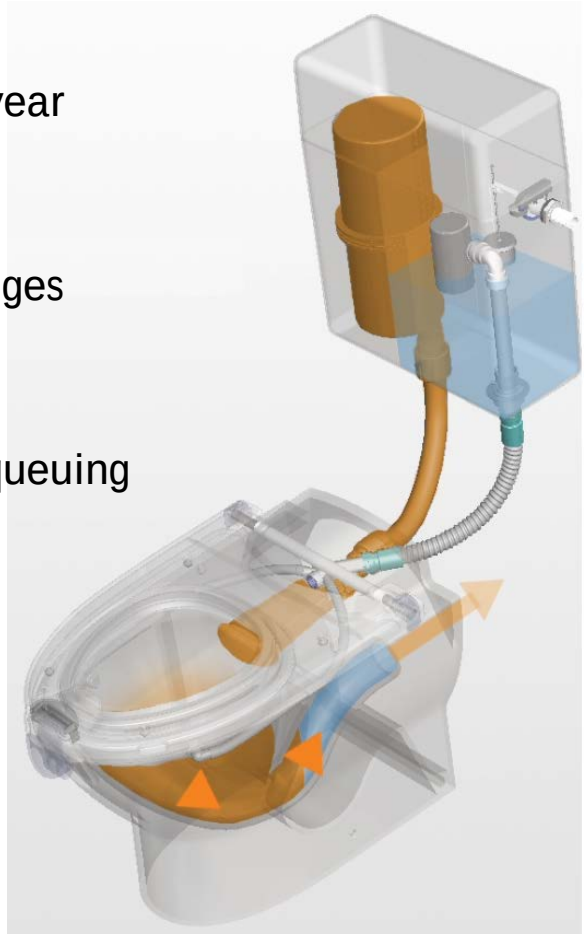
1.5 Litre flush toilet

propelair®

- Saves 84 per cent water; 80 per cent energy
- Payback from less than one year
- Improves hygiene; better hinges
- High performance; reduces queuing



Garry Moore

CEO Propelair Ltd

1.5 Litre flush toilet

Regulations compliance testing

Product Approvals

propelair®

WRAS APPROVED PRODUCT

AS9100 CERTIFIED

QUALIFIED WATER TECHNOLOGY LIST WWW.ECA-WATER.GOV.UK

AUTHORISED USER NO. 01942

CE

waterwise RECOMMENDED www.waterwise.org.uk

LLOYD'S REGISTER QUALITY ASSURANCE · ISO9001

UKAS QUALITY MANAGEMENT 001

WaterMark

Manufacture

Manufacturing capability:

ISO 9001 – AS 9100 – BS Kite mark
250 units stockholding: any quantity 12 week lead time

Customers

propelair®

Data Capture

Propelair 1.5 litre flush cost saving calculator

Your metered water charge per cubic metre	£3.53	0.00353	pence per litre
current flush volume in Litres	7.39	5.89	Litres saved each flush
number of WC flushes each day	123	31980	flushes per year

	You save	**£664.92**	**per year**
Propelair cost £675 less discount			
10%	£607.50	0.6	years payback period
Cost of new conventional WC	£225.00		on balance
Balance	£382.50		
Discount	£67.50	188,362	litres water saved
		17,848	Joules energy saved per flush
		2.16	grammes C02 saved per flush
		570,779,040	Joules energy saved per year
		68.97	Kg C02 saved per year
Number of toilets	9	**Annual Savings**	
		£5,984	Money
		1,695,260	Litres Water
		621	KG Carbon

Data Capture

propelair®

Data Capture

propelair®

Ladies customer normal WC Cubicle 2			Average flush between dates	
09.10.2013	Flush Counter	18		
	Water Meter	191		140
			9.39L	1,314
11.10.2013	Flush Counter	158		
	Water Meter	1,505		666
			6.91L	4,603
16.10.2013	Flush Counter	824		
	Water Meter	6,108		1,809
			7.39L	13,367
30.10.2013	Flush Counter	2,633		
	Water Meter	19,475		824
			7.58L	6,249
6.11.2013	Flush Counter	3,457		
	Water Meter	25,724		563
			7.58L	4,266
11.11.2013	Flush Counter	4,020		
	Water Meter	29,990		
18.11.2013	Flush Counter	4,228	Counter stopped	
	Water Meter	35,094		
25.11.2013	Flush Counter	4,228	Counter stopped	
	Water Meter	41,071		893
			7.81L	6,973
2.12.2013	Flush Counter	5,121		
	Water Meter	48,044		881
			7.90L	6,962
9.12.2013	Flush Counter	6,002		
	Water Meter	55,006		933
			7.50L	6,998
16.12.2013	Flush Counter	6,935		
	Water Meter	62,004		
8.1.2014	Flush Counter	8,919	Counter stopped	
	Water Meter	81,070		539
			7.42L	3,999
13.1.2014	Flush Counter	9,458		
	Water Meter	85,069		681
			7.35L	5,008
20.1.2014	Flush Counter	10,139		
	Water Meter	90,077		723
			8.22L	5,941
27.1.2014	Flush Counter	10,862		
	Water Meter	96,018		723
			6.97L	5,040
3.2.2014	Flush Counter	11,585		
	Water Meter	101,058		649
			7.68L	4,986

Flush Counters

Counter readings		Gents		Ladies				
		1	2	1	2	3	4	5
Start	30.10.13	0	2,028	0	18	0	0	5,870
	10.02.14		9,603					
Stop	09.04.14	10,240		8,657	18,203	23,165	13,709	21,585
Recorded flushes		10,240	7,575	8,657	18,185	23,165	13,709	15,715
No of weeks		23	15	23	23	23	23	23
flushes per week		445	505	376	791	1,007	596	683
flushes per day		64	72	54	113	144	85	98
Flushes per year		23,215	26,332	19,626	41,227	52,517	31,079	35,627

Projected savings p.a

229,624	Total flushes of 7
32,803	Average flushes p.a. of 7
9	Toilest in store
295,230	Total flushes of 9 toilets
7.77L	average water used per flush
2,295	m3 total water used
£3.53	Price per cubic metre
£8,101.55	Cost to run store toilets p.a.
£6,523.32	Saving p.a.
1,830,428	L total water saved on 9 toilets

Note: Some weeks flush counter data is incomplete when flush counter battery flat.
Data capture resumes the following week BUT total flushes for year will be LESS than actual

Average flush for both normal monitored WCs shown as metered water use divided by number of flushes between good weeks.
Good weeks averages then averaged together

Gents 2	Lowest average	5.24L	Flushed 394 times between 8th- 13th Jan 2014.
	Highest Average	29.75L	Flushed 440 times between 3rd - 10th Jan 2014. Note that the flush valve in the cistern was leaking this week.
	Average of Averages	**8.06L**	
Ladies 2	Lowest Average	6.05L	Flushed 839 times between 17th - 24th March 2014
	Highest Average	9.39L	Flushed 140 times between 9th - 11th October 2013
	Average of Averages	**7.49L**	

Combined average of averages 7.77L 15.55

Extrapolated number of flushes

Gents 2		**Ladies 2**	
77,930L	used between 09.10.13 - 10.02.14	164,842L	used between 09.10.13 - 21.04.14
8.06L	average flush volume	7.49L	average flush volume
9,668	fluses this period	22,018	flushes this period
18	weeks in period	28	weeks in period
537	flushes per week	786	flushes per week
77	flushes per day	112	flushes per day
28,005	flushes per year	41,003	flushes per year

Research

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Collaborative research

Imperial College London - £2.5M EPSRC 4-year project to investigate new approaches for construction projects

Research

propelair®

Human Factor Studies

Research

Human Factor Studies

Research

Human Factor Studies

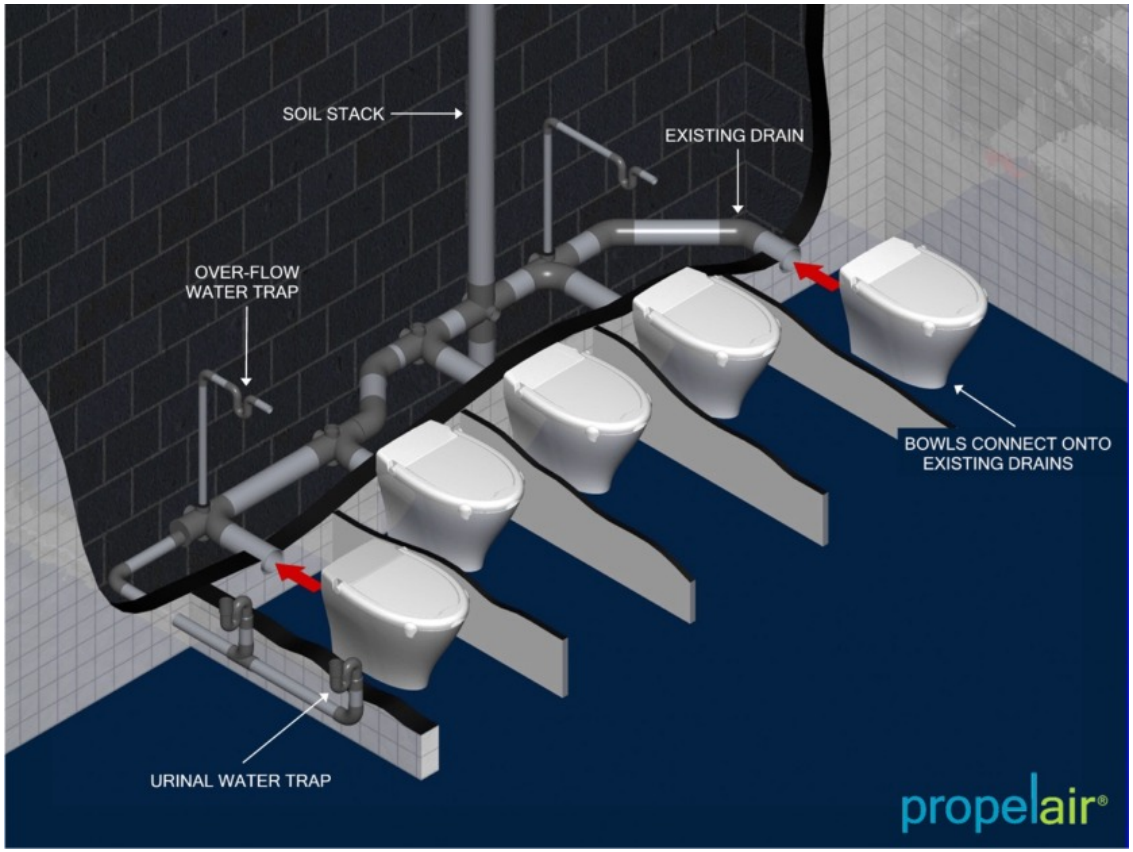
Research

propelair®

Building trials at WRc

Research

Building trials at WRc



Can retrofit onto existing drains

propelair®

User Studies

Results from a WRc user questionnaire

The purpose of the questionnaire was to gain information for design improvements. However, user acceptance of the existing design was good, with 93% of respondents rating the flushing performance as good, and 78% classifying the cleaning performance as good.

Research

propelair®

Drainage function

Now use twice as much water as 1930

Wave

Dam

Drains will work on less water (as they did in 1930)

Research

propelair®

Drainage function

EU Ecolabel Criteria for Flushing Toilets

4.9.2 Impacts of low-flush products on the drainage system/sewage network

During the stakeholders discussion, the question of the impact of water-saving products in general and low-flush toilets in particular on the drainage system of the building and further on the sewage network was raised many times. Low-flush toilets were often blamed by industry for blockage problems and rising up costs of wastewater treatment. However, these types of statement have never been supported by any solid proof. Low-flush toilets are already implemented in some parts of Europe and, where installed, do not seem to cause specific problems to the functioning of the sewage. In that perspective, there is no evidence that the proposed Ecolabelled flushing toilets and urinals would cause a problem with sewers.

Aurélien Genty
May 2013

JRC EUROPEAN COMMISSION

ipts Institute for Prospective Technological Studies

Drainage Function

Peacock Theatre, Kingsway, London

Drainage Function

Royal Pavilion Gardens, Brighton

Drainage Function

McDonalds Canterbury

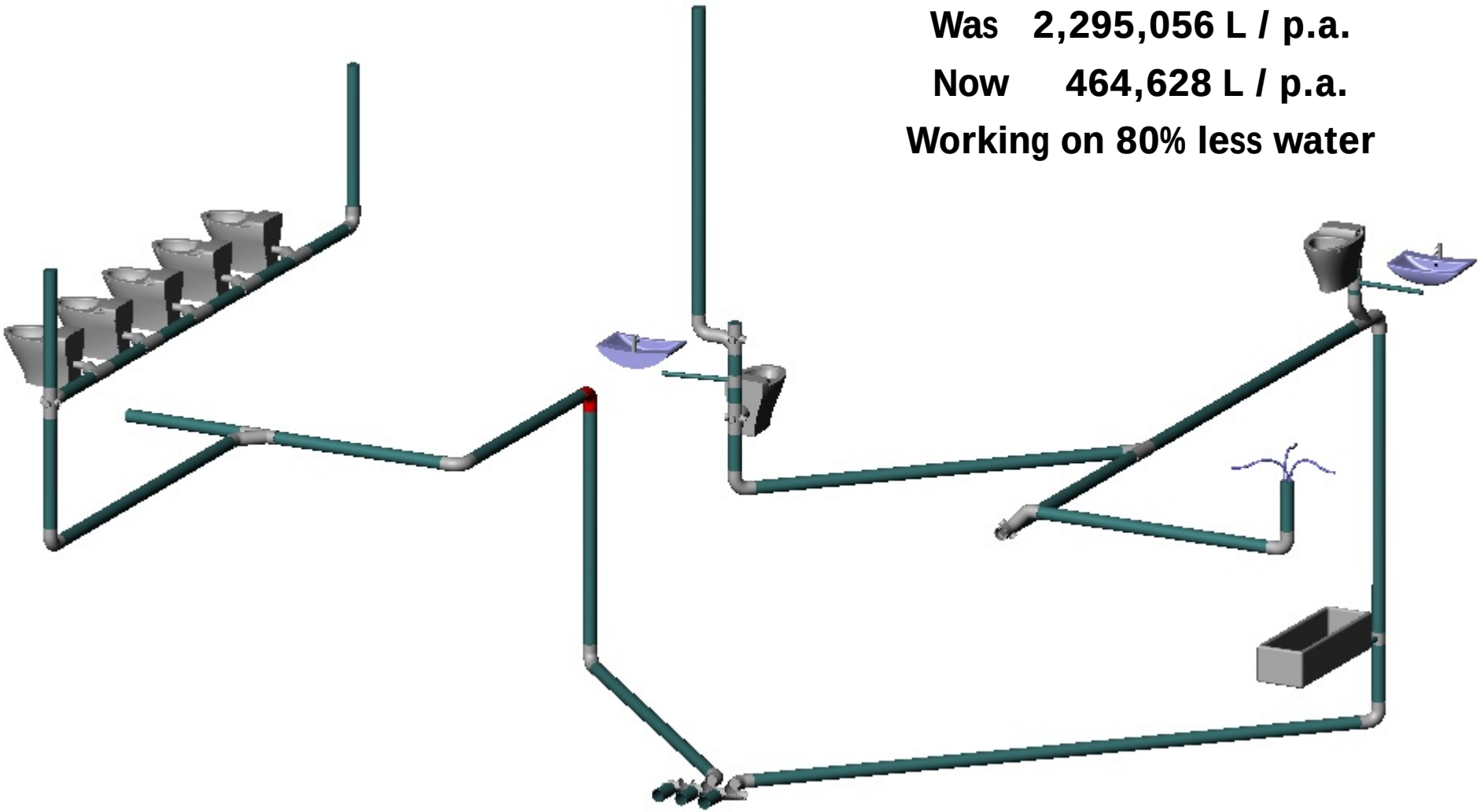
Drainage Function

propelair®

Was 2,295,056 L / p.a.

Now 464,628 L / p.a.

Working on 80% less water



Drainage Function

Existing problems

- Fix
- Maintain
- Educate
- If none work...

Drainage Function

Solution 1

Flush drains with tonnes of water (what we do today).

Drainage Function

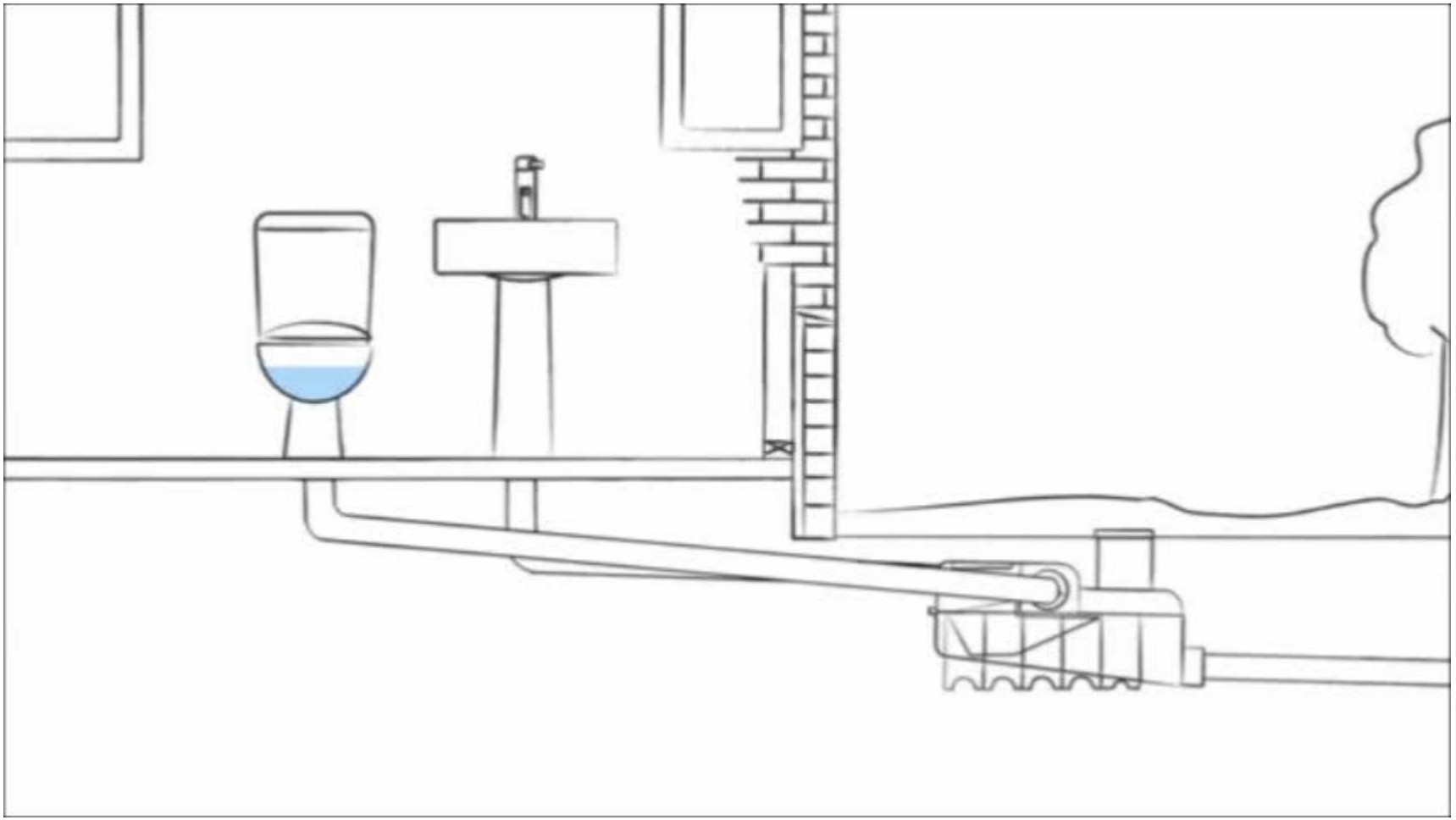
Solution 2
Adjustable flush volume

Drainage Function

9 - Litre

Solution 3
Dowsing unit

Drainage Function



Solution 3
Dowsing unit

Drainage Function

13 - Litres
Variable frequency

Solution 4
Cleansing Flush

1.5 Litre flush toilet

Thank You.

Garry Moore
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