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Planning application regarding fixture of condenser units (heat inverters) on the exterior walls of building, Sparkenhoe Business Centre Southfield Road Hinckley LE10 1UB.

Design & Access Statement:

This brief will deal only with the design aspects as there are no access issues, the permission only relates to the fitting of air cooled heat exchanger inverter pump units.

Sparkenhoe Business Centre Ltd. have evaluated it's heating requirements for the 'old factory' area along Southfield Road (marked as area ' A' on the appendix 'D' land registry map) and followed advice from its Contractors (TEAMS Leicester) that the most energy efficient method was to use heat pump systems.

This necessitated designing a system that supplied sufficient heat and kept the external interference to the building to a minimum whilst ensuring that the system worked to its best efficiency.

Following a number of consultations and draft plans for the overall configurations with some 'draft' fittings the final position was that there are five (5) in total units and their positions and sizes are described below. The units are part of Sparkenhoe Business Centre Ltd ongoing programme of changing to eco friendly heating/cooling systems on the Southfield road site as a whole.

Front of building: (photographs 1 & 2 refers. One condensing unit approx size: 1.5 M x 0.806 m x 0.690 m. Type Synchro (fixed Speed) UU72 UYC. For technical details of unit (inc sound levels) refer to 'page 32' attached under appendix 'C'.

Fitment to wall of building as shown on photographs (appendix 'A' photo's 1 & 2) and site plan (unit ref. A) above paint store, small building to front of factory building Southfield Road. This location has been chosen for a number of reasons they are as follows:

(a) **Technical:** The pipe runs to the units (internal to external) can only be a maximum of 50 metres and the shorter the runs the more efficient the units will operate. This position satisfies those requirements. Also the condenser draws air from the bottom of the unit and blows it through the top this position on the building will allow an unrestricted air flow through the condenser unit. (From bottom to top) It also needs to ensure that nothing can be deposited either in the bottom or the top which could cause considerable harm to the unit and is potentially hazardous to anyone tampering with the unit.

(b) **Safety reasons:** The air being expelled from the top of the unit will be freezing and needs to be kept away from people, passing by or in close proximity (as noted above). It is not a hazard as such but it is sensible to keep them clear of people and especially children. In this position it is also easier to fix, maintain and ensure that it cannot be 'wrenched' off the wall.

(c) **Vandalism:** This leads into the vandalism aspects, since we have had sporadic vandalism attacks on the front aspects and by keeping the unit higher up and away from easy access it is reasoned to be safer. Being at the roof level it is less likely to pose a 'challenge' for vandalism incidents. The refrigerant pipes also (although short) need to be protected from vandalism and at the height they will be, should be safer than at a lower position. However it is clear that the pipe work and electrics need to be kept as far from the street as is possible.

Again these are under normal circumstances perfectly safe, but if tampered with could be

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2 0 MAR 2009
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hazardous to health, three phase electrical supply to unit and ice formation inside the unit which is defrosted and then expelled as water.

(d) **Aesthetics:** By considering the site generally and the position suggested it is argued that by placing the unit next to the window (toilets) and the rising soil pipe, (see appendix 'A' photo's 1 & 2) the impact of this addition is minimal. Other positions were considered and discussed with Louise Forman on her recent visit. One such considered was between the front aspect windows, but there are technical reasons (as above) with this in that it causes problems with the pipe run lengths and also cold air discharge into the windows. Another area was next to the small building at lower level but the discharge of cold air would again either blow into the window above or the building ventilation panel to one side and would be vulnerable to tampering (vandalism). We did discuss the point that the unit could be painted any colour to blend in with the factory walls/doors etc.

(e) **Noise levels:** The noise from the unit is purely a fan moving air through the unit when operating. It will only run during the winter as this is designed for heating only. Noise levels at maximum load and in free field conditions is approx 58 dba (see technical data at appendix 'C'). Considering the road noise levels here generally and the position away from residential properties there should not be any noise problems.

Summary:

Although a number of different placings were considered, (roof not possible as unit too high and this end the roof is the slate and Georgian glass, between windows, technical considerations with pipe runs, vandalism and air discharge. As the unit requires unhindered air flow through it (from the bottom to the top) the position is felt to be acceptable for that. The unit chosen is the smallest which would allow proper operation of the heating system.

Photographs: Numbered 1 & 2. Marked as unit ref 'A' on the site plan.

Position on building: Appendix 'B & D' refers.

Units to the Rear of Building: There are four condensing units. Sizes are 1 x 1.3 m x .0970 m x 0.370 m and three x 0.970 m x 0.845 m x 0.370 m. Type Mitsubishi FDC140VS (3) and Mitsubishi FDC200VS (1) . For technical details of units (inc sound levels) refer to 'page 14' attached under appendix 'C'.

Of these units one is to be fitted at high level in the external rear corridor (Mitsubishi FDC200VS, refer to photo's and site plan) and three (small units, Mitsubishi FDC140VS) on the roof attached to the sloped bricked northern lights/slate area. (see photo's and technical specs under appendix 'C')

These locations have been chosen again, for a number of reasons:

(a) Technical: Again pipe runs and keeping them as short as possible for the efficiency etc of the system. They cannot be fitted to the roof immediately above the 'draft' fit area as it is the sloped / slate glass roof. As these units differ in the air flow requirements (these blow through the unit back to front) they need to be in a free air position. Therefore the roof position is assessed as best fit on that perspective too.

(b) Security/Fire Safety: it was originally intended to fit all of the units in this 'rear' corridor (see site plan and photo's) but it is clear from the 'draft' fit that they obstruct this rear

(b) Security/Fire Safety: it was originally intended to fit all of the units in this 'rear' corridor (see site plan and photo's) but it is clear from the 'draft' fit that they obstruct this rear passageway which is a designated Fire Escape route from the far end of the factory building. One unit will therefore have to be fitted at 'high' level, (see photo) and is to allow easy access for the fire escape route and have head height clearance too. It cannot be fitted to the roof alongside the smaller units due to HS&E issues for lifting it onto the roof (insufficient space to allow adequate craneage/lifting to access the roof and also there is inadequate siting on the roof to mount the unit onto. The three smaller units have been accommodated reasonably onto the roof area and bolted to the wall of the northern lights apex side of the roof (see photo's). This allows the short pipe runs (technical requirements) and ensures that the units are well out the way of being tampered with/vandalised at a lower level.

(c) **Aesthetics:** It is evident that the roof mounting is unlikely to be sighted by the flats (see photo's) and as the wall height is well above the neighbours property it is unlikely that they will be overlooking them. It is therefore not expected that any of the neighbours will be affected by these units as the positioning on the roof is far enough back and at a height that would hide them from direct view.

The one unit that was a problem is the larger Mitsubishi unit which can be viewed on photo number 7. This was lower mounted in a 'draft' position but impeded the access along the Fire Exit. This unit had therefore had to be mounted higher up this wall so that it did not obstruct the Fire Access and would be just below the edge of the coping at the flat roof wall height. At this level it will be obscured by the trees already in existence and the wall/fencing that edges the boundary of the site to the neighbours. (Photo's 7 & 8) In these photo's the unit can be seen in its final position and is behind the wall partially obscured by it, also the trees/shrubs. As can be seen this will ensure that it is above head height but low enough to be largely obscured by the fence & wall along the passageway and the existing tree line.

(d) **Noise Levels:** It is not anticipated that noise will be an issue as the roof mounted units are well out of the way and the one large unit at high level on the wall is partially obscured by trees/shrubs and the boundary wall. By reference to the technical specs the sound levels for the units are: FDC200VS (Larger unit) has a sound level of 57dB(A) and the smaller units FDC140VS have a sound level of 51 dB(A) each.

It should be noted that of the units being fitted all will be used during the winter months for the heating of the factory building but that only the roof mounted ones may be used in summer for use as a/c cooling.

Appendices attached:

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Appendix 'A'

Photo's:

(a) Numbered 1 & 2. Southfield Road front mounting unit.
(b) Numbered 3 & 4 Roof (north side of building)
(c) Numbered 5 Large unit Passageway (North side of building) Unit at high level.

Appendix 'B' Site Plan of showing positions of units.

Appendix 'C' Technical specifications: (i) Synchro LG Unit type UU72 UYC (1 unit) (Front of building, photo 1 & 2) (PAGE 32)

(ii) Mitsubishi FDC 140VS (3 units) (Roof mounted) (photos' 3 & 4) (PAGE 14)

(iii) Mitsubishi FDC200VS (1 unit) (High level wall mounted, rear of building) (photo 5) (PAGE 14)

Appendix 'D' Land Registry outline of the site. (Dots show approx position of all units)

Appendix 'E' General dimensions & fitment schedule.

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Appendix 'A' Photo's

Syncro Unit on Paint Store Southfield Road side of Building.

1.) Showing height of unit and position.
2.) Street scene looking towards the outbuilding general sizing and proximity to flats.

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Roof position of smaller units. (Mitsubishi unit ref FDC140VN x 3 off)

3.) View along side of the building (north) boundary with Springfield Road neighbour. Vertical line showing where the roof photo's were taken.

4.) Hand drawn position showing the position and approximate height of the three units on the roof.

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High Position on wall north side of building. (Mitsubishi unit ref FDC200VS)

5.) Position of 'Large' unit on north wall at approx roof line level.

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Appendix 'B' Site Plan of showing positions of units.



Appendix 'C' Technical specifications: (i) Synchro LG Unit type UU72 UYC (1 unit) (Front of building, photo 1 & 2)

(ii) Mitsubishi FDC 140VS (3 units) (Roof mounted) (photos' 3 & 4)

(iii) Mitsubishi FDC200VS (1 unit) (High level wall mounted, rear of building) (photo 5)

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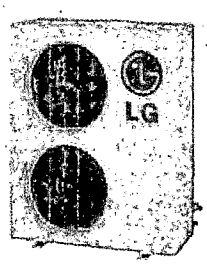
60724 LG Catalogue Spring07 23/3/07 10:13 am Page 32

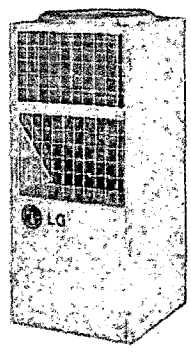
synchro (fixed speed)

UU48 / UU72 / UU100

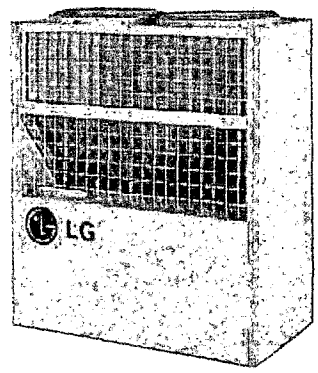
heat pump



(UU48)



(UU72)



(UU100)

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Specification

Model	Indoor Unit / Outdoor Unit		UU48.UHC	UU72.UYC	UU100.UWC
Nominal Capacity	Cooling	kW	14.1	*	*
Capacity (UK)	Cooling	kW	12.4	*	*
Nominal Capacity (T1)	Heating	kW	15.5	*	*
Power Supply to Unit		V/Phase/Hz	415/3/50	415/3/50	415/3/50
Power supply to			Outdoor	Outdoor	Outdoor
Inter connecting Cables cores and rating		No. Amps	4 * 5A	4 * 5A	4 * 5A
Running Current	Cooling	Amps	12.7	14.7	20
	Heating	Amps	11.7	14.4	19.7
Power Input	Cooling	kW	5.8	*	*
	Heating	kW	5.5	*	*
Start Current	Cooling	Amps	42		
	Heating	Amps	42		
Circuit Breaker		Amps	20	32	50
T1 EER	Cool	(W/W)	2.4	*	*
T1 COP	Heat	(W/W)	2.8	*	*
ECA compliant			n	n	n
Air Circulation (High Speed)	Outdoor	(m3/min)	106	90	185
Sound Levels (High Speed)	Outdoor	dB(A) +/-3 (at 1.0m)	57	58	60
Outdoor Units	WxHxD	(mm)	900 x 1165 x 370	806x1507x690	1280x1555x690
Outdoor Units		(Kg)	105	150	299
Liquid		(inch)	3/8	3/8	1/2
Suction		(inch)	3/4	1	1
Maximum Elevation		(m)	30	30	30
Max. Distance between In & Out		(m)	50	110	110
Factory charge		(Kg)	4.2	7.1	7.8
Charged for — m		(m)	30	*	*
Additional g/m		(g/m)	70	*	*

T1 Condition: Cooling - indoor 27Cwb, 19Cdb; outdoor 35Cdb
Heating - indoor 20Cdb: outdoor 7Cdb, 6Cwb
UK Condition: Cooling - indoor 23Cdb, 16Cwb; outdoor 30Cdb

Note: Due to our policy of innovation some specifications may be changed without notification.

■SPECIFICATIONS

*Not available in 60Hz

Set model name				★FDU71VNV	★FDU100VNV	★FDU125VNV	★FDU140VNV	★FDU100VSV	★FDU125VSV	★FDU140VSV
Indoor name				FDU71V	FDU100V	FDU125V	FDU140V	FDU100V	FDU125V	FDU140V
Outdoor name				FDC71VN	FDC100VN	FDC125VN	FDC140VN	FDC100VS	FDC125VS	FDC140VS
Power source				1Phase 220-240V 50Hz				3phase,380-415V 50Hz		
Type										
Nominal cooling capacity (Min~Max)	ISO-T1(JIS)		kW	7.1 (3.2~8.0)	10.0 (4.0~11.2)	12.5 (5.0~14.0)	14.0 (5.0~16.0)	10.0 (4.0~11.2)	12.5 (5.0~14.0)	14.0 (5.0~16.0)
Nominal heating capacity (Min~Max)	ISO-T1(JIS)		kW	8.0 (3.6~9.0)	11.2 (4.0~12.5)	14.0 (4.0~16.0)	16.0 (4.0~18.0)	11.2 (4.0~12.5)	14.0 (4.0~16.0)	16.0 (4.0~18.0)
Input	Cooling/Heating		kW	2.08/2.21	2.88/2.99	4.04/3.79	4.95/4.43	2.88/2.99	4.04/3.79	4.95/4.43
COP	Cooling/Heating			3.41/3.62	3.47/3.75	3.09/3.69	2.83/3.61	3.47/3.75	3.09/3.69	2.83/3.61
Energy label	Cooling/Heating			A/A	A/A	B/A	C/A	A/A	B/A	C/A
Inrush current			A	5						
Sound level*1	Indoor		dB(A)	Hi:41 Lo:37	Hi:42 Lo:37	Hi:43 Lo:38		Hi:42 Lo:37	Hi:43 Lo:38	
	Outdoor			48	49	Cooling:50 Heating:51	51	49	Cooling:50 Heating:51	51
Air flow	Indoor		CMM	Hi:25 Lo:20	Hi:34 Lo:27	Hi:42 Lo:33.5		Hi:34 Lo:27	Hi:42 Lo:33.5	
	Outdoor			Cooling:60 Heating:50	Cooling:76 Heating:74	Cooling:75 Heating:73		Cooling:76 Heating:74		
Static pressure			Pa	standard:50, Max:130						
Indoor unit: Exterior dimensions	Height x Width x Depth		mm	297x850x650	350x1,370x650					
Indoor unit: Net weight			kg	40	63					
Indoor unit: Remote control				RC-E3						
Outdoor unit: Exterior dimensions	Height x Width x Depth		mm	750x880(+88)x340	845x970x370					
Outdoor unit: Net weight			kg	60	74					
Outdoor unit: Type of compressor				Rotary						
Outdoor unit: Ref.control				EEV						
Outdoor unit: Ref.amount precharged			kg(m)	2.95(30)	3.8(30)					
Outdoor unit: Ref.piping size	Liquid/Gas		ø	9.52/15.88						
Range of usage: Ref.piping length			m	50						
Range of usage: Vertical height difference	between O/U and I/U		<O/U	30						
			>O/U	15						
Limitations: Air temp.	Cooling		I/U	18~30						
			O/U	-15~43*2						
	Heating		I/U	18~30						
			O/U	-10~24	-15~24					

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■SPECIFICATIONS

Set model name				FDU200VSV	FDU250VSV
Indoor name				FDU200V	FDU250V
Outdoor name				FDC200VS	FDC250VS
Power source				3Phase,380-415V,50Hz,380V,60Hz	
Type				Inverter	
Nominal cooling capacity (Min~Max)	ISO-T1(JIS)		kW	20.0 (7.0~22.4)	25.0 (10.0~28.0)
Nominal heating capacity (Min~Max)	ISO-T1(JIS)		kW	22.4 (7.6~25.0)	28.0 (9.5~31.5)
Input	Cooling/Heating		kW	50Hz:6.59/6.08	50Hz: 9.91/8.50
				60Hz:6.58/5.84	60Hz:10.21/8.22
COP	Cooling/Heating			50Hz:3.03/3.68	50Hz:2.52/3.29
				60Hz:3.04/3.83	60Hz:2.45/3.41
Energy label	Cooling/Heating			B/A	E/B
Inrush current			A	5	
Sound level*1	Indoor		dB(A)	51	52
	Outdoor			57	Cooling:57 Heating:58
Air flow	Indoor		CMM	50Hz:51, 60Hz:60	50Hz:68, 60Hz:80
	Outdoor			Cooling:150 Heating:145	
Static pressure			Pa	standard:100, Max:200	
Indoor unit: Exterior dimensions	Height x Width x Depth		mm	360x1,570x830	
Indoor unit: Net weight			kg	92	
Indoor unit: Remote control				RC-E3	
Outdoor unit: Exterior dimensions	Height x Width x Depth		mm	1,300x970x370	
Outdoor unit: Net weight			kg	122	140
Outdoor unit: Type of compressor				Scroll	
Outdoor unit: Ref.control				EEV	
Outdoor unit: Ref.amount precharged			kg(m)	5.4(30)	7.2(30)
Outdoor unit: Ref.piping size	Liquid/Gas		ø	9.52/25.4	12.7/25.4
Range of usage: Ref.piping length			m	70	
Range of usage: Vertical height difference	between O/U and I/U		<O/U	30	
			>O/U	15	
Limitations: Air temp.	Cooling		I/U	18-30	
			O/U	-15-43 *2	
	Heating		I/U	18-30	
			O/U	-15-24	

The data are measured under the following conditions(ISO-T1).
Cooling:Indoor temp. of 27°CDB, 19°CWB, and outdoor temp. of 35°CDB. Heating:Indoor temp. of 20°CDB, and outdoor temp. of 7°CDB, 6°CWB.
*1 : *Indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.*
*2 : If a cooling operation is conducted when the outdoor air temperature is –5°C or lower, the outdoor unit should be installed at a place where it is not influenced by natural wind. If wind blows, the low pressure will drop and compressor frequency will increase, this will cause the capacity to drop and may cause the unit to break down.

Appendix 'D' Land Registry outline of the site. (Dots show approx position of all units)

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ORDNANCE SURVEY MAP REFERENCE: SP4293SE

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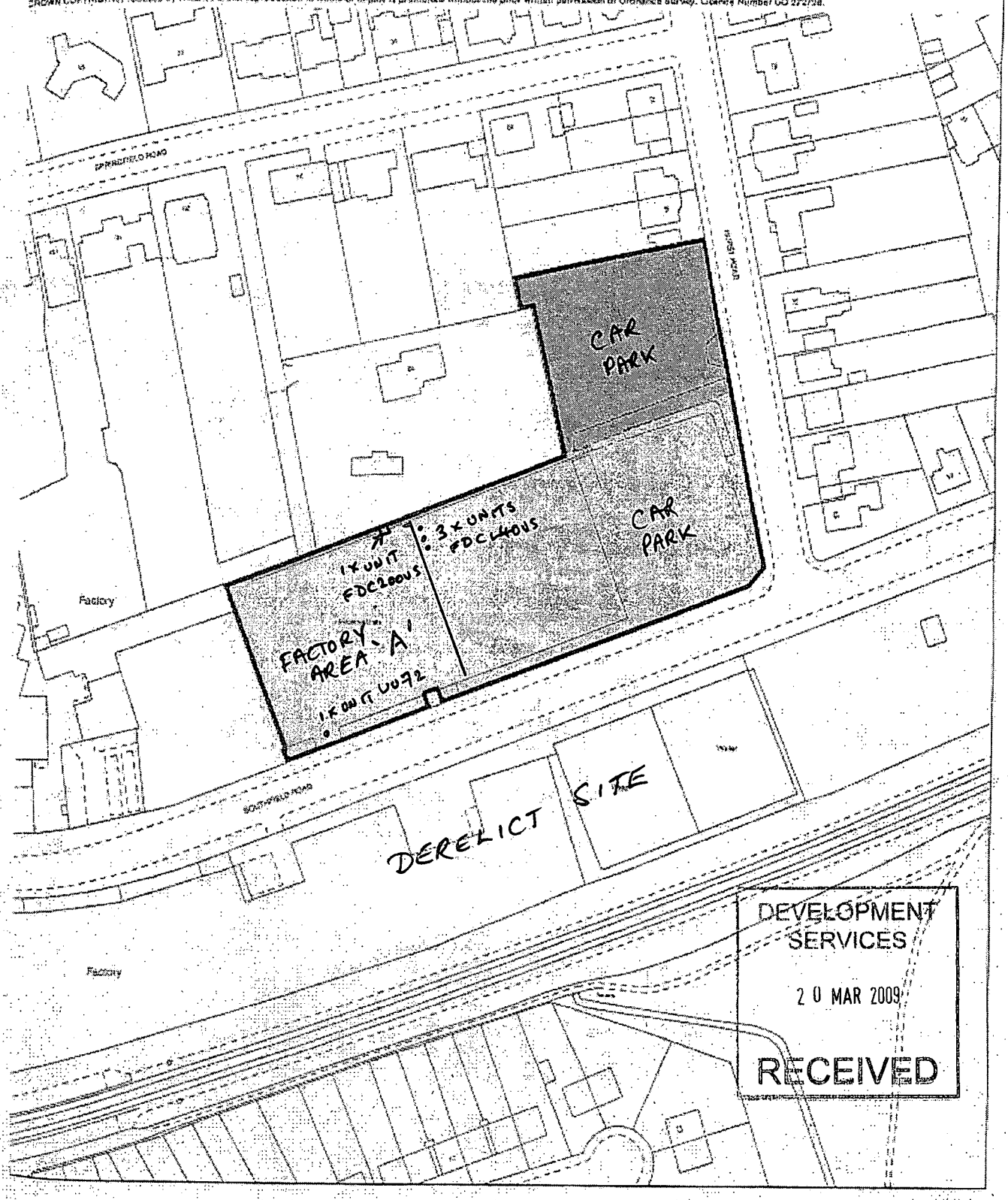

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Appendix 'E' General dimensions & fitment schedule.

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SPECIFICATION SHEET

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Outdoor Unit Model

Manufacturer	Mitsubishi
Model Reference	FDC140VN 2 off
Dimensions (mm)	845 W x 970W x 370D
Weight	74kg
Noise Level	51dBA*
	c.
Model Reference	FDX200VS 1 off
Dimensions (mm)	1300W x 970W x 370D
Weight	122kg
Noise Level	57dBA*

* All noise levels are measured in free field conditions

Outdoor Unit Location

The units are positioned adjacent to the North Facing wall in the access corridor.

Fixing Method

The units are fixed to cantilever brackets which are themselves fixed to slotted channels securely fixed to the building structure at low level.

External Service

Insulated copper pipe work and interconnecting power and control cable fixed to galvanised cable tray.

Power Supply

Rotary isolator adjacent to each outdoor unit.

Environmental Issues

The unit function as air cooled condensing units and produce no effluent or noxious substances.

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Trevor brought this in.
Can you have a look at it and get back to David Cope if any problems
—New App - Techs

· reservations about the unit on the front but suggest we process application

fee required

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