



TETRA TECH

Hangar 4

Utilities Strategy

PRESENTED TO

Columbia Threadneedle Investments Ltd

PRESENTED BY

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03/04/2023

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04/04/2023

Restriction on Disclosure and Use of Data

Prepared on Behalf of Tetra Tech Limited. Registered in England Number: 01959704.



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1 INTRODUCTION

Threadneedle Curtis Ltd have commissioned Tetra to prepare an external lighting strategy for a proposed logistics development on the site of the existing Hangar 4 in the global logistics area at Manchester Airport.

An outline masterplan for the site has been prepared by RPS and is provided below. The site will comprise a 92,000 square foot logistics unit comprising warehouse and office space. The site is located within the western maintenance area of Manchester Airport in an area that is designated as ‘controlled landside’.

External to the building, there is proposed yard area wrapping around the east, west and to the south of the building. A car park is provided to the North. Multiple accesses are provided to the site from the existing airport owned road network surrounding the perimeter.

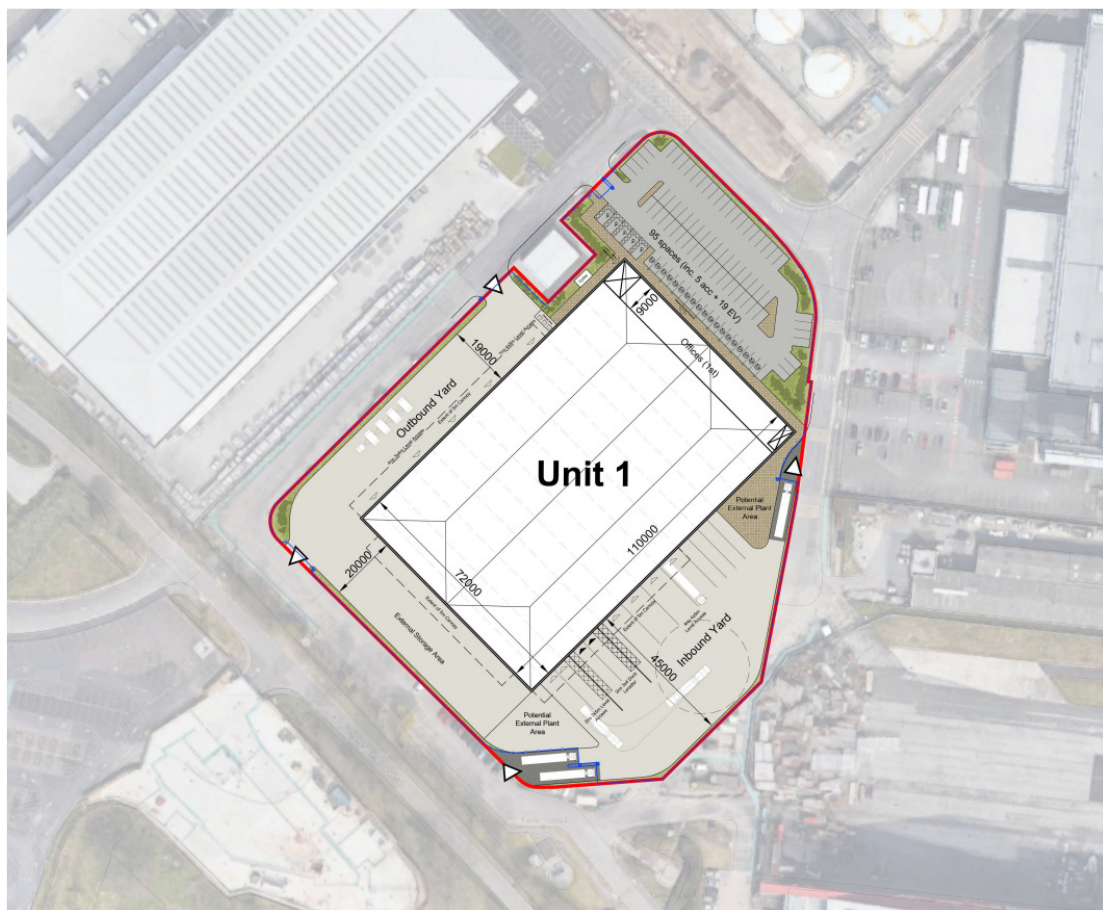


Figure 1 – Proposed Masterplan

2 UTILITIES STRATEGY

The following utilities strategy addendum has been prepared based on the following maximum areas for the unit taken from the latest RPS masterplan:

Unit 1 - 92,000sqft of building footprint

DEMAND CALCULATION

Demand calculations have been prepared in line with the CIBSE guidance assuming warehouse and office use with 10% of unit 1 area being allocated as Office space, and 10% of Unit 2 and unit 3 footprints allocated as office space.

A 20% additional demand has been assumed within the power load for future EV charging requirements. The following demand loads are estimated for the proposed development:

Unit 1

Power (Base Build) = 456kVA

Power (Full fit out) = 1029 KVA

Gas – N/A

Water = 1.04 l/s (TBC by United Utilities)

Foul = 0.936l/s

POWER

Existing airport i-sub-station sits on the western boundary of the site opposite the existing DNATA building. Airport I is a HV sub-station with LV switch room. The LV switch room serves local supplies whilst the HV switch room has a dedicated supply to a remote transformer serving DNATA. There is provision within the HV room of the substation for one additional transformer and additional switchgear as required.

The sub-station is owned by Manchester Airport and operated and maintained by Electricity Northwest Limited on behalf of MAG under a COMA agreement.

Discussions with MAG utilities and ENWL have confirmed that an additional transformer can be introduced to I sub to serve the development however there is not sufficient capacity in the ring to meet the demand requirements.

To generate additional capacity offsite amendments to the ring will be required to remove airport o-substation from the cargo ring and connect it to an existing airfield ring. This will provide the additional capacity needed at airport i-sub to facilitate the development.

Temporary infrastructure will be required to remove O sub-station from the ring. The cabling and diversion works will be undertaken via existing pit and ducts networks. Survey works of the existing network will be required and removal of redundant cabling may also be needed.

Once O substation is removed from the ring the new transformer and switchgear can be installed at I sub-station. The proposed building will then be supplied at Low Voltage from I-sub into a dedicated LV switch room within the proposed building.

Power strategy drawings are provided in Appendix A.

GAS

The building will not be supplied via natural gas in line with the current regulations nor will any provision for a future gas supply be made.

WATER

The water strategy for potable and fire will be delivered separately summarised as follows:

Phase 1 – Fire supply

Prior to the main works commencing a demolition and utilities diversion scope will be progressed. Existing combined MAG potable and fire mains run within the site currently which will be diverted to the perimeter of the site as part of the demolition works contract. Existing hydrants will be relocated to suitable points around the perimeter whilst some existing hydrants are retained to the south. This ensures hydrant provision is provided to all facades of the building at or near the site boundary.

Phase 2 – New potable supply to building.

Phase 2 will see a potable supply brought into the new building. The new supply will be taken from the existing United Utilities distribution main in Wilmslow Old Road. The supply will connect outside of the site boundary in Wilmslow Old Road and be brought into the site via the southern boundary crossing the existing MAG road. The supply pipe will then be routed to the plant room in the northern end of the building.

Water drawings are provided in Appendix B.

COMMS

Existing BT Infrastructure is present to the South of the site adjacent to Wilmslow Old Road. A site wide ducting system will be installed with a connection to the infrastructure in Wilmslow Old Road made via a new pit connecting to the site wide duct system.

The supply application will be made by the tenant and all cabling and connections undertaken by BT or their chosen supplier on their behalf.

Comms drawings are provided in Appendix C.

3 EXISTING UTILITIES

The existing site comprises a former World War 2 Hangar that currently services as the airports motor transport facility whilst there is car parking to the northern end of the site. There are a number of main utilities that run within the site serving the existing on site buildings and infrastructure and also serving the wider network.

Prior to the main works commencing the existing Hangar will be demolished. To facilitate this existing utilities supplies have been identified and will be disconnected prior to demolition. Existing power, water and gas will be disconnected with the power and gas supplies removed to outside of the site boundary.

As part of the demolition scope of works critical utilities passing through the site as part of the wider airport networks have been identified and will be diverted.

The existing COMMS supply to the Hangar has already been disconnected by MAG.

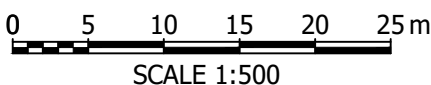
A number of small power feeds are fed from the Hangar building most of which will become redundant following the demolition works. An existing small power supply to an airfield access gate is to be resupplied from i-substation via the diversion works.

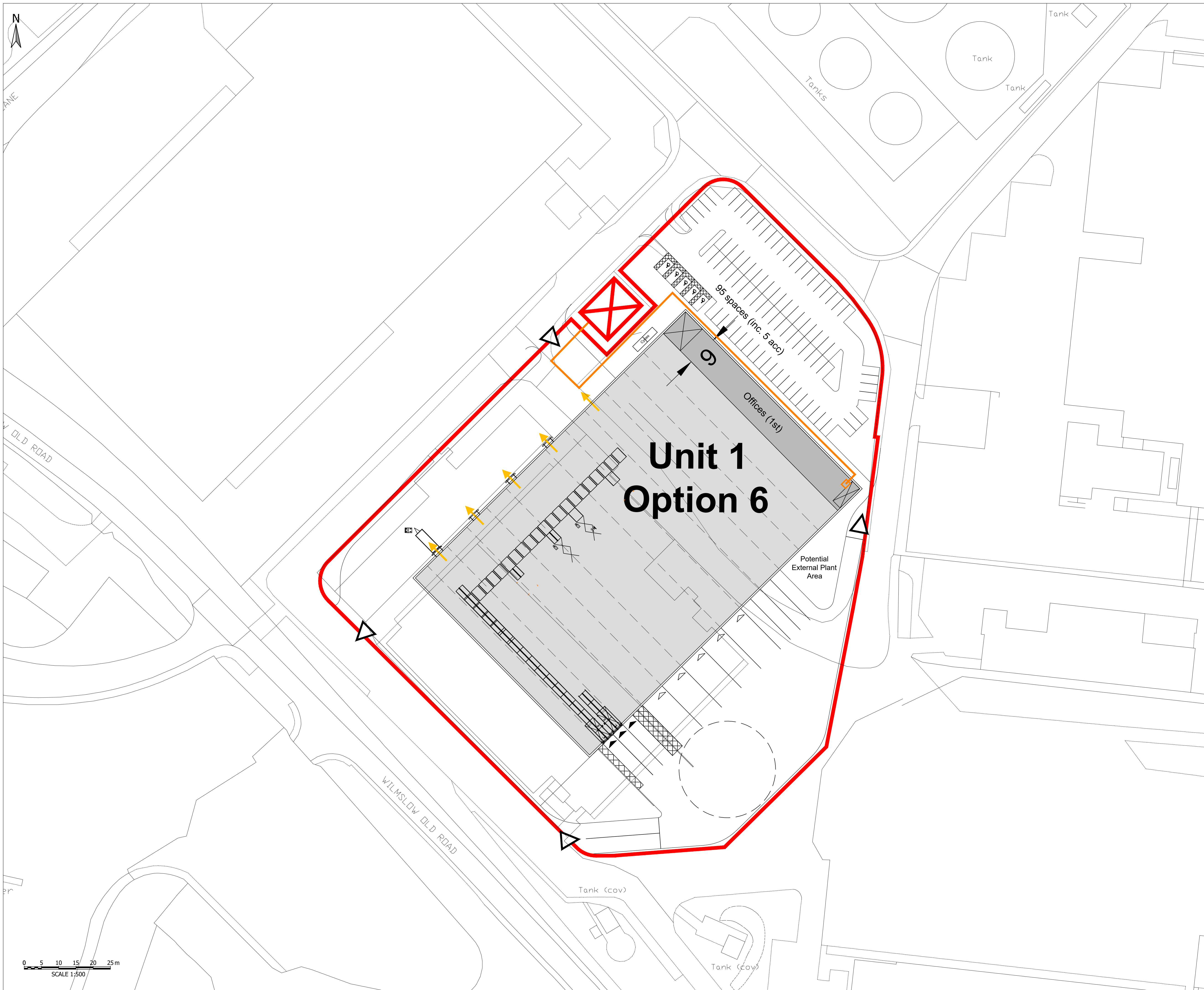
Lighting to the existing Hangar 5 car park to the north will remain. This is supplied via a feeder pillar adjacent to the car park entrance. The lighting supply is to be disconnected prior to commencement of the works however the feeder pillar is to remain as it serves wider road lighting.

There is the potential for unknown services and redundant services to still be present in ground. Following demolition and prior to the main works commencing the Contractor will undertake a further GPR scan to verify any remaining live and redundant services.

The demolition drawings including existing service records are provided in Appendix D for information.

APPENDIX A – POWER STRATEGY DRAWINGS





- NOTES - GENERAL**
1. THIS DRAWING TO READ IN CONJUNCTION WITH ALL RELEVANT CIVILS, STRUCTURAL AND ARCHITECTURAL DRAWINGS.
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION.
 3. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED. LEVELS ARE IN METRES A.O.D.
 4. ALL DIMENSIONS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
- KEY:**
- | | |
|---|----------------------------------|
|  | LOW VOLTAGE SUPPLY TO SWITCHROOM |
|  | EXISTING HV SUB-STATION |

PRELIMINARY ISSUE

P01	PRELIMINARY FIRST ISSUE						24.03.2023	MA	NM	NM
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Client
MANCHESTER AIRPORT GROUP

The logo for Manchester Airport Group (MAG) features a stylized blue and grey 'M' shape to the left of the letters 'MAG' in a bold, blue, sans-serif font.

Project Name	HANGER 4 DEMOLITION
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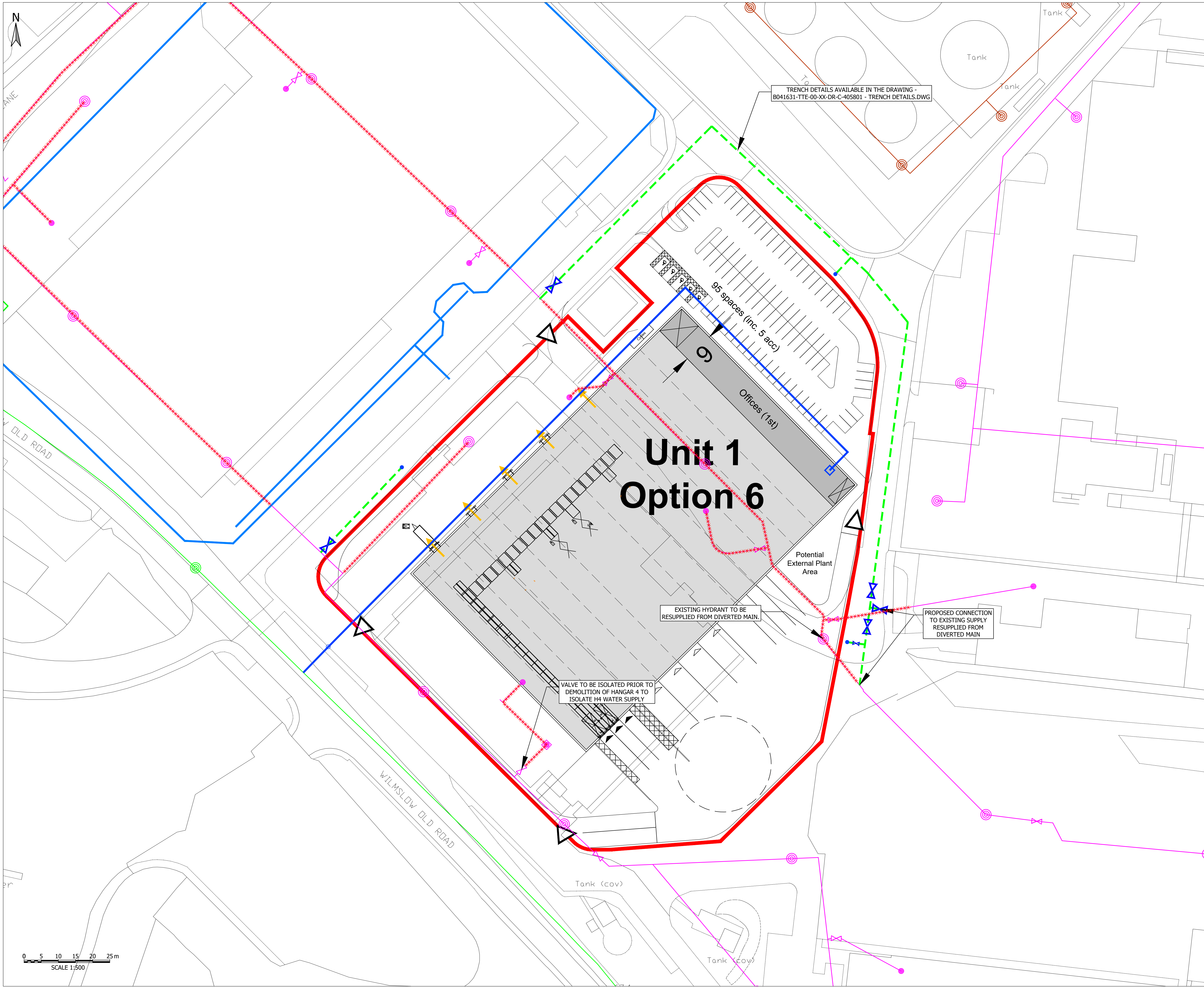
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PROPOSED POWER STRATEGY

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Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision	
B041631	TTE	00	ZZ	DR	C	412307	P01	

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APPENDIX B – WATER STRATEGY DRAWINGS



NOTES - GENERAL

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KEY:

- WATER SUPPLY TO PLANT ROOM
- WATER SUPPLY POINT OF CONNECTION
- ***** ROUTE TO BE ABANDONED
- EXISTING WATER MAIN 1
- EXISTING WATER MAIN 2
- EXISTING WATER MAIN 3
- PROPOSED WATER MAIN DIVERSION
- PROPOSED FIRE HYDRANT
- ⋈ PROPOSED VALVE

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Project Name

HANGER 4 DEMOLITION

Sheet Title

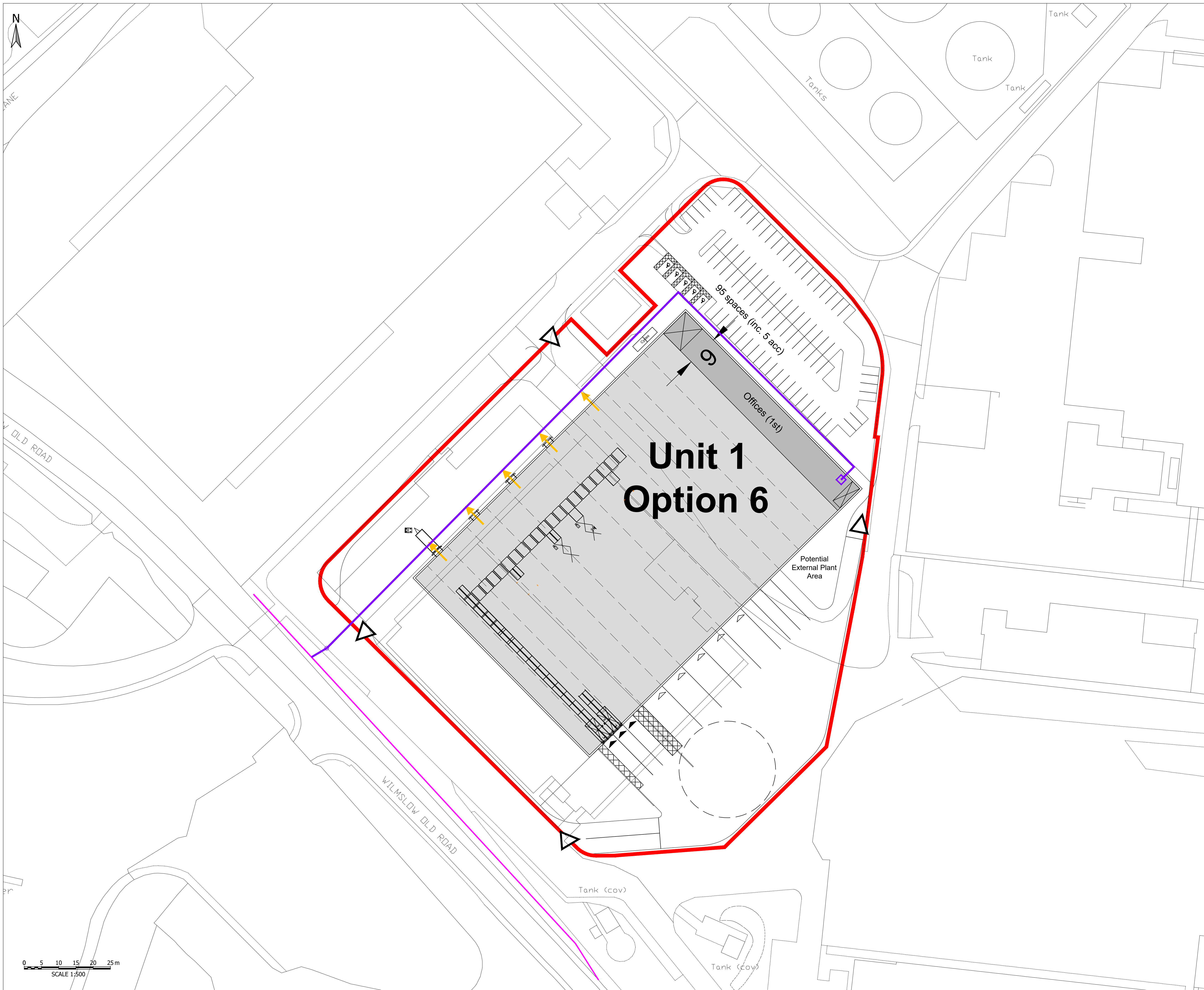
PROPOSED WATER STRATEGY

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Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision	
B041631	TTE	00	ZZ	DR	C	-412311	P01	

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APPENDIX C – COMMS STRATEGY DRAWINGS



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- KEY:
- | | |
|---|----------------------------|
|  | COMMS SUPPLY TO SWITCHROOM |
|  | EXISTING BT COMMS LINE |
|  | COMMS POINT OF CONNECTION |

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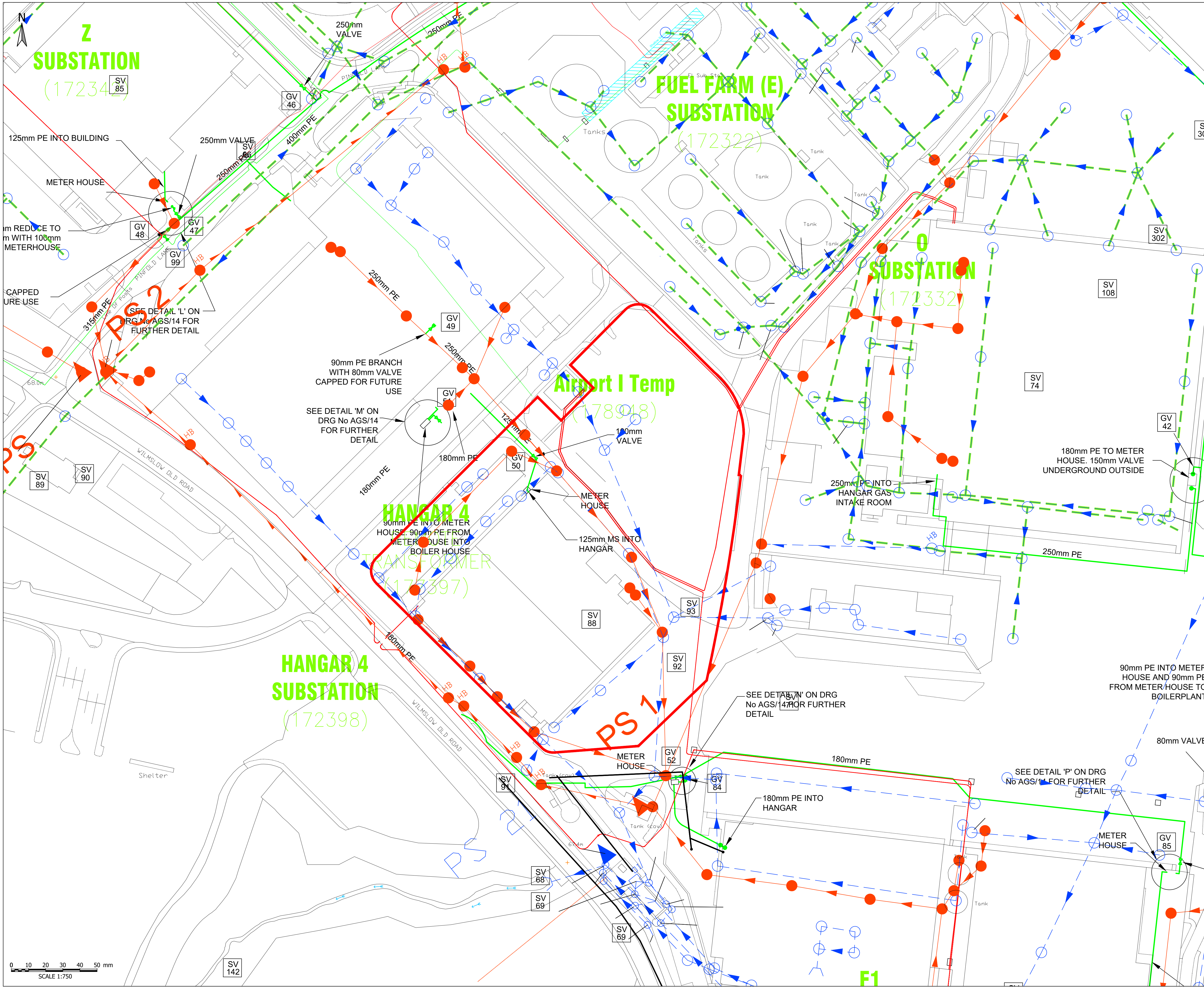
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Sheet Title
PROPOSED COMMS STRATEGY

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B041631 - TTE	00	ZZ	DR	C	-412312	P01		
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APPENDIX D – EXISTING UTILITIES & DIVERSION DRAWINGS



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NOTES - UTILITIES

- THIS PLAN SHOWS THE LOCATIONS OF KNOWN UNDERGROUND SERVICES IN THE AREA OF THE PROPOSED INVESTIGATION AND IS BASED ON INFORMATION SUPPLIED BY UTILITY COMPANIES. THE INFORMATION ON THE PLAN IS GIVEN WITHOUT WARRANTY AND ITS ACCURACY CANNOT BE GUARANTEED. NO LIABILITY OF ANY KIND WHATSOEVER IS ACCEPTED BY TETRA TECH FOR ANY ERROR OR OMISSION. SAFE DIGGING PRACTICES IN ACCORDANCE WITH HSG47 MUST BE USED TO VERIFY ESTABLISHMENT THE ACTUAL POSITION OF BURIED SERVICES BEFORE ANY MECHANICAL PLANT IS USED. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT THIS INFORMATION IS PROVIDED TO ALL PERSONS WORKING ON OR NEAR BURIED SERVICES. THE INFORMATION ON THIS PLAN SHOULD NOT BE REFERRED TO BEYOND A PERIOD OF 28 DAYS FROM THE DATE OF ISSUE. THIS DRAWING IS PROVIDED FOR THE INFORMATION AND IN THE EVENT OF ANY DOUBT THE CONTRACTOR SHOULD REFER TO THE CURRENT PLANS PROVIDED BY THE UTILITY COMPANY.

KEY:

- SW MAINS
- FW MAIN
- GAS MAIN
- HV CABLE
- SW MANHOLE
- FW MANHOLE

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T01	TENDER ISSUE	28.02.2023			

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Client
**MANCHESTER AIRPORT GROUP,
MAG**

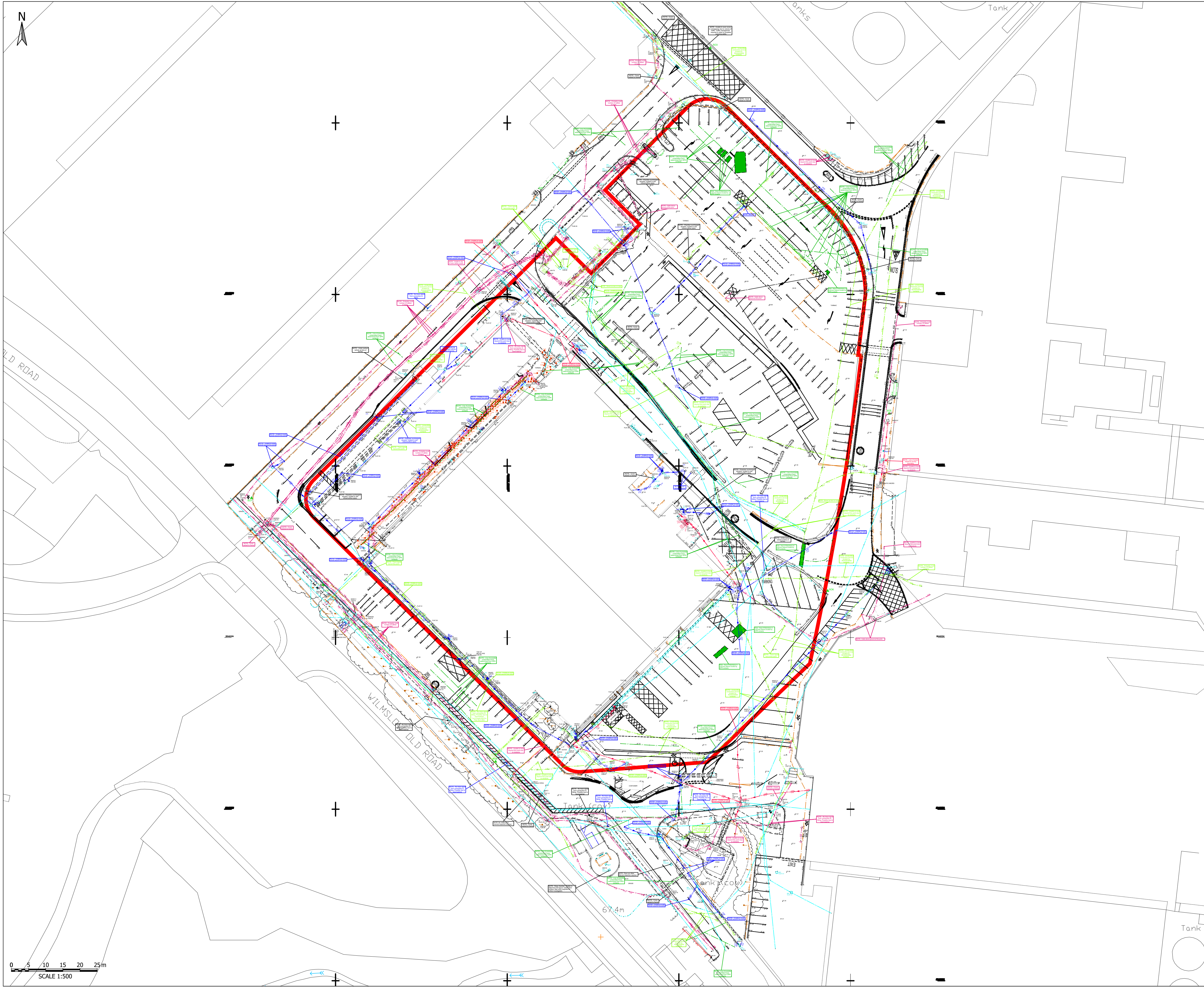
Project Name
HANGAR 4 DEMOLITION

Sheet Title
MAG RECORDS

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
B041631	MA	FEB 23	NM	FEB 23	NM	FEB 23	As Shown	S0

Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision
B041631	- TTE	- 00	- ZZ	- DR	- C	- 401100	T01

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 6. BASED ON UTILITY SURVEY 'GPR SURVEY 22.02.23' PROVIDED BY SURVEY OPERATIONS 22.02.2023.

KEY:

SW	SW MAIN
FW	FW MAIN
Gas	GAS MAIN
WM	WATER MAIN
UI	UNIDENTIFIED LINE
EL	ELECTRIC MAIN

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T01	TENDER ISSUE	28.02.2023	MA	NM	NM
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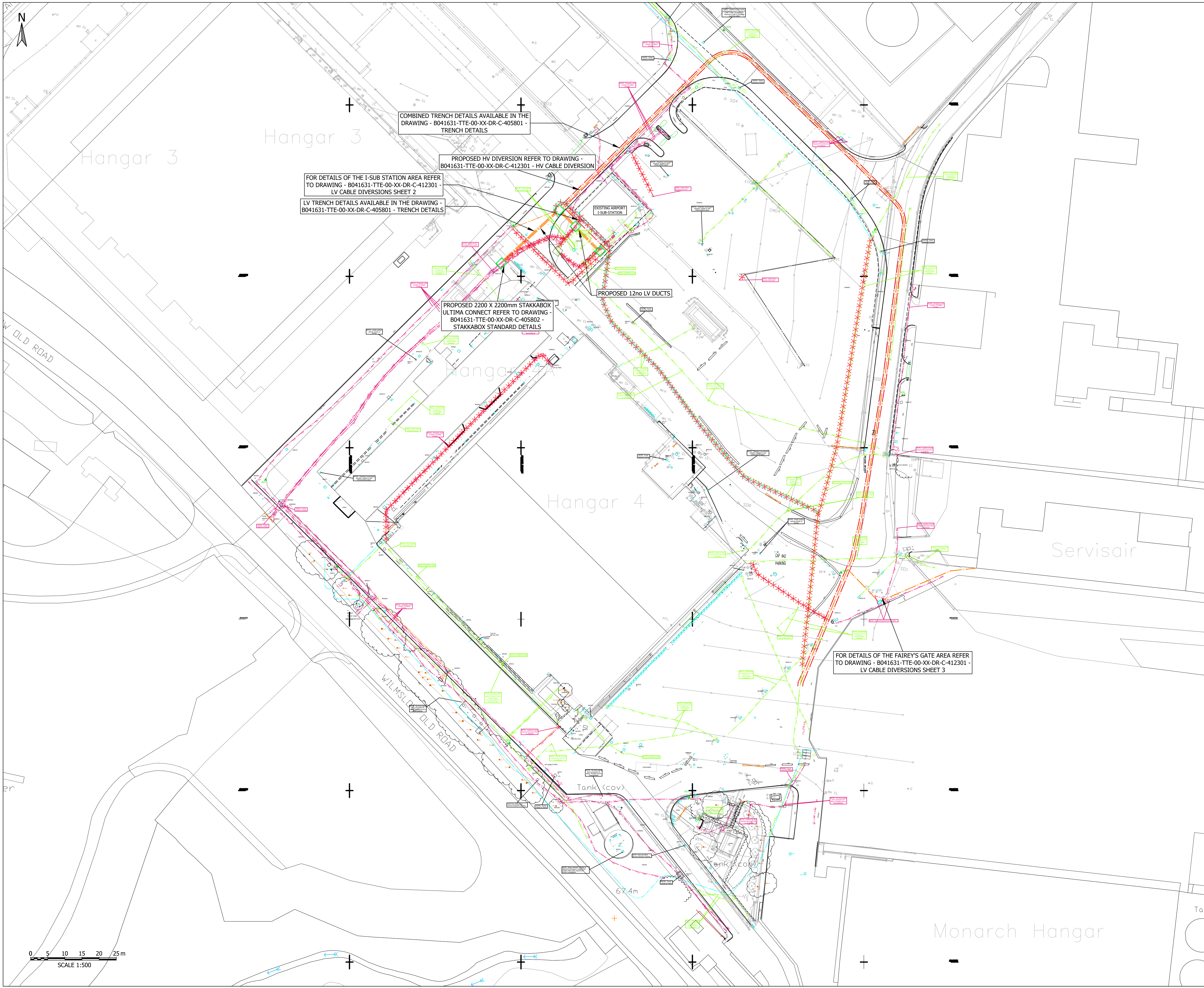
Client
**MANCHESTER AIRPORT GROUP,
MAG**

Project Name
HANGAR 4 DEMOLITION

Sheet Title
EXISTING UTILITIES

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
B041631	MA	FEB 23	NM	FEB 23	NM	FEB 23	As Shown	S0
Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision	
B041631	- TTE	- 00	- ZZ	- DR	- C	- 401101	T01	

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 5. THIS OVERLAY SHOWS THE DIVERSIONARY AND ABANDONMENT UTILITY WORKS PROPOSED TO TAKE PLACE OUTSIDE OF THE SITE RED LINE BOUNDARY.

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 7. EXCAVATION SHOULD BE CARRIED OUT IN ACCORDANCE WITH HSG 47 AVOIDING DANGER FROM UNDERGROUND SERVICES AND THE POSITION OF ALL APPARATUS SHOULD BE VERIFIED INDEPENDENTLY PRIOR TO ANY INVASIVE OPERATION ON SITE.
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 9. THIS DRAWING SHOWS AN OVERVIEW OF PROPOSED, EXISTING AND TO BE ABANDONED UTILITY SERVICES. REFER TO SPECIFIC DRAWINGS WITHIN THE 412300 SERIES.

- KEY:**
- PROPOSED HV CABLE DIVERSION
 - PROPOSED LV CABLE DIVERSION
 - EXISTING LV CABLE
 - PROPOSED DUCT CHAMBER
 - ROUTE TO BE ABANDONED
 - HANGER 4, SITE BOUNDARY
 - PROPOSED FEEDER PILLAR

TENDER ISSUE

T01	TENDER ISSUE	27.02.2023	MA	NM	NM
P02	UPDATED GPR/TOPO	15.02.2023	MA	NM	NM
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Rev	Description	Date	Dr	CHK	App

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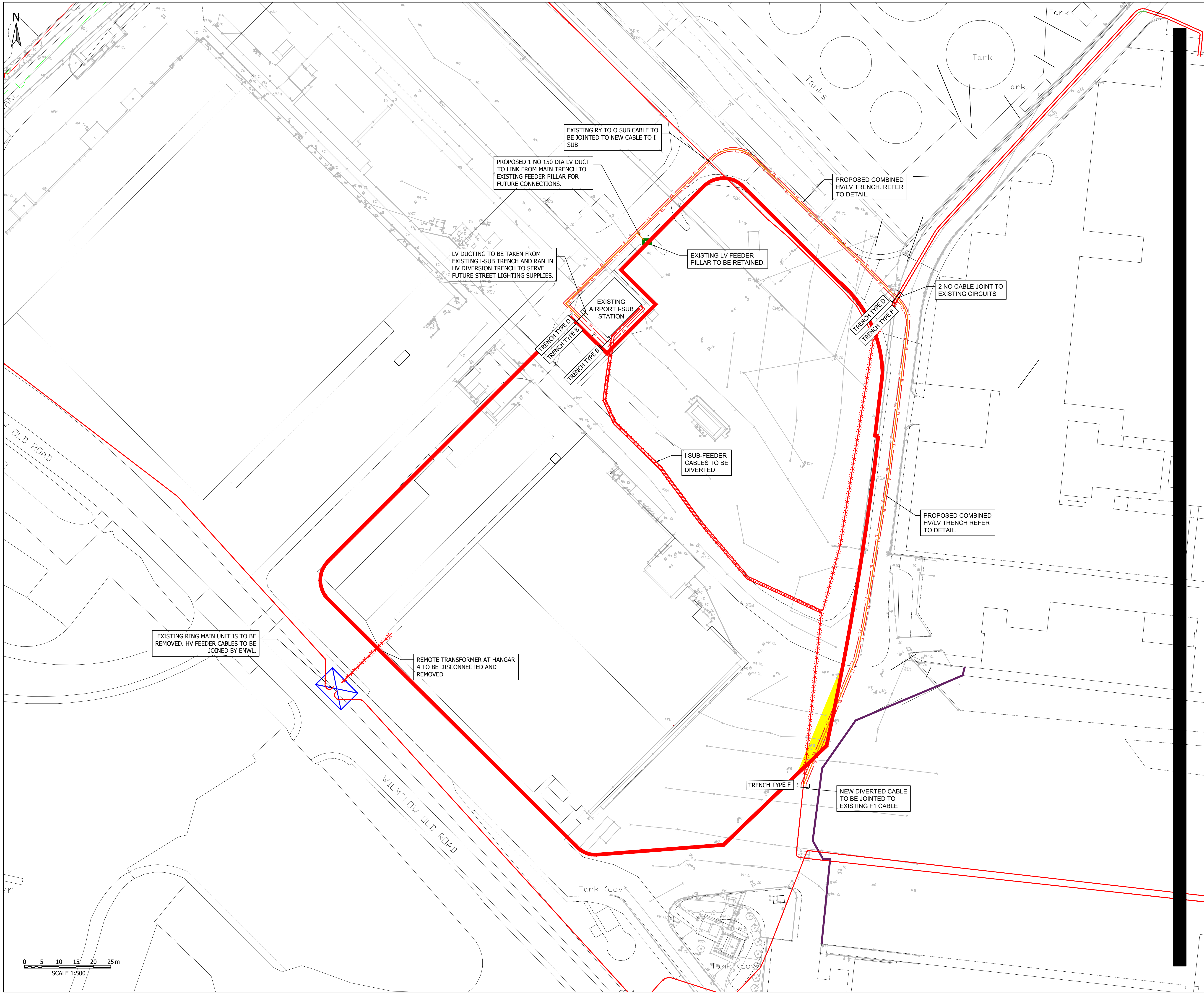
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MANCHESTER AIRPORT GROUP, MAG

Project Name
HANGER 4 DEMOLITION

Sheet Title
**LV CABLE DIVERSIONS
SHEET 1 OF 3**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Substability
B041631	JR	FEB 23	JF	FEB 23	NM	FEB 23	1:1000	S2
Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision	
B041631	- TTE	- 00	- XX	- DR	- C	- 412300		T01

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 6. ALL DUCTING IS TO BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATION AND THE MAG ASSET STANDARDS.
 7. FINAL CABLE ROUTES AND DETAILS ARE TO BE AGREED WITH MAG UTILITIES.
 8. EXCAVATION SHOULD BE CARRIED OUT IN ACCORDANCE WITH HS(G) 47 AVOIDING DANGER FROM UNDERGROUND SERVICES AND THE POSITION OF ALL APPARATUS SHOULD BE VERIFIED INDEPENDENTLY PRIOR TO ANY INVASIVE OPERATION ON SITE.
 9. ALL CABLING, JOINTING AND CONNECTIONS ARE TO BE UNDERTAKEN BY ELECTRICITY NORTHWEST LIMITED. THE CONTRACTOR MUST APPOINT ENWL FOR ALL HV INSTALLATIONS AS THE COMA PROVIDER FOR THE AIRPORTS NETWORK.
 10. EXCAVATION ONTO EXISTING HV CABLES FOR CONNECTIONS MUST BE UNDERTAKEN USING VACUUM EXCAVATION OR HAND DIG.
 11. TERMINATION OF HV CABLES INTO SUB-STATION IS TO BE CONFIRMED BY ENWL. CONTRACTOR IS TO COORDINATE EXTERNAL HV WORKS WITH PROPOSED SUB-STATION.
 12. THIS PLAN SHOWS THE LOCATIONS OF KNOWN UNDERGROUND SERVICES IN THE AREA OF THE PROPOSED INVESTIGATION AND IS BASED ON INFORMATION SUPPLIED BY UTILITY COMPANIES. THE INFORMATION ON THE PLAN IS GIVEN WITHOUT WARRANTY AND ITS ACCURACY CANNOT BE GUARANTEED. NO LIABILITY OF ANY KIND WHATSOEVER IS ACCEPTED BY TETRA TECH FOR ANY ERROR OR OMISSION. SAFE DIGGING PRACTICES IN ACCORDANCE WITH HSG47 MUST BE USED TO VERIFY ESTABLISHMENT THE ACTUAL POSITION OF BURIED SERVICES BEFORE ANY MECHANICAL PLANT IS USED. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT THIS INFORMATION IS PROVIDED TO ALL PERSONS WORKING ON OR NEAR BURIED SERVICES. THE INFORMATION ON THIS PLAN SHOULD NOT BE REFERRED TO BEYOND A PERIOD OF 28 DAYS FROM THE DATE OF ISSUE. THIS DRAWING IS PROVIDED FOR THE INFORMATION AND IN THE EVENT OF ANY DOUBT THE CONTRACTOR SHOULD REFER TO THE CURRENT PLANS PROVIDED BY THE UTILITY COMPANY.
- KEY:**
- EL — PROPOSED HV DIVERSION
 - ***** ROUTE TO BE ABANDONED
 - EXISTING HV CABLES
 - CRITICAL PART BOUNDARY FENCE
 - HV/LV CABLE EASEMENT
 - TRENCH TYPE MARKER

TENDER ISSUE

Rev	Description	Date	Drawn	Checkd	Appr
T01	TENDER ISSUE	31.02.2023	MA	NM	NM
P02	DRAFT ISSUE - PINFOLD LANE HV NOW ABANDONED. REFER TO 413002	08.02.2023	JF	NM	NM
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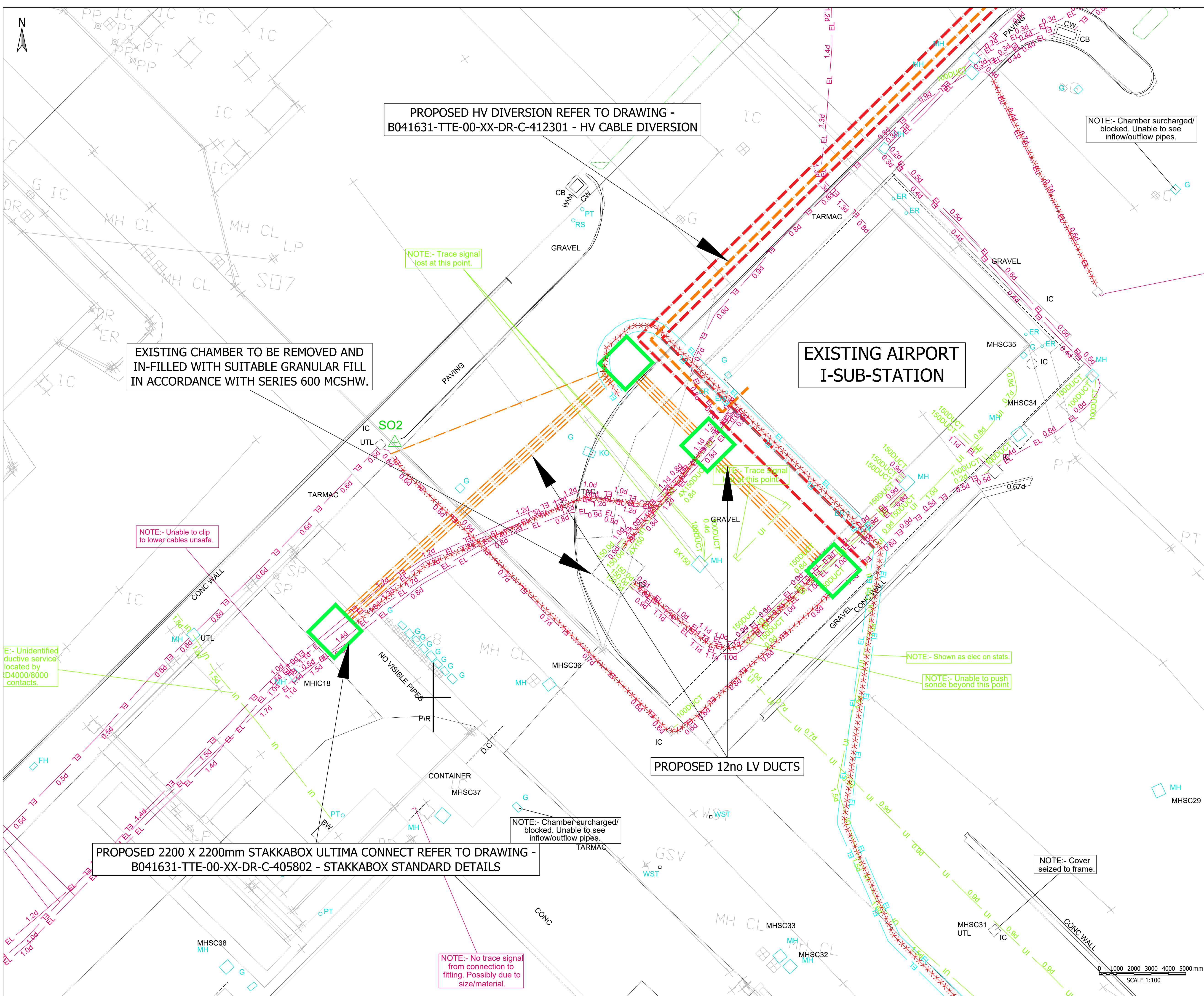
Client
MANCHESTER AIRPORT GROUP



Project Name
HANGER 4 DEMOLITION

Sheet Title
**UTILITIES
HV CABLE DIVERSION
PHASE 1**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Subsidiary
B041631	MA	NOV 22	TK	NOV 22	NM	NOV 22	1:500	S2
Client Project Number Originator Volume/System Level/Location Type/Code Role Number Revision								
B041631 - TTE - 00 - ZZ - DR - C - 412303 T01								



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 7. EXCAVATION SHOULD BE CARRIED OUT IN ACCORDANCE WITH HS(G) 47 AVOIDING DANGER FROM UNDERGROUND SERVICES AND THE POSITION OF ALL APPARATUS SHOULD BE VERIFIED INDEPENDENTLY PRIOR TO ANY INVASIVE OPERATION ON SITE.
 8. THIS PLAN SHOWS THE LOCATIONS OF KNOWN UNDERGROUND SERVICES IN THE AREA OF THE PROPOSED INVESTIGATION AND IS BASED ON INFORMATION SUPPLIED BY UTILITY COMPANIES. THE INFORMATION ON THE PLAN IS GIVEN WITHOUT WARRANTY AND ITS ACCURACY CANNOT BE GUARANTEED. NO LIABILITY OF ANY KIND WHATSOEVER IS ACCEPTED BY TETRA TECH FOR ANY ERROR OR OMISSION. SAFE DIGGING PRACTICES IN ACCORDANCE WITH HSG47 MUST BE USED TO VERIFY ESTABLISHMENT THE ACTUAL POSITION OF BURIED SERVICES BEFORE ANY MECHANICAL PLANT IS USED. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT THIS INFORMATION IS PROVIDED TO ALL PERSONS WORKING ON OR NEAR BURIED SERVICES. THE INFORMATION ON THIS PLAN SHOULD NOT BE REFERRED TO BEYOND A PERIOD OF 28 DAYS FROM THE DATE OF ISSUE. THIS DRAWING IS PROVIDED FOR THE INFORMATION AND IN THE EVENT OF ANY DOUBT THE CONTRACTOR SHOULD REFER TO THE CURRENT PLANS PROVIDED BY THE UTILITY COMPANY.
 9. THIS DRAWING SHOWS AN OVERVIEW OF PROPOSED, EXISTING AND TO BE ABANDONED UTILITY SERVICES. REFER TO SPECIFIC DRAWINGS WITHIN THE 412300 SERIES.

- KEY:**
- PROPOSED HV CABLE DIVERSION
 - PROPOSED LV CABLE DIVERSION
 - EXISTING LV CABLE
 - PROPOSED DUCT CHAMBER
 - ROUTE TO BE ABANDONED
 - HANGER 4, SITE BOUNDARY
 - PROPOSED FEEDER PILLAR

TENDER ISSUE

T01	TENDER ISSUE	27.02.2023	MA	NM	NM
P02	UPDATED GPR/TOPO	15.02.2023	MA	NM	NM
P01	DRAFT ISSUE	14.02.23	JR	JF	NM
Rev.	Description	Date	Rev.	Rev.	App.

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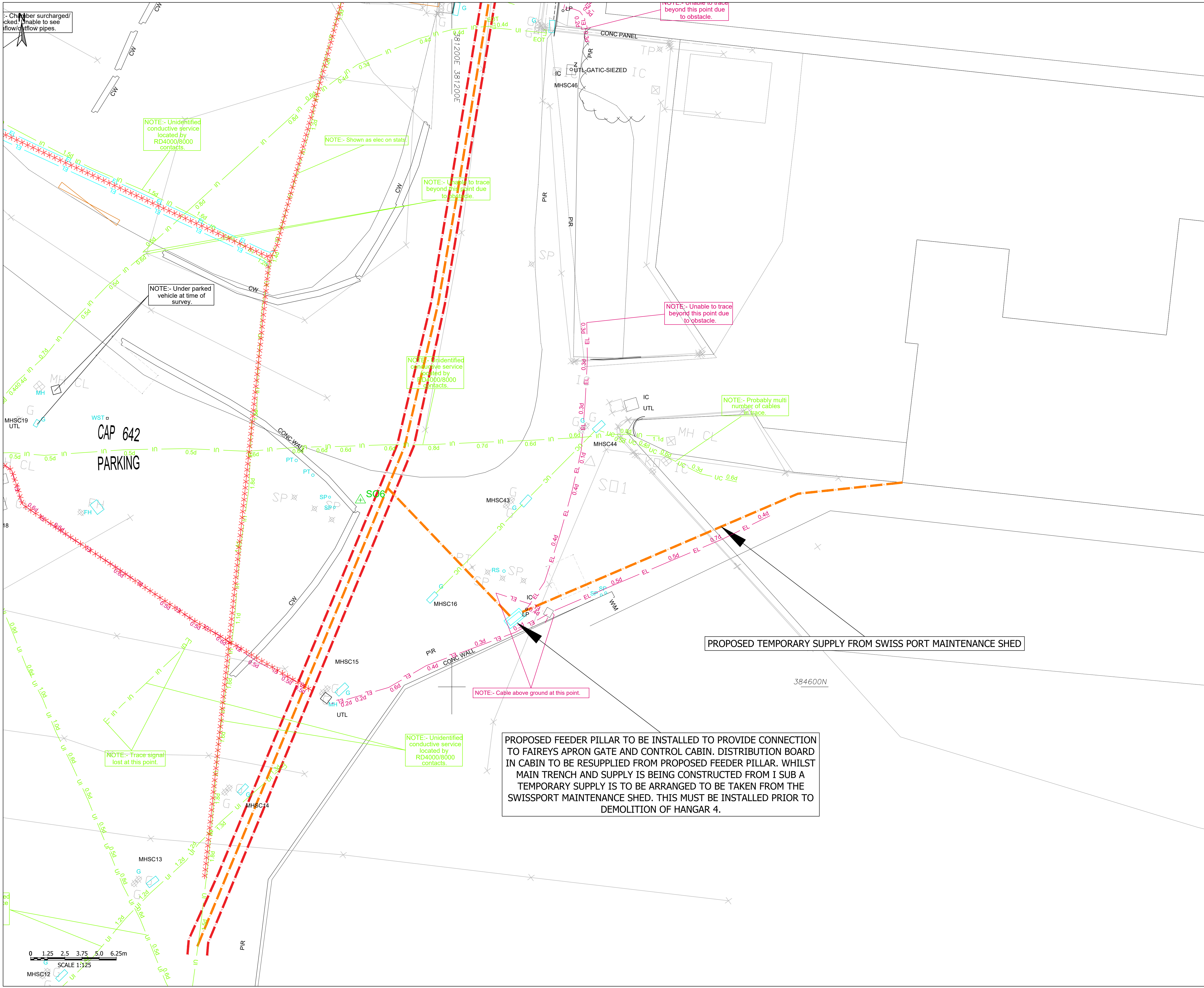


Client
MANCHESTER AIRPORT GROUP, MAG

Project Name
HANGER 4 DEMOLITION

Sheet Title
**LV CABLE DIVERSIONS
SHEET 2 OF 3**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A3	Suitability
B041631	JR	FEB 23	JF	FEB 23	NM	FEB 23	1:1000	S2
Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision	
B041631	TTE	- 00 - XX - DR - C - 412301						T01



- NOTES - GENERAL**
1. THIS DRAWING TO READ IN CONJUNCTION WITH ALL RELEVANT CIVILS, STRUCTURAL AND ARCHITECTURAL DRAWINGS.
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION.
 3. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED. LEVELS ARE IN METRES A.O.D.
 4. ALL DIMENSIONS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
 5. THIS OVERLAY SHOWS THE DIVERSIONARY AND ABANDONMENT UTILITY WORKS PROPOSED TO TAKE PLACE OUTSIDE OF THE SITE RED LINE BOUNDARY.
- NOTES - UTILITIES**
6. THE APPARATUS IDENTIFIED ON THIS DRAWING HAS BEEN PREPARED USING THE ASSET PLANS PROVIDED BY UTILITY COMPANIES. THEREFORE THE SERVICES INFORMATION IS GIVEN WITHOUT OBLIGATION (OR WARRANTY) AND THE ACCURACY CANNOT BE GUARANTEED.
 7. EXCAVATION SHOULD BE CARRIED OUT IN ACCORDANCE WITH H5(G) 47 AVOIDING DANGER FROM UNDERGROUND SERVICES AND THE POSITION OF ALL APPARATUS SHOULD BE VERIFIED INDEPENDENTLY PRIOR TO ANY INVASIVE OPERATION ON SITE.
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- KEY:**
- PROPOSED HV CABLE DIVERSION
 - PROPOSED LV CABLE DIVERSION
 - EXISTING LV CABLE
 - PROPOSED DUCT CHAMBER
 - ROUTE TO BE ABANDONED
 - HANGER 4, SITE BOUNDARY
 - PROPOSED FEEDER PILLAR

TENDER ISSUE

T01	TENDER ISSUE	27.02.2023	MA	NM	NM
P02	UPDATED GPR/TOPO	15.02.2023	MA	NM	NM
P01	DRAFT ISSUE	14.02.23	JR	JF	NM
Rev	Description	Date	Dr	Chk	App

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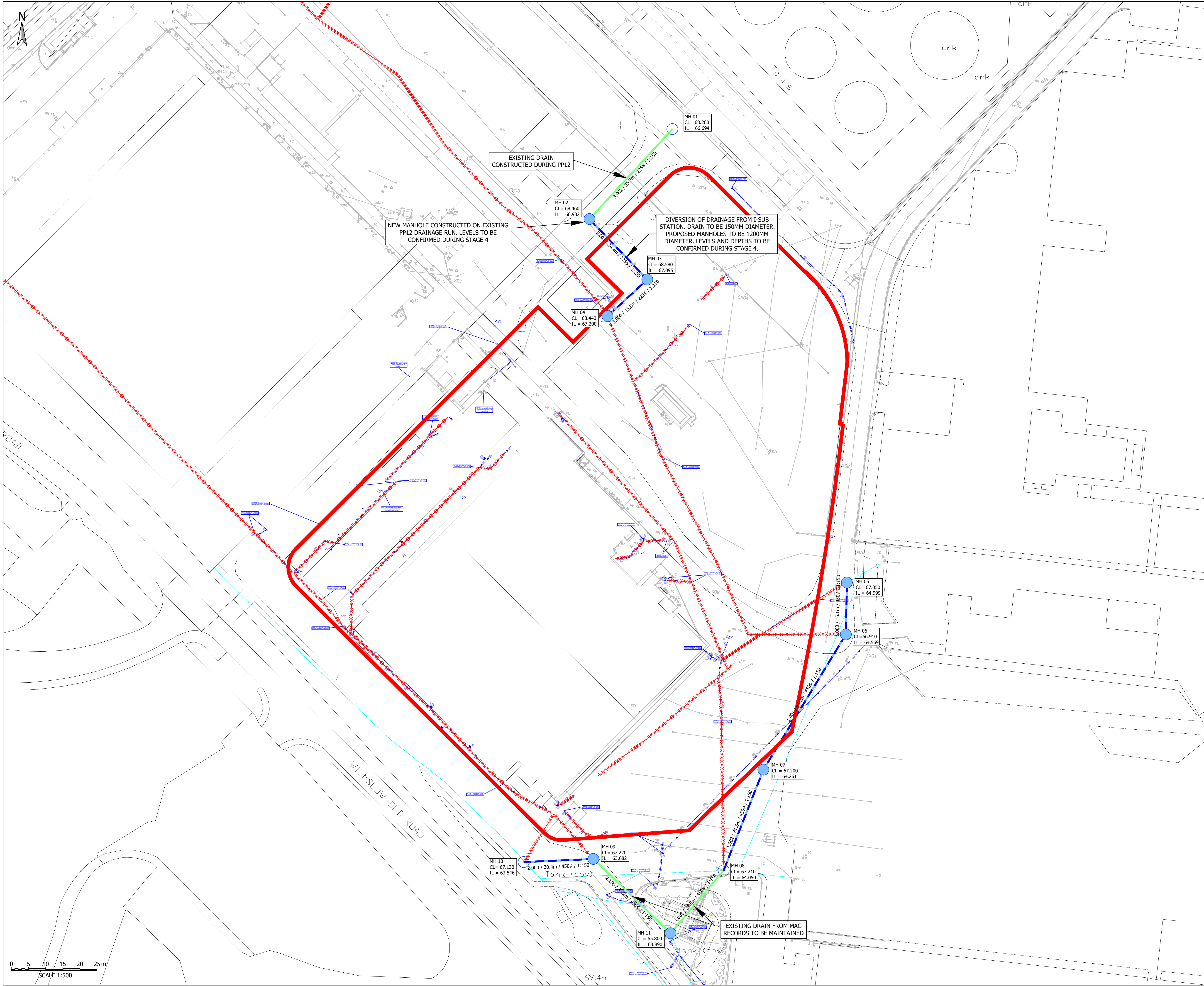
Client
MANCHESTER AIRPORT GROUP, MAG

Project Name
HANGER 4 DEMOLITION

Sheet Title
**LV CABLE DIVERSIONS
SHEET 3 OF 3**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
B041631	JR	FEB 23	JF	FEB 23	NM	FEB 23	1:125	S2
Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision	
B041631	- TTE	- 00	- XX	- DR	- C	- 412302	T01	

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GENERAL NOTES:

- ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
- ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH "PART H OF THE BUILDING REGULATIONS" AND CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 8th EDITION (CESWI)
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE ENGINEERS' SPECIFICATION.
- LOCATION SIZE AND DEPTH OF ALL CONNECTIONS TO EXISTING SEWERS TO BE CONFIRMED ON SITE PRIOR TO COMMENCING DRAINAGE WORKS.
- ALL DRAINS TO BE LAID IN CLASS 5 GRANULAR BED AND SURROUND GENERALLY. DRAINS WITH LESS THAN 1200mm COVER TO HAVE CLASS Z GEN3 CONCRETE BED & SURROUND.
- ALL FOUL DRAINAGE CONNECTIONS FROM BUILDINGS ARE TO BE 100mm Ø DIAMETER UNLESS NOTED OTHERWISE. FOUL CONNECTIONS SHOWN ON THIS DRAWING ARE INDICATIVE AND ARE TO BE DEVELOPED DURING THE DETAILED DESIGN PHASE.
- SURFACE WATER DRAINAGE CONNECTIONS. RWP CONNECTIONS TO BE 100mm Ø. GULLY AND DRAINAGE CHANNEL CONNECTIONS TO BE 150mm Ø UNLESS NOTED OTHERWISE. CONNECTIONS SHOWN ARE INDICATIVE AND TO BE COORDINATED WITH ARCHITECT AND MANUFACTURERS SPECIFICATIONS FOR RWP'S AND CHANNEL'S RESPECTIVELY.
- FOR ACCURATE LAYOUT AND SIZES OF ALL THROUGH SLAB DRAINAGE OUTLETS WITHIN THE BUILDINGS PLEASE REFER TO ALL RELEVANT M&E BUILDING SERVICES/ARCHITECTS DRAWINGS.
- VENTING OF THE FOUL BUILDING DRAINAGE IS TO BE DESIGNED BY OTHERS
- ALL FOUL BUILDING DRAINAGE TO HAVE ACCESS FITTINGS PRIOR TO GROUND FLOOR SLAB PENETRATIONS.
- ALL EXTERNAL GULLIES AND CHANNEL DRAINS TO BE RODDABLE WITH APPROPRIATE SUMP UNITS FOR SILT CAPTURE.
- SYPHONIC ROOF DRAINAGE SYSTEMS TO BE DESIGNED BY SPECIALIST.
- FOR POSITIONS OF ALL EXISTING DRAINS AND EXISTING MANHOLES REFER TO TOPOGRAPHICAL SURVEY AND RECORDS DRAWINGS.
- ALL PROPOSED SURFACE WATER AND FOUL WATER MANHOLES HAVE BEEN CO-ORDINATED USING THE TOPOGRAPHICAL SURVEY.
- THE CONTRACTOR IS TO CONFIRM THE SIZE OF THE HYDROBRAKE UNIT AND HYDROBRAKE CHAMBER .
- THE CONTRACTOR IS TO FOLLOW THE CONSTRUCTION & CONNECTION METHODS FOR THE ATTENUATION STORAGE TANK FROM THE TANK MANUFACTURERS. THIS IS TO BE MEMBRANE LINED AND VENTED.
- ACCESS POINTS INTO TANKS ARE NOT SHOWN ON THIS DRAWING. THE CONTRACTOR IS TO ALLOW FOR PROVIDING SUITABLE MAINTENANCE ACCESS IN ACCORDANCE WITH THE CIRIA GUIDANCE AND SHOULD COORDINATE THIS WITH THE TANK SUPPLIER. FULL DETAILS ARE TO BE PROVIDED TO THE ENGINEER FOR COORDINATION PRIOR TO CONSTRUCTION
- FOR ACCURATE LAYOUT AND SIZES OF FOUNDATIONS PLEASE REFER TO ALL RELEVANT STRUCTURAL DRAWINGS.
- DRAINAGE CHANNEL AND SLOT DRAIN SIZES TO BE DETERMINED BY CONTRACTOR BASED ON RAIN FALL INTENSITY OF 75mm/h INCLUDING NUMBER OF OUTLET UNITS.
- YARD DRAINAGE SHOULD BE PROVIDED AS LINEAR SLOT DRAINS RATED TO D400 LOAD CLASS. CHANNEL DRAINS SHOULD BE PROVIDED IN THE CAR PARK AREAS TO D400 LOAD CLASS. SUITABLE ACCESS UNITS FOR MAINTENANCE MUST BE PROVIDED TO ALL LINEAR DRAINAGE ALONG WITH APPROPRIATE SUMP OUTLET UNITS.
- INTERCEPTORS TO BE ALARMED AND VENTED .
- FOR PUMPING STATION REQUIREMENTS REFER TO PERFORMANCE SPECIFICATION IN ENGINEERS SPECIFICATION.
- PERMISSION AND COORDINATION FROM MANCHESTER AIRPORT GROUP REQUIRED TO INSTALL FOUL RISING MAIN AND SURFACE WATER CONNECTIONS TO OUTFALL.
- COORDINATION OF THE DRAINAGE WITH FOUNDATIONS & UNDERGROUND SERVICES WILL BE CARRIED OUT BY THE CONTRACTOR DURING STAGE 4.

KEY:

- ***** ROUTE TO BE ABANDONED
- FOUL SEWER
- PROPOSED SW DRAIN
- PROPOSED MANHOLE
- EXISTING MANHOLE
- EXISTING DRAINAGE RUN

TENDER ISSUE

Rev	Description	Date	Drawn	Checked	Appr
T01	TENDER ISSUE	28.02.2023	MA	NM	NM
P02	DRAFT ISSUE	08.02.2023	DC	JF	NM
P01	PRELIMINARY FIRST ISSUE	30.11.2022	MA	TK	NM

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Client

MANCHESTER AIRPORT GROUP

Project Name

HANGER 4 DEMOLITION

Sheet Title

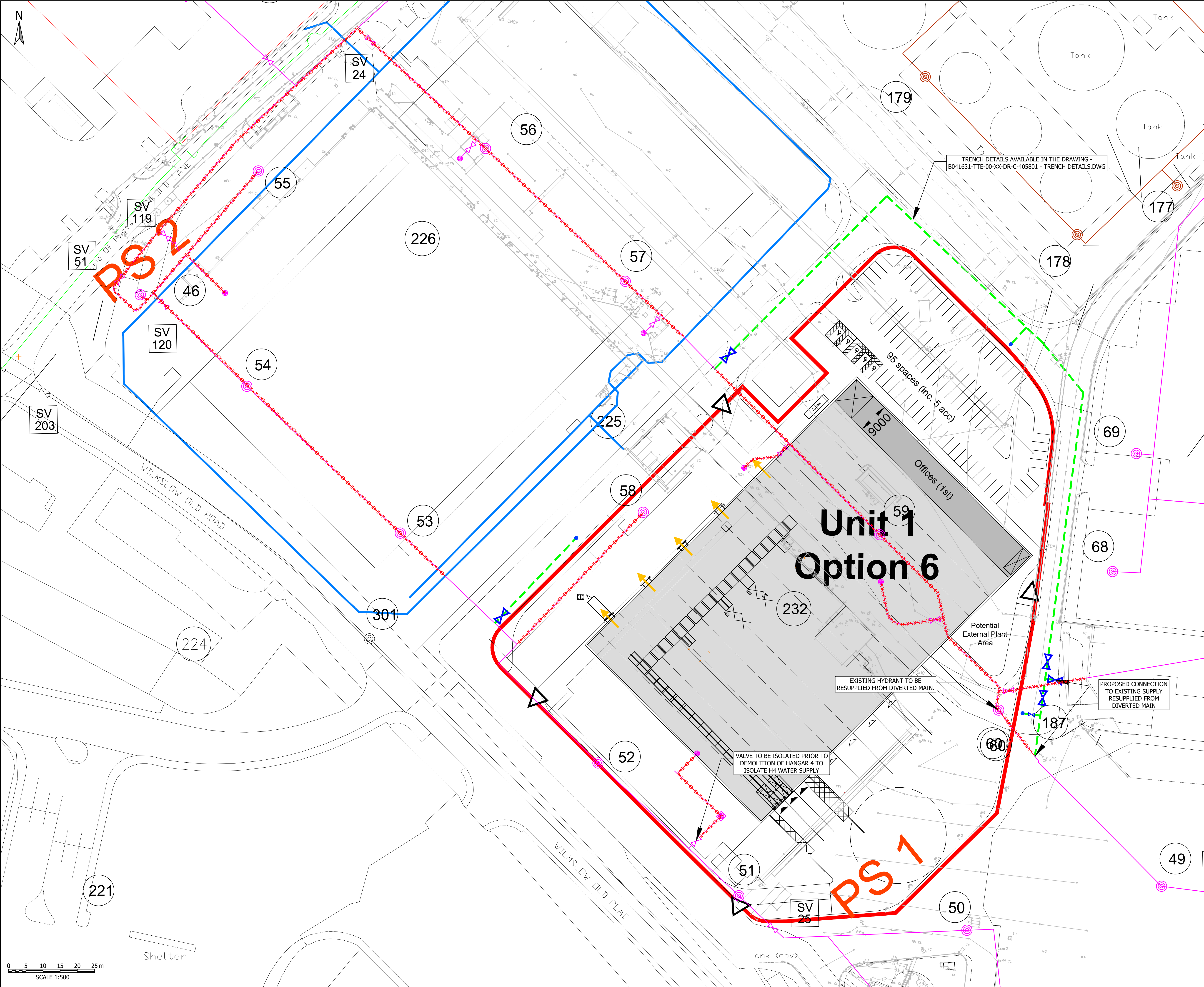
**UTILITIES
SW DIVERSION**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
B041631	MA	NOV 22	TK	NOV 22	NM	NOV 22	1:500	S2

Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision
B041631	TTE	-	00	-	XX	-	DR - C - 412303

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KEY:

- ***** ROUTE TO BE ABANDONED
- EXISTING WATER MAIN 1
- EXISTING WATER MAIN 2
- EXISTING WATER MAIN 3
- PROPOSED WATER MAIN DIVERSION
- PROPOSED FIRE HYDRANT
- PROPOSED VALVE

TENDER ISSUE

T01	TENDER ISSUE	03.03.2023	MA	NM	NM
P03	UPDATED LAYOUT	21.02.2023	MA	NM	NM
P02	DRAFT ISSUE	08.02.2023	JF	NM	NM
P01	PRELIMINARY FIRST ISSUE	30.11.2022	MA	TK	NM

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Project Name

HANGER 4 DEMOLITION

Sheet Title

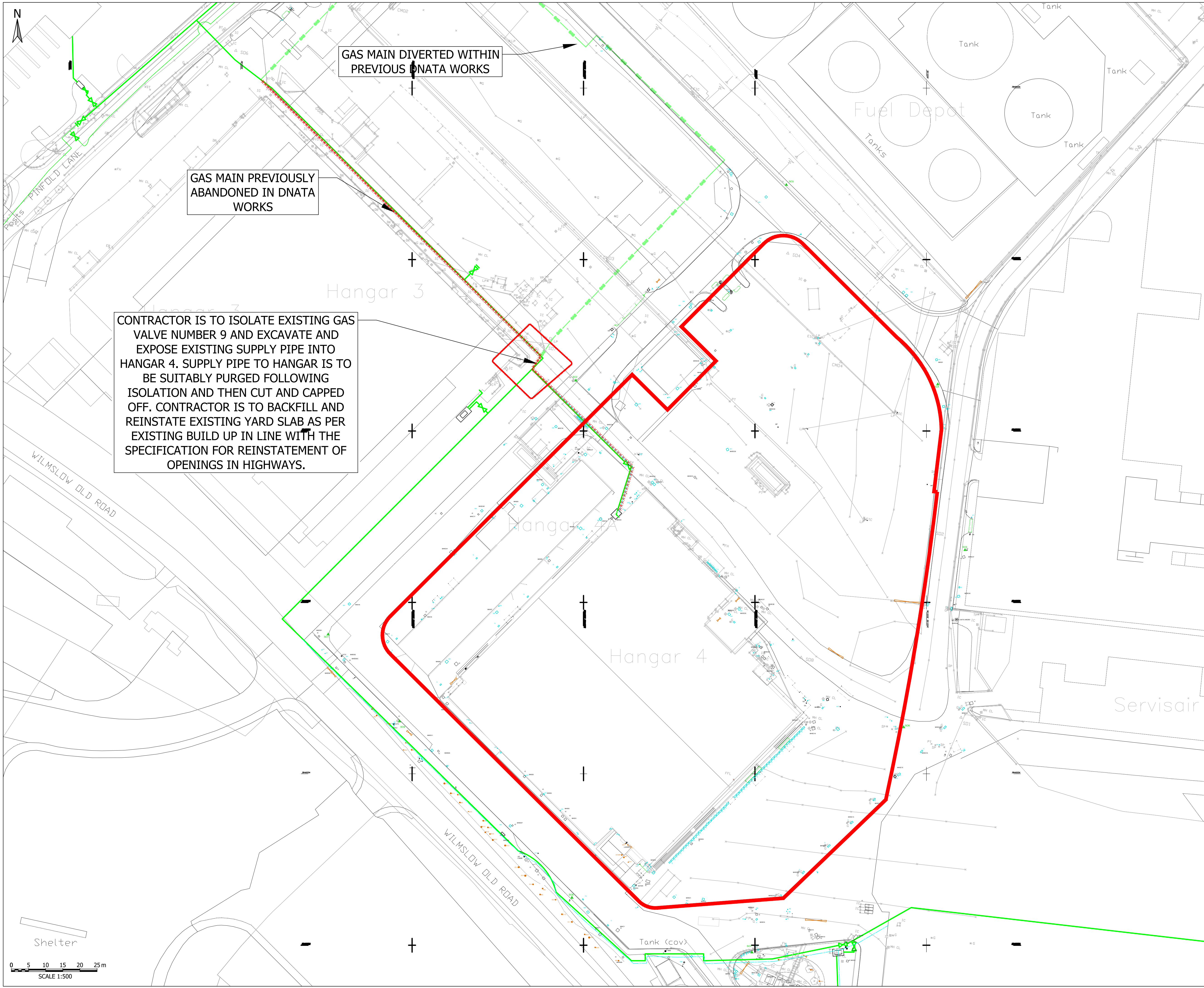
**UTILITIES
WATER MAINS DIVERSION**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
B041631	MA	NOV 22	TK	NOV 22	NM	NOV 22	1:500	S2

Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision
PRJ01	TTE	00	ZZ	DR	C	-412305	T01

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KEY:

- ***** ROUTE TO BE ABANDONED
- GAS PROPOSED GAS MAIN
- EXISTING GAS MAIN

ALL GAS ISOLATION WORKS ARE TO BE AGREED WITH MAG AND CHARLES ANDREWS

TENDER ISSUE

T01	TENDER ISSUE	27.02.2023	MA	NM	NM
P02	DRAFT ISSUE	08.02.2023	JF	NM	NM
P01	PRELIMINARY FIRST ISSUE	30.11.2022	MA	TK	NM
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Project Name

HANGER 4 DEMOLITION

Sheet Title

GAS ISOLATIONS

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
B041631	MA	NOV 22	TK	NOV 22	NM	NOV 22	1:500	S2
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B041361	TTE	- 00	- XX	- DR	- C	-412306	T01	

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