Wates

7&8 Wellington Place:

Environmental Report - April 2019

Contract No. 511243

EXECUTIVE SUMMARY

The aims of this report are as follows:

- To highlight the Energy & Carbon achievements of the site
- Demonstrate good energy management and reductions in CO2 from a range of measures
- To highlight the Waste Management achievements of the site
- Demonstrate good management and minimisation of waste from a range of measures

Wates as the main contractor have the responsibility of the energy use on the site. The project team have showed leadership and a good understanding of their responsibilities leading to innovative solutions and actions to save energy. The site has met all its environmental targets;

Project forecast consumption			Project reduction targets	
Elec	711,900	kWh's	633,591	kWh's
Gas Oil	88,592	litres	78,847	litres
Water	3,512	m3	3,161	m3
Waste	60,475	tonnes	54,428	tonnes
Scope 1&2 Carbon emissions	401	t/CO2e	357	t/CO2e

Target Performance Outputs				
Electric	8.1	kWh/m2	4,069	kWh/£m
Gas Oil	1.8	ltrs/m2	912	ltrs/£m
Water	0.32	m3/m2	164	m3/£m
Waste	11.1	tonnes/m2	5,614	tonnes/£m
Scope 1&2 Carbon emissions	0.01	t/CO2e/m2	4.12	t/CO2e/£m

Actual			Progress to target	
Elec	515,272	kWh's	-19%	Reduction
Gas Oil	49,481	litres	-37%	Reduction
Water	2,328	m3	-26%	Reduction
Waste	36,501	tonnes	-33%	tonnes
Scope 1&2 Carbon emissions	146	t/CO2e	-59%	Reduction

Actual Performance Outputs				
Electric	11.8	kWh/m2	5,957	kWh/£m
Gas Oil	1.1	ltrs/m2	572	ltrs/£m
Water	0.1	m3/m2	27	m3/£m
Scope 1&2 Carbon emissions	0.00	t/CO2e/m2	1.69	t/CO2e/£m

carbon footprint™

This certificate acknowledges that

Wates Group

offset

146 Tonnes of Carbon Dioxide

for

Wellington Place

(contract 511243)

by supporting the **Wind based power generation by Panama Wind Energy Private Limited in Maharashtra** Project in India (VCS-1671)

This helps to combat climate change
and sustain our environment for future generations.

John Buckley, Managing Director,
Carbon Footprint Ltd

www.carbonfootprint.com 15 April 2019

Calculating the carbon footprint
offsetting carbon emissions
helping to combat climate change

Highlights on how it achieved meeting the environmental targets

1. 59% reduction in CO2e emissions & zero carbon electricity supply
2. Remaining CO2e emissions offset so that the site is Zero Carbon
3. Innovative Solar PV system that has saved over 2,000kg of CO2e
4. £25k spend with a Social Enterprise to design, supply and install the PV system
5. Innovative design of PV system so it can be transported and used on another Wates site
6. Innovative way to engage staff and clients by running volunteer days to help move the PV systems to new sites
7. LED lighting reducing energy by over 8%
8. PIR controls in the welfare cabins and across site
9. Primary and secondary lighting circuits that reduce unnecessary use of electricity overnight and weekends
10. Good heating and ventilation strategies for the main office and dry rooms
11. Excellent water management
12. 33% reduction in waste
13. 97% of waste diverted to Landfill
14. Single use plastic reduction initiatives at the café and canteen
15. Over 30 waste minimisation schemes and initiatives including innovative take back scheme of temporary protection products from Protec
16. Wellington Place has the highest Wates Project Excellence score out of all our regions 47 points out of 50.


Wates
Wates
Wate


Wates
Welcome you to
7&8 Wellington Place

WATES GROUP ENERGY & CARBON PERFORMANCE

ENERGY EXCELLENCE

The Statistics

4%

Verification has shown a reduction in CO_2 emissions from 2016

CARBON TRUST STANDARD
CARBON MEASURED

OFFICES & WAREHOUSES

on average used **134kWh/m²** for **electric** and **190kWh/m²** for **gas**

Our staff travelled over **3.5 million kilometres** on **trains and planes**

SITES average **electricity** usage down from **400kWh/day** to **329kWh/day**

Over **30** staff used the **'Cycle to Work Scheme'** to get a new bike

We **travelled** over **24 million** business kilometres by car!

SITES on average used **18,400 litres** of **gas oil** down from **19,500 litres** on 2016

Wates used over **1 million** litres of fuel for our company vehicles

3% of our total CO_2 emissions were offset by supporting; renewable energy, rainforest protection and UK tree planting schemes

CO_2e

6% of our electriity demand came from **renewable sources**

SEP managed over **500** Gas, Electic and Water meters with a value of around **£1.3m**

WP7&8 ENERGY & CARBON PERFORMANCE

515,272 kWh
of **electricity** used
19% below our usage reduction target

49,481 Litres
of **Gas oil** used
37% below our usage reduction target

2,328 m³
of **water** used
26% below our usage reduction target

36,501 tonnes
of **waste** generated
33% below our usage reduction target

97%
of **waste** diverted from landfill

146 t/CO_2e
of **Carbon emissions**
59% below our usage reduction target

Solar PV system
saved over
2000kg
of CO_2e

Wellington Place has the highest Wates
PROJECT EXCELLENCE
45/50
score out of all our regions

INTRODUCTION

1.1 Summary

This report has been produced for the CCS audit visit, need prevision scores.

The Wellington Place site in Leeds consists of a mixture of cabins for office use and process electricity use for the construction site. This type of project is common within Wates with construction sites opening initially with diesel generators using hybrid set ups where practical, switching over to a temporary electricity supply and then finally onto the projects final supply.

This report is designed to enable both technical and non-technical staff to understand their building's energy consumption, the opportunities that exist for improving energy efficiency, and the actions available to start reducing energy consumption. The report should be thought of more as an action plan for achieving savings to on-going energy consumption rather than a report to be read once and filed away. The layout and content of this report is designed to enable the reader to use it as a means of guiding future project implementation and delivery of energy saving measures.

Energy Excellence

CONSTRUCTION ENERGY USE

Scope 1
One generator used for initial site set up
Two generators used for 2 tower cranes
One statutory Gas Supply

Scope 2
One TBS electricity supply which is 100% renewable

Scope 3
Plant equipment
One Statutory Electricity supply
One Statutory Water supply
One Statutory Gas supply

Building Occupancy Energy Use Reductions

The Wellington Place site is the development of an office building which will be complete in 2020 and will house HMRC. To estimate the CO2 emissions savings as a result of the energy efficient design of buildings we have drawn upon the following sources:

- A 2013 report on the energy efficiency of buildings which found that the typical new office building in the UK generated 100kg of CO2 per sq m each year.
- The 2016 briefing paper 'Assessing carbon emissions in BREEAM' which demonstrated that the average CO2 saving for a BREEAM assessed building is 22%, whilst a BREEAM Excellent building is expected to reduce carbon emissions by 33%.

Based on a total of 31,000 sq m of office space, this means Wellington Place has delivered carbon savings of around 1,000 tonnes compared to the average for new office buildings in the UK. Based on a typical carbon value of £25 per kg of CO2, the savings are equivalent to £25,000.

Construction Site Set Up

At the time of the survey, the concrete structure of the building had been erected with external walls still outstanding, mechanical services were being installed and temporary lighting was in place. Off the main site, there were several interconnected cabins providing office and welfare spaces to employees and contractors.

The cabins consist of a total of 33 cabins split into the following areas:

- **Ground floor** - Toilets, drying room and induction office/first aid
- **First floor** - Canteen and sub-contractors offices
- **Second floor** - Site reception, kitchen, open plan office space and a number of meeting rooms.
- **External** - Canteen/food servery

The office and welfare cabins are hired from AV Danzer for the period of construction.

The normal occupancy pattern of the site is 7am - 5.30pm daily with most weekends being non-operational.

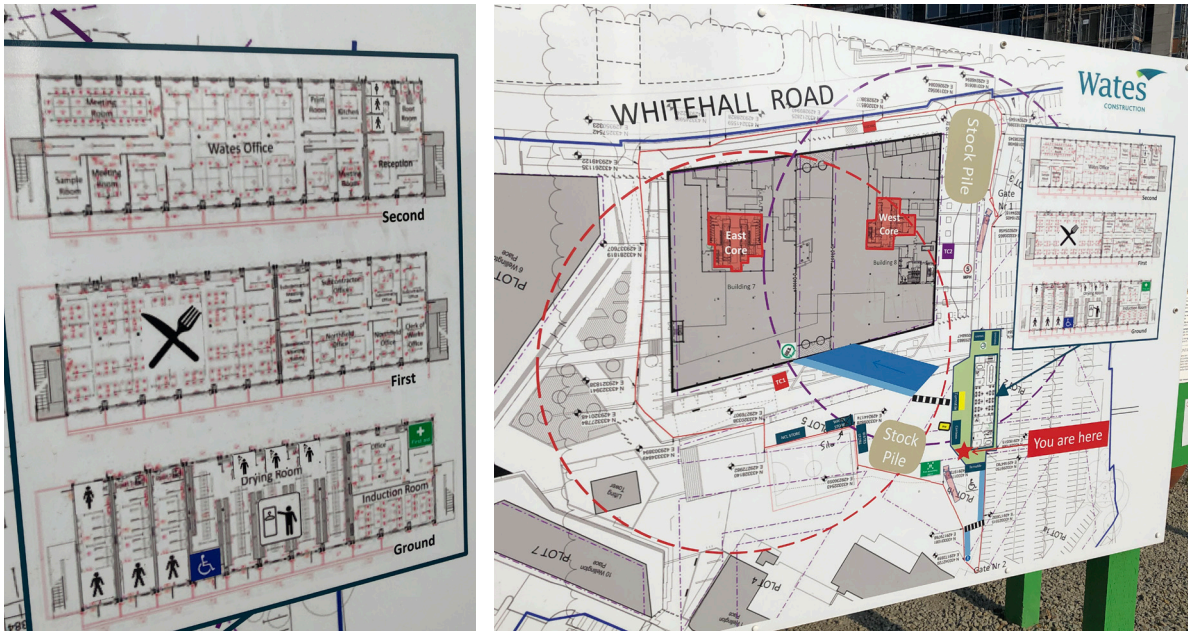
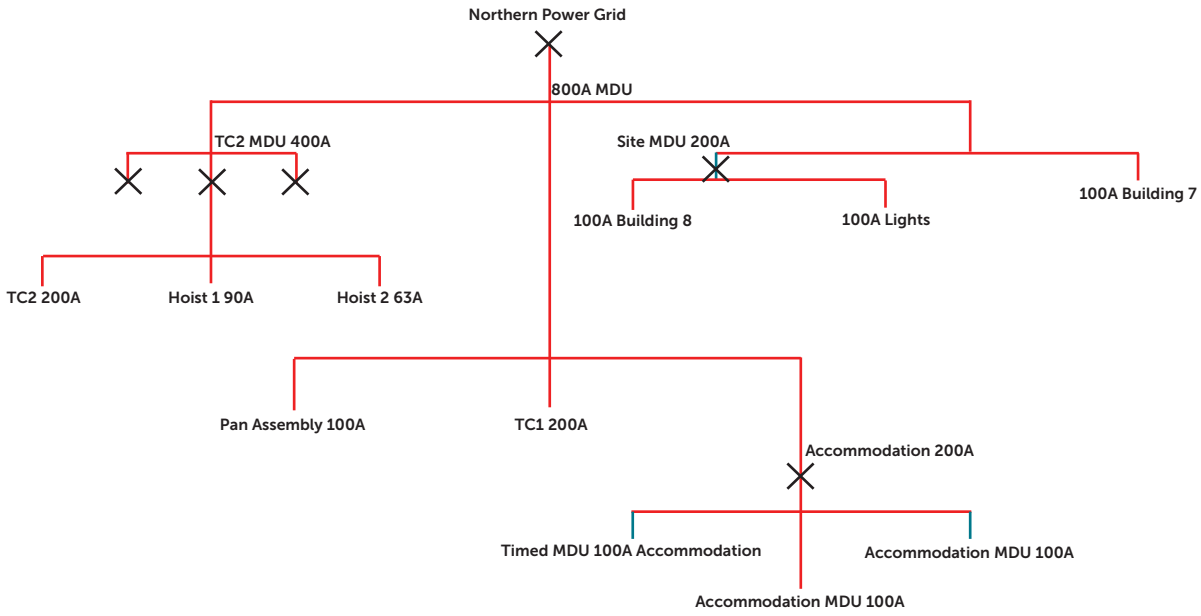


Figure 1 & 2: Cabin Layout and Site Layout

Energy Supply

The cabins and site are both supplied by the same dedicated substation which is then split into the cabins and site. The site supplies are once again split to have a 'primary supply' and a 'secondary supply'. The primary supply keeps power to certain cabins 24/7 which have servers, fridges, etc. The secondary supply is timed and switches off power to those cabins with equipment not required overnight. The site has been on mains electricity supply for almost all of the time on site.

Circuit Design



Renewable Energy Generation

5 Stars

Solar PV System

Roof mounted solar photovoltaic panels have been installed atop the site cabins to further reduce the amount of power used from the grid, and provide a renewable source of energy during the programme of the build. The cabins benefit from having a solar PV array installed on the roof spanning across all 11 cabin roofs made up of 36, 330W peak panels totalling a total output of 11880Wp. The array is arranged into two aspects; one at 15° from south and the other opposite at 165° from south, both at a 10° inclination.

The system has a unique modular design so it can be split into smaller systems if required and once the project is completed the PV array will be redeployed to one or more Wates sites in the region by the partnership. This system will be moved to Wellington Place 4 and we are just looking at the feasibility of doing this now. If Wellington Place 4 is unable to take on the system it will go to another site in the region as one or split up at 3 smaller systems.

- Saving over £16,000 on energy costs and saving 25 tonnes of CO2 over its lifetime
- Full system has remote monitoring and management to individual panel level ensuring maximum yield
- Including extensive sub-metering to help identify areas where we can further reduce energy use on site

Wates Construction has set up an innovation Social Enterprise partnership with Planet First Energy to manage energy and reduce CO2 emissions in its own operations. Planet First manages the procurement of energy supplies and supports the development and delivery of sustainable energy projects. This is the first project to be delivered by the partnership is the installation of an 11kWp PV array on Wates welfare cabins at Wellington Place, Leeds, engineered and delivered by the R-ECO co-operative a key partner in the Planet First community.

Figure 15: Solar Panel Array

The partnerships objective is to build up 100 kWp of PV assets in each region so Wates are able to generate their own renewable energy on site and reduce CO2 emissions while supporting the Social Enterprise sector. The project at Wellington Place is the proof of concept to support the attainment of establishing 100kWp across the U.K.

- In the first year the concept would save over £30k a year on electricity.
- Saving over £800k on energy costs and reduce over 5,600 kg of CO2 over its lifetime.

Our collective objectives are;

- To procure renewable energy and low carbon fuels for its own operations and clients;
- Design, install, provide, maintain and promote the use of Renewable Energy generating and storage systems;
- To support, promote and encourage the development of resilient, sustainable communities through community or shared ownership of Renewable Energy generation capacity;
- To address the issues of fuel poverty, energy security, climate change and environmental degradation by providing access to education, information and technical expertise to facilitate and enable the reduction of energy consumption and by providing access to the means for participating in community or shared ownership of Renewable Energy generation capacity;
- To promote, support, encourage and provide education and information resources regarding sustainability, environmental and energy issues to individuals, communities, businesses and policy makers;
- To support and encourage the growth of the co-operative movement; promote co-operative principles, enterprises and activities. To encourage equality and democratic control over the workplace

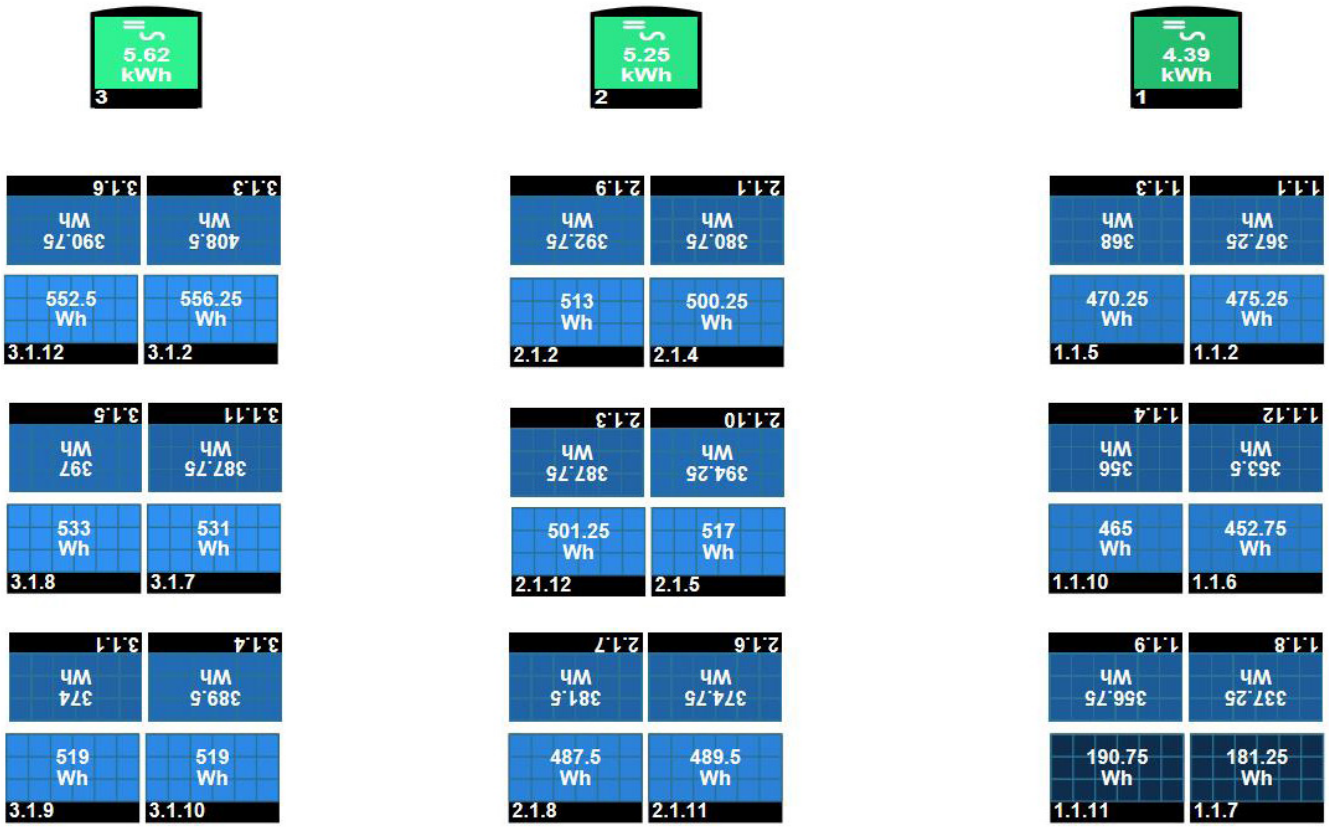


Figure 16: Panel Array Management

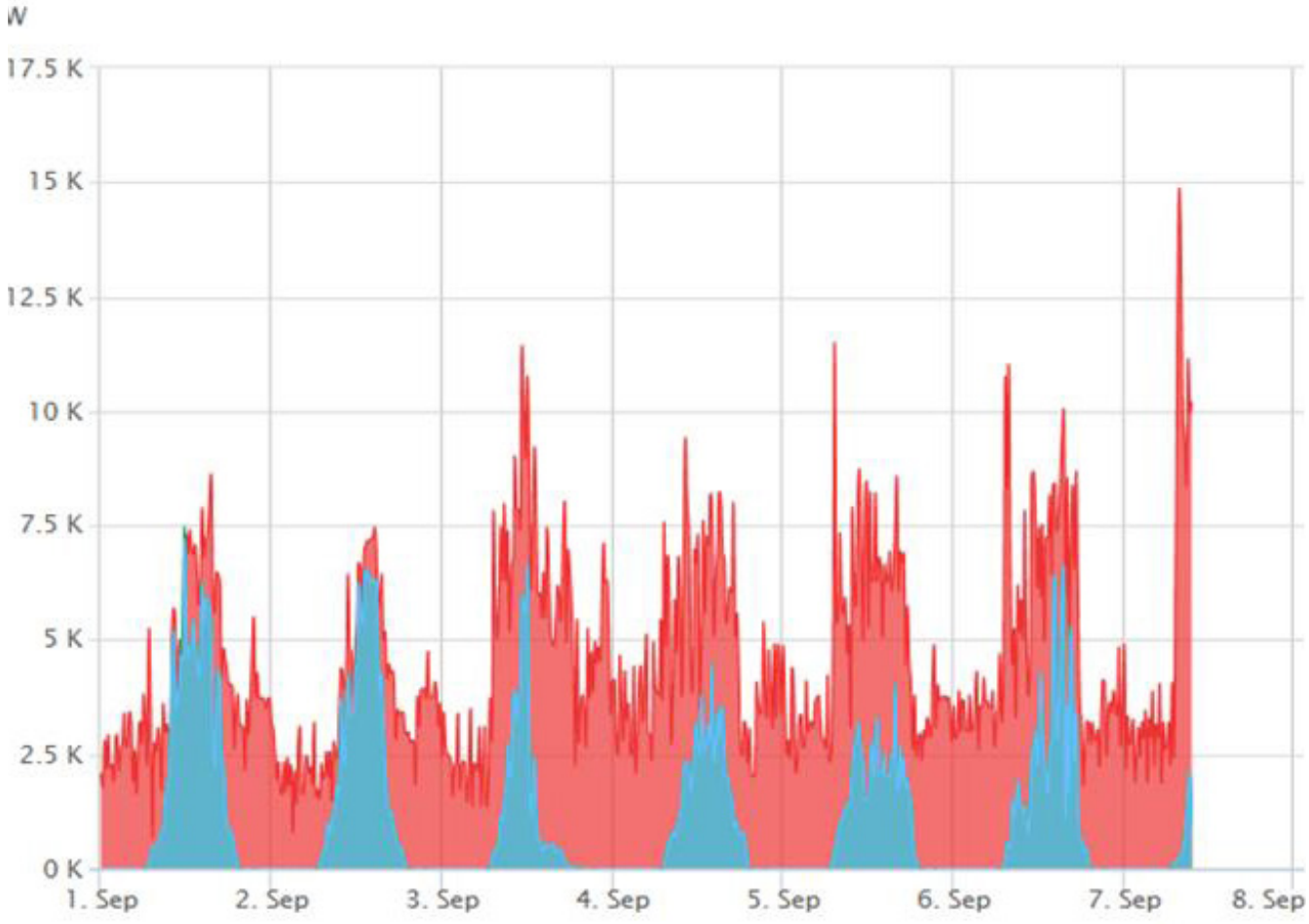


Figure 17: Sub Metering

CARBON TARGETS

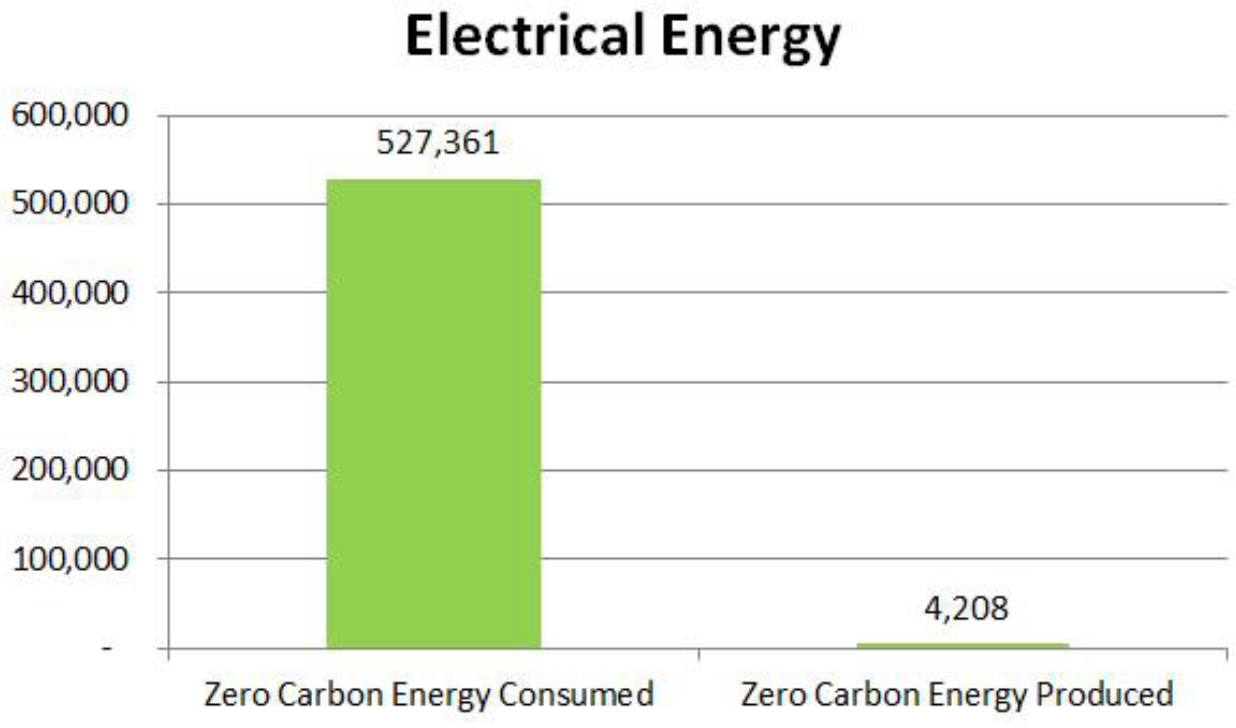
5 Stars

The site is supplied by EDF 100% renewable energy for business, therefore CO2e are zero for site electricity use.

Month	Site Energy Consumption (kWh)	t/CO2e Emissions
Jan-18	5,451	0
Feb-18	36,956	0
Mar-18	38,787	0
Apr-18	25,178	0
May-18	18,592	0
Jun-18	14,987	0
Jul-18	13,618	0
Aug-18	19,999	0
Sep-18	28,384	0
Oct-18	44,552	0
Nov-18	52,276	0
Dec-18	52,320	0
Jan-19	61,838	0
Feb-19	53,980	0
Mar-19	48,354	0
Apr-19	12,089	0
Totals	515,272	0

Solar PV system since its installation has produce the following environmental benefits

Month	Energy Generation PV (kWh)	% Contribution
Aug-18	805	4%
Sep-18	832	3%
Oct-18	538	1%
Nov-18	228	0%
Dec-18	119	0%
Jan-19	174	0%
Feb-19	400	1%
Mar-19	744	2%
Apr-19	365	3%
Totals	4,205	1%



Lighting

The cabins are entirely lit with fluorescent lighting with lamps being either fluorescent tubes or 2D compact fluorescent lamp. All internal lighting is controlled with PIR which was observed to be suitably set for timer periods and sensitivity.

The site has temporary lighting installed which is set on a timer so that it turned off overnight. There are a number of emergency lights which remain on 24/7. The initial install of temporary lighting consisted of fluorescent tubes which covers around 2 floors of the building (total of approximately 234 lamps) after which temporary lighting was moved to LED and the remainder of the building is covered by these LED fittings.

Figure 3 & 4: Internal and Temporary Lighting Examples

The cabins have a number of LED floodlights to illuminate the immediate cabin areas and walkways that lead up to the main site.

The site also has a number of LED floodlights as well as LED bulkhead fittings to illuminate the site compounds, working areas and walkways. LED temporary lighting has been installed throughout the site in lieu of traditional fluorescent fittings to save on the power output per fitting without compromising the lumen output. There are 316 standard and 197 emergency 2ft IP65 rated fittings in use on site, and an additional 90 LED bulkhead fittings on site. We have also introduced 57 100W LED floodlights onto site to replace fluorescents.

All external lighting is controlled on the same time scales as the site temporary lighting therefore turns off overnight.

Figure 5: External Lighting

Lighting within the offices is activated through PIRs situated throughout the floor. Each PIR serves 2no. Lights and is only activated when a person is within the desk layout that the lighting serves.

Figure 6: PIRs in the Office

2.2.2 Electrical Equipment

The cabins are the only area of fixed electrical consumption with the site consumption consisting of temporary power tools and plant equipment.

The electrical equipment in the cabins is:

- Ground floor
  - Toilets - hand dryers, fan heaters, water heaters
  - Drying room - showers, fan heaters, oil-filled heaters
  - Induction office/first aid - IT equipment, water heater, water boiler, fridge and other kitchen equipment
- First floor
  - Canteen - water heaters, water boilers, fridges
  - Sub-contractor's offices - IT equipment, photocopiers
- Second floor
  - Site reception (incl. toilets) - IT equipment, fan heaters, water heaters, showers
  - Kitchen - water heater, water boiler, fridge
  - Open plan office space/meeting rooms - IT equipment, photocopiers, projectors

Heating Ventilation And Air Conditioning (HVAC)

The drying room is served by a mix electric storage heaters and electric radiators, and ventilated through the use of extract fans with the fresh air being supplied through cross ventilation from the doorways and windows. The only space cooling is within the office and one meeting room on the 2nd floor of cabins. A separate portable air conditioning unit is located in the reception but was described as not working and not used. The office air conditioning is only used for cooling and is two separate split systems. Each system runs from a single external condenser unit to the rear of the building and two internal 1-way evaporators mounted of opposite sides of the office (a total of 4 evaporators). The meeting room air conditioning is a single split system which has a single external condenser unit to the rear of the building and a single internal 1-way evaporator.

Each system has its own Toshiba controller mounted directly underneath one of the evaporators. At the time of the survey, the controllers were off due to the heating season and that the air conditioning units are not used for heating.

Figure 6, 7 & 8: Space Cooling

All cabins have heating systems available through either fan heaters, oil-filled radiators or wall panel heaters. The heating arrangement of the cabins is:

- Ground floor
  - Toilets - 5no. 2kW fan heaters
  - Drying room - 5no. 2kW fan heaters, 10no. 2kW oil-filled radiators
  - Induction office/first aid - 5no. 2kW panel heaters
- First floor
  - Canteen - 8no. 2kW panel heaters
  - Sub-contractor's offices - 8no. 2kW panel heaters
- Second floor
  - Site reception (incl. toilets and meeting rooms) - 4no. 2kW panel heaters, 3no. 0.45kW fan heaters
  - Kitchen - N/A
  - Open plan office space - 8no. 2kW panel heaters
  - meeting rooms - 14no. 2kW panel heaters

Drying Rooms

The drying room is served by a mix electric storage heaters and electric radiators, and ventilated through the use of extract fans with the fresh air being supplied through cross ventilation from the doorways and windows

The panel heaters and oil-filled radiators all have timers.

All the heaters have adjustable thermostatic control which was all set reasonably.

The fan heaters do not have timers available and are controlled through the switched FSU.

Figure 9, 10 & 11: Space Heating

Ventilation fans are available in the cabin toilets, showers and drying rooms. These are all of wall mounted extractor fan type and are on the secondary circuit so will not run overnight.

Figure 12: Ventilation

2.2.4 Hot Water & Water Saving Measures

Hot water availability for hand washing, etc. in the cabins is either through storage or POU (point of use) water heaters dependant on location. Some of these water heaters were enclosed for protection and could not be observed therefore these have been assumed. Hot water availability for drink making, etc. in the cabins is through storage water boilers.

- Ground floor
  - Toilets - 3no. .3kW storage water heaters
  - Drying room - 2no. 8.5kW POU showers
  - Induction office/first aid - 1no. c.3kW storage water heater, 1no. 3kW storage water boiler
- First floor
  - Canteen - 3no. 3kW storage water boilers, 3no. 3kW storage water heaters
  - Sub-contractor's offices - N/A
- Second floor
  - Site reception (incl. toilets) - 3no. 3kW POU hand wash unit
  - Kitchen - 1no. 3kW storage water boiler, no. 3kW storage water heater
  - Open plan office space/meeting rooms - N/A

Figure 13 & 14: Hot Water / Figure 15 Concussive Taps

Catering Equipment

The catering cabin contained a small amount of all electric commercial kitchen equipment including refrigeration, hot plates, ovens and hobs. Observation of the equipment was that it is well controlled in that equipment is turned off or to low when not required.

Solar Powered Water Feature

As you enter the site there is a well maintained 'garden' area hosting a variety of plant life and a solar powered water feature.

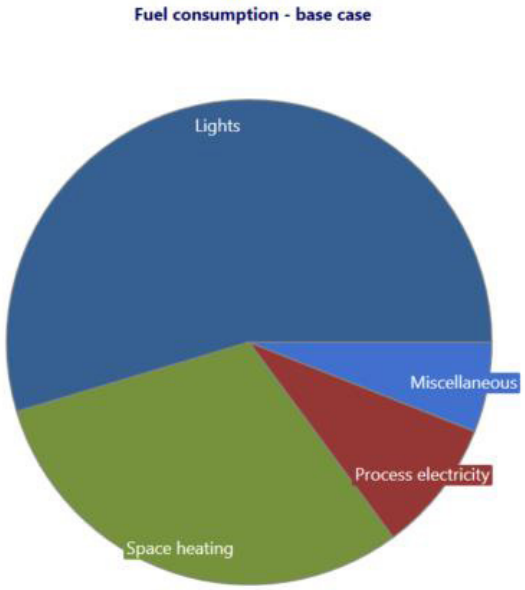
DATA ANALYSIS

This section of the report is intended to provide an overview of the energy performance of the site based on energy data from the site.

The site has a Half Hourly (HH) meter, this data is highly accurate and allows us to make some detailed analysis on consumption trends at site.

3.2 Energy Balance

We have calculated an energy balance for the site based on what was observed at site (i.e. number and ratings of equipment, operational use of the equipment etc.) and where necessary estimation (i.e. percentage loads, estimated ratings where equipment could not be accessed etc.).



Section	Fuel consumption - base case kWh	%
Lights	219,066	54.6%
Space heating	122,305	30.5%
Process electricity	35,624	8.9%
Miscellaneous	24,041	6%
Hot water	16,893	4.2%
Electrical equipment	6,365	1.6%
Space cooling	783	0.2%

Figure 16: Energy Balance by kWh

As can be seen by the data above, lighting (54.6%) is the largest single end energy user of energy and this accounts for both the cabin lighting (33% of total lighting load) and the site temporary lighting (67% of total lighting load). All of the cabin lighting and most of the site lighting is fluorescent and a huge benefit would be made from specifying LED lighting from the initial procurement stage of the project.

The next biggest area of consumption is space heating (30.5%) due to the large use of electric radiant heating within the cabins. There is little room for reduction in the heating requirements as the cabins are already well insulated through the fabric and windows. Engagement with staff to ensure the doors and windows of heated areas are kept closed (i.e. toilets and drying rooms) would provide savings. There are some spaces within the cabins, such as the second-floor offices, which are always occupied during the site operating hours.

The process electricity consumption (8.9%) is made up of a snapshot of equipment seen during the site survey. It is more than likely the types and requirement of plant machinery and equipment will differ throughout the construction project.

There was no evidence of generators on the site at the time of the audit.

3.3 Electricity Usage Against Heating Degree Days

The site's consumption is process related rather than weather based, degree day analysis would not be appropriate and therefore is not included.

3.4 Gas Usage Against Heating Degree Days

There is no gas consumption on this site.

3.5 Electricity Profile Analysis

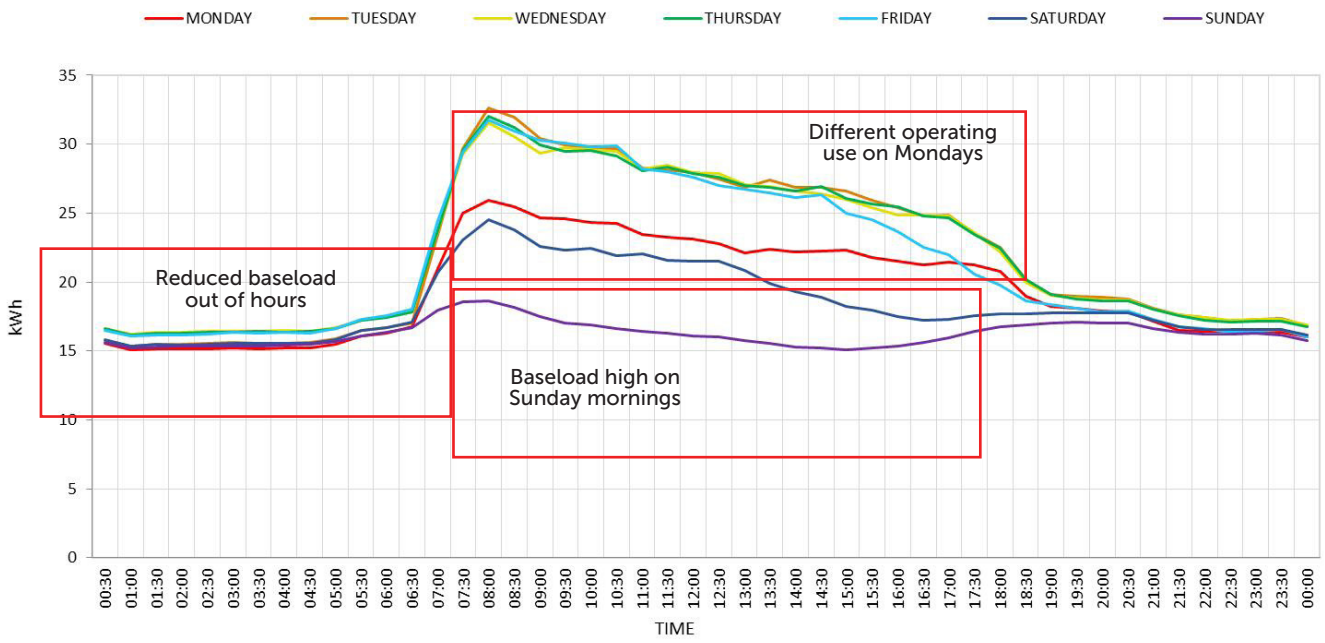


Figure 17: Average consumption profile per day of week for the year (Feb 2018 - Nov 2018)

The above graph illustrates a varied consumption trend where consumption is predominantly impacted by weekday and operation patterns.

- The data suggests that the 2nd circuit is helping to reduce the baseload out of hours however the consumption is still relatively high. This should be investigated to see if we could reduce the baseload further.
- The average daily consumption on a Monday is lower than any other day which may be influenced by the number of staff on site but may be achievable throughout the rest of the week.

	MON	TUE	WED	THU	FRI	SAT	SUN
AVG (kWh)	19.47	21.97	22.05	22.06	21.53	18.36	16.26
MAX (kWh)	25.90	32.61	31.57	32.05	31.78	24.51	18.65
MIN (kWh)	15.07	15.36	16.21	16.17	16.03	15.37	15.06

KEY RANGE

LOW HIGH

Figure 18: Average, minimum and maximum consumption on each day of the week

Waste

Waste / Material Type	Solution		Considerations
	Company	Detail	
Ceilings	SIG Ceilings Recycling	Ceiling tiles recycling service from Armstrong Tiles run in conjunction with SIG (a Wates PSL Supplier). Both an offcuts recycling service and a BREEAM certified end-of-life recycling service is available. ***www.ceilings.co.uk*** ***Email: recycling@ceilings.co.uk***	• Restricted to Armstrong tiles ordered through SIG • Dry storage needs to be available between collections • Collections are on return journey of delivery vehicles • Carriers Licenses and WTNs supplied • Consider – what happens to ceiling tile offcuts generated after last load is delivered?
Contaminated Soils and Land	Biogenie Offsite Soil Remediation	Biogenie treats selected contamined soils offsite through Biopile technologies, creating an environment suitable for bacteria naturally present to break down organic contamination from soils, oily sludges, railway ballast, river and lagoon dredgings etc. On completion of the process, the decontaminated soils are used for landfill site remediation. ***Tel: 0118 916 7340*** ***E-mail: sales@biogenie-env.com*** ***www.biogenie-env.com***	• Only organic contaminants can be treated by this technology • All sites are fully licensed • Sites are positioned on the landfilled being remediated, so no onward transport issues • No landfill tax liability
Lightweight Materials	Mobile Compactor Skips	Portable waste skips with integrated compactor unit. Useful for compacting weak materials such as plastics, plasterboard, cardboard and timber. Delivery / removal for emptying by standard skip delivery vehicles (Skip Luggers and RoRo). Various capacities available from 14 to 34 yd. Many larger waste companies can offer them as an alternative to regular skips, but they may have to be booked in advance as numbers are normally limited. ***Request from Wates preferred waste contractors.***	• Requires power (typically 16A), so needs to be sited near a suitable supply • Skips are always enclosed so materials stay dry, reducing weighbridge weights and charges • Lightweight materials are contained, so less risk of windblown litter • High compaction rates are normally achieved – 6x (or more) uncompacted weight • Fewer skip movements and higher skip weights reduce transport charges • Weekly hire charges normally apply - short term use for specific light wastes • If used for segregated plastics or cardboard, credit for content value should be requested • Consider – Some retail clients may already have on-site compactor skips – could you use them?
Lightweight Materials	Ceco Minipak Baler	A hand operated lightweight baler that can be used to compress flimsy materials into compact bales for storage and transportation. Overall footprint is 500 x 700mm, with a bale size of 440 x 360 x max 650 high. ***Ceco Equipment Ltd (Ireland)*** ***Tel: +353 (0) 94 938 2988*** ***Email: info@cecobalers.com***	• Manufactured for both indoor and outdoor use, and requires no power • Bales can weigh up to 35kg, so a FLT is not necessarily needed • Not very good with larger cardboard boxes as these have to be broken up to fit in • Small bales stack well in skips or wheelie bins, maximising weight • Ceco manufacture in Ireland, but supply throughout the UK

Waste / Material Type	Solution		
	Company	Detail	Considerations
Lightweight Materials	Ceco Hydraulic Waste Balers	A range of electrically operated hydraulic waste balers that are designed for indoor or outdoor use that can be supplied with a 110v powerpack. Hydraulic compaction ensures high density bales. Bale tying is integral to the machine operation. ***Tel and Email as above***	• Seven different 110v models available • Bales sizes vary from 40kg / 2 tonne ram (Ceco 40) to 250 kg / 15 tonne ram (Ceco 250) • Smaller bales (600x535x460 for Ceco 40) improve weights in skips • Larger bales (1200x1200x800 for Ceco 250) may be directly mill saleable • The balers are made in Ireland, but shipped worldwide • Other balers are also available but most require an indoor 240 volt supply
Lightweight Materials	Hand Strapping Kit	Roll packers break up and consolidate bulky wastes such as furniture, pallets, cable drums, packaging etc. by rolling a heavy toothed drum backwards and forwards in a skip as it is filled. Static and mobile (lorry mounted) versions are available. ***www.sevenways.co.uk/products/roll-packers***	• May be useful when high volume bulky wastes are being moved, such as soft strip from a retail refurbishment, green waste, or timber crating from an automated warehouse fitout • Dramatically reduces volume (typically 3-5 times) and minimises skip movements • Skips are high weight, minimising transport costs • Power supply and hardstanding required for static units. • You could do something similar (although not as effectively) using an excavator bucket.
Lightweight Materials	Waste Wizard	A simple no-frills piece of equipment that can reduce the bulk of lightweight materials such as cardboard, plastics, etc. The frame can be used as a collection bin, with the contents later compacted by means of a weighted plunger, then banded to form a compact bale which fits on a standard pallet. Plastic bales can be up to 750kg if filled and compacted repeatedly, but much less for cardboard. ***Tel: 01485 528977*** ***Email: contact@thewastewizard.co.uk***	• You need a FLT to move the frame around, lift the plunger in and out, and move bales • No power is needed and it's designed for outdoor use • The bales are reasonably compact but are not "mill-standard" for direct sale for reprocessors • A Waste Wizard can help you get a good tonnage of lightweight materials into a skip
Lightweight Materials	Rotary Waste Compactors	Rotary waste compactors compress lightweight waste into tough plastic bags to maximise the weight you can get into a skip. Filled bags sit directly on a pallet to aid handling. ***www.bergmann.online.com***	• Electrical power is required (2.2kW) • High compression ratios of lightweight materials can be achieved, including card, plastic and foam • Bagging waste in this way maximises skip weights, and minimises windblown litter • If carefully segregated, the bags of materials may have commercial value

Waste / Material Type	Solution		
	Company	Detail	Considerations
Window Recycling	Veka	PVC windows have a lifespan of typically 25-30 years, but the PVC in them can be recycled up to 10 times. Whilst many PVC recycling schemes exist, most recycle the high quality PVC window waste into lower grade applications such as sewer pipes. VEKA however recycle old PVC windows into new PVC frames. ***Tel: 01322 387219*** ***www.veka-recycling.co.uk***	• PVC frames by any maker or any age can be recycled • Storage bins are supplied and collected free of charge • Glass must be removed, but gaskets, handles, reinforcement etc. can be left on the frame • No need to separate different profile colours
Insulation	Rockwool Recycling Service	Rockwool offer two recycling programmes: returning clean offcuts or end-of-life "raw" rockwool insulation to their Bridgend recycling plant for a gate fee of £40 per tonne; and a mobile recycling plant that can separate composite sheet panels into the sheet facings and compressed insulation ready for returning to the recycling plant. ***Tel: 01656 868621*** ***Email: recycling@rockwool.co.uk*** ***www.rockwool.co.uk***	• The cost of transportation of insulation to Bridgend is not included in the gate fee • If the insulation is excessively contaminated with foreign matter, it will be returned to the contractor's site at the contractor's cost • The materials must be bagged or packaged properly. • Compressed bales are also accepted
Insulation	Insulation Panel Recycling	Composite foam panels manufactured before 2004 may contain Ozone Depleting Substances (ODS). Recycling of ODS-containing panels can only take place in a sealed environment – typically a fridge recycling plant. Panels should be cut into maximum 2m lengths prior to dispatch for recycling. ***European Metal Recycling Group (London, Birmingham etc.) Tel: 01925 715400*** ***Sims Recycling Ltd (S.Wales & County Durham) Tel: 0800 008 7223*** ***SR Waste Recycling (Birmingham) Tel: 01226 698584***	• Only panels that contain ODS need to be recycled in this way • Recycling recovers facing sheets, and granulated insulation (suitable for use as an oil absorbent), and captures ODS blowing agents for high-temperature destruction elsewhere • There are a limited number of fully-licensed fridge recycling plants in the UK • To identify your panels and determine whether or not they contain ODS, see "Insulated Panels, Identification and Disposal" by EPIC (Google search)

Waste / Material Type	Solution		
	Company	Detail	Considerations
Carpet	Carpet Recycling UK	Carpet Recycling UK is a not-for-profit organisation working to increase the recycling of carpet waste across the UK. Under the "Recyclers" tab on the website there is a downloadable list of all member recyclers (with contact details). The organisation is funded by 10 of the largest UK carpet manufacturers, many of whom are also included as recyclers in the listing. ***www.carpetrecyclinguk.com*** ***Tel: 0161 440 8325*** ***Email: info@carpetrecyclinguk.com***	• Cost of recycling will depend upon the condition of the carpet, its type, volume, and distance to the actual recycler • Individual recyclers need to be contacted to arrange collections etc. – this is not done by the organisation itself – it's just a central source of information
Furniture	Greenworks Furniture Recycling	GreenWorks is the furniture recycling business of London Re-use, which specialises is the collection, repair and reuse of redundant office furniture in the London area. At their depots, reusable furniture is repaired, cleaned and graded. Non-reusable items are broken down into components for recycling as plastics, textiles, wood and metals by authorised recycling centres. ***Tel: 0845 230 2231*** ***Email: info@ londonreusecommercial.org***	• Furniture is collected in 12 cu yd caged vans. • Carriers licenses and WTNs are offered as standard • Furniture is used for charity, community or educational groups, small businesses, or sent abroad to help in developing countries
Glass	Berryman Glass Plate Recycling	Flat plate glass can be readily recycled into new window glass. Berryman UK offer a nationwide flat glass recycling service serving most major cities. Useful waste codes: 17 04 02 Aluminium 17 04 03 Lead 17 04 05 Iron and steel (Stainless steel) ***See also:*** ***Recycling ferrous metals*** ***Recycling copper and brass***	• Stainless steel, lead and aluminium skips contain high value waste and may be targeted by thieves. Keep inside the secure compound and DO NOT SIGN! • The target credit value for mixed mid-value metal skips containing stainless steel, lead and aluminium is at least £700 per tonne (unless mainly old rolled aluminium sections). Individually segregated skips may attract higher credit rates if quantities permit • Where practical, use smaller covered & locked skips for stainless steel, lead and aluminium waste and remove regularly to minimise risk

Waste / Material Type	Solution		Considerations
	Company	Detail	
Flooring	Reco Vinyl Floor Recycling	Flooring manufacturers Altro and Polyflor are founding members of the Recofloor, which recycles waste vinyl flooring into new flooring or traffic management products such as cones and road signs. The scheme accepts both uplifted vinyl and post installation offcuts. Vinyl is collected in bulk bags and either collected from site or dropped off at participating flooring distributors. ***Tel: 0161 355 7618*** ***Email: info@recofloor.org***	• Sites register their interest with Recofloor, who then dispatch bulk bags to site • When the bags are full, contact Recofloor to arrange collection • Collections cost £15 per bag (approx 250kg) from construction sites • If you take bags to distributors yourself, remember Carrier's Licenses and WTNs!
Wood / Timber	Roll Packers	Roll packers break up and consolidate bulky wastes such as furniture, pallets, cable drums, packaging etc by rolling a heavy toothed drum backwards and forwards in a skip as it is filled. Static & mobile (lorry mounted) versions are available. ***www.sevenways.co.uk/products/roll-packers***	• May be useful when high volume bulky wastes are being moved, such as soft strip from a retail refurbishment, green waste, or timber crating from an automated warehouse fitout • Dramatically reduces volume (typically 3-5 times) and minimises skip movements • Skips are high weight, minimising transport costs • Power supply and hardstanding required for static units • You could do something similar (although not as effectively) using an excavator bucket
Wood / Timber	National Community Wood Recycling	The National Community Wood Recycling Project supports the establishment of local Community Wood Recycling centres throughout the country. CWRs are run as social enterprises and not only reduce waste and save resources but also create work for disadvantaged people. In 2012, CWRs recovered 8150 tonnes of timber for reuse that would otherwise have been chipped or landfilled. ***Tel: 01273 203040*** ***Email: info@communitywoodrecycling.org.uk***	• The cost of wood disposal using Community Wood Recyclers is less than using skips • A reasonable amount of wood needs to be stored up between collections • Use of local CWRs can aid local business and give good publicity to Wates • All CWRs have Carriers Licenses and will issue Waste Transfer Notes • CWRs will normally hold T6 and U9 exemptions under the Environmental Permitting Regs
Wood / Timber	Scott ELM Pallet Repatriation	Free collection service for used pallets. The company returns usable pallets to the company of origin for reuse, and chips any badly damage ones for energy from waste. In 2012 they collected 7,327 pallets from 13 Wates sites, with 4,819 of these returned into use. That's 66%! ***Tel : 01283 550660*** ***Email: enquiries@scott-elm.com***	• Pallets need to have markings or other identifiers to enable them to be returned for reuse • A reasonable quantity needs to be collected together prior to collection • Some standard pallets have a commercial value and could be sold instead • Some standard pallets have a commercial value and could be sold instead • It may be possible to do a similar thing directly with suppliers using return vehicle journeys

Waste / Material Type	Solution		
	Company	Detail	Considerations
Concrete	Concrete Sock	Concrete socks fit over the delivery chute of a ready-mix wagon after discharge allowing it to return to the batching plant for washout without the risk of loss of concrete onto roads. This allows cement, aggregates and washout water to be reused at the plant, and avoids having to have a washout point (with the associated waste water and solids) on site. On one project, Bardon delivered 3,750m^3 of concrete without a single truck washing out on site, saving 18,720 litres of concrete -contaminated washout water being discharged on site. ***Tel (Dan Smith): M 07818 078970*** ***Email: info@concretesock.co.uk***	• Concrete socks are relatively cheap, c. £250 per unit • Some suppliers, such as Bardon, use them as standard to prevent road contamination • The requirement to wash out at the batching plant needs to be included in contract docs • As a rule of thumb, batching plants need to be not more than 20 mins from site to do this
Concrete	Watermaiden Concrete Washout	The Watermaiden concete washout unit removes fines and adjusts pH of the wash water allowing safe discharge to drain. System includes dual 110V pumps, hydrocyclone, settlement, and on demand pH and flocculent dosing equipment. ***Tel: 0207 259 0681*** ***Email: ian@watermaiden.com***	• 110V power supply needed for pumps • Discharge consent is required for discharge of treated water to foul drainage • Minimum hire period is 6 weeks @ £300 per week, plus £1,490 delivery/collection (Typ.costs) • 2 floc blocks & 25 pH sachets are included in cost, but extra will probably be needed • Use of a packaged system avoids the need to manage an open washout point on site
WEE Waste Lighting / Electrical Goods - White goods	Recolight FREE Lamp and CFL Recycling	Recolight is the UK's specialist WEEE compliance scheme for the recycling of Gas Discharge Lamps & LEDS, funded by over 120 lamp producer members representing the majority of lamps placed on the UK market. To date over 160 million lamps have been recycled. ***Book a collection online at:*** ***www.recolight.co.uk/FREE-lamp-CFL-recycling*** ***You can also search for a local collection point on the same page.***	• All the lamps covered by Recolight are WEEE waste and MUST BE RECYCLED • Many of the lamps contain mercury, which makes them Hazardous Waste as well • For large quantities of lamps (100+) a free container, collection and recycling is offered • For smaller quantities, a container can be leased, but collection & recycling is still free • There is also a network of collection points across the UK located at electrical wholesalers

Waste / Material Type	Solution		
	Company	Detail	Considerations
Paints	Community Re-paint Scheme	Community RePaint has been sponsored by Dulux since its inception in 1993, and forms part of the ongoing sustainability programme of Dulux. Community RePaint schemes offer a range of paints and are keen to help individuals and families on a low income and/or benefits, local not-for-profit organisations, charities and community groups. ***Tel: 01132 003959*** ***Email: repaint@resourcefutures.co.uk*** ***www.communityrepaint.org.uk***	• There is a small charge for processing waste paint, but this is less than dealing with it as Hazardous Waste • The scheme can accept most emulsion and gloss paints, including primers, undercoats, masonry and floor paints, varnishes and wood stains • The Scheme cannot accept paint strippers and thinners, wood preservatives, car paints, aerosol & spray paints, industrial paints, paints not in their original container, or any COSHH hazard-labelled paint
Paints	Aerosol can de-pressuriser	A simple piece of equipment that fits to the larger (50mm) top hole of a standard oil drum, with a filter that fits onto the 20mm vent hole. Aerosol cans are depressurised by a no-spark spike that is driven into the top of the can, with any residual contents collected in the drum below. The propellant gases pass through the activated carbon filter, minimising risk. Once depressurised, cans are no longer Hazardous waste, but may be placed in metal or general skips. ***Tel: 01691 670891*** ***Email: sales@aerosolrecycling.co.uk*** ***www.aerosolrecycling.co.uk***	• The unit is designed to be used outdoors or in well ventilated spaces • The unit comes with an earthing lead to prevent static build-up • The propellant gas is discharged to atmosphere via the filter • Any residue collected in the drum must be treated as Hazardous Waste • A standard oil drum will contain the residue from approx 4000 spent aerosol cans • Any SAFE method of depressuring EMPTY and EXHAUSTED aerosol cans (for example a large tracked vehicle!) will turn an aerosol can from Hazardous Waste into scrap metal
Paints	Readsche Can crusher	A useful piece of equipment that can be used for crushing empty metal tins up to 10 litre capacity to get more weight in a metal skip and maximise materials credits. Useful on sites where you know you will have a lot of material delivered in tins, including EMPTY paint tins, depressurised aerosols, etc. Can also be used to reduce the volume of other materials, for example plastic drums, before placing in general or segregated skips. ***Tel: 01252 785010*** ***Email: info@redashe.co.uk*** ***www.redashe.co.uk***	• The unit must be wall mounted to use • The operation is purely manual – no power required – but generates about a tonne of force. • Empty tin cans have a scrap value of around £120 / tonne in a metal skip • A can crusher can reduce bulk by 80 - 90% • A large tracked vehicle or excavator bucket will do a similar job! (As will a sledge hammer!)

Waste / Material Type	Solution		
	Company	Detail	Considerations
Plasterboard	SIG plasterboard recycling	Plasterboard recycling from SIG, a Wates PSL supplier. ***Tel: 08701 229950*** ***Email: speedlinerecycling@sigplc.co.uk*** ***www.speedlinerecycling.co.uk***	• Any make of plasterboard can be sent for recycling through this service • Check beforehand if you want to recycle "historic" (demolition) plasterboard by this route • Bags can be bought at local centres or brought with deliveries • Collections are via return journeys of delivery vehicles only • Carriers Licenses and WTNs supplied • Consider – what happens to plasterboard waste generated after last load is delivered?
Asset Values of Waste Materials	Packaging Materials	Waste packaging materials, if kept clean, have significant asset (credit) values that can offset the cost of skip delivery and collection, particularly if the packaging is compacted into light bales so that a reasonable weight is achieved in a skip. Provided that the materials are baled separately so that they are easing segregated, there is no reason why paper, cardboard and plastics should not be sent away in a single skip. The cleaner the materials, the higher the credit value. Useful waste codes: 15 01 01 Paper and cardboard packaging 15 01 02 Plastic packaging 15 01 06 Mixed packaging 20 01 01 Paper & cardboard (segregated office paper) ***See MiniPak hand baler, hydraulic balers, rotary bag compactors for compaction equipment.***	• Full asset values shown it the graphs above are for large mill-standard bales. Credit values for small bales from waste handlers are typically 50 -75% of the mill price • If you expect a lot of clean clear polythene film, such as from equipment or shopfitting deliveries, consider collecting and baling this as part of the unwrapping process. Collected in this way, the material has a target credit value of around £250 per tonne • For general packaging, place baled paper, card and contaminated (printing, paper labels, dirt etc) plastic film in the same skip, and expect a target credit value of around £50 per tonne • A decent alternative is "free" skips for mixed baled packaging • An uncompacted mixed packaging skip can weigh as little as 0.25 tonnes when apparently full. Avoid segregating packaging like this as the disposal cost per tonne is exorbitant • If you are not planning to bale packaging, place it in mixed waste skips where heavier materials will compact it, achieving higher overall skip weights, and a better disposal rate per tonne overall

Waste / Material Type	Solution		
	Company	Detail	Considerations
Asset Values of Waste Materials	Ferrous Metals	Steel scrap has a well-defined recovery route via metals merchants, and as such is readily recycable everywhere. Even light steel scrap such as old pressed metal radiators, empty paint tins, metal furniture or metal stud partitioning has a significant value if segregated. Useful waste codes: 17 04 05 Iron and steel 17 04 07 Mixed metals 15 01 04 Metallic packaging ***See also:*** ***Recycling copper and brass*** ***Recycling stainless steel, lead & aluminium*** ***Aerosolv Aerosol Can Depressuriser*** ***Redache Can Crusher***	• Unless site conditions or quantities make it impractical, always have a segregated metals skip • Ferrous metals are the least expensive of the metals, but even so, iron and steel should have a credit value of at least £100 per tonne in the present market • Use 20/24 yard RoRo skips for longer lengths such as stud partitioning or steel sections to avoid needing to cut to fit in shorter skips • An 8 yard mixed metals skip can easily hold 1 to 2 tonnes of metal, potentially offsetting the cost of its delivery and collection up to four-fold • As an absolute minimum, a segregated metals skip should be at least free • Waste electronic and electrical equipment (WEEE waste) must not be disposed of in metals skips unless this has been agreed in advance with the waste handler • Gas bottles, fire extinguishers, or any other pressurised container should not be placed in any skips. (Once punctured, dismantled or otherwise depressurised, all of these may be placed in a metals skip)
Asset Values of Waste Materials	Copper & Brass	All copper, bronze and brass is extremely valuable, and should be segregated whenever practical. Even electrical cable such as ring main, lighting and data cabling contains 25 - 45% copper by weight, and has a significant value without being stripped of its insulation. ***See also:*** ***Recycling ferrous metals*** ***Recycling stainless steel, lead & aluminium***	• Copper skips contain high value waste and may be targeted by thieves. Keep inside the secure compound and DO NOT SIGN! • The target credit value for mixed copper skips containing stripped out electrical and data cabling, copper pipework, hot water tanks, etc is at least £1,000 per tonne. For metals skips without cabling (i.e. just old pipework etc) this increases to around £2,000 per tonne • Use smaller covered and locked skips for copper waste and remove regularly to minimise risk • If your electricians and plumbers are removing their own waste ensure that they have Carriers Licences, and that you have a record of where it is being taken, how much, and when. Do not give copper materials away in package deals unless the inherent value of the materials reduces the package price • Never strip the insulation off electrical cables – even the insulation is worth £150+ per tonne and its value is taken into account in the credit rate
Asset Values of Waste Materials	Stainless Steel, Lead and Aluminium	Stainless steel, lead and aluminium are all midrange metals in terms of value, and as such can be segregated in a single skip if quantities don't permit separate segregation. Useful waste codes: 17 04 02 Aluminium 17 04 03 Lead 17 04 05 Iron and steel (Stainless steel) ***See also:*** ***Recycling ferrous metals*** ***Recycling copper and brass***	• Stainless steel, lead and aluminium skips contain high value waste and may be targeted by thieves. Keep inside the secure compound and DO NOT SIGN! • The target credit value for mixed mid-value metal skips containing stainless steel, lead and aluminium is at least £700 per tonne (unless mainly old rolled aluminium sections). Individually segregated skips may attract higher credit rates if quantities permit. • Where practical, use smaller covered and locked skips for stainless steel, lead and aluminium waste and remove regularly to minimise risk

WATES CONSTRUCTION

Paradigm
3175 Thorpe Park
Century Way
Leeds
LS15 8ZB

Tel: 0113 397 5200

7&8 Wellington Place
Whitehall Road
Wellington Place
Leeds
LS1 4AP

wates.co.uk