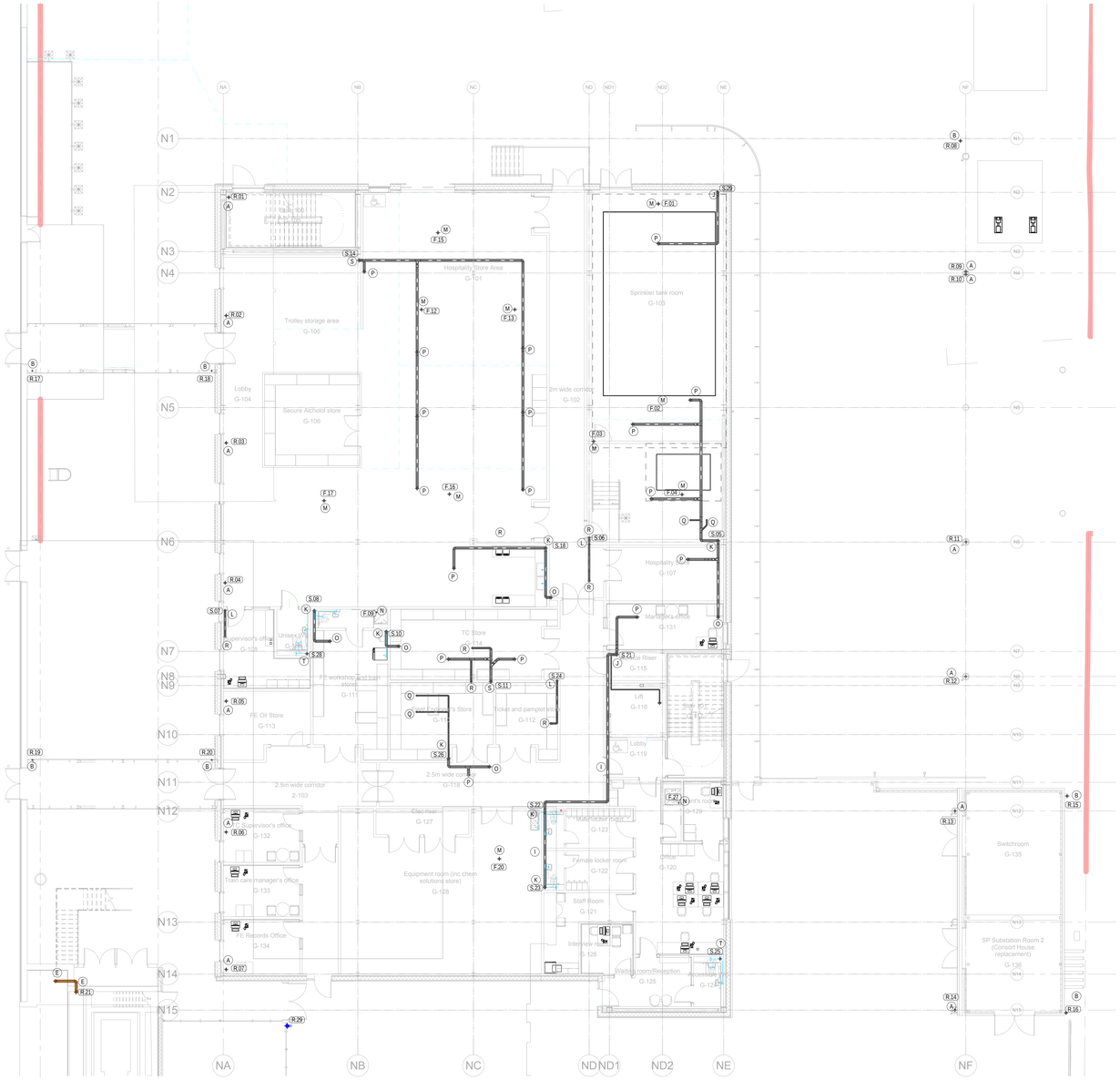
DO NOT SCALE



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NOTES

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4. WHERE PLASTIC PIPES PENETRATE FIRE COMPARTMENT, WITH PENETRATION THAT IS 50mm AND ABOVE, FIRE COLLAR TO BE FITTED.
5. WATERLESS TRAPS TO BE INSTALLED ON CONDENSATE PIPEWORK BEFORE CONNECTION TO STACK.
6. CONDENSATE FROM IN ROOM COOLING UNITS TO BE TAKEN TO THE NEAREST STACK.
7. RAINWATER ROOF OUTLETS TO BE DESIGNED BY ARCHITECTS.

LEGEND

- (A) 100Ø RAINWATER PIPE DROPS FROM ABOVE TO BELOW GROUND DRAINAGE
- (B) 50Ø RAINWATER PIPE DROPS TO BELOW GROUND DRAINAGE
- (C) 110Ø VENT PIPE DROPS TO BELOW AND TERMINATES WITH WEATHER COLLAR
- (D) 150Ø RAINWATER PIPE DROPS FROM ABOVE TO BELOW GROUND DRAINAGE
- (E) 100Ø RAINWATER PIPE FROM 100Ø RAINWATER OUTLET ABOVE OFSETS AND DROPS TO BELOW
- (F) 110Ø FLOOR GULLY INSTALLED WITHIN LIFT SHAFT
- (G) 50Ø RAINWATER PIPEWORK CONVEYING WATER FROM CANOPY ROOF ON TO SURFACE GROUND
- (H) 75Ø RAINWATER PIPE DROPS FROM ABOVE TO BELOW GROUND DRAINAGE
- (I) 110Ø VENT PIPE RUNS AT HIGH LEVEL
- (J) 110Ø WASTE PIPE DROPS TO BELOW GROUND DRAINAGE WITH VENT PIPE TO ABOVE
- (K) 110Ø SOIL VENT PIPE DROPS FROM HIGH LEVEL TO BELOW GROUND DRAINAGE
- (L) 75Ø WASTE PIPE DROPS FROM HIGH LEVEL TO BELOW GROUND DRAINAGE
- (M) 110Ø FLOOR GULLY DROPS TO BELOW GROUND DRAINAGE
- (N) 50Ø SHOWER GULLY DROPS TO BELOW GROUND DRAINAGE
- (O) 110Ø SOIL VENT PIPE DROPS FROM ABOVE TO HIGH LEVEL
- (P) 110Ø WASTE PIPE DROPS FROM ABOVE TO HIGH LEVEL
- (Q) 50Ø WASTE PIPE DROPS FROM ABOVE TO HIGH LEVEL
- (R) 75Ø WASTE PIPE DROPS FROM ABOVE TO HIGH LEVEL
- (S) 110Ø WASTE PIPE DROPS FROM HIGH LEVEL TO BELOW GROUND DRAINAGE
- (T) 110Ø STUB STACK DROPS TO BELOW GROUND DRIAINEGE
- (U) 110Ø SOIL VENT PIPE DROPS TO BELOW GROUND DRAINAGE WITH VENT PIPE TO ABOVE
- (V) 40Ø PUMPED SOIL VENT PIPE RISES FROM LOW TO HIGH LEVEL
- (W) 22Ø PUMPED WASTE PIPE RISES FROM LOW TO HIGH LEVEL

WORK IN PROGRESS

Rev	Date	Description	Drwn	Ch'k'd
B02	29/04/16	GRIP 4 REVISED DRAWING	MG	ST
B01	05/04/16	GRIP 4	MG	RF

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

	Name	Sig.	Date
Drawn By	MP	MP	29/04/16
Checked By	MG	MG	29/04/16
Approved By	ST	ST	29/04/16

Scale: 1 : 100 | Sheet of

Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDR-52-091 | Rev: B-02

Size: A0

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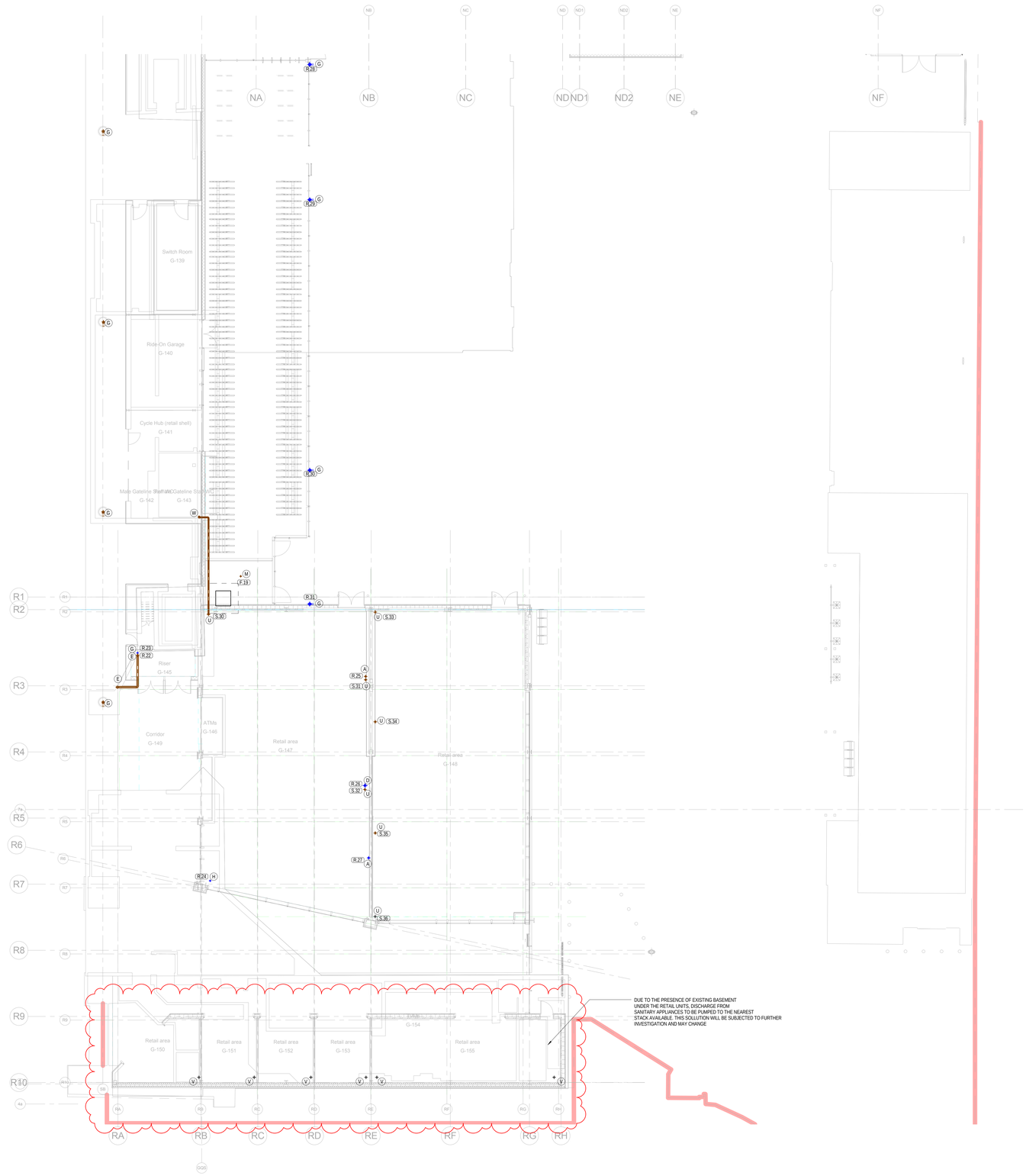

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6. CONDENSATE FROM IN ROOM COOLING UNITS TO BE TAKEN TO THE NEAREST STACK.
7. RAINWATER ROOF OUTLETS TO BE DESIGNED BY ARCHITECTS.

LEGEND

- (A) 100Ø RAINWATER PIPE DROPS FROM ABOVE TO BELOW GROUND DRAINAGE
- (B) 50Ø RAINWATER PIPE DROPS TO BELOW GROUND DRAINAGE
- (C) 110Ø VENT PIPE DROPS TO BELOW AND TERMINATES WITH WEATHER COLLAR
- (D) 150Ø RAINWATER PIPE DROPS FROM ABOVE TO BELOW GROUND DRAINAGE
- (E) 100Ø RAINWATER PIPE FROM 100Ø RAINWATER OUTLET ABOVE OFSETS AND DROPS TO BELOW
- (F) 110Ø FLOOR GULLY INSTALLED WITHIN LIFT SHAFT
- (G) 50Ø RAINWATER PIPEWORK CONVEYING WATER FROM CANOPY ROOF ON TO SURFACE GROUND
- (H) 75Ø RAINWATER PIPE DROPS FROM ABOVE TO BELOW GROUND DRAINAGE
- (I) 110Ø VENT PIPE RUNS AT HIGH LEVEL
- (J) 110Ø WASTE PIPE DROPS TO BELOW GROUND DRAINAGE WITH VENT PIPE TO ABOVE
- (K) 110Ø SOIL VENT PIPE DROPS FROM HIGH LEVEL TO BELOW GROUND DRAINAGE
- (L) 75Ø WASTE PIPE DROPS FROM HIGH LEVEL TO BELOW GROUND DRAINAGE
- (M) 110Ø FLOOR GULLY DROPS TO BELOW GROUND DRAINAGE
- (N) 50Ø SHOWER GULLY DROPS TO BELOW GROUND DRAINAGE
- (O) 110Ø SOIL VENT PIPE DROPS FROM ABOVE TO HIGH LEVEL
- (P) 110Ø WASTE PIPE DROPS FROM ABOVE TO HIGH LEVEL
- (Q) 50Ø WASTE PIPE DROPS FROM ABOVE TO HIGH LEVEL
- (R) 75Ø WASTE PIPE DROPS FROM ABOVE TO HIGH LEVEL
- (S) 110Ø WASTE PIPE DROPS FROM HIGH LEVEL TO BELOW GROUND DRAINAGE
- (T) 110Ø STUB STACK DROPS TO BELOW GROUND DRAIANEGE
- (U) 110Ø SOIL VENT PIPE DROPS TO BELOW GROUND DRAINAGE WITH VENT PIPE TO ABOVE
- (V) 40Ø PUMPED SOIL VENT PIPE RISES FROM LOW TO HIGH LEVEL
- (W) 22Ø PUMPED WASTE PIPE RISES FROM LOW TO HIGH LEVEL

WORK IN PROGRESS

Rev	Date	Description	Drwn	Chk'd
B01	31/03/16	GRIP 4	MP	MG

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

	Name	Sig.	Date
Drawn By	MP	MP	31/03/16
Checked By	MG	MG	31/03/16
Approved By	ST	ST	31/03/16

Scale	1 : 100	Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDR-52-092 — Rev B01

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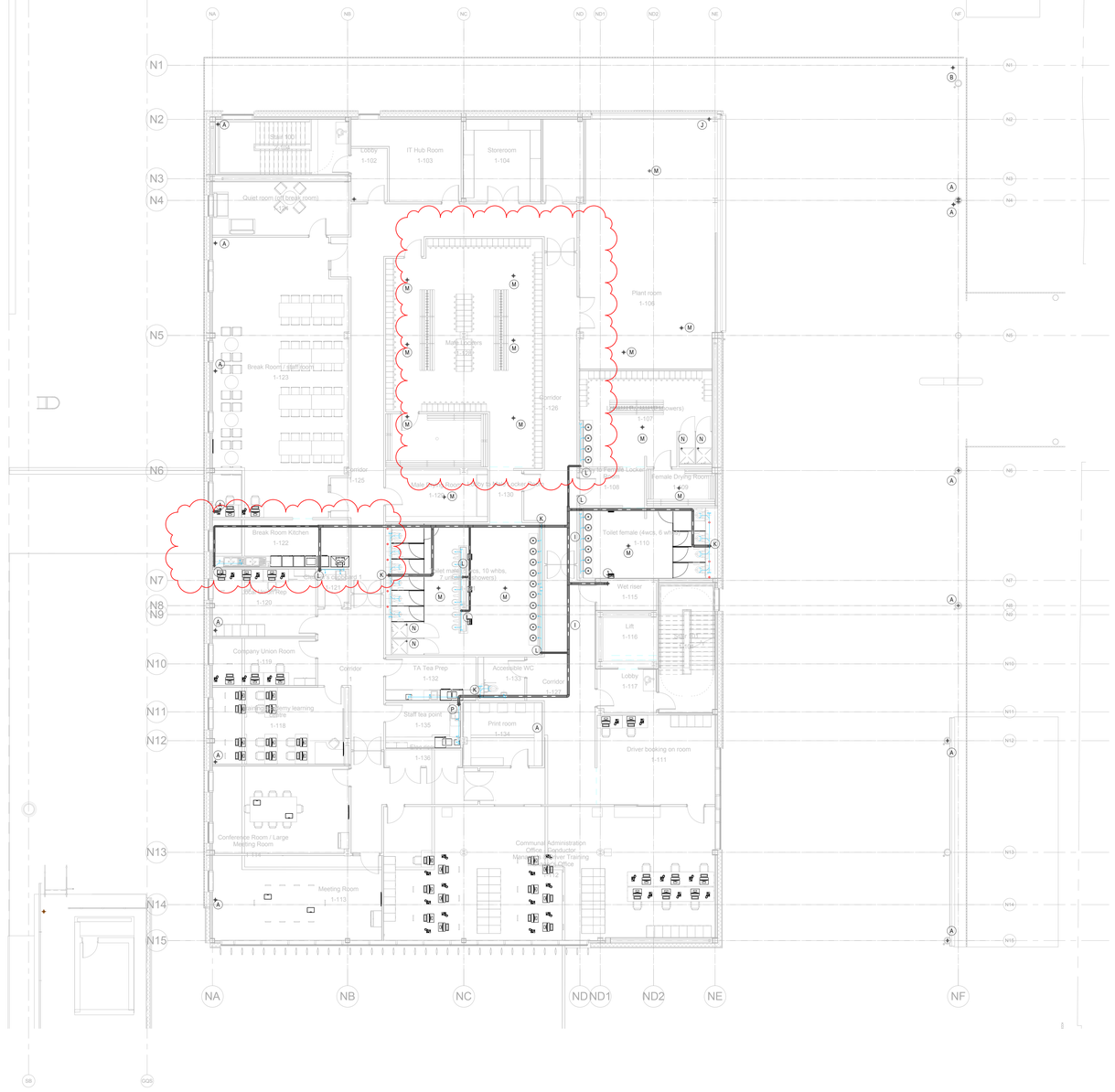

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5. WATERLESS TRAPS TO BE INSTALLED ON CONDENSATE PIPEWORK BEFORE CONNECTION TO STACK.
6. CONDENSATE FROM IN ROOM COOLING UNITS TO BE TAKEN TO THE NEAREST STACK.
7. RAINWATER ROOF OUTLETS TO BE DESIGNED BY ARCHITECTS.

LEGEND

- (A) 100Ø RAINWATER PIPE DROPS FROM GUTTER ABOVE TO BELOW
- (B) 50Ø RAINWATER PIPE DROPS FROM GUTTER ABOVE TO BELOW
- (C) 110Ø VENT PIPE DROPS TO BELOW AND TERMINATES WITH WEATHER COLLAR
- (D) 150Ø RAINWATER PIPE DROPS FROM GUTTER ABOVE TO BELOW
- (E) 100Ø RAINWATER PIPE DROPS FROM RWO ABOVE OFSETS AND DROPS TO BELOW
- (F) 150Ø RAINWATER PIPE DROPS FROM RWO ABOVE OFSETS AND DROPS TO BELOW
- (G) 100Ø RAINWATER OUTLET WITH 100Ø PIPE CONVEYING WATER FROM HIGHER ONTO LOWER ROOF
- (H) 75Ø RAIWATER PIPE DROPS FROM GUTTER ABOVE OFSETS AND DROPS TO BELOW
- (I) 110Ø VENT PIPE RUNS AT HIGH LEVEL
- (J) 110Ø VENT PIPE DROPS FROM ABOVE TO BELOW
- (K) 110Ø SOIL VENT PIPE DROPS TO BELOW WITH VENT PIPE AT HIGH LEVEL
- (L) 75Ø WASTE PIPE DROPS TO BELOW WITH VENT PIPE AT HIGH LEVEL
- (M) 110Ø FLOOR GULLY DROPS TO BELOW
- (N) 50Ø SHOWER GULLY DROPS TO BELOW
- (O) 100Ø RAINWATER OUTLET FROM GUTTER
- (P) 110Ø WASTE PIPE DROPS TO BELOW WITH VENT AT HIGH LEVEL
- (R) 22Ø PUMPED SOIL VENT PIPE RUNS AT HIGH LEVEL

Rev	Date	Description	Drwn	Chk'd
B02	29/04/16	GRIP 4 REVISED DRAWING	MG	ST
B01	05/04/16	GRIP 4	MG	RF

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

	Name	Sig.	Date
Drawn By	MP	MP	29/04/16
Checked By	MG	MG	29/04/16
Approved By	ST	ST	29/04/16

Scale	1 : 100	Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDR-52-191 — Rev B02

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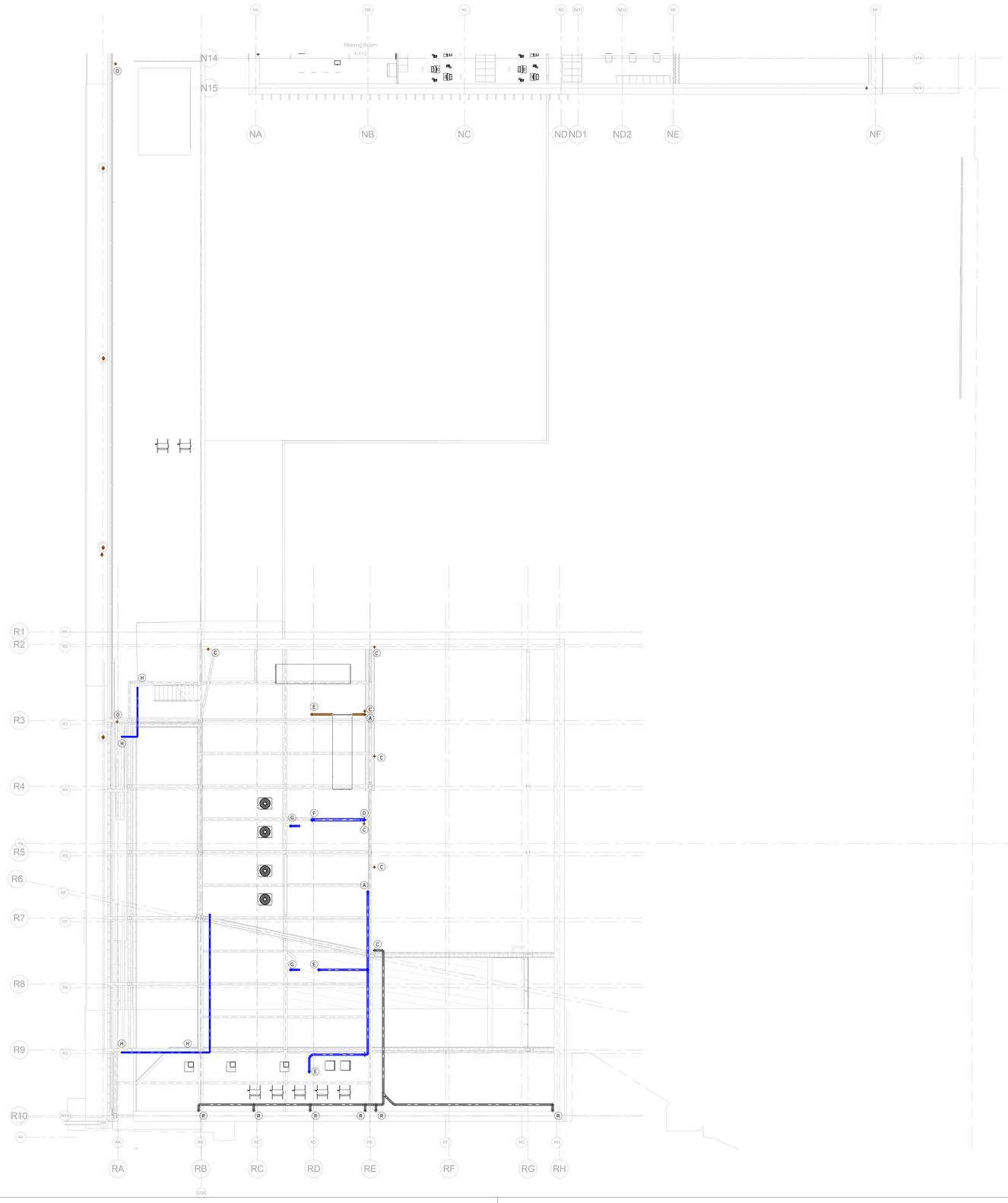

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LEGEND

- (A) 100Ø RAINWATER PIPE DROPS FROM GUTTER ABOVE TO BELOW
- (B) 50Ø RAINWATER PIPE DROPS FROM GUTTER ABOVE TO BELOW
- (C) 110Ø VENT PIPE DROPS TO BELOW AND TERMINATES WITH WEATHER COLLAR
- (D) 150Ø RAINWATER PIPE DROPS FROM GUTTER ABOVE TO BELOW
- (E) 100Ø RAINWATER PIPE DROPS FROM RWO ABOVE OFSETS AND DROPS TO BELOW
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- (I) 110Ø VENT PIPE RUNS AT HIGH LEVEL
- (J) 110Ø VENT PIPE DROPS FROM ABOVE TO BELOW
- (K) 110Ø SOIL VENT PIPE DROPS TO BELOW WITH VENT PIPE AT HIGH LEVEL
- (L) 75Ø WASTE PIPE DROPS TO BELOW WITH VENT PIPE AT HIGH LEVEL
- (M) 110Ø FLOOR GULLY DROPS TO BELOW
- (N) 50Ø SHOWER GULLY DROPS TO BELOW
- (O) 100Ø RAINWATER OUTLET FROM GUTTER
- (P) 110Ø WASTE PIPE DROPS TO BELOW WITH VENT AT HIGH LEVEL
- (R) 22Ø PUMPED SOIL VENT PIPE RUNS AT HIGH LEVEL

Rev	Date	Description	Drwn	Chk'd
P01	31/03/16	GRIP 4	MP	MG

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

	Name	Sig.	Date
Drawn By	MP	MP	31/03/16
Checked By	MG	MG	31/03/16
Approved By	ST	ST	31/03/16

Scale: 1 : 100 | Sheet | of

Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDR-52-192 | Rev: P01

Size: A0

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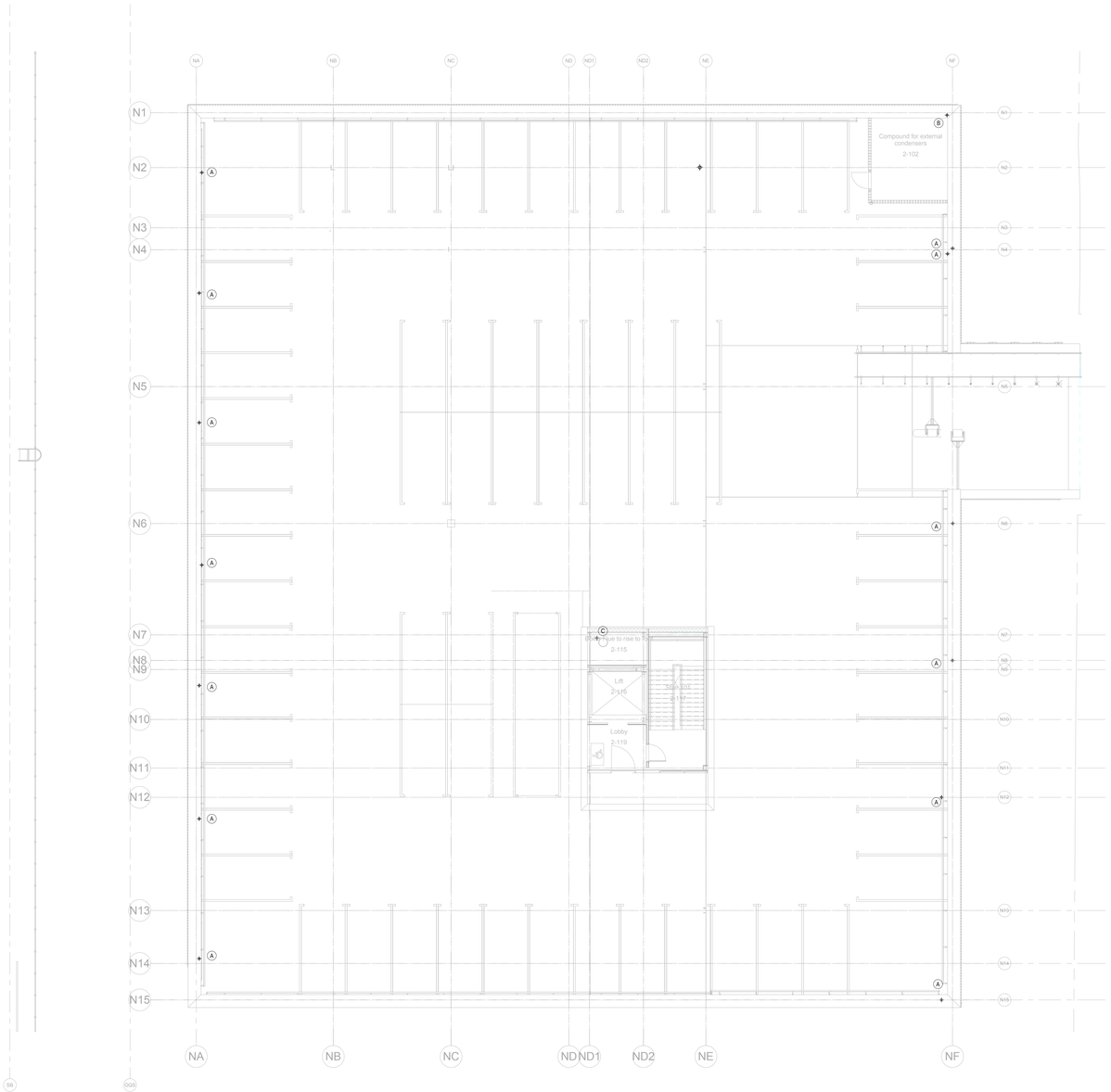

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LEGEND

(A) 100Ø RAINWATER OUTLET FROM GUTTER
(B) 50Ø RAINWATER OUTLET
(C) 110Ø VENT PIPE DROPS TO BELOW AND TERMINATES WITH WEATHER COLLAR

Rev	Date	Description	Drwn	Ch'k'd
R01	31/03/16	GRIP 4	MP	MG

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

	Name	Sig.	Date
Drawn By	MP	MP	31/03/16
Checked By	MG	MG	31/03/16
Approved By	ST	ST	31/03/16

Scale	Sheet	of
1 : 100		

Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDR-52-291 Rev: R01

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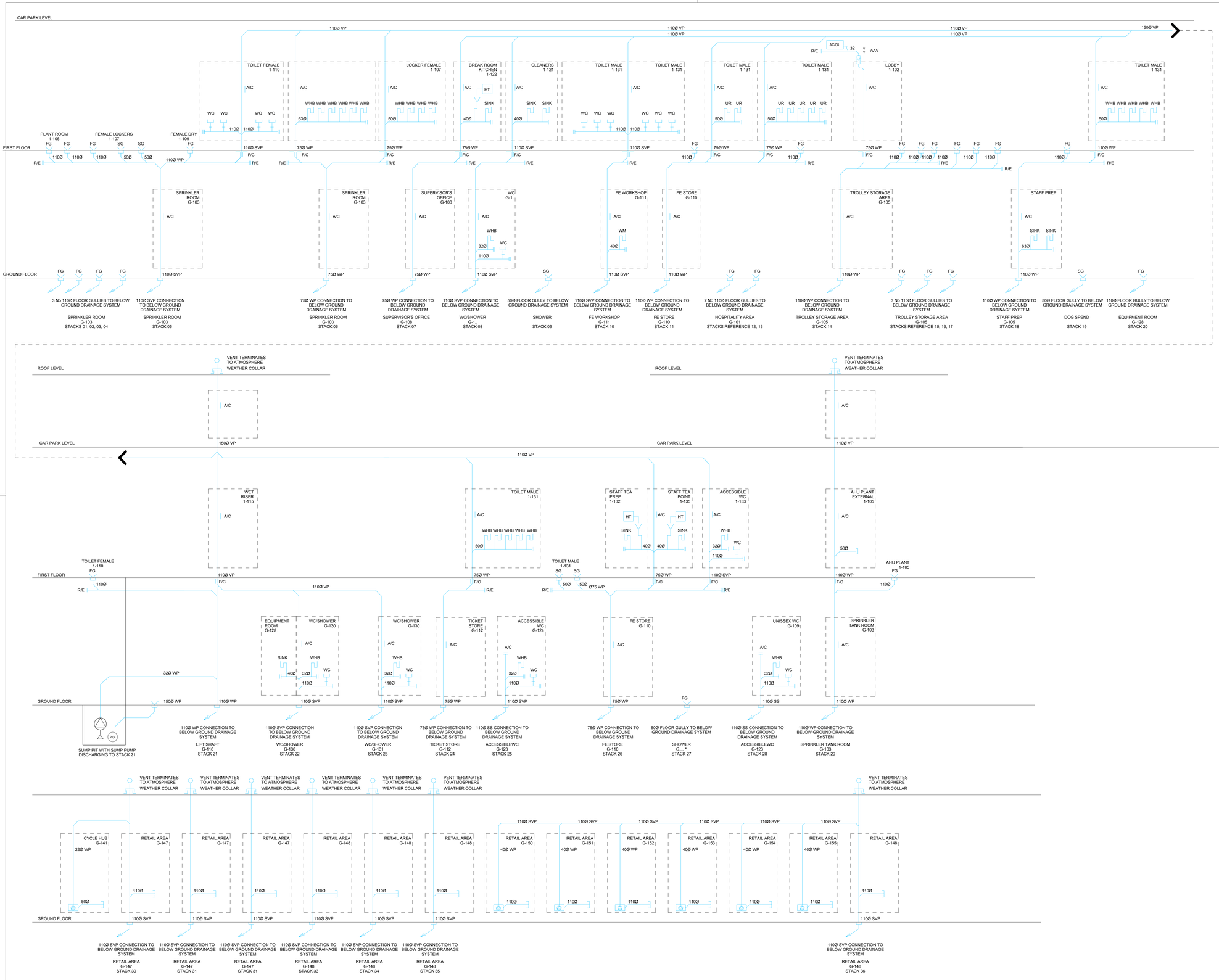

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7. RAINWATER ROOF OUTLETS TO BE DESIGNED BY ARCHITECTS

LEGEND

SVP - SOIL VENT PIPE
WP - WASTE PIPE
VP - VENT PIPE
SS - SUB STACK
RWO - RAINWATER OUTLET
SRWO - SYPHONIC RAINWATER OUTLET
FG - FLOOR GULLY
RWP - RAINWATER PIPEWORK
SRWP - SYPHONIC RAINWATER PIPEWORK
HT - HYDRO TAP
A/C - ACCESS
F/C - FIRE COLLAR
UR - URINAL
AAV - AIR ADMITTANCE VALVE
R/E - RODDING EYE

Rev	Date	Description	Drwn	Ch'k'd

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

Drawn By	Name: Author	Sig: Author	Date	
Checked By	Name: Checker	Sig: Checker	Date	
Approved By	Name: Approver	Sig: Approver	Date	
Scale: As indicated		Sheet	of	
Map Grid	ELR	UCM	Distance	

Network Rail Drawing Number: EGIP19-ARP-DRG-EDR-52-S91 — Rev

Size: A0

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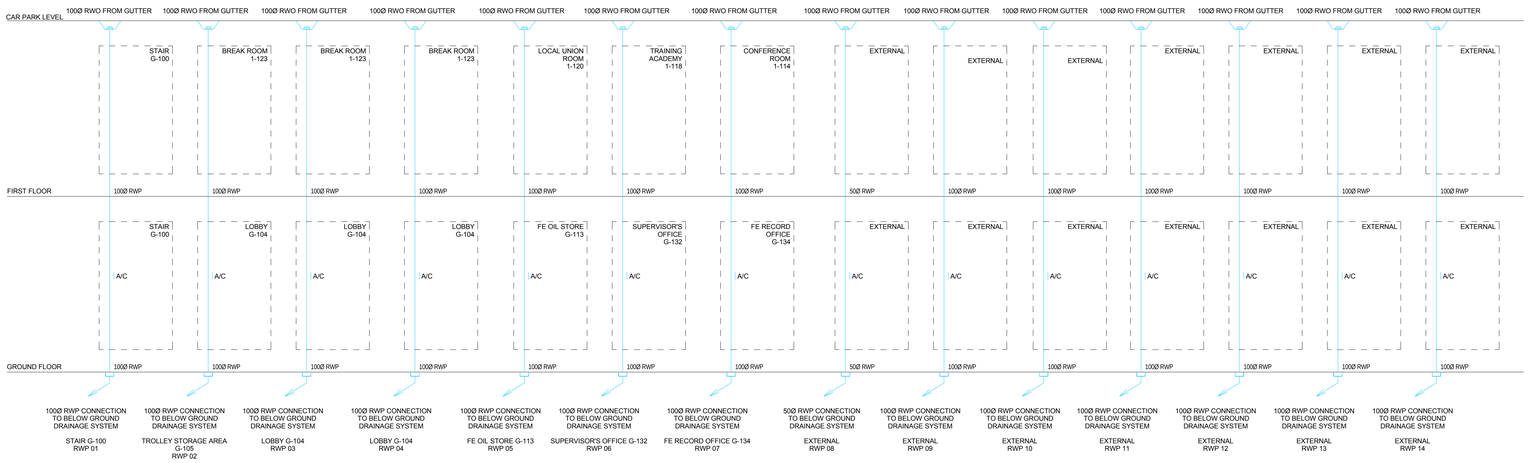

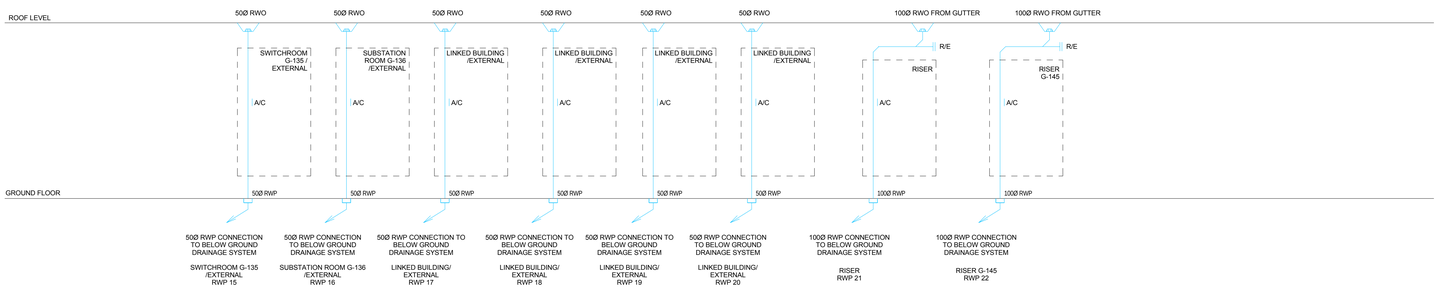

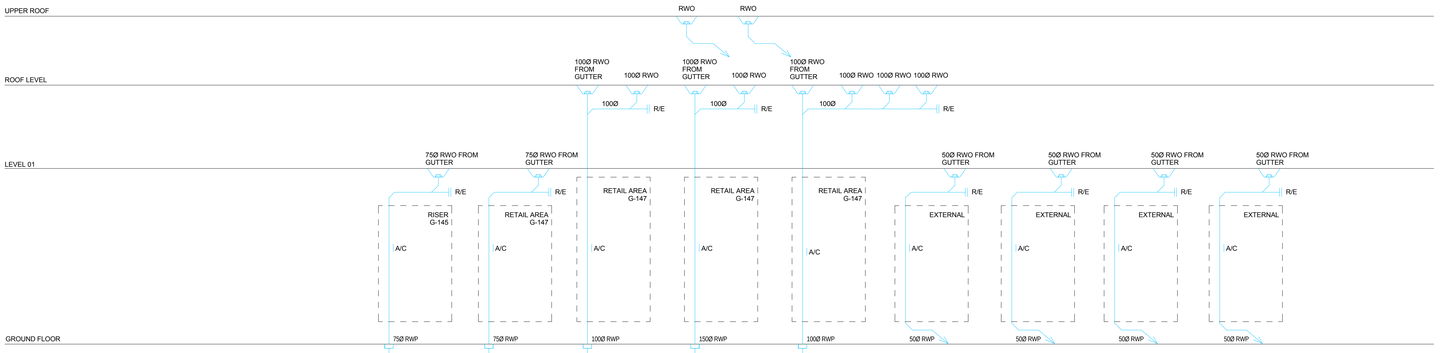

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Rev	Date	Description	Drwn	Ch'k'd

Status: GRIP 3

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

Drawn By	Name: Author	Sig: Author	Date	
Checked By	Name: Checker	Sig: Checker	Date	
Approved By	Name: Approver	Sig: Approver	Date	
Scale: 1 : 1		Sheet	of	
Map Grid	ELR	UCM	Distance	

Network Rail Drawing Number: EGIP19-ARP-DRG-EDR-52-S93 Rev:

Size: A0

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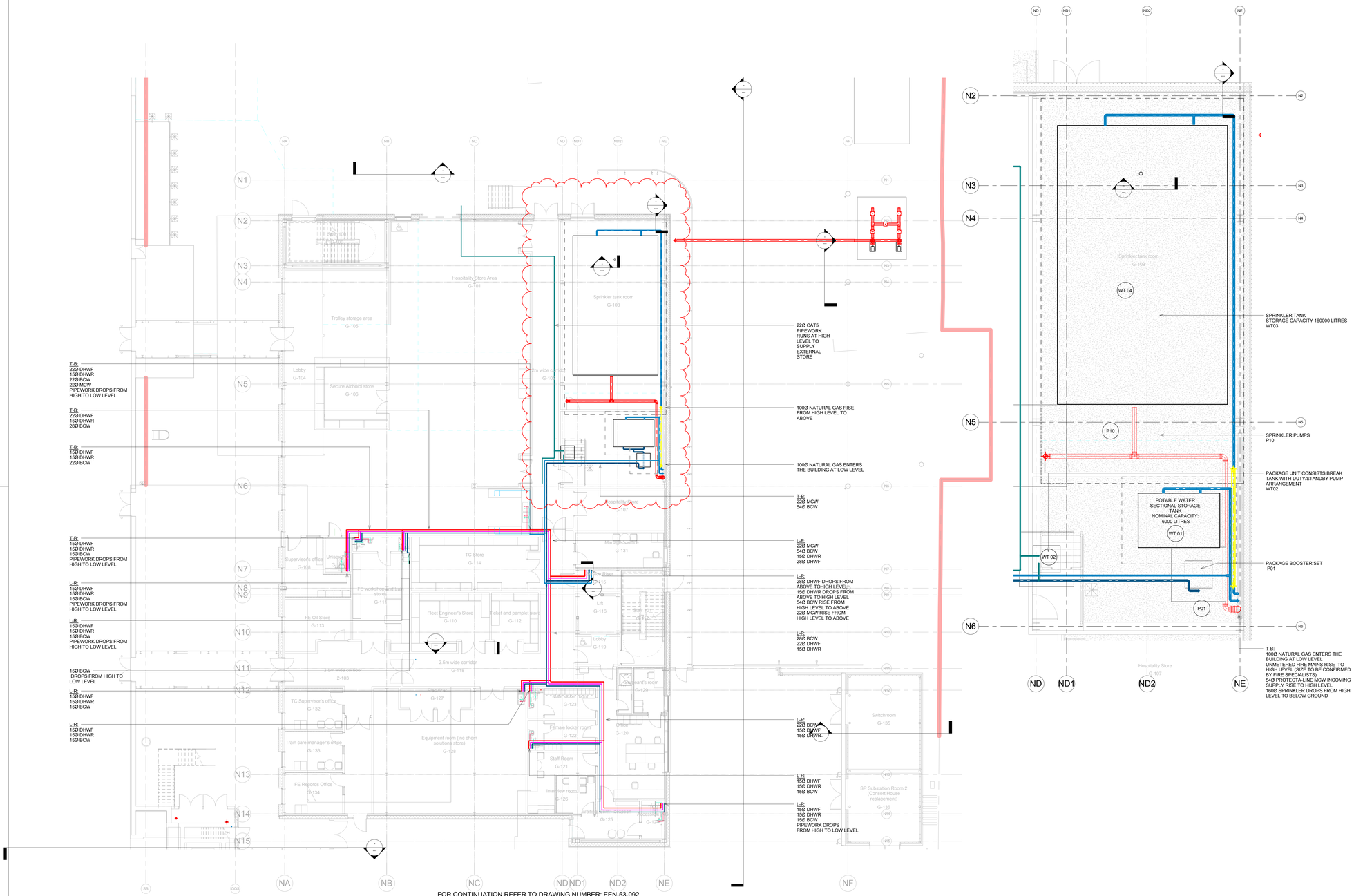

FOR CONTINUATION REFER TO DRAWING NUMBER: EEN-53-092

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NOTES

1. WATER SERVICES DESIGN BASED ON BS806 - ALL PARTS, AND WATER REGULATIONS.
2. ALL HOT WATER USING APPLIANCES EXCEPT CLEANERS SINKS TO HAVE MIXING VALVES LOCATED WITHIN MAXIMUM DISTANCE 2 METRES.
3. ALL THERMOSTATIC MIXING VALVES TO BE FAIL SAFE TO AVOID SCANDLING WHEN COLDWATER SUPPLY IS SHUT OFF BY PIR OPERATED SOLENOID VALVE
4. ALL REGULATING VALVES ON DOMESTIC HOT WATER RETURN TO BE SELF BALANCING TYPE I.E. OVENTROP AQUASTORM
5. SOLENOID VALVES TO BE INSTALLED ON THE BOOSTED COLD WATER SUPPLY TO EACH TOILET
6. ALL APPLICANCES TO HAVE LOCAL QUARTERTURN ISOLATION BALL VALVE.
7. ALL VISIBLE PIPEWORK IN OCCUPIED ROOMS TO BE CHROME PLATED COPPER WITH CHROME PLATED COMPRESSION FITTINGS AND NOT TO BE INSULATED
8. ALL PIPES LOCATED IN AREAS WHERE SUBSEQUENT INSPECTION WILL BE DIFFICULT OR IMPRACTICAL SHOULD BE INSTALLED AS CONTINUOUS RUN OR BE PRESSURE TESTED BEFORE BEING CONCEALED
9. FINAL LOCATIONS OF BIB TAPS FOR WASH DOWN, SERVED FROM NON POTABLE WATER SUPPLY TO BE CONFIRMED BY ARCHITECT.
10. PIPEWORK RUNNING EXTERNALLY TO SUPPLTY RETAIL AREAS TO BE TRACE HEATED

Note: This drawing has been extracted from a model that contains Structure and Services information imported directly from models provided by other disciplines, and may be subject to further design development up to the AFC issue date.

LEGEND:

BCW - BOOSTED COLD WATER
DHWF - DOMESTIC HOT WATER FLOW
DHWR - DOMESTIC HOT WATER RETURN
NPCW - NON POTABLE COLD WATER
MCW - MAINS COLD WATER

Rev	Date	Description	Drwn	Ch'k'd
B02	15/04/16	GRIP 4 REVISED DRAWING	MG	ST
B01	05/04/16	GRIP 4	MG	RF

Status: GRIP 4

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ARUP BDP.

Client: NetworkRail

Project Title
Queen Street Station - North Hanover Site

Drawing Title
Mechanical Engineering Services
Domestic Water Services and Natural Gas
Ground Floor Layout (A)

Drawn By	Name MP	Sig	Date 04/05/16
Checked By	Name MG	Sig	Date 04/05/16
Approved By	Name ST	Sig	Date 05/05/16
Scale NTS		Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-53-091 Rev B02

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Size: A0

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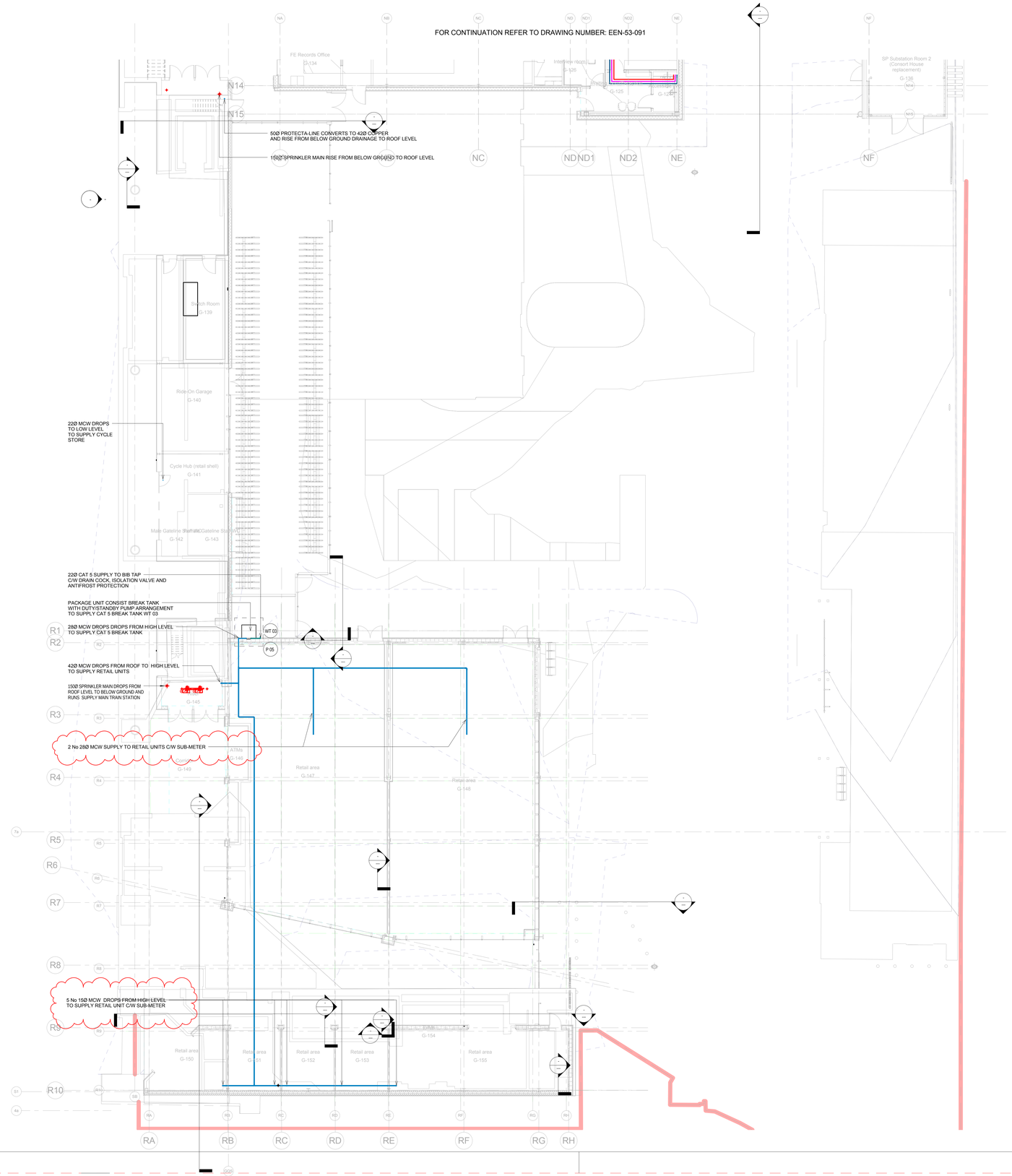

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NOTES

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DHWF - DOMESTIC HOT WATER FLOW
DHWR - DOMESTIC HOT WATER RETURN
NPCW - NON POTABLE COLD WATER
MCW - MAINS COLD WATER

Rev	Date	Description	Drwn	Ch'k'd
B02	15/04/16	GRIP 4 REVISED DRAWING	MG	ST
B01	31/03/16	GRIP 4	MP	MG

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services
Domestic Water Services and Natural Gas
Ground Floor Layout (B)

Drawn By	Name MP	Sig. MP	Date 04/05/16	
Checked By	Name MG	Sig. MG	Date 04/05/16	
Approved By	Name ST	Sig. ST	Date 05/05/16	
Scale 1 : 100		Sheet	of	
Map Grid	ELR	UCM	Distance	

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-53-092
Rev: B02

Size: A0

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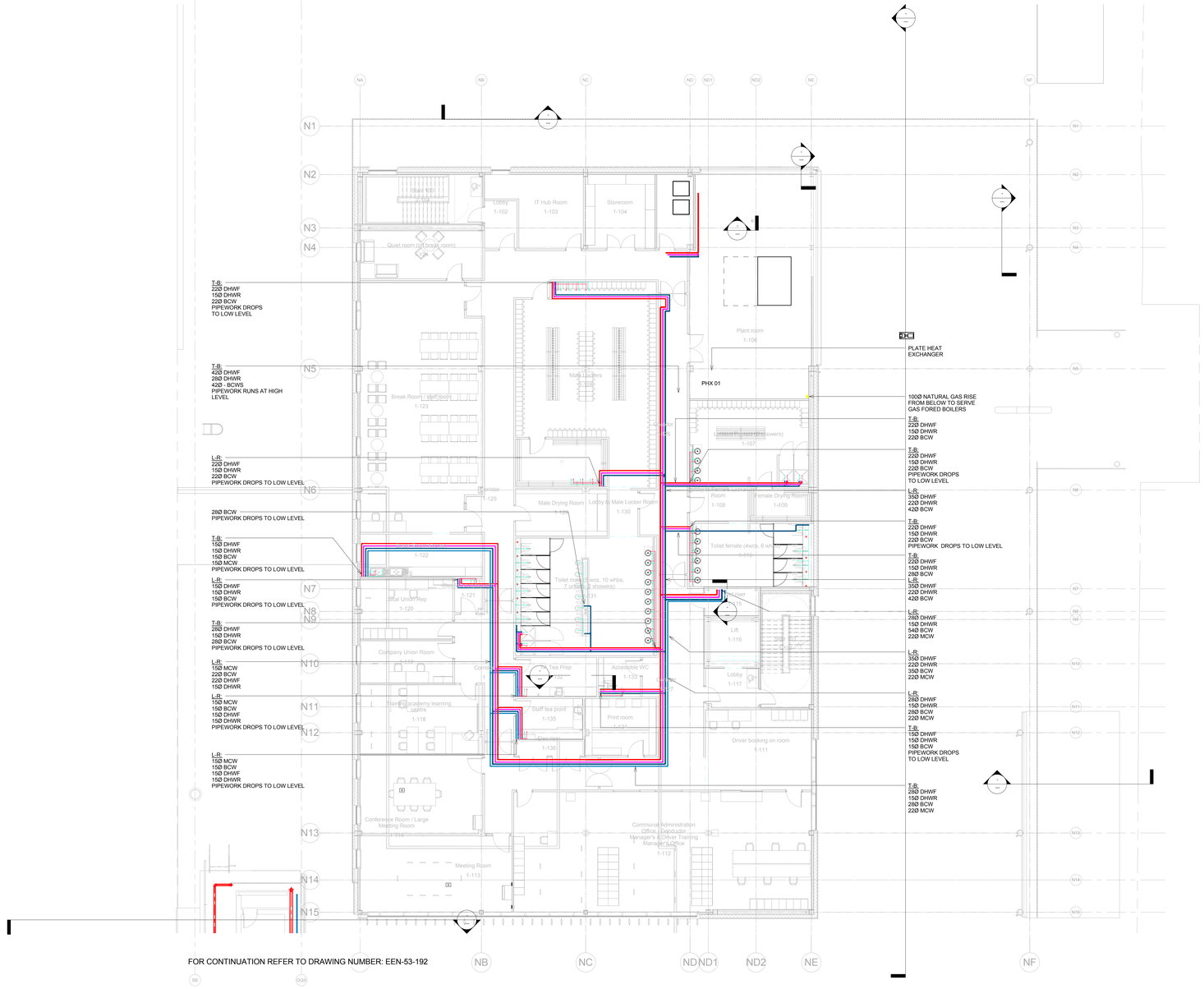

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NOTES

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LEGEND:

BCW - BOOSTED COLD WATER
DHWF - DOMESTIC HOT WATER FLOW
DHWR - DOMESTIC HOT WATER RETURN
NPCW - NON POTABLE COLD WATER
MCW - MAINS COLD WATER

Rev	Date	Description	Drwn	Chk'd
B02	15/04/16	GRIP 4 REVISED DRAWING	MG	ST
B01	05/04/16	GRIP 4	MG	RF

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services
Domestic Water Services and Natural Gas
First Floor Layout (A)

Drawn By	Name MP	Sig. MP	Date 04/05/2016		
Checked By	Name MG	Sig. MG	Date 04/05/2016		
Approved By	Name ST	Sig. ST	Date 05/05/2016		
Scale 1 : 100		Sheet	of		
Map Grid	ELR	UOM	Distance		

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-53-191 Rev B02

Size: A0

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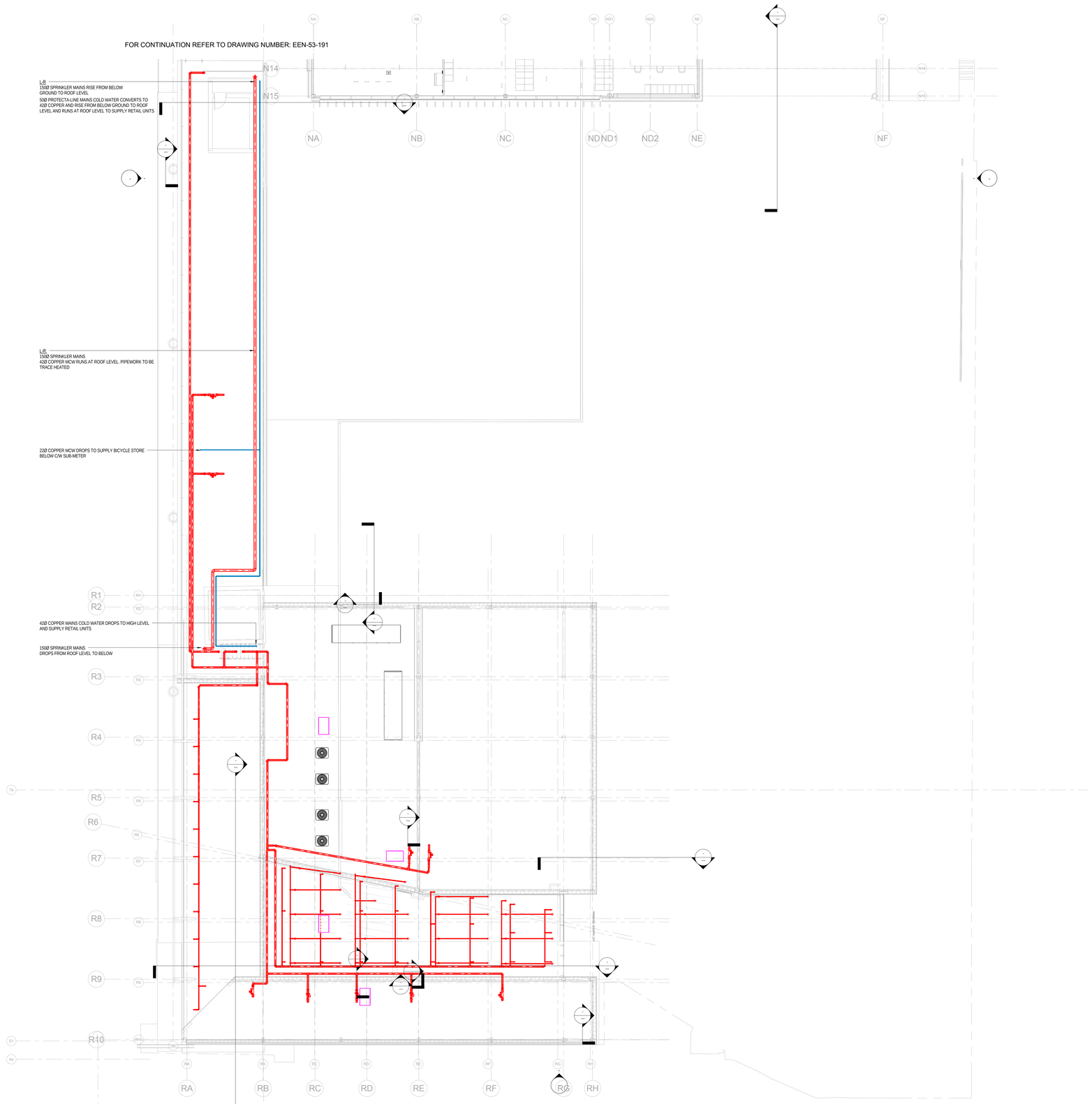

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NOTES

1. WATER SERVICES DESIGN BASED ON BS8006 - ALL PARTS, AND WATER REGULATIONS.
2. ALL HOT WATER USING APPLIANCES EXCEPT CLEANERS SINKS TO HAVE MIXINIG VALVES LOCATED WITHIN MAXIMUM DISTANCE 2 METRES.
3. ALL THERMOSTATIC MIXING VALVES TO BE FAIL SAFE TO AVOID SCANDLING WHEN COLDWATER SUPPLY IS SHUT OFF BY PIR OPERATED SOLENOID VALVE
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LEGEND:

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DHWF - DOMESTIC HOT WATER FLOW
DHWR - DOMESTIC HOT WATER RETURN
NPCW - NON POTABLE COLD WATER
MCW - MAINS COLD WATER

Rev	Date	Description	Drwn	Chk'd
B01	29/04/16	GRIP 4 REVISED DRAWING	MG	ST

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services
Domestic Water Services and Natural Gas
First Floor Layout (B)

	Name	Sig	Date
Drawn By	MG	MG	29/04/16
Checked By	ST	ST	29/04/16
Approved By	RF	RF	29/04/16

Scale: 1 : 100 | Sheet | of

Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-53-192 | Rev: B01

Size: A0

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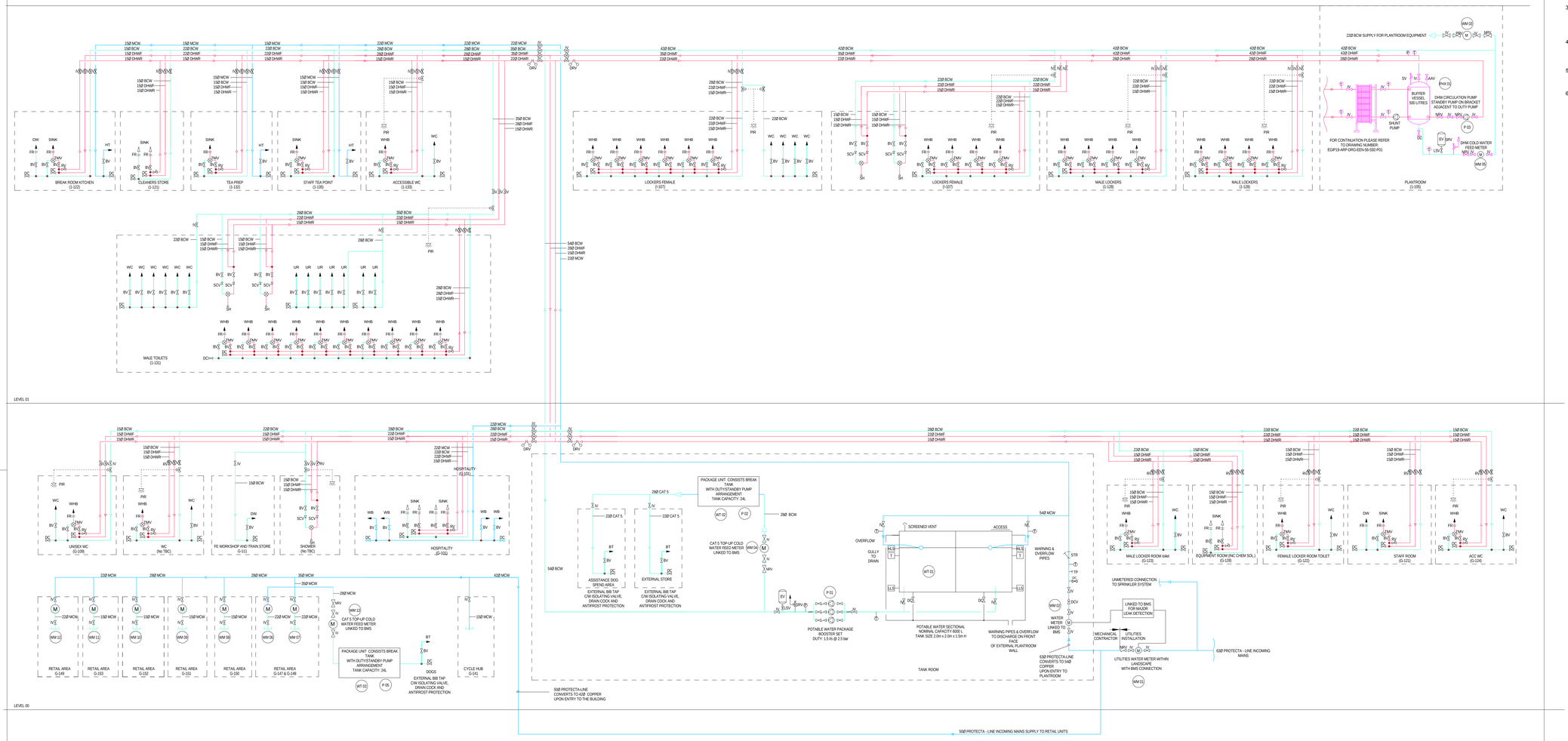

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NOTES

1. DRAWING TO BE READ IN CONJUNCTION WITH MECHANICAL SERVICES SPECIFICATION, LAYOUT DRAWINGS AND PLANT SCHEDULES.
2. WATER SERVICES DESIGN BASED ON BS 806-ALL PARTS, AND WATER EGULATIONS.
3. TEMPERATURE SENSORS TO BE LOCATED ON INDEX RUN COLD, HOT WATER FLOW AND RETURN LINKED TO MS FOR WATER TEMPERATURE MONITORING.
4. ALL VISIBLE PIPEWORK IN OCCUPIED ROOMS TO BE CHROME PLATED COOPER WITH CHROME PLATED COMPRESSION FITTINGS AND NOT INSULATED.
5. ALL APLIANCES TO HAVE LOCAL QUARTER TURN BALL VALVES WITH INTEGRAL FLOW REGULATOR DEVICE.
6. PIPEWORK RUNNING EXTERNALLY TO SUPPLY RETAIL AREAS TO BE TRACE HEATED.

LEGEND:

BCW	- BOOSTED COLD WATER
DHWF	- DOMESTIC HOT WATER FLOW
DHWR	- DOMESTIC HOT WATER RETURN
CAT 5	- CAT 5 WATER SUPPLY
MCW	- MAINS COLD WATER
IV	- ISOLATING VALVE
RV	- REGULATING VALVE (SELF BALANCING TYPE I.E. OVENTROP AQUASTORM)TO BE INSTALLED ON EACH HOT WATER RETURN PIPEWORK BRANCH
DC	- DRAIN COCK
DCV	- DOUBLE CHECK VALVE
TP	- TEST POINT
	- SOLENOID VALVE
LLS	- LOW LEVEL SENSOR
TS	- TEMPERATURE SENSOR
HLS	- HIGH LEVEL SENSOR
	- THERMOMETER
	- PRESSURE GAUGE
SCV	- SINGLE CHECK VALVE (SCV)
PIR	- LOCAL PIR LINKED TO WATER SAVING SHUT OFF VALVE
BV	- BALL VALVE
	- SAFTY RELIEF VALVE
STR	- STRAINER
	- NON RETURN VALVE

Rev	Date	Description	Drwn	Chk'd
B02	15/04/16	GRIP 4 REVISED DRAWING	MG	ST
B01	05/04/16	GRIP 4	MG	RF

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services Domestic Water Services Schematic

Drawn By	Name MP	Sig. MP	Date 15/04/16		
Checked By	Name MG	Sig. MG	Date 15/04/16		
Approved By	Name ST	Sig. ST	Date 15/04/16		
Scale As indicated		Sheet	of		
Map Grid	ELR	UOM	Distance		
Network Rail Drawing Number EGIP19-ARP-DRG-EEN-53-S91				Rev B02	

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Size: A0

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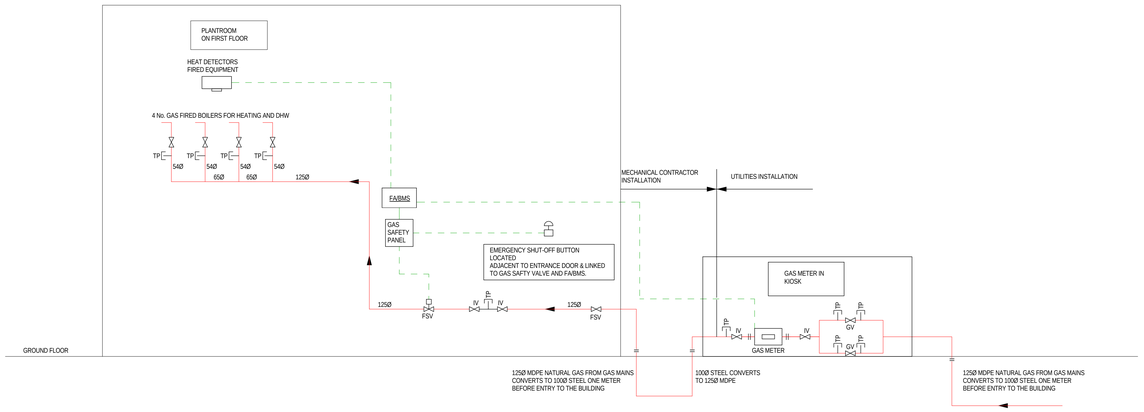

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NOTES

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IV - ISOLATION VALVE
TP - TEST POINT
FA - FIRE ALARM
BMS - BUILDING MENAGEMENT SERVICE
FSV - FIRE SAFETY VALVE
GV - GAS GOVERNOR
P - PRESSURE GAUGE

Rev	Date	Description	Drwn	Chk'd
#001	05/04/16	GRIP 4	MG	RF

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

Drawn By	Name: Author	Sig. Author	Date 05/04/16
Checked By	Name: Checker	Sig. Checker	Date 05/04/16
Approved By	Name: Approver	Sig. Approver	Date 05/04/16
Scale: As indicated		Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-54-S91

Rev: F01

Size: A0

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2. ALL PIPEWORK SHALL BE INSULATED AS DEFINED IN THE MECHANICAL SPECIFICATION UNLESS EXPOSED
ADJACENT TO EMITTERS. EXPOSED PIPEWORK SHALL BE PAINTED TO THE ARCHITECT'S REQUIREMENTS.

3. FIRE COLLARS SHALL BE FITTED ON ALL PIPEWORK + FLUE PENETRATIONS THROUGH FLOORS AND FIRE
COMPARTMENT WALLS. ALL PENETRATIONS THROUGH FLOORS AND FIRE COMPARTMENT WALLS SHALL BE
FIRE STOPPED IN LINE WITH THE ARCHITECT'S FIRE COMPARTMENTATION DRAWINGS.

4. ALL EXTERNAL/EXPOSED PIPEWORK TO BE TRACE HEATED, INSULATED AND PROTECTED WITH HAMMER-CLAD FINISH FOR FROST PROTECTION

5. ALL CONNECTIONS TO EMITTERS ARE 15MMØ UNLESS NOTED.

6. DRAIN COCKS SHALL BE FITTED AT LOW POINTS AND AIR VENTS SHALL BE FITTED AT HIGH POINTS.

7. THE CONTRACTOR SHALL INSTALL SUFFICIENT COMMISSIONING STATIONS (OR EQUIVALENT) TO PERMIT ALL SYSTEMS TO BE FULLY BALANCED AND COMMISSIONED IN ACCORDANCE WITH RELEVANT PUBLICATIONS BY BSRIA AND CIBSE.

8. ALL BRANCHES TO HAVE ISOLATION/VALVES.

9. FOR VALVE ARRANGEMENTS AND COMMISSIONING VALVE STATIONS, REFER TO THE SCHEMATIC DRAWINGS.

10. WHERE POSSIBLE, SERVICES REQUIRING MAINTENANCE, OR USED FOR COMMISSIONING PURPOSES SHALL BE KEPT TO ABOVE ACCESSIBLE CEILINGS.

12. THE CONTRACTOR SHALL LIAISE WITH A SPECIALIST THERMAL EXPANSION CONTRACTOR AND MAKE A SUITABLE ALLOWANCE FOR THE ACCOMMODATION
OF EXPANSION WITHIN ALL PIPEWORK SYSTEMS BASED UPON THEIR FINAL INSTALLATION DRAWINGS.

13. REFRIGERANT PIPE SIZES TO BE CONFIRMED BY SPECIALIST REFRIGERANT SYSTEMS CONTRACTOR.

14. REFER TO PLANT SCHEDULES FOR TECHNICAL DETAILS OF INDOOR ACU'S & OUTDOOR CONDENSING UNITS.

15. ALL INDOOR ACU LOCATIONS TO BE COORDINATED WITH OTHER M&E SERVICES.

16. REFER TO DRAINAGE DRAWINGS FOR DETAILS OF CONDENSATE PIPE RUNS.

17. REFRIGERATION LINES SHALL BE MOUNTED ON TRAY.

18. ALL WALL MOUNTED FAN COIL UNITS SHALL BE MOUNTED AT A MINIMUM OF 100mm FROM CEILING LEVEL TO TOP OF UNITS

19. RADIANT PANELS TO BE SUPORTED INDEPENDENTLY FROM THE CEILING STRUCTURE.

LEGEND

VT	- VARIABLE TEMPERATURE CIRCUIT
CT	- CONSTANT TEMPERATURE CIRCUIT
IRH	- ELECTRIC INFRARED HEATER
DAC	- DOOR AIR CURTAIN
LL	- LOW LEVEL
HL	- HIGH LEVEL
TB	- TO BELOW
FA	- FROM ABOVE
LTHW	- LOW TEMPERATURE HOT WATER
F&R	- FLOW AND RETURN
CU	- CONDENSING UNIT

AC — AC UNIT

RP — RADIANT PANEL

ELECTRIC INFRARED HEATER

DOOR AIR CURTAIN

BRANCH CIRCUIT CONTROLLER

OUTDOOR CONDENSING UNITS

Rev	Date	Description	Drwn	Ch'k'd
P01	05/04/16	GRIP 4	GL	RF

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

	Name	Sig.	Date
Drawn By	GL	GL	
Checked By	RF	RF	
Approved By	ST	ST	

Scale	As indicated	Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-56-091 — Rev: P01

Size: A0

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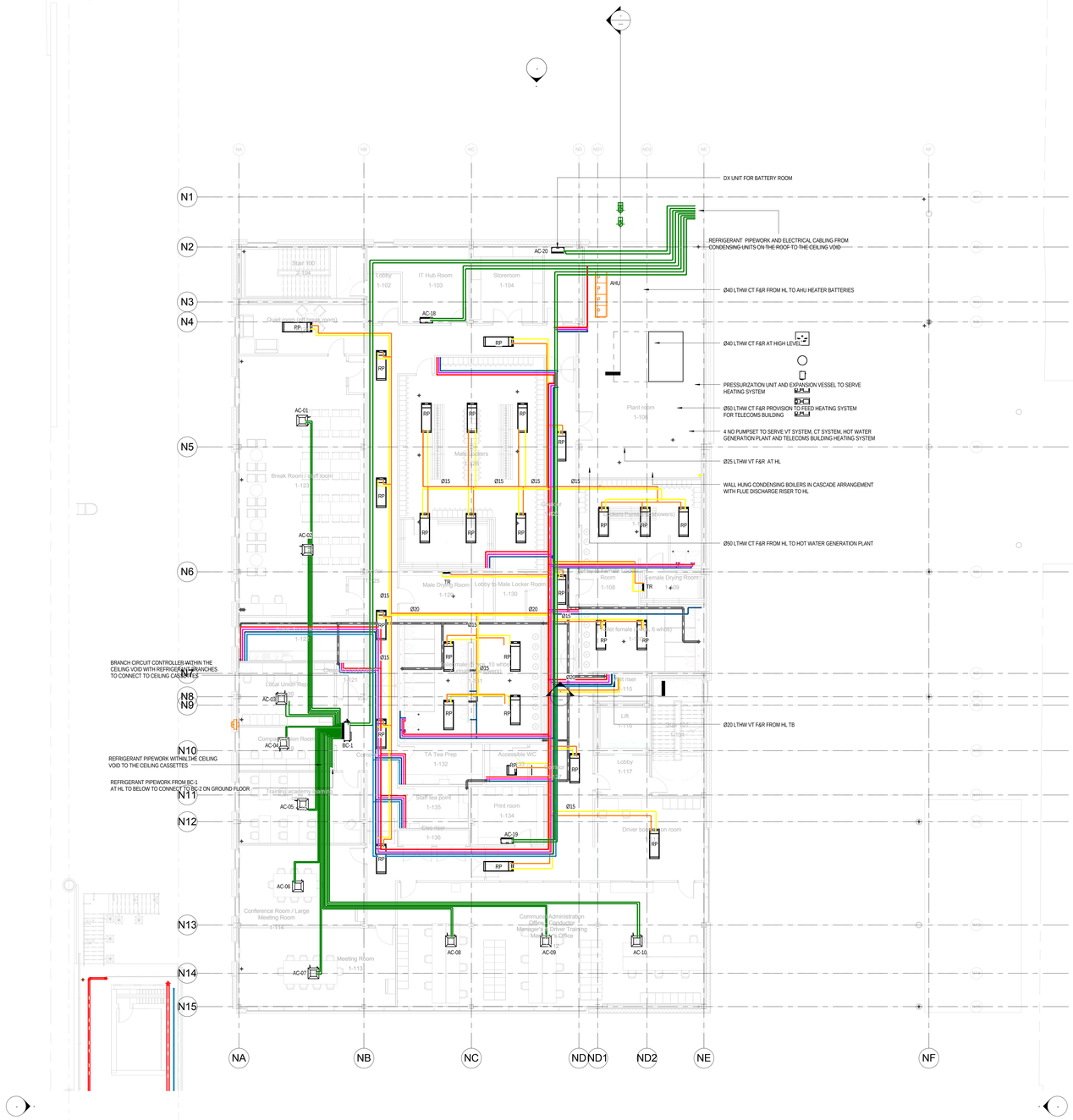

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SPECIFICATIONS AND SCHEDULES.

2. ALL PIPEWORK SHALL BE INSULATED AS DEFINED IN THE MECHANICAL SPECIFICATION UNLESS EXPOSED ADJACENT TO EMITTERS. EXPOSED PIPEWORK SHALL BE PAINTED TO THE ARCHITECT'S REQUIREMENTS.

3. FIRE COLLARS SHALL BE FITTED ON ALL PIPEWORK + FLUE PENETRATIONS THROUGH FLOORS AND FIRE COMPARTMENT WALLS. ALL PENETRATIONS THROUGH FLOORS AND FIRE COMPARTMENT WALLS SHALL BE FIRE STOPPED IN LINE WITH THE ARCHITECT'S FIRE COMPARTMENTATION DRAWINGS.

4. ALL EXTERNAL/EXPOSED PIPEWORK TO BE TRACE HEATED, INSULATED AND PROTECTED WITH HAMMER-CLAD FINISH FOR FROST PROTECTION

5. ALL CONNECTIONS TO EMITTERS ARE 15MMØ UNLESS NOTED.

6. DRAIN COCKS SHALL BE FITTED AT LOW POINTS AND AIR VENTS SHALL BE FITTED AT HIGH POINTS.

7. THE CONTRACTOR SHALL INSTALL SUFFICIENT COMMISSIONING STATIONS (OR EQUIVALENT) TO PERMIT ALL SYSTEMS TO BE FULLY BALANCED AND COMMISSIONED IN ACCORDANCE WITH RELEVANT PUBLICATIONS BY BSRIA AND CIBSE.

8. ALL BRANCHES TO HAVE ISOLATION\VALVES.

9. FOR VALVE ARRANGEMENTS AND COMMISSIONING VALVE STATIONS, REFER TO THE SCHEMATIC DRAWINGS.

10. WHERE POSSIBLE, SERVICES REQUIRING MAINTENANCE, OR USED FOR COMMISSIONING PURPOSES SHALL BE KEPT TO ABOVE ACCESSIBLE CEILINGS.

12. THE CONTRACTOR SHALL LIAISE WITH A SPECIALIST THERMAL EXPANSION CONTRACTOR AND MAKE A SUITABLE ALLOWANCE FOR THE ACCOMMODATION OF EXPANSION WITHIN ALL PIPEWORK SYSTEMS BASED UPON THEIR FINAL INSTALLATION DRAWINGS.

13. REFRIGERANT PIPE SIZES TO BE CONFIRMED BY SPECIALIST REFRIGERANT SYSTEMS CONTRACTOR.

14. REFER TO PLANT SCHEDULES FOR TECHNICAL DETAILS OF INDOOR ACU'S & OUTDOOR CONDENSING UNITS.

15. ALL INDOOR ACU LOCATIONS TO BE COORDINATED WITH OTHER M&E SERVICES.

16. REFER TO DRAINAGE DRAWINGS FOR DETAILS OF CONDENSATE PIPE RUNS.

17. REFRIGERATION LINES SHALL BE MOUNTED ON TRAY.

18. ALL WALL MOUNTED FAN COIL UNITS SHALL BE MOUNTED AT A MINIMUM OF 100mm FROM CEILING LEVEL TO TOP OF UNITS.

19. RADIANT PANELS TO BE SUPORTED INDEPENDENTLY FROM THE CEILING STRUCTURE.

LEGEND

VT	-	VARIABLE TEMPERATURE CIRCUIT
CT	-	CONSTANT TEMPERATURE CIRCUIT
IRH	-	ELECTRIC INFRARED HEATER
DAC	-	DOOR AIR CURTAIN
LL	-	LOW LEVEL
HL	-	HIGH LEVEL
TB	-	TO BELOW
FA	-	FROM ABOVE
LTHW	-	LOW TEMPERATURE HOT WATER
F&R	-	FLOW AND RETURN
CU	-	CONDENSING UNIT

AC — AC UNIT

RP — RADIANT PANEL

ELECTRIC INFRARED HEATER

DOOR AIR CURTAIN

BRANCH CIRCUIT CONTROLLER

OUTDOOR CONDENSING UNITS

Rev	Date	Description	Drwn	Chk'd
P01	05/04/16	GRIP 4	GL	RF

Status: GRIP 3

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

	Name	Sig.	Date
Drawn By	GL	GL	
Checked By	RF	RF	
Approved By	ST	ST	

Scale	As indicated	Sheet	of
Map Grid	BLR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-56-191 — Rev: P01

Size: A0

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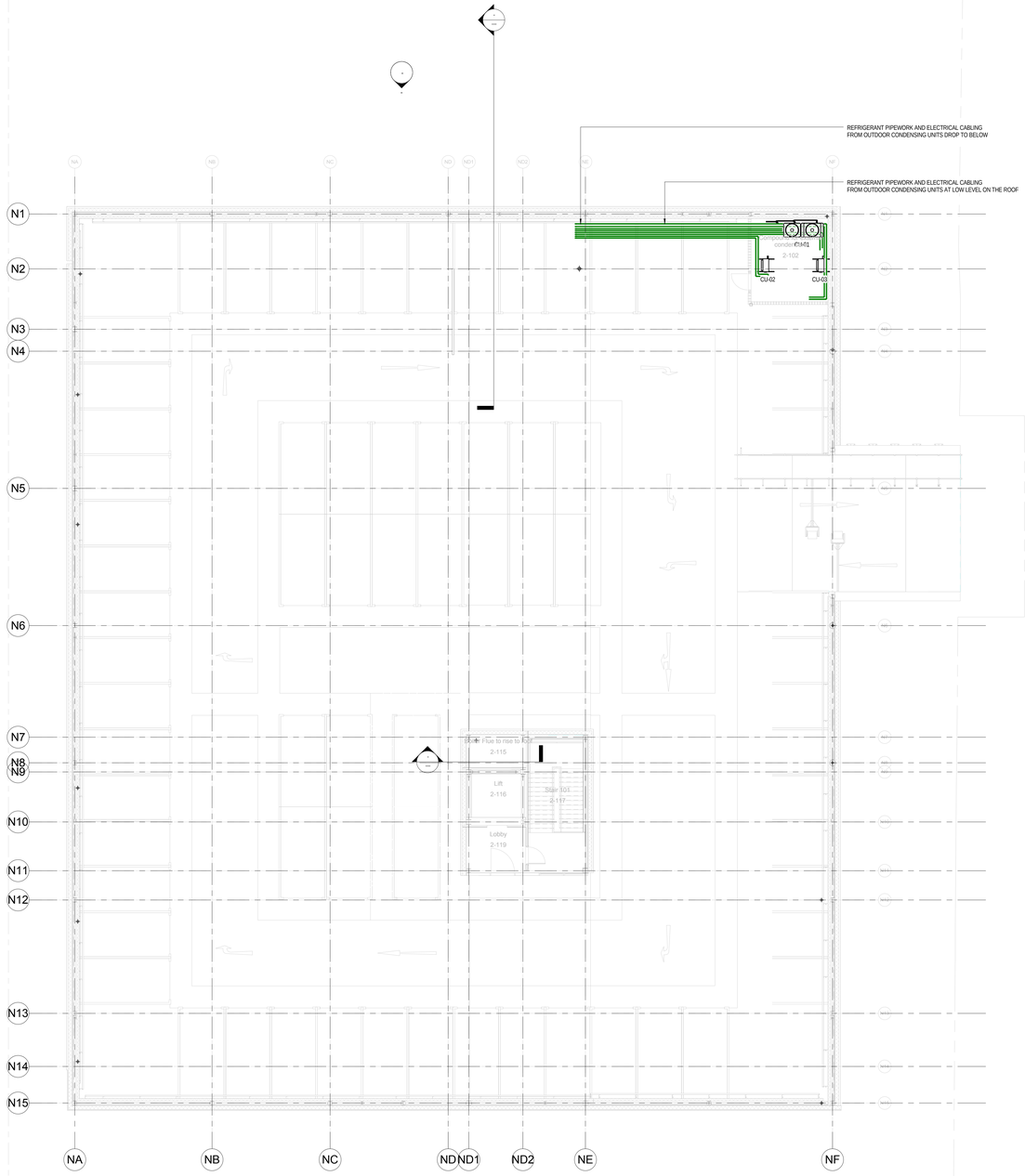

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LEGEND

VT - VARIABLE TEMPERATURE CIRCUIT
CT - CONSTANT TEMPERATURE CIRCUIT
IRH - ELECTRIC INFRARED HEATER
DAC - DOOR AIR CURTAIN
LL - LOW LEVEL
HL - HIGH LEVEL
TB - TO BELOW
FA - FROM ABOVE
LTHW - LOW TEMPERATURE HOT WATER
F&R - FLOW AND RETURN
CU - CONDENSING UNIT

AC — AC UNIT

RP — RADIANT PANEL

ELECTRIC INFRARED HEATER

DOOR AIR CURTAIN

BRANCH CIRCUIT CONTROLLER

OUTDOOR CONDENSING UNITS

Rev	Date	Description	Drwn	Chk'd
P01	05/04/16	GRIP 4	GL	RF

Status: GRIP 5

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www.bdp.com

ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

Drawn By	Name GL	Sig GL	Date	
Checked By	Name RF	Sig RF	Date	
Approved By	Name ST	Sig ST	Date	
Scale As indicated		Sheet	of	
Map Grid	EUR	UOM	Distance	

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-56-291 — Rev: P01

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Size: A0

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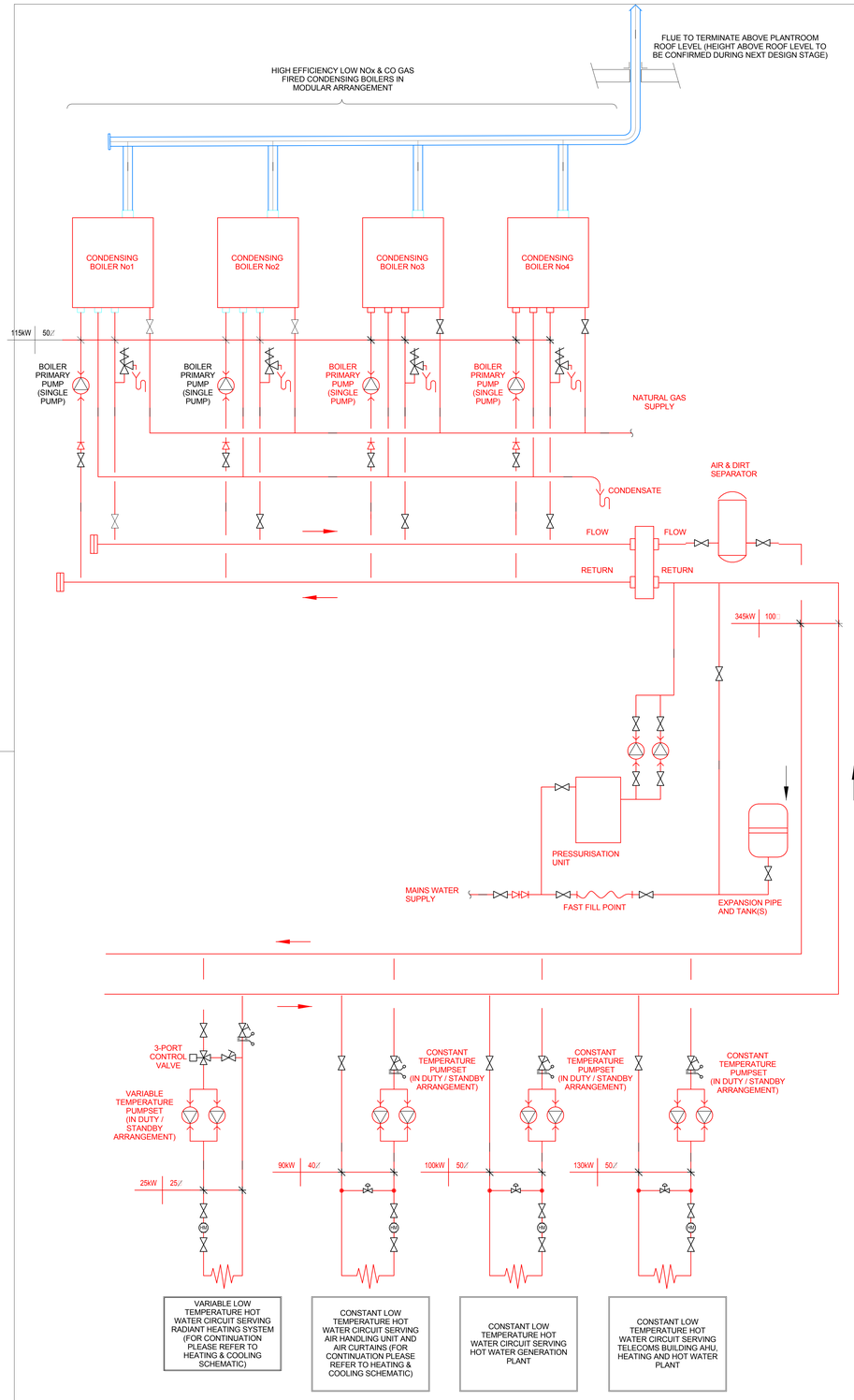
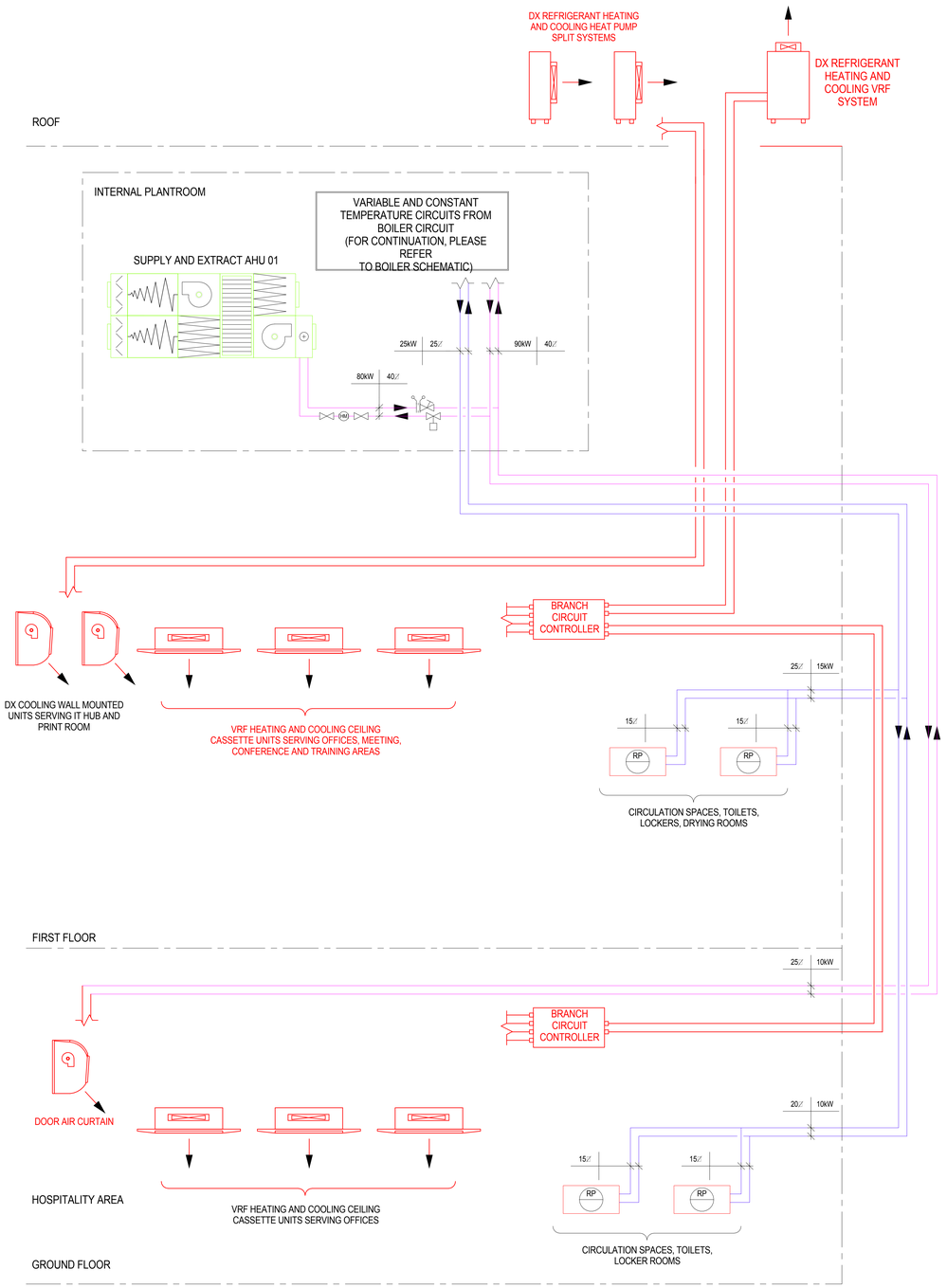


BOILER PLANTROOM SCHEMATIC



HEATING AND COOLING SERVICES SCHEMATIC

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LEGEND

IV	ISOLATING VALVE
LSV	LOCK SHIELD VALVE
S TRV	THERMOSTATIC RADIATOR VALVE c/w REMOTE TEMPERATURE SENSOR ADJUSTER
VODRV	VARIABLE ORIFICE DOUBLE REGULATING VALVE
	COMBINED STRAINER / BALL VALVE
ST	STRAINER
	FLEXI-CONNECTION MIN 300mm LONG
	ANCHOR POINT
	COMMISSIONING STATION
DC	DRAIN COCK
AV	AIR VENT
TRV	THERMOSTATIC RADIATOR VALVE
	2 PORT CONTROL VALVE
	DIFFERENTIAL PRESSURE REGULATING VALVE
BMS	BUILDING MANAGEMENT SYSTEM
TS	TEMPERATURE SENSOR
	TEST POINT
RP XXXx	RADIANT PANEL AND REFERENCE
FLOW RATE (kg/s) | DIAMETER (mm)	
HM	HEAT METER

Rev	Date	Description	Drwn	Chk'd
P01	05/04/16	GRIP 4	GL	RF

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

	Name	Sig.	Date
Drawn By	GL	GL	
Checked By	RF	RF	
Approved By	ST	ST	

Scale: NTS		Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-56-S92 — Rev: P01

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Size: A0

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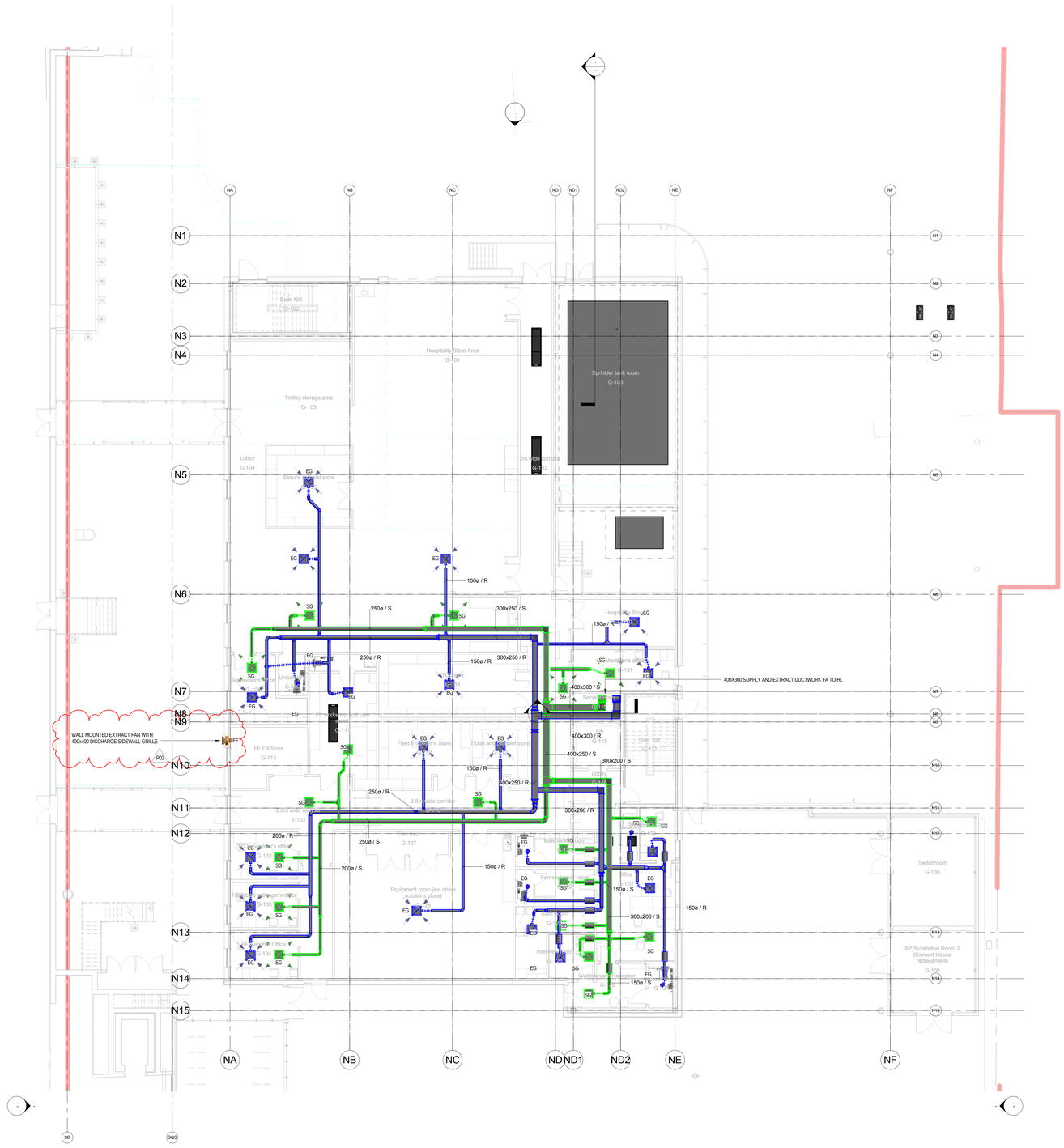

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3. DUCTWORK BETWEEN AHU'S / FAN'S AND ATTENUATORS TO BE ACOUSTICALLY LAGGED TO PREVENT NOISE BREAKOUT THROUGHN DUCT.

4. VOLUME CONTROL DAMPERS TO BE PROVIDED ON ALL MAIN BRANCHES AND ALL FINAL CONNECTIONS TO GRILLES.

5. FUSIBLE LINK FIRE DAMPERS TO BE PROVIDED WHERE DUCTS PASS THROUGH CAVITY BARRIERS / FIRE COMPARTMENTATION.

6. DUCT ACCESS PANELS FOR CLEANING PURPOSES SHALL BE LOCATED AS INDICATED WITHIN THE MECHANICAL SPECIFICATION. MECHANICAL CONTRACTOR TO ADVISE ARCHITECT OF ACCESS REQUIREMENTS WITHIN PLASTERBOARD CEILINGS.

7. WHERE POSSIBLE, SERVICES REQUIRING MAINTENANCE, OR USED FOR COMMISSIONING PURPOSES SHALL BE KEPT TO ABOVE ACCESSIBLE CEILINGS.

8. FINAL POSITION OF ALL CEILING MOUNTED GRILLES AND CASSETTE UNITS TO BE INDICATED ON ARCHITECTS REFLECTED CEILING PLANS.

9. ALL FINAL FLEXIBLE CONNECTIONS TO GRILLES TO BE NO MORE THAN 1000mm LONG.

10. EXTERNAL LOUVRES SIZED BASED ON A FREE AREA OF 50%

11. ALL GRILLES WITHIN PLASTERBOARD CEILINGS TO BE PROVIDED C/W OPPOSED BLADE DAMPERS TO LIMIT REQUIREMENT OF VCD'S ABOVE PLASTERBOARD CEILINGS.

12. ALL GRILLE POSITIONS SHOWN ARE INDICATIVE. FINAL LOCATIONS TO BE BY M&E CONTRACTOR ONCE CEILING GRID AND FURNITURE HAVE BEEN FINALISED.

LEGEND

AHU - AIR HANDLING UNIT
SG - SUPPLY GRILLE
EG - EXTRACT GRILLE
FD - FIRE DAMPER
HB - HEATER BATTERY
VCD - VOLUME CONTROL DAMPER
ATT - ATTENUATOR
CTA - CROSS TALK ATTENUATOR
FA - FROM ABOVE
TB - TO BELOW
HL - HIGH LEVEL
LL - LOW LEVEL
SFD - SMOKE FIRE DAMPER
EF - EXTRACT FAN

Rev	Date	Description	Drwn	Chk'd
B02	29/04.16	AMENDMENTS AS SHOWN	GL	RF
B01	05/04/16	GRIP 4	GL	RF

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Services Supply and Extract Ventilation

	Name	Sig.	Date
Drawn By	GL	GL	29/04.16
Checked By	RF	RF	29/04.16
Approved By	ST	ST	29/04.16

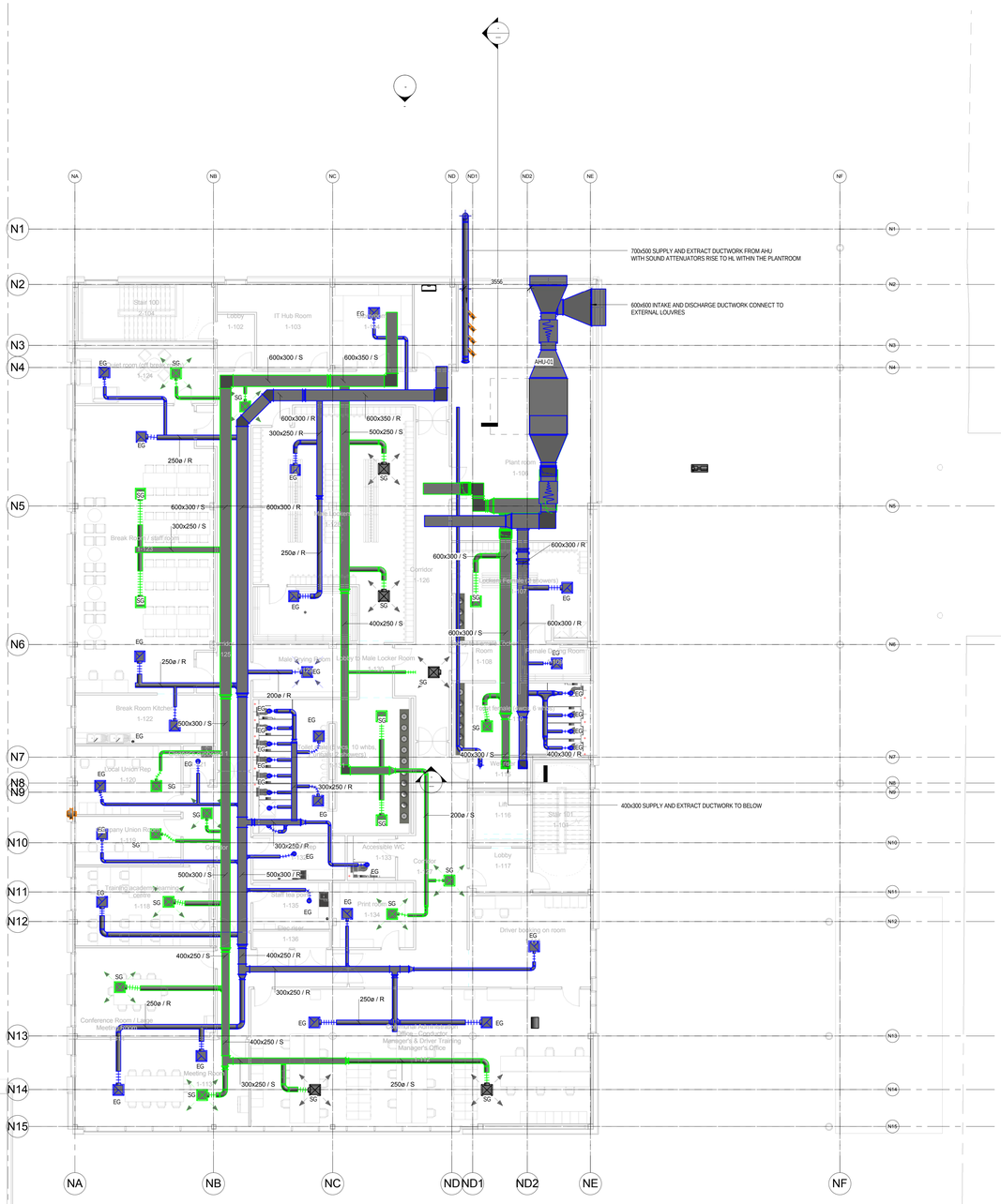
Scale: As indicated | Sheet | of

Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-57-091 | Rev: B02

Size: A0

DO NOT SCALE



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Rev	Date	Description	Drwn	Chk'd
P01	05/04/16	GRIP 4	GL	RF

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

Drawn By	Name GL	Sig. GL	Date	
Checked By	Name RF	Sig. RF	Date	
Approved By	Name ST	Sig. ST	Date	
Scale	As indicated	Sheet	of	
Map Grid		ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-57-191 — Rev P01

Size: A0

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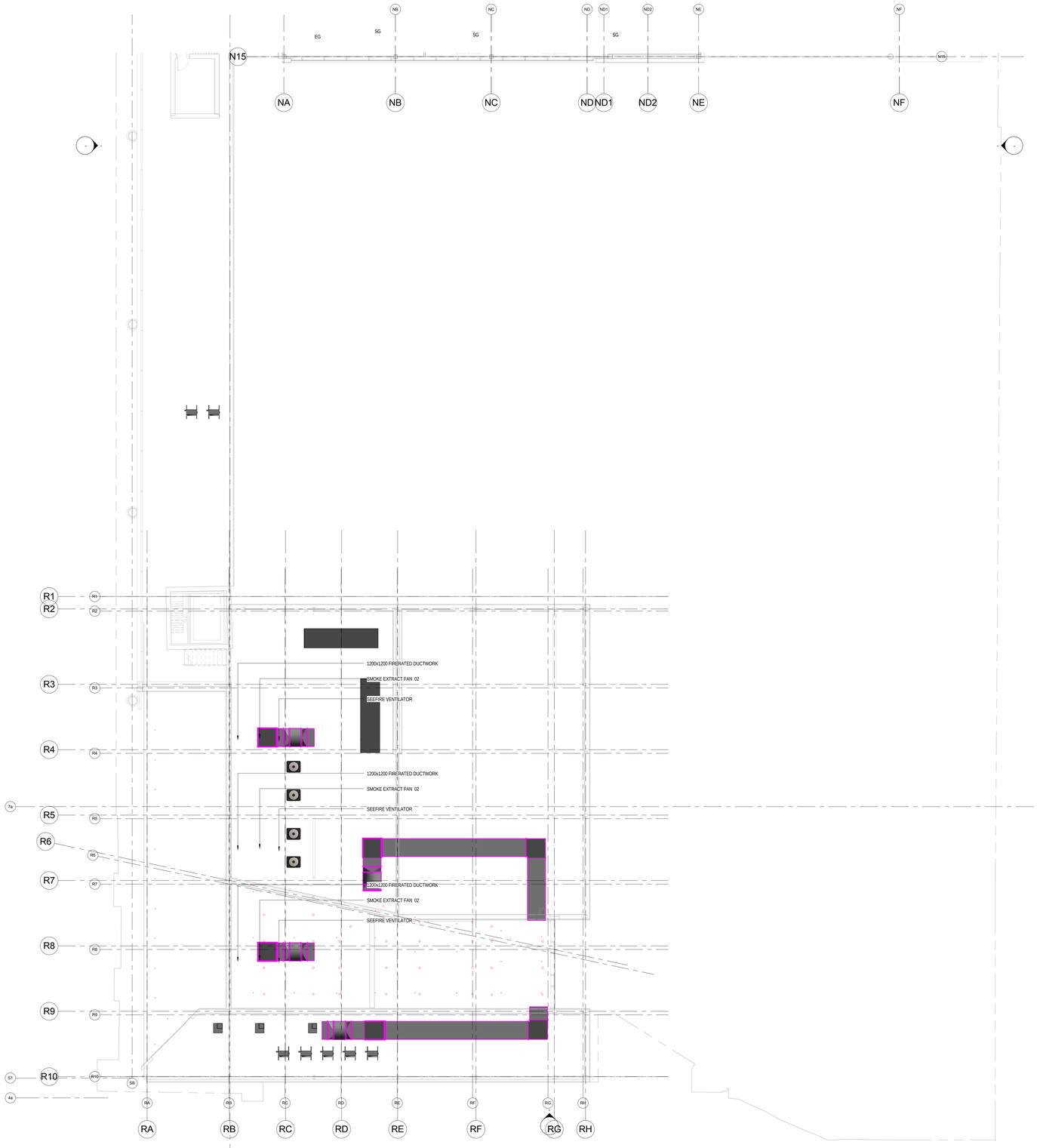

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Rev	Date	Description	Drwn	Chk'd
P01	05/04/16	GRIP 4	GL	RF

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services

Drawn By	Name GL	Sig. GL	Date	
Checked By	Name RF	Sig. RF	Date	
Approved By	Name ST	Sig. ST	Date	
Scale As indicated		Sheet	of	
Map Grid	ELR	UOM	Distance	

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-57-192 — Rev P01

Size: A0

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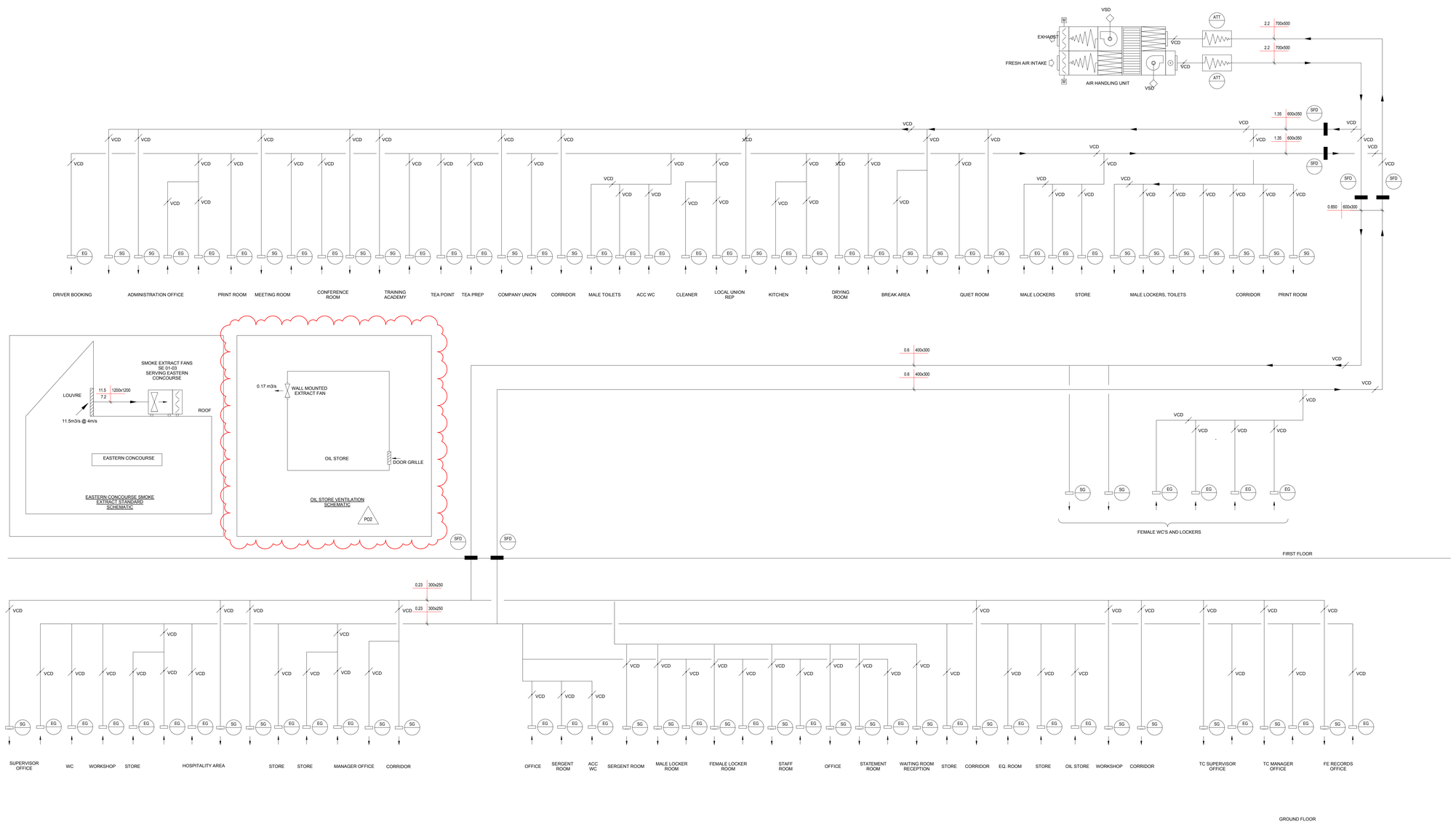

LEGEND

- SD — SUPPLY DIFUSER
- EG — EXTRACT GRILLE
- DEG — DIRTY EXTRACT GRILLE
- ATT — ATTENUATOR
- CROSS TALK ATTENUATOR
- FAN
- VCD — VOLUME CONTROL DAMPER
- FD — FIRE DAMPER
- SFD — SMOKE FIRE DAMPER
- NATURAL VENTILATION VIA OPENING WINDOW
- TG CL/01 — TRANSFER GRILLE
- M — MOTORISED DAMPER
- H HB — HEATER BATTERY
- C CC — COOLING COIL
- H/D HUM — HUMIDIFIER
- VSD — VARIABLE SPEED DRIVE

Rev	Date	Description	Drwn	Chk'd
B02	29/04.16	AMENDMENTS AS SHOWN	GL	RF
B01	05/04/16	GRIP4	GL	RF

Status: GRIP 5

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www.bdp.com

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services Ventilation Schematic

	Name	Sig.	Date
Drawn By	GL	GL	29/04.16
Checked By	RF	RF	29/04.16
Approved By	ST	ST	29/04.16

Scale: 1 : 100 | Sheet | of

Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-57-S91 | Rev: B02

Size: A0

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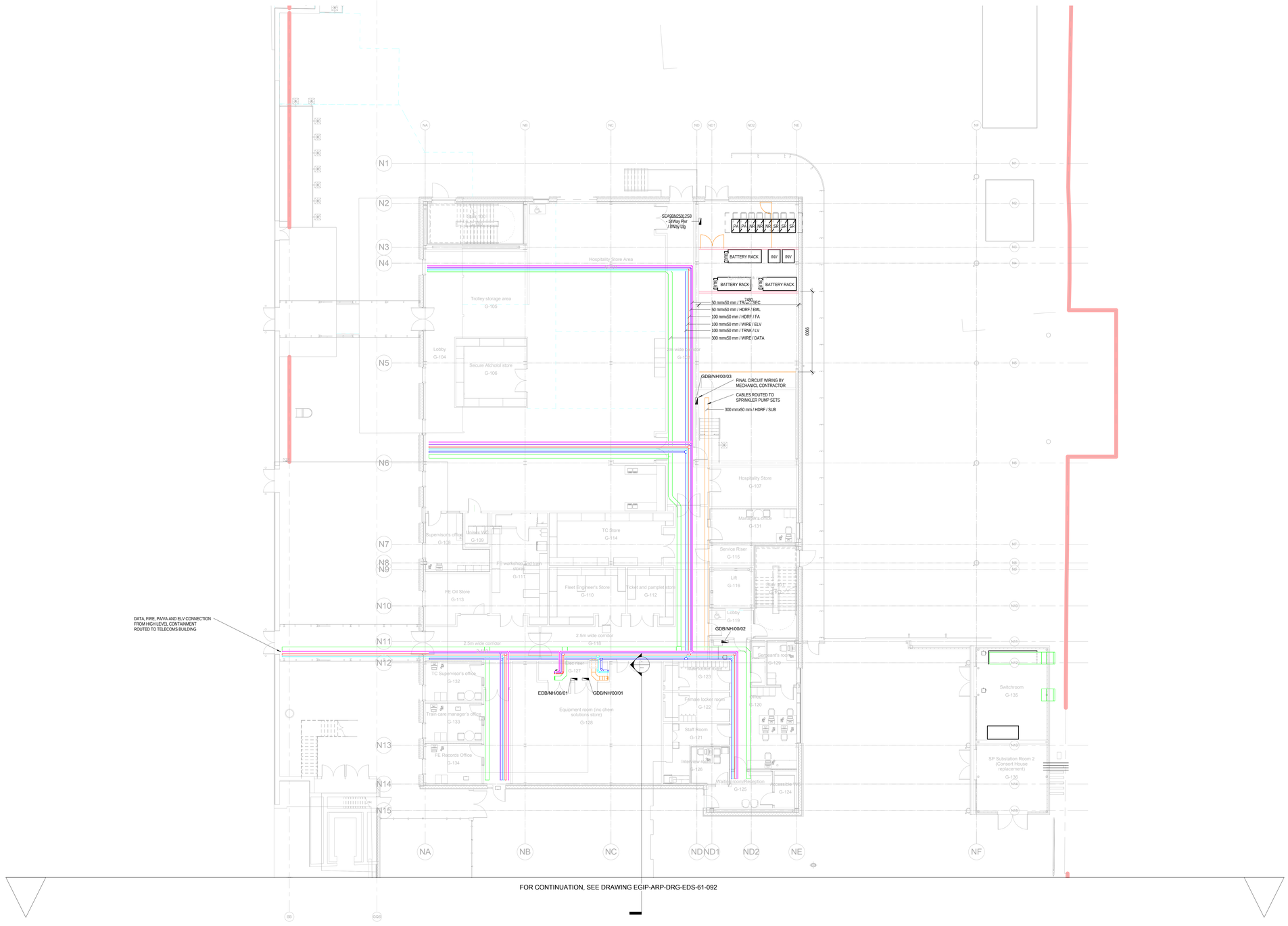
DO NOT SCALE



FOR CONTINUATION, SEE DRAWING EGIP-ARP-DRG-EDS-61-092

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5. FOR EXTERNAL SERVICES DETAIL SEE DRAWINGS: EGIP19-ARP-DRG-EEN-96-001 AND EGIP19-ARP-DRG-EEN-96-092

LEGEND

SIZE | TYPE
300 mm x 300 mm / HDRF / LV
SYSTEM

TYPE

HDRF	HEAVY DUTY RETURN FLANGE CABLE TRAY
MDRF	MEDIUM DUTY RETURN FLANGE CABLE TRAY
MDSE	MEDIUM DUTY STRAIGHT EDGE CABLE TRAY
LADD	CABLE LADDER FLANGE IN
TRNK	CABLE TRUNKING
WIRE	WIRE BASKET

SYSTEM

70-30
LOW VOLTAGE DISTRIBUTION - SUBMAIN CABLES
SUB

70-30-45-45
LOW VOLTAGE DISTRIBUTION - FINAL CIRCUITS
LV

70-80-33-12
EMERGENCY LIGHTING SYSTEMS
EML

75-10-21-21
DATA DISTRIBUTION SYSTEMS
DATA

75-40
SECURITY SYSTEMS
SEC

75-50-28-29
FIRE DETECTION AND ALARM SYSTEMS
FA

75-70-54-10
CONTROL AND MANAGEMENT SYSTEMS
ELV

NOTE: FA CONTAINMENT TO BE DIVIDED
AND INCLUDE PA / VA CIRCUITS ALSO

Rev	Date	Description	Drwn	Chk'd
B02	26/07/16	GRIP 5	CARS	CC
B01	30/06/16	GRIP 5	AR	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title
Queen Street Station - North Hanover Site

Drawing Title
Electrical Engineering Services
Primary Equipment & Containment
Ground Floor Layout (A)

Drawn By	Name: AR	Sig. AR	Date: 26/07/16		
Checked By	Name: RF	Sig. RF	Date: 26/07/16		
Approved By	Name: CC	Sig. CC	Date: 26/07/16		
Scale 1 : 100		Sheet	of		
Map Grid	ELR	UOM	Distance		

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-61-091
Rev: B02

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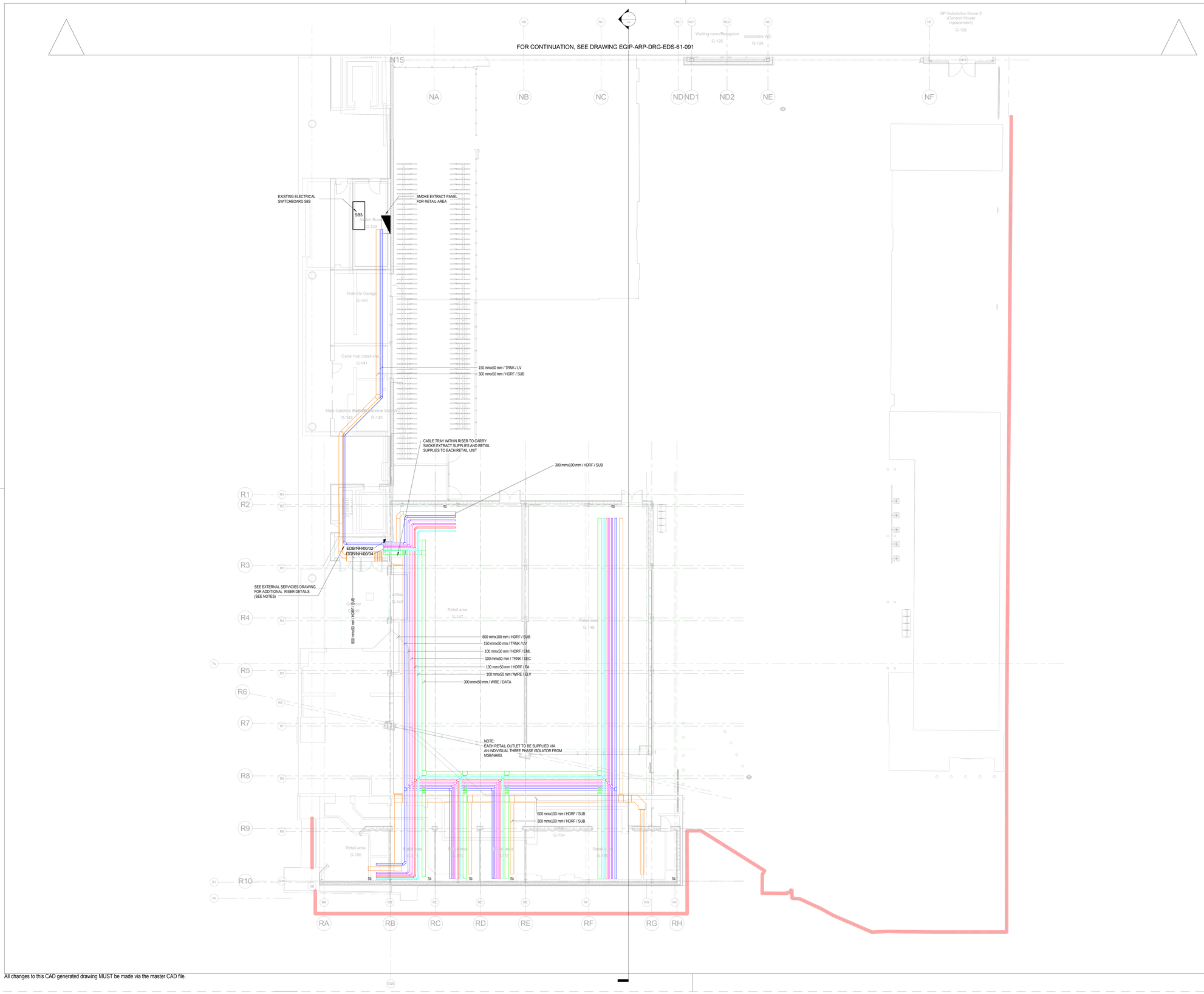
Size: A0

DO NOT SCALE



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5. FOR EXTERNAL SERVICES DETAIL SEE DRAWINGS: EGIP19-ARP-DRG-EEN-96-091 AND EGIP19-ARP-DRG-EEN-96-092

LEGEND

SIZE | TYPE
300 mm x 300 mm / HDRF / LV
SYSTEM

TYPE

HDRF	HEAVY DUTY RETURN FLANGE CABLE TRAY
MDRF	MEDIUM DUTY RETURN FLANGE CABLE TRAY
MDSE	MEDIUM DUTY STRAIGHT EDGE CABLE TRAY
LADD	CABLE LADDER FLANGE IN
TRNK	CABLE TRUNKING
WIRE	WIRE BASKET

SYSTEM

- 70-30 LOW VOLTAGE DISTRIBUTION - SUBMAIN CABLES SUB
- 70-30-45-45 LOW VOLTAGE DISTRIBUTION - FINAL CIRCUITS LV
- 70-80-33-12 EMERGENCY LIGHTING SYSTEMS EML
- 75-10-21-21 DATA DISTRIBUTION SYSTEMS DATA
- 75-40 SECURITY SYSTEMS SEC
- 75-50-28-29 FIRE DETECTION AND ALARM SYSTEMS FA
- 75-70-54-10 CONTROL AND MANAGEMENT SYSTEMS ELV

NOTE: FA CONTAINMENT TO BE DIVIDED AND INCLUDE PA / VA CIRCUITS ALSO

Rev	Date	Description	Drwn	Chk'd
B02	26/07/16	GRIP 5	CMS	CC
B01	30/06/16	GRIP 5	AR	CC

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Primary Equipment & Containment
Ground Floor Layout (B)

	Name	Sig.	Date
Drawn By	AR	AR	26.04.2016
Checked By	RF	RF	26.04.2016
Approved By	CC	CC	26.04.2016

Scale: 1 : 100 | Sheet | of

Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-61-092 | Rev: B02

Size: A0

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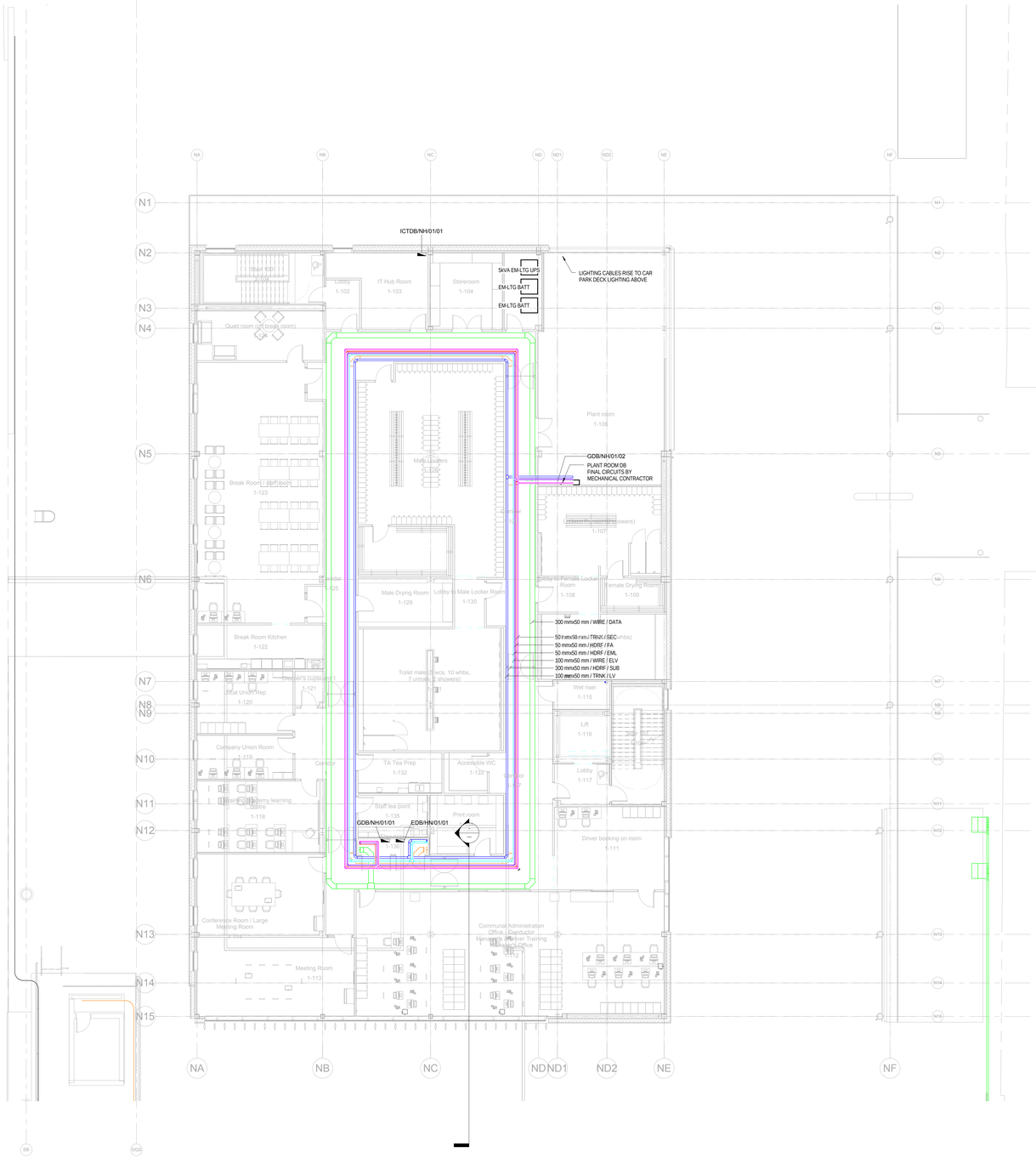
DO NOT SCALE



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5. FOR EXTERNAL SERVICES DETAIL SEE DRAWINGS: EGIP19-ARP-DRG-EEN-96-091 AND EGIP19-ARP-DRG-EEN-96-092

LEGEND

SIZE | TYPE
300 mm x 300 mm / HDRF / LV
SYSTEM

TYPE

HDRF	HEAVY DUTY RETURN FLANGE CABLE TRAY
MDRF	MEDIUM DUTY RETURN FLANGE CABLE TRAY
MDSE	MEDIUM DUTY STRAIGHT EDGE CABLE TRAY
LADD	CABLE LADDER FLANGE IN
TRNK	CABLE TRUNKING
WIRE	WIRE BASKET

SYSTEM

70-30
LOW VOLTAGE DISTRIBUTION - SUBMAIN CABLES
SUB

70-30-45-45
LOW VOLTAGE DISTRIBUTION - FINAL CIRCUITS
LV

70-80-33-12
EMERGENCY LIGHTING SYSTEMS
EML

75-10-21-21
DATA DISTRIBUTION SYSTEMS
DATA

75-40
SECURITY SYSTEMS
SEC

75-50-28-29
FIRE DETECTION AND ALARM SYSTEMS
FA

75-70-54-10
CONTROL AND MANAGEMENT SYSTEMS
ELV

NOTE: FA CONTAINMENT TO BE DIVIDED AND INCLUDE PA / VA CIRCUITS ALSO

Rev	Date	Description	Drwn	Chk'd
B02	26/07/16	GRIP 5	CMS	CC
B01	30/06/16	GRIP 5	AR	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title
Queen Street Station - North Hanover Site

Drawing Title
Electrical Engineering Services
Primary Equipment & Containment
First Floor Layout

	Name	Sig.	Date
Drawn By	AR	AR	26.04.2016
Checked By	RF	RF	26.04.2016
Approved By	CC	CC	26.04.2016

Scale	1 : 100	Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-61-191
Rev: B02

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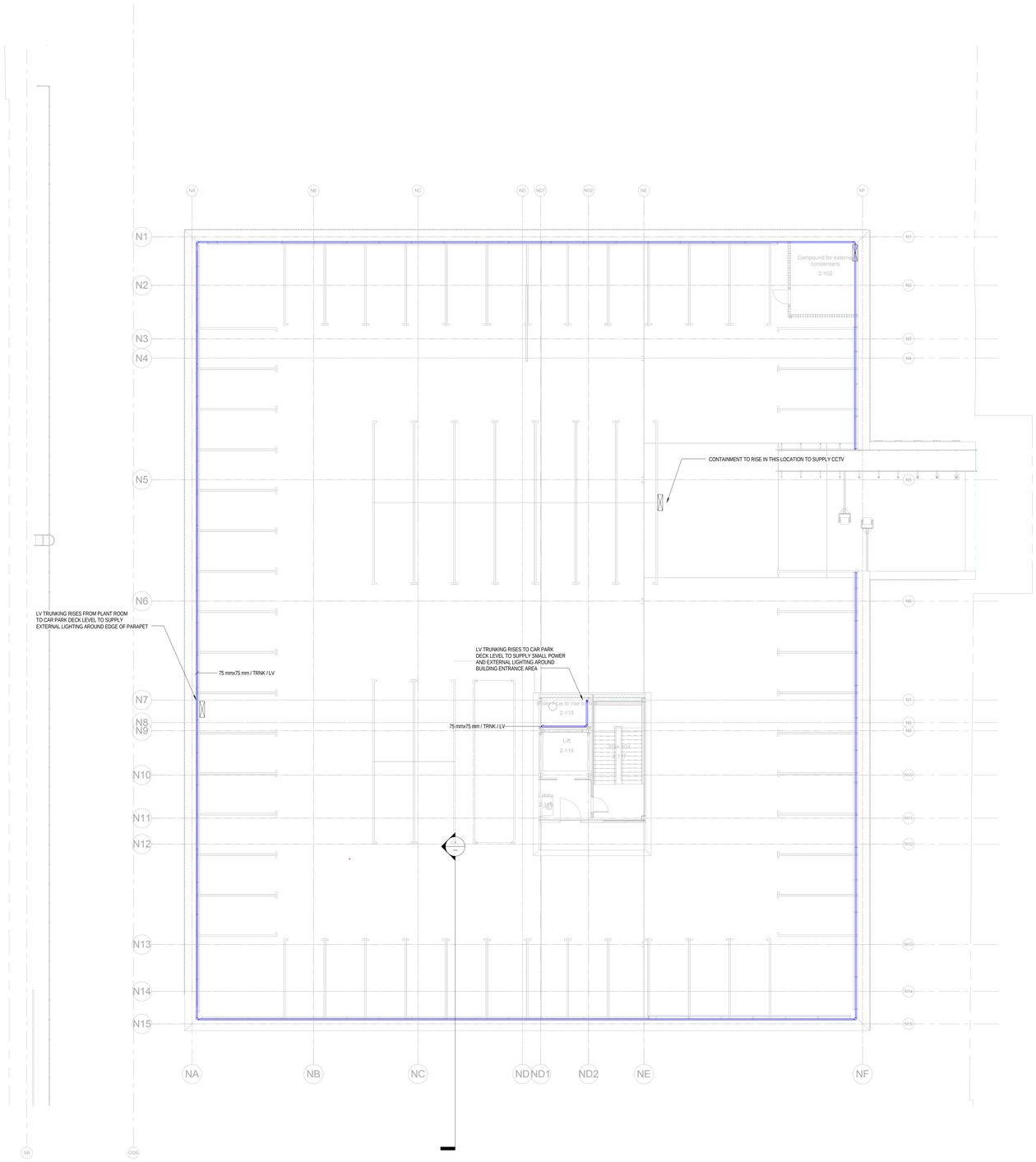
Size: A0

DO NOT SCALE



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5. FOR EXTERNAL SERVICES DETAIL SEE DRAWINGS: EGIP19-ARP-DRG-EEN-96-091 AND EGIP19-ARP-DRG-EEN-96-092

LEGEND

SIZE | TYPE
300 mm x 300 mm / HDRF / LV
SYSTEM

TYPE

HDRF	HEAVY DUTY RETURN FLANGE CABLE TRAY
MDRF	MEDIUM DUTY RETURN FLANGE CABLE TRAY
MDSE	MEDIUM DUTY STRAIGHT EDGE CABLE TRAY
LADD	CABLE LADDER FLANGE IN
TRNK	CABLE TRUNKING
WIRE	WIRE BASKET

SYSTEM

70-30
LOW VOLTAGE DISTRIBUTION - SUBMAIN CABLES
SUB

70-30-45-45
LOW VOLTAGE DISTRIBUTION - FINAL CIRCUITS
LV

70-80-33-12
EMERGENCY LIGHTING SYSTEMS
EML

75-10-21-21
DATA DISTRIBUTION SYSTEMS
DATA

75-40
SECURITY SYSTEMS
SEC

75-50-28-29
FIRE DETECTION AND ALARM SYSTEMS
FA

75-70-54-10
CONTROL AND MANAGEMENT SYSTEMS
ELV

NOTE: FA CONTAINMENT TO BE DIVIDED AND INCLUDE PA / VA CIRCUITS ALSO

Rev	Date	Description	Drwn	Chk'd
B02	26/07/16	GRIP 5	CMS	CC
B01	30/06/16	GRIP 5	AR	CC

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Primary Equipment & Containment
Second Floor

	Name	Sig.	Date
Drawn By	AR	AR	26/07/16
Checked By	RF	RF	26/07/16
Approved By	CC	CC	26/07/16

Scale: 1 : 100 | Sheet | of

Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-61-192 | Rev: B02

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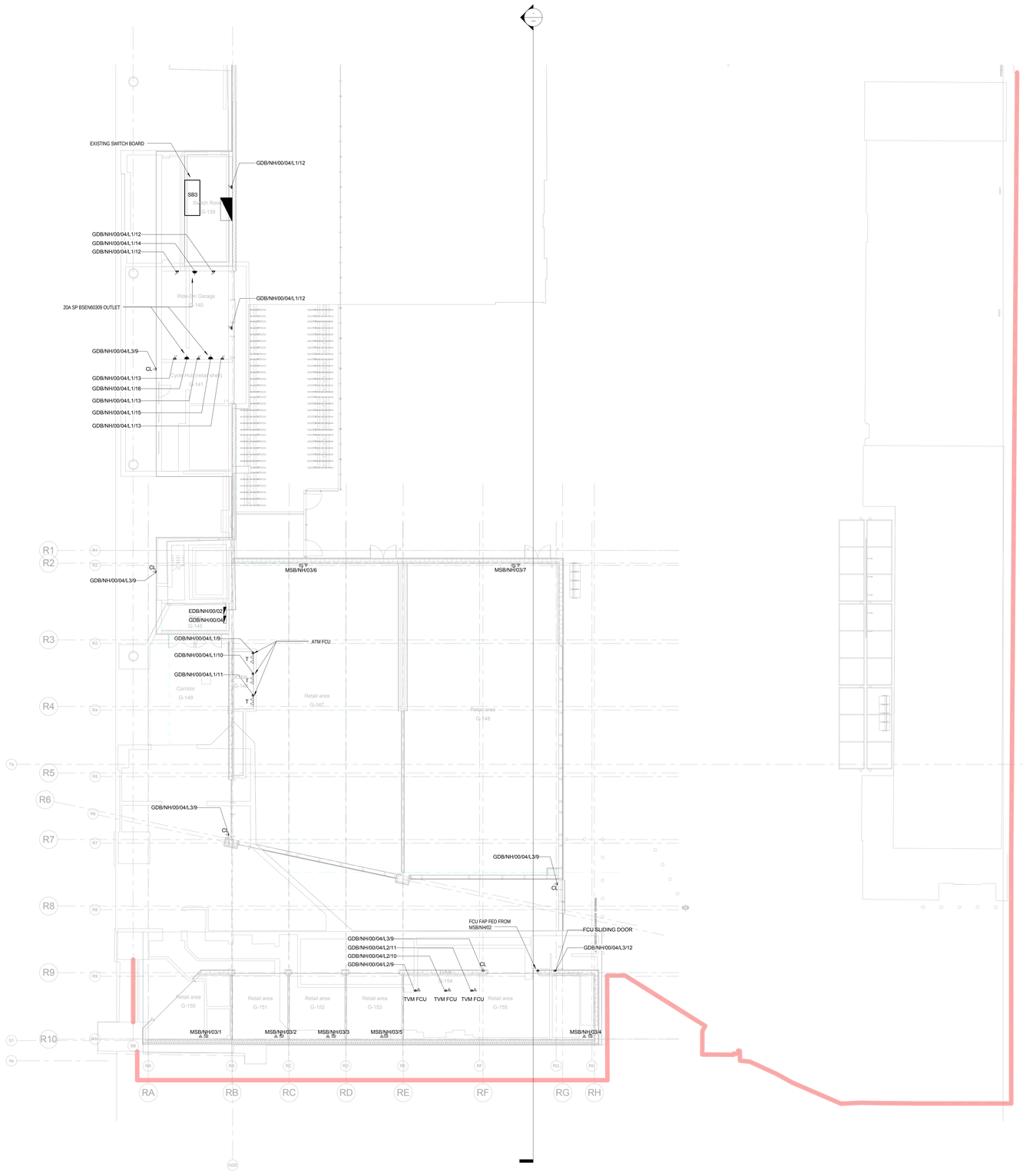

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LEGEND:

CV - CEILING VOID
NSV - SOLENOID VALVE
HD - HAND DRYER
CL - CLEANERS SOCKET
WAP - WIRELESS ACCESS POINT
SINGLE DATA OUTLET
TWIN DATA OUTLET
DP4N SWITCH DISCONNECTOR
TP4N SWITCH DISCONNECTOR
SWITCHED FUSED CONNECTION UNIT
WEATHERPROOF SWITCHED FUSED CONNECTION UNIT
UNSWITCHED FUSED CONNECTION UNIT
SINGLE SWITCHED SOCKET OUTLET
TWIN SWITCHED SOCKET OUTLET
BS60309 COMMANDO SOCKET OUTLET
FLOOR BOX
DADO TRUNKING
COOKER CONTROL UNIT

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Small Power and Data Layout
Ground Floor Layout (A)

	Name	Sig.	Date
Drawn By	CMS	CMS	26/07/16
Checked By	RF	RF	26/07/16
Approved By	CC	CC	26/07/16

Scale	Sheet	of
1 : 100		

Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-62-091
Rev: B01

Size: A0

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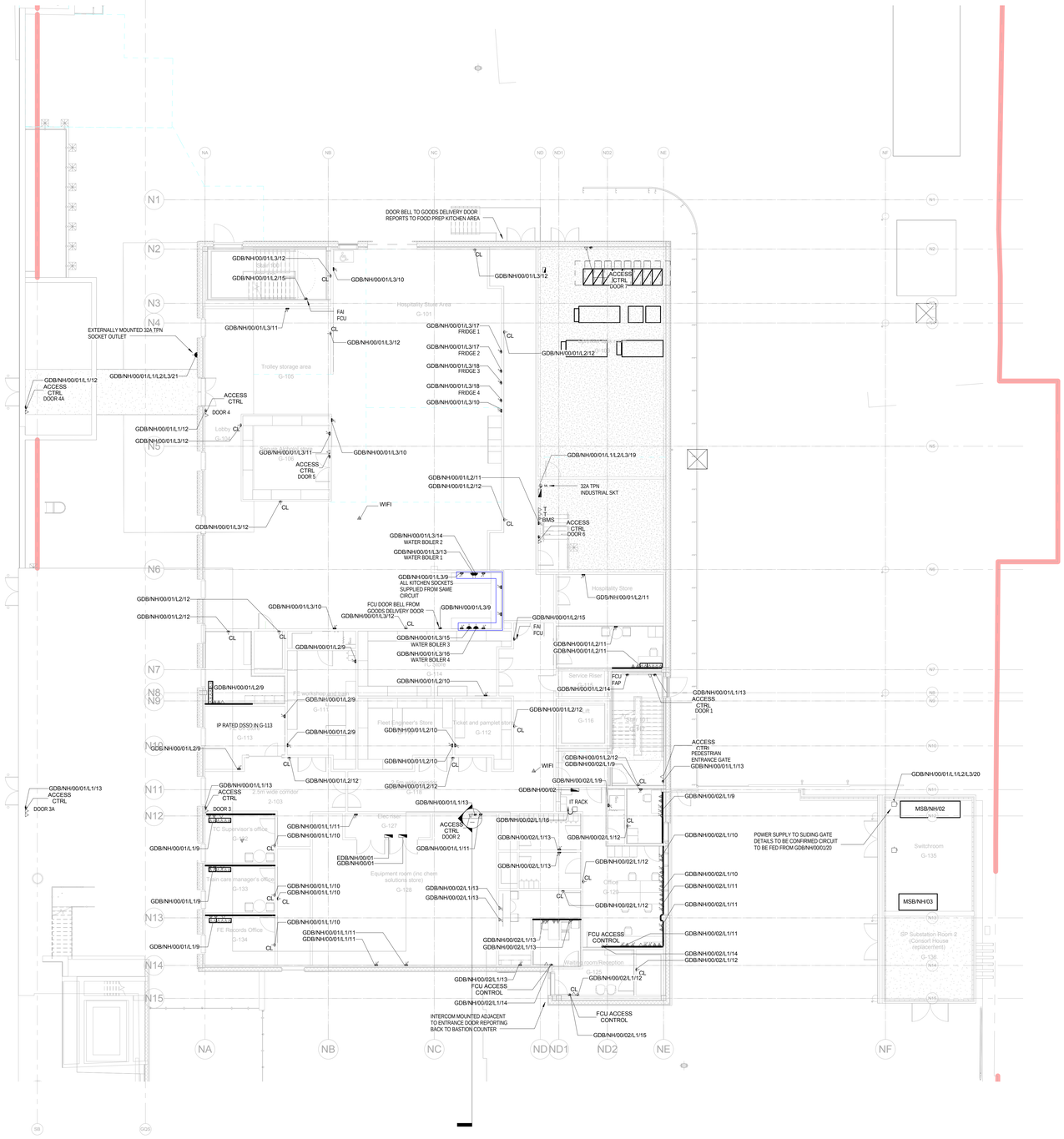

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LEGEND:

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NSV - SOLENIOD VALVE
HD - HAND DRYER
CL - CLEANERS SOCKET
WAP - WIRELESS ACCESS POINT
SINGLE DATA OUTLET
TWIN DATA OUTLET
DP&N SWITCH DISCONNECTOR
TP&N SWITCH DISCONNECTOR
SWITCHED FUSED CONNECTION UNIT
WEATHERPROOF SWITCHED FUSED CONNECTION UNIT
UNSWITCHED FUSED CONNECTION UNIT
SINGLE SWITCHED SOCKET OUTLET
TWIN SWITCHED SOCKET OUTLET
BS60309 COMMANDO SOCKET OUTLET
FLOOR BOX
DADO TRUNKING
COOKER CONTROL UNIT

Rev	Date	Description	Drwn	Chk'd
B02	26/07/16	GRIP 5	CMS	CC
B01	30/06/16	GRIP 5	AR	CC

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Small Power and Data Layout
Ground Floor Layout (B)

	Name	Sig.	Date
Drawn By	AR	AR	26/06/2016
Checked By	RF	RF	22/06/2016
Approved By	CC	CC	22/06/2016

Scale: 1 : 100 | Sheet | of

Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-62-092 | Rev: B02

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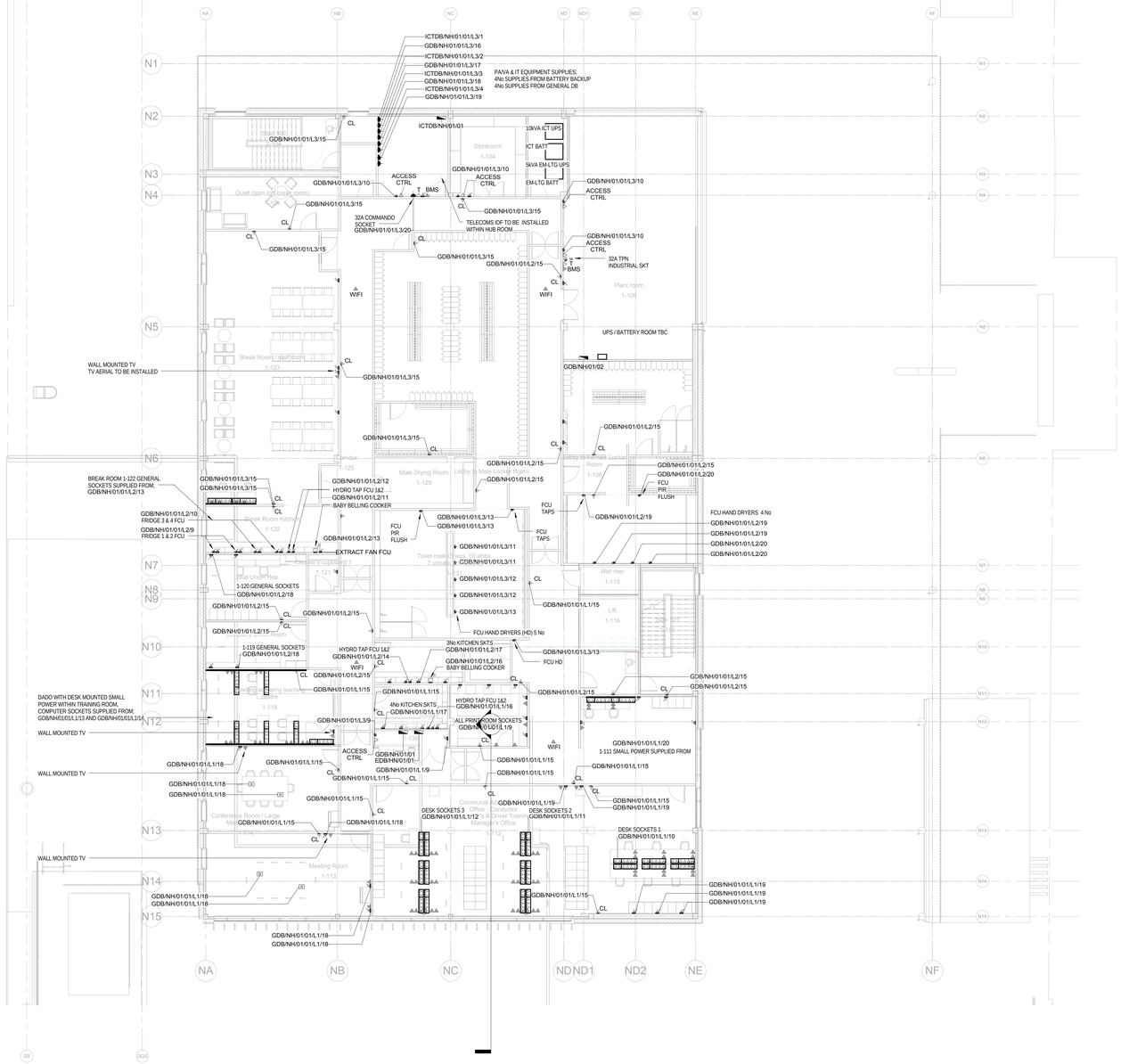
Size: A0

DO NOT SCALE



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LEGEND:

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HD - HAND DRYER
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WAP - WIRELESS ACCESS POINT

SINGLE DATA OUTLET
TWIN DATA OUTLET
DP&N SWITCH DISCONNECTOR
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UNSWITCHED FUSED CONNECTION UNIT
SINGLE SWITCHED SOCKET OUTLET
TWIN SWITCHED SOCKET OUTLET
BS60309 COMMANDO SOCKET OUTLET
FLOOR BOX
DADO TRUNKING
COOKER CONTROL UNIT

Rev	Date	Description	Drwn	Chk'd
B02	26/07/16	GRIP 5	CMS	CC
B01	30/06/16	GRIP 5	AR	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title
Queen Street Station - North Hanover Site

Drawing Title
Electrical Engineering Services
Small Power and Data Layout
First Floor Layout (B)

	Name	Sig.	Date
Drawn By	AR	AR	26/06/16
Checked By	RF	RF	26/06/16
Approved By	CC	CC	26/06/16

Scale	Sheet	of
1 : 100		

Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-62-191
Rev: B02

Size: A0

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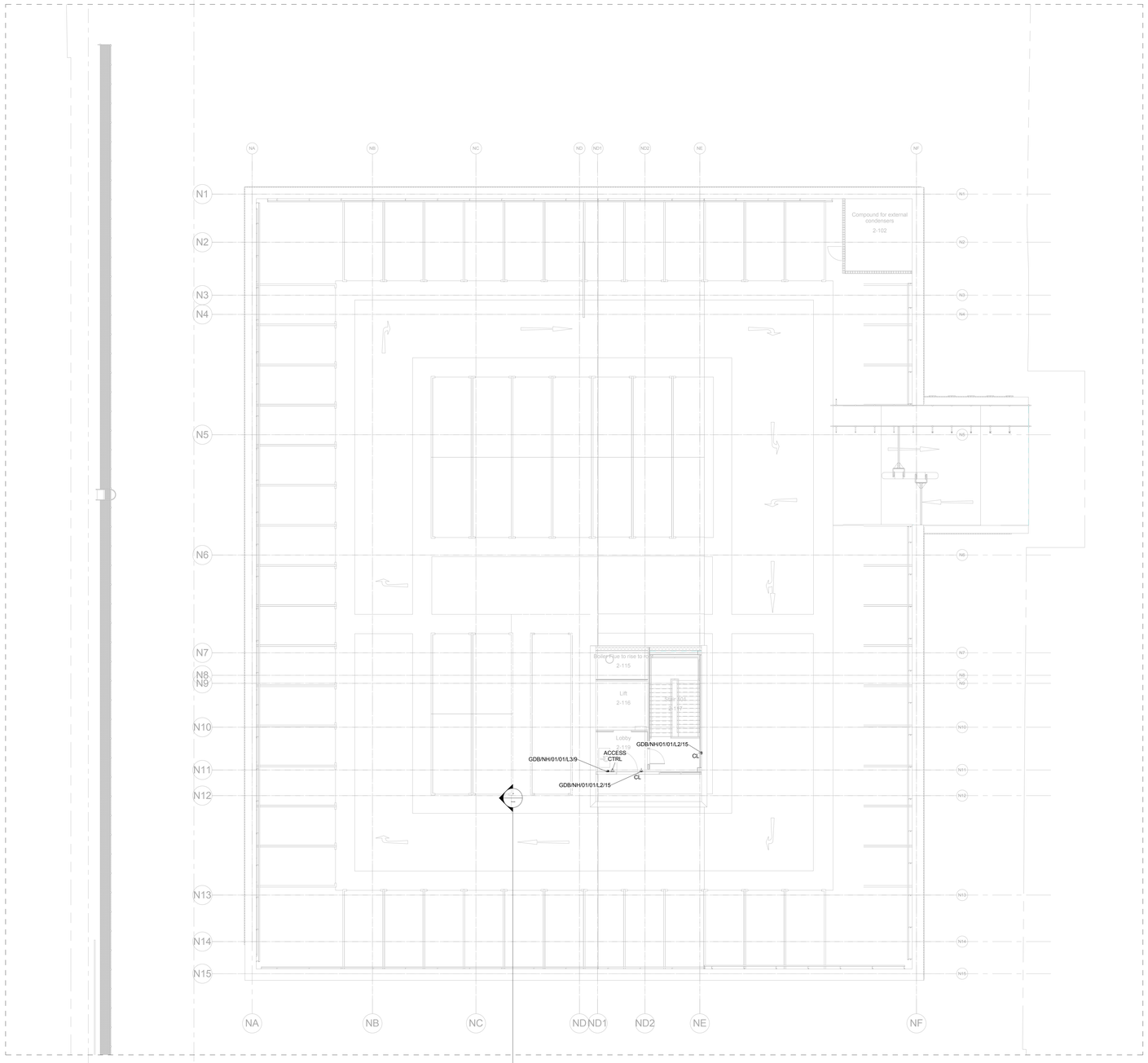
DO NOT SCALE



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NOTES:

1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTS AND DRAWINGS.
2. ALL ELECTRICAL INSTALLATION WOKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT BRITISH AND HARMONISED STANDARDS LISTED IN THE SPECIFICATION.
3. THIS DRAWING OUTLINES THE DESIGN INTENT ONLY. FINAL LOCATIONS ARE SUBJECT TO DESIGN DEVELOPMENT AND CO-ORDINATION.

LEGEND:

CV - CEILING VOID
NSV - SOLENOID VALVE
HD - HAND DRYER
CL - CLEANERS SOCKET
WAP - WIRELESS ACCESS POINT

SINGLE DATA OUTLET
TWIN DATA OUTLET
DP&N SWITCH DISCONNECTOR
TP&N SWITCH DISCONNECTOR
SWITCHED FUSED CONNECTION UNIT
WEATHERPROOF SWITCHED FUSED CONNECTION UNIT
UNSWITCHED FUSED CONNECTION UNIT
SINGLE SWITCHED SOCKET OUTLET
TWIN SWITCHED SOCKET OUTLET
BS60309 COMMANDO SOCKET OUTLET
FLOOR BOX
DADO TRUNKING
COOKER CONTROL UNIT

Rev	Date	Description	Drwn	Ch'k'd
B02	26/07/16	GRIP 5	CMS	CC
B01	30/06/16	GRIP 5	AR	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title
Queen Street Station - North Hanover Site

Drawing Title
Electrical Engineering Services
Small Power and Data Layout
Second Floor

Drawn By	Name AR	Sig AR	Date 20/06/16	Date 26/07/16
Checked By	Name RF	Sig RF	Date 20/06/16	Date 26/07/16
Approved By	Name CC	Sig CC	Date 24/06/16	Date 26/07/16
Scale 1 : 100		Sheet	of	
Map Grid	ELR	UOM	Distance	

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-62-192
Rev: B02

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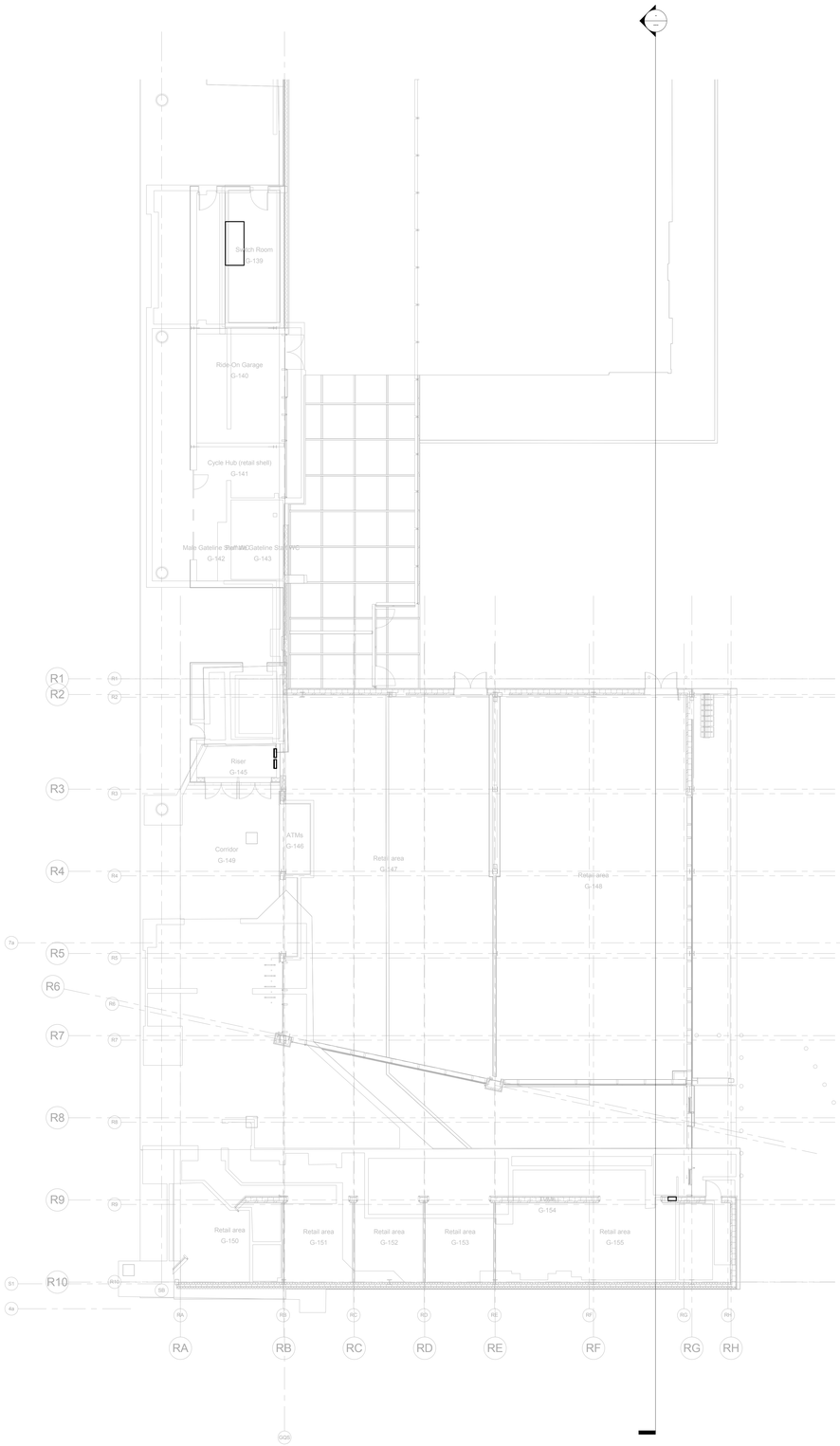
Size: A0

DO NOT SCALE



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NOTES:

1. DRAWING TO BE READ IN CONJUNCTION WITH LIGHTING DESIGN CRITERIA AND SCHEDULE EGIP19- ARP-SCP-EEN-63-001 AND M&E SPECIFICATION EGIP10-ARP-SPE-EEN-60-001.
2. LUMINAIRES WITH SUFFIX 'E' ARE EMERGENCY LUMINAIRES - TO BE POWERED BY CENTRAL BATTERY.
3. FOR LIGHTING CONTROL SCHEMATIC REFER TO EGIP19-ARP-DRG-EDS-63-501
4. 'A32/A32E' STAIR LUMINAIRES TO BE MOUNTED AT 1800MM ABOVE LANDING/TREAD.
5. CONTRACTOR TO COORDINATE LIGHTING LAYOUT WITH FINAL PLANT LAYOUT.

LEGEND:

- HATCHED AREA NOT APPLICABLE ON THIS LEVEL
- PRESENCE DETECTOR
- PRESENCE DETECTOR C/W PHOTOCELL
- ABSENCE DETECTOR
- ABSENCE DETECTOR C/W PHOTOCELL
- 'n'g MANUAL SWITCH ('n' DENOTES GANG)
- 'n'g 2 WAY MANUAL SWITCH ('n' DENOTES GANG)
- ILLUMINATED EMERGENCY EXIT SIGN (SEE FIRE STRATEGY DRAWING FOR FURTHER DETAILS)

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 4

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www.bdp.com

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: LIGHTING LAYOUT RETAIL BUILDING GROUND FLOOR

Drawn By	Name CMS	Sig.	Date 13/07/16
Checked By	Name CC	Sig.	Date 26/07/16
Approved By	Name RF	Sig.	Date 26/07/16
Scale 1 : 100		Sheet of	
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-63-101 Rev B01

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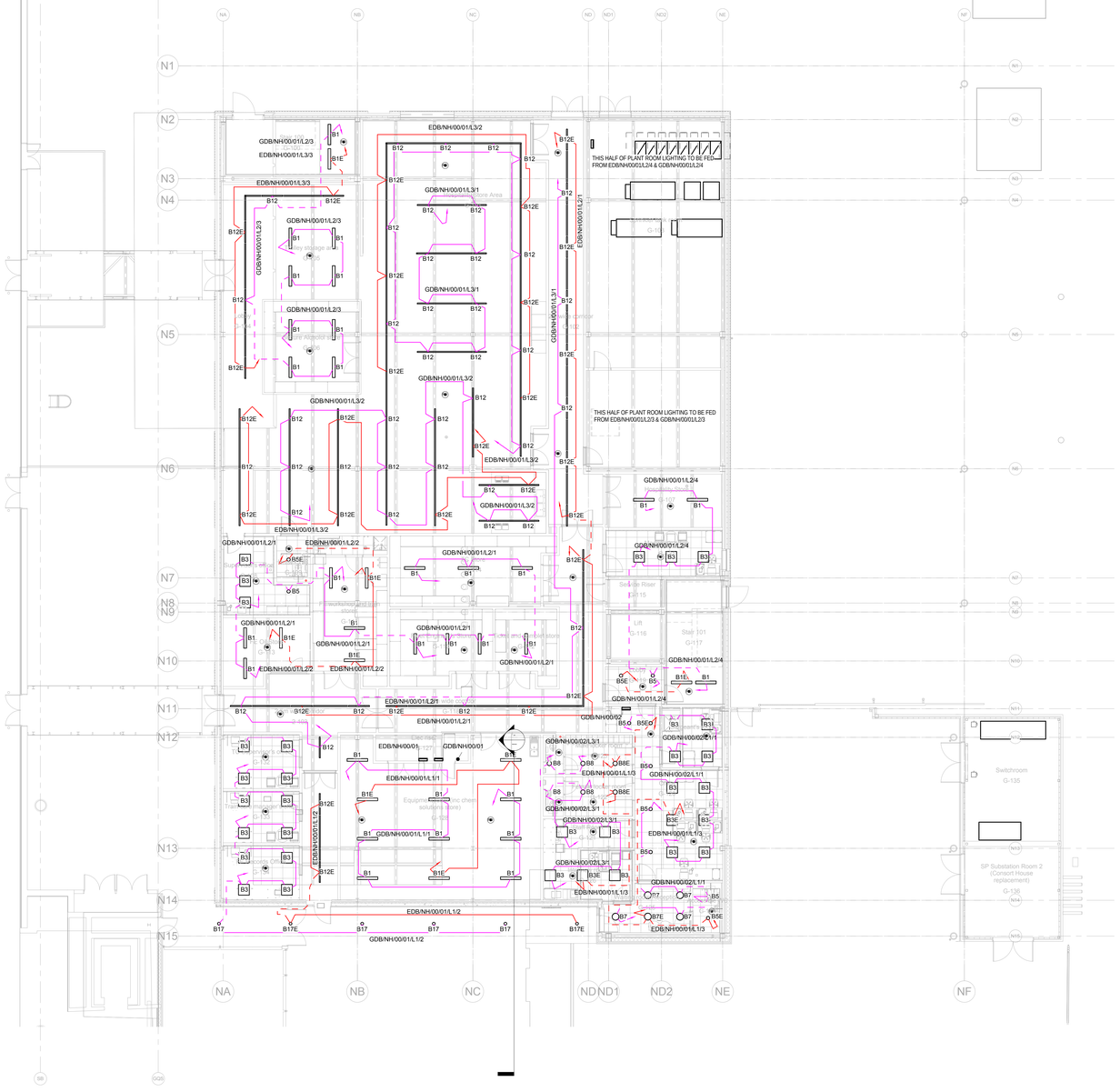
Size: A0

DO NOT SCALE



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NOTES:

1. DRAWING TO BE READ IN CONJUNCTION WITH LIGHTING DESIGN CRITERIA AND SCHEDULE EGIP19- ARP-SCP-EEN-63-001 AND M&E SPECIFICATION EGIP10-ARP-SPE-EEN-60-001.
2. LUMINAIRES WITH SUFFIX 'E' ARE EMERGENCY LUMINAIRES - TO BE POWERED BY CENTRAL BATTERY.
3. FOR LIGHTING CONTROL SCHEMATIC REFER TO EGIP19-ARP-DRG-EDS-63-501
4. 'A32/A32E' STAIR LUMINAIRES TO BE MOUNTED AT 1800MM ABOVE LANDING/TREAD.
5. CONTRACTOR TO COORDINATE LIGHTING LAYOUT WITH FINAL PLANT LAYOUT.

LEGEND:

- HATCHED AREA NOT APPLICABLE ON THIS LEVEL
- PRESENCE DETECTOR
- PRESENCE DETECTOR C/W PHOTOCELL
- ABSENCE DETECTOR
- ABSENCE DETECTOR C/W PHOTOCELL
- MANUAL SWITCH (Y' DENOTES GANG)
- 2 WAY MANUAL SWITCH (Y' DENOTES GANG)
- ILLUMINATED EMERGENCY EXIT SIGN (SEE FIRE STRATEGY DRAWING FOR FURTHER DETAILS)

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 4

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: LIGHTING LAYOUT ACCOMMODATION BUILDING GROUND FLOOR

Drawn By	Name CMS	Sig.	Date 13/07/16
Checked By	Name CC	Sig.	Date 26/07/16
Approved By	Name RF	Sig.	Date 26/07/16
Scale 1 : 100		Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-63-102 — Rev: B01

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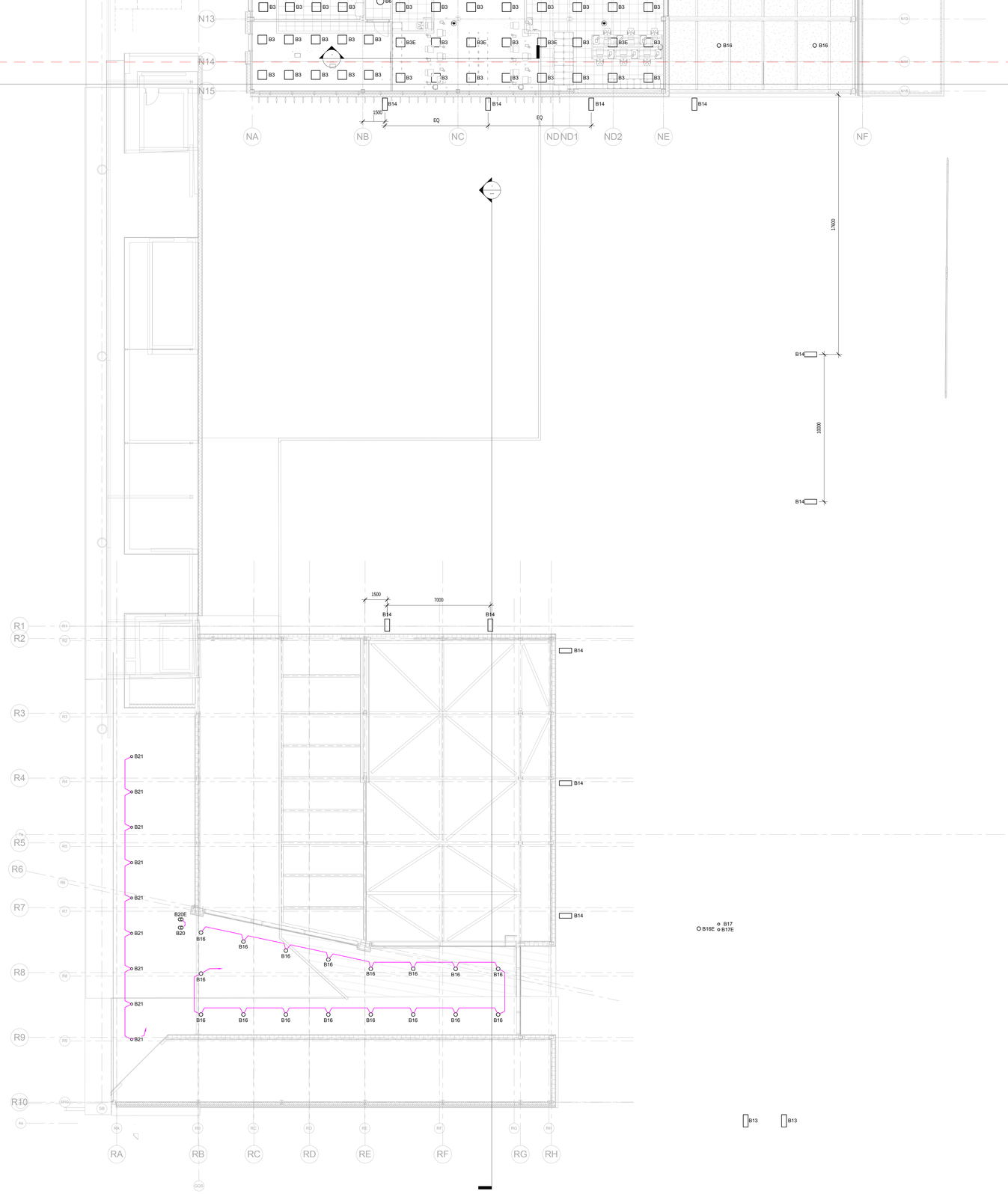
Size: A0



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NOTES:

1. DRAWING TO BE READ IN CONJUNCTION WITH LIGHTING DESIGN CRITERIA AND SCHEDULE EGIP19- ARP-SCP-EEN-63-001 AND M&E SPECIFICATION EGIP10-ARP-SPE-EEN-60-001.
2. LUMINAIRES WITH SUFFIX 'E' ARE EMERGENCY LUMINAIRES - TO BE POWERED BY CENTRAL BATTERY .
3. FOR LIGHTING CONTROL SCHEMATIC REFER TO EGIP19-ARP-DRG-EDS-63-501
4. 'A32/A32E' STAIR LUMINAIRES TO BE MOUNTED AT 1800MM ABOVE LANDING/TREAD.
5. CONTRACTOR TO COORDINATE LIGHTING LAYOUT WITH FINAL PLANT LAYOUT.

LEGEND:

- HATCHED AREA NOT APPLICABLE ON THIS LEVEL
- PS — PRESENCE DETECTOR
- PS — PRESENCE DETECTOR C/W PHOTOCELL
- AS — ABSENCE DETECTOR
- AS — ABSENCE DETECTOR C/W PHOTOCELL
- 'n'/g — MANUAL SWITCH ('n' DENOTES GANG)
- 'n'/g — 2 WAY MANUAL SWITCH ('n' DENOTES GANG)
- ILLUMINATED EMERGENCY EXIT SIGN (SEE FIRE STRATEGY DRAWING FOR FURTHER DETAILS)

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 4

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: LIGHTING LAYOUT
RETAIL BUILDING
ROOF AND EXTERNAL

Drawn By	Name CMS	Sig.	Date 13/07/16
Checked By	Name CC	Sig.	Date 26/07/16
Approved By	Name RF	Sig.	Date 26/07/16
Scale 1 : 100		Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-63-201 — Rev: B01

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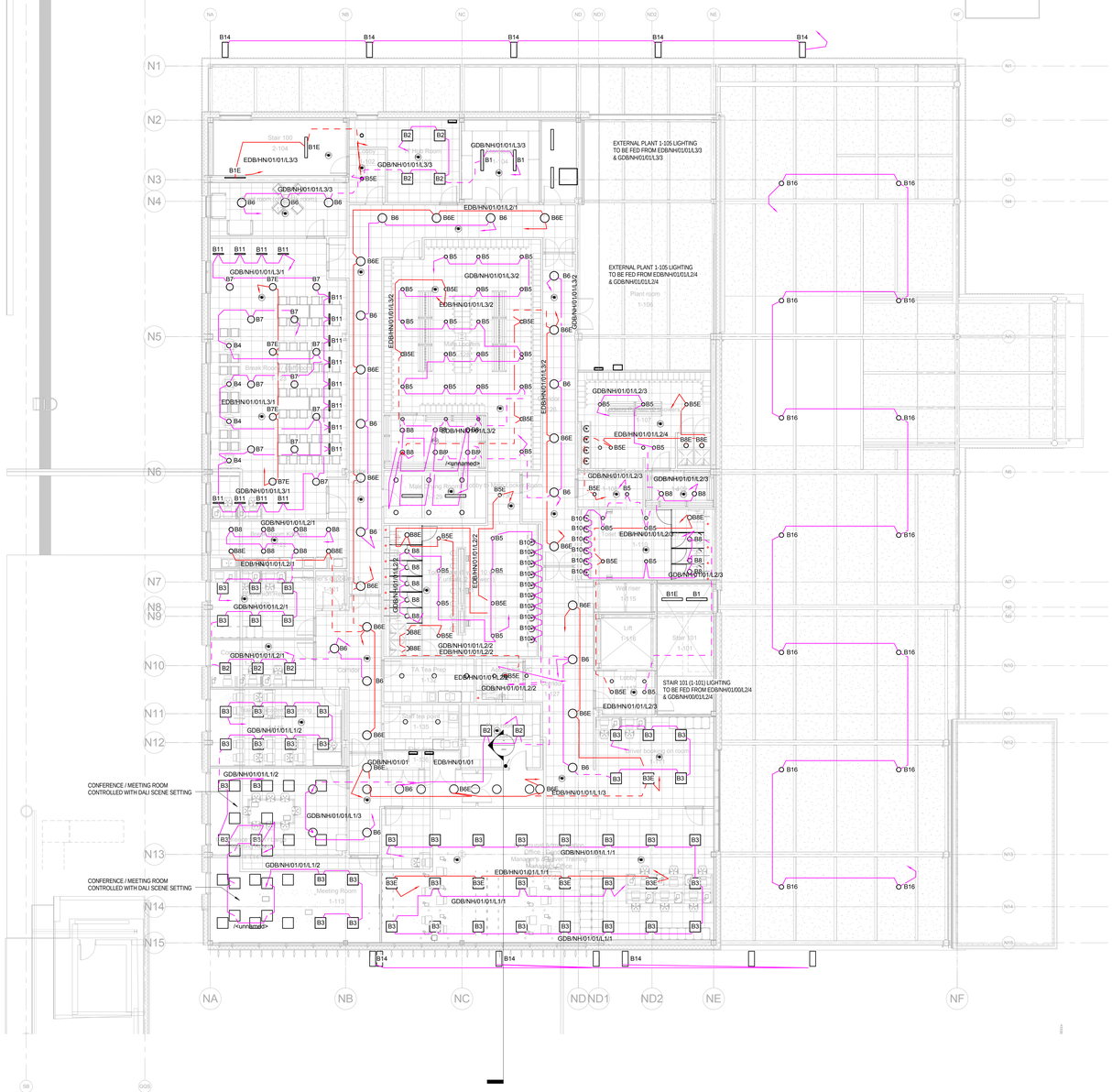
Size: A0

DO NOT SCALE



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NOTES:

1. DRAWING TO BE READ IN CONJUNCTION WITH LIGHTING DESIGN CRITERIA AND SCHEDULE EGIP19 - ARP-SCP-EEN-63-001 AND M&E SPECIFICATION EGIP10-ARP-SPE-EEN-60-001.
2. LUMINAIRES WITH SUFFIX 'E' ARE EMERGENCY LUMINAIRES - TO BE POWERED BY CENTRAL BATTERY.
3. FOR LIGHTING CONTROL SCHEMATIC REFER TO EGIP19-ARP-DRG-EDS-63-501.
4. X32/X32E' STAIR LUMINAIRES TO BE MOUNTED AT 1800MM ABOVE LANDING/TREAD.
5. CONTRACTOR TO COORDINATE LIGHTING LAYOUT WITH FINAL PLANT LAYOUT.

LEGEND:

- HATCHED AREA NOT APPLICABLE ON THIS LEVEL
- PRESENCE DETECTOR
- PRESENCE DETECTOR C/W PHOTOCELL
- ABSENCE DETECTOR
- ABSENCE DETECTOR C/W PHOTOCELL
- 'n/g' MANUAL SWITCH ('n' DENOTES GANG)
- 'n/g' 2 WAY MANUAL SWITCH ('n' DENOTES GANG)
- ILLUMINATED EMERGENCY EXIT SIGN (SEE FIRE STRATEGY DRAWING FOR FURTHER DETAILS)

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 4

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: LIGHTING LAYOUT ACCOMMODATION BUILDING FIRST FLOOR

	Name	Sig.	Date
Drawn By	CMS		13/07/16
Checked By	CC		26/07/16
Approved By	RF		26/07/16

Scale: 1 : 100 | Sheet of

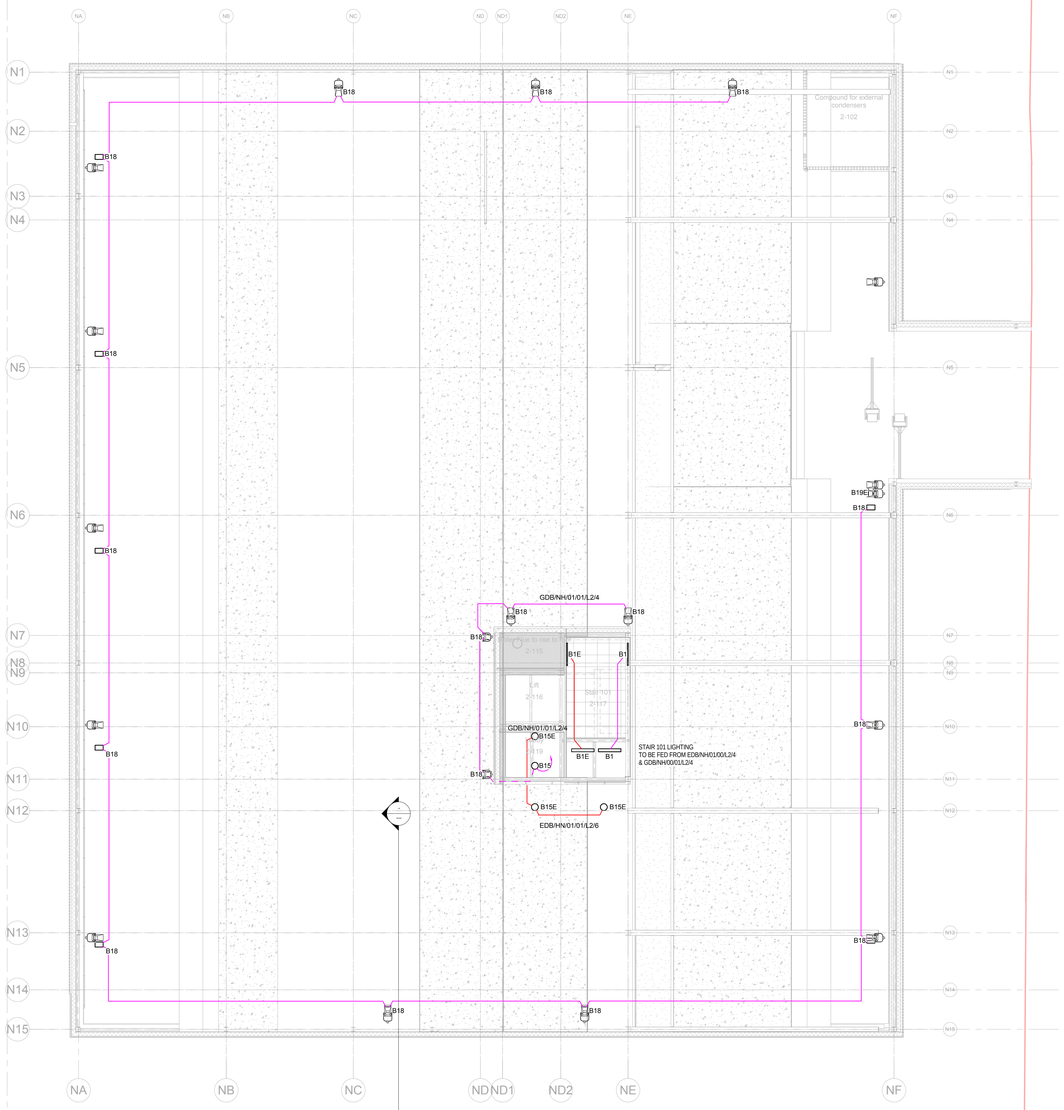
Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-63-202 | Rev B01

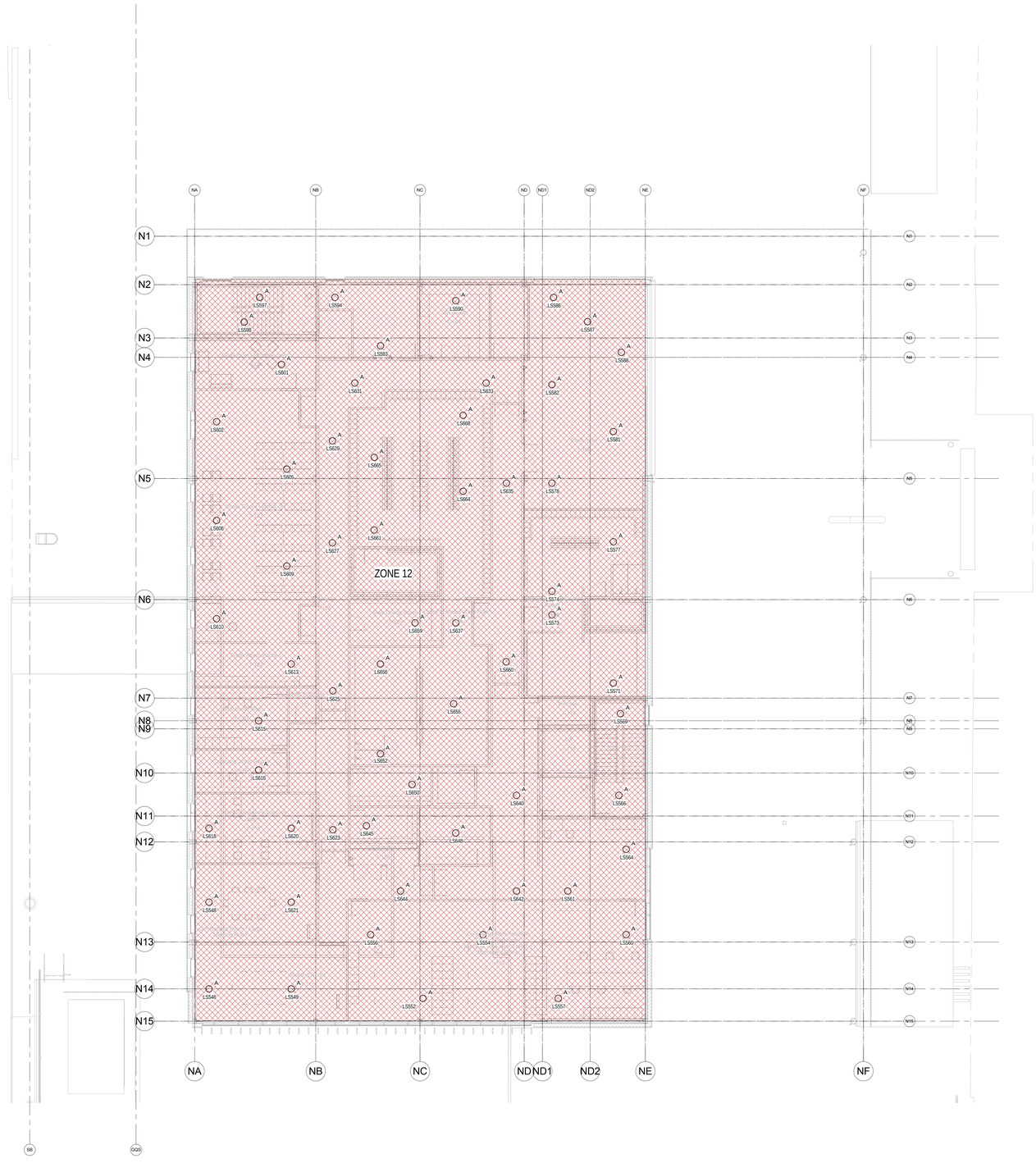
All changes to this CAD generated drawing MUST be made via the master CAD file.

Size: A0

DO NOT SCALE


NA
NB
NC
ND
ND1
ND2
NE
NF
N1
N2
N3
N4
N5
N6
N7
N8
N9
N10
N11
N12
N13
N14
N15
B18
Compound for external condensers
2-102
B19E
B18
GDB/NH/01/01/L2/4
B18
B18
B18

DO NOT SCALE



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LEGEND:

A	CIRCUIT A: CELING SPEAKERS (BOSCH LBC3086/41 WITH LBC3081/02 FIRE PROOF DOME)
B	CIRCUIT B: CELING SPEAKERS (BOSCH LBC3086/41 WITH LBC3081/02 FIRE PROOF DOME)
LSXXXX	SPEAKER DESIGNATION NUMBER

NOTES:

1. REFER TO ALL OTHER DRAWINGS, SPECIFICATIONS AND SCHEDULES
2. WORK TO FIGURED DIMENTIONS ONLY
3. REFER TO PA SPECIFICATION XXXXXXX
4. ALL SPEAKERS SHALL BE WIRED IN FIRE RATED CABLE AS PER PAVA SPECIFICATION
5. WHERE SUSPENDED CEILINGS ARE PRESENT PAVA SPEAKERS SHALL BE RECESSED.

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	AA	CC

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Communication Devices
First Floor Layout (A)

	Name	Sig.	Date
Drawn By	AA	AA	26/07/16
Checked By	AR	AR	26/07/16
Approved By	CC	CC	26/07/16

Scale	1 : 100	Sheet	of
Map Grid	ELR	UOM	Distance

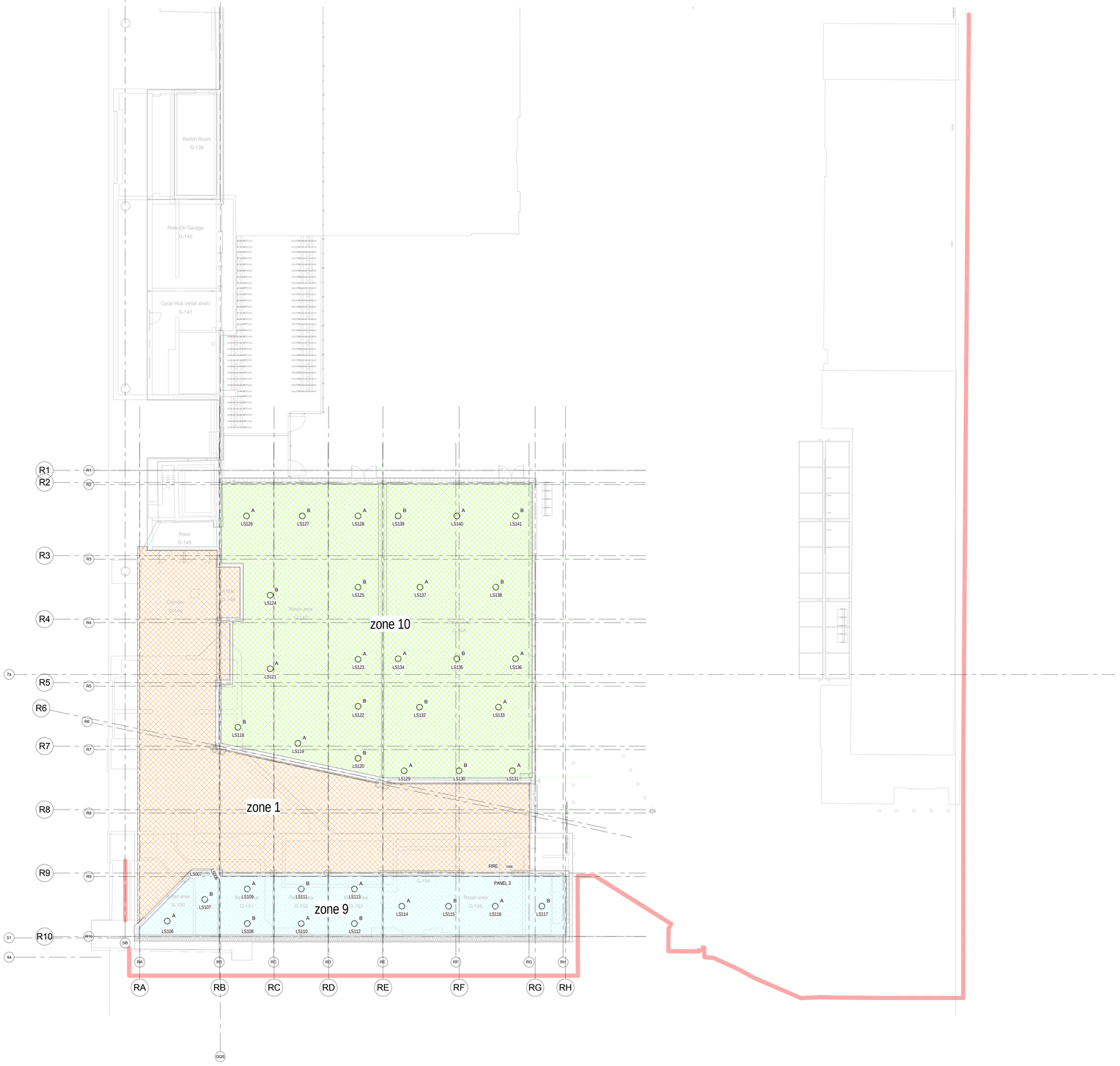
Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-65 -191 — Rev: B01

All changes to this CAD generated drawing MUST be made via the master CAD file.

Size: A0

DO NOT SCALE

FOR CONTINUATION, SEE DRAWING EGIP19-ARP-DRG-ESS-65-001



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LEGEND:

A	CIRCUIT A: CEILING SPEAKERS (BOSCH LBC3086/41 WITH LBC3081/02 FIRE PROOF DOME)
B	CIRCUIT B: CEILING SPEAKERS (BOSCH LBC3086/41 WITH LBC3081/02 FIRE PROOF DOME)
LSXXXX	SPEAKER DESIGNATION NUMBER

NOTES:

1. REFER TO ALL OTHER DRAWINGS, SPECIFICATIONS AND SCHEDULES
2. WORK TO FIGURED DIMENTIONS ONLY
3. REFER TO PA SPECIFICATION XXXXXXX
4. ALL SPEAKERS SHALL BE WIRED IN FIRE RATED CABLE AS PER PAVA SPECIFICATION
5. WHERE SUSPENDED CEILINGS ARE PRESENT PAVA SPEAKERS SHALL BE RECESSED.

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	AA	CC

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Communication Devices
Ground Floor Layout (B)

	Name	Sig.	Date
Drawn By	AA	AA	26/07/16
Checked By	AR	AR	26/07/16
Approved By	CC	CC	26/07/16

Scale: 1 : 100 | Sheet | of

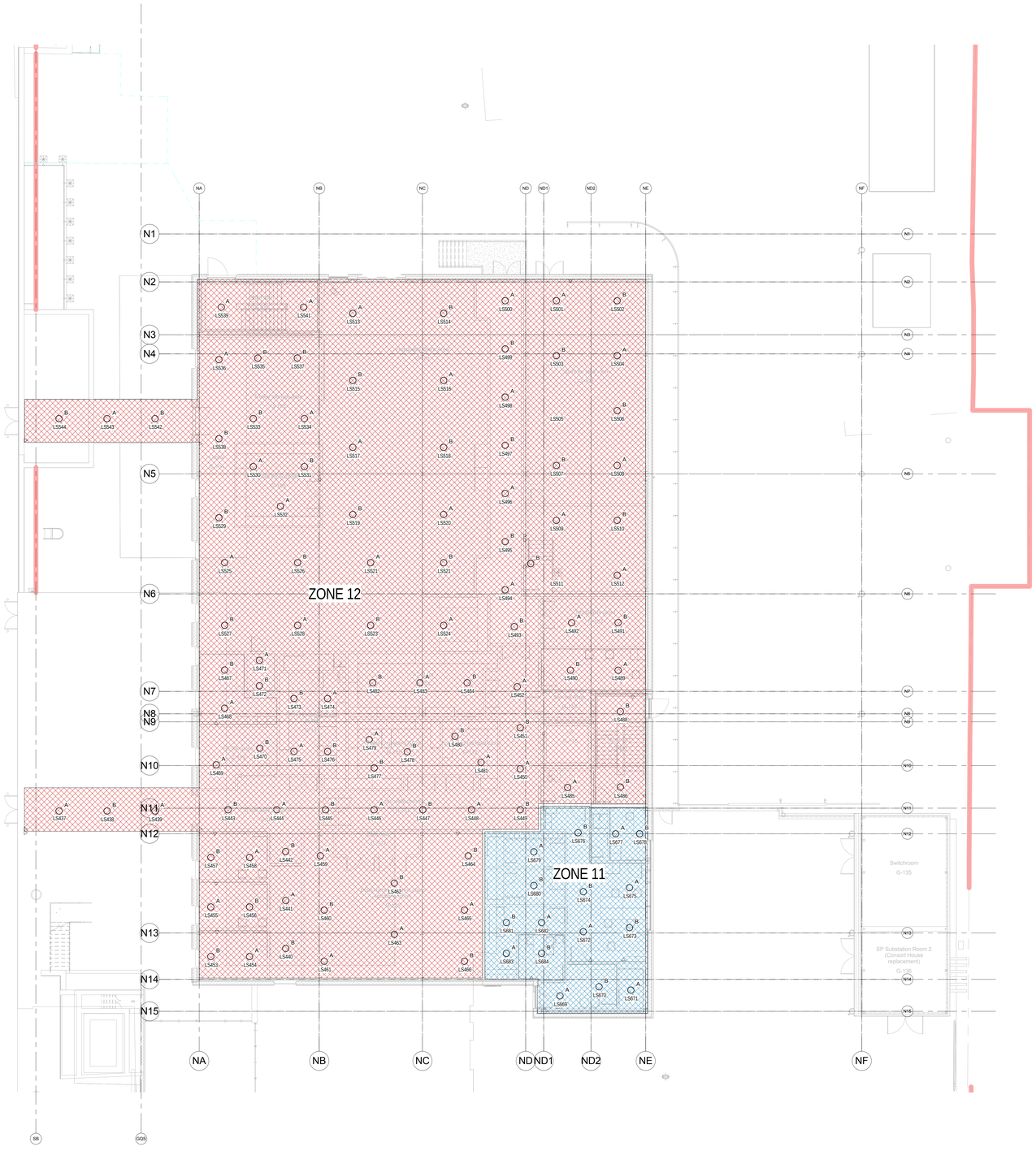
Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-65-002 | Rev: B01

All changes to this CAD generated drawing MUST be made via the master CAD file.

Size: A0

DO NOT SCALE



FOR CONTINUATION, SEE DRAWING EGIP19-ARP-DRG-ESS-65-092

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LEGEND:

A	CIRCUIT A: CELING SPEAKERS (BOSCH LBC3086/41 WITH LBC3081/02 FIRE PROOF DOME)
B	CIRCUIT B: CELING SPEAKERS (BOSCH LBC3086/41 WITH LBC3081/02 FIRE PROOF DOME)
LSXXXX	SPEAKER DESIGNATION NUMBER

NOTES:

1. REFER TO ALL OTHER DRAWINGS, SPECIFICATIONS AND SCHEDULES
2. WORK TO FIGURED DIMENTIONS ONLY
3. REFER TO PA SPECIFICATION XXXXXXX
4. ALL SPEAKERS SHALL BE WIRED IN FIRE RATED CABLE AS PER PAVA SPECIFICATION
5. WHERE SUSPENDED CEILINGS ARE PRESENT PAVA SPEAKERS SHALL BE RECESSED.

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	AA	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

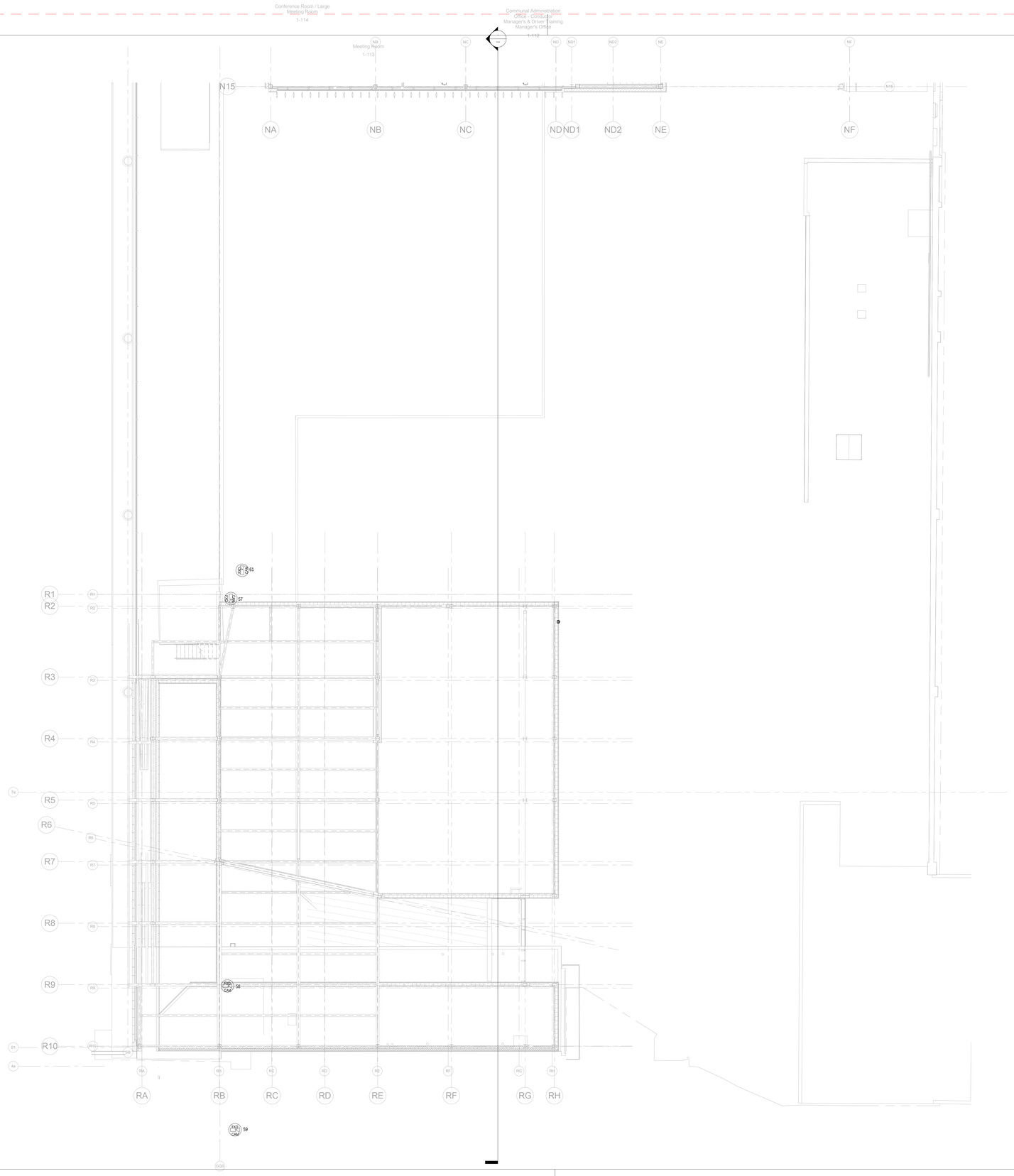
Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Communication Devices
Ground Floor Layout (A)

Drawn By	Name AA	Sig AA	Date 26/07/16		
Checked By	Name AR	Sig AR	Date 26/07/16		
Approved By	Name CC	Sig CC	Date 26/07/16		
Scale 1 : 100		Sheet	of		
Map Grid	ELR	UOM	Distance		
Network Rail Drawing Number	EGIP19-ARP-DRG-ESS-65-091			Rev B01	

Size: A0

All changes to this CAD generated drawing MUST be made via the master CAD file.



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LEGEND

- CAM IP 360 — HOUSED IP CAMERA
- CAM IP 360 — 360 DEGREE MEGA PIXEL CAMERA
- CAM IP PTZ — PTZ IP CAMERA
- CAM IP Dome — DOME IP CAMERA
- VIU — VIDEO INTERCOM UNIT
- ICU — INTERCOM CALL UNIT
- CCTV PRIMARY VIEWING ANGLE - NOTE THIS AREA DOES NOT DENOTE EXTENT OF COVERAGE AS MULTIPLE CAMERAS OVERLAP COVERAGE AREAS.

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Security Services
First Floor Layout

	Name	Sig.	Date
Drawn By	CMS	CMS	26/07/16
Checked By	CC	CC	26/07/16
Approved By	RF	RF	26/07/16

Scale	1 : 100	Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-65-191
Rev: B01

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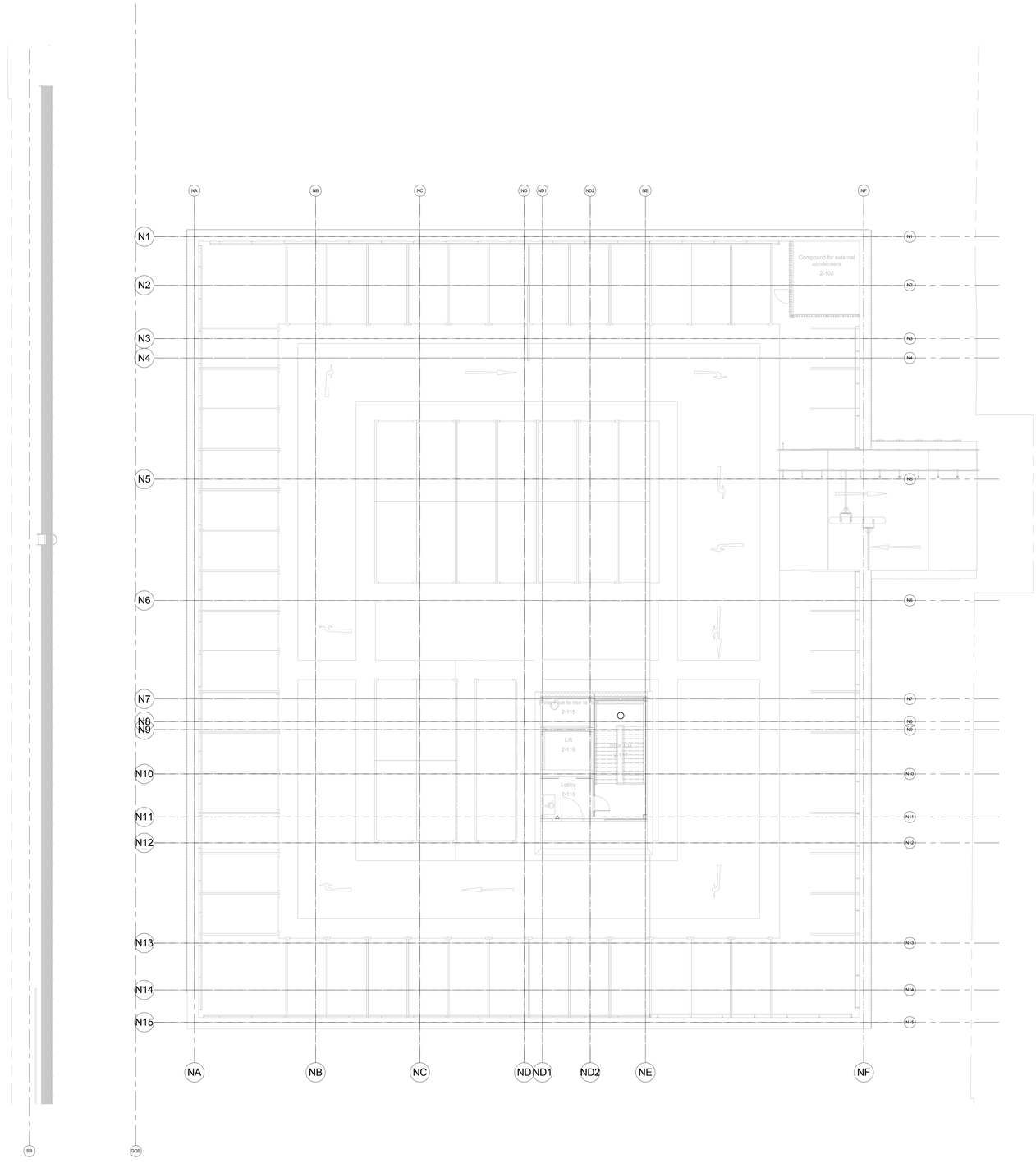
Size: A0

DO NOT SCALE



FOR CONTINUATION, SEE DRAWING EGIP19-ARP-DRG-ESS-65-202

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Note: The works illustrated in the area outlined in blue are subject to amendments through a parallel GRIP4 & 5 design process. They are indicative and provided for context only.

LEGEND:

A	CIRCUIT A: CELING SPEAKERS (BOSCH LBC3086/41 WITH LBC3081/02 FIRE PROOF DOME)
B	CIRCUIT B: CELING SPEAKERS (BOSCH LBC3086/41 WITH LBC3081/02 FIRE PROOF DOME)
LSXXXX	SPEAKER DESIGNATION NUMBER

NOTES:

1. REFER TO ALL OTHER DRAWINGS, SPECIFICATIONS AND SCHEDULES
2. WORK TO FIGURED DIMENTIONS ONLY
3. REFER TO PA SPECIFICATION XXXXXXX
4. ALL SPEAKERS SHALL BE WIRED IN FIRE RATED CABLE AS PER PAVA SPECIFICATION
5. WHERE SUSPENDED CEILINGS ARE PRESENT PAVA SPEAKERS SHALL BE RECESSED.

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	AA	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Communication Devices
Roof Layout (A)

Drawn By	Name: AA	Sig.: AA	Date: 26/07/16
Checked By	Name: AR	Sig.: AR	Date: 26/07/16
Approved By	Name: CC	Sig.: CC	Date: 26/07/16
Scale: 1 : 100		Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EDS-65-201 — Rev: B01

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Size: A0

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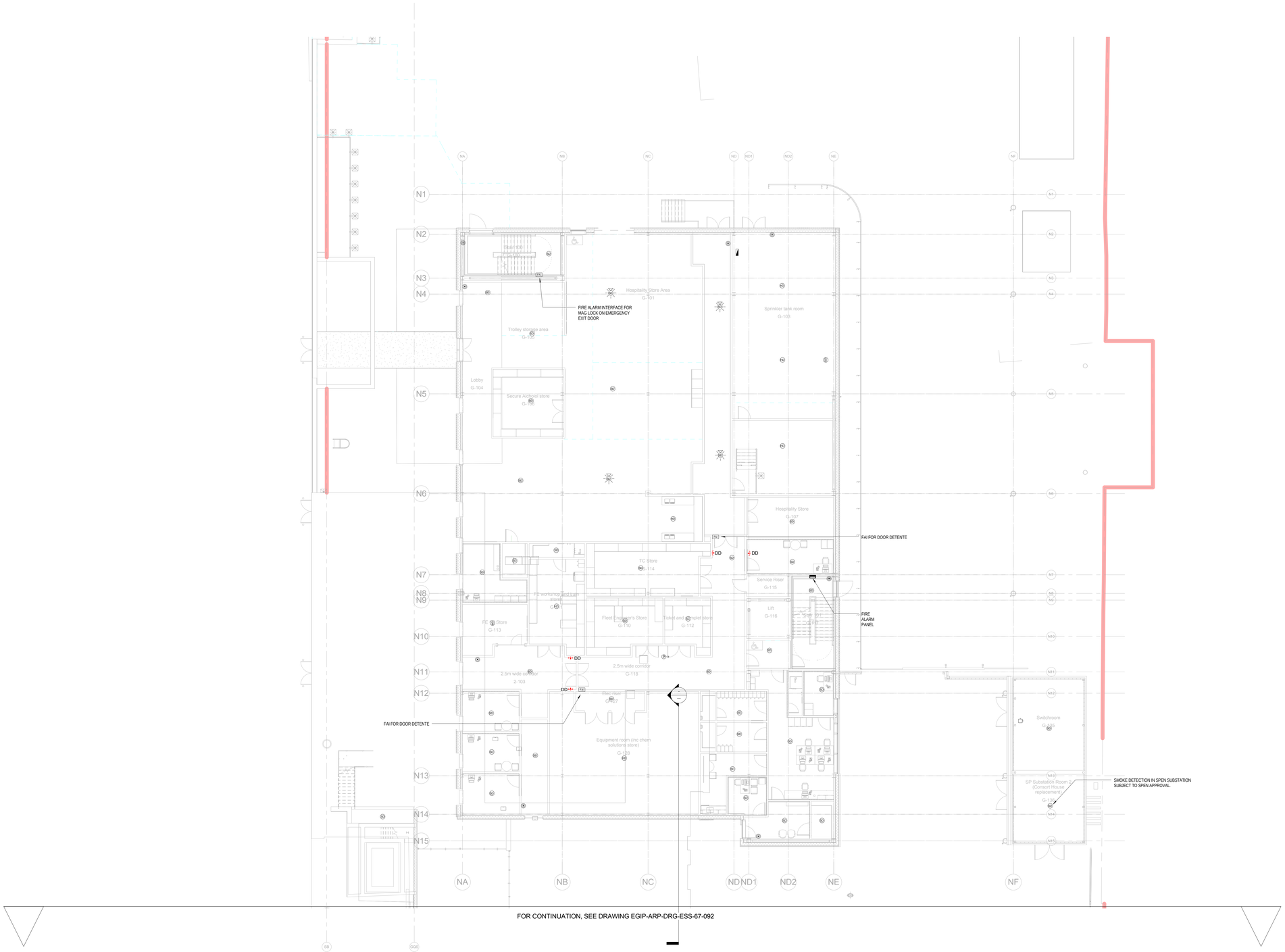

FOR CONTINUATION, SEE DRAWING EGIP-ARP-DRG-ESS-67-092

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NOTES:

1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, SCHEMATICS AND SPECIFICATIONS.
2. THIS DRAWING OUTLINES THE DESIGN INTENT ONLY. THE CONTRACTOR SHALL APPOINT A FIRE ALARM SPECIALIST SUBCONTRACTOR TO DESIGN, SUPPLY, INSTALL, TEST AND COMMISSION ALL NECESSARY COMPONENTS REQUIRED FOR A COMPLETE AND FULLY FUNCTIONING FIRE DETECTION AND ALARM SYSTEM.
4. THE DESIGN IS BASED ON A CATERGORY L1 SYSTEM. THE SPECIALIST SHALL DEVELOP THE DESIGN IN ACCORDANCE WITH THE FIRE STRATEGY.
5. THE APPOINTED SPECIALIST SHALL ACCEPT FINAL DESIGN RESPONSIBILITY FOR THE DESIGN. THIS SHALL BE REFLECTED IN THE FINAL CERTIFICATION. ALL CERTIFICATION SHALL BE SUBMITTED BY THE SPECIALIST IN ACCORDANCE WITH THE MODEL CERTIFICATES INCLUDED IN BS5839, IN PARTICULAR:
   - G.1 DESIGN CERTIFICATE
   - G.2 INSTALLATION CERTIFICATION
   - G.3 COMMISSIONING CERTIFICATE
   - CAUSE & EFFECT SCHEDULE
6. THE SPECIALIST CONTRACTOR IS RESPONSIBLE FOR ENSURING ANY VOID OVER 800mm IS PROTECTED WITH VOID DETECTION

LEGEND:

- TOILET CALL OVER DOOR LAMP/SOUNDER
- P→ CALL PULL CORD
- TOILET CALL RESET AND SOUNDER
- MANUAL CALL POINT (C/W LIFT UP COVER)
- FAI FIRE ALARM INTERFACE
- EVC EMERGENCY VOICE COMMUNICATION PANEL
- FAP FIRE ALARM PANEL
- SD SMOKE DETECTOR
- SD SMOKE DETECTOR / SOUNDER
- SD SMOKE DETECTOR / BEACON
- SD SMOKE DETECTOR / SOUNDER / BEACON
- HD HEAT DETECTOR
- HD HEAT DETECTOR / SOUNDER
- HD HEAT DETECTOR / BEACON
- HD HEAT DETECTOR / SOUNDER / BEACON
- R BEAM DETECTION DEVICE (RECEIVER)
- T BEAM DETECTION DEVICE (TRANSMITTER)
- DD-1- DOOR DETENTE
- SOUNDER
- SOUNDER / BEACON
- RI REMOTE LED INDICATOR
- TP CONTROL / TEST POINT

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Fire Detection & Alarm
Ground Floor Layout (A)

	Name	Sig.	Date
Drawn By	AR	AR	26/07/16
Checked By	RF	RF	26/07/16
Approved By	CC	CC	26/07/16

Scale	1 : 100	Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-ESS-67-091 — Rev B01

Size: A0

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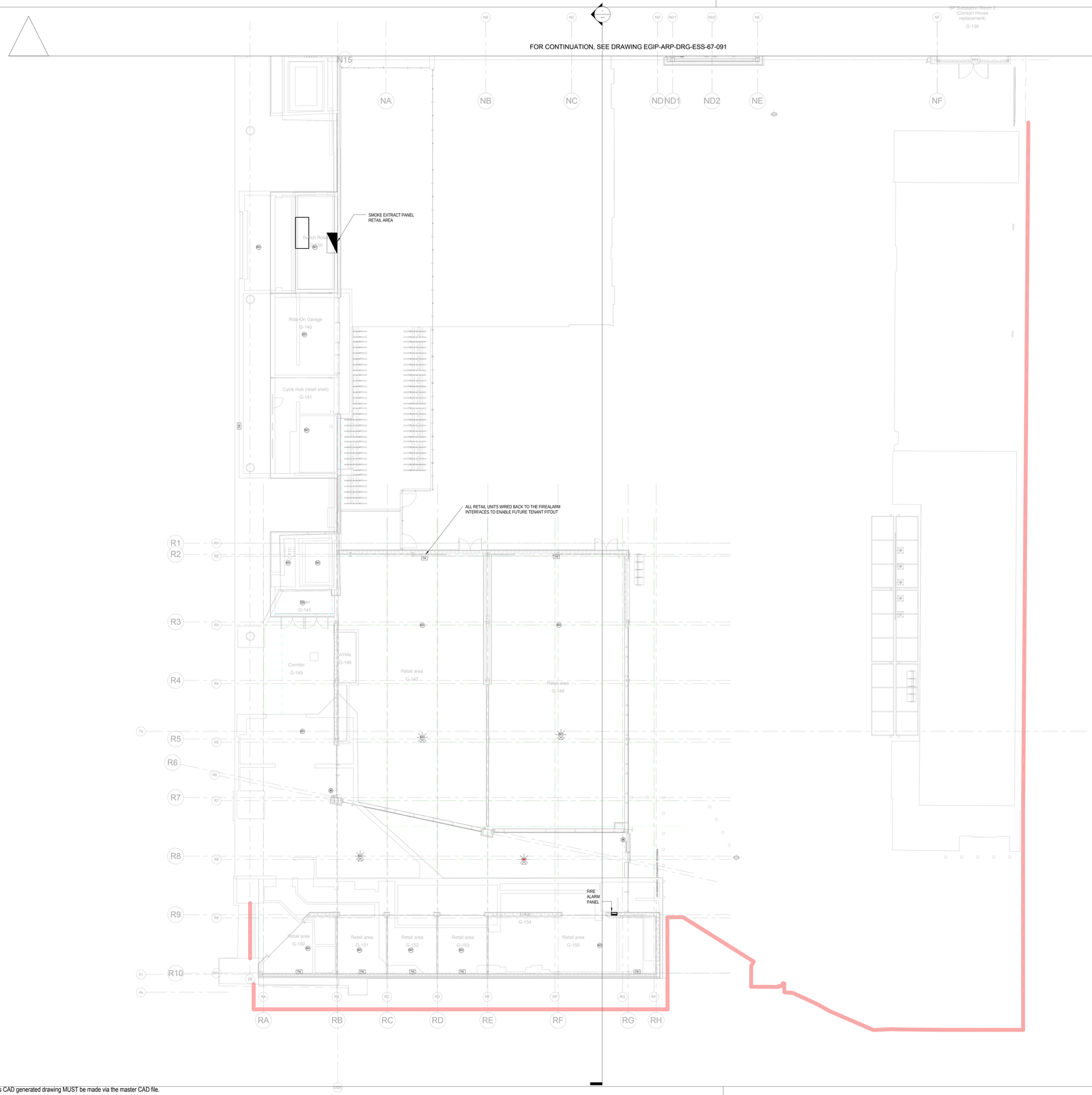
DO NOT SCALE



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   Note: The works illustrated in the area outlined in blue are subject to amendments through a parallel GRIP4 process.
2. THIS DRAWING IS FOR DESIGN INTENT ONLY. THE CONTRACTOR SHALL APPOINT A FIRE ALARM SPECIALIST SUBCONTRACTOR TO DESIGN, SUPPLY, INSTALL, TEST AND COMMISSION ALL NECESSARY COMPONENTS REQUIRED FOR A COMPLETE AND FULLY FUNCTIONING FIRE DETECTION AND ALARM SYSTEM.
4. THE DESIGN IS BASED ON A CATERGORY L1 SYSTEM. THE SPECIALIST SHALL DEVELOP THE DESIGN IN ACCORDANCE WITH THE FIRE STRATEGY.
5. THE APPOINTED SPECIALIST SHALL ACCEPT FINAL DESIGN RESPONSIBILITY FOR THE DESIGN. THIS SHALL BE REFLECTED IN THE FINAL CERTIFICATION. ALL CERTIFICATION SHALL BE SUBMITTED BY THE SPECIALIST IN ACCORDANCE WITH THE MODEL CERTIFICATES INCLUDED IN BS5839, IN PARTICULAR:
   - G.1 DESIGN CERTIFICATE
   - G.2 INSTALLATION CERTIFICATION
   - G.3 COMMISSIONING CERTIFICATE
   - CAUSE & EFFECT SCHEDULE
6. THE SPECIALIST CONTRACTOR IS RESPONSIBLE FOR ENSURING ANY VOID OVER 800mm IS PROTECTED WITH VOID DETECTION

LEGEND:

- TOILET CALL OVER DOOR LAMP/SOUNDER
- CALL PULL CORD
- TOILET CALL RESET AND SOUNDER
- MANUAL CALL POINT (C/W LIFT UP COVER)
- FAI — FIRE ALARM INTERFACE
- EVC — EMERGENCY VOICE COMMUNICATION PANEL
- FAP — FIRE ALARM PANEL
- SD — SMOKE DETECTOR
- SD — SMOKE DETECTOR / SOUNDER
- SD — SMOKE DETECTOR / BEACON
- SD — SMOKE DETECTOR / SOUNDER / BEACON
- HD — HEAT DETECTOR
- HD — HEAT DETECTOR / SOUNDER
- HD — HEAT DETECTOR / BEACON
- HD — HEAT DETECTOR / SOUNDER / BEACON
- R — BEAM DETECTION DEVICE (RECEIVER)
- T — BEAM DETECTION DEVICE (TRANSMITTER)
- DD — DOOR DETENTE
- SOUNDER
- SOUNDER / BEACON
- R1 — REMOTE LED INDICATOR
- TP — CONTROL / TEST POINT

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Fire Detection & Alarm
Ground Floor Layout (B)

	Name	Sig.	Date
Drawn By	AR	AR	26/07/16
Checked By	RF	RF	26/07/16
Approved By	CC	CC	26/07/16

Scale: 1 : 100 | Sheet | of

Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-ESS-67-092 | Rev: B01

Size: A0

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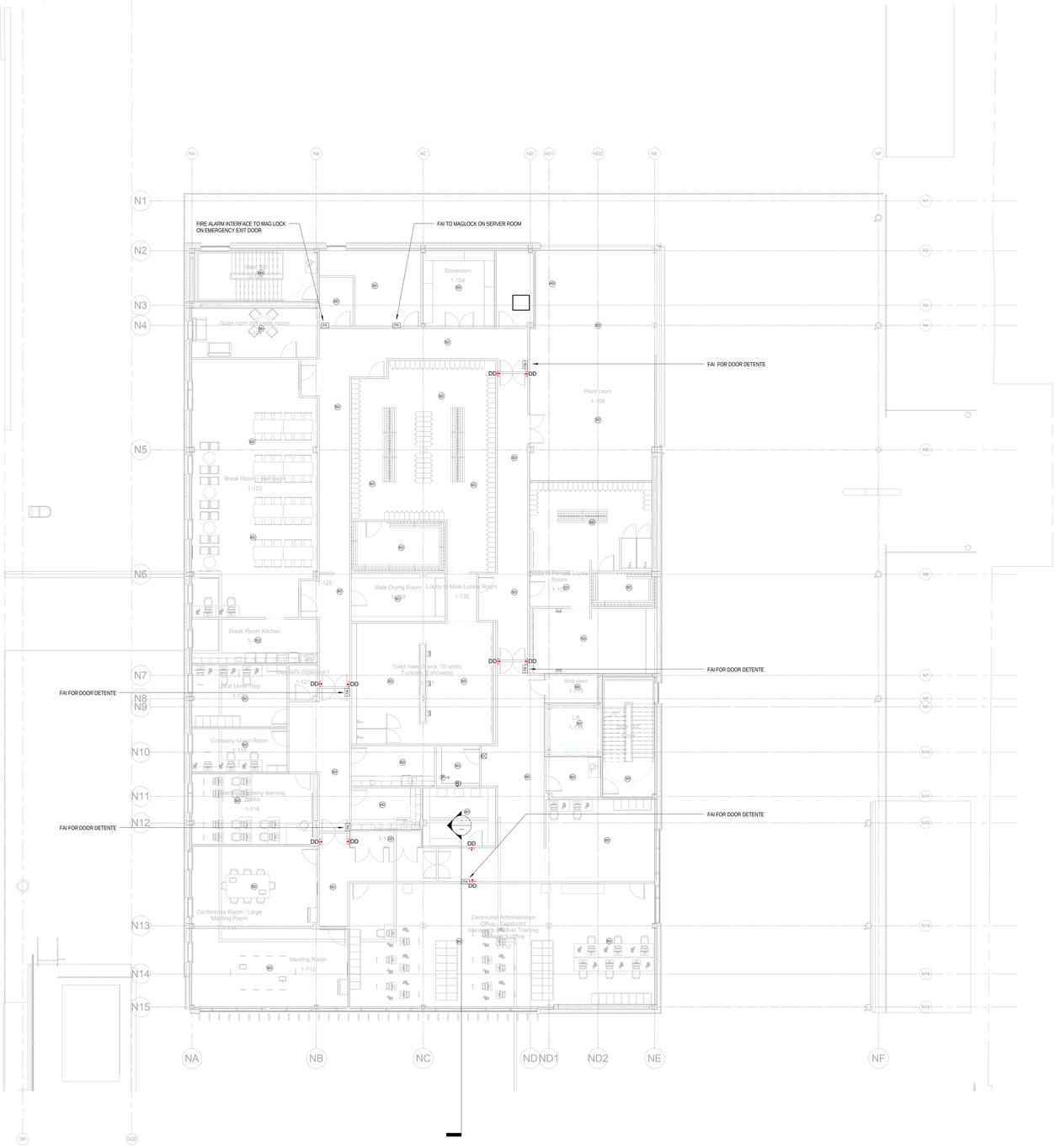
DO NOT SCALE



NOTES:

1. Unless stated otherwise all dimensions are in millimetres and all levels are in metres.
2. THIS DRAWING MUSTBE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, SCHEMATICS AND SPECIFICATIONS.

Note: This drawing has been extracted from a model that contains information imported directly from models provided by other disciplines. All dimensions and information should be verified prior to the commencement of any work.

Note: This drawing is not to be used for setting out purposes. Refer to Architectural drawings for setting out GRPH

3. CONTRACTOR SHALL APPOINT A SUBCONTRACTOR TO DESIGN, SUPPLY, INSTALL, TEST AND COMMISSION ALL NECESSARY COMPONENTS REQUIRED FOR A COMPLETE AND FULLY FUNCTIONING FIRE DETECTION AND ALARM SYSTEM.
4. THE DESIGN IS BASED ON A CATERGORY L1 SYSTEM. THE SPECIALIST SHALL DEVELOP THE DESIGN IN ACCORDANCE WITH THE FIRE STRATEGY.
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   - G.2 INSTALLATION CERTIFICATION
   - G.3 COMMISSIONING CERTIFICATE
   - CAUSE & EFFECT SCHEDULE
6. THE SPECIALIST CONTRACTOR IS RESPONSIBLE FOR ENSURING ANY VOID OVER 800mm IS PROTECTED WITH VOID DETECTION

LEGEND:

- TOILET CALL OVER DOOR LAMP/SOUNDER
- CALL PULL CORD
- TOILET CALL RESET AND SOUNDER
- MANUAL CALL POINT (C/W LIFT UP COVER)
- FIRE ALARM INTERFACE
- EVC — EMERGENCY VOICE COMMUNICATION PANEL
- FAP — FIRE ALARM PANEL
- SD — SMOKE DETECTOR
- SD — SMOKE DETECTOR / SOUNDER
- SMOKE DETECTOR / BEACON
- SMOKE DETECTOR / SOUNDER / BEACON
- HD — HEAT DETECTOR
- HD — HEAT DETECTOR / SOUNDER
- HEAT DETECTOR / BEACON
- HEAT DETECTOR / SOUNDER / BEACON
- R — BEAM DETECTION DEVICE (RECEIVER)
- T — BEAM DETECTION DEVICE (TRANSMITTER)
- DD — DOOR DETENTE
- SOUNDER
- SOUNDER / BEACON
- RI — REMOTE LED INDICATOR
- TP — CONTROL / TEST POINT

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Fire Detection & Alarm
First Floor Layout

	Name	Sig.	Date
Drawn By	AR	AR	26/07/16
Checked By	RF	RF	26/07/16
Approved By	CC	CC	26/07/16

Scale: 1 : 100 | Sheet | of

Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-ESS-67-191 | Rev: B01

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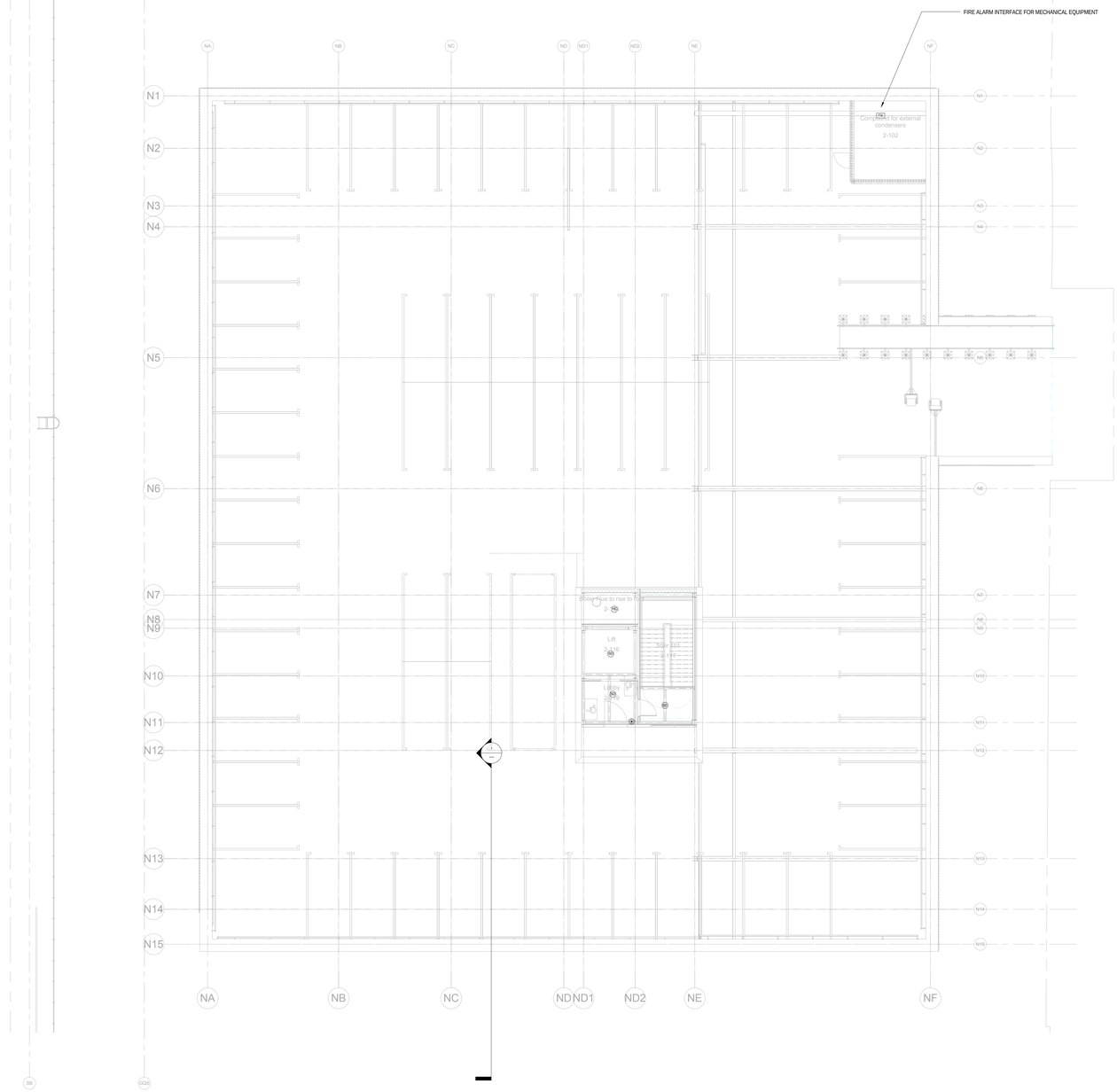
Size: A0

DO NOT SCALE



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2. THIS DRAWING MUST BE READ IN CONJUNCTION WITH GRIP4 & 5 DOCUMENTS.
3. THE CONTRACTOR SHALL APPOINT A FIRE ALARM SPECIALIST SUBCONTRACTOR TO DESIGN, SUPPLY, INSTALL, TEST AND COMMISSION ALL NECESSARY COMPONENTS REQUIRED FOR A COMPLETE AND FULLY FUNCTIONING FIRE DETECTION AND ALARM SYSTEM.
4. THE DESIGN IS BASED ON A CATERGORY L1 SYSTEM. THE SPECIALIST SHALL DEVELOP THE DESIGN IN ACCORDANCE WITH THE FIRE STRATEGY.
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   - G.2 INSTALLATION CERTIFICATION
   - G.3 COMMISSIONING CERTIFICATE
   - CAUSE & EFFECT SCHEDULE
6. THE SPECIALIST CONTRACTOR IS RESPONSIBLE FOR ENSURING ANY VOID OVER 800mm IS PROTECTED WITH VOID DETECTION

LEGEND:

	TOILET CALL OVER DOOR LAMP/SOUNDER
P	CALL PULL CORD
	TOILET CALL RESET AND SOUNDER
	MANUAL CALL POINT (C/W LIFT UP COVER)
FAI	FIRE ALARM INTERFACE
EVC	EMERGENCY VOICE COMMUNICATION PANEL
FAP	FIRE ALARM PANEL
SD	SMOKE DETECTOR
SD	SMOKE DETECTOR / SOUNDER
SD	SMOKE DETECTOR / BEACON
SD	SMOKE DETECTOR / SOUNDER / BEACON
HD	HEAT DETECTOR
HD	HEAT DETECTOR / SOUNDER
HD	HEAT DETECTOR / BEACON
HD	HEAT DETECTOR / SOUNDER / BEACON
R	BEAM DETECTION DEVICE (RECEIVER)
T	BEAM DETECTION DEVICE (TRANSMITTER)
DD	DOOR DETENTE
	SOUNDER
	SOUNDER / BEACON
RI	REMOTE LED INDICATOR
TP	CONTROL / TEST POINT

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Fire Detection & Alarm
Car Park Deck

	Name	Sig.	Date
Drawn By	AR	AR	26/07/16
Checked By	RF	RF	26/07/16
Approved By	CC	CC	26/07/16

Scale: 1 : 100 | Sheet | of

Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-ESS-67-291 | Rev: B01

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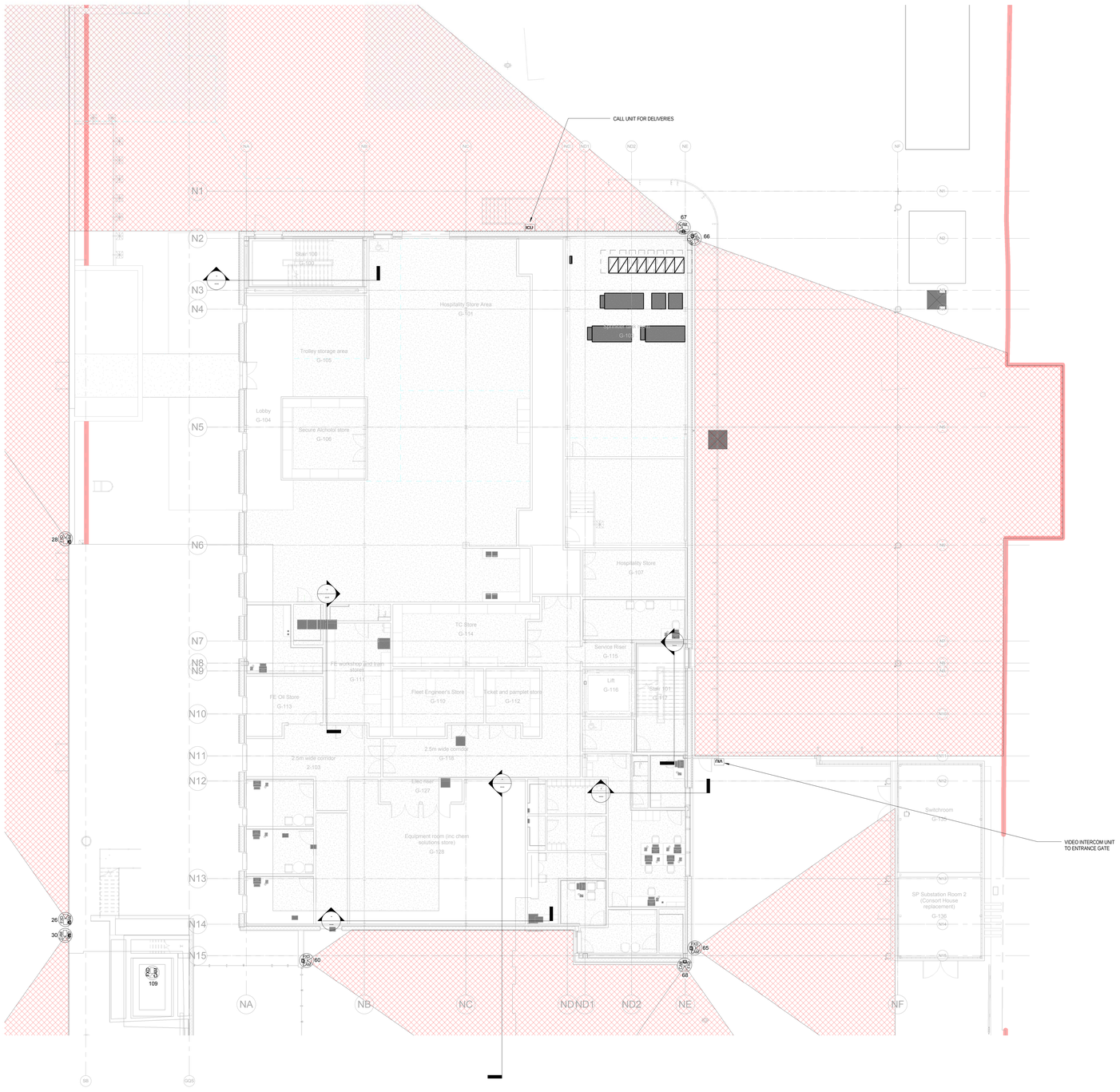

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LEGEND

- CAM FIXD — HOUSED IP CAMERA
- CAM 360 — 360 DEGREE MEGA PIXEL CAMERA
- CAM PTZ — PTZ IP CAMERA
- CAM FIXD — DOME IP CAMERA
- VIU — VIDEO INTERCOM UNIT
- ICU — INTERCOM CALL UNIT
- CCTV PRIMARY VIEWING ANGLE - NOTE THIS AREA DOES NOT DENOTE EXTENT OF COVERAGE AS MULTIPLE CAMERAS OVERLAP COVERAGE AREAS.

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Security Services
Ground Floor Layout (A)

Drawn By	Name	CMS	Sig.	CMS	Date	26/07/16
Checked By	Name	CC	Sig.	CC	Date	26/07/16
Approved By	Name	RF	Sig.	RF	Date	26/07/16
Scale	1 : 100		Sheet		of	
Map Grid		ELR	UOM		Distance	

Network Rail Drawing Number: EGIP19-ARP-DRG-ETL-68-091 — Rev B01

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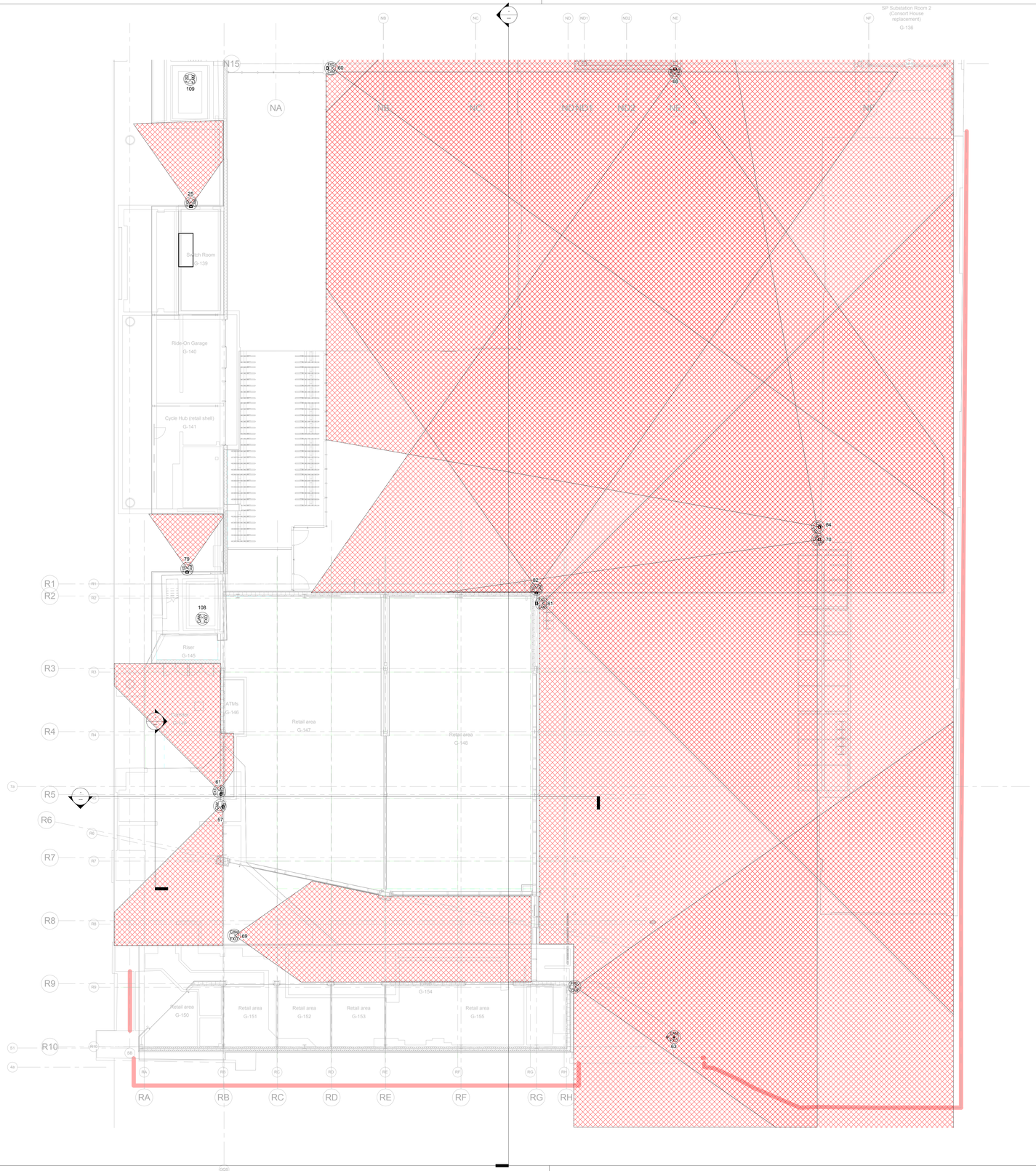
Size: A0

DO NOT SCALE



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Note: The works illustrated in the area outlined in blue are subject to amendments through a parallel GRIP4 & 5 design process. They are indicative and provided for context only.

LEGEND

- CAM 360° — HOUSED IP CAMERA
- CAM 360 — 360 DEGREE MEGA PIXEL CAMERA
- CAM PTZ — PTZ IP CAMERA
- CAM DOME — DOME IP CAMERA
- VIU — VIDEO INTERCOM UNIT
- ICU — INTERCOM CALL UNIT
- CCTV PRIMARY VIEWING ANGLE - NOTE THIS AREA DOES NOT DENOTE EXTENT OF COVERAGE AS MULTIPLE CAMERAS OVERLAP COVERAGE AREAS.

Rev	Date	Description	Drwn	Ch'k'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title:
Electrical Engineering Services
Security Services
Ground Floor Layout (B)

	Name	Sig.	Date
Drawn By	CMS	CMS	26/07/16
Checked By	CC	CC	26/07/16
Approved By	RF	RF	26/07/16

Scale: 1 : 100 | Sheet: of

Map Grid | ELR | UOM | Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-ETL-68-092 | Rev: B01

Size: A0

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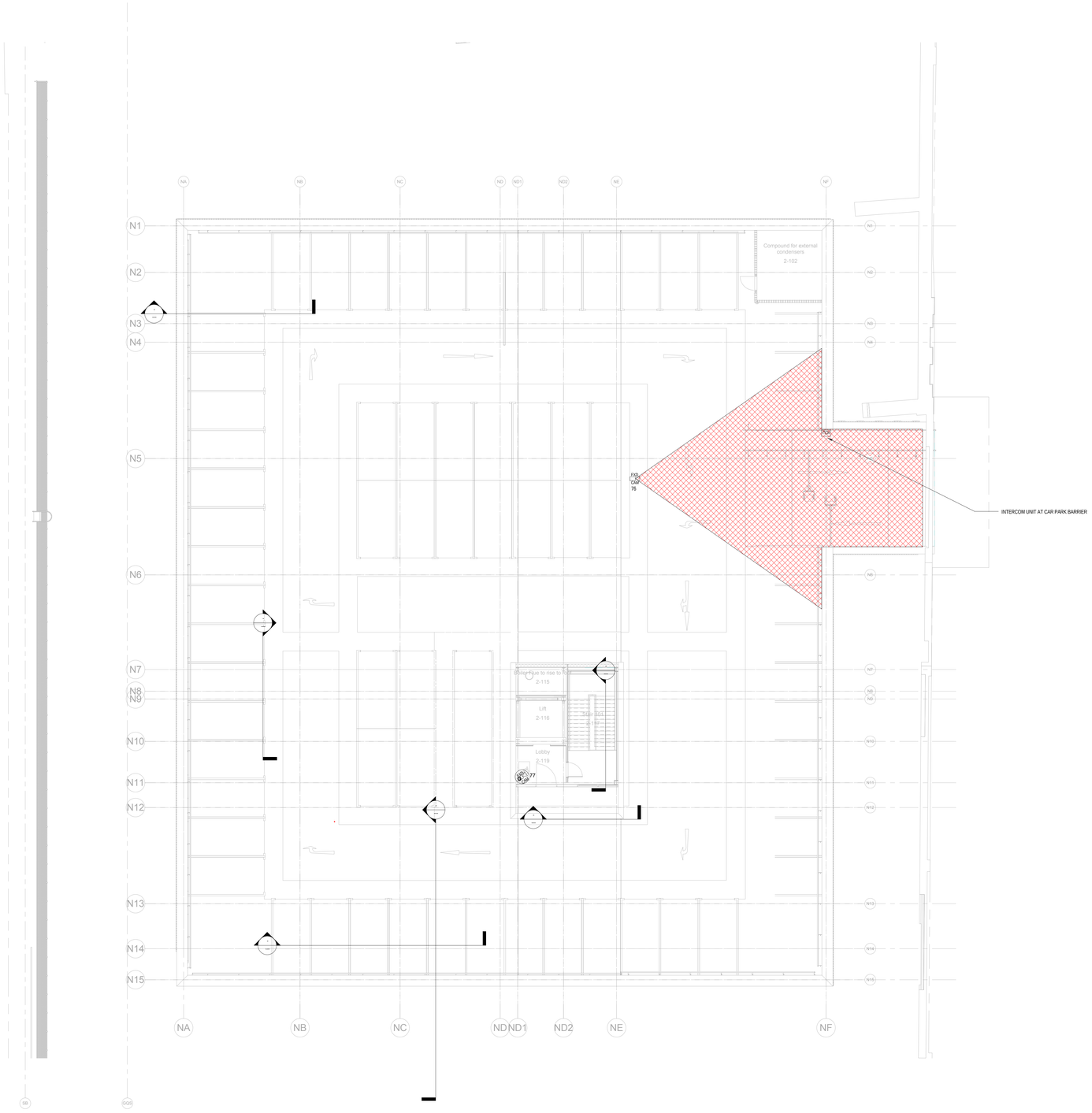
DO NOT SCALE



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LEGEND

CAM FIX	HOUSED IP CAMERA
CAM 360	360 DEGREE MEGA PIXEL CAMERA
CAM PTZ	PTZ IP CAMERA
CAM FIX	DOME IP CAMERA
VIU	VIDEO INTERCOM UNIT
ICU	INTERCOM CALL UNIT
	CCTV PRIMARY VIEWING ANGLE - NOTE THIS AREA DOES NOT DENOTE EXTENT OF COVERAGE AS MULTIPLE CAMERAS OVERLAP COVERAGE AREAS.

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
Security Services
Car Park Deck

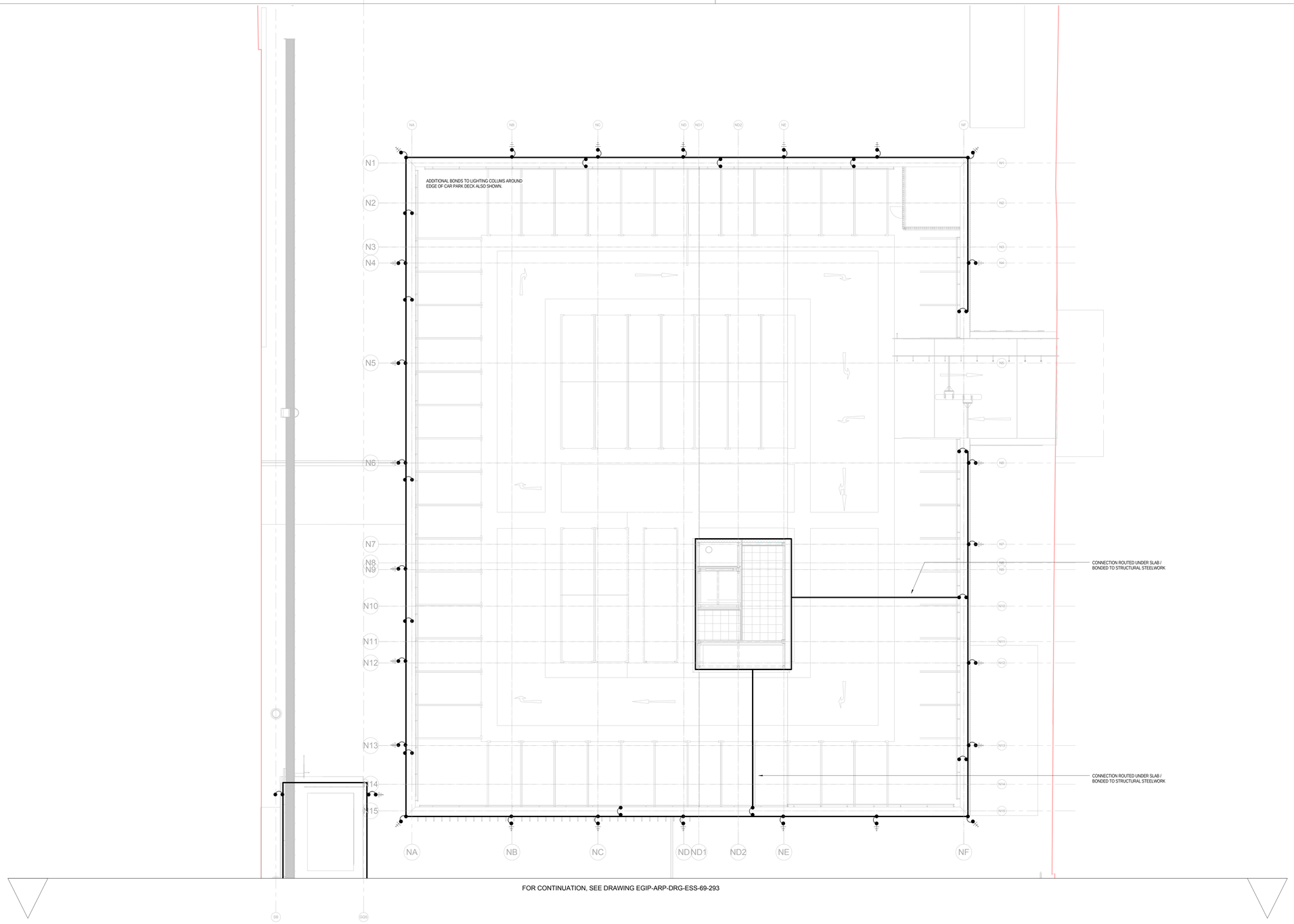
Drawn By	Name CMS	Sig. CMS	Date 26/07/16		
Checked By	Name CC	Sig. CC	Date 26/07/16		
Approved By	Name RF	Sig. RF	Date 26/07/16		
Scale 1 : 100		Sheet	of		
Map Grid	ELR	UOM	Distance		

Network Rail Drawing Number: EGIP19-ARP-DRG-ETL-68-291 Rev B01

All changes to this CAD generated drawing MUST be made via the master CAD file.

Size: A0

DO NOT SCALE



FOR CONTINUATION, SEE DRAWING EGIP-ARP-DRG-ESS-69-293

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NOTES:

1. WORK TO FIGURED DIMENSIONS ONLY.
2. REFER TO ALL OTHER DRAWINGS AND SPECIFICATIONS.
3. LIGHTNING PROTECTION WILL BE INSTALLED AND VERIFIED BY SPECIALIST.
4. LIGHTNING PROTECTION SYSTEM WILL BE CLASS II MINIMUM.
5. LIGHTNING PROTECTION SYSTEM WILL UTILISE BUILDING STRUCTURE WHERE POSSIBLE. WHERE DOWN CONDUCTORS ARE USED THESE WILL BE INTERGRATED WITH THE ARCHITECTURAL CLADDING.
6. A CO-ORDINATED SURGE PROTECTION SYSTEM WITH BE INSTALLED ON ALL INCOMING CONDUCTIVE SERVICES. EQUIPOTENTAL BONDS WILL BE MADE FROM THE LPS TO THE EXISTING ENGINE SHED AND ALL ITEMS OF EXPOSED PLANT, HANDRAILS AND OTHER METAL WORK.

LEGEND:

- 25x3mm COPPER PVC SHEATHED LIGHTNING PROTECTION TAPE.
- BONDS TO EXTERNAL PLANT, METAL WORK OR DOWN CONDUCTORS
- EARTHING PIT

Rev	Date	Description	Drwn	Chk'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
ACCOMMODATION BUILDING
LIGHTNING PROTECTION ROOF AND EXTERNAL LAYOUT (A)

	Name	Sig.	Date
Drawn By	AR	AR	26/07/16
Checked By	RF	RF	26/07/16
Approved By	CC	CC	26/07/16

Scale	1 : 100	Sheet	of
Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-ESS-69-292 Rev B01

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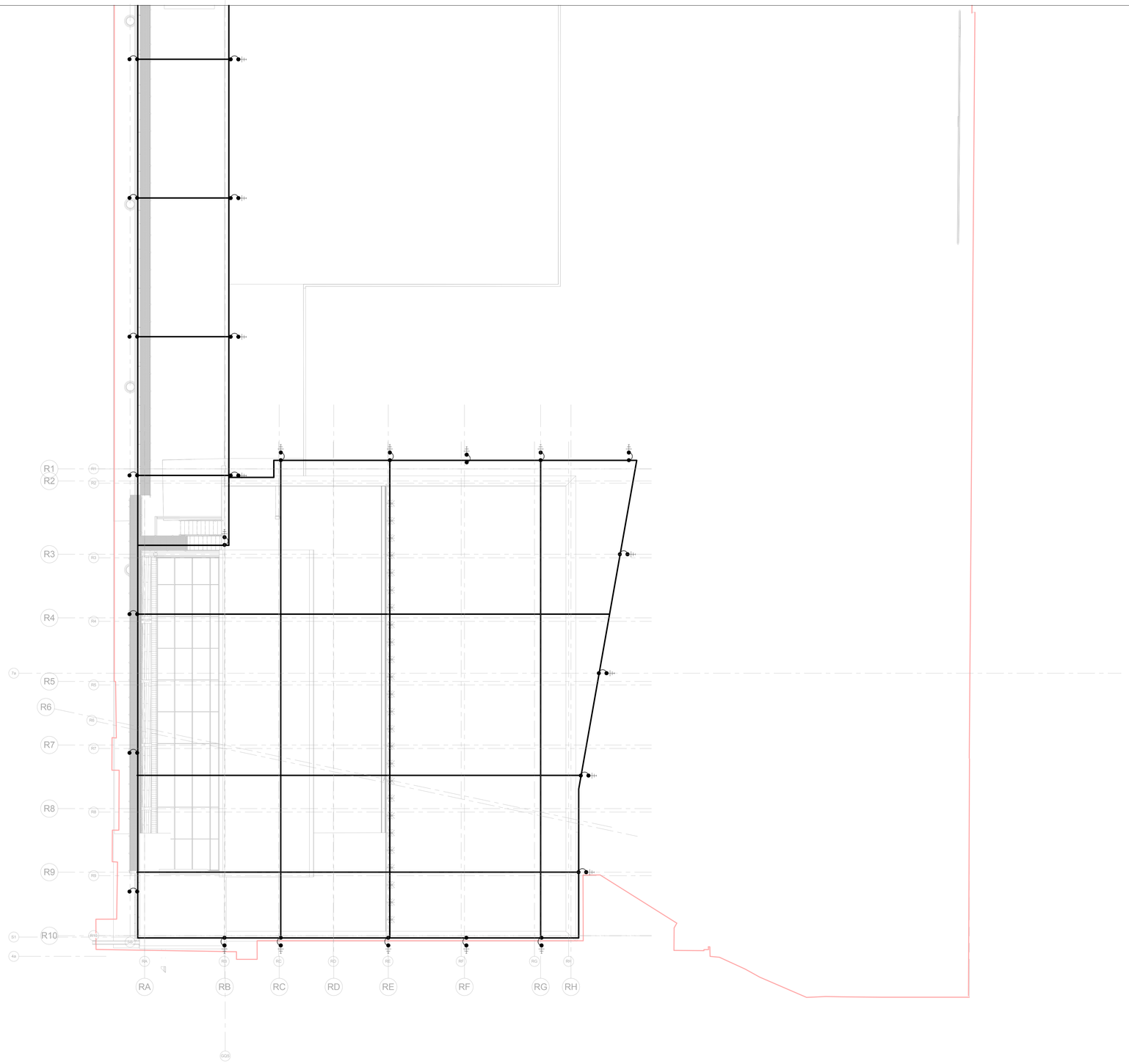
Size: A0

DO NOT SCALE

FOR CONTINUATION, SEE DRAWING EGIP-ARP-DRG-ESS-69-292



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LEGEND:

- 25x3mm COPPER PVC SHEATHED LIGHTNING PROTECTION TAPE
- BONDS TO EXTERNAL PLANT, METAL WORK OR DOWN CONDUCTORS
- EARTHING PIT

Rev	Date	Description	Drwn	Ch'k'd
B01	26/07/16	GRIP 5	CMS	CC

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Electrical Engineering Services
RETAIL BUILDING
ROOF AND EXTERNAL

Drawn By	Name AR	Sig. AR	Date 26.04.16	
Checked By	Name RF	Sig. RF	Date 26.04.16	
Approved By	Name CC	Sig. CC	Date 26.04.16	
Scale 1 : 100		Sheet	of	
Map Grid	ELR	UCM	Distance	

Network Rail Drawing Number: EGIP19-ARP-DRG-ESS-69-293 — Rev: B01

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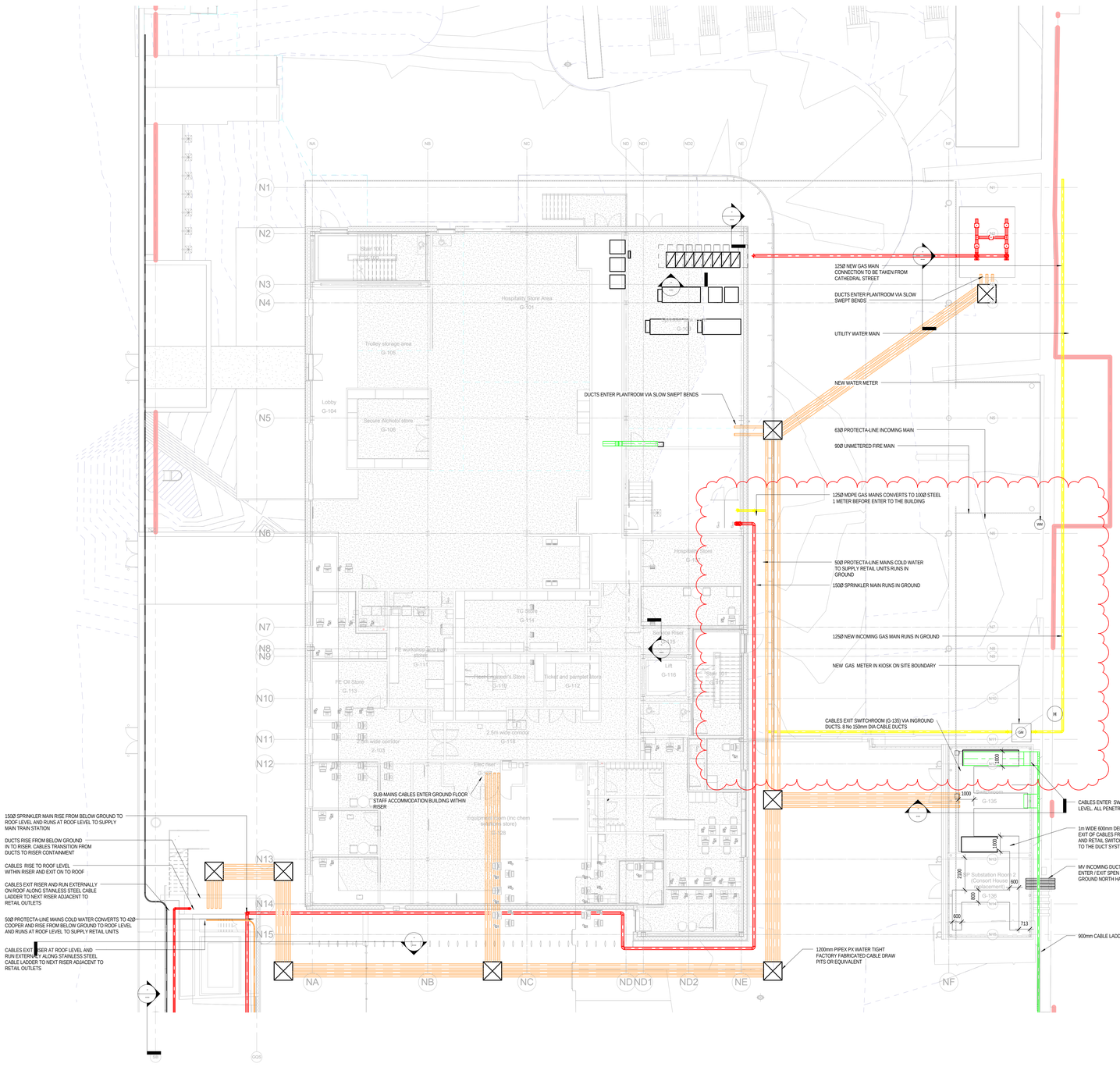
Size: A0

DO NOT SCALE



FOR CONTINUATION REFER TO DRAWING NUMBER: 96-092

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NOTES

1. LOCATION OF EXISTING WATER AND GAS INFRASTRUCTURE IS INDICATIVE ONLY.
2. THIS DRAWING SHALL BE READ WITHSYSTEM SCHEMATIC AND MAJOR PLANT SCHEDULE.

Rev	Date	Description	Drwn	Chk'd
B02	29/04/16	GRIP 4 REVISED DRAWING	MG/AR	CC
B01	05/04/16	GRIP 4	MG	RF

Status: GRIP 5

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ARUP BDP.

Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services
External Services Drawing Layout (A)
Ground Floor Layout (A)

Drawn By	Name MG	Sig. MG	Date 04/04/16		
Checked By	Name TG	Sig. TG	Date 04/04/16		
Approved By	Name RF	Sig. RF	Date 05/04/16		
Scale 1 : 100		Sheet	of		
Map Grid	ELR	UOM	Distance		

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-96-091
Rev: B02

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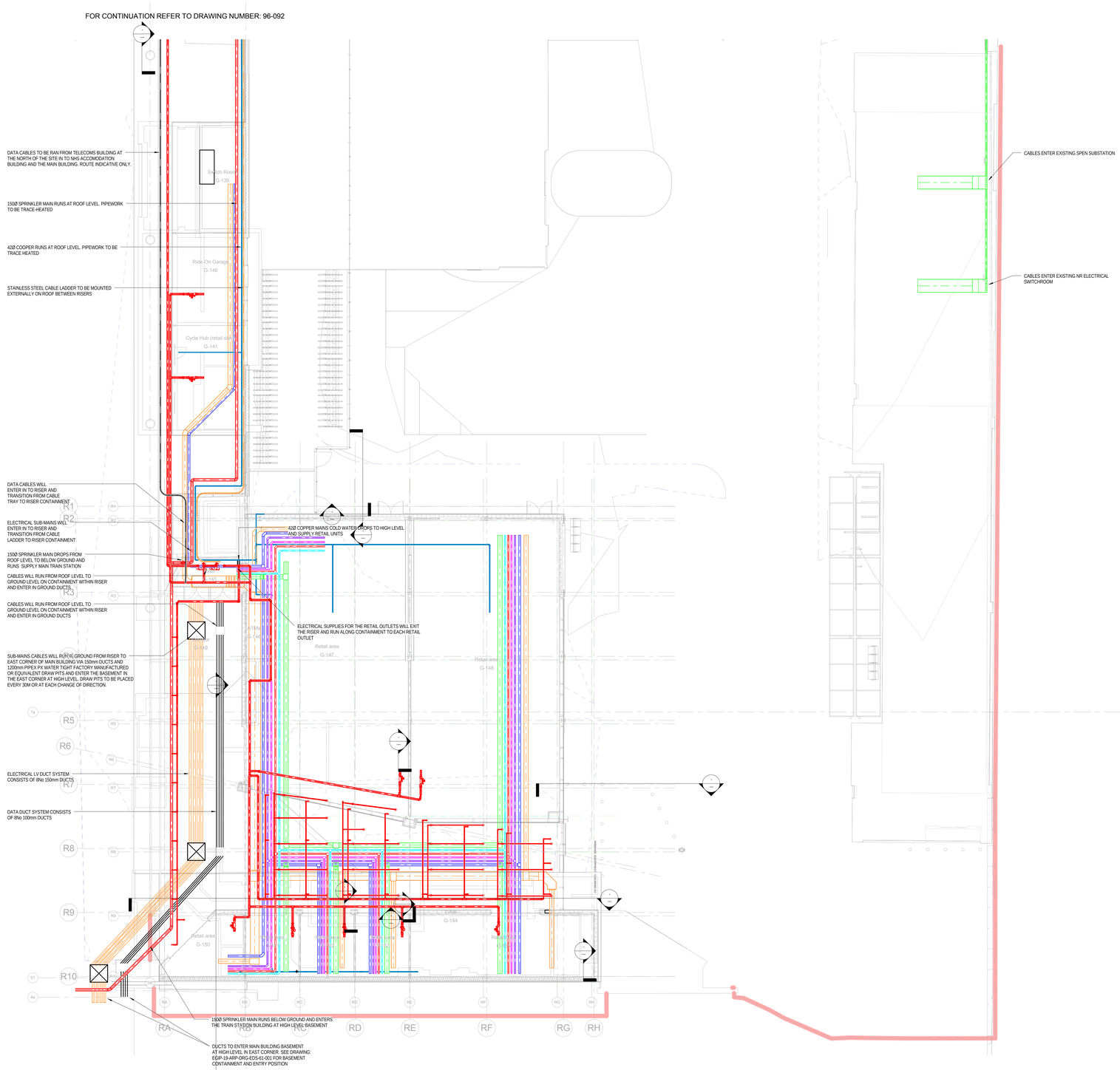
Size: A0

DO NOT SCALE



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Rev	Date	Description	Drwn	Ch'k'd
B01	15/04/16	GRIP 4	MG/AR	CC

Status: GRIP 5

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Client: NetworkRail

Project Title: Queen Street Station - North Hanover Site

Drawing Title: Mechanical Engineering Services
External Services Drawing Layout (B)
Ground Floor Layout (B)

	Name	Sig.	Date
Drawn By	MG/AR	MG/AR	14/05/16
Checked By	CC	CC	14/05/16
Approved By	ST	ST	15/05/16

Scale	Sheet	of
1 : 100		

Map Grid	ELR	UOM	Distance

Network Rail Drawing Number: EGIP19-ARP-DRG-EEN-96-092
Rev: B01

Size: A0

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