC TOOL included on page 9.

With only 1500L require for cleaning of the pool filter a year, 1260L of evaporation and bathing loss being covered by rainwater capture in the pool, installing 2 x 350L RHW tank (example on page 8) will allow for all garden watering usage to be covered by RWH based on an average garden watering usage of 15L per day over May to October.[5]

[5] https://www.freeflush.co.uk/blogs/freeflush-rainwater-harvesting-blog/how-much-water-do-i-need-to-water-my-garden-and-other-useful-watering-tips

Conclusion

In Summary, the installation of a Desjoyaux Swimming Pool along with the implementation of steps 1 and 2, will offer the project a sustainable neutrality by moving from House Water for the garden to RHW via water butts, whilst requiring no additional house water for the pool fill will provide an overall reduction in the net usage on the existing supply at Jacaranda by 6.8litres per day.

Current Usage	286.6 l/p or 100.18l/p/d.
One Off Pool Fill on construction	External Fill from Tanker
Pool Usage /Cleaning	1500L over 6 months season/183 days or 8.19 l/d
Garden watering moved to Rainwater Harvesting	-2745L over 6 months or -15L per day
Net Water Usage change	-1,244.4L over 6 months of pool use or -6.8 l/d

*Evaporation and bathing loss replaced by rainfall capture due to permeable cover.

from Southern Water

DR REINHARDT DACHSEL
JACARANDA
WHITEHALL DRIVE
IFIELD
RH11 0LP

Visit our website for live chat or to log into your account
southernwater.co.uk/help

0330 303 0277
Weekdays - 8am to 6pm

Your customer number
22317069

Your payment reference
0004 5179 80798

Dear Dr REINHARDT DACHSEL,

Here's your latest bill based on the meter reading we took on 15 November 2024. You currently pay by Direct Debit, so you don't need to do anything – your payments will be taken automatically.

Meter reading

Water used in cubic metres

48 m³

One cubic metre = 1,000 litres
This is equivalent to: 11 baths, 31 (4 min) showers or 166 toilet flushes

Meter number: 8498937

Latest reading: 15 Nov 2024

8 6 6 . 0 0

Previous reading: 24 May 2024

8 1 8 . 0 0

Your next meter reading is scheduled to take place by 29 May 2025

Previous bill's usage
54.00 m³

Charges

£105.47

Bill date
19 Nov 2024

Billing period
From: 25 May 2024
To: 15 November 2024

Bill type
Metered - Direct Debit

Previous bill's charges
£107.53

Future payments

Your Direct Debit payment

£105.47

To be taken on
01 Jan 2025

Struggling to pay? See p. 3

Water

Period: 25 May 2024 to 15 November 2024

Variable Rate	£1.958	x 48.00m³	=	£93.98
Standing Charge			=	£11.49
Total Water				**£105.47**

Wastewater

Thames Water takes away your wastewater. Its customer service number is **0800 980 8800**. You'll receive a separate bill from Thames Water for your wastewater.

Southern Water supplies your water.

Standing Charge:
This covers essential service costs such as sending bills, collecting payments and dealing with enquiries.

If you would like to know more about how we calculate our charges, please go to **www.southernwater.co.uk/account/how-we-calculate-your-bill**

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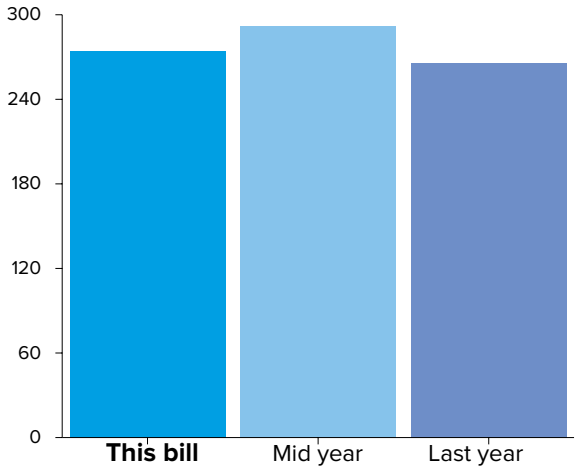
Your account summary

Balance brought forward from your last bill	£107.53
What you've paid since your last bill	£107.53 Credit
What you've been charged for From 25 May 2024 to 15 November 2024	£105.47
Outstanding Balance	**£105.47**

Your water use

Over the last six months your household used an average of **274** litres a day

You're using £0.61 of water a day on average.



Your water meter is read twice a year. We can read most meters from the street – so you may not have noticed when we read yours.



WATER for LIFE from Southern Water

DR REINHARDT DACHSEL
JACARANDA
WHITEHALL DRIVE
IFIELD
RH11 0LP

Visit our website for live chat or to log into your account
southernwater.co.uk/help

0330 303 0277
Weekdays - 8am to 6pm

Your customer number
22317069

Your payment reference
0004 5179 80798

Dear Dr REINHARDT DACHSEL,

Here's your latest bill based on the meter reading we took on 24 May 2024. You currently pay by Direct Debit, so you don't need to do anything – your payments will be taken automatically.

Meter reading

Water used in cubic metres

54 m³

One cubic metre = 1,000 litres
This is equivalent to: 11 baths, 31 (4 min) showers or 166 toilet flushes

Meter number: 8498937

Latest reading: 24 May 2024

818.00

Previous reading: 21 Nov 2023

764.00

Your next meter reading is scheduled to take place by 28 Nov 2024

Previous bill's usage
50.00 m³

Charges

£107.53

Bill date
28 May 2024

Billing period
From: 22 November 2023
To: 24 May 2024

Bill type
Metered - Direct Debit

Previous bill's charges
£96.57

Future payments

Your Direct Debit payment

£107.53

To be taken on
01 Jul 2024

Struggling to pay? See p. 3

Water

Period: 22 November 2023 to 31 March 2024

Variable Rate	£1.716	x	38.20m³ =	£65.55
Standing Charge			=	£7.50

Period: 01 April 2024 to 24 May 2024

Variable Rate	£1.958	x	15.80m³ =	£30.94
Standing Charge			=	£3.54
Total Water				**£107.53**

Wastewater

Thames Water takes away your wastewater. Its customer service number is **0800 980 8800**. You'll receive a separate bill from Thames Water for your wastewater.

Southern Water supplies your water.

Standing Charge:
This covers essential service costs such as sending bills, collecting payments and dealing with enquiries.

If you would like to know more about how we calculate our charges, please go to **www.southernwater.co.uk/account/how-we-calculate-your-bill**

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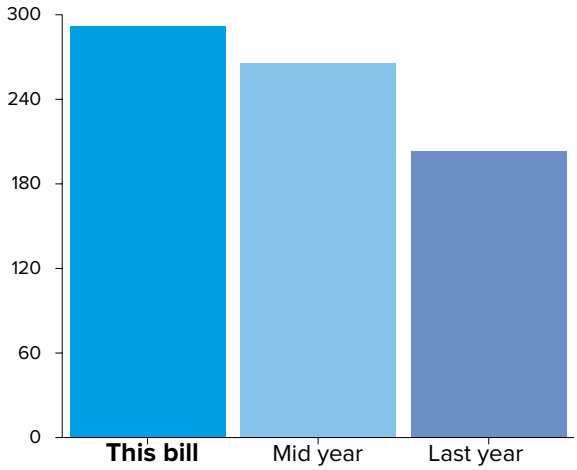
Your account summary

Balance brought forward from your last bill	£96.57
What you've paid since your last bill	£96.57 Credit
What you've been charged for From 22 November 2023 to 24 May 2024	£107.53
Outstanding Balance	**£107.53**

Your water use

Over the last six months your household used an average of **292** litres a day

You're using £0.58 of water a day on average.



We noticed your water use has increased by 26 litres of water a day on average.

If you use less water, you'll save money on your bill. Find out how you could reduce your usage here:

southernwater.co.uk/save-water

Your water meter is read twice a year. We can read most meters from the street – so you may not have noticed when we read yours.





350 Litre Magnum
Solid Tank Water Butt

CalcTool

3 Easy Steps:

Get Fast!

1. Click "Download"
2. Start Download
3. Install the app

Catchment area	215	m^2
Rainfall depth	794	mm
Water volume	170.7	m^3

Advanced mode | Reset defaults | Send this result