Revised proposal to DHL Canon Coalville for Energy Management Services.

Prepared for Bob Cliff and Ian Caldwell

By DHL Environmental Compliance Solutions

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Overview

Site location	DHL, Beveridge Lane, Bardon Hill, Coalville, Leicestershire LE67 1TB		
Client	Canon	Contract Duration	2 Years in March 09
Freehold	.....	Leasehold	Yes
Building age	@1993	Extension age	@1998
Warehouse staff	@80	Office staff	@40
Weekly operation	3,848 hrs per annum operation		

Aerial Photo

Site size	Not given	Total area	@240,000sq.ft+ Offices
Warehouse size	@240,000sq.ft	Office size	Not given
Ridge height	12M	Eaves height	10M
Electric costs	9p kWh	Gas costs	Not given
Water costs	Not given	Other costs	Not given









Canon
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Building Element – External Lighting	3sC- 0120 No. - 3.1

Location	Building Perimeter and Yard Lamp Posts inc Car Park
Existing Installation	**29x** 250W Lights on Lamp posts **14x** 70W Building Floodlights **8x** 250W Building Floodlights **4x** 400W Building Floodlights **1x** 70W Son to Sprinkler House **1x** IP 65 **22x** T5 8W Permanently Illuminated Fire Door Lights Operating period calculated at 12 hrs per day, 7 days a week, 52 weeks per year.

Acceptable		Substantial Savings	
Potential saving	**Yes**	Investigation required	**Complete**

Recommendations

Proposed Action	Replace floodlights with led technology light fittings which will reduce the current consumption of 58,387kW by 76% to 14,240kW, and require zero maintenance for 10yrs. IP 65 and T5 fire door light fittings remain the same.

Operating Hrs	4,368hrs	Implementation Cost	£34,497.41
kW saved pa	44,147kW	Predicted carbon saving	6.7 tonnes CO_2/pa
Payback Period	6.2 years	Saving pa @ 9p/kWh	£5,544.46
10 Yr NET return @ 9p/kWh		£20,947.19	

Building Element – Dock Lighting		3sC- 0120 No. – 3.2	
Location	To front elevation only		
Existing Installation	16x Loading Docks 4x Level Entry Doors		
Acceptable		Substantial Savings	
Potential saving	**Yes**	Investigation required	**Complete**



Recommendations

Proposed Action	Replace existing 16 traffic light fittings with led fittings this will reduce existing consumption of 13,978kW by 80% to 2,796kW.

Operating Hrs	8,736hrs	Implementation Cost	£5,988.28
kW saving	11,182kW	Predicted carbon saving	1.7 tonnes CO_2/pa
Payback Period	5.9 yrs	Energy saving pa @ 9 p/kWh	£1,006.39
10 Yr NET return @ 9p/kWh		£4,075.62	

Building Element – Dock Curtains	3sC- 0120 No. – 3.3

Location	To front elevation only
Existing Installation	16x Docks have dock curtains which are generally in good order.

Acceptable	**Yes**	Substantial Savings	
Potential saving		Investigation required	**Complete**

Recommendations

Proposed Action	No action required

Operating Hrs	....	Implementation Cost	....
kW consumed	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh	....		

Building Element – Water Storage		3sC- 0120 No. – 3.4	
Location	Not currently installed at this site		
Existing Installation	**N/A**		
Acceptable		Substantial Savings	
Potential saving	**Yes**	Investigation required	**In progress**

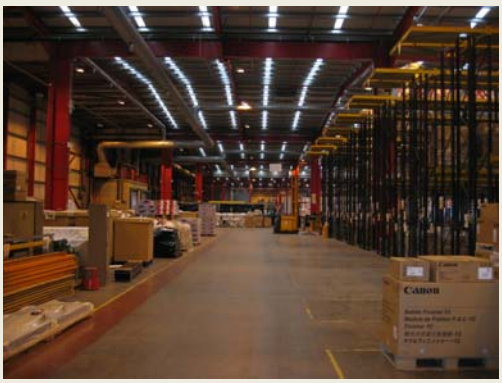
Recommendations

Proposed Action	Second stage survey needed to indicate whether feasible within payback period		
Operating Hrs	....	Implementation Cost	....
kW consumed	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh	....		

Building Element – Warehouse Lighting	3sC- 0120 No. - 4.1

Location	Warehouse roof, above & below mezzanine
Existing Installation	**48**x 400W low bay Sodium units in J Racks **33**x 400W low bay Sodium units in H Racks **25**x 400W low bay Sodium units in Bulk & Dispatch **35**x 400W low bay Sodium units above Mezzanine **51x** 6ft twin 70w cool white tubes **141x** 400W low bay Sodium units main area **176x** 250W low bay sodium units main area

Acceptable		Substantial Savings	**Yes**
Potential saving		Investigation required	**Complete**



Recommendations

Action Proposed	Replace all light fittings with T5 high frequency light fitting units with movement and daylight sensors incorporating dimming capabilities. The existing consumption of 739,416kW will be reduced by 47% to 393,843kW due to the efficiency of the new low energy light fittings alone. The movement and daylight sensors will reduce the remaining consumption by a further 50% to 196,922kW.

Operating Hrs	3,848hrs	Implementation Cost	£178,352.82
kW saving	542,494kW	Predicted carbon saving	82. 5 tonnes CO_2/pa
Payback Period	43.8 months	Energy saving pa @ 9 p/kWh	£48,824.46
5 Yr NET return @ 9p/kWh		£65,769.48	

Cost Summary: 4.1	3sC- 0120 No. - 4.1f

Funding	DHL Canon Coalville site
Funding Models	ECS have two basic funding models although others are available by negotiation. Costs quoted include procurement, installation, all project management and commissioning costs. 1 Site funds the quoted cost and retains all the benefits. 2 ECS fund all costs and make a monthly charge to site over an agreed period of 60 months which will include a small return for ECS. This cost will become payable only after implementation has taken place and benefits in excess of this charge demonstrated. Where possible, the ECS costs model aims to achieve savings that do not exceed the monthly cost to the site. Thereby placing the site in the position of enjoying NET savings from day 1

The proposal is based upon the following assumptions:

Installation to be carried out during normal working hours and conditions.
There are 509 light fittings and they are the specification detailed opposite.

The light fittings are all fully operational and switched on during all operational hours. The sites operational hours are 3,848 hrs per annum presently if any increase to this was to happen then the monthly savings would be greatly increased.

A 47% reduction by the light fittings alone is a mathematically produced calculation and is achieved by changing the light fittings alone.

Occupancy / Daylight and Dimming combined savings have been calculated at 50% of the remaining energy consumption of 393,843kW

Occupancy sensors will reduce the light fitting to 10% of their running consumption after 1 minute of inactivity. Lux levels will be an average of 150lux with a minimum of 100lux at any point.

Work load of facilities remains as witnessed during Audit and stated in this document
No additional electricity consuming equipment or services are engaged by the site.

Recommendations

ECS Funding proposed	Total cost of implementing solution outlined opposite	**£178,352.82**
	ECS would be willing to fund this on the basis of a monthly charge to site subject to the conditions outlined above of per month for 60 months.	**£3,715.68**
	Actual monthly savings based on above analysis would be giving NET monthly savings during the 5 years of based upon an energy cost of 9p per kWh.	**£4,068.71** **£353.03**
	Savings over 5 year period of (excluding ECS finance charge)	**£65,859.88**

Building Element – Battery Charging	3sC- 0120 No. - 4.2

Location	Located in far end zone 15
Existing Installation	30x Charging locations with Battery's ranging from 10 to 20 years old 28x Trucks are BT except 2x VNA Charging time is @ 10 hours

Acceptable	**Yes**	Substantial Savings	
Potential saving		Investigation required	**Complete**

Recommendations

Proposed Action	Charging units are fit for their purpose.

Operating Hrs	....	Implementation Cost	....
kW saving	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh		....	

Building Element – Heating System	3sC- 0120 No. - 4.3

Location	Sporadic to zones 1-4 & on top of offices to zones 12-15
Existing Installation	**Phase 2 zones 12 to 15** – 2x Benson ducted blown air system with Trend management control system with 4x thermostats set at 16 deg C – 15kW motors – New burner fitted to 1x in 2005 **Phase 1 zones 1 to 4** – Total of 8x unit set at 16 deg C as follows: **1x** Benson high level blown air heat exchanger **2x** Powermatic ducted blown air heat exchangers **5x** Powermatic high level blown air heat exchanger

Acceptable		Substantial Savings	
Potential saving	**Yes**	Investigation required	**Yes**

Recommendations

Proposed Action	These units are over 10 years old and so are inefficient compared to a new installation. *Heating cost can increase by 30% or more if the boiler is poorly operated or maintained. It is recommended that a stage 2 survey is carried out to analyze installation costs in relation to running reduction savings.

Operating Hrs	....	Implementation Cost	....
kW consumed	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh	....		

Building Element –	3sC- 0120 No. - 4.4

Location	Natural Light
Existing Installation	Double skin GRP roof-lights were installed at construction stage to most areas which are cleaned regularly and give good natural lux levels in daylight hours

Acceptable	**Yes**	Substantial Savings	
Potential saving		Investigation required	**Complete**



Recommendations

Proposed Action	No action required – the amount of natural light which could be utilized by intelligent lighting controls outlined within the proposed warehouse lighting is substantial.

Operating Hrs	....	Implementation Cost	....
kW consumed	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh	....		

Building Element – Building Openings	3sC- 0120 No. - 4.5

Location	Various dock, level entry and personnel/fire doors to all elevations
Existing Installation	Dock doors - if not utilized were all closed during survey Main staff access door closer had failed so permanently open 2x Level entry doors had rapid roller doors installed behind

Acceptable		Substantial Savings	
Potential saving	**Yes**	Investigation required	**Complete**

Recommendations

Action proposed	Site management need to arrange repair to personnel door closer – otherwise no action is required.

Operating Hrs	....	Implementation Cost	....
kW saving	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh	....		

Building Element – De-stratification Fans	3sC- 0120 No. – 4.6

Location	In roof void to part of initial 1993 phase 1 building
Existing Installation	Part of the phase 1 building has de-stratification fans installed which will push the warm air down from the roof void down to the operational floor area No de-stratification fans are installed into the phase 2 building and part of phase 1 building

Acceptable		Substantial Savings	
Potential saving	**Yes**	Investigation required	

Recommendations

Proposed Action	Due to the fact that partial fan coverage is already installed, the payback calculations for refitting the remaining sectors would be very difficult to produce accurately but would not be less than a 10 year pay back.

Operating Hrs	....	Implementation Cost	....
kW saving	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh		Over 10 yrs	

Building Element – Office Heating	3sC- 0120 No. - 5.1

Location	In Plant Room at GL off warehouse
Existing Installation	3x Hamworthy gas fired boilers which are original installed in 1993 These provide heat to a wet radiator system and in addition a blown warm air system.

Acceptable		Substantial Savings	
Potential saving	**Yes**	Investigation required	**Yes**

Recommendations

Proposed Action	These 3x boilers are 16 years old so a stage 2 survey is highly recommended as they are inefficient compared to a new installation. The survey will analyze the installation cost in relation to running reduction savings. *Heating costs can increase by 30% or more if the boiler is poorly operated or maintained. The heating management system was set at 23.5 deg C which is considerably over the recommended 18 to 21 deg C. Reducing the temp set will drastically reduce running costs

Operating Hrs	....	Implementation Cost	....
kW saving	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh		....	

Building Element – Office Radiators	3sC- 0120 No. – 5.2

Location	In all Main Office Areas
Existing Installation	The gas fired boilers located in Plant Room supply a wet system with radiators located throughout the offices, most have TRV's fitted. Some units such as Toilets have no TRV's. Additional electrical fan units have been installed to provide additional heat

Acceptable		Substantial Savings	
Potential saving	**Yes**	Investigation required	**Yes**

Recommendations

Action proposed	Most TRV settings were set at the highest of a range from 1 to 9 at 9 or from 1 to 6 at 6 – therefore the heat level could be turned down – these are high because the system is now inefficient If a new set of boilers were introduced then this would remove the need for additional electric fan heaters. Therefore it is recommended that a stage 2 survey is carried out which will analyze capital costs against potential running cost savings.*Heating costs rise by about 8% for each 1 degree of overheating.

Operating Hrs	....	Implementation Cost	....
kW saving	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh	....		

Building Element – Office AC Installation	3sC- 0120 No. – 5.3

Location	Main Office areas
Existing Installation	6x AC units have been installed into main offices

Acceptable	**Yes**	Substantial Savings	
Potential saving		Investigation required	

Recommendations

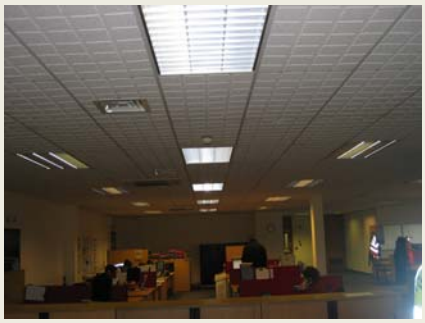
Action proposed	These units are reasonably new and maintained so no action required Engineer stated that there is no link between heating and cooling systems. Therefore management should make sure both systems are not operational at same time. Consideration could be given to a management link between both systems

Operating Hrs	....	Implementation Cost	....
kW saving	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh	....		

Building Element – Office Lighting	3sC- 0120 No. – 5.4

Location	Located in all office areas
Existing Installation	**18** x 600mm2 4 tube 18W units **13** x diachronic spot lights **51** x 600x1200 recessed 3 tube units 39W **85** x 600x1200 recessed 4 tube units 39W - tubes out in main office **15** x 2D fittings **20** x surface twin 70W 4ft fittings **1** x single 70W 4ft **2** x twin 5ft surface mounted **3** x single 5ft **10** x low energy spots **Warehouse Offices etc** **4**x twin 58W tube fittings – Boiler House **4**x 2D – Boiler House **26**x 3 tube 4ft recessed eggcrate diffuser units **7**x single 5ft eggcrate surface mounted **2**x single 6ft surface mounted **30**x 4ft twin surface mounted eggcrate units **3**x PIR's installed in central office

Acceptable		Substantial Savings	**Yes**
Potential saving		Investigation required	**Complete**



Recommendations

Action proposed	Replace all fittings that can be replaced with T5 high frequency light fittings. This will reduce energy consumption of 130,900kW by 49% to 63,461kW, reducing the running cost savings as shown below.

Operating Hrs	3,120	Implementation Cost	£33,212.51
kW saving	67,439kW	Predicted carbon saving	10.3 tonnes CO_2/pa
Payback Period	65.7 months	Saving pa @ 9.p/kWh	£6,069.55
10 Yr return @ 9p/kWh		£27,482.99	

Building Element – Compactor / Cardboard	3sC- 0120 No. – 6.1

Location	To Dock Elevation Area
Existing Installation	ECS are already involved with cardboard compaction and removal at this site

Acceptable	**Yes**	Substantial Savings	
Potential saving		Investigation required	

Recommendations

Proposed Action	N/A

Operating Hrs	....	Implementation Cost	....
kW savings	....	Predicted carbon saving	....
Payback Period	....	Energy saving pa @ 9 p/kWh	....
5 Yr NET return @ 9p/kWh	....		

Building Element – Warehouse Roof	3sC - 0120	No. - 6.2

Location	Main Warehouse Roof
Existing Installation	Some issues were noted with main roof measuring 90x240 Meters as follows: 1 - Cracking is evident in main ridge cap sheets as shown on photo below caused by lack of expansion as ridge sheets thermally move. 2 - The gutters are showing signs of wear as coating begins to fail particularly at joints. 3 - The plastisol coating is delaminating from the profiled steel sheeting caused by water getting between coating and steel sheet as edges were not coated.

Acceptable		Substantial Savings	
Potential saving		Investigation required	**Action required**




Recommendations

Action proposed	1 – Joints need to be created in ridge capping so expansion / contraction can take place with thermal changes. 2 – The gutters will require recoating on a regular basis particularly to vulnerable joint areas – suggest an elastomeric product such as Acropol. This will thermally move and not crack causing failure. 3 – Eventually the delaminated sections will need to be removed back to a straight line where adhesion exists. The exposed metal will require priming and then a 2 stage coating system will need to be applied. This will stop the metal from rusting which will overtime occur.

Operating Hrs	.....	Implementation Cost	.....
kW Saving	.....	Predicted carbon saving	.....
Payback Period	.....	Energy saving pa @ 9 p/kWh	.....
5 Yr NET return @ 9p/kWh	....		

BRIEF

The following document has been prepared by DHL ECS to replace the original proposal submitted to DHL Canon. At the sites request, the energy tariff has been changed to 9p/kWh and the operating hours have been adjusted to 3,848hrs per annum.

STAGE 1

This stage 1 survey is an overview of the current building and services to include an audit and recommendations for the following:

External – Warehouse – Offices

PROPOSAL OVERVIEW:

The stage 1 survey identified one energy management solution that once implemented and managed correctly falls within the ECS costs model and presents significant savings. The savings for this solution are summarised below:

Annual saving-	**£48,824.46**
Total implementation cost-	**£178,352.82**
Payback period-	**43.8 months**
NET benefit over five years (based on 9p/kWh)-	**£65,769.48**

Based on the above figures, ECS can offer the following cost model:

A NET monthly benefit free of all capital costs of **£353.03** for the first 60 months

Followed by a permanent monthly benefit of at least **£4,068.71**

Additional energy management solutions have also been identified within this proposal. These have been omitted from the overall cost summary. Details of these energy management solutions can be found within the proposal summary at the end of this proposal. Please contact ECS for further details on these potential installations.

Please note that the savings calculated above are based upon the operating hours, conditions and current energy tariff (9p/kWh) stated by the site. The savings will only be achieved if these are correct and maintained.

SURVEY AUDIT LIMITATIONS

Notes

Carbon savings within this proposal are based upon our records which indicate that the site is currently operating on a half hourly core contract which sources energy from 50% Combined Heat and Power (CHP) and 50% Renewable. For further information please contact the ECS Carbon Team on 02476 212475 or envirohelp@dhl.com.

Anything which is highlighted by an * in the text of this audit relates to third party information.

3sC -0120 Canon - Coalville				
Element	**Implementation Cost**	**Savings p.a.**	**Payback**	**Carbon Saving (tonnes)**
External Lighting	£34,497.41	£5,544.46	6.2yrs	6.7
Dock Lighting	£5,988.28	£1,006.39	5.9yrs	1.7
Dock Curtains				
Water Storage				
Warehouse Lighting	£178,352.82	£48,824.46	43.8months	82.5
Battery charging				
Heating System				
Natural Light				
Building Openings				
De-stratification fans				
Office Heating				
Office Radiators				
Office AC Install				
Office Lighting	£33,212.51	£6,069.55	65.7months	10.3
Cardboard / Compactor				
Warehouse Roof				