



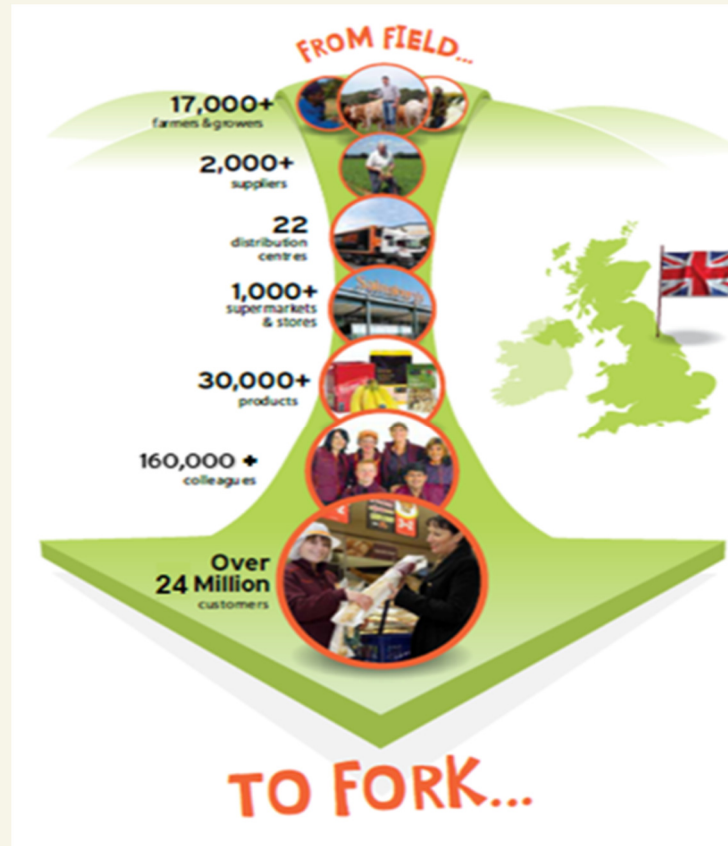
Natural 4 Neutral in Convenience

Sainsbury's
live well. for less

Contents

- Sainsbury's
- Background
- Convenience model store
- Natural 4 Neutral challenge
- Olympic Way - Wembley
- 12 months results
- Summary

Sainsbury's – our values make us different



Sainsbury's
live well for less

200th CO₂ Refrigeration Store

Abbey Wood

Sainsbury's
live well for less



330,000
TONNES CO₂E SAVING

EQUIVALENT TO

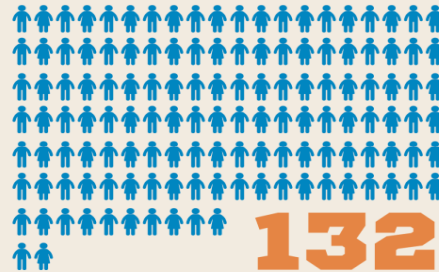
2.53 sq MI
OF DEFORESTATION

EQUIVALENT TO LIGHTING

1.7 MILLION
DOMESTIC BUILDINGS
FOR A YEAR



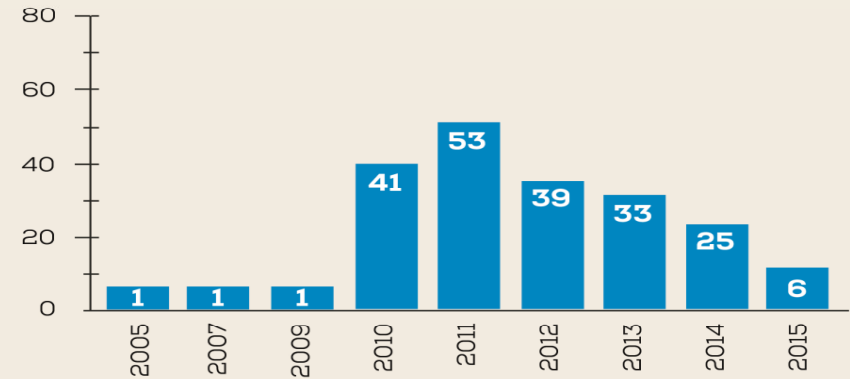
**COST
NEUTRAL**



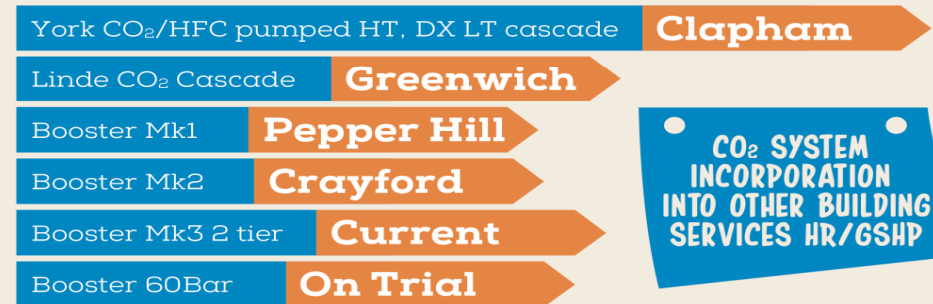
ENGINEERS TRAINED
WITH SSL FUNDING

**HEAT RECLAIM
OPPORTUNITY FROM
CO₂ REFRIGERATION
IS GREATER THAN HFC
DUE TO HIGH GRADE
OF HEAT AVAILABLE**

CO₂ REFRIGERATION STORE INVESTMENTS

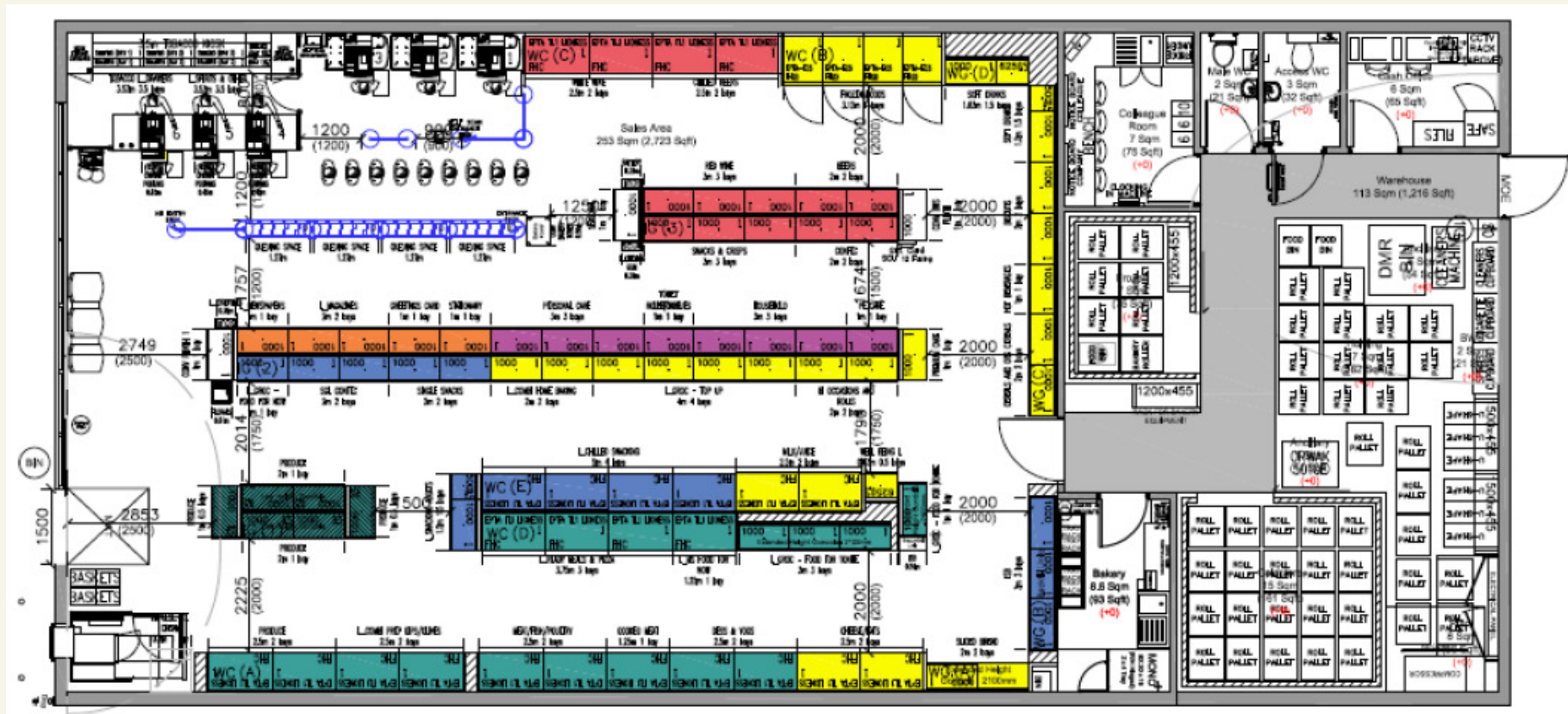


NUMBER OF SYSTEM VARIATIONS EVALUATED VARIANTS IN NATURAL SOLUTIONS:



**CO₂ SYSTEM
INCORPORATION
INTO OTHER BUILDING
SERVICES HR/GSHP**

Convenience model store



Sainsbury's
live well for less

Convenience model store

- 3000 sqft [279m²]
- Refrigeration 41.48kW @ -7°C & 4.52kW @ -32°C R407A
DT pack – external condenser 35dB(A) @ 10m
- Hot water point of use 3kW – 3 x 15l and 1 x 30l
- Sales floor heating 2 x 12.5kW heat pumps [R410A]
- 12kW electric over door heater
- Cash office 2.5kW heat pump [R410A]
- No sales floor ventilation < 280m²

Natural 4 Neutral challenge

- Convenience store challenges
- 2014 Tender
- “Tear up the rule book”

Olympic Way, Wembley solution

- 2712 sqft [252m²]
- Refrigeration 52.0kW @ -8°C & 3.9kW @ -32°C R744
Booster pack – 80/60 bar IP & LP
- Internal gas cooler
- Hot water point of use
- Sales floor - heat reclaim to water; 4 Nr 8.5kW cassettes
& 10kW over door heater (0.36kg/s – 50oC flow / 30oC
return)
- De stratification fans
- Cash office cooling 3.0kW – IT system + LPHW radiator

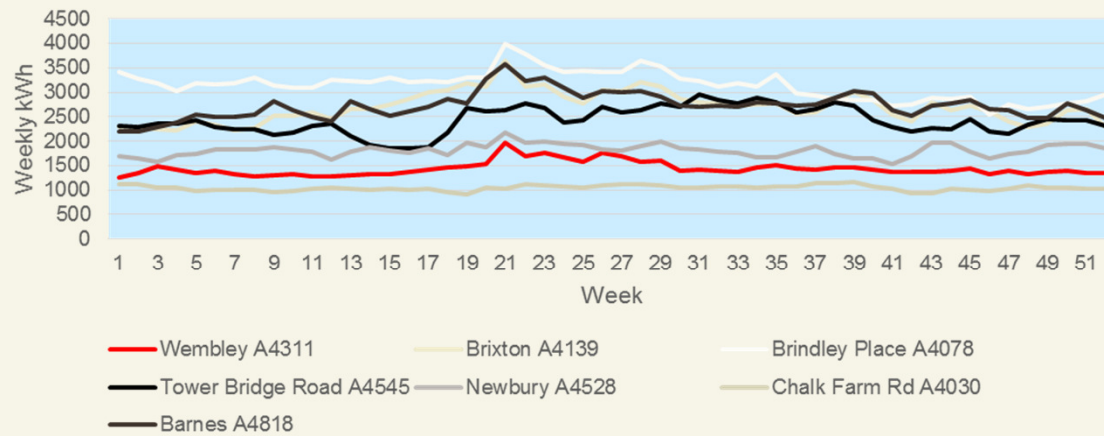
Comparison store data

Store	Nº. IT Cabinets	Total IT Length	Nº. FHGD	Total Cabinets
A4818 Barnes	10	92'	3	13
A4139 Brixton Hill	10	100'	1	11
A4030 Chalk Farm Rd	10	108'	1	11
A4545 Tower Bridge Rd	10	92'	1	11
A4528 Newbury	10	96'	1	11
A4078 Brindley Place	13	118'	1	14
A4311 Olympic Way, Wembley	11	112'	1	12

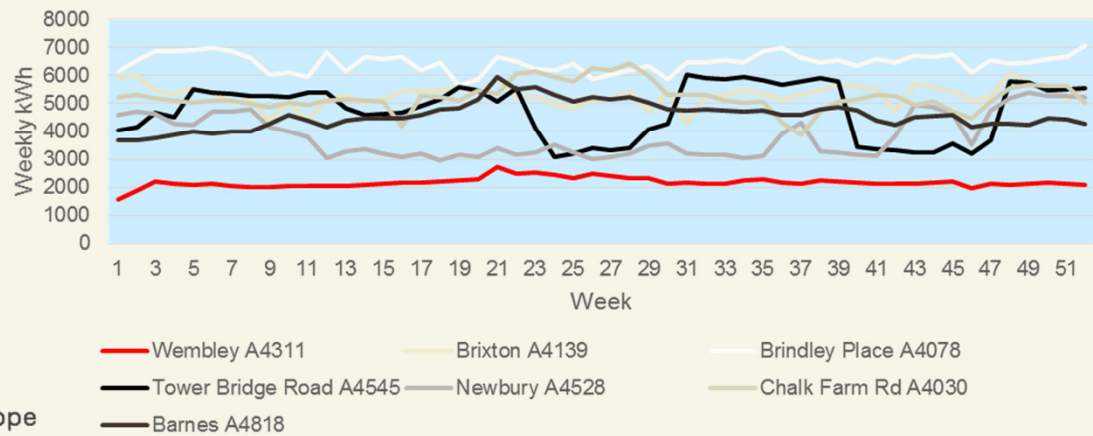
Sainsbury's
live well for less

Performance graphs

Refrigeration



Total



Sainsbury's
live well for less

Energy performance data

Refrigeration average weekly usage (ex Wembley) kWh	2309.3
Wembley average weekly refrigeration usage kWh	1436.2 -37.8%
Total average weekly usage (ex Wembley) kWh	5036.1
Wembley average weekly total kWh	2170.9 -56.8%

Pay back period - 14.15 months

Carbon comparison – Average store vs Wembley

	Store average	Wembley
Indirect CO₂ annual analysis		
Annual energy - kWh	261,878	112,888
Equivalent Carbon @ 0.422 generation factor – kg CO ₂	110,512	47,638
Annual indirect carbon saving – kg CO₂	62,874	
Direct CO₂ annual analysis		
TEWI criteria: 5% leakage, 0.25% service loss, 95% recovery efficiency, 75kg charge, R407A GWP 1770, R744 GWP 1		
Model store R407A – kg CO ₂	7,633	4
Annual direct carbon saving – kg CO₂	7,629	
Total annual carbon saving – kg CO₂	70,503	

Sainsbury's
live well for less

In Summary

- Project objective – 14.15 month pay back
- Annual CO₂ saving of 70 tonnes
- The solution is sustainable for future stores



Sainsbury's Local

Open every day 7am - 11pm

Sainsbury's Local

Sainsbury's Local
ATM