ALL WORK TO COMPLY WITH THE LATEST MARKS AND SPENCER REFRIGERATION SPECIFICATION

## *PLANT NOTES*

**A** **PLANT - COMPRESSOR PACK**
- COMPRESSOR PACKS SHALL COMPRISE OF BUT, NOT LIMITED TO, COMPRESSORS, LIQUID RECEIVER, OIL SEPARA TOR AND CONTROL SY STEM, CONTROL PANEL WITH INTEGRATED CONTROL SY STEM, DISCHARGE PIPE WORK, SUCTION PIPE WORK WITH SUCTION FILTERS, AND ALL INTERCONNECTING PIPE WORK AND SHUT OFF V ALVES REQUIRED FOR SA FE OPERATION IN LINE WITH THE LA TEST 'BOI 1 TRANSISTRICAL RTAA PLANT SPECIFICATION.
- PLANT SHALL BE POSITIONED TO ENABLE FULL ACCESS FROM THE FRONT AND EITHER SIDE OF THE PACK.
- THE MA JOR PA CK COMPONENTS SHALL BE SELECTED AND SIZED BY THE PACK MANUFA CTURER TO ENSURE ENERGY EFFICIENT, LEAK FREE OPERA TION.
- COMPRESSOR PACKS WILL BE SUPPLIED CHARGED WITH THE CORRECT OIL TO THE MIDDLE OF THE OIL RESERV OIR SIGHT GLA SS.
- PA CKS ARE TO BE DELIVERED WITH A HOLDING CHARGE OF OXY GEN FREE NITROGEN A T 2BAR.
- THE CONTROL PANEL WILL BE COMPLETE WITH ALL NECESSARY CONTROLS AND EQUIPMENT TO OPERA TE THE PA CK COMPONENTS AND CONDENSER, HOUSED WITHIN SUITABLY IP RA TED ENCLOSURE, COMPLETE WITH EX TRA CT FAN (IF DEEMED NECESSARY BY MANUFACTURER) AND INTAKE FILTER, INTERLOCKING MAINS ISOLATOR AND WARNING LABELS.
- THE ELECTRICAL CONTRACTOR SHALL SUPPLY AND CONNECT ALL ELECTRICAL AND CONTROL WIRING TO THE COMPRESSOR PACKS.
- THE REFRIGERA TION CONTRACTOR IS RESPONSIBLE FOR THE SUPPLY, POSITIONING AND CONNECTION OF THE REFRIGERA TION EQUIPMENT AND REFRIGERA TION SERVICES.
- ANY CHA NGE TO EQUIPMENT SUPPLIER / DETAILS TO BE COMMUNICA TED TO SPACE ENGINEERING IMMEDIA TELY TO AV OID CO-ORDINA TION ISSUES ON SITE.
- AS THE SY STEM INTEGRITY IS BROKEN INTO, ALL FILTER DRIERS ARE TO BE REPLACED UPON FINAL COMMISSIONING AND COMPLETION OF WORKS.

**B** **PLANT - GAS COOLER**
- FA NS / MOTORS A RE TO BE ENERGY EFFICIENT AND OF V ARIABLE SPEED. E.G. EC OR INVERTOR CONTROLLED
- PA CK CONTROLLER MUST BE CA PABLE OF OPERA TING THE EC FAN CONENSER V IA 0-10v SIGNAL.
- MANUFACTURERS STANDARD COLOUR FINISH IS ACCEPTABLE UNLESS SITE CONDITIONS DICTA TE OTHERWISE.
- THE ELECTRICAL CONTRACTOR SHALL SUPPLY AND CONNECT ALL ELECTRICAL AND CONTROL WIRING TO THE GAS COOLER.
- CARE SHALL BE TAKEN TO ENSURE THE FAN ISOLA TOR SWITCHES A RE IN A FULLY ACCESSIBLE POSITION. THESE SHOULD BE HIGHLIGHTED TO THE MANUFA CTURER A T THE TIME OR ORDER.
- MANUFACTURERS STANDARD COLOUR FINISH IS ACCEPTABLE UNLESS SITE CONDITIONS DICTA TE OTHERWISE.
- THE ELECTRICAL CONTRACTOR SHALL SUPPLY AND CONNECT ALL ELECTRICAL AND CONTROL WIRING TO THE GAS COOLER.
- CARE SHALL BE TAKEN TO ENSURE THE FAN ISOLA TOR SWITCHES A RE IN A FULLY ACCESSIBLE POSITION. THESE SHOULD BE HIGHLIGHTED TO THE MANUFA CTURER A T THE TIME OR ORDER.

**C** **PLANT - SUPPORT**
- ALL REFRIGERA TION PLANT SHA LL BE INSTALLED ON A FLA T AND LEVEL BA SE, PROVIDED BY OTHERS. ANTI-V IBRA TION PA DS TO BE SUPPLIED BY THE REFRIGERA TION CONTRACTOR.
- A REINFORCED FLA T AND LEVEL WORKING AREA IS TO BE POSITIONED A DJACENT TO THE PLANT HOUSING FOR COMPRESSOR REMOV AL.
- SECONDARY SUPPORT STEEL WORK FOR NSV PLANT TO BE DETAILED AND SUPPLIED BY THE STRUCTURA L ENGINEER, WHERE NECESSARY.
- ALL PLANT IS TO BE FIXED TO ITS SUPPORTS.

**D** **PLANT - LABELS**
- F-GAS LABELS - ALL REFRIGERA TION EQUIPMENT WITH AN EQUIV ALENT REFRIGERA TION CHARGE OF 5 TONNES CO2 OR MORE MUST BE SHOWING THE FOLLOWING INFORMA TION - **REFRIGERANT TYPE INSTA LLED, ENTRA INED V OLUME, REFRIGERA NT GWP.**
- PRESSURE EQUIPMENT DIRECTIV E LABELS - ALL APPLICA BLE NEW REFRIGERA TION SHA LL CA RRY A DECLARA TION OF CONFORMITY AND AN ASSEMBLY LA BEL SHOWING THE FOLLOWING INFORMA TION - **HIGH/LOW SIDE MWP, HIGH/LOW SIDE TEST PRESSURES, REFRIGERANT TYPE AND CHA RGE, REFRIGERA NT GWP.**
- REFRIGERA TION CONTRA CTOR SHALL SUPPLY AND FIX PERMANENT 'TRAFFOLYTE' TYPE LABELS TO ALL ITEMS OF PLANT, EQUIPMENT, CONTROL PANELS AND COLD STORES CLEARLY IDENTIFYING THE ITEM AND INDICA TING THE REFERENCE NUMBER, IF A PPLICABLE.
- PLEASE REFER TO ORWELL DESIGN A SSOCIATES **'PRACTICAL GUIDE TO THE F-GA S REGULATIONS'** FOR FURTHER CLARIFICA TION.

**E** **PLANT - OPERATION AND MAINTENANCE ACCESS**
- ACCESS SHOULD BE SUITABLE FOR AN ENGINEER CARRYING A TOOLBOX / HANDTOOLS.
- PROTECTED WALKWAYS TO BE PROVIDED AND DETAILED FOLLOWING CONFIRMA TION OF ROOF ACCESS POSITION.
- ACCESS STAIRS AND STEEL WALKWAY TO BE SUPPLIED AND INSTALLED BY OTHERS.
- PROVISION SHOULD BE MADE FOR LIFTING HEA VY ITEMS TO THE PLANT PLA NTFORM WITH A CLEAR ACCESS ROUTE TO THE PLANT. A CA T LADDER IS NOT DEEMED SUITABLE ACCESS FOR HEA VY ITEMS. ALTERNA TIVE MEANS OF TRANSPORTING / MOVING EQUIPMENT TO BE PROVIDED BY OTHERS.
- PLANT POSITIONED A DJA CENT TO THE REFRIGERA TION EQUIPMENT SHOULD BE CHECKED TO ENSURE AIR ON/OFF PA THS DO NOT A FFECT THE PERFORMANCE OF THE GA S COOLERS.
- ADEQUA TE TASK LIGHTING TO BE SUPPLIED AND INSTA LLED BY OTHERS FOR MAINTENANCE AND ACCESS.
- EXTERNAL HOUSED REFRIGERA TION PLANT TO BE PROVIDED WITH INTERNAL LIGHTING WITH GENERAL ROOF ACCESS ROUTE LIGHTING PROVIDED BY OTHERS.

**F** **PLANT - VENTILATION**
- VENTILA TION SHOULD BE PROVIDED TO -
  **a)** PREVENT THE PLANT FROM OVERHEA TING. A THERMOSTA T SHOULD BE PROVIDED IN THE PLANTROOM TO REGULA TE THE TEMPERA TURE.
  **b)** ENSURE THE PLANTROOM IS VENTILA TED IN THE EVENT OF A REFRIGERANT LEAK, AND WHEN MAINTENANCE IS BEING PERFORMED. THE OPERA TION SHOULD BE AUTOMA TIC IN THE EVENT OF A LEAK CONTROLLED BY A SIGNAL FROM THE GAS DETECTION SY STEM. MANUAL OVERRIDES SHOULD BE PROVIDED BOTH INTERNALLY AND EXTERNALLY OF THE AREA FOR SERV ICE PERSONNEL AND SHOULD BE CLEARLY IDENTIFIED.
  **c)** THE AIR V OLUME REQUIRED FOR REFRIGERANT REMOV AL WILL A S A GUIDE, BE BETWEEN 10 AND 15 AIR EXCHANGES PER HOUR. PLEA SE REFER TO SITE SPECIFIC CALCULA TIONS A S THE VENTILA TION REQUIREMENTS FOR HEA T EXTRACTION COULD BE HIGHER THAN THIS V ALUE.

**NOTES**

**1)** V ENTILA TION FA NS TO BE ELECTRICALLY FED FROM AN ESSENTIAL SERVICES SUPPLY. INTAKE FROM HIGH LEVEL, EXTRACT FROM LOW LEVEL, LOCA TION TO ENSURE NO AIR RECIRCULA TION.

**2)** FAN OPERA TION CAN BE TWO SPEED TO PROVIDE V ARIA TION BETWEEN HEA T EXTRACT AND REFRIGERANT EXTRACT.

**3)** UTILISING ONE AIR CIRCULA TION FAN WITH ON/OFF CONTROL MA Y LEAD TO UNACCEPTABLE SWINGS IN TEMPERA TURE WITHIN THE PLANT ROOM. NOT ALL EQUIPMENT WILL OPERA TE AT THE SAME TIME DUE TO LOAD CHANGES AND THE V ARYING AMBIENT TEMPERA TURES. IT MA Y BE ADVISABLE TO INSTALL A NUMBER OF AIR CIRCULA TING FANS AND CONTROL V IA A MULTI-STEP THERMOSTA T OR ALTERNA TIVELY TO USE SPEED CONTROL FAN(S).

**4)** CO-ORDINA TE WITH THE SERVICES/CONTROL LAY-OUT AND SPECIFICA TION IN RELA TION TO GAS DETECTION BY STEM DETAILS.

**H** **PLANT - SY STEM PRESSURES**
- REFRIGERANT GRA DE CO2 MUST BE USED A T ALL TIMES. OPERA TING A T THE FOLLOWING PRESSURES, WHERE A PPLICABLE -

**HT SUCTION - 63BAR**
**L T SUCTION - 30BAR**
**COMMON LIQUID - 60BA R**
**DISCHA RGE / LIQUID RETURN - 120BAR**

**G** **PLANT - INTERNAL PLANTROOM (TO BE READ A LONG SIDE V ENTILA TION)**
- THE DOORS IN THE EMERGENCY EXITS SHALL BE SUCH THA T THEY CA N BE OPENED MA NUALLY FROM THE INSIDE (ANTI-PA NIC SY STEM).
- MACHINERY ROOMS SHALL HA VE DOORS OPENING OUTWARD.
- A REMOTE SWITCH FOR STOPPING THE REFRIGERA TING SY STEM SHALL BE PROV IDED OUTSIDE THE ROOM, NEAR TO THE MACHINERY ROOM DOOR. A SIMILA R A CTING SWITCH SHALL BE IN A SUITA BLE LOCA TION INSIDE THE ROOM.
- FIXED LIGHTING SHALL BE INSTALLED IN SPA CES CONTA INING REFRIGERA TING EQUIPMENT TO TO ENSURE SA FE OPERA TION.
- A FIXED EMERGENCY LIGHTING SY STEM SHALL BE PROVIDED, A DEQUA TE TO ALLOW OPERA TION OF CONTROLS A ND EV A CUA TION OF PERSONNEL, WHEN NORMAL LIGHTING FA ILS.
- MACHINERY ROOMS OR SPECIAL MACHINERY ROOMS SHALL BE CLEARLY MARKED A S SUCH ON THE ENTRANCES TO THE ROOM, TOGETHER WITH WA RNING NOTICES INDICA TING THA T UNAUTHORISED PERSONS SHALL NOT ENTER A ND THA T SMOKING, NAKED LIGHT OR FLAMES A RE PROHIBITED. THE NOTICES SHALL A LSO STA TE THA T, IN THE EVENT OF A N EMERGENCY, ONLY AUTHORISED PERSONS CONVERSA NT WITH EMERGENCY PROCEDURES SHALL DECIDE WHETHER TO ENTER THE MACHINERY ROOM. A DDITIONA LLY, WA RNING NOTICES SHALL BE DISPLA YED PROHIBITING UNAUTHORISED OPERA TION OF THE SY STEM.
- WHERE AN A LARM SY STEM IS INSTALLED, THE POWER SOURCE OF THE SY STEM SHALL BE INDEPENDENT FROM THE POWER SOURCE OF THE MECHANICAL V ENTILA TION.
  NOTE THA T BA CK-UP POWER USING BA TTERIES MA Y BE USED FOR THE A LARM SY STEM.
- THE A LARM SY STEM SHALL WA RN, BOTH A UDIBLY, A ND V ISIBLY SUCH A S BOTH A LOUD BUZZER A ND A FLA SHING LAMP. THE A LARM SY STEM SHALL WARN BOTH INSIDE A ND OUTSIDE OF THE MA CHINERY ROOM, OR A T LEA ST INSIDE THE SPA CE WHERE USED IN A N OCCUPIED SPA CE. THE OUTSIDE A LARM MA Y BE INSTALLED IN A V A TCH ROOM OR OTHER SUPERV ISED LOCA TION.
- ANY SUITA BLE DETECTOR MA Y BE USED A ND SHALL GIV E A N ELECTRICA L SIGNA L A T THE PRE-SET V ALUE OF THE REFRIGERA NT OR OXY GEN CONCENTRA TION THA T A CTIV A TES THE SHUT OFF V ALVES. THE A LARM SY STEM OR THE MECHA NICAL V ENTILA TION. THE PRE-SET V ALUE FOR THE REFRIGERA NT DETECTOR SHALL BE HA LF OR LESS OF PRA CTICA L LIMIT CONCENTRA TION. A N APPROPRIA TE MA INTENA NCE PERIOD SHALL BE ESTA BLISHED FOR EA CH TY PE OF DETECTOR USED.
- THE INSTRUCTIONS GIV EN WITH THE SY STEM SHALL CLEARLY STA TE THE REQUIRED PROCEDURES IN THE EVENT OF THE A LARM SY STEM OPERA TING. A RESPONSIBLE PERSON(S) SHALL BE DESIGNA TED IN THE MA CHINERY ROOM OR EA CH OCCUPIED SPA CE THA T WILL KNOW THESE PROCEDURES A ND HA VE THE A UTHORITY TO A CT ON THEM.
- THE USER/OWNER SHALL REGULA RLY CHECK THE A LA RMS, MECHA NICAL V ENTILA TION A ND DETECTORS. A T LEA ST ONCE A YEA R TO ENSURE THEIR CORRECT FUNCTIONING. THE RESULTS OF THESE CHECKS SHALL BE RECORDED IN THE LOGBOOK/O&M MA NUAL.

**PLEASE NOTE**

**R744, R134A & R290**

**REFRIGERANTS USED ON THIS SITE**

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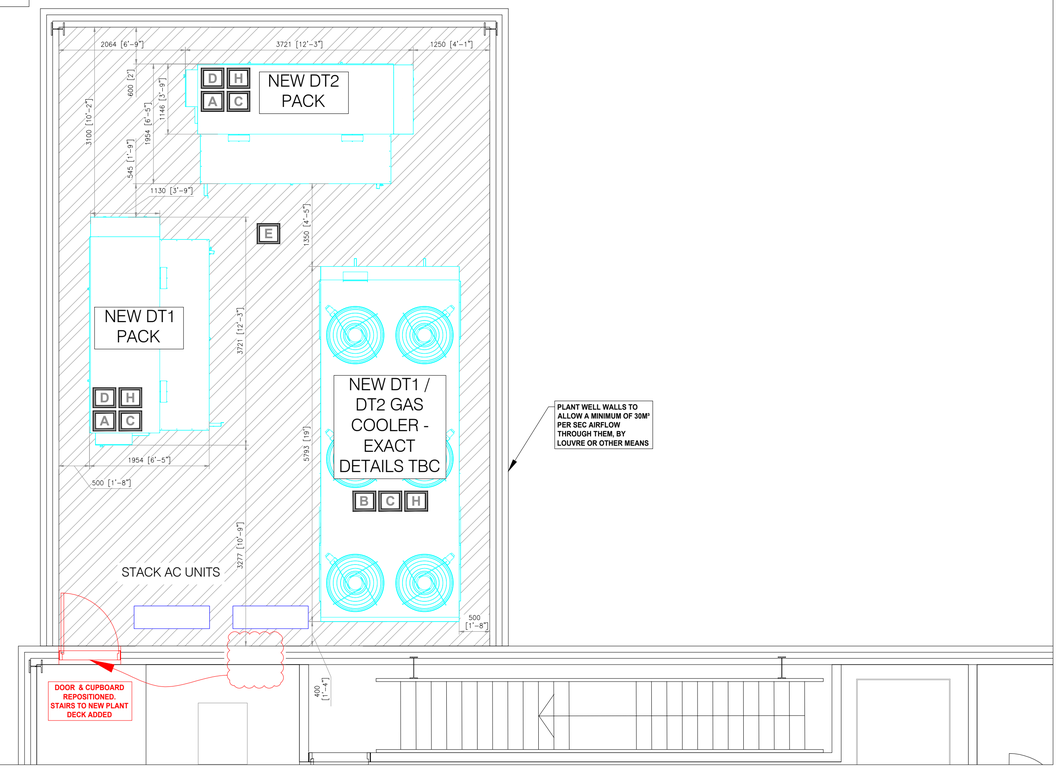
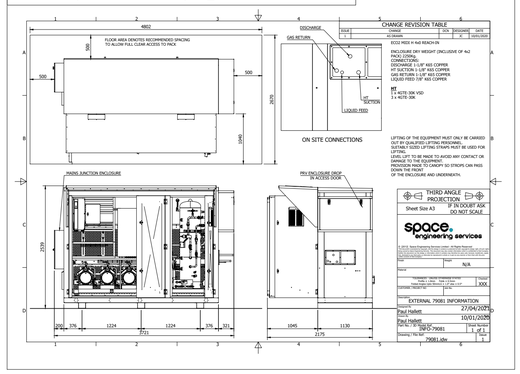
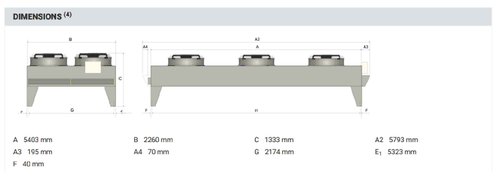
## LOWERED PLANT DECK PROPOSAL @ 1:50



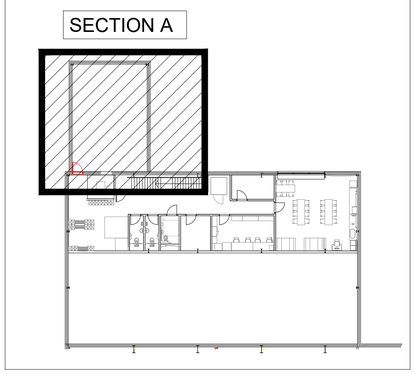

## GROUND FLOOR - PLANT SERVICE YARD (SECTION A) @ NTS




## KELVION GAS COOLER EXACT DETAILS TBC @ NTS




## STORE PLAN OVERVIEW @ NTS




## PLANT SCHEDULES

**PLANT - PACK**

| SYSTEM REFERENCE | NEW / EXISTING | PACK MANUFACTURE | PACK MODEL | REFRIGERANT TYPE | COMPRESSORS | | | | | | | LENGTH (mm) | DEPTH (mm) | HEIGHT (mm) | APPROXIMATE WEIGHT (kg) | PACK NOISE dB(A) @ 10m | RECEIVER SIZE | PED CATEGORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COMPRESSOR MODEL | POWER INPUT PER COMPRESSOR (kW) | EVAPORATOR CAPACITY PER COMPRESSOR (kW) | TOTAL HEAT OF REJECTION PER COMPRESSOR (kW) | FULL LOAD CURRENT PER COMPRESSOR (A) | DESIGN CURRENT PER COMPRESSOR (A) | START CURRENT PER COMP (A) | | | | | | | |
| DT1 HT/LT - PACK | NEW | SPACE ENGINEERING | ECO-MIDI 4x2 - (Reach-in) | R744 | 2JSL-2K (50 Hz) | 1.44 | 4.09 | - | 4.60 | - | - | 3721 | 1130 (With canopy 2175) | 2539 | 2250 | 48 | 190L | IV |
| | | | | | 2JSL-2K | 1.44 | 4.10 | - | 4.60 | 3.37 | - | | | | | | | |
| | | | | | 4GTE-30K (55 Hz) | 19.92 | 29.61 | 53.42 | 51.60 | - | - | | | | | | | |
| | | | | | 4G TE-30K | 18.08 | 26.63 | 48.21 | 51.60 | 33.08 | - | | | | | | | |
| | | | | | 4G TE-30K | 18.08 | 26.63 | 48.21 | 51.60 | 33.08 | - | | | | | | | |
| | | | | | 4G TE-30K | 18.08 | 26.63 | 48.21 | 51.60 | 33.08 | - | | | | | | | |

**PLANT - PACK**

| SYSTEM REFERENCE | NEW / EXISTING | PACK MANUFACTURE | PACK MODEL | REFRIGERANT TYPE | COMPRESSORS | | | | | | | LENGTH (mm) | DEPTH (mm) | HEIGHT (mm) | APPROXIMATE WEIGHT (kg) | PACK NOISE dB(A) @ 10m | RECEIVER SIZE | PED CATEGORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COMPRESSOR MODEL | POWER INPUT PER COMPRESSOR (kW) | EVAPORATOR CAPACITY PER COMPRESSOR (kW) | TOTAL HEAT OF REJECTION PER COMPRESSOR (kW) | FULL LOAD CURRENT PER COMPRESSOR (A) | DESIGN CURRENT PER COMPRESSOR (A) | START CURRENT PER COMP (A) | | | | | | | |
| DT2 HT/LT - PACK | NEW | SPACE ENGINEERING | ECO-MIDI 4x2 - (Reach-in) | R744 | 2JSL-2K (50 Hz) | 1.51 | 4.00 | - | 4.60 | - | - | 3721 | 1130 (With canopy 2175) | 2539 | 2250 | 48 | 190L | IV |
| | | | | | 2JSL-2K | 1.51 | 4.02 | - | 4.60 | 3.44 | - | | | | | | | |
| | | | | | 4GTE-30K (55 Hz) | 20.21 | 32.13 | 56.29 | 51.60 | - | - | | | | | | | |
| | | | | | 4G TE-30K | 18.31 | 28.90 | 50.76 | 51.60 | 33.40 | - | | | | | | | |
| | | | | | 4G TE-30K | 18.31 | 28.90 | 50.76 | 51.60 | 33.40 | - | | | | | | | |
| | | | | | 4G TE-30K | 18.31 | 28.90 | 50.76 | 51.60 | 33.40 | - | | | | | | | |

**PLANT - GAS COOLER**

| SYSTEM REFERENCE | NEW / EXISTING | GAS COOLER MANUFACTURER | GAS COOLER MODEL | REFRIGERANT TYPE | FIN MATERIAL | GAS COLER CAPACITY @ DESIGN CONDITIONS (kW) | AIR VOLUME @ DESIGN CONDITIONS (m3/s) | REFRIGERANT QUANTITY (kg) | FAN TYPE | NUMBER OF FANS | TOTAL FAN POWER (kW) | FULL LOAD CURRENT PER FAN (A) | START CURRENT PER FAN (A) | LENGTH (mm) | DEPTH (mm) | HEIGHT (mm) | APPROXIMATE WET WEIGHT (kg) | GAS COOLER NOISE LEVEL (dB(A) @ 10m) | PED CATEGORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT1 HT/LT - GC | NEW | KELVION | GF-PC203G5H-091M-AL-10FPI | R744 | Cu/Al | 205.81 | 26.81 | 54 | EC | 6 | 3.1 | 1.2 | 4.2 | 5793 | 2260 | 1583 | 1573 | 44 | IV |
| DT2 HT/LT - GC | | | | | | 211.16 | | | | | | | | | | | | | |

## NOTES

ORIGINAL A1

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| A | 15.02.22 | UPDATE PLANT LAYOUT & ENGINEERING | JRG | AT |
| - | 01.02.22 | FIRST ISSUE BASED ON WHITTAM/COX DRAWING "210249 SK_104F" REV G (11.11.21) | LB | AT |

LOCATION FIGURE



M&S
EST. 1884

STORE NAME
BARNSLEY

STORE NUMBER
0000

COUNTRY
ENGLAND

PROJECT
NEW FOODHALL

DRAWING
GROUND FLOOR REFRIGERATION PLANT LAYOUT

CONSULTANT
ODA

CONSULTANT LOGO
oda
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**ODA Drawing Approval**

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