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PRIVATE & CONFIDENTIAL



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31st October 2012

Dear Mr Hendawi,

FET Advanced Power Factor Correction Equipment Trial Tests

BRI Education Centre

The following short form report details the initial analysis of part of the metered data recorded by BSRIA of the PSS Deployment to the BRI Education Centre, Upper Maudlin Street, Bristol, between 25th September and 26th October 2012. The building is typical of an office style building with main occupancy occurring between the hours of 08.00hrs and 18.00hrs Monday to Friday.

Hoare Lea undertook the detailed design of the LV connection within the building to enable the installation of the PSS Panel. Refer to Appendix 1 for a copy of the LV schematic drawing showing how the PSS panel connects to the LV switchboard via an BS88 switch fuse and armoured cable.

FET employed Larson Electrical to undertake the physical installation works on site in accordance with the Hoare Lea Specification and BS7671:2011 (17th Edition Requirements for Electrical Installations).

After initial commissioning of the PSS Panel, BSRIA (Building Performance, part of their Sustainable Buildings Group) were employed by FET to undertake independent metering to ascertain the electrical performance of the PSS panel.

Tests were carried out by BSRIA using the following electrical meter;

1/ CHAUVIN ARNOUX CA 8335 (calibrated) BSRIA Ref 3110201776

The meter was attached at the cable intake to the LV Switchboard for the Building. The meter took current measurements (via Current Transformers) and direct voltage measurements for all three phases and neutral, and was set up to record measurements on a 5 minute interval. Data was then presented to Hoare Lea in Excel spreadsheet format to Hoare Lea for further interrogation.

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Figure 1- BSRIA's installation of the metering unit used for the trial at the LV Switchboard.

The following Graphs demonstrate the effects the PSS Panel have on the measured Active Power being consumed by the building. These test were undertaken during a representative working day and shows an increased in measured consumption when the PSS Panel is switched off.

Figure 2 shows measurements of Active Power Consumption (in Watts) versus time (in 24 hour clock) on the 17th October 2012:

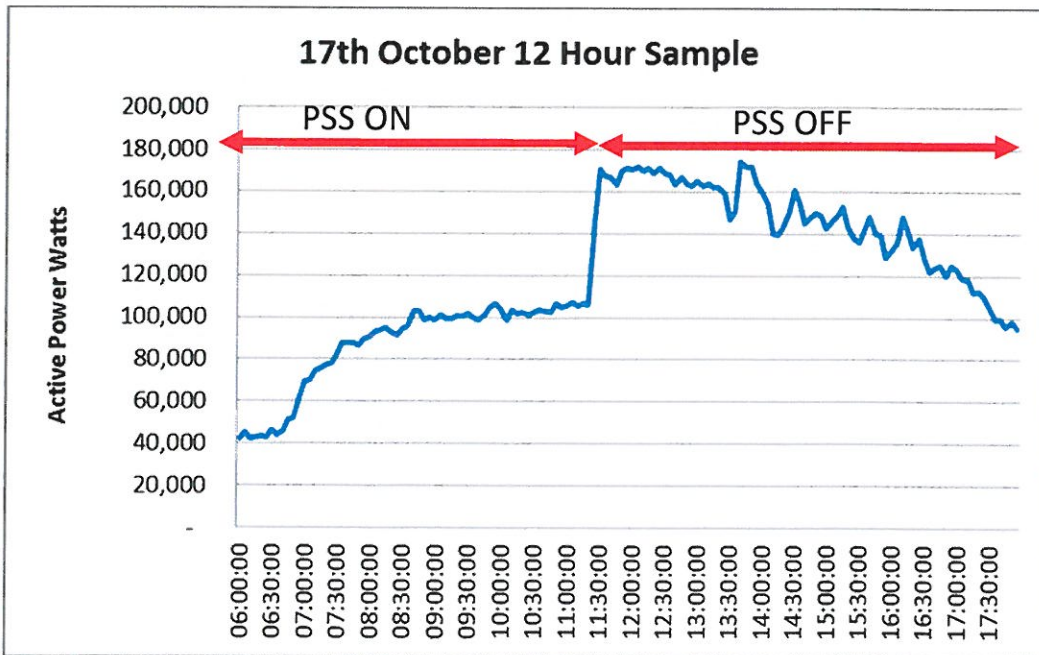


Figure 2

Figure 3 shows similar information to Figure 2, although zoomed into the 4 hour period when the PSS unit was switched off. Measurements of Active Power Consumption (in Watts) are again displayed versus time (in 24 hour clock) on the 17th October 2012:

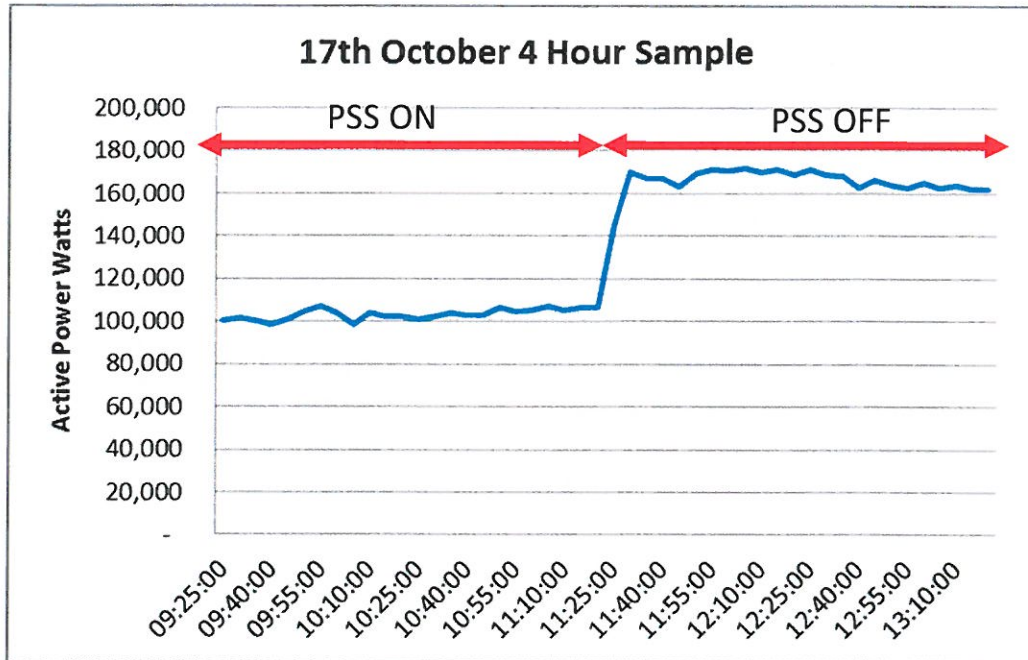


Figure 3

Active Power consumed by the building in Figure 3 increases from 106,000W to 166,938W once the PSS panel is switched off.

Analysing the Active Power consumed by the building for the two hour period either side of when the PSS panel is switched off is summarised in Figure 4 below:

Start Time	End Time	Duration	PSS Status	Active Power Consumption (kWh)	Approximate Power Consumption Saving (%)
09:25hrs	11:25hrs	2 Hours	On	206	37%
11:25hrs	13:25hrs	2 Hours	Off	332	-

Figure 4

During this 4 hour period we are not aware of any significant changes in occupancy or connected loads in the building.

At the time of writing this report, further metered data (from an increased period of time to that analysed in Figures 3, 4 & 5) is awaited from BSRIA for our interrogation. However, the initial metered



information analysed within the report appears to indicate that the PSS Panel is reducing the Active Power consumption within the building.

We await the furthered metered data from BSRIA in due course for our review.

Yours sincerely,
HOARE LEA

A handwritten signature in black ink, appearing to read 'Graham Cossons'.

Graham Cossons
PARTNER

Attachments

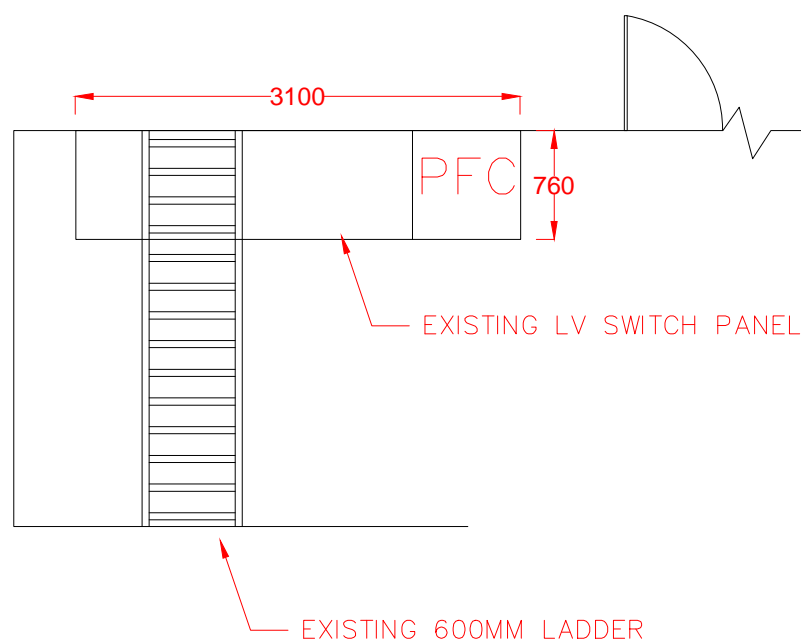
Appendix 1 – Hoare Lea LV Schematic



This drawing shall not be scaled. Work from the dimensions shown in the drawing or given in relevant specifications

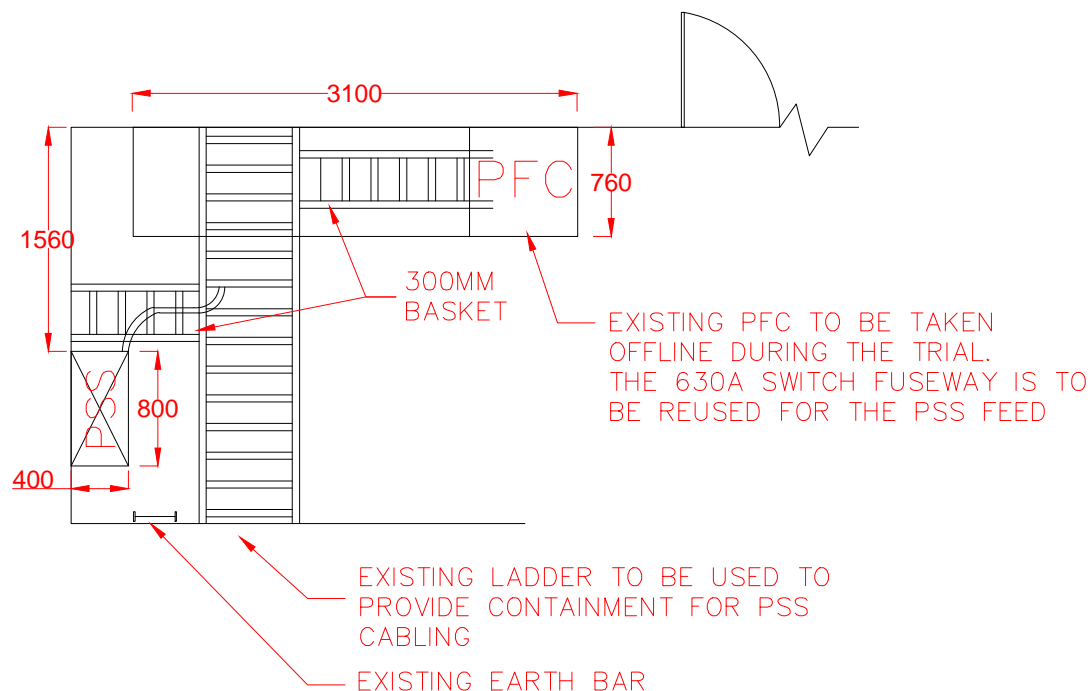
EXISTING

Scale 1:50 @ A3



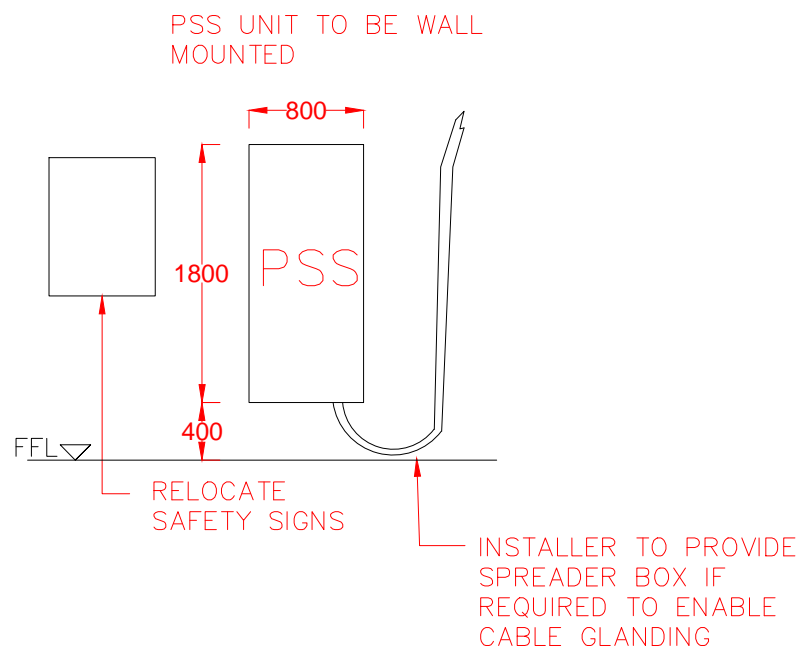
PROPOSED

Scale 1:50 @ A3



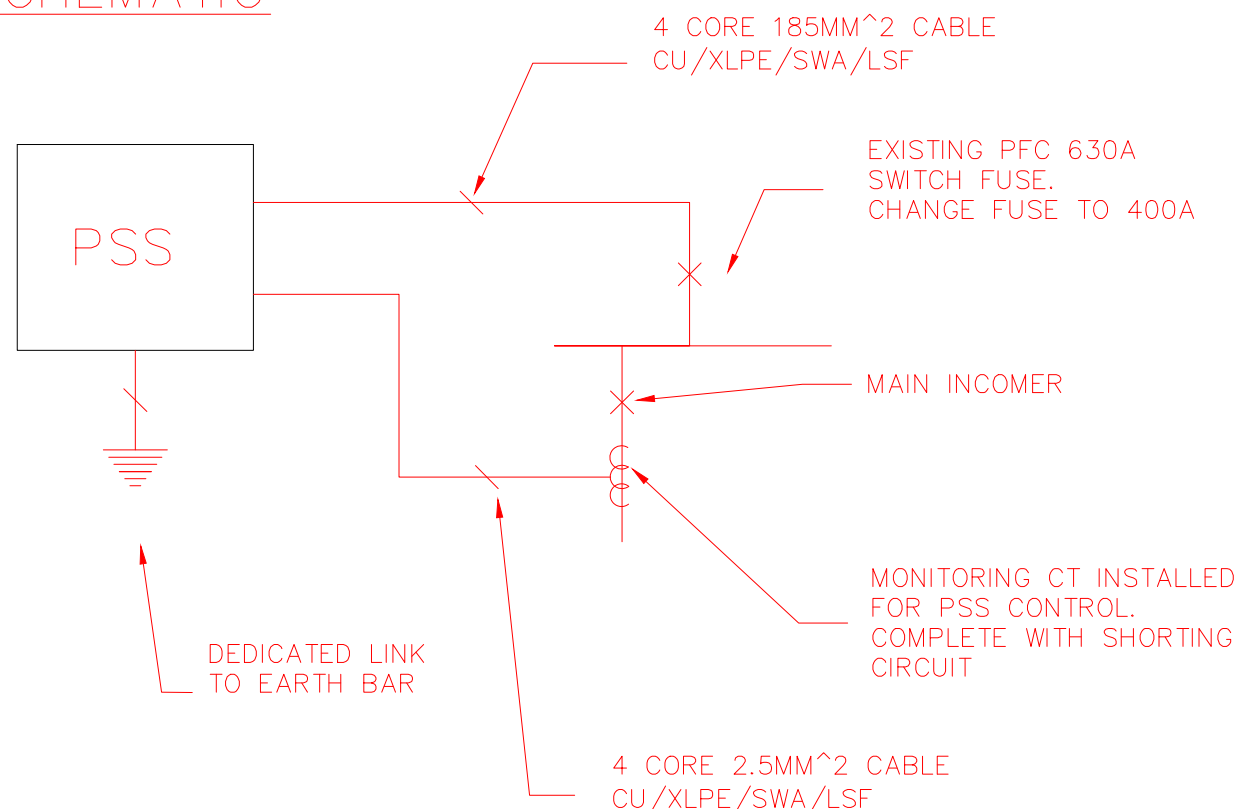
ELEVATION

Not To Scale



SCHEMATIC

Not To Scale



CDM Pre-Construction Information

The following information is provided in pursuance of Regulations 11 (6) of the CDM Regulations 2007:

NOTES:

1. The drawing does not necessarily show all the information needed to interpret the design intent or the construction details.
2. The drawing contains information from more than one source and must be read in conjunction with all relevant specifications.
3. Any apparent drafting errors and differences between other drawings and specifications shall be brought to our attention.
4. All installation works shall be in full compliance with BS7671

P1	PRELIMINARY ISSUE	HA	SJB	8/12
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Index	Description	Drawn & Chk by	Rev'd by	Date
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Revisions

Architect

N/A

Client

FUTURE ENVIRONMENTAL TECHNOLOGIES (FET)

PRELIMINARY ISSUE

Project Title

BRI Carbon Abatement Scheme

Drawing Title

PSS Proposed Layout Education Centre

Project No	Drawn & Checked by	Reviewed by
0586176	VO	SJB
Date	Scale	Issuing Office
AUG 2012	AS NOTED	BRISTOL

DRAWING NUMBER

Project Code	Orig.	Zone	Level	Type	Role	Class.	Number	Rev.
0586176	HL	XX	XX	DR	E	XXX	002	P1

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