PART B
FIRE ENGINEERING
WALES

Fire Safety Design Review

Project Title	Project Dragon - Sustainable Aviation Fuel (SAF) Production Facility
Client	LanzaTech UK Limited
Written by	Jessica Price
Reviewed by	Jon Preston

Revision 01 **Date** 11.08.2023

Overview

Project Dragon - Sustainable Aviation Fuel (SAF) Production Facility (referred to as 'Project Dragon' throughout this document) is a proposed SAF production facility located in Port Talbot, Wales. The development includes enclosed ground flare, storage tanks, administration, warehouse and laboratory buildings as well as car parking/loading facilities. The development will be assessed against Approved Document B (ADB) Volume 2: Buildings other than dwellings, 2006 edition including 2010, 2013, 2016 and 2020 amendments – for use in Wales. PartB have reviewed the individual buildings located within the site plan for Building Regulations B1 - B4, and the site wide plan for B5.

Regulation B1 - Means of warning and escape

- The following purpose groups and travel distances are relevant to Project Dragon.
- The evacuation strategy will be simultaneous for all parts of the site
- In accordance with BS 5839-1:2017, the minimum fire detection and alarm system classification should be M (manual). PartB would suggest increasing this is to a minimum of L2/M for the smaller outbuildings. Insurer and Client requirements will need to be taken into account when designing the individual building and full site wide fire detection and alarm systems.

Purpose Group/s	Use of Premises	Maximum Travel distance (m)	
		Single direction	More than one direction
3	Office	18	45
6	Industrial – Normal Hazard	25	45
	Industrial – Higher Hazard	12	25
7	Storage – Normal Hazard	25	45
	Storage – Higher Hazard	12	25
2 – 7	Places of Special Fire Hazard	9	18
2 - 7	Plant (within room)	9	35
	Plant (internal escape route)	18	45
	Plant (open air escape route)	60	100

Regulation B2 - Internal Fire Spread (Linings)

- All wall and ceiling linings within the buildings should conform to Table 10 in ADB.
- All surface finishes and floor coverings materials should resist flame spread over their surfaces and, when ignited, any heat release or propagation of the fire is limited as recommended.

Regulation B3 - Internal Fire Spread (Structures)

- Elements of structure of the building should give 30 minutes for single storey buildings. Elements of structure for hazardous areas will be considered on an individual basis.
- No compartmentation is required within the individual buildings.

Regulation B4 - External Fire Spread

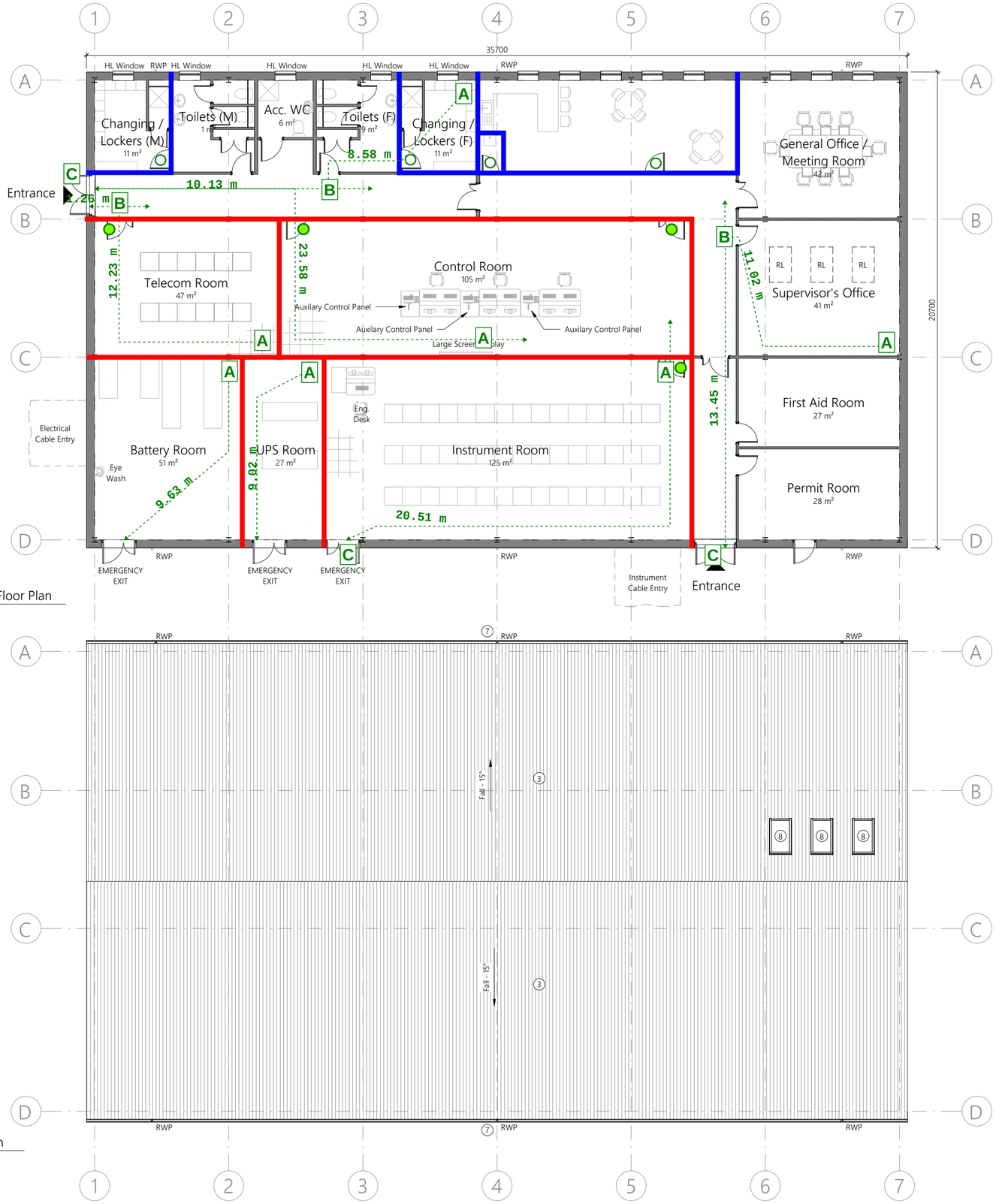
- The provisions for external fire spread will be calculated using the enclosing rectangle' method from BRE 187:2014 for the individual buildings.
-Due to the close proximity of the industrial equipment to each other and to the buildings and storage around the site, blast analysis will also be undertaken to review any blast resistance requirements for the walls of the buildings.

Regulation B5 - Access and Facilities for the Fire Service

- The Fire Service require access to 15% of the perimeter of all of the individual buildings on site, or reach all areas in the building with 45m from the location of the parked pump appliance.
- Fire Service provisions for the highly hazardous areas on site will be reviewed individually.
- There should be a fire hydrant located within 90m of the Fire Service access to all areas of the site.

Legend

- FD30 Fire Door
- FD30S Fire Door
- 30 minutes Fire Rated Construction
- 60 minutes Fire Rated Construction
- Travel Distance



1 Proposed Ground Floor Plan
1 : 100

2 Proposed Roof Plan
1 : 100

Project Title	Project Dragon
Drawing Title	Process Control Building - Markups
Drawing Number	
Revision 00	**Date** 03.08.2023
Drawn by	Jessica Price
Reviewed by	Jon Preston

PartB Group
Pera Business Park
Nottingham Road
Melton Mowbray
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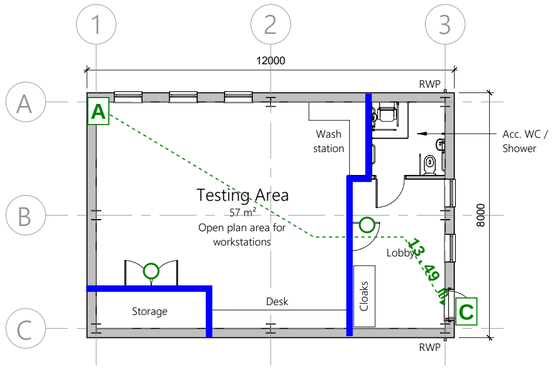

1 Proposed Ground Floor Plan
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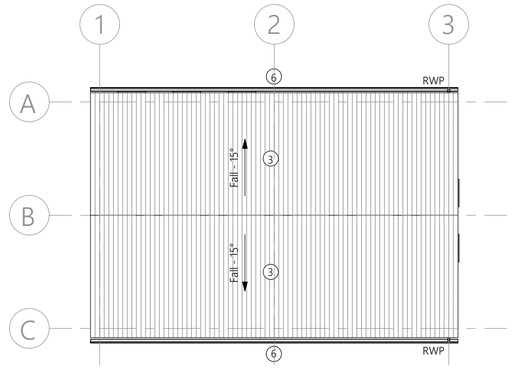
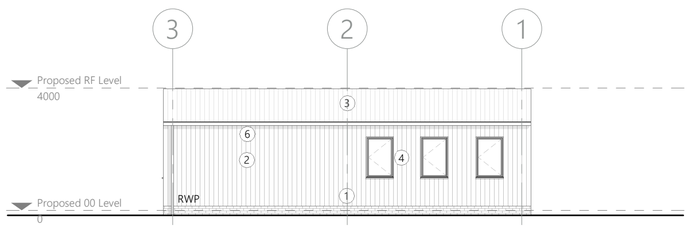


2 Proposed Roof Plan
1 : 100

7 Laboratory 3D View 1



3 Proposed North Elevation
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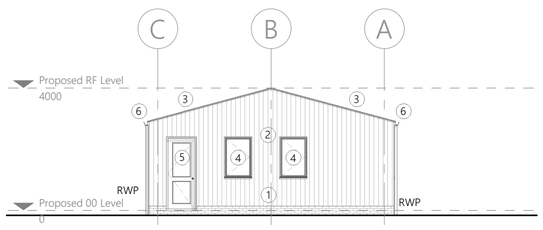

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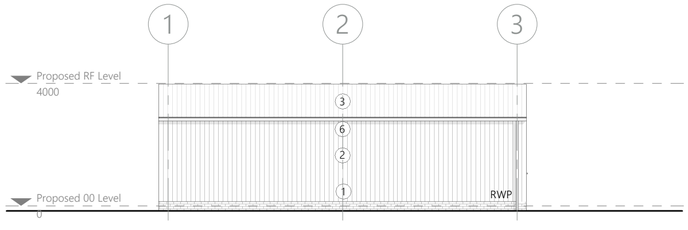
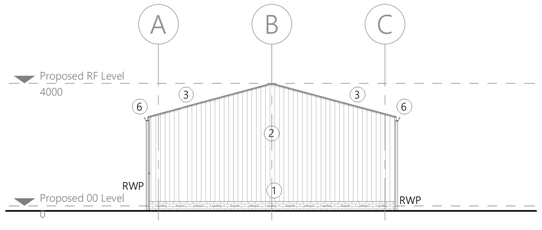
1 : 100



5 Proposed South Elevation
1 : 100



6 Proposed West Elevation
1 : 100

Legend

- FD30 Fire Door
- 30 minutes Fire Rated Construction
- Travel Distance

Project Title Project Dragon

Drawing Title Laboratory - Markups

Drawing Number

Revision 00 **Date** 03.08.2023

Drawn by Jessica Price

Reviewed by Jon Preston

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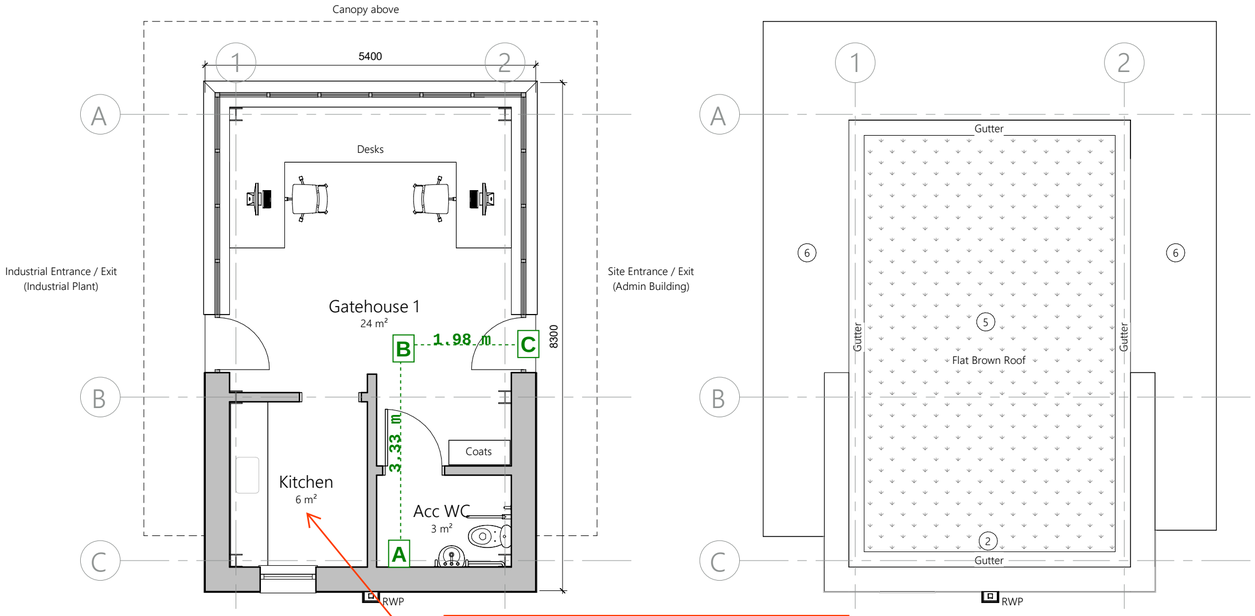
Legend

Travel Distance

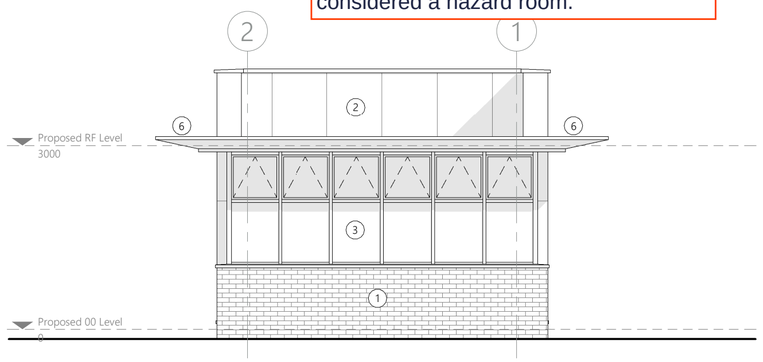


1 Proposed Ground Floor Plan
1 : 50

PartB Fire Safety Design Comment
Kitchen contains cold food prep and re-heat (microwave) only, therefore is not considered a hazard room.

d Roof Plan

7 Gatehouse 3D View 1



3 Proposed North Elevation
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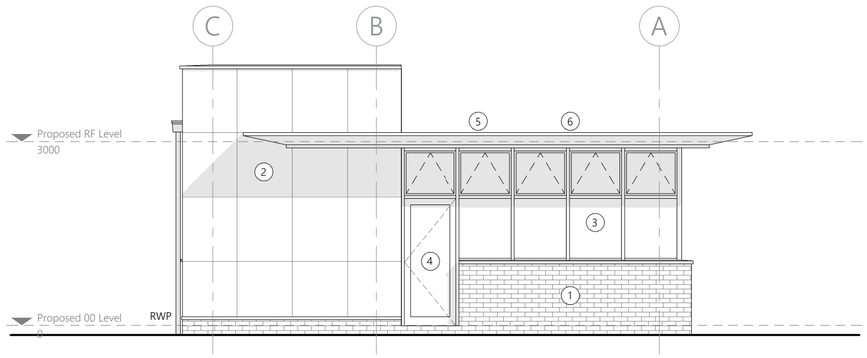
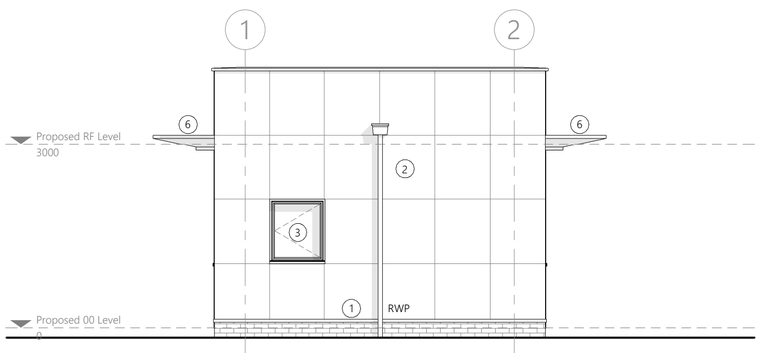


4 Proposed East Elevation
1 : 50



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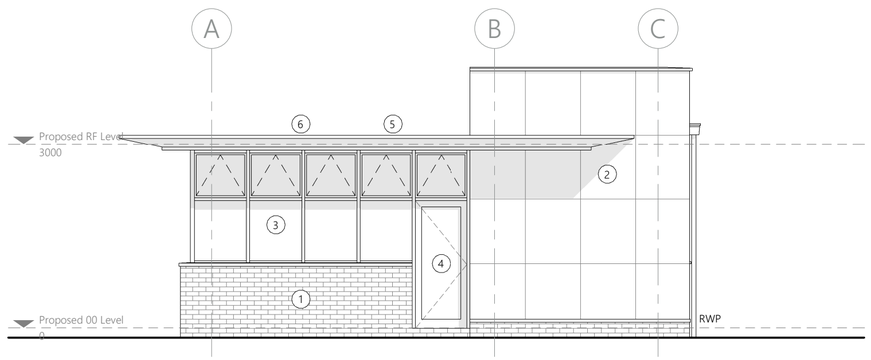
1 : 50



6 Proposed West Elevation
1 : 50

Project Title Project Dragon

Drawing Title Gatehouse 1 - Markups

Drawing Number

Revision 00 **Date** 03.08.2023

Drawn by Jessica Price

Reviewed by Jon Preston

PartB Group
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Park
Nottingham Road
Melton Mowbray
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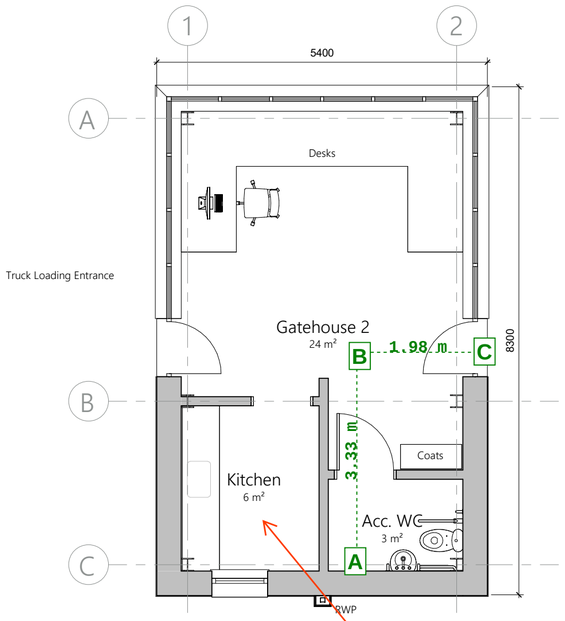

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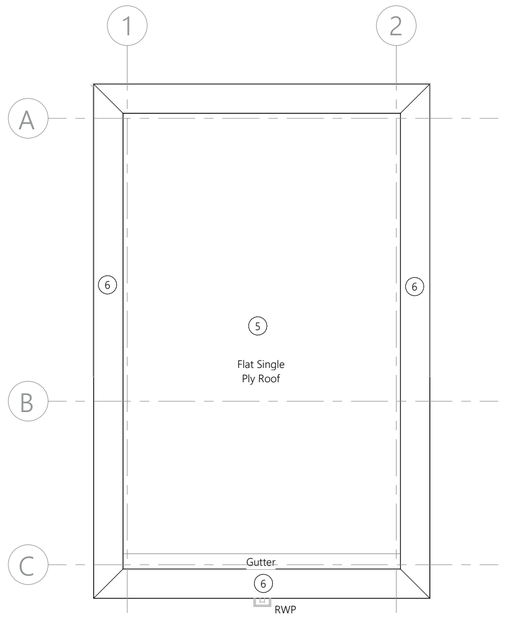
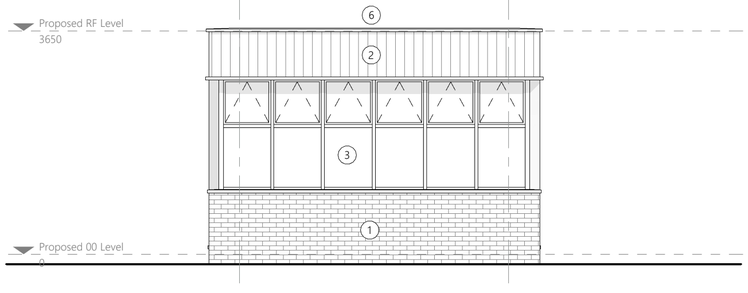


osed Roof Plan

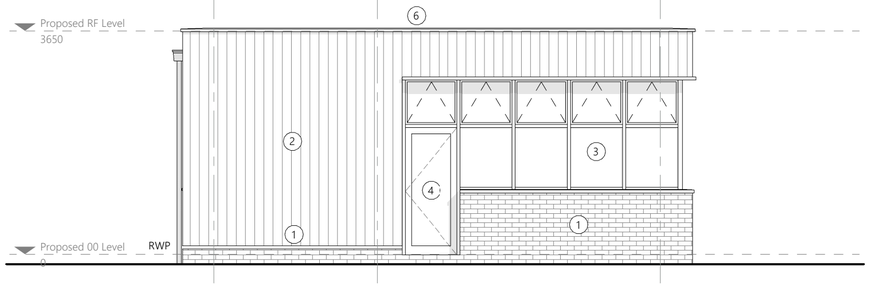
7 Gatehouse 2 3D View 1

Legend

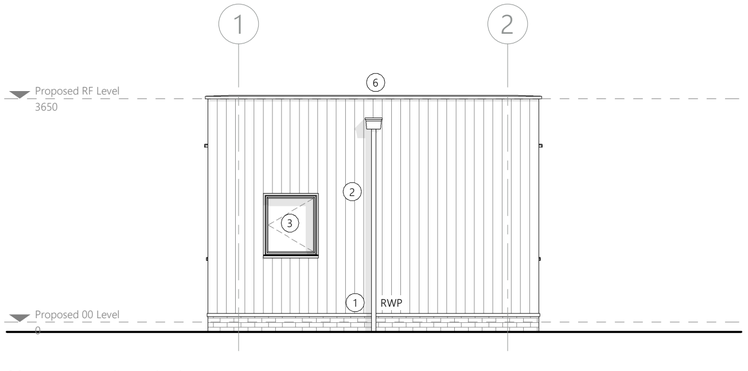
Travel Distance



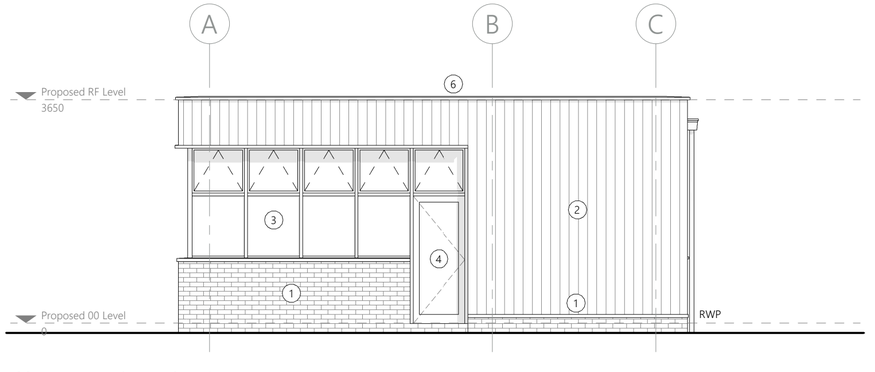
3 Proposed South Elevation
1 : 50



4 Proposed West Elevation
1 : 50



5 Proposed North Elevation
1 : 50



6 Proposed East Elevation
1 : 50

Project Title Project Dragon

Drawing Title Gatehouse 2 - Markups

Drawing Number

Revision 00 **Date** 03.08.2023

Drawn by Jessica Price

Reviewed by Jon Preston

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Pera Business Park
Nottingham Road
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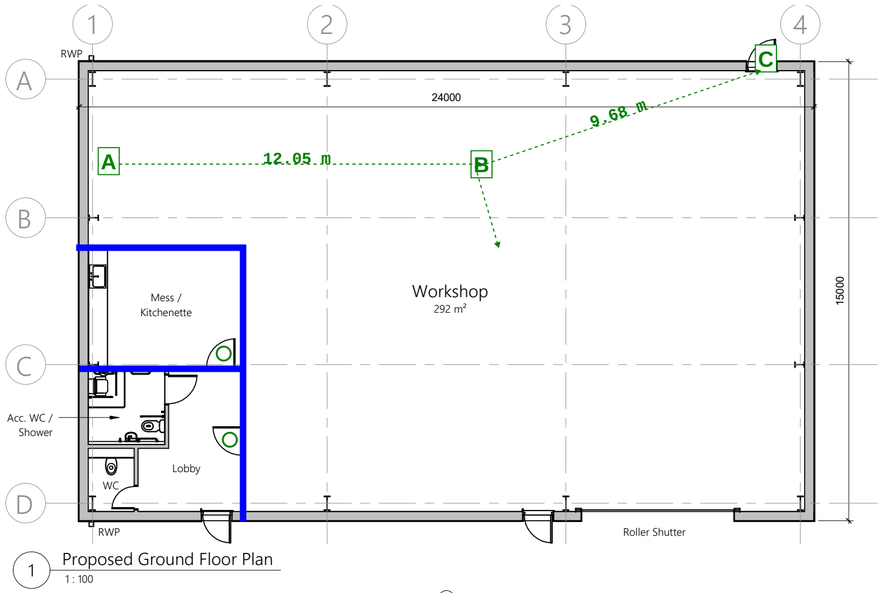
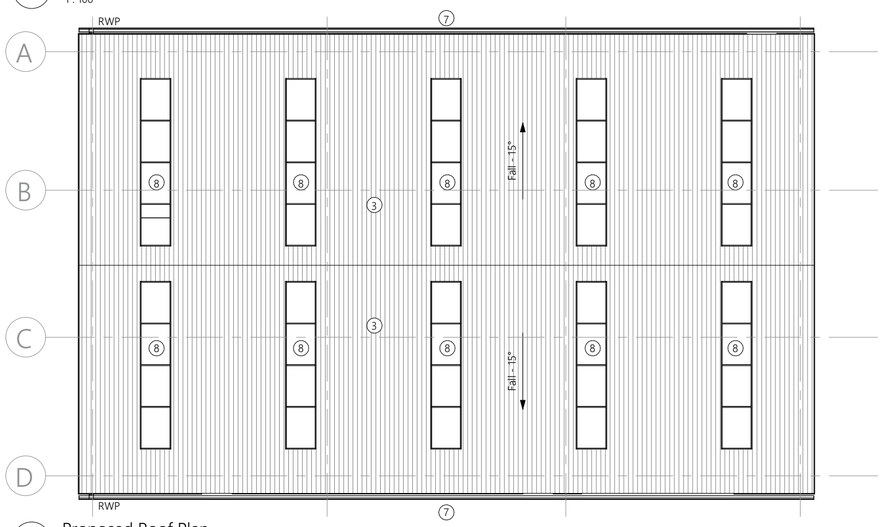
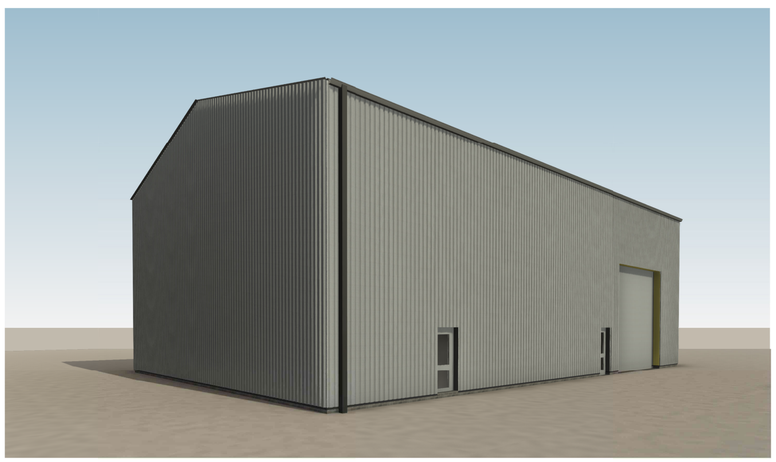


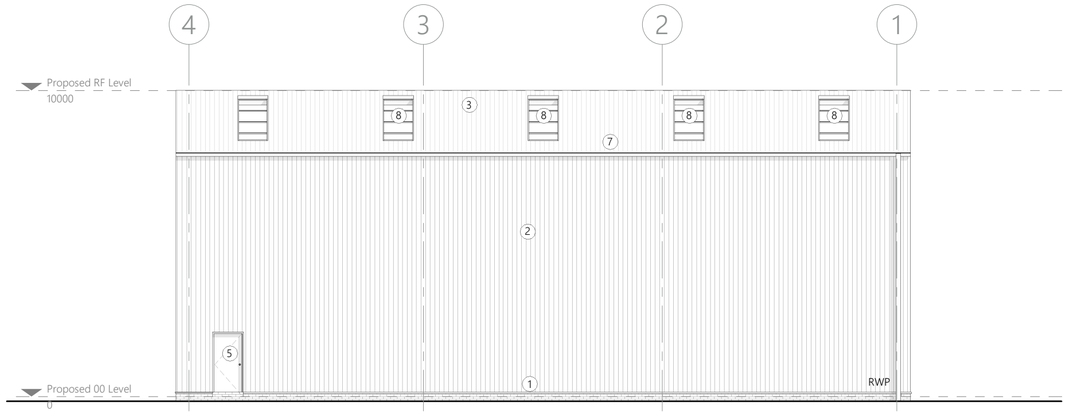
1 Proposed Ground Floor Plan
1 : 100



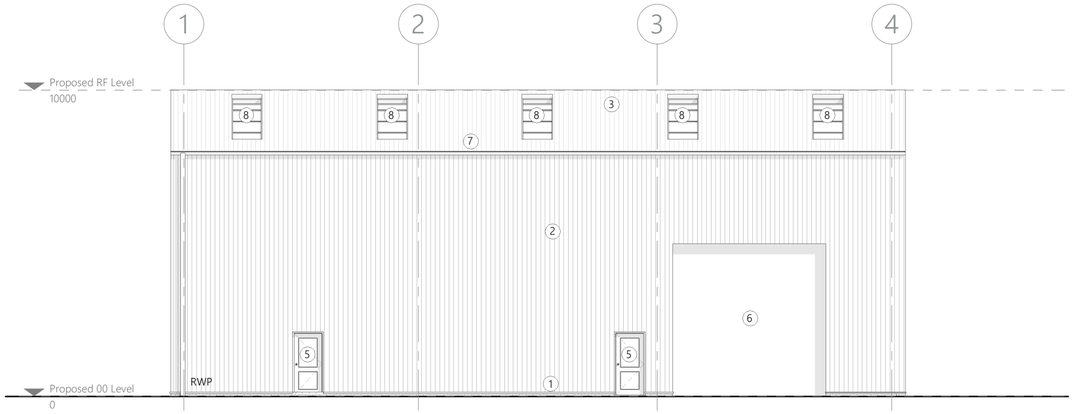
2 Proposed Roof Plan
1 : 100



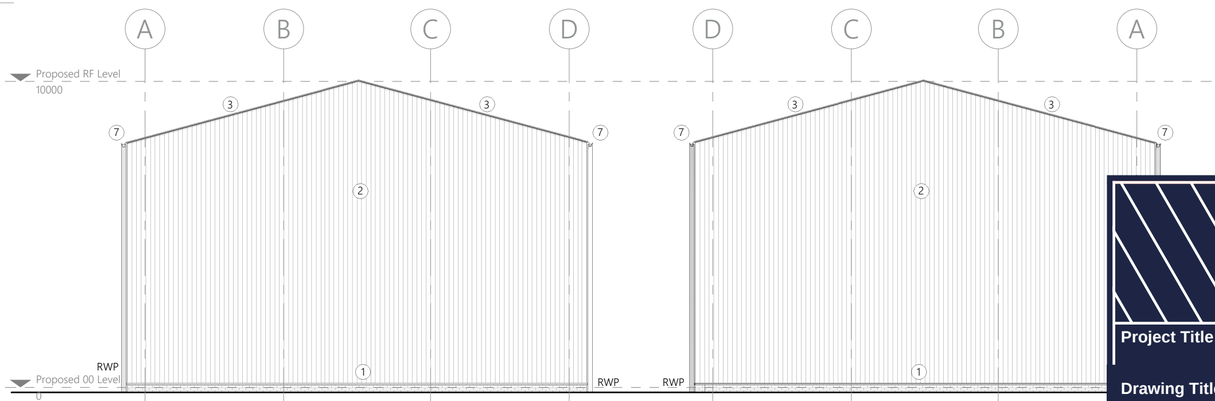
7 Workshop 3D View 1



3 Proposed East Elevation
1 : 100



4 Proposed West Elevation
1 : 100



5 Proposed South Elevation
1 : 100

6 Proposed North Elevation
1 : 100

Legend
- FD30 Fire Door
- 30 minutes Fire Rated Construction
- Travel Distance

Project Title Project Dragon

Drawing Title Workshop - Markups

Drawing Number

Revision 00 **Date** 03.08.2023

Drawn by Jessica Price

Reviewed by Jon Preston

PartB Group
Pera Business
Park
Nottingham Road
Melton Mowbray
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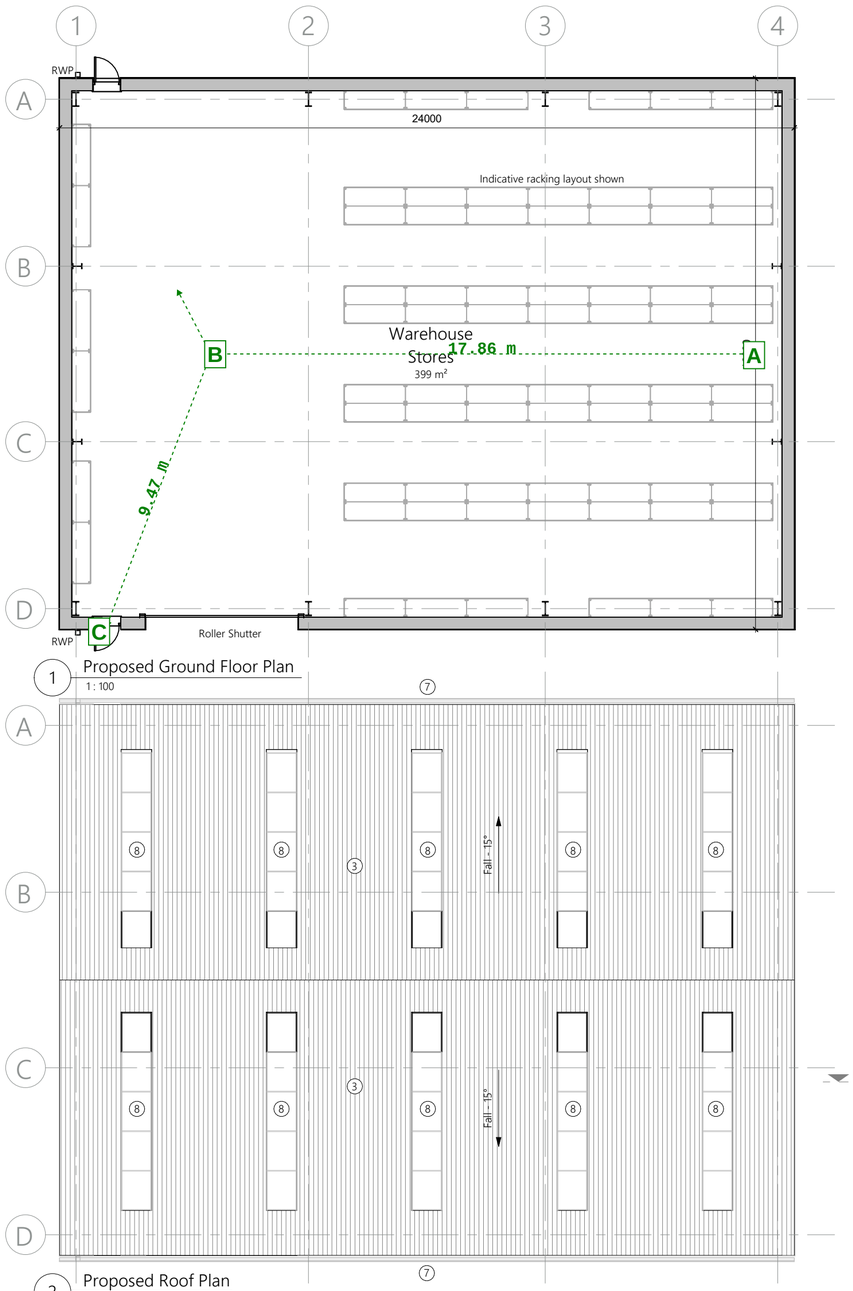
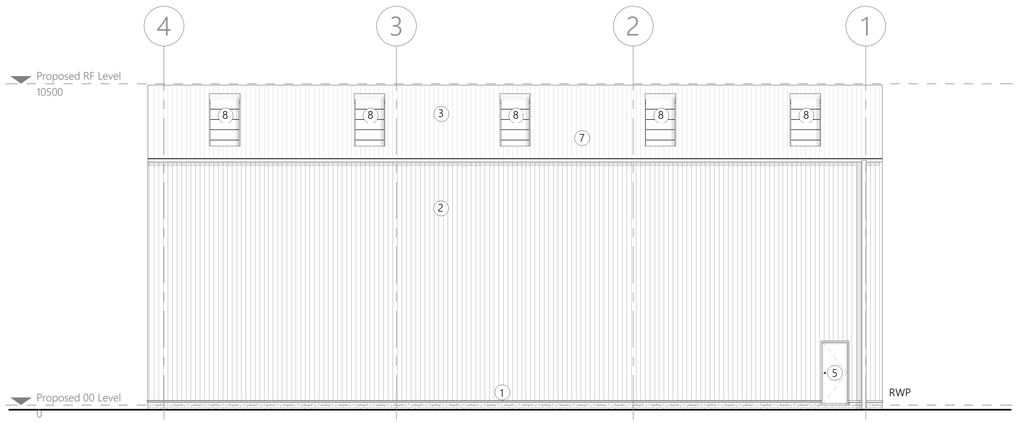


1 Proposed Ground Floor Plan
1 : 100

2 Proposed Roof Plan
1 : 100

7 Warehouse 3D View 1



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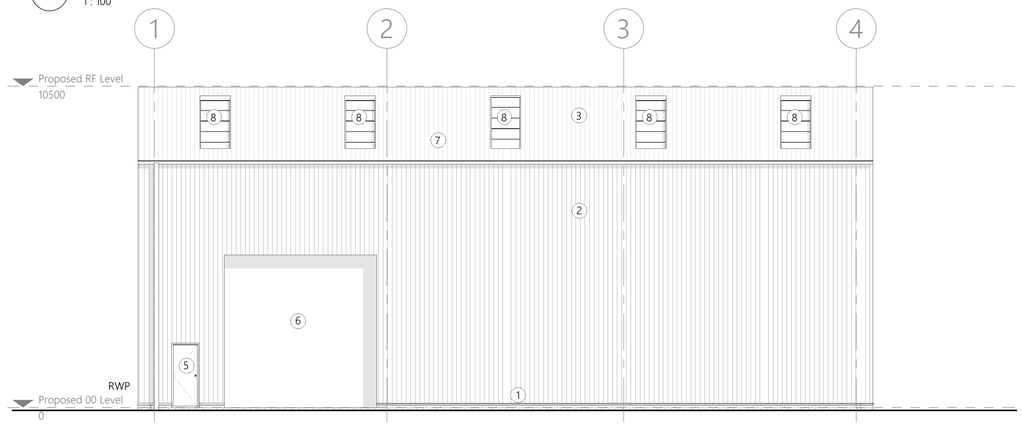
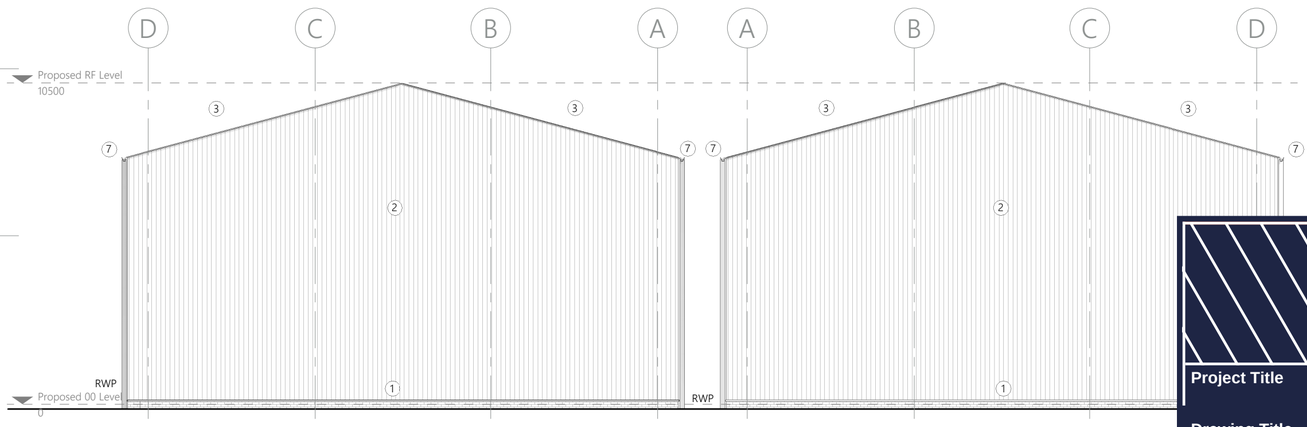
1 : 100



4 Proposed West1 Elevation
1 : 100



5 Proposed East Elevation
1 : 100

6 Proposed West Elevation
1 : 100

Legend

Travel Distance

Project Title	Project Dragon
Drawing Title	Warehouse - Markups
Drawing Number	
Revision 00	**Date** 03.08.2023
Drawn by	Jessica Price
Reviewed by	Jon Preston

PartB Group
Pera Business
Park
Nottingham Road
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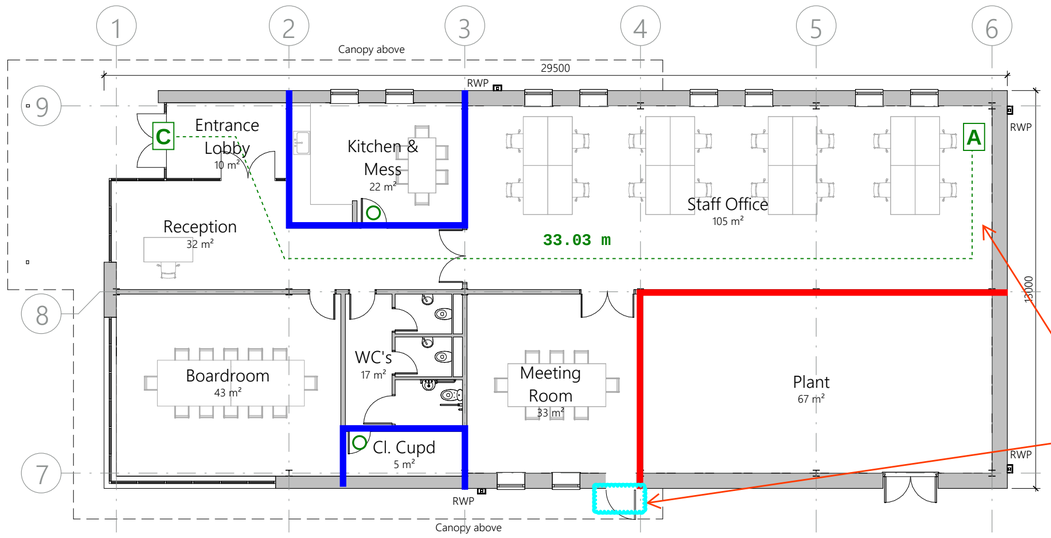
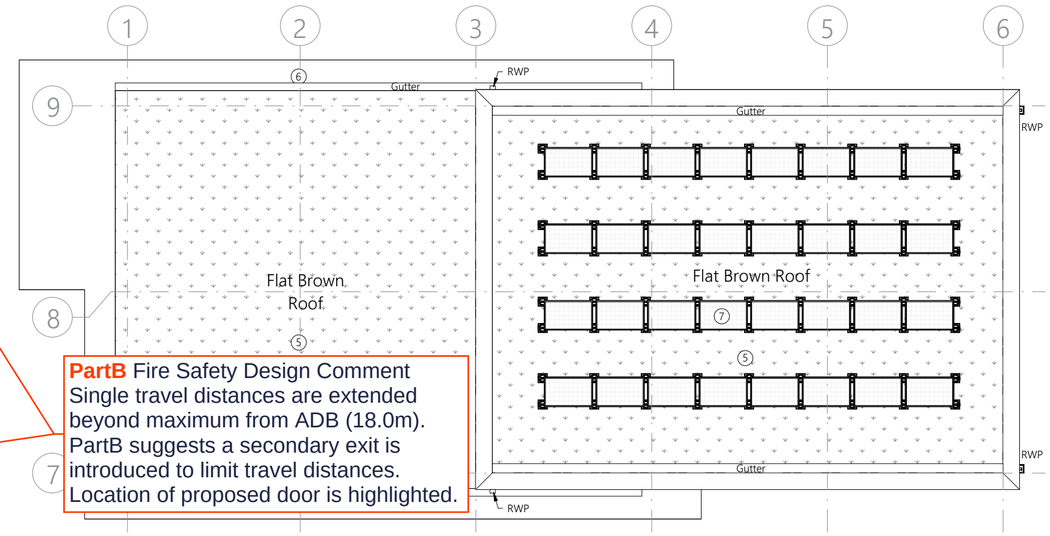


1 Proposed Ground Floor Plan
1 : 100

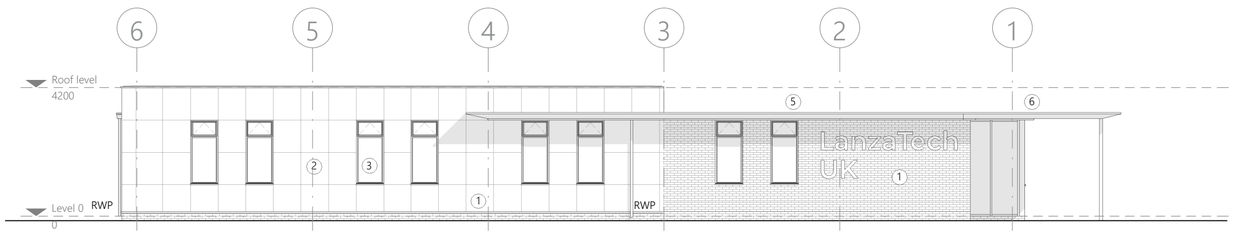


2 Proposed First Floor Plan
1 : 100

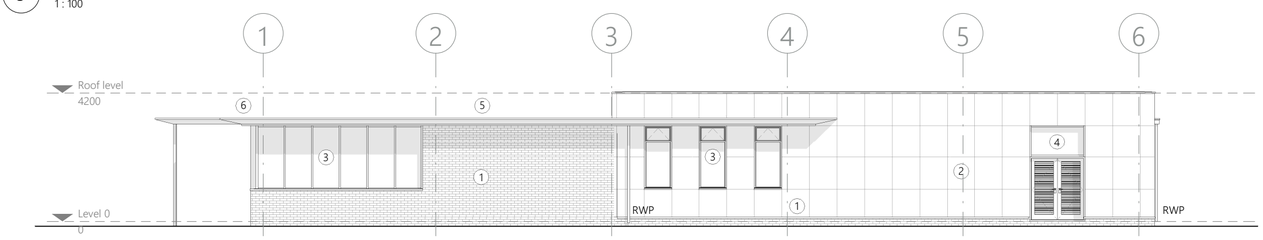
PartB Fire Safety Design Comment
Single travel distances are extended beyond maximum from ADB (18.0m). PartB suggests a secondary exit is introduced to limit travel distances. Location of proposed door is highlighted.

Legend
- FD30 Fire Door
- 30 minutes Fire Rated Construction
- 60 minutes Fire Rated Construction
- Proposed additional door
- Travel Distance

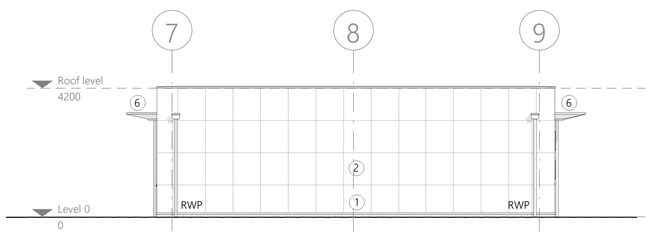
NOTES
- North arrow above indicates 'True North'



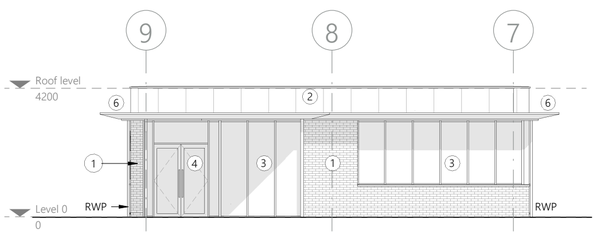
3 Proposed North Elevation
1 : 100



4 Proposed South Elevation
1 : 100



5 Proposed East Elevation
1 : 100



6 Proposed West Elevation
1 : 100

7 Admin Building 3D View 1

8 Admin Building 3D View 2

Project Title	Project Dragon
Drawing Title	Admin Building 1 - Markups
Drawing Number	
Revision 00	**Date** 03.08.2023
Drawn by	Jessica Price
Reviewed by	Jon Preston

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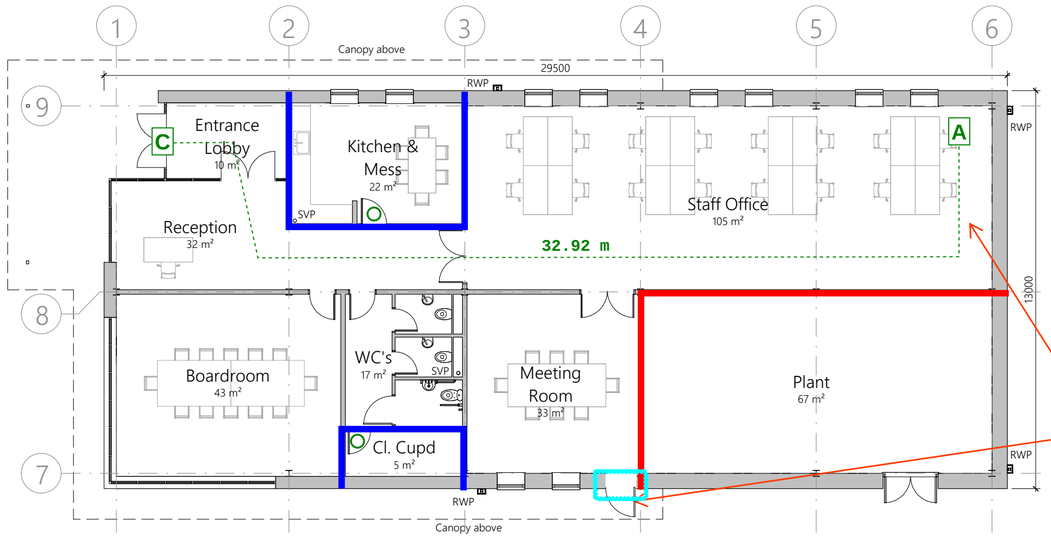
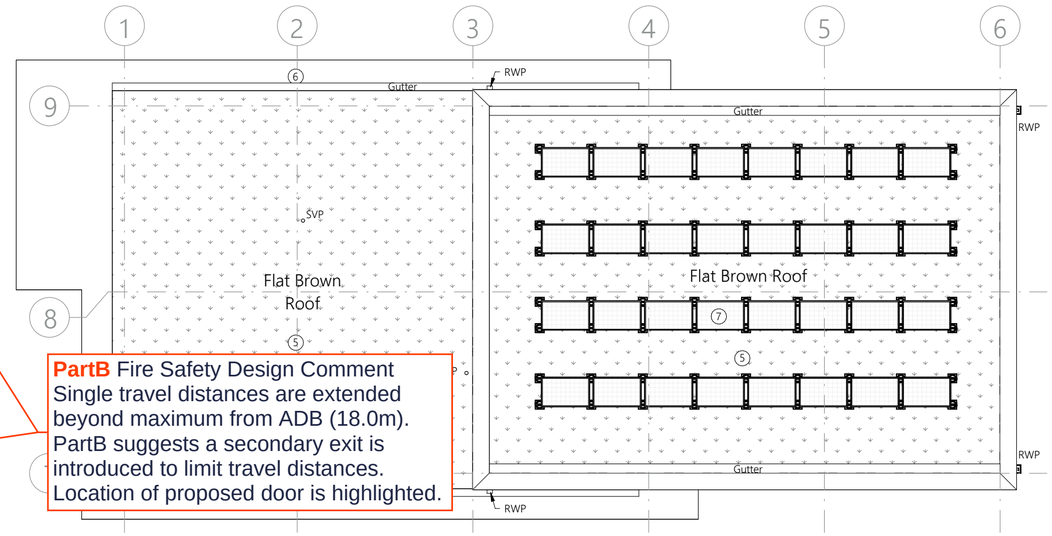


1 Proposed Ground Floor Plan
1 : 100



2 Proposed First Floor Plan
1 : 100

PartB Fire Safety Design Comment
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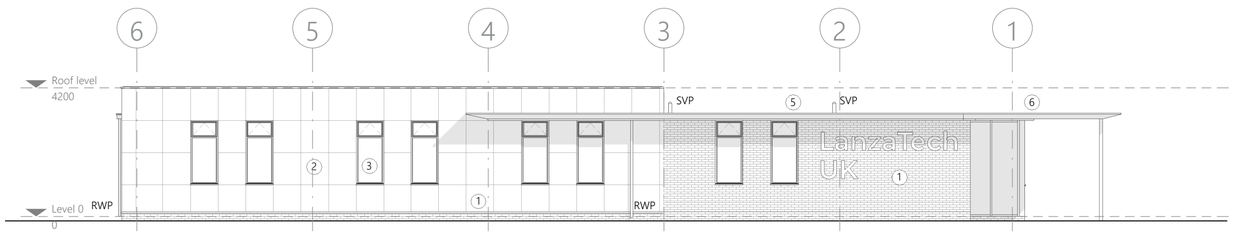
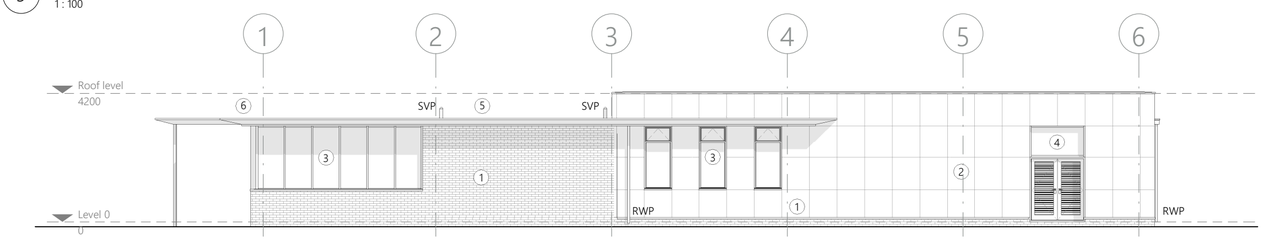
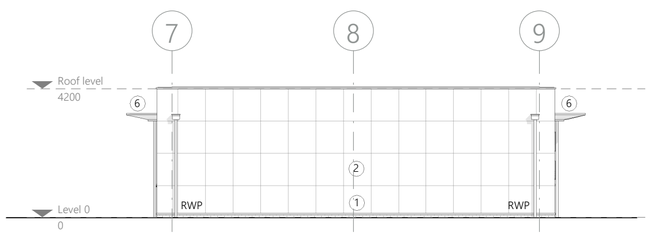


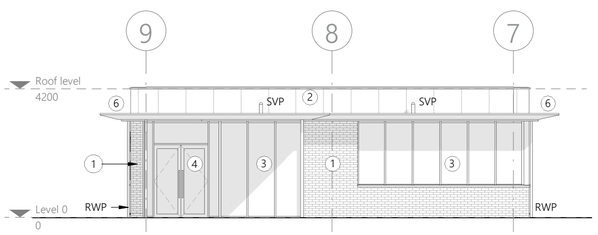
3 Proposed North Elevation
1 : 100



4 Proposed South Elevation
1 : 100

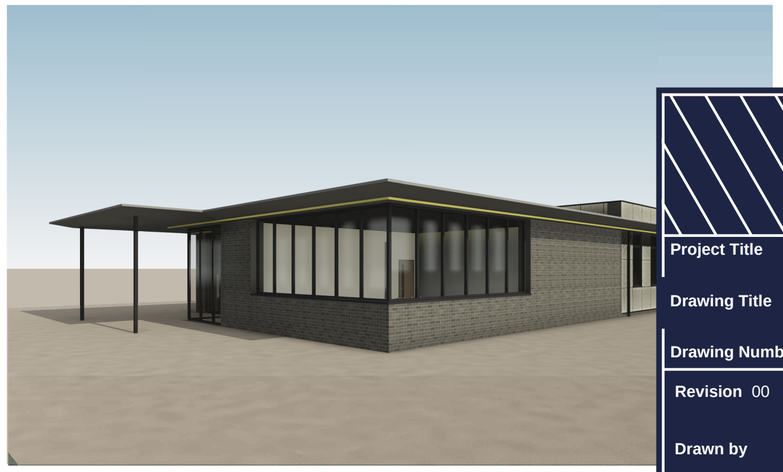


5 Proposed East Elevation
1 : 100



6 Proposed West Elevation
1 : 100

7 Admin Building 3D View 1



8 Admin Building 3D View 2

Project Title	Project Dragon
Drawing Title	Admin Building 2 - Markups
Drawing Number	
Revision	00
Date	03.08.2023
Drawn by	Jessica Price
Reviewed by	Jon Preston

PartB Group
Pera Business Park
Nottingham Road
Melton Mowbray
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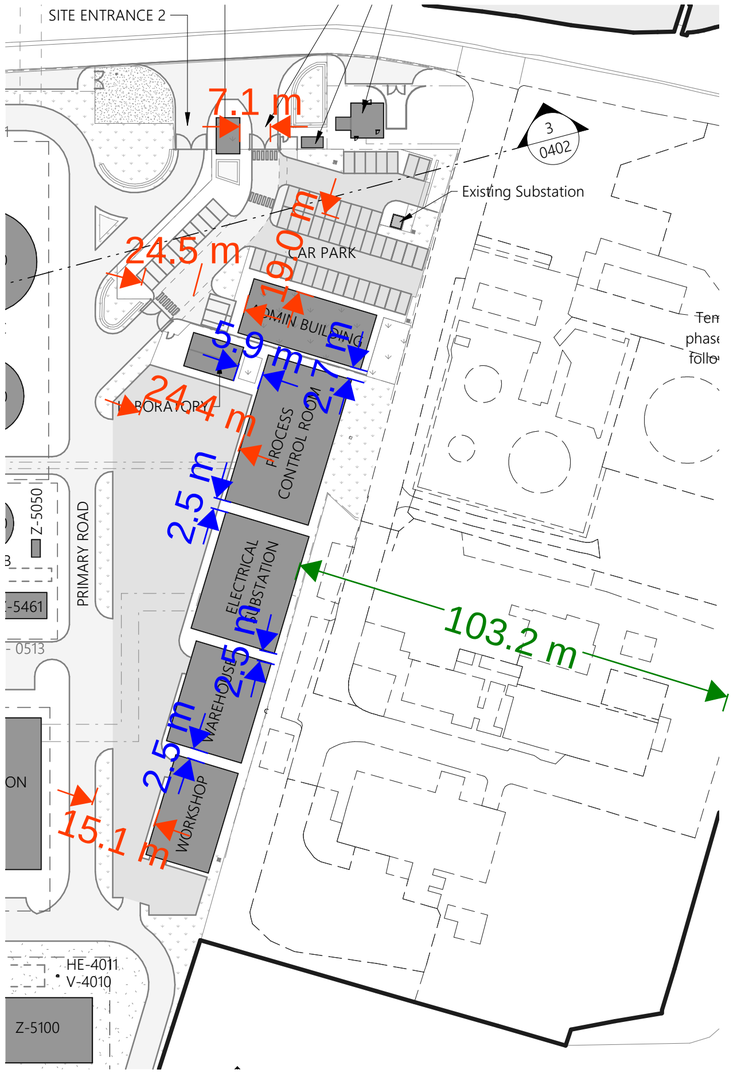
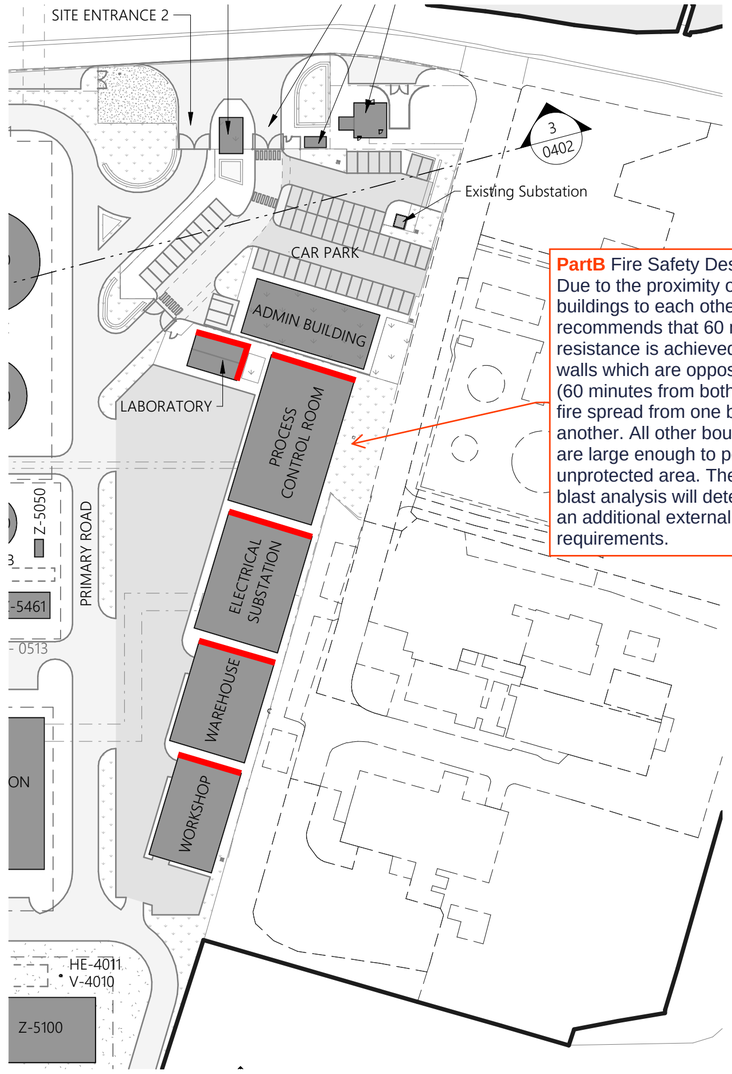
PART B

External Boundaries



External wall fire resistance



PartB Fire Safety Design Comment
Due to the proximity of the individual buildings to each other, PartB recommends that 60 minutes fire resistance is achieved for one of the walls which are opposite each other (60 minutes from both sides), to stop fire spread from one building to another. All other boundary distances are large enough to permit 100% unprotected area. The results from the blast analysis will determine if there are an additional external wall requirements.

Legend

- Notational boundary to equipment on site
- Boundary between buildings
- Site boundary
- 60 minutes Fire Resistant Construction

Project Title	Project Dragon
Drawing Title	External Fire Spread Review
Drawing Number	
Revision 00	**Date** 03.08.2023
Drawn by	Jessica Price
Reviewed by	Jon Preston

PartB Group
Pera Business Park
Nottingham Road
Melton Mowbray
LE13 0PB

PART B

Part B - Fire Service Access Key

- Fire appliance parking position
- Fire appliance route
- Actual building perimeter
- Accessible building perimeter

PartB Fire Safety Design Comment
Location of Hydrants to be confirmed.

PartB Fire Safety Design Comment
Fire Service will require access to the area in front of the buildings.

PartB Fire Safety Design Comment
Fire Service Access requirements for the individual pieces of plant/equipment will be specialist design.

PartB Fire Safety Design Comment
All areas in the building can be reached within 45m.

PartB Fire Safety Design Comment
All areas in the building can be reached within 45m.

PartB Fire Safety Design Comment
The buildings have the following percentage of fire service access:
Admin - 58.8%
Process Control - 45.2%
Substation - 55.3%
All are above 15% and therefore acceptable.

PartB Fire Safety Design Comment
All areas in the building can be reached within 45m.

Indicative proposed jetty subject to marine licence.

SHIP LOADING

Rio Tinto Wharf

GATEHOUSE 1

SITE ENTRANCE 1

CYCLE STORE

NATIONAL GRID SWITCHROOM

SITE ENTRANCE 2

SITE ENTRANCE 3

TRUCK LOADING LAYBY

EXIT WEIGHBRIDGE

SITE ENTRANCE 4

TRUCK PARKING

GATEHOUSE 2

ENTRANCE WEIGHBRIDGE

EMERGENCY FIRE FIGHTING ENTRANCE / ENTRANCE

PROPOSED LAY-DOWN AREA

mporary use during construction
se. Area to be covered in hardcore
owing completion of construction.

PRIMARY ROAD

SERVICE ROAD

MAINTENANCE ACCESS

ZONE 1 - 0500
ZONE 2 - 0501
ZONE 3 - 0502
ZONE 4 - 0503
ZONE 5 - 0504
ZONE 6 - 0505
ZONE 7 - 0506
ZONE 8 - 0507
ZONE 9 - 0508
ZONE 10 - 0509
ZONE 11 - 0510
ZONE 12 - 0511
ZONE 13 - 0512
ZONE 14 - 0513
ZONE 15 - 0514

T-6000A
T-6000B
T-6000C
T-6000D
P-6020A/B
T-6431A / B / C
P-6450A/B
6451
Z-7910
Z-7710
Z-6421
P-6480A/B
P-6420A/B
T-6400A
T-6400B
T-6400C
T-6400D
T-6160
P-6170A/B
Z-4300
V-6600
V-7950
V-7960
P-6601
P-7951
P-7961
Z-4500
P-4610A/B
P-4601A/B/C
P-4710A/B/C
E-4711A/B
Z-4700
Z-4760
Z-3500
V-3510
Z-3520
V-3530
Z-4510
P-4740A/B
P-4712A/B/C
T-4600
P-4540A/B/C
P-4530A/B
T-4520
V-5400
P-5401
T-5450
Z-5050
P-5460A/B
Z-5020
Z-5461
HE-5451
HE-5452
T-5010
P-5011A/B/C
P-5030A/B
P-5040A/B
Z-5000
Z-3750
SUBSTATION 2000
V-4750
FLARE Z-7460
Z-6950
Z-6900
P-6911A/B
S-6910
P-6912A/B
SUBSTATION 3000
Z-7450
Z-7320
HE-7311
HE-7310
HE-7301
V-7300
V-7150
V-7000
P-5671A/B
P-5810A/B
P-4251A/B
P-5510A/B
T-5801
T-4250
T-5670
T-5501
P-5800
P-5500
Z-5660
V-6100A/B
P-6110A/B
PR1
PR2
PR3
PR4
PR5
PR6
PR7
PR8
MODULE A1
MODULE B1
COMPRESSOR HOUSE 1
MODULE D1
MODULE E1 & E2
COMPRESSOR HOUSE 2
Z-5200
Z-5100
HE-4011
V-4010

ADMIN BUILDING
50.1 m
85.2 m
LAB
PROCESS CONTROL ROOM
49.9 m
110.3 m
ELECTRICAL SUBSTATION
96.1 m
53.3
WAREHOUSE
29.4 m
WORKSHOP
3.8 m
Existing Substation

0401 1
0401 2
0402 3
0402 1

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