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**Proposed Antenna
Withington Golf Club
243 Palatine Road
Manchester
M20 2UE**

FLOOD RISK ASSESSMENT

for

Freshwave

April 2023

Adamson House
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APPENDIX A – DEVELOPMENT PROPOSALS

1.0 INTRODUCTION

1.1 Overview

- 1.1.1 Cora IHT have been instructed by Freshwave to prepare a Flood Risk Assessment [FRA] to support a proposal for a 30m high mast and antenna situated within a 7m x 7m secure compound on land at Withington Golf Club, 243 Palatine Road, Manchester, M20 2UE. **Figure 1.1** illustrates the site location.
- 1.1.2 This report presents the findings of an FRA, which has been carried out in accordance with the National Planning Policy Framework (NPPF 2021), Technical Guidance to the NPPF and Planning Practice Guidance. Environment Agency (EA) FRA Guidance and Manchester City Council Strategic Flood Risk Assessment (SFRA) have also been reviewed.
- 1.1.3 This FRA aims to identify and assess the risks of all forms of flooding to and from the development proposals, and demonstrate how these flood risks will be managed, taking climate change into account.
- 1.1.4 In accordance with the NPPF and SFRA, site development should not increase the risk of flooding elsewhere and this FRA has therefore also been prepared to demonstrate that this has been achieved.
- 1.1.5 It is proposed that the ground levels post-development will remain as existing. If this or other key assumptions change then the conclusions within this report may need to be reassessed to check that they are still applicable.

Figure 1.1: Site Location



2.0 SITE DESCRIPTION AND EXISTING CONDITIONS

2.1 Site Description

- 2.1.1 The proposed location of the mast compound is immediately north of the 2nd tee box, within a number of mature trees at Northenden golf Club, 243 Palatine Road, Manchester, M20 2UE.
- 2.1.2 The existing and proposed plans provided by Freshwave are presented in **Appendix A**.
- 2.1.3 The proposed secure compound location is square in plan footprint and within a number of mature trees. Immediately to the north is Palatine Road and a wooded area beyond. Directly to the east abutting the site is Ashfield lodge which is a residential complex consisting of several blocks of flats with parking areas and to the south, southeast and west are the golf club grounds and course. A new gravel access track is proposed from Palatine Road to the west.

2.2 Hydrology

- 2.2.1 The closest identified watercourse is a small tributary of the River Mersey, circa 50m to the south of the site, flowing in a westerly direction where it outfalls to the River Mersey, some 250m downstream.

2.3 Existing Drainage

- 2.3.1 The existing United Utilities sewer records have been reviewed and confirms a 750x600mm brick egg combined sewer and 600mm diameter surface water sewer in Palatine Road, both flowing south.
- 2.3.2 The area of the proposed compound is located on an area of landscaping with no positive drainage.

2.4 Topography

- 2.4.1 At the time of writing, no site-specific topographical survey had been completed. A review of the site area would indicate it to be relatively flat at a level of circa 29.50m AOD with a nominal fall in a southerly direction towards the River Mersey.

3.0 PLANNING OBLIGATIONS

3.1 National Planning Policy Framework (NPPF)

- 3.1.1 Local Planning Authorities are advised by the National Planning Policy Framework (NPPF 2021) to consult the Environment Agency (EA) and Lead Local Flood Authorities (LLFA) on all developments of an area greater than 1Ha and those that are at an increased risk of flooding.
- 3.1.2 This report has been prepared to assess the requirements of the NPPF in accordance with the current EA and LLFA policies and will primarily assess the following;
- Determining whether the site is likely to be affected by flooding and whether it would increase flood risk elsewhere.
 - Assessing whether the proposed development is appropriate in the suggested location.
 - Detailing any measures necessary to mitigate any flood risk identified, to ensure that the proposed development and occupants would be safe, and that flood risk would not be increased elsewhere.
 - Consider the recommendations of Manchester City Council Strategic Flood Risk Assessments (SFRA) and other local policies.

3.2 Sequential and Exception Test

- 3.2.1 A review of the EA Flood Maps shows that the site is located within the periphery of Flood Zone 3, i.e. land defined as having greater than a 1 in 100 annual probability of flooding from of river or sea water in any year. Though note the site benefits from protection by the River Mersey Flood Defences the lower order events.
- 3.2.2 Assessing the NPPF, telephone masts not required to be operational during times of flood are not clearly defined and so for the purpose of this assessment it would be classed 'Water Compatible Development'. This development type in Flood Zone 3 informs that the sequential test is passed and thus the exception test is consequently not required.

3.3 Strategic Flood Risk Assessment

- 3.3.1 Manchester City Council in consultation with adjacent authorities, produced the Manchester City Salford City and Trafford Councils Hybrid Level 2 Strategic Flood Risk Assessment (2011) to demonstrate and define its understanding and role in managing flood risk. A fundamental aim of the strategy is that the Council embraces and supports its role as Lead Local Flood Authority, and this means taking the lead in helping with infrastructure development and re-development and working with other bodies in dealing with flood risk. The Council wants to encourage and wherever possible enforce current thinking and guidance and be able to provide improvements through working better together. The Strategy is aimed at providing an overview and assessment of local flood risk, setting out objectives and measures for how the Council will manage and reduce local flood risk. This Strategy builds on existing and developing approaches to flood risk management and promotes the use of a wide range of measures to manage flood risk. Risk should be managed in a co-ordinated way within catchments and balance the needs of communities, the economy and the environment.

3.3.2 The full report can be obtained from the Manchester City Council website. The main findings and objectives of the report are:

- The most significant sources of flood risk are fluvial and surface water.
- To better understand local flood risk and make best use of available information to better manage flood risk to people, businesses, property, infrastructure and the natural environment;
- To reduce the potential impact and costs of flooding in the area;
- To ensure resilience of local water bodies and drainage assets;
- To ensure appropriate development in areas of flood risk;
- To develop a collaborative partnership approach to flood risk management, and cooperate with other Risk Management Authorities (RMAs) and key stakeholders working across catchments;
- To assist communities in understanding information on flood risk and supporting themselves;

4.0 ASSESSMENT OF FLOOD RISK

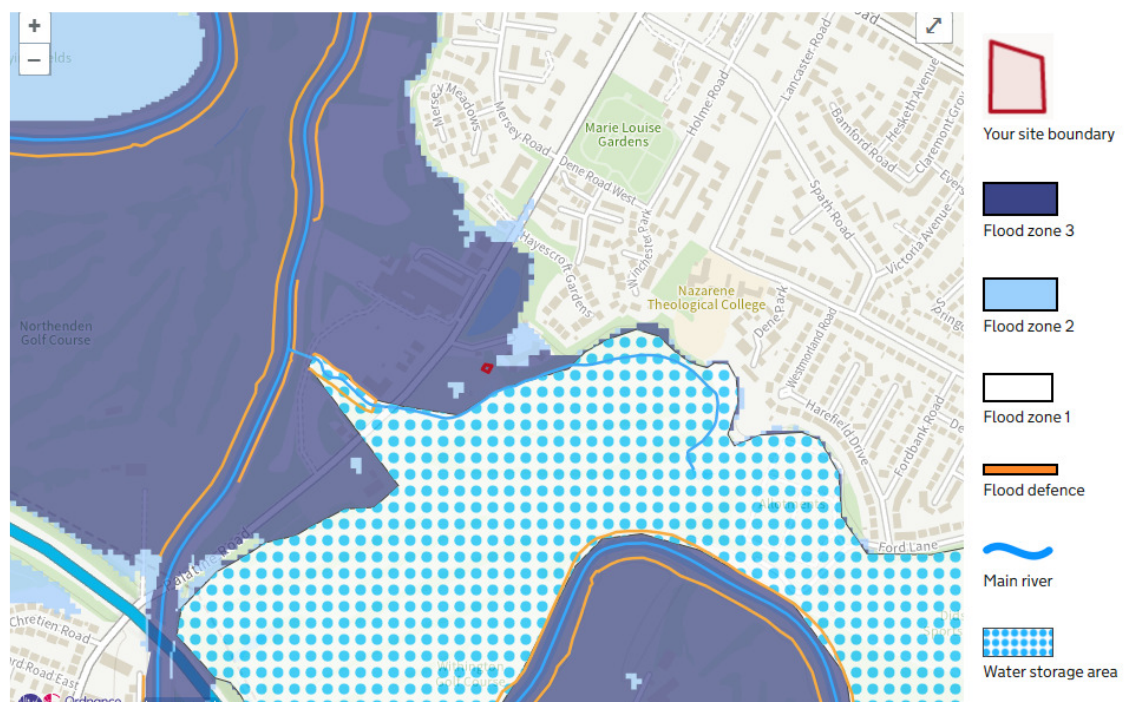
4.1 Brief

- 4.1.1 The vulnerability of the site to flooding from rivers, sea and other sources has been considered. Typical sources of flooding include fluvial, tidal, surface water, groundwater, sewers and anthropogenic sources; these are considered in the following sub sections.

4.2 Fluvial and Tidal Flood Risk

- 4.2.1 As defined in Section 2.2, the closest identified watercourse is a small tributary of the River Mersey, located approximately 50m to the south of the site flowing west through the golf course, where it outfalls to the River Mersey 250m to the west.
- 4.2.2 Flood maps are produced by the EA for the whole of the UK to highlight areas at particular risk of flooding by categorising them into different Zones. These maps are based on a broad assessment of areas using digital mapping techniques and extracts from the EA flood maps for the site and its surroundings are included in the figure below.
- 4.2.3 The EA flood map planning in **Figure 4.1** below indicates that the development area and its immediate surroundings are located within EA Flood Zone 3, therefore classified as 'High Risk'. This is land assessed as having greater than 1 in 100 (1.0%) fluvial and 1 in 200 (0.5%) tidal annual probability of flooding. Though note the site benefits from protection by raised flood defences of the River Mersey.
- 4.2.4 The golf course area to the south of the new compound is lower lying and classed as a water storage area. Used at times of increased flooding to the River Mersey with controlled gates to allow the water to spill onto the land.
- 4.2.5 Due to this risk, further assessment is required to determine the risk to the development proposals. This is detailed further in Sections 5.

Figure 4.1: EA Flood Map for Planning



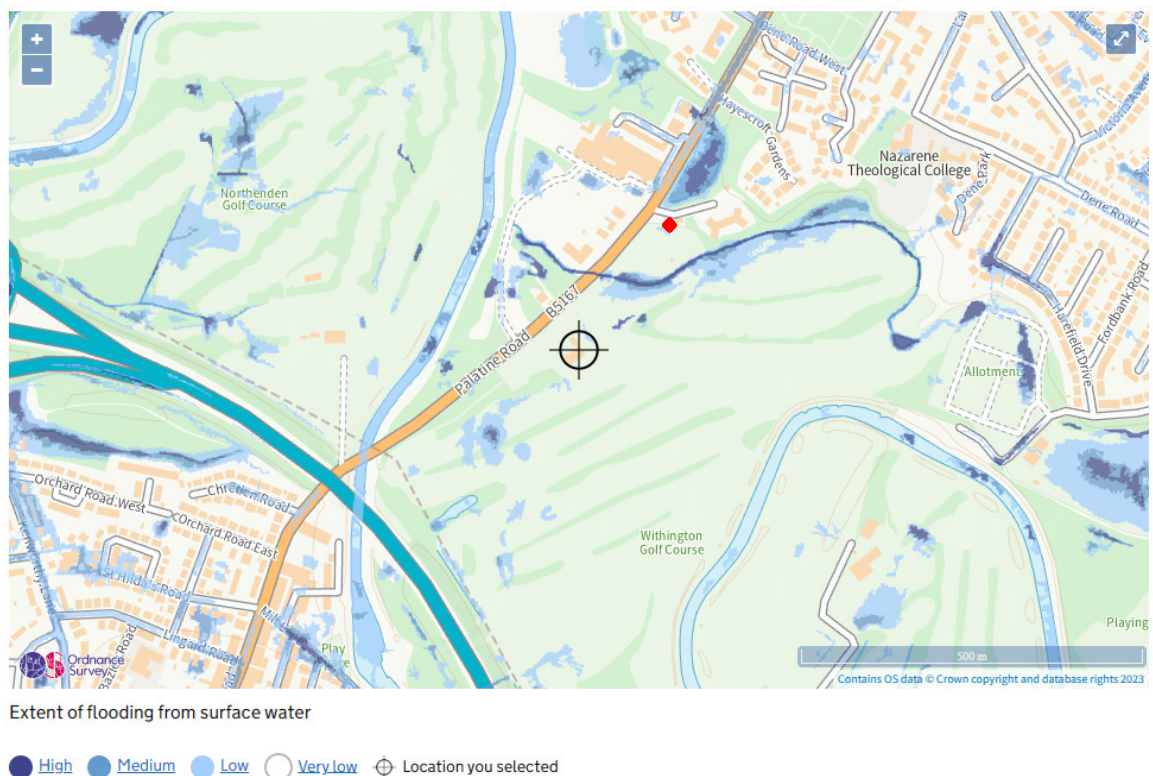
4.3 Surface Water Flood Risk

4.3.1 The EA descriptions for the High, Medium and Low risk scenarios for surface water flooding are as follows:

- High risk means that each year this area has a chance of flooding of greater than 3.3%.
- Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%.
- Low risk means that each year this area has a chance of flooding of between 0.1% and 1%.
- Very Low risk means that each year this area has a chance of flooding of less than 0.1%.

4.3.2 A review of the EA's surface water flood map shown in **Figure 4.2** identifies the surface water flood risk for the proposed site. The surface water flood zone for the site has been identified as being low.

Figure 4.2 Surface Water flood Map – Extents



4.3.3 Surface water flooding occurs when rainwater does not drain away through normal drainage systems or soak into the ground but lies on or flows over the ground instead.

4.3.4 Surface water flooding appears to be very minimal in the area due to the relatively flat ground. The main areas are affiliated to the lower lying small watercourse located some 50m to the south.

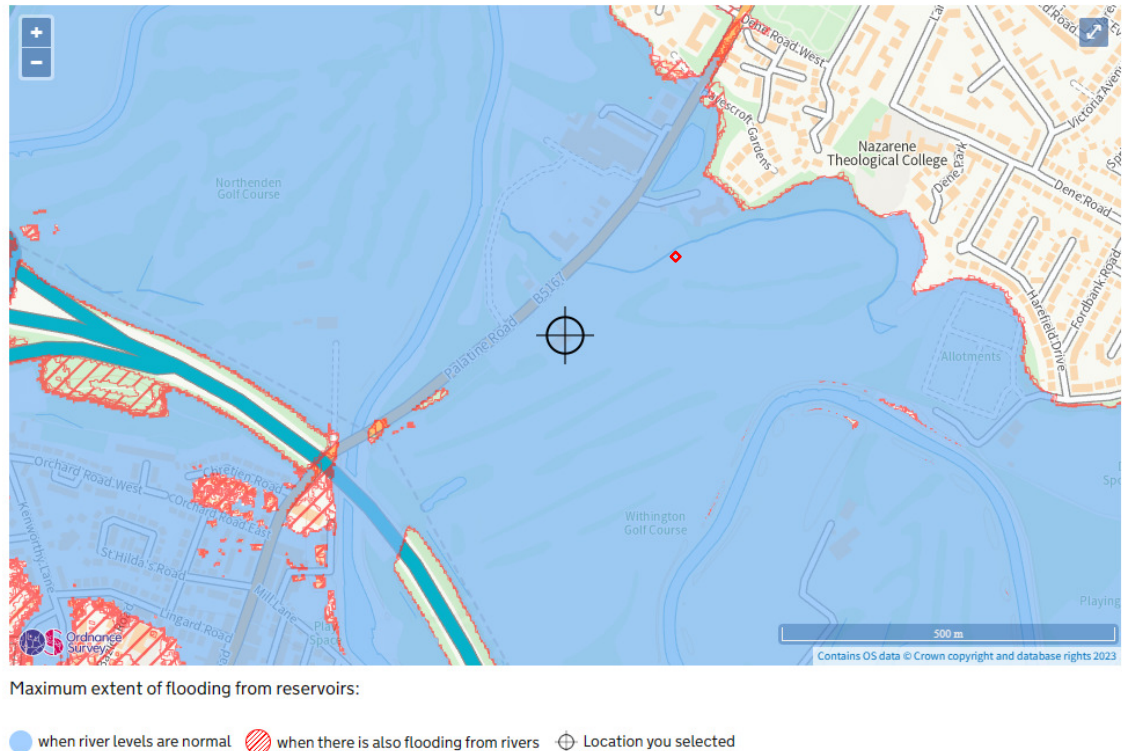
4.3.5 There are no overland flood flows that need to be maintained.

4.3.6 In light of these findings there is a very low risk of surface water flooding.

4.4 Reservoirs

- 4.4.1 Reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Environment Agency is the enforcement authority and ensures that reservoirs are inspected regularly, and essential safety work is carried out.
- 4.4.2 The Long-Term Flood Risk Assessment (Flood Risk from Reservoirs) map in **Figure 4.3** shows that the site is at risk of flooding to the same magnitude as the fluvial risk, due to the River Mersey being the main carrier of flood water from the reservoirs located on higher ground to the east.

Figure 4.3 Reservoir flood Map – Extents



4.5 Ground Water

- 4.5.1 Groundwater flooding typically results from heavy/prolonged rainfall causing the level of the groundwater table to rise, which may lead to emergence of groundwater at the surface or into underground features such as basements. Low lying areas of land with permeable underlying strata may be particularly susceptible.
- 4.5.2 The depth to groundwater beneath the site is currently unknown. According to information contained within the SFRA, the area is at a low risk of groundwater flooding.
- 4.5.3 There are also no basements and the existing ground levels will be maintained.

4.6 Sewer Flooding

- 4.6.1 The United Utilities (UU) sewer records have not been reviewed as part of this assessment and indicate medium diameter combined and surface water sewers in the lower lying Palatine Road to the west of the site.
- 4.6.2 The extensive United Utilities (UU) adopted drainage network serving the surrounding urban district ensures that the development footprint is protected from the impact of both upstream and downstream runoff. It is speculated that complete protection may well exist beyond a storm event equivalent to the 30-year statistical event. Beyond this projection, there may be a small degree of peripheral 'Exceedance' flooding within the highway areas above the sewers. However, this is expected to be localised and restricted to the location of specific manhole covers located outside the development footprint.

5.0 Fluvial Flood Risk Assessment

5.1 Assessment of Flood Risk on Proposed Development

- 5.1.1 It is evident from the previous section that there is one high flood risk area, related to the flooding of the fluvially influenced River Mersey that requires further assessment.
- 5.1.2 Other flood risk sources such as groundwater, sewer and overland flows have been considered and have been found not to be a flood risk generator to the site.
- 5.1.3 As discussed in previous sections, the Environment Agency maps have indicated that the development site would lie within the current statistical fluvial floodwater model footprint generated from the River Mersey for the 100-year fluvial (1.0% probability of occurrence) and 200-year tidal flood event (0.5% probability of occurrence), though benefitting from defences.
- 5.1.4 No actual flood data has been obtained from the EA as a site-specific topographical survey has not been undertaken to coordinate the actual flood depths at the site. However, assessing the flood maps it is evident that the compound location is on the periphery of the flood extent and so a maximum depth of 0.5m is anticipated.
- 5.1.5 The proposal is for a 7m x 7m compound located at existing levels to house a 30m high mast and supporting cabinets at ground level. The compound is protected by a 2.4m high mesh fence to allow any potential flood water to pass into and through the area. Thus, no loss of flood plain storage is proposed.
- 5.1.6 The compound will only be occasionally occupied by engineers and so there is no flood risk to future users of the development proposals.

6.0 Drainage Assessment

- 6.0.1 The proposed development is for a 7m x 7m compound in an area of landscaped land.
- 6.0.2 In light of this no surface water drainage is proposed with the runoff from the small area of concrete hardstanding to fall into the adjacent landscaping.
- 6.0.3 The new access path will be constructed in gravel with the water allowed to soak to ground or fall into the adjacent grassed area.
- 6.0.4 No foul drainage is proposed.

6.1 Flood Risk Management Measures

- 6.1.1 The proposed compound is located within the 1.0% Fluvial AEP event including the allowance for climate change from the River Mersey. The proposed ground levels compound will mimic the existing ground levels.
- 6.1.2 All other flood risks have been considered and found not to be a flood risk generator to the development.
- 6.1.3 Based on the proposal, flood resilient measures are not required.
- 6.1.4 No occupation of the site during times of extreme flooding will take place.

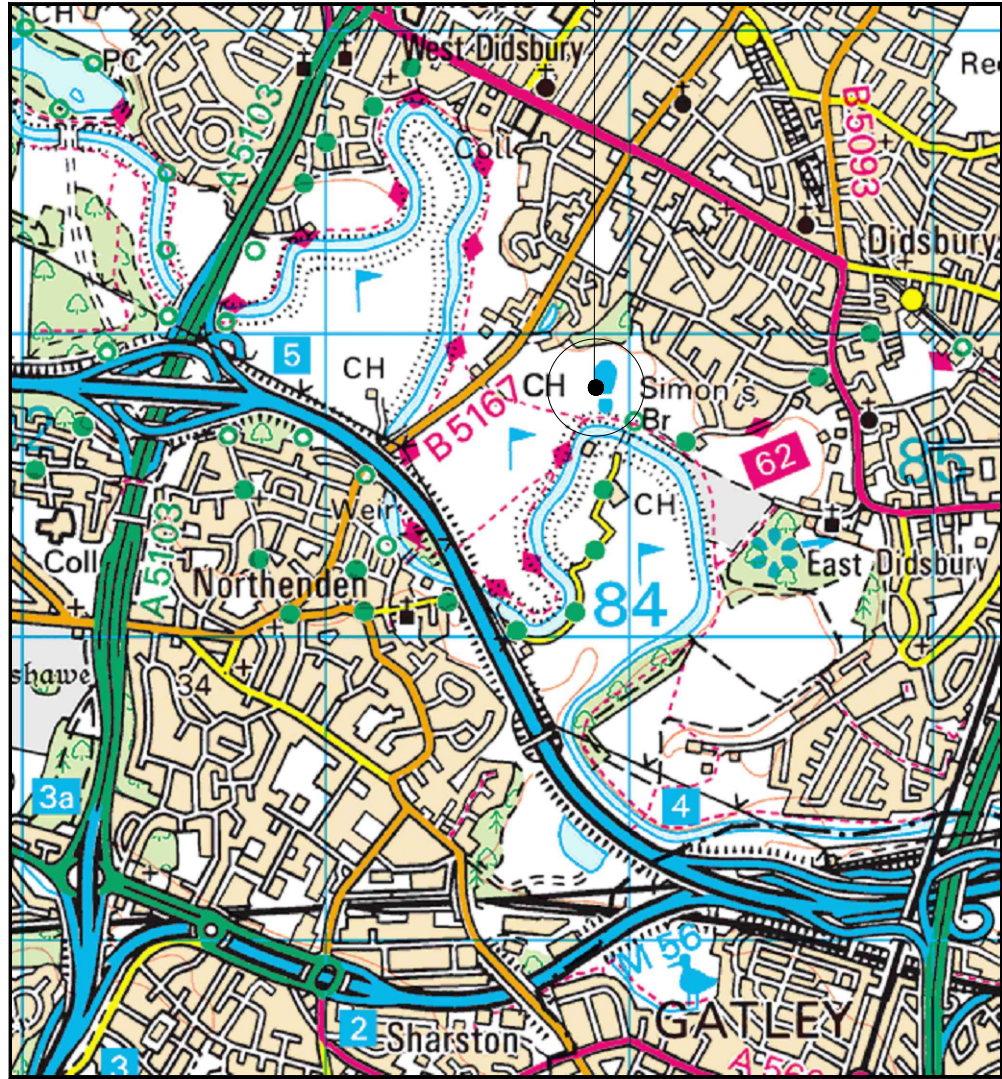
6.2 Off Site Impacts

- 6.2.1 The redevelopment of the site does not impair the hydraulic continuity of any watercourse and the current “local hydraulics” of distributing watercourses / outfalls.
- 6.2.2 The development footprint does not cross or cover any existing or declared future catchment flood defences. Consequently, the Applicant does not propose to augment or compromise the current flood regime.

6.3 Residual Risk

- 6.3.1 No residual risks are anticipated.

APPENDIX A – DEVELOPMENT PROPOSALS

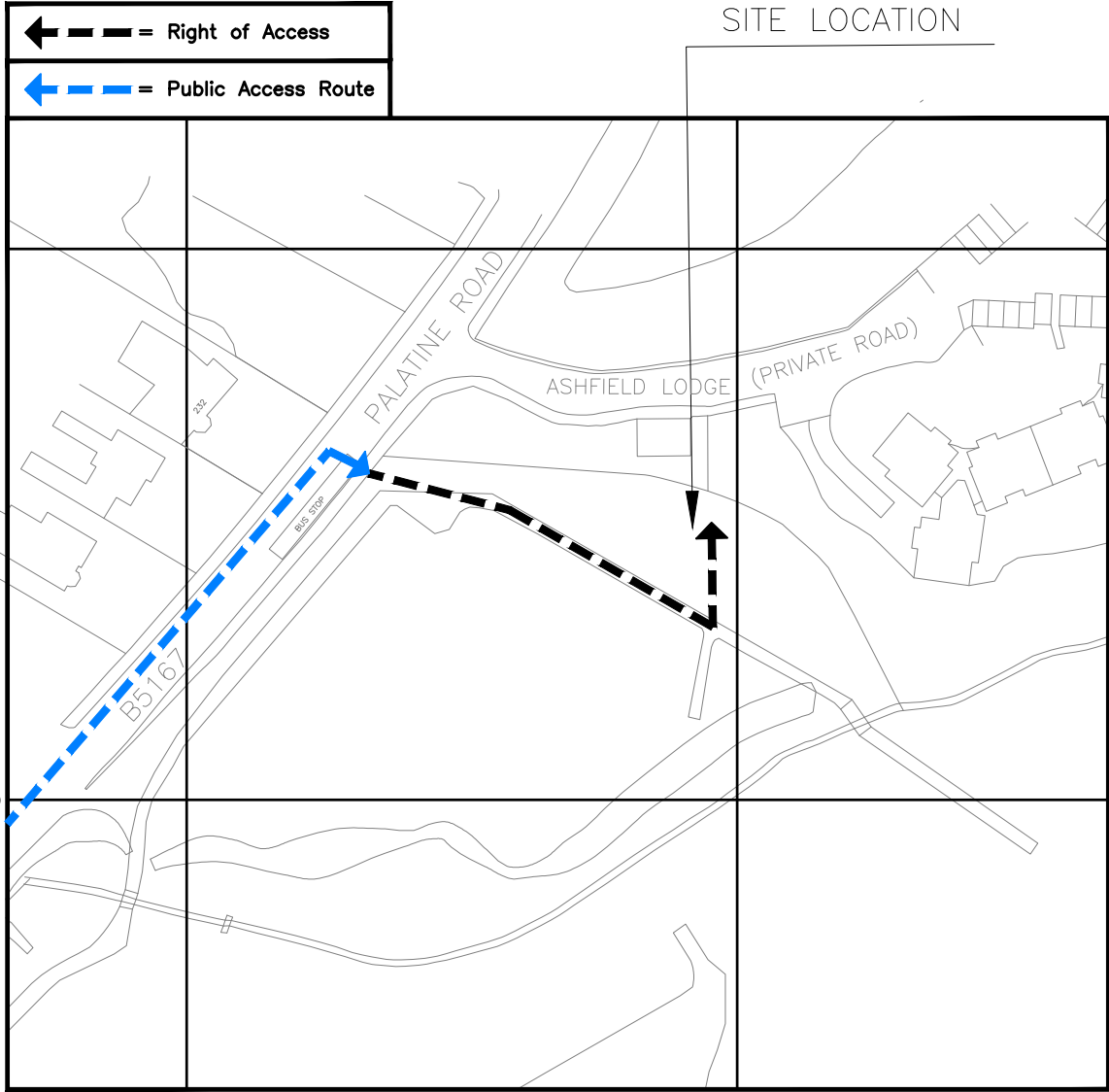
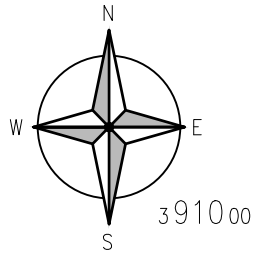


SITE LOCATION
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SITE PHOTOGRAPH



DETAILED SITE LOCATION
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DIRECTIONS TO SITE:
Heading south-east on M60 at junction 5,
exit onto Princess Pkwy/A5103
towards M56/Chester/Manchester
Airport/Birmingham/M6 continue for 1.0 mi.
Take the B5166 exit towards
Northenden/Sale Moor
Turn left onto Palatine Rd/B5167 follow for
1 mi. At the Entrance to Withington Golf
Club continue for 200m, Site Access on the
right through Access gate near Bus Stop
before Ashfield Lodge entrance

NOTES:

B	Site Access Directions updated	AW	P J	06-01-23
A	Issued for Approval	AW	P J	26-05-22

REV	MODIFICATION	BY	CH	DATE
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Site Address / Contact Details

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243 Palatine Road
Manchester

M20 2UE

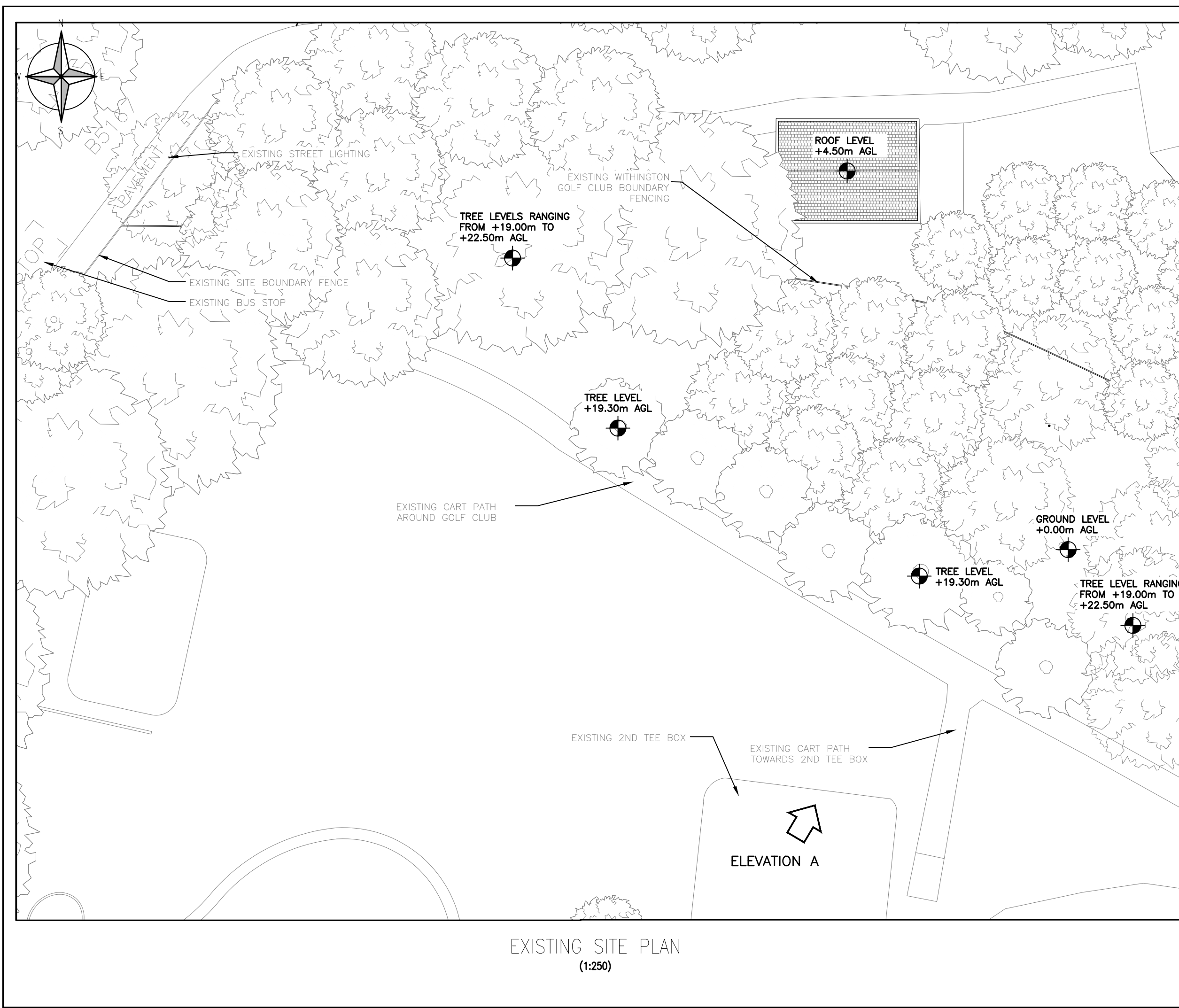
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EXISTING SITE PLAN
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NOTES:

B	Scale Increase to Site Boundary	AW	PJ	21-12-22
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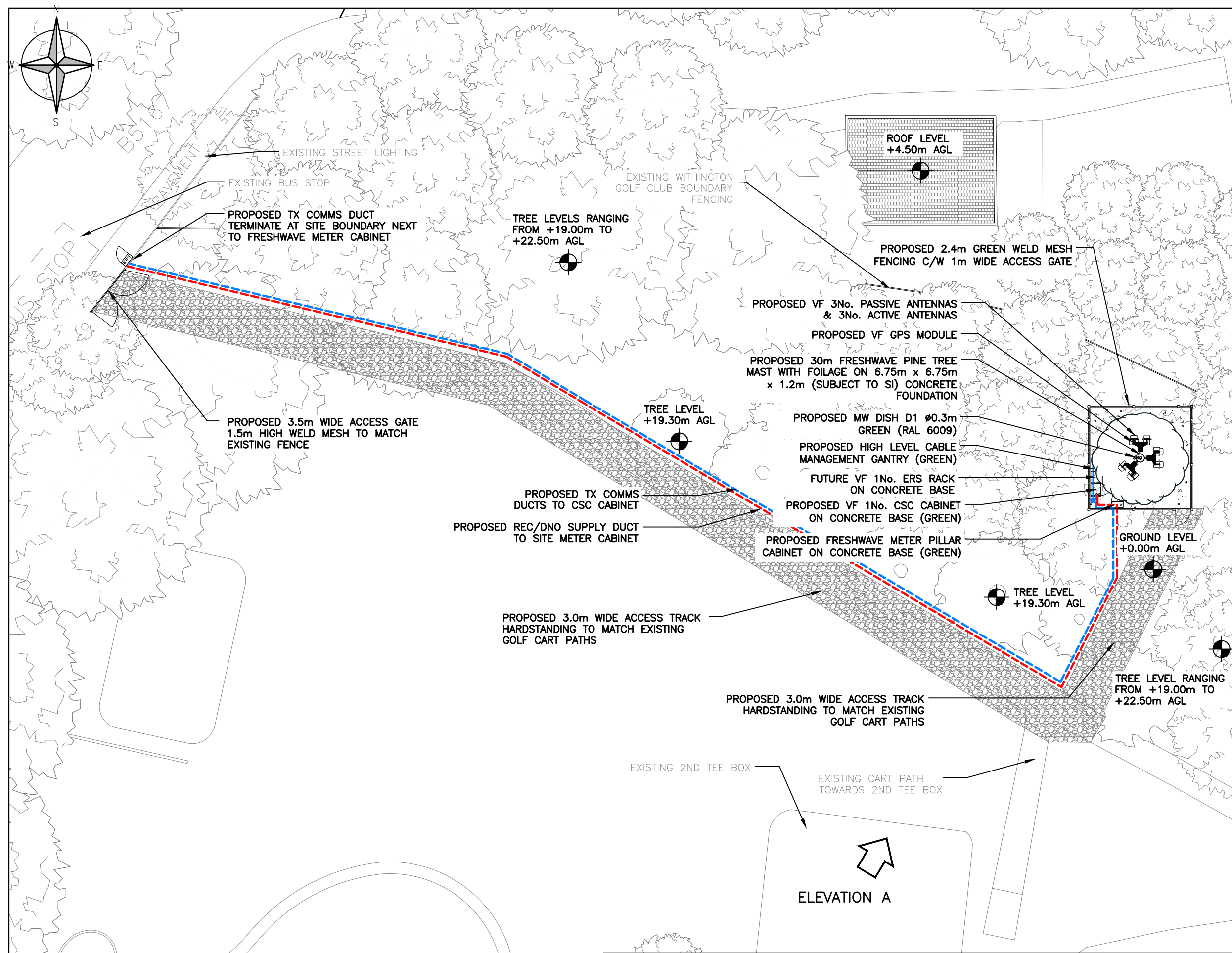
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B	Antenna Height Increased, Azimuth Change DAF	AW	WJ	20-10-22
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Purpose of issue: PLANNING

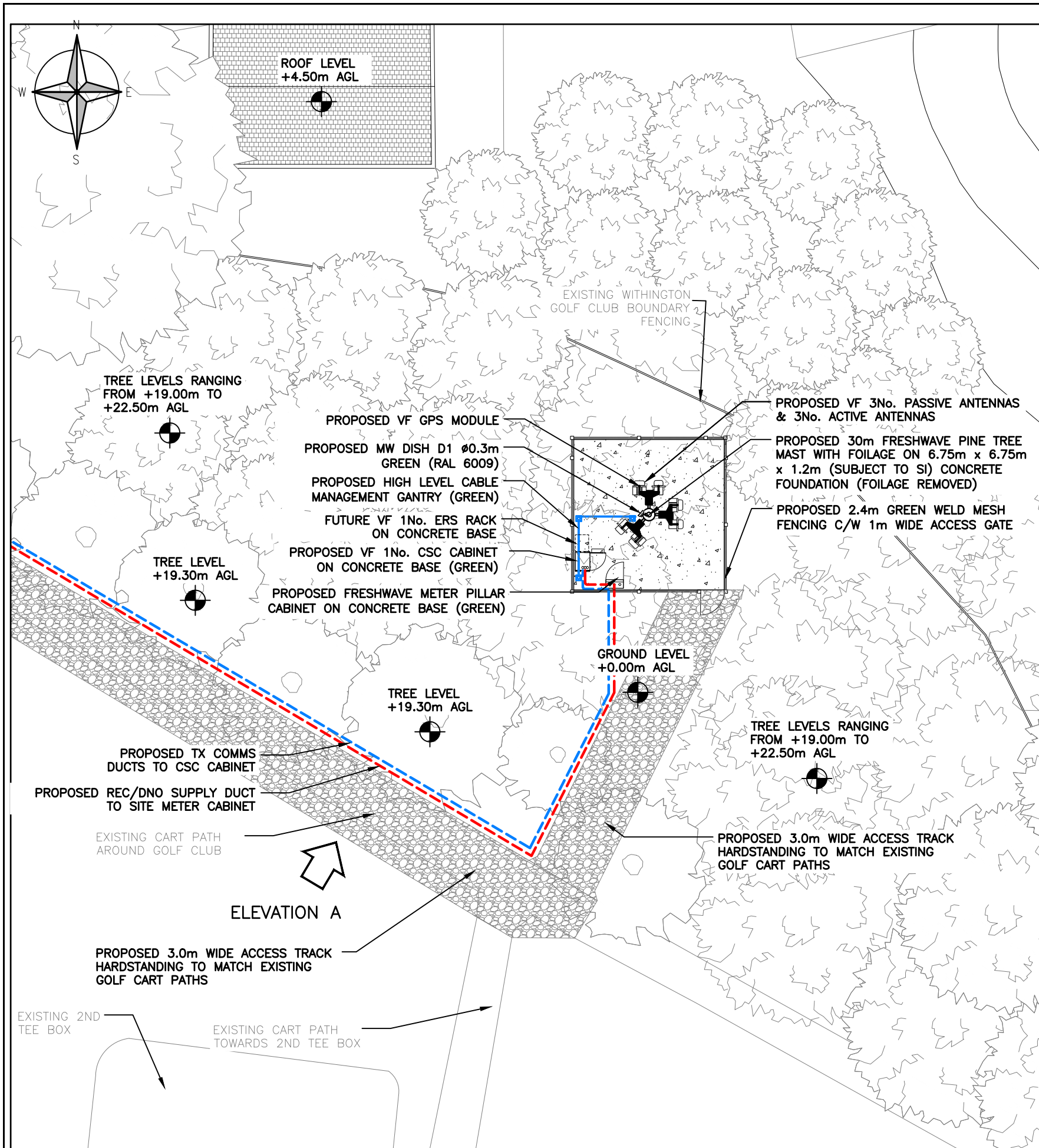
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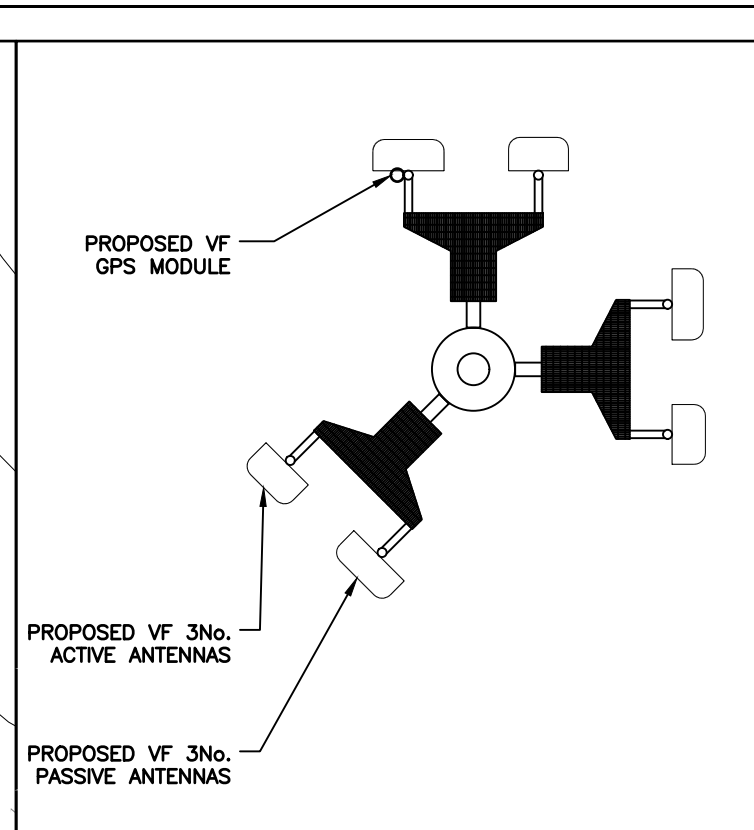
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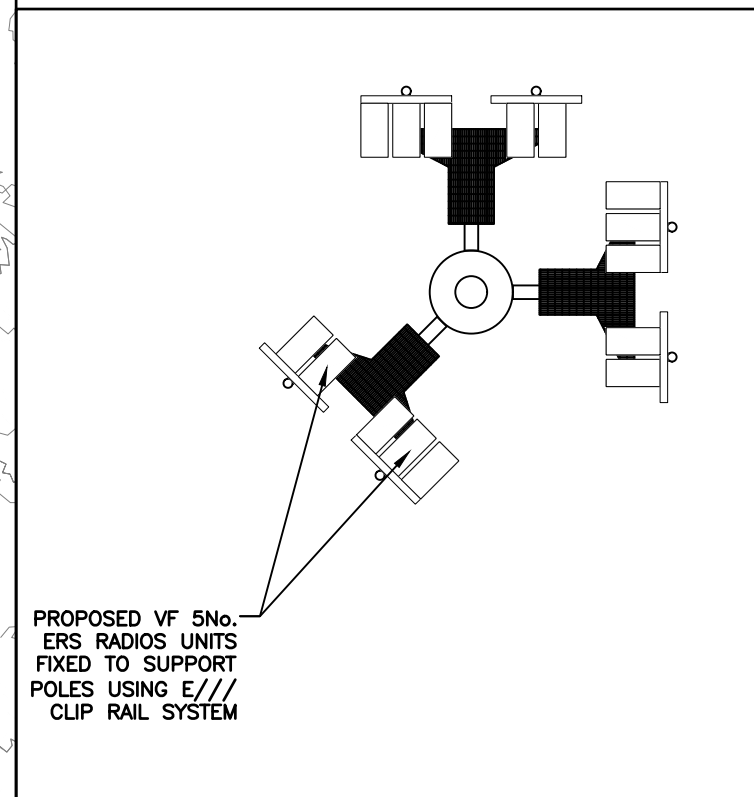
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PROPOSED SITE PLAN
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PROPOSED TOP HEADFRAME PLAN
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PROPOSED MIDDLE HEADFRAME PLAN
(1:50)

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C	ACCESS TRACK ADDED		AW	PJ	06-01-23
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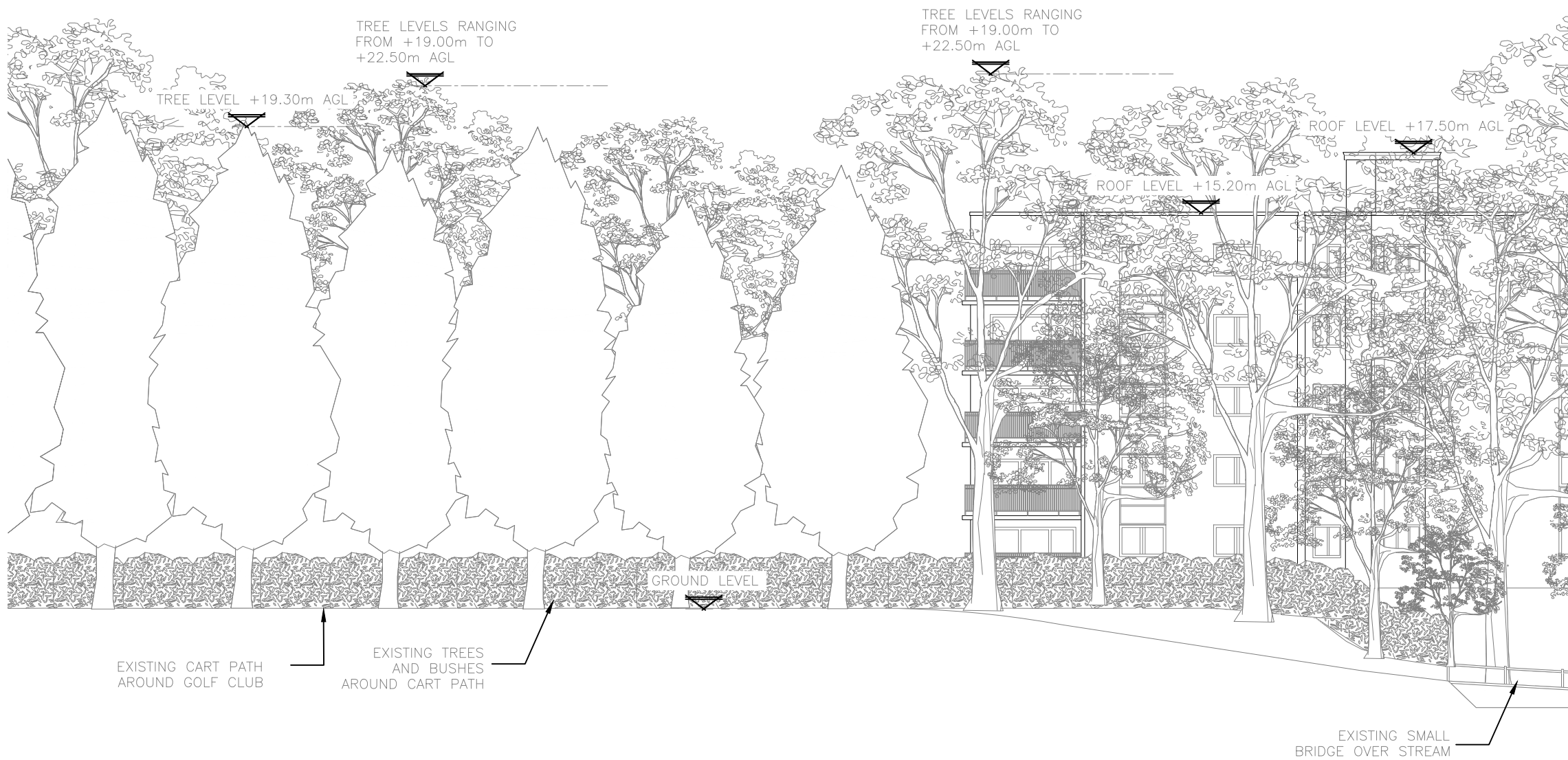
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EXISTING ELEVATION A
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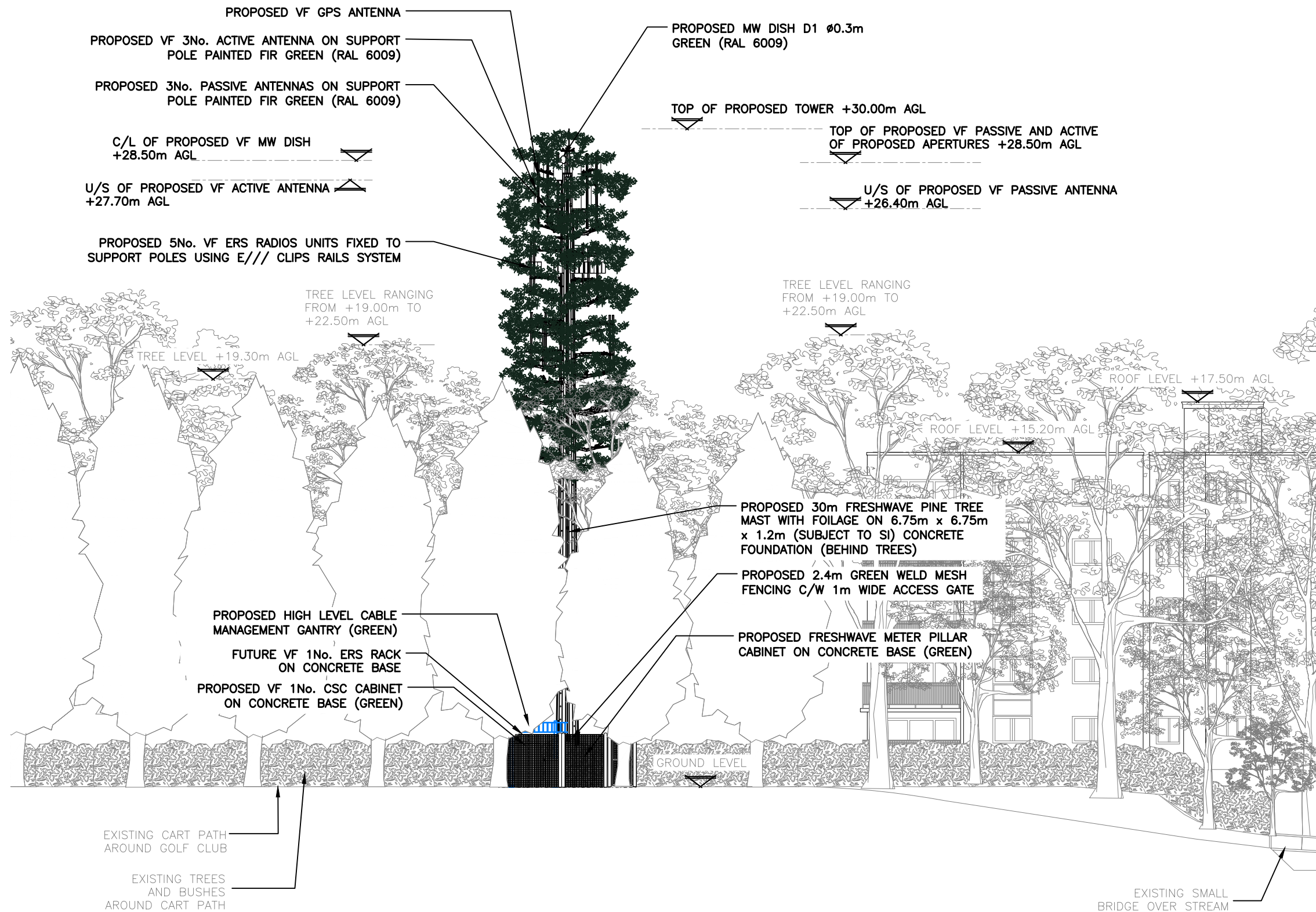
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PROPOSED ELEVATION A
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NOTES:

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C	U/S of Passive Antenna Changed DAF	AW	PJ	21-12-22
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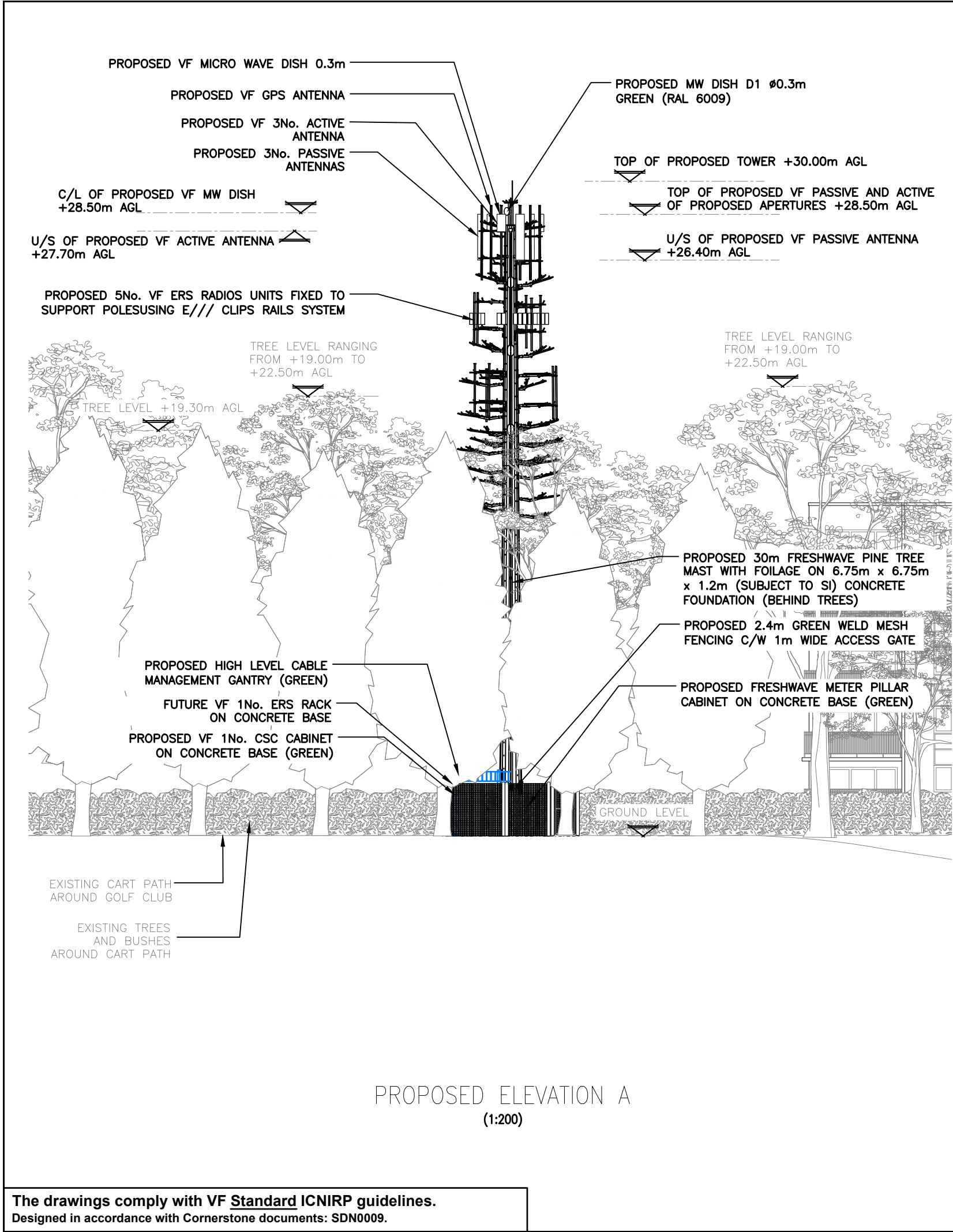
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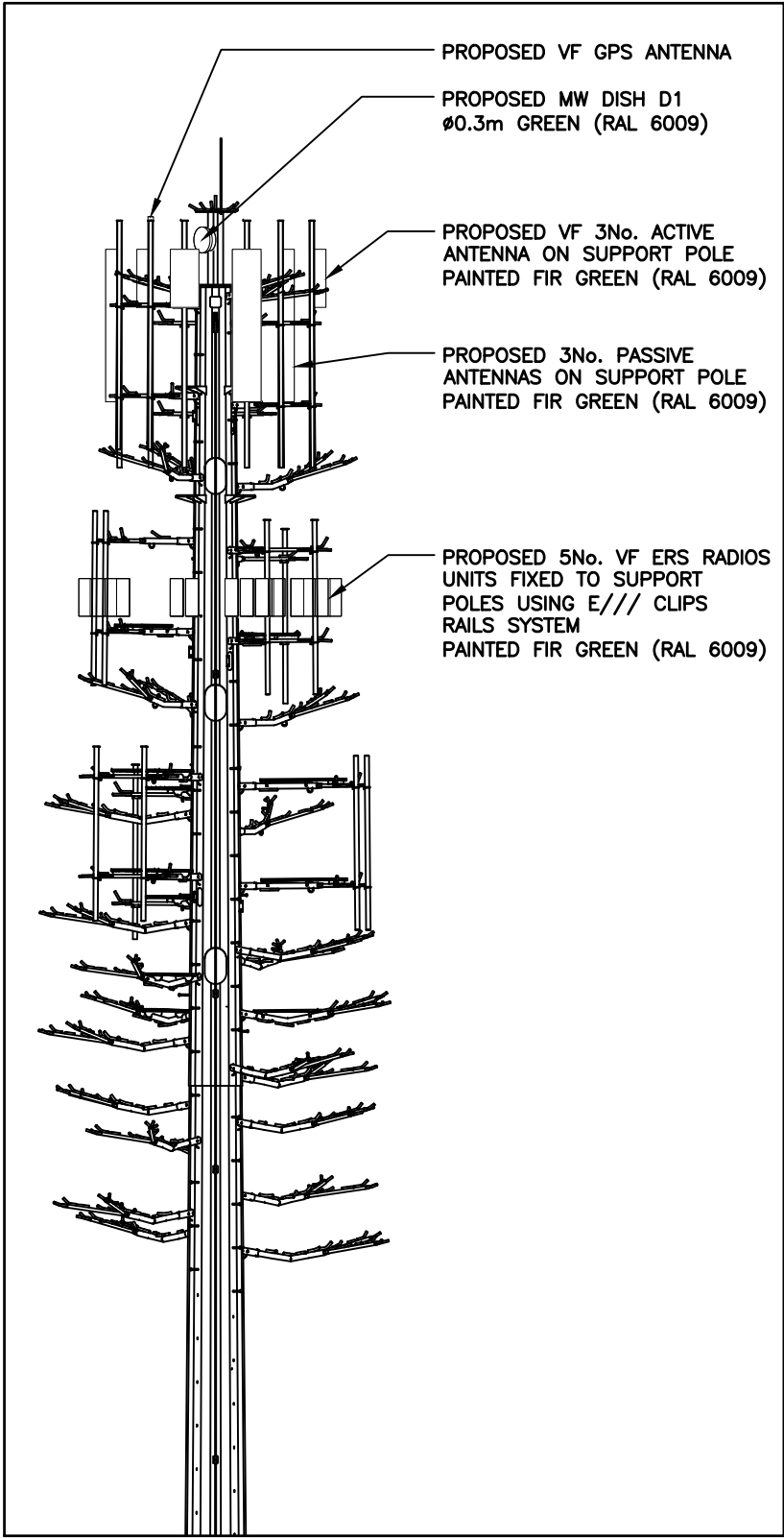
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PROPOSED ELEVATION A
(1:200)



PROPOSED EQUIPMENT LAYOUT
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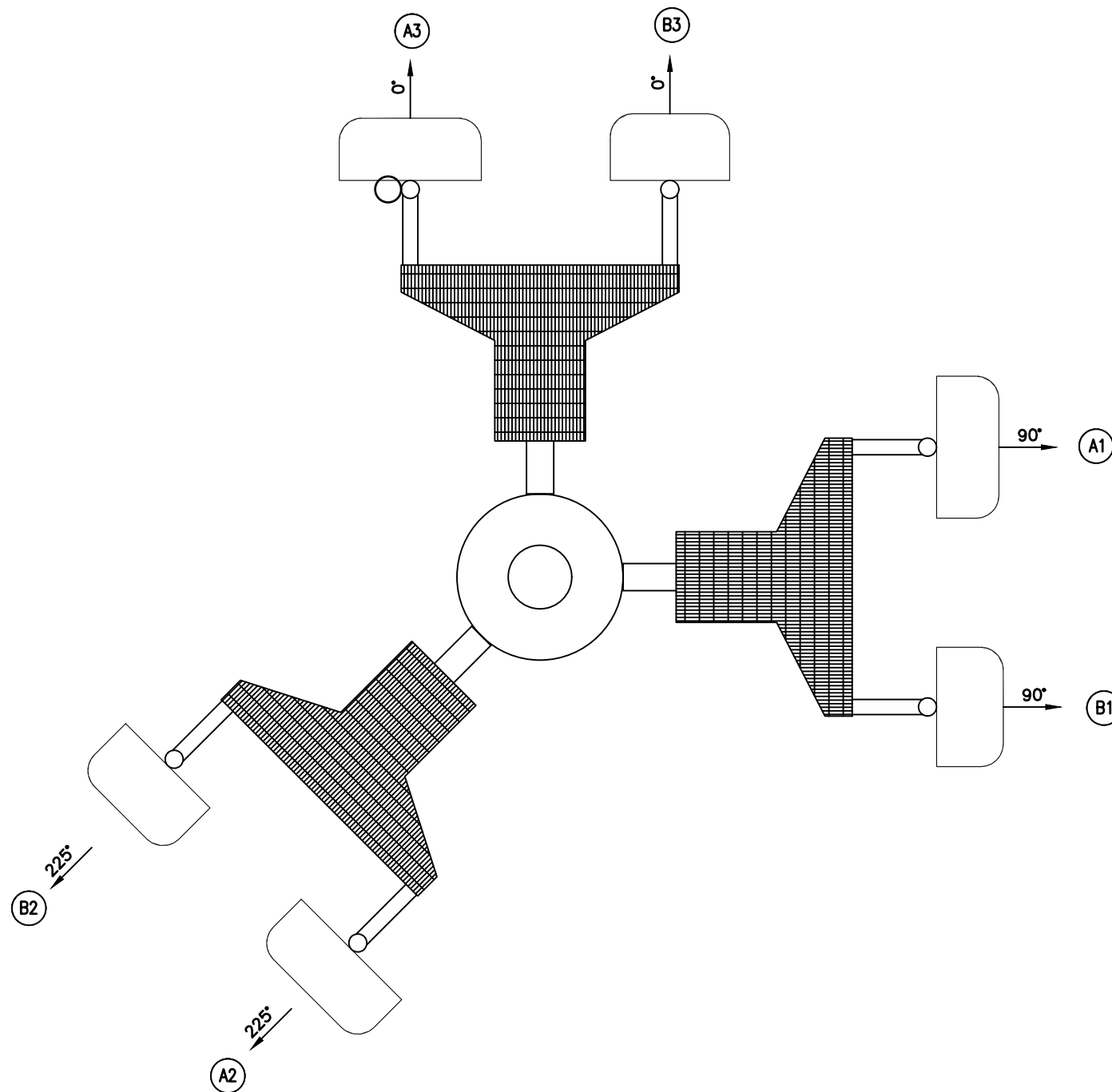
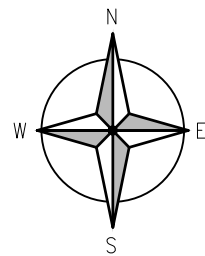
Site Address / Contact Details

Withington Golf Club
243 Palatine Road
Manchester

M20 2UE

Drawing Title: PROPOSED SITE ELEVATION DETAIL			
Purpose of issue: PLANNING			Dwg Rev:
Drawing Number: 302			C
Surveyed By: WJ		Original Sheet Size: A3	
Drawn: AW	Date: 26/05/22	Checked: P J	Date: 26-05-22
			Pack Issue: D

The drawings comply with VF Standard ICNIRP guidelines.
Designed in accordance with Cornerstone documents: SDN0009.



PROPOSED ANTENNA PLAN
(1:20)

ALL DIMENSIONS ARE IN mm UNLESS NOTED OTHERWISE

N.G.R | E: 383699 N: 390952

NOTES:

REV	MODIFICATION	BY	CH	DATE
B	Antenna Height Increased, Azimuth Change DAF	AW	WJ	20-10-22
A	Issued for Approval	AW	P J	26-05-22



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307360_01	-	-

Site Address / Contact Details

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Manchester

M20 2UE

Drawing Title: ANTENNA PLAN

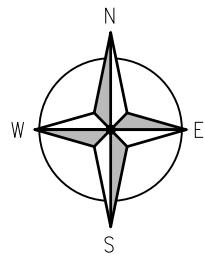
Purpose of issue: PLANNING | Dwg Rev:

Drawing Number: 400 | B

Surveyed By: WJ | Original Sheet Size: A3 | Pack Issue:

Drawn: AW | Date: 26/05/22 | Checked: P J | Date: 26-05-22 | D

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Designed in accordance with Cornerstone documents: SDN0009.



PROPOSED VF 3No.
ACTIVE ANTENNAS ON SUPPORT POLE
PAINTED FIR GREEN (RAL 6009)

PROPOSED VF 3No.
PASSIVE ANTENNAS ON SUPPORT POLE
PAINTED FIR GREEN (RAL 6009)

PROPOSED VF
GPS MODULE FIXED TO
ANTENNA SUPPORT POLE
PROPOSED 5No. VF ERS RADIOS UNITS
FIXED TO SUPPORT POLES USING
E/// CLIPS RAILS SYSTEM PAINTED
FIR GREEN (RAL 6009)

PROPOSED MW DISH D1
Ø0.3m GREEN (RAL 6009)

PROPOSED HIGH LEVEL CABLE
MANAGEMENT GANTRY (GREEN)

FUTURE VF 1No. ERS RACK
ON CONCRETE BASE

PROPOSED VF 1No. CSC CABINET
ON CONCRETE BASE (GREEN)

PROPOSED POWER SUPPLY FROM
METER CABINET TO CSC CABINET

PROPOSED FRESHWAVE METER PILLAR
CABINET ON CONCRETE BASE (GREEN)

PROPOSED TX COMMS DUCTS TO CSC CABINET

PROPOSED REC/DNO SUPPLY DUCT
TO SITE METER CABINET

PROPOSED 30m FRESHWAVE PINE TREE
MAST WITH FOILAGE ON 6.75m x 6.75m
x 1.2m (SUBJECT TO SI) CONCRETE
FOUNDATION

PROPOSED 2.4m GREEN WELD MESH
FENCING C/W 1m WIDE ACCESS GATE

PROPOSED 3.0m WIDE ACCESS TRACK
HARDSTANDING TO MATCH EXISTING
GOLF CART PATHS

EXISTING/PROPOSED EQUIPMENT LAYOUT
(1:50)

ALL DIMENSIONS ARE IN mm UNLESS NOTED OTHERWISE

N.G.R | E: 383699 N: 390952

DUCT KEY

	EXISTING 100Ø POWER
	EXISTING 100Ø COMMS
	EXISTING 150Ø FEEDER
	EXISTING 100Ø INCOMING*
	PROPOSED 100Ø POWER
	PROPOSED 100Ø COMMS
	PROPOSED 150Ø FEEDER
	PROPOSED 100Ø POKE-OUT*

*INCOMING AND POKE-OUT DUCTS TO BE COLOURED BY
DUCT TYPE (POWER/COMMS/FEEDER)

EXISTING U/G SERVICES KEY

	HV	POWER LINE HV
	LV	POWER LINE LV
	E	POWER LINE UNIDENTIFIED
	GLP	GAS LOW PRESSURE
	GMP	GAS MEDIUM PRESSURE
	GHP	GAS HIGH PRESSURE
	PW	POTABLE WATER
	FW	FOUL SEWER
	CSEW	COMBINED SEWER
	SW	SURFACE WATER SEWER
	TU	TELECOM
	CTV	CABLE
	EA	ABANDONED PIPE
	?	UNIDENTIFIED

B	Antenna Height Increased, Azimuth Change DAF	AW	WJ	20-10-22
A	Issued for Approval	AW	P J	26-05-22

REV	MODIFICATION	BY	CH	DATE
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-		

Site Address / Contact Details

Withington Golf Club
243 Palatine Road
Manchester

M20 2UE

Drawing Title:

EQUIPMENT LAYOUT

Purpose of issue: | Dwg Rev:

PLANNING

Drawing Number: | B

401

Surveyed By: | Original Sheet Size: | Pack Issue:

WJ

A3

D

Drawn: | Date: | Checked: | Date: |

AW

26/05/22

P J

26-05-22

The drawings comply with VF Standard ICNIRP guidelines.
Designed in accordance with Cornerstone documents: SDN0009.