

# BUILDING REGULATIONS UPDATE



**Butler & Young Ltd**  
Building Control & Fire Safety Consultants  
Approved Inspectors

**Colin Winton**

FBEng

# 2010 Changes to The Building Regulations

- Part G – April 2010
  - Water efficiency & sanitary provision
- Part L & F – October 2010
  - Conservation of Fuel & Power
  - Ventilation

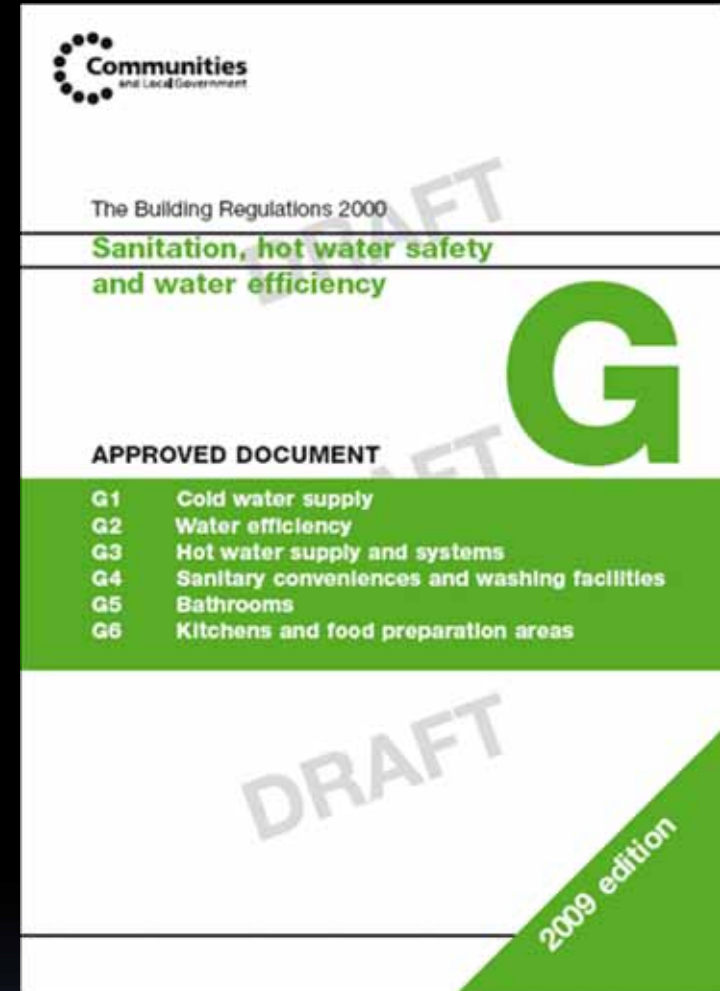
# Part F - Ventilation

- Only real changes to dwellings
- Enhanced trickle vent requirement
- Two tier design based on air permeability
- Commissioning of ventilation systems
- Visual inspection for natural ventilation
- Testing of extract and whole house ventilation systems



# Part G

- G1 – Water Quality
- G2 – Water Efficiency
- G3 - Hot Water Supply
- G4 – Sanitary Provisions
- G5 – Bathrooms
- G6 – Food Preparation Areas

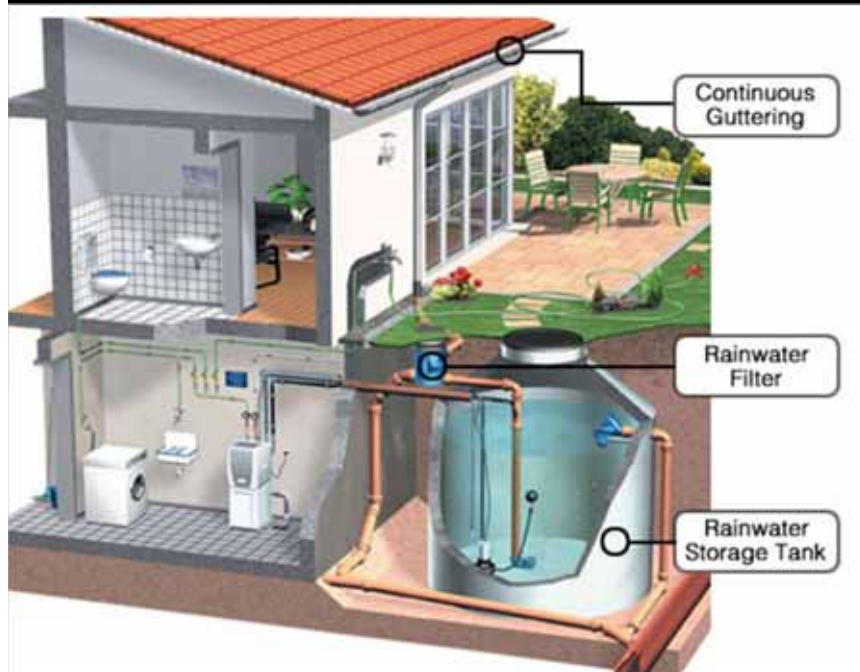


# Part J

- Air supply to combustion appliances all changed
- New requirement J2A in relation to Carbon monoxide detectors for dwellings
- Changes to guidance on flue positions
- New guidance on when secondary containment required for oil tanks

# Part G1 – Provision of Cold Water Services

- Definition of wholesome and non-wholesome water
- Allows recycled or rainwater to be used for non wholesome use



# G2 Water Efficiency

- Maximum water use per person per day
- 125 litres maximum of wholesome water
- Calculated by formula
- Allows additional non wholesome water use



# Regulations 17K & 20E

- Only Applies to dwellings
- New build dwellings
- New Dwellings formed by material change of use
- Calculation required before Completion Certificate issued

The Water Efficiency Calculator for New Dwellings

Available from Planning Portal

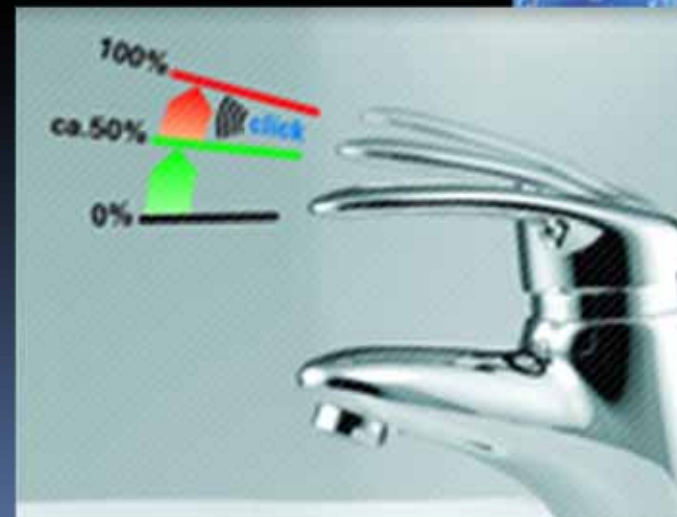
[www.wrcplc.co.uk/PartGCalculator/Calculator.aspx](http://www.wrcplc.co.uk/PartGCalculator/Calculator.aspx)

# New Build Domestic Water Efficiency Calculation Tool - Table A (Example 2)

							Total water by appliance				
WC	Full flush volume in litres	6	x	1.6	+	Reduced flush volume in litres	3	x	3.2	=	19.2
Bidet	Is bidet fitted?	No	If yes add 5.28 litres/head/day, otherwise zero							=	0
Basin	Manufacturer's flow rate (l/min)	2.5	x	3.54						=	8.86
Bath Only	Bath capacity in litres		x	0.4						=	
Shower only	Flowrate (l/min)		x	5						=	
Bath & Shower	Bath capacity in litres	225	x	0.16						=	36
	Shower Flowrate (l/min)	8	x	3						=	24
Kitchen Sink Click Tap	Manufacturer's flow rate at first stop (l/min)		x	5.29						=	
Kitchen Sink Other Tap	Manufacturer's flow rate (l/min)	2.5	x	3.54						=	8.86
Waste disposal unit	Is unit fitted?	No	If yes add 8 litres/head/day, otherwise zero							=	
Washing machine	No machine fitted	Fixed allowance of 16.66 litres/head/day							=	16.66	
Dishwasher	No machine fitted	Fixed allowance of 3.9 litres/head/day							=	3.9	
<b>SUB-TOTAL (INTERNAL WATER USE)</b>										=	117.48
<b>=Sum of above</b>											
Outside use			Fixed allowance of 5 litres/head/day							=	5
<b>TOTAL WATER USE</b>										=	122.48
<b>= Internal water use + outside use</b>											

# Water Use

- Low flush WC
- Aerated taps & showers
- Smaller baths
- Low water use appliances



# G3 – Hot Water Services

- Requires hot water supply to sinks within toilet accommodation
- Specifically includes food prep areas
- Vented Hot Water Storage systems require additional energy cut out to prevent boiling the water
- Pressurised systems require two independent safety devices

# Prevention of Scalding

- In line hot water tempering valves required where DHW store can exceed 80°C
- In line blending valve to baths
- Thermostatic mixing valves
- Limiting temperature to 48°C
- Only applies to dwellings

# G4 – Sanitary Provision

- Follow Guidance within Workplace Regs 1992
- or BS 6465: Part 1 2006
- 'Adequate and Suitable' provision now part of Building Regulations

BS 6465-1:2006

BRITISH STANDARD

## Sanitary installations –

Part 1: Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances

ICS 91.140.70

**BSi**  
British Standards

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

# Workplace Scale of Provision

Table 1 Number of toilets and washbasins for mixed use (or women only)

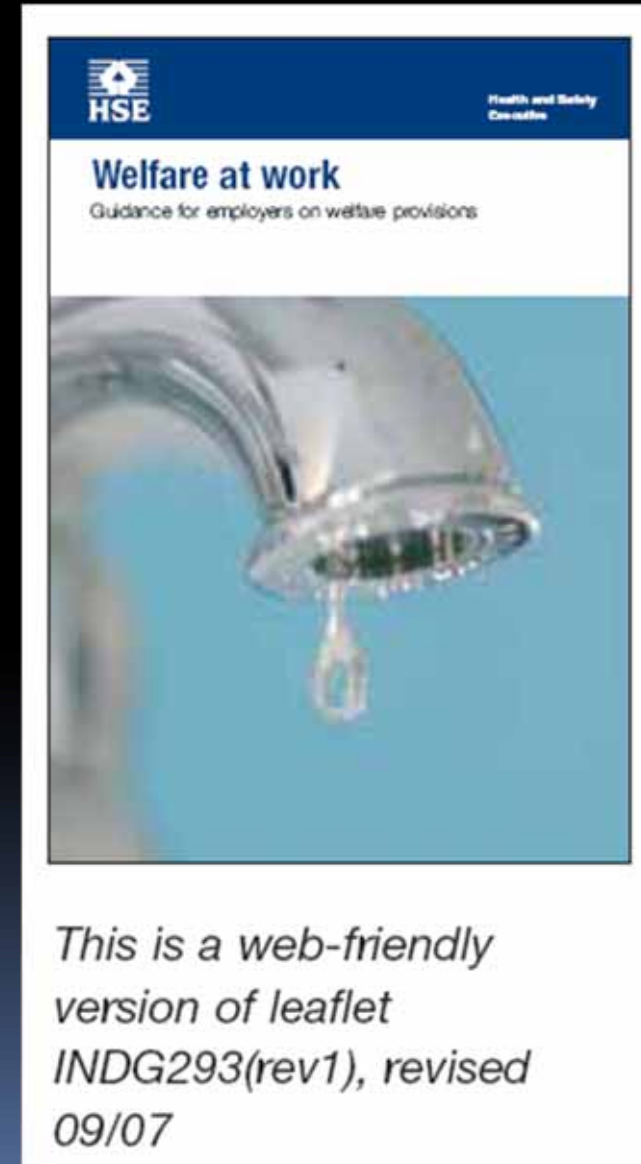
Number of people at work	Number of toilets	Number of washbasins
1-5	1	1
6-25	2	2
26-50	3	3
51-75	4	4
76-100	5	5

Table 2 Toilets used by men only

Number of men at work	Number of toilets	Number of urinals
1-15	1	1
16-30	2	1
31-45	2	2
46-60	3	2
61-75	3	3
76-90	4	3
91-100	4	4

# Non Domestic Buildings

- Separate sinks for hand washing required within commercial kitchens
- Single door between WC and kitchen – but beware Environmental Health Officers Requirements



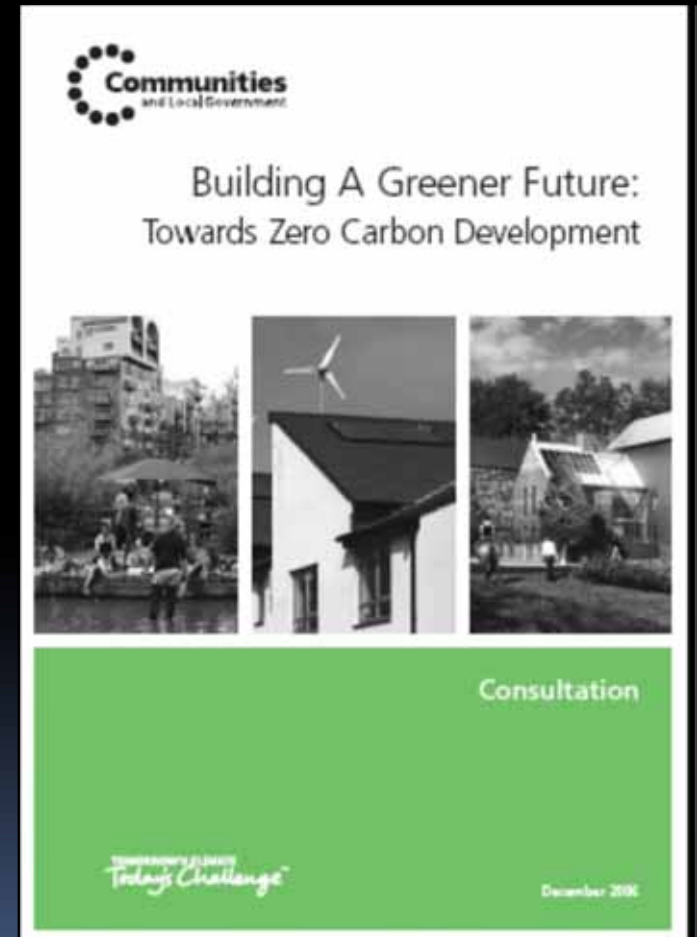
*This is a web-friendly  
version of leaflet  
INDG293(rev1), revised  
09/07*

# General Items

- Hot taps should always be on the left
- All new dwellings to have WC with integrated washing facility
- Must also have a bath or shower
- Single door required between WC and kitchens

# Part L Conservation of Fuel & Power

- Moving towards “Carbon Neutral”
- 2016 Zero Carbon Building Regulations for domestic
- 2019 for Commercial



# 'Timetable for Change'

2010 25% reduction	Code level 3
2013 44% reduction	Code level 4
2016 100% reduction	Code level 5

Taken from 2006 Part L Baseline

Non Domestic Buildings move to 100% by 2019

# Non Domestic

- 25% CO<sub>2</sub> improvement required over 2006  
Part L
- Submit a design stage SBEM
- Submit list of key design features
- New Regulation to require a commissioning plan at submission stage

# Solar Gain



- Solar gain must be considered on all building types
- Including Air conditioned buildings
- More than 40% of external wall glazed could cause potential problems

# 25% Improvement

- Improvement is likely to be averaged over different categories of buildings

**Table 9:** Percentage CO<sub>2</sub> reductions by non-domestic building type

Shallow plan (heated)	Shallow plan (Aircon)	Deep plan (Aircon)	Warehouse (no rooflights)	Warehouse (with rooflights)	Hotel	School	Retail	Supermarket
27%	33%	19%	22%	36%	25%	23%	33%	11%

# Why?

- Aim is to maximise all efficiency savings possible
- Reduce maximum amount of CO<sub>2</sub> with minimum cost across building types
- CO<sub>2</sub> savings have different costs in different types of buildings

# Quality of Construction

- Increased sample of air testing for dwelling
- All non domestic buildings require testing
- Improved thermal bridging
- Testing of heating ductwork
- Improved commissioning

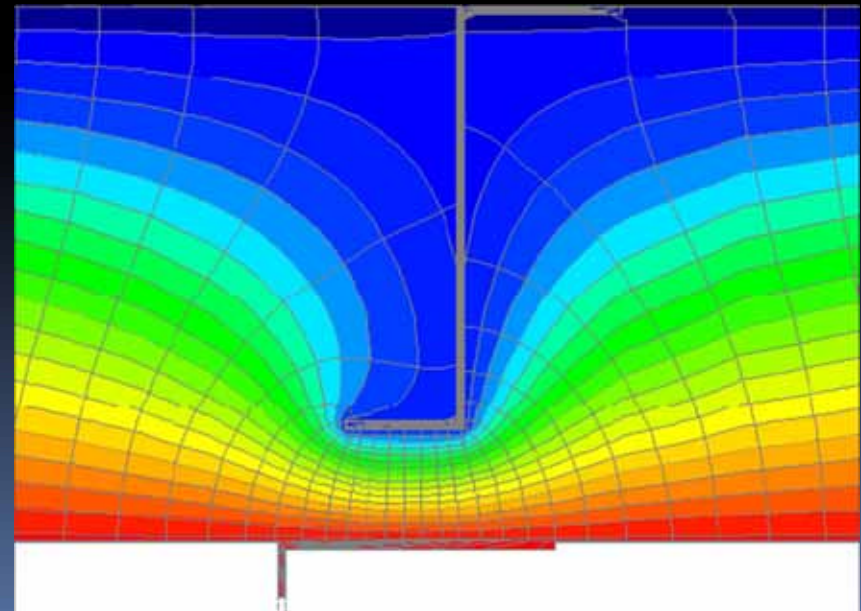
# Linear Thermal Bridging

## Three Proposed Options

	Quality calc	Build-ability	Checks made	$\Psi$ -margin
ACD	✓	✓	<ul style="list-style-type: none"><li>• <math>\psi</math>-value calculated by “accredited expert” calculator</li><li>• Assessment of buildability &amp; robustness</li><li>• Sample inspection &amp; feedback loop</li></ul>	0%
Private	✓	x	<ul style="list-style-type: none"><li>• Accredited calc</li><li>• No independent assessment of buildability</li></ul>	25%
None	x	x	<ul style="list-style-type: none"><li>• No accreditation</li></ul>	$y=0.15$ or IP 1/06 generics +50%

# $\Psi$ -Value Calculation

- Accreditation Scheme Proposed
- CA, Kingspan or Eurobond may produce standard details
- Traditional details should be freely available (ACD)



# On Site Assessment

- On site inspection of details
- Checking for buildability
- Reporting of defects
- Continuous improvement of details
- Someone must pay for this
- Traditional details bigger problem

# Un Accredited Details

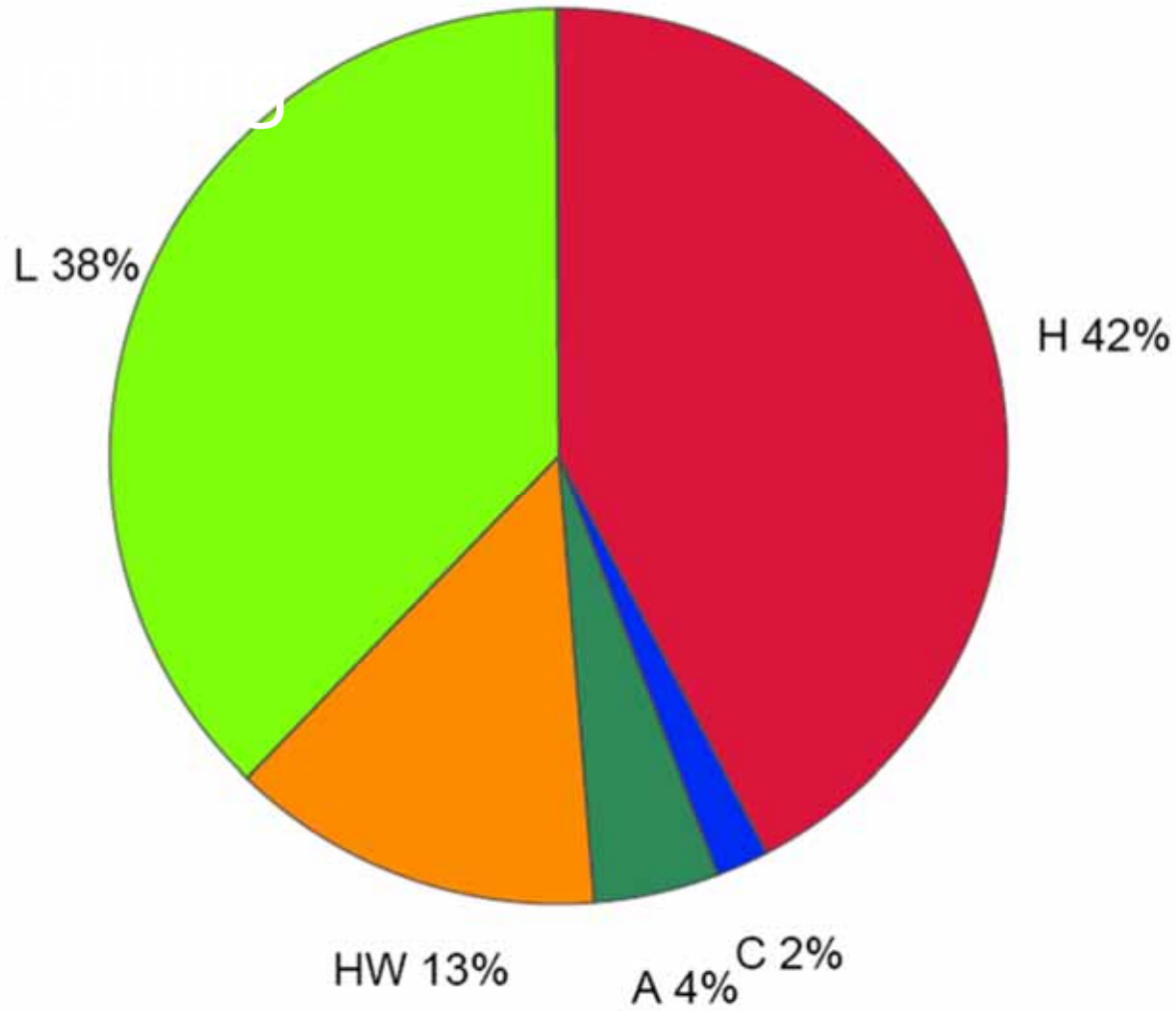
- No added costs
- May not have big effect on SBEM
- Buildings with high heating loads would be more effected
- Care homes, schools, leisure centres, distribution warehouses little effect

# Air Testing of Ductwork

- Ductwork leakage testing to low pressure ductwork
- Required when SBEM assumes low air leakage to improve calculation
- Not required for ventilation only



# Energy Use - Office



Heating

# Offices – Natural Ventilation

- Lighting has high carbon load
- Auto Switching and daylight dimming provide a big saving
- LED's to circulation spaces & toilets
- Low installed power loads
- Automatic monitoring & targeting to energy meters

# Heating Systems

- Thermal Mass can provide 10% improvement (5% with aircon)
- High efficiency condensing boilers
- 95% efficient or better
- Use underfloor heating with heat pump boilers

# Other Features

- Power Factor Correction
- aM&T to Energy Meters
- Maximise areas of South Glazing
- But beware of Overheating!!
- Renewables

# Retail - Supermarket

- Build to current standards they should PASS
- Why?

**Table 9:** Percentage CO<sub>2</sub> reductions by non-domestic building type

Shallow plan (heated)	Shallow plan (Aircon)	Deep plan (Aircon)	Warehouse (no rooflights)	Warehouse (with rooflights)	Hotel	School	Retail	Supermarket
27%	33%	19%	22%	36%	25%	23%	33%	11%

# Low & Zero Carbon Systems

- Solar Thermal
- Combined Heat & Power
- Wind Turbines
- Photovoltaic
- Heat Pumps



# Part L Summary

- Heat pump boilers replacing gas boilers
- LED lighting for non-domestic may provide benefits to get a pass
- Solar shading and thermal mass important, not enough alone
- Low and Zero Carbon Systems can help
- U values and air permeability will require improvements