NORMAN BROMLEY
PARTNERSHIP

REF	**BS 1369**
DATE	**March 2021**
REVISION	**01**

Abbey Road – Phase 2

Planning Condition 16, Photovoltaic Panel Submission

PREPARED BY:

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PROJECT REVISION SHEET

Revision No.	Date	Details	Changes	Author	Approved
0	March 2021			MR	MR
01	March 21	Comments included		MR	MR

Contents

1.0 Introduction

This submission is provided as a response to planning submission 16, wording as follows:-

Prior to commencement of above ground works, drawings and data sheets showing the location, extent and predicted energy generation of photovoltaic cells and associated equipment to be installed on the building shall have been submitted to and approved by the Local Planning Authority in writing. The measures shall include the installation of a meter to monitor the energy output from the approved renewable energy systems. A site-specific lifetime maintenance schedule for each system, including safe roof access arrangements, shall be provided. The cells shall be installed in full accordance with the details approved by the Local Planning Authority and permanently retained and maintained thereafter.

2.0 System Description

The photovoltaic panel system shall comprise photovoltaic panels installed on the roof. Details of proposed PV panels included in Appendix A.

The photovoltaic panels shall be mounted on a KT Systems, S Dome mounting system. Details included in Appendix B.

The PV panels shall be installed to the roof and proposed layout is included in Appendix D. The proposed location will not be shaded so output will be as advised by the manufacturer.

The PV array shall provide a minimum output of 18.5 kilowatt peak and generate 12,970kwp of electricity per annum. This will include 6.0 kilowatt peak (kWp) connected to the community centre and 12.5 kilowatt peak (kWp) connected to the health centre.

Inverter units (one for the health centre and one for the community centre) have been selected to suit the photovoltaic requirement and shall be located within the main LV intake for community centre and store cupboard in the health centre. Details of the proposed invertors and meters are included in Appendix C. The proposed inverters are as Solis their 15kw three phase model 3P 4G.

The inverters shall be wired from the main panelboards with all outgoing ways installed to comply with the manufacturer's recommended cable arrangement. Separate inverter units to be installed to the health centre and community centre. Schematic diagram of distribution which indicates the PV connections and metering are included in appendix E.

A G59 relay and low carbon/kWh meter will be provided for each system to enable the systems to be interconnected to the grid installation.

3.0 PV Lifetime Maintenance Schedule

3.1 Solar Panel Maintenance Checklist

1. Check system output every month. This will be done by the users from the metering provided.

2. Watch out for any new shading. Shading is the downfall of PV, especially when modules are connected in a string and shading in one part limits the output of the whole. So keep an eye on any trees that have begun to overgrow since the system was installed and trim them back if necessary.

3. Clean once a year. See below for more detail.

4. Users to visually check every month to ensure birds are not nesting below the PV's.

5. Carry out electrical testing every 5 years.

6. PV Specialist to be instructed to carry out an inspection and electrical performance test every 5 years which would include any required maintenance to the PV panels and invertors.

7. A logbook of maintenance will be kept to record any maintenance on the system including inspections, cleaning or component replacements.

3.2 Instructions for Cleaning Solar Panels

Solar panels to be cleaned annually in late spring or summer, after the pollen has settled.

Choose a cooler day or start early in the morning, before the panels heat up.

First, clear off big debris like fallen leaves with a dry brush.

Lightly scrub the surface with warm or mildly soapy water to remove dust, dirt and droppings.

Rinse the panels off with the spray from a hose (not a pressure washer).

Dry with a window wiper or microfibre cloth.

The most important thing is to be as gentle as possible with the panels, since even tiny scratches or cracks can cause problems down the line.

3.3 Responsibility and Maintenance Access

A logbook of maintenance will be kept to record any maintenance on the system including inspections, cleaning or component replacements. Camden have a dedicated maintenance team and have committed to undertaking inspections, maintenance and updating the logbook as required.

A PV Specialist will be instructed to inspect the installation and carry out electrical performance tests every 5 years which would include any required maintenance to the PV panels and invertors.

The PV's are located on a flat roof which is accesses via an access hatch and pull down steps. A man safe system will be provided to provide safe access to the PV's for maintenance and cleaning. Roof plan indicating mansafe included in Appendix F.

APPENDIX A - PROPOSED PV PANELS

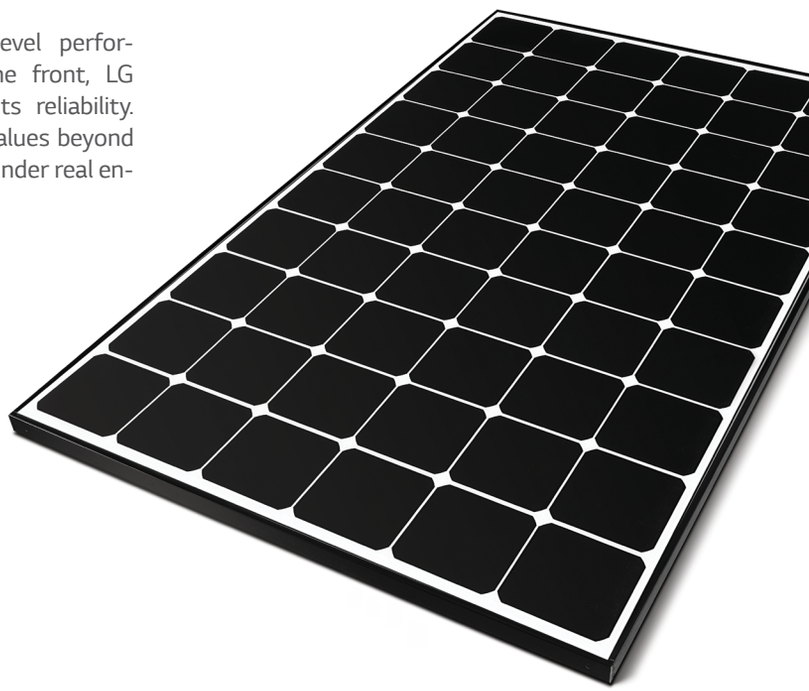
LG NeON® R

60

LG365Q1C-A5 | LG360Q1C-A5 | LG355Q1C-A5 | LG350Q1C-A5

365W | 360W | 355W | 350W

LG NeON® R is new powerful product with global top level performance. Applied new cell structure without electrodes on the front, LG NeON® R maximized the utilization of light and enhanced its reliability. LG NeON® R demonstrates LG's efforts to increase customer's values beyond efficiency. It features enhanced warranty, durability, performance under real environment, and aesthetic design suitable for roofs.



Feature

Enhanced Performance Warranty

LG NeON® R has an enhanced performance warranty.
After 25 years, LG NeON® R is guaranteed at least 88.4% of initial performance.

Extended Product Warranty

LG has extended the product warranty of the LG NeON® R to 25 years which is top level of the industry.

Aesthetic Roof

LG NeON® R has been designed with aesthetics in mind: no electrode on the front that makes new product more aesthetic. LG NeON® R can increase the value of a property with its modern design.

High Power Output

The LG NeON® R has been designed to significantly enhance its output making it efficient even in limited space.

Better Performance on a Sunny Day

LG NeON® R now performs better on a sunny days thanks to its improved temperature coefficient.

Outstanding Durability

With its newly reinforced frame design, LG NeON® R can endure a front load up to 6000 Pa, and a rear load up to 5400 Pa.

About LG Electronics

LG Electronics is a global big player, committed to expanding its operations with the solar market. The company first embarked on a solar energy source research program in 1985, supported by LG Group's vast experience in the semi-conductor, LCD, chemistry and materials industries. In 2010, LG Solar successfully released its first MonoX® series to the market, which is now available in 32 countries. The NeON® (previous. MonoX® NeON), NeON®2, NeON®2 BiFacial won the "Intersolar AWARD" in 2013, 2015 and 2016, which demonstrates LG Solar's lead, innovation and commitment to the industry.

LG NeON®R

LG365Q1C-A5 | LG360Q1C-A5 | LG355Q1C-A5 | LG350Q1C-A5

Mechanical Properties

Cells	6 x 10
Cell Vendor	LG
Cell Type	Monocrystalline / N-type
Cell Dimensions	161.7 x 161.7 mm / 6 inches
Dimensions (L x W x H)	1,700 x 1,016 x 40 mm
	66.93 x 40.0 x 1.57 in
Front Load	6,000Pa / 125 psf*
Rear Load	5,400Pa / 113 psf*
Weight	18.5 kg / 40.79 lb
Connector Type	MC4 (MC), 05-8 (Renhe)
Junction Box	IP68 with 3 Bypass Diodes
Cables	1,000 mm x 2 ea / 39.37 in x 2 ea
Glass	High Transmission Tempered Glass
Frame	Anodized Aluminium

* Please refer to the installation manual for the details

Certifications and Warranty

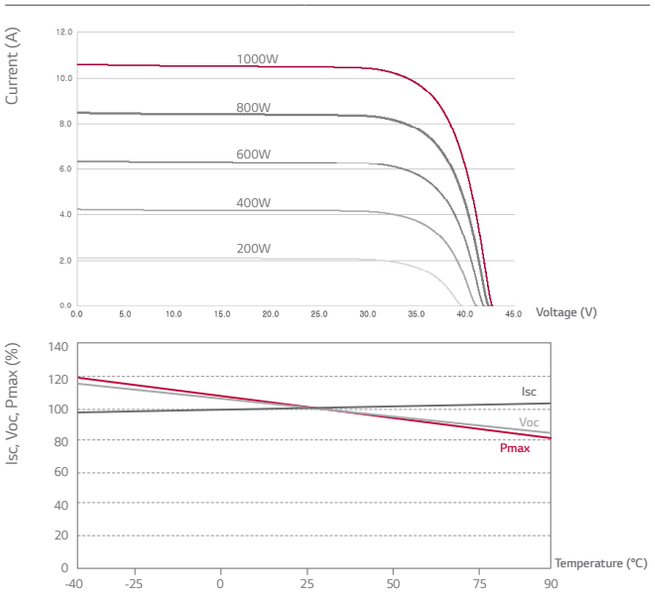
Certifications	IEC 61215, IEC 61730-1/-2
	UL 1703
	IEC 61701 (Salt mist corrosion test)
	IEC 62716 (Ammonia corrosion test)
	ISO 9001
Module Fire Performance	Type 1 (UL 1703)
Fire Rating	Class C(ULC/ORD C1703, IEC 61730)
Product Warranty	25 years
Output Warranty of Pmax	Linear Warranty*

* 1) First year : 98%, 2) After 1st year : 0.4%p annual degradation, 3) 25 years : 88.4%
* This warranty shall apply to all NeON®R modules manufactured after July 1, 2017

Temperature Characteristics

NOCT*	[°C]	44 ± 3
Pmax	[%/°C]	-0.300
Voc	[%/°C]	-0.240
Isc	[%/°C]	0.037

Characteristic Curves



Electrical Properties (STC*)

Model		LG365Q1C-A5	LG360Q1C-A5	LG355Q1C-A5	LG350Q1C-A5
Maximum Power (Pmax)	[W]	365	360	355	350
MPP Voltage (Vmpp)	[V]	36.7	36.5	36.3	36.1
MPP Current (Impp)	[A]	9.95	9.87	9.79	9.70
Open Circuit Voltage (Voc)	[V]	42.8	42.7	42.7	42.7
Short Circuit Current (Isc)	[A]	10.80	10.79	10.78	10.77
Module Efficiency	[%]	21.1	20.8	20.6	20.3
Operating Temperature	[°C]	-40 ~ +90			
Maximum System Voltage	[V]	1,000 (UL / IEC)			
Maximum Series Fuse Rating	[A]	20			
Power Tolerance	[%]	0 ~ +3			

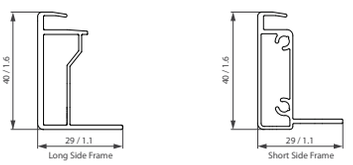
The nameplate power output is measured and determined by LG Electronics at its sole and absolute discretion.
* STC (Standard Test Condition): Irradiance 1000 W/m², Cell Temperature 25 °C, AM 1.5

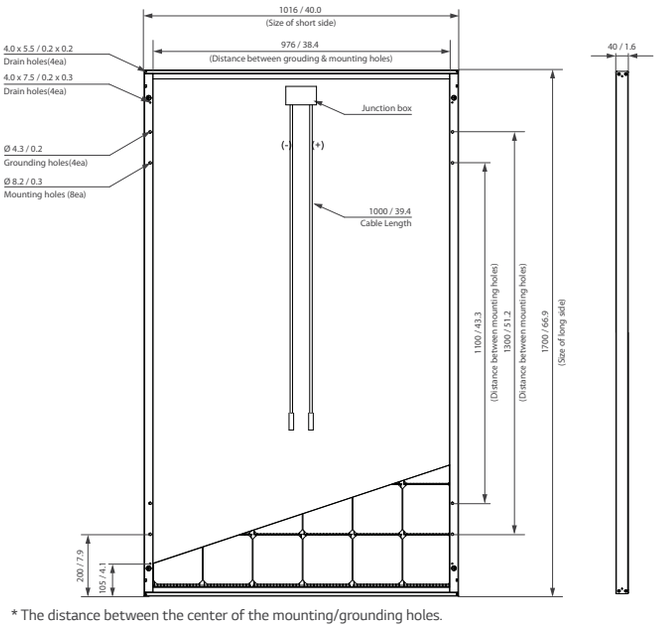
Electrical Properties (NOCT)

Model		LG365Q1C-A5	LG360Q1C-A5	LG355Q1C-A5	LG350Q1C-A5
Maximum Power (Pmax)	[W]	275	271	267	264
MPP Voltage (Vmpp)	[V]	36.6	36.4	36.2	36.0
MPP Current (Impp)	[A]	7.51	7.45	7.39	7.32
Open Circuit Voltage (Voc)	[V]	40.2	40.2	40.2	40.1
Short Circuit Current (Isc)	[A]	8.70	8.69	8.68	8.67

* NOCT (Nominal Operating Cell Temperature): Irradiance 800 W/m², ambient temperature 20 °C, wind speed 1 m/s

Dimensions (mm / inch)





* The distance between the center of the mounting/grounding holes.

LG Electronics Inc.
Solar Business Division
LG Twin Towers, 128 Yeoui-daero, Yeongdeungpo-gu, Seoul
07336, Korea

www.lg-solar.com

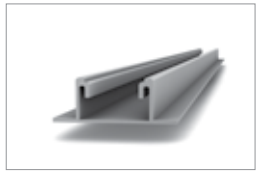
Product specifications are subject to change without notice.
DS-Q1-60-C-G-F-EN-80517

APPENDIX B – PROPOSED PV MOUNTING ARRANGEMENT

Mounting systems for solar technology

Slovenia
Installation: 150 kW | S-Dome System

Slovenia
Installation: 150 kW | S-Dome System



SERVICE-HOTLINE
+49 (0)7159 42059-0
www.k2-systems.com

Produktblatt S-Dome System | GB7 | 1014 | Subject to change

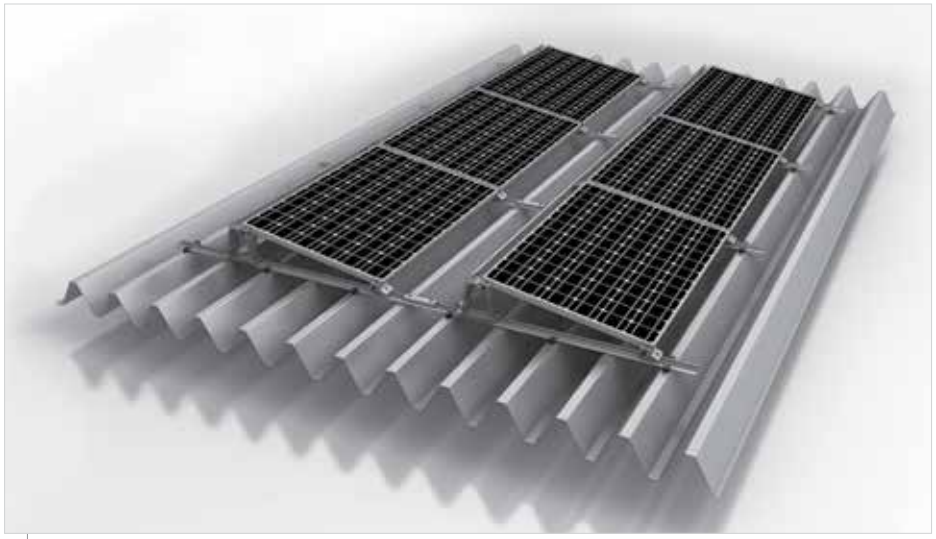
K2 SYSTEMS
FLAT ROOF SYSTEMS
S-DOME SYSTEM

S-DOME SYSTEM

- Ideal for roofs with low ballast potential and with or without a parapet
- Very easy to install, because of just a few simple K2 Dome system components with optimum accessibility
- Reduced assembly time
- Very attractive price-performance ratio
- Available at 10° elevation angle
- Aerodynamically optimised with wind breaker on reverse enabling minimal ballast; tested in a wind tunnel by leading structure aerodynamicists
- K2 SpeedRail as base
- K2 building protection mats, specially coated for secure and durable roof support on virtually all membrane roofs, K2 Scale or K2 Porter for simple and quick installation of ballast
- Static proven solution using the K2 Base Planning Software

Technical data	
Field of application	Flat roof to 5°
Roofing	Foil, trapezoidal and bitumen roof
PV modules	Module attachment by corner clamping, observing module manufacturer recommendations
Module orientation	Horizontal
System orientation	South-east to south-west
Material	Aluminium (EN AW-6063 T66)
Connecting elements	Stainless steel screw A2-70
Weight/m² module surface	without module, without ballast approx. ca. 4 kg
Roof connection	Laying with potential ballasting, no roof penetration
Static principles	Calculation principles in accordance with Eurocode 9 - dimensioning and construction of aluminium structures using wind tunnel tests
Load assumption in accordance with	DIN EN 1991 (Eurocode 1)
Systemkomponenten	K2 SpeedRail, K2 S-Dome, K2 Dome SD, End and Middle Clamp Sets, M K2, K2 Porter/ K2 Scale/ K2 Scale XL, Wind-breaker, K2 Solar building protection mat, K2 Allen bolt

Explosion drawing



K2 S-Dome System on Trapezoidal sheet

APPENDIX C - PROPOSED INVERTER AND METER

3P 4G

15kW

4G NEW

Solis 3P 4G Three Phase Inverter

- Solis 4G Three Phase Range
- 160V-850V MPPT voltage range-ultra low startup
- Dual MPPT design with precise MPPT algorithm
- THDi＜1.5%, low harmonic distortion against grid
- Over 98.7% Max.efficiency
- RS485, WiFi/LAN/GPRS (optional) interface
- Multiple protections levels
- WiFi monitoring available-iphone and android app available
- 5 years standard warranty, 20 years optional upgrade

Model:

Solis–3P15K–4G

Features:

THDi	IP65	Weight	AFCI	WiFi/GPRS	
<2%		22kg	Optional	Real time monitoring	Available on the iPhone App Store / Available on the iPhone App Store

Datasheet

Model	Solis-3P15K-4G
Energy Source	PV
Input Side(DC)	
Max. DC input power(kW)	18
Max. DC input voltage(V)	1000
Start-up voltage(V)	180
MPPT voltage range(V)	160-850
Max. input current per MPPT(A/B)	22A+22A
MPPT number/Strings per MPPT input	2 / A:2; B:2
Output Side (AC)	
Rated output power(kW)	15
Max. apparent output power(kVA)	16.5
Max. output power(kW)	16.5
Rated grid voltage(V_{LL})	400
Grid voltage range(V)	313-470
Rated grid frequency(Hz)	50/60
Operation phase	three
Rated grid output current(A)	21.7
Max. output current(A)	25.1
Power Factor (at rated output power)	0.8 leading ... 0.8 lagging
THDi (at rated output power)	<2%
DC injection current(mA)	<0.5%In
Grid frequency range(Hz)	47-52 or 57-62
Efficiency	
Max.efficiency	98.7%
EU efficiency	98.1%
MPPT efficiency	>99.5%
Protection	
DC reverse-polarity protection	Yes
Short circuit protection	Yes
Output over current protection	Yes
Output over voltage protection	Yes
Insulation resistance monitoring	Yes
Residual current detection	Yes
Surge protection	Yes
Islanding protection	Yes
Temperature protection	Yes
Integrated DC switch	Optional
General Data	
Dimensions(mm)	310W*563H*219D
Weight(kg)	22
Topology	Transformerless
Self consumption (night)	<1W(Night)
Operating ambient temperature range	-25~60℃
Ingress protection	IP65
Noise emission{typical}	<30 dBA
Cooling concept	Intelligent redundant fan-cooling
Max.operation altitude	4000m
Designed lifetime	>20 years
Grid connection standard	EN50438, G59/3, AS4777, VDE0126-1-1, IEC61727, VDE N4105
Relative humidity	0~100%
Safety/EMC standard	IEC62109-1/-2, AS3100
Features	
DC connection	MC-4 mateable
AC connection	IP67 rated plug
Display	LCD,2×20 Z.
Communication connections	4 pins RS485 connector
Warranty	5 years standard (extend to 20 years)

Data Sheet

2014 v3.0

SMARTRAIL X835-100

DIN Rail Multifunction Power Meter - 100A Direct Connected (MID Certified)

- MID B+D Certified
- Certificate Number 0120/SGS0151
- Class B (kWh) EC Directive 2004/22/EC
- Certified for Single & Three Phase
- Certified for Import / Export kWh

SMARTRAIL X835-100-MID

Multifunction Power Meter

The SMARTRAIL X835-100-MID is a new generation modern design power monitor that will measure and display electrical power quality parameters. It has been engineered to cover most applications (Single Phase and Three Phase networks / Built in Pulsed and RS485 Modbus / Import and Export kWh), replacing the need for several different models of this power meter.

As the demand for MID certified meters has increased, we have obtained annex B and D of the EC Directive 2004/22/EC. This power meter has been tested and certified for single or three phase networks and import and export active energy (kWh).

The SMARTRAIL X835-100-MID is produced to the highest quality and utilizes the latest microprocessor and technology. It has a blue backlit display and 16 different measuring parameters. This meter supports a maximum 100A Direct connection. Available with built in pulsed outputs and RS485 Modbus RTU it is fully compatible for integration with BMS and remote monitoring systems.

Parameters

- Phase to Phase Voltage
- Phase to Neutral voltage
- Frequency
- Voltage Total Harmonic Distortion (THD) Current
- Neutral Current (Calculated)
- Current Max Demand
- Current Total Harmonic (THD)
- kW,kVA &· kVAr
- Power Max Demand
- Power Factor
- Import kWh
- Export kWh
- Import kVarh
- Export kVArh
- Total kWh (Active Energy)
- Total kVarh (Reactive Energy)

Specifications

Measured Parameters

The unit can monitor and display the following parameters of a single phase two wire (1p2w), three phase three wire (3p3w) or three phase four wire (3p4w) system.

Voltage and Current

- Phase to neutral voltages 100 to 289V a.c. (not for 3p3w supplies).
- Voltages between phases 173 to 500V a.c. (3p supplies only).
- Percentage total voltage harmonic distortion (THD%) for each phase to N (not for 3p3w supplies).
- Percentage voltage THD% between phases (three phase supplies only).
- Current THD% for each phase

Power factor and Frequency and Max. Demand

- Frequency in Hz
- Instantaneous power:
- Power 0 to 3600 MW
- Reactive power 0 to 3600 MVAr
- Volt-amps 0 to 3600 MVA
- Maximum demanded power since last Demand reset Power factor
- Maximum neutral demand current, since the last Demand reset (for 3p4w supplies only)

Energy Measurements

Imported/Exported active energy	0 to 9999999.9 kWh
Imported/Exported reactive energy	0 to 9999999.9 kVArh
Total active energy	0 to 9999999.9 kWh
Total reactive energy	0 to 9999999.9 kVArh

Measured Inputs

Voltage inputs through 4-way fixed connector with 2.5mm² stranded wire capacity. single phase two wire(1p2w), three phase three wire(3p3w) or three phase four wire(3p4w) unbalanced. Line frequency measured from L1 voltage or L3 voltage.

Nominal Voltage Input	(Ph+N) 100 to 289V (Ph+Ph) 173 to-500V
Max Continuous Voltage	120% of nominal
Nominal Input Current	10(100)A Direct Connected
Max Continuous Current	120% of nominal
Nominal Input Current Burden	0.5VA
Frequency	45-65Hz

Accuracy

Voltage	0·5% of range maximum
Current	0·5% of nominal
Frequency	0·2% of mid-frequency
Power factor	1% of unity (0.01)
Active power (W)	±1% of range maximum
Reactive power (VAr)	±1% of range maximum
Apparent power (VA)	±1% of range maximum
Active energy (Wh)	Class 1 IEC 62053-21
Reactive energy (VARh)	±1% of range maximum
Total harmonic distortion	1% up to 31st harmonic
Response time to step input	1s, typical, to >99% of final reading, at 50 Hz.

Auxiliary Supply

This meter is self-supplied through internal links.

Interfaces for External Monitoring

Three interfaces are provided:

- RS485 communication channel that can be programmed for Modbus RTU protocol
- Relay output indicating real-time measured energy.(configurable)
- Pulse output 3200imp/kWh (not configurable)
- Also available as Mbus (SMARTRAIL X835-100-MID-MBUS)

The Modbus configuration (baud rate etc.) and the pulse relay output assignments (kW/kVArh, import/export etc.) are configured through the set-up screens.

Pulse Output

Opto-coupler with potential free SPST-NO Contact (Contact range 5-27VDC / Max current input: Imin 2mA and Imax 27mA DC).
The pulse output can be set to generate pulses to represent kWh or kVArh.

Rate can be set to generate 1 pulse per:
0.0025 = 2.5 Wh/VArh
0.01 = 10 Wh/VArh
0.1 = 100 Wh/VArh
1 = 1 kWh/kVArh
10 = 10 kWh/kVArh
100 = 100 kWh/kVArh

Pulse width 200/100/60 ms.

RS485 Output for Modbus RTU

For Modbus RTU, the following RS485 communication parameters can be configured from the set-up menu:

Baud rate 2400, 4800, 9600, 19200, 38400

Parity none (default) / odd / even

Stop bits 1 or 2

RS485 network address 3-digit number, 1 to 247

Modbus™ Word order Hi/Lo byte order is set automatically to normal or reverse. It cannot be configured from the set-up menu.

Reference Conditions of Influence Quantities

Influence Quantities are variables that affect measurement errors to a minor degree. Accuracy is verified under nominal value (within the specified tolerance) of these conditions.

Ambient temperature	23°C ±1°C
Input waveform	50 or 60Hz ±2%
Input waveform	Sinusoidal (distortion factor < 0·005)
Auxiliary supply voltage	Nominal ±1%
Auxiliary supply frequency	Nominal ±1%
Auxiliary supply waveform (if AC)	Sinusoidal (distortion factor < 0·05)
Magnetic field of external origin	Terrestrial flux

Environment

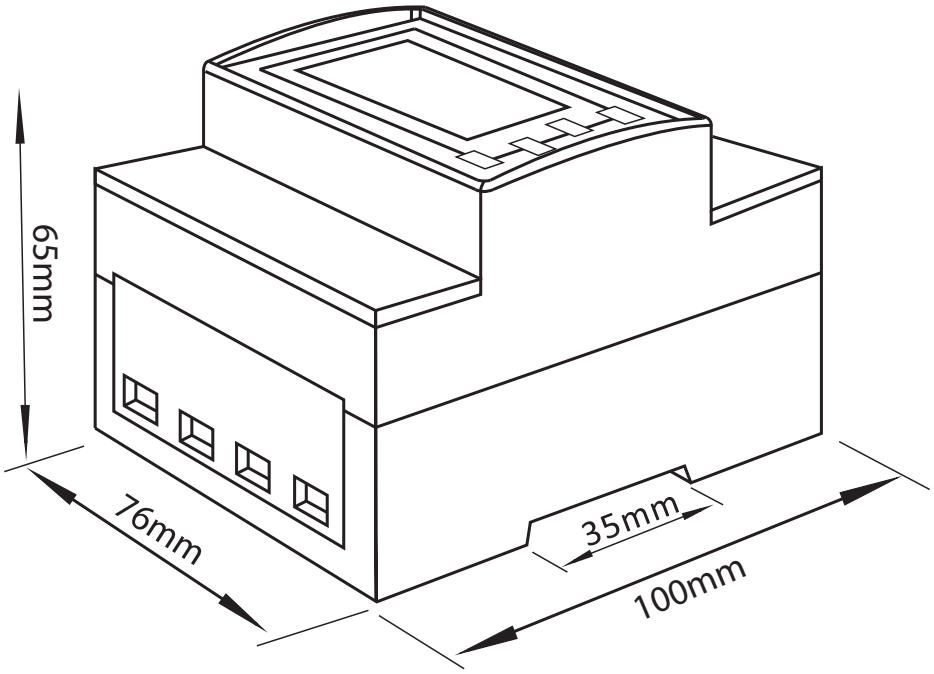
Operating temperature	-25°C to +55°C*
Storage temperature	-40°C to +70°C*
Relative humidity	0 to 95%, non-condensing
Altitude	Up to 3000m
Warm up time	1 minute
Vibration	10Hz to 50Hz, IEC 60068-2-6, 2g
Shock	30g in 3 planes

*Maximum operating and storage temperatures are in the context of typical daily and seasonal variation.

Mechanics

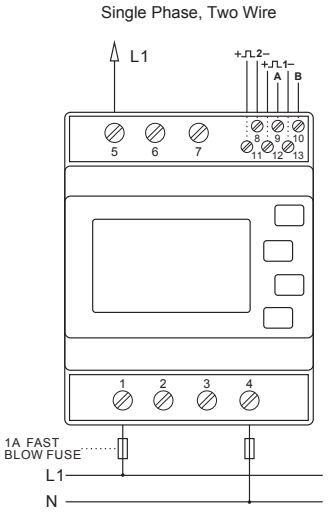
DIN rail dimensions	76 x 100 mm (WxH) per DIN 43880
Mounting	DIN rail (DIN 43880)
Sealing	IP51 indoor
Material	Self-extinguishing UL 94 V-0

Dimensions

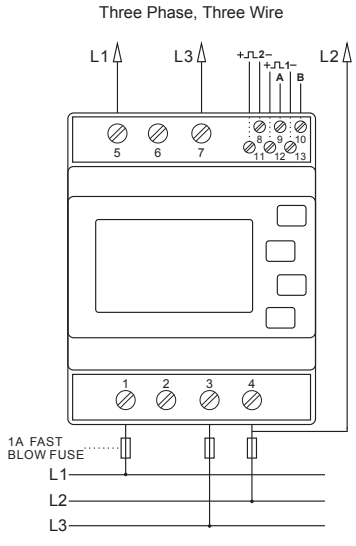


Installation

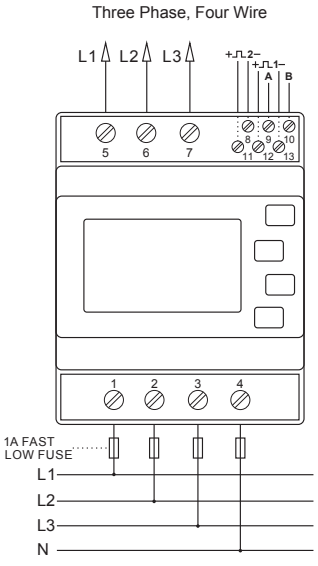
Single phase two wires



Three phase three wires



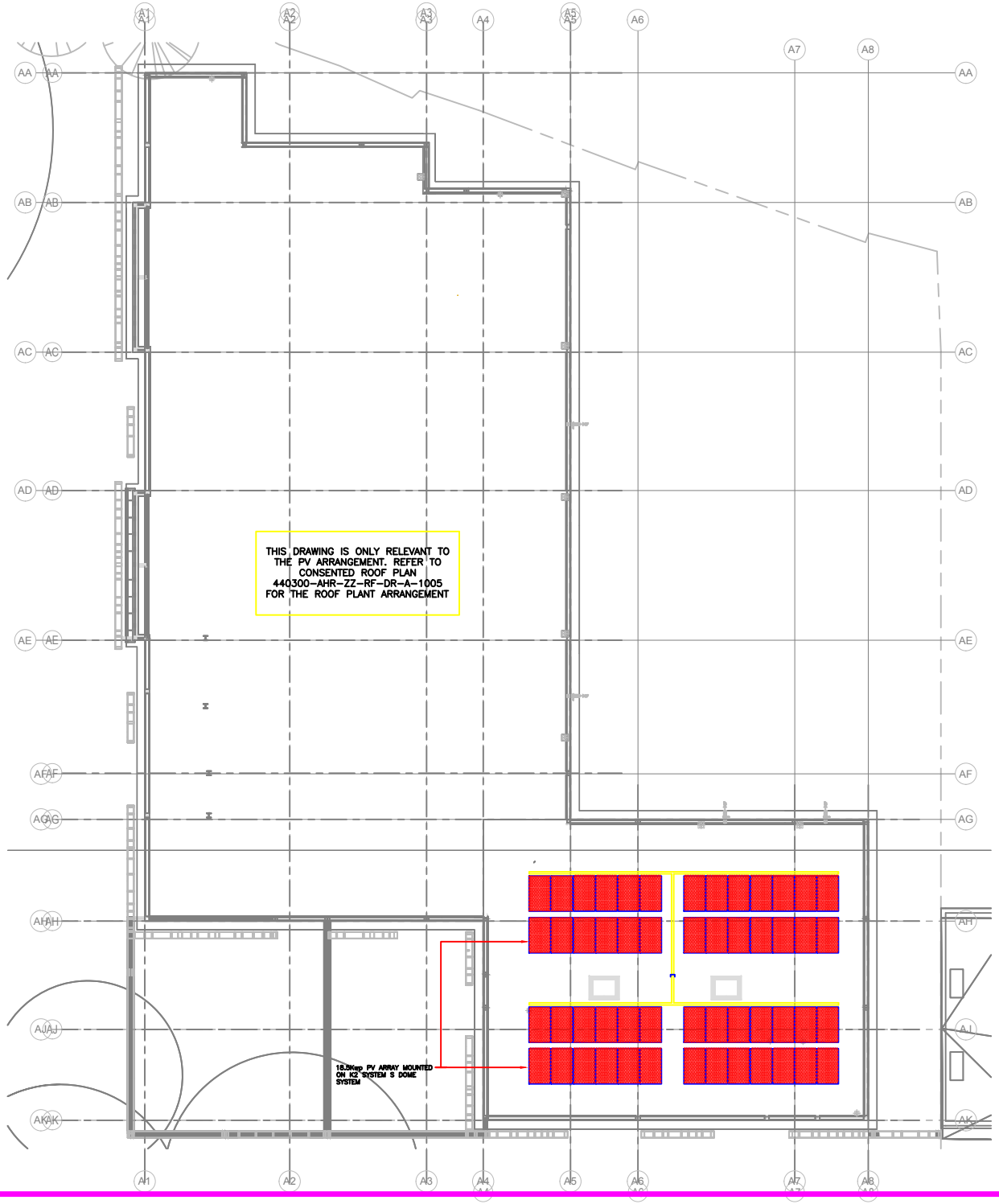
Three phase four wires



Specifications are subject to change without notice.

CE RoHS MID

APPENDIX D – PROPOSED PV LAYOUT



Notes:

MODULE LENGTH 1700mm
MODULE WIDTH 1016mm
PV PEAK OUTPUT 18.5 kWp
MODULE TYPE LG NEON R LG360Q1C-A5

Rev	Description	Date
P02	PV POWER TYPE CHANGED	09.04.21
P01	FOR PLANNING	16.03.21

Norman Bromley
Partnership LLP
Consulting Engineers
Bridge House,
97-101 High Street,
Tonbridge,
Kent, TN9 1DR
Tel.No.(01732)773737
tbmail@normanbromley.co.uk

CLIENT
WATES

PROJECT
Abbey Road – Phase 2

TITLE
Roof Plan PV Layout

Xref

DRAWN BY	CHECKED BY	DATE
PK	NR	16/03/21

SCALE (@A1)	PROJECT NUMBER
1:50	1383

DRAWING NUMBER	REV
EBS-1383/SK1	P02

APPENDIX E - ELECTRICAL SCHEMATIC

NOTE
TOTAL PV CAPACITY TO COMMUNITY CENTRE = 6.0kWp

32A 4 POLE ISOLATOR | G59 RELAY | Kwh METER (TOTAL GENERATION METER) | 32A 4 POLE ISOLATOR AC | INVERTERS (WITH BUILT IN SURGE PROTECTION) | DC ISOLATOR DOUBLE POLE | PHOTOVOLTAIC PANELS

WORKS BY SPECIALIST INSTALLER

ALL WORKS DOWNSTREAM OF THE MAIN POWER ISOLATOR BY SPECIALIST PV INSTALLER – REFER TO SPECIALIST DRAWINGS

NOTE
TOTAL PV CAPACITY TO HEALTH CENTRE = 12.5kWp

PHOTOVOLTAIC PANELS | DC ISOLATOR DOUBLE POLE | INVERTERS (WITH BUILT IN SURGE PROTECTION) | 32A 4 POLE ISOLATOR AC | Kwh METER (TOTAL GENERATION METER) | G59 RELAY | 32A 4 POLE ISOLATOR

WORKS BY SPECIALIST INSTALLER

ALL WORKS DOWNSTREAM OF THE MAIN POWER ISOLATOR BY SPECIALIST PV INSTALLER – REFER TO SPECIALIST DRAWINGS

HEALTH CENTRE

HEATING ASHP 63A 4P+E
HEATING ASHP 63A 4P+E
AIR HANDLING UNIT ASHP 160A 4P+E
COMMS ROOM A/C 20A 4P+E

COMMUNITY CENTRE ASHP'S
63A 4P+E
63A 4P+E

ROOF

50mm² 4C XLPE/SWA/LSF
4mm² 4C XLPE/SWA/LSF

FIRE ALARM PANEL

kWh METERS TO BE INCORPORATED WITHIN THE PANELBOARD

16mm² 3C XLPE/SWA/LSF
10mm² 4C XLPE/SWA/LSF
2.5mm² FP400 CABLE

TYPE 1 SPD

18 WAY TPN MCCB
400A PANEL BOARD HC

TROLLY LIFT 32A TPN
PASSENGER LIFT 20A TPN

6.0mm² –4C
4.0mm² –4C
XLPE/SWA/LSF CABLE ON TRAY

LIGHTING | ROOF LIGHTING | LIFT LIGHTING
18 WAY SPN MCB LIGHTING DISTRIBUTION BOARD HL1

LIGHTING
14 WAY SPN MCB LIGHTING DISTRIBUTION BOARD HL2

LIGHTING
14 WAY SPN MCB LIGHTING DISTRIBUTION BOARD HL3

2.5mm² 2C+E
1.5mm² 2C+E
MULTICORE LSF/LSF CABLE
1.5mm² – 3C XLPE/SWA/LSF CABLE

16mm² 3C XLPE/SWA/LSF CABLE ON TRAY

COMMS CABINET
6 WAY MCB COMMS SPN DIST. BOARD

RING MAIN | RADIAL
27 WAY SPN MCB POWER DISTRIBUTION BOARD HP1

RING MAIN | RADIAL | WATER BOILER
18 WAY SPN MCB POWER DISTRIBUTION BOARD HP2

RING MAIN | RADIAL | WATER BOILER
27 WAY SPN MCB POWER DISTRIBUTION BOARD HP3

4.0mm² 2C+E
2x2.5mm² 2C+E
2.5mm² 2C+E
2C+E MULTICORE LSF/LSF CABLE

10mm² 4C XLPE/SWA/LSF CABLE ON TRAY

16mm² 4C XLPE/SWA/LSF CABLE ON TRAY

25mm² 3C XLPE/SWA/LSF CABLE ON TRAY
95mm² 3C XLPE/SWA/LSF CABLE ON TRAY

LEVEL 01 – HEALTH CENTRE

COMMUNITY CENTRE MECHANICAL CONTROL PANEL
FIRE ALARM PANEL
HEALTH CENTRE MECHANICAL CONTROL PANEL

185mm² 4C XLPE/SWA/LSF CABLE ON TRAY + 95mm² G/Y CPC
2.5mm² FP400 CABLE
16mm² 4C XLPE/SWA/LSF CABLE
kWh METERS TO BE INCORPORATED WITHIN THE PANELBOARD

315A TPN FUSE/ SWITCH
LKP76 CUT-OUT AND METER
LKP76 CUT-OUT AND METER

TYPE 1 SPD
12 WAY TPN MCCB PANEL BOARD CC

5x95mm² XLPE/LSF SC CABLES IN TRUNKING

LOCATED IN MAIN INTAKE

EARTH BAR | TEST LINK
PV PANELS
LIGHTING PROTECTION
INCOMING WATER
STRUCTURAL STEELWORK
DIST BOARD HCM
DIST BOARD HL3
DIST BOARD HL2
DIST BOARD HL1
DIST BOARD HP3
DIST BOARD HP2
DIST BOARD HP1
FUNCTIONAL EARTH
MAIN EARTH

TEST LINK | EARTH BAR
PV PANELS
LIGHTING PROTECTION
INCOMING WATER
STRUCTURAL STEELWORK
DIST BOARD CM
DIST BOARD CL3
DIST BOARD CL2
DIST BOARD CL1
DIST BOARD CP3
DIST BOARD CP2
DIST BOARD CP1

LIGHTING | EXT. LIGHTING EXTERNAL LIGHTING (CONTACTOR CONTROLLED)
14 WAY SPN MCB LIGHTING DISTRIBUTION BOARD CL1

LIGHTING
14 WAY SPN MCB LIGHTING DISTRIBUTION BOARD CL2

LIGHTING | EXT. LIGHTING EXTERNAL LIGHTING (CONTACTOR CONTROLLED)
14 WAY SPN MCB LIGHTING DISTRIBUTION BOARD CL3

2.5mm² 2C+E MULTICORE LSF/LSF CABLE
1.5mm² 2C+E MULTICORE LSF/LSF CABLE ON TRAY. INSTALL IN CONDUIT TO DROPS

16mm² 3C XLPE/SWA/LSF CABLE ON TRAY
25mm² 3C XLPE/SWA/LSF CABLE ON TRAY

RING MAIN | MVHR SPURS | SMOKE DAMPERS | A/C OUTDOOR UNIT
14 WAY SPN MCB POWER DISTRIBUTION BOARD CP1

RING MAIN | HOB | OVEN | DISHWASHER | EXT SOCKET | ACCESS CONTROL | COMMS CABINET | ASHP | DISABLED TOILET ALARM | MVHR SPURS | SMOKE DAMPERS | A/C OUTDOOR UNIT
27 WAY SPN MCB POWER DISTRIBUTION BOARD CP2

RING MAIN | MVHR SPURS | ACCESS CONTROL | SMOKE DAMPERS | A/C OUTDOOR UNITS | SPURS
18 WAY SPN MCB POWER DISTRIBUTION BOARD CP3

2.5mm² FP400 CABLE
2.5mm² 3C MULTICORE XLPE/SWA/LSF CABLE
4.0mm² 3C MULTICORE XLPE/SWA/LSF CABLE
6.0mm² –2C+E
4.0mm² –2C+E
2x2.5mm² –2C+E
2.5mm² –2C+E
MULTICORE LSF/LSF CABLE ON TRAY. INSTALL IN CONDUIT TO DROPS

16mm² 3C XLPE/SWA/LSF CABLE ON TRAY
50mm² 3C XLPE/SWA/LSF CABLE ON TRAY

LEVEL 00 – COMMUNITY CENTRE

Notes

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL OTHER ENGINEERING AND ARCHITECTURAL DRAWINGS.
2. EXACT POSITIONS AND MOUNTING HEIGHTS OF ALL EQUIPMENT TO BE AGREED WITH THE ARCHITECT BEFORE THE INSTALLATION IS COMMENCED.

Rev	Date	Notes	Dwn	Chk
C02	09.04.21	PV REVISED	CH	MR
C01	16.02.21	RCBO'S CHANGED TO MCB TO LIGHTING CIRCUITS, AND 1st FLOOR WIRING CHANGED TO T+E	DP	MR
P04	27.08.20	STAGE 4 ISSUE	PK	MR
P03	04.08.20	STAGE 4 PRELIMINARY ISSUE	PK	MR
P02	05.06.20	COMMENTS INCLUDED.	JP	MR
P01	20.05.20	PRELIMINARY ISSUE	DP	MR

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Email: mail@normanbromley.co.uk

Client: WATES

Project: ABBEY ROAD - PHASE 2

Service: Electrical Engineering

Title: SCHEMATIC DIAGRAM OF ELECTRICAL DISTRIBUTION

Scale	Date	Drawn	Approved
N.T.S@A1	MAY'20	DP	MR

Drawing No.	Rev.
440300-NBP-B1-ZZ-SC-E-6101	C02

APPENDIX F – ROOF PLAN

SIMS

BUILT UP ROOF END	BUILT UP ROOF INTERMEDIATE	BUILT UP ROOF CORNER	BUILT UP 'T' INTERMEDIATE	BUILT UP ROOF MULTI END
				
QTY: 7 GRB 221	QTY: 10 GRB 222	QTY: 8 GRB 224	QTY: 1 GRB 225	QTY: 2 GRB 227

No. of Systems: 6

Total Length of Safety Line: 190LM

Payload

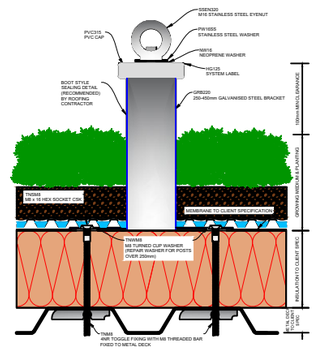
SAYFA
WORKING AT HEIGHT

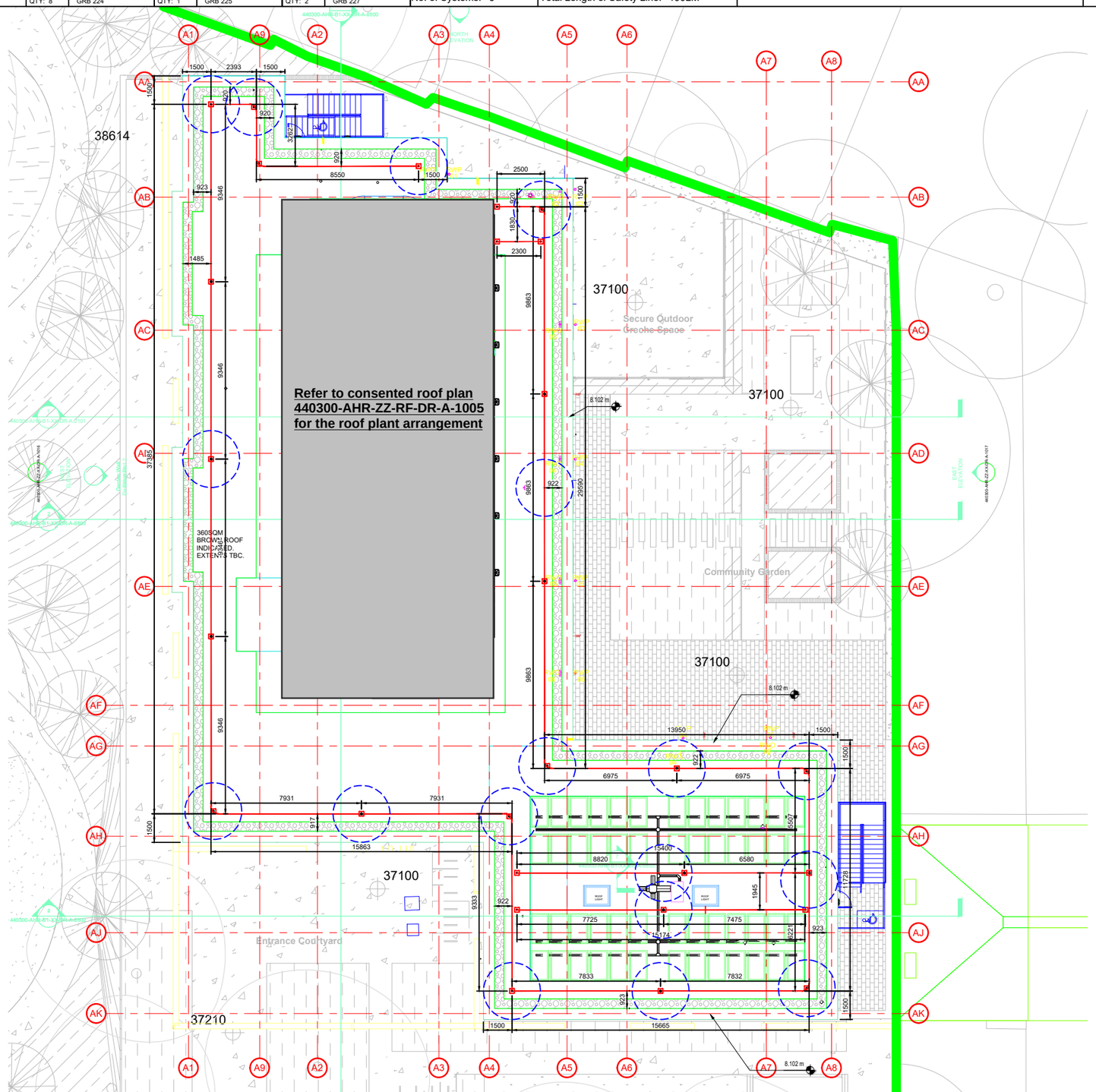
JUBILEE HOUSE
UNIT 3, GELDERS HALL ROAD
SHEPSHED LEICESTERSHIRE
LE12 9NH
TEL: 01509 502 155
WWW.SAYFASYSTEMS.COM

Drawing Legend:

A = ACCESS POINT | = ABSEIL POST | = TOP FIX POST
= ACCESS STROP | = BUILT UP POST | = DAVIT BASE
BUILT UP POST STOP/START | = TOP FIX POST STOP/START

TYPICAL FIXING DETAILS: 450mm Built Up Roof Post





AirDeck

This drawing was created in conjunction with: AHR London Limited
Drawing No: 440300-AHR-ZZ-RF-DR-A-1005

SYSTEM DETAILS

- Line to be located as indicated on the roof plan.
- Line primarily used to gain access to exposed roof edges.
- Incorporates Aviator™ units and all Sayfa Systems components required.
- Fixing details for Aviator™ units as indicated within layout.
- System to be used in conjunction with 1.0m restraining lanyard unless stated otherwise.
- Structural Engineer to confirm substructure can withstand LSD (Limit State Design) 12-15KN. SLD (Serviceable Limit Design) 4-6KN of post/davit.
- Enables two users simultaneously at any one time.
- Corner brackets can be offset up to 200mm from the rest of the safety line.

Aviator

REV	DESCRIPTION	BY	DATE
P1	Issued for comments	C.S	09/04/2021

STATUS:
S4 - Issued For Approval

CLIENT:
Wates Construction

PROJECT TITLE:
Abbey Road Phase 2

DRAWING TITLE:
Aviator™ Fall Restraint Systems - GA Roof Plan

Released By:

- S4 Issue Status not to be given without digital or wet signature by an approved officer of the company covered under the insurance.
- Project not to proceed without Status A from the Client.

Scale @ A3:	Date:	Drawn By:	Checked By:
1:250	09/04/2021	C.S	J.S

Drawing No:	Status:	Revision:
31303-SSUK-ZZ-RF-DR-X-0001	S4	P1