

FLOOD RISK ASSESSMENT

Proposed Change Use of Agricultural Buildings
to Industrial Units
Double Roof Farm
High Road,
Moulton, Whaplode,
Spalding,
PE12 6NT



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FLOOD RISK ASSESSMENT FOR PROPOSED CHANGE OF USE AGRICULTURAL BUILDINGS TO INDUSTRIAL UNITS, DOUBLE ROOF FARM, HIGH ROAD, MOULTON, WHAPLODE, SPALDING, PE12 6NT

INTRODUCTION

The Government has placed increasing priority on the need to take full account of the risk associated with flooding at all stages of the planning and development process. This seeks to reduce the future damage to property and the risk to life from incidents of flooding. Their expectations relating to flooding are contained in the National Planning Policy Framework July 2021, (NPPF), which identifies how the issue of flooding is dealt with in the drafting of planning policy and the consideration of planning applications by avoiding inappropriate development in areas at risk from flooding and to direct development away from areas at highest risk.

The NPPF provides that development in areas at risk of flooding should be avoided and seeks to direct development away from areas at highest risk. There is a sequential, risk-based approach to the location of development avoiding where possible, flood risk to people and property managing any residual risk and taking account of the impacts of climate change.

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APPLICATION SITE

The site is located on land at Double Roof farm, High Road, Moulton, Whaplode, Spalding, PE12 6NT and lies within the administrative area of South Holland District Council. The National Grid Reference for the centre of the site is TF31629 24530. **Plan 1**

This flood risk assessment has been prepared for a full planning application for the change of use off an existing range off agricultural buildings to a flexible commercial use to include uses classes eg. (i) offices)eg.(ii) (industrial process)) and B2 (general industry) and B8 (storage and distribution)).

There are two glasshouses on site that are proposed to be demolished as they are not suitable for conversion..

Plans 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 & 18.



Existing Buildings from High Road

The site would be classed as Non-Major Development applying the National Planning Policy Guidance (NPPG)..

The National Planning Policy Framework Guidance NPPG defines three levels of flood risk depending upon the annual probability of fluvial flooding occurring.

- Zone 1 – Low Probability (<0.1%)
- Zone 2 – Medium Probability (0.1 – 1.0%)
- Zone 3 – High Probability (>1.0%)

The majority of the proposed development site is shown to be within an area of Flood Zone 1 'Low Probability' with a small area in Flood Zone 2 "Medium Probability" as detailed on the Environment Agency's Flood Zone Maps **without defences**, and as defined in Table 1 of NPPG.

Table 1: Flood Zones Definition

Flood Zone 1- Low Probability
Definition This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%). Appropriate uses. All uses of land are appropriate in this zone. Flood risk assessment requirements For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a flood risk assessment. This need only be brief unless the factors above or other local considerations require particular attention. Policy aims. In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage systems.

Flood Zone 2- Medium Probability
Definition This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year. Appropriate uses Essential infrastructure and the water-compatible, less vulnerable and more vulnerable uses, as set out in table 2, are appropriate in this zone. The highly vulnerable uses are only appropriate in this zone if the Exception Test is passed. Flood risk Assessment requirements All development proposals in this zone should be accompanied by a flood risk assessment. Policy aims. In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage systems.

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPG, the existing use in connection with agricultural use is classified as Less Vulnerable use, the proposed industrial use for the site is classified as “Less Vulnerable,” therefore no change to the classification use, in accordance with Table 1. Less Vulnerable uses, as set out in Table 2, are appropriate in this zone.

Table 2: Flood Risk Vulnerability Classification

Less Vulnerable
• Police ambulance and fire stations that are not required to be operational during flooding. • Buildings used for shops, financial, professional, and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in “more vulnerable” and assembly and leisure. • Land and buildings used for agricultural and forestry. • Waste treatment (except land fill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works that do not need to remain operational during times of flood. • Sewage treatment works (if adequate measures to control pollution and manage sewage during flood events are in place).

Site Levels

From the topographical survey to OS datum, the existing ground level varies from 3.80mODN to the south and 3.40mODN to the north with an average circa 3.60mODN. High Road is at a level of 4.25mODN. The floor level for the buildings to be reused are as follows:-

Building 1a, 3.28mODN, Building 1b, 3.40mODN, Building 2a, 3.28mODN, Building 2b 3.28mODN, Building 2c, 3.40mODN, Building 2d, 3.28mODN, Building 3a, 3.86mODN, Building 3b, 3.86mODN, Building 7, 3.54mODN, Building 8 3.69mODN, Building 11, 3.79mODN, Building 12, 3.74mODN, Building 13, 3.72mODN, **Plan 5**

DRAINAGE AUTHORITIES

Environment Agency

The Environment Agency has permissive powers for reducing the risk of flooding from designated main rivers and

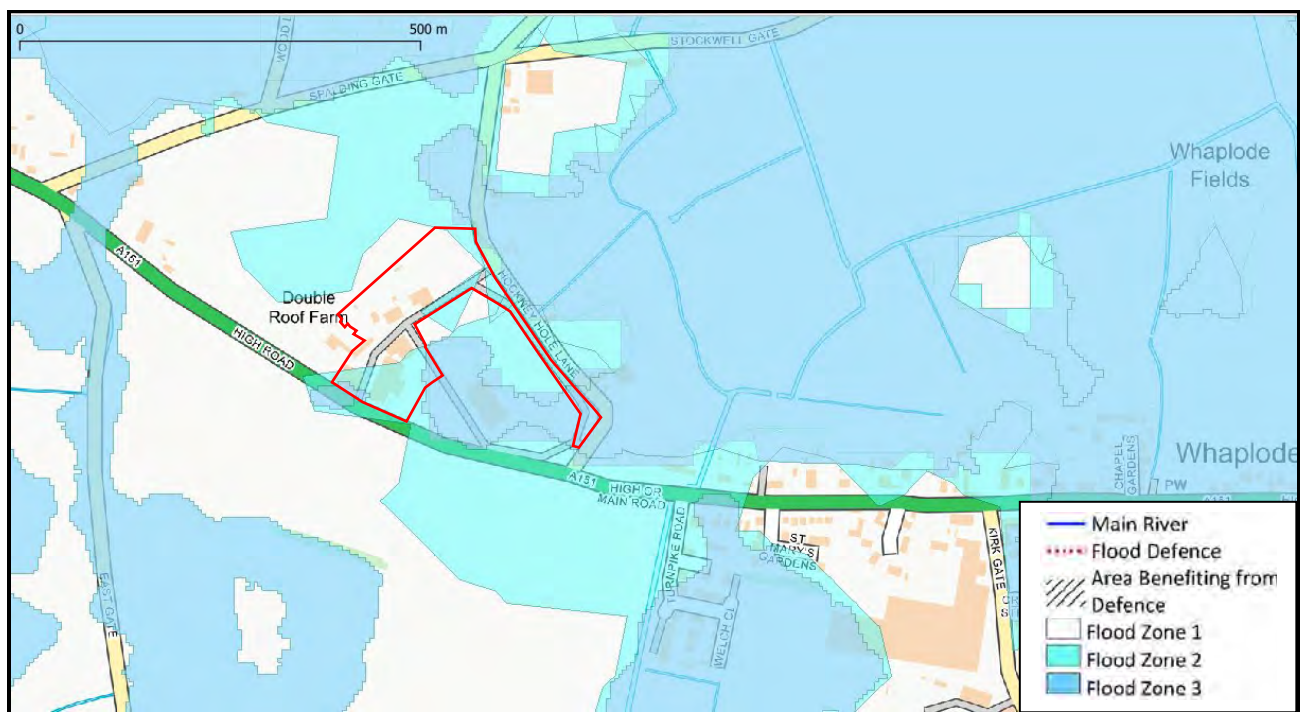
from the sea.

The following potential sources of flooding affecting the development site have been identified as:

- Tidal River Nene and The Wash
- Tidal River Welland
- South Holland IDB Watercourses.

The flood zone maps indicate that the area would be flooded without flood defences.). The Flood Map indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood event with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring for fluvial (river) flooding. It also shows the extent of the Extreme Flood Outline which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater. In some locations, such as around the fens and the large coastal floodplains there are many kilometres of raised flood defences. To meet the requirements of the National Planning Policy Framework, these defences are removed in their entirety to produce the Flood Map for Planning (Rivers and Sea). The map therefore shows the full extent of areas that would be at risk of flooding if no defences existed, and water could spread out across the floodplain.

Flood Zone



Flood Map for Planning (Source EA)

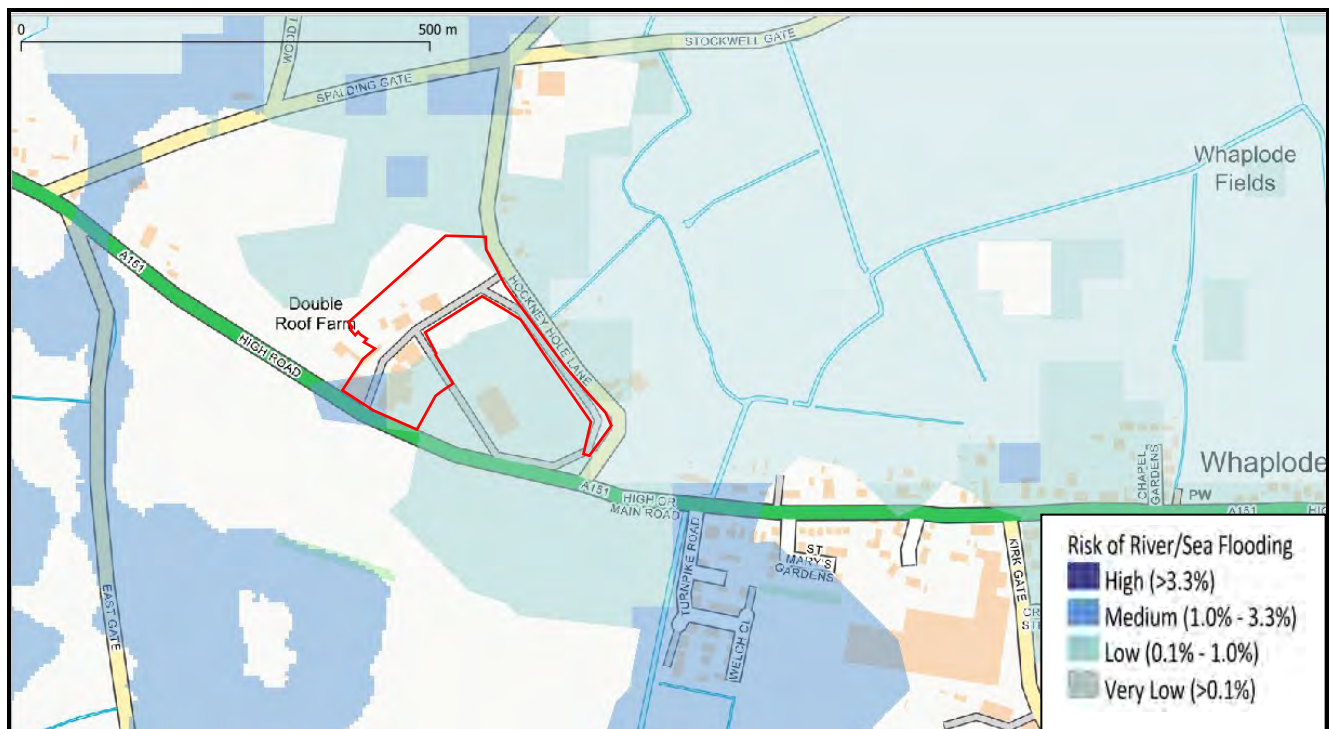
These maps show that the site is not now considered to be at risk from tidal/fluvial flooding as it is all located within an area zoned as Flood Zone 1. The maps indicate that the area would be flooded without flood defences, which are in place, (with an annual probability of more than 0.5% i.e., return frequency of less than 1 in 200 years for tidal flooding or more than 1.33% return frequency of less than 1 in 100 years for fluvial flooding).



Flood Map with Site Overlay

From the overlay the following buildings are located with an area of Flood Zone 2, Building 1a, 1b, 2a, 2b, 2c, and 2d, the remaining buildings are in Flood Zone 1

Risk of Flooding from Rivers & Sea



Risk of Flooding from Rivers & Sea Map (Source EA)

The Risk of flooding from Rivers and Sea shows that the site is at Low risk. **Low risk** means that each year this area has a chance of flooding of between 0.1% and 1.0%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped or fail.

Tidal Flooding

The main risk of flooding is therefore from a breach to the tidal defences to the River Welland which are located some 5.3Km to the east. The River Nene and the Wash are discounted as they are some 17Km to the west of the site and 11.2Km to the North-east respectively..

Tidal Defences

The existing tidal defences protecting this site consist of earth embankments. They are in good condition and reduce the risk of flooding (at the defence) to a 0.67% (1 in 150) chance of occurring in any year. The Environment Agency inspect these defences routinely to ensure potential defects are identified.

Schemes in the Area

There are no ongoing capital projects to reduce or sustain the current flood risk to this site.

Breach Analysis to Welland Tidal Defences

From Lincolnshire & Northamptonshire Area Tidal Modal Analysis, levels for East Coast and Wash: Immingham to the West Lighthouse have an assessment date of 2017, which should be used in any consideration of future increases due to climate change. **Map 3**

Peak tide levels (2017) for the 1 in 200-year 50% confidence bound tide level is 5.82mODN at Marsh Lane.

Taking the base date as 2017

$$2018 - 2035 = 17 \times 5.8\text{mm} = 98.6\text{mm}$$

$$2036 - 2065 = 30 \times 8.7\text{mm} = 261\text{mm}$$

$$2066 - 2085 = 30 \times 11.6\text{mm} = 348\text{mm}$$

$$2086 - 2123 = 28 \times 13\text{mm} = 364\text{mm}$$

$$\text{Total} = 1072\text{mm}$$

$$\text{Estimated tide level 2123} = 5.82\text{m} + 1.07\text{m} = 6.89\text{mODN}.$$

Taking the precautionary approach, the Hazard Rating following a breach which in Flood Risk Assessment (FD 2320) Guidance for New Development Phase 2 R& D Technical Report these are classified as low <0.75, moderate 0.75-1.25, significant 1.25-2.50 and extreme >2.50 based upon an empirical measure of velocity and depth.

$$\text{HR} = d \times (v + 0.5) + \text{DF}$$

Where V = Flood flow velocity (m/sec) D = Flood depth (m)

DF = A debris factor included to represent the greater damage, or risk of injury to people, that can occur if

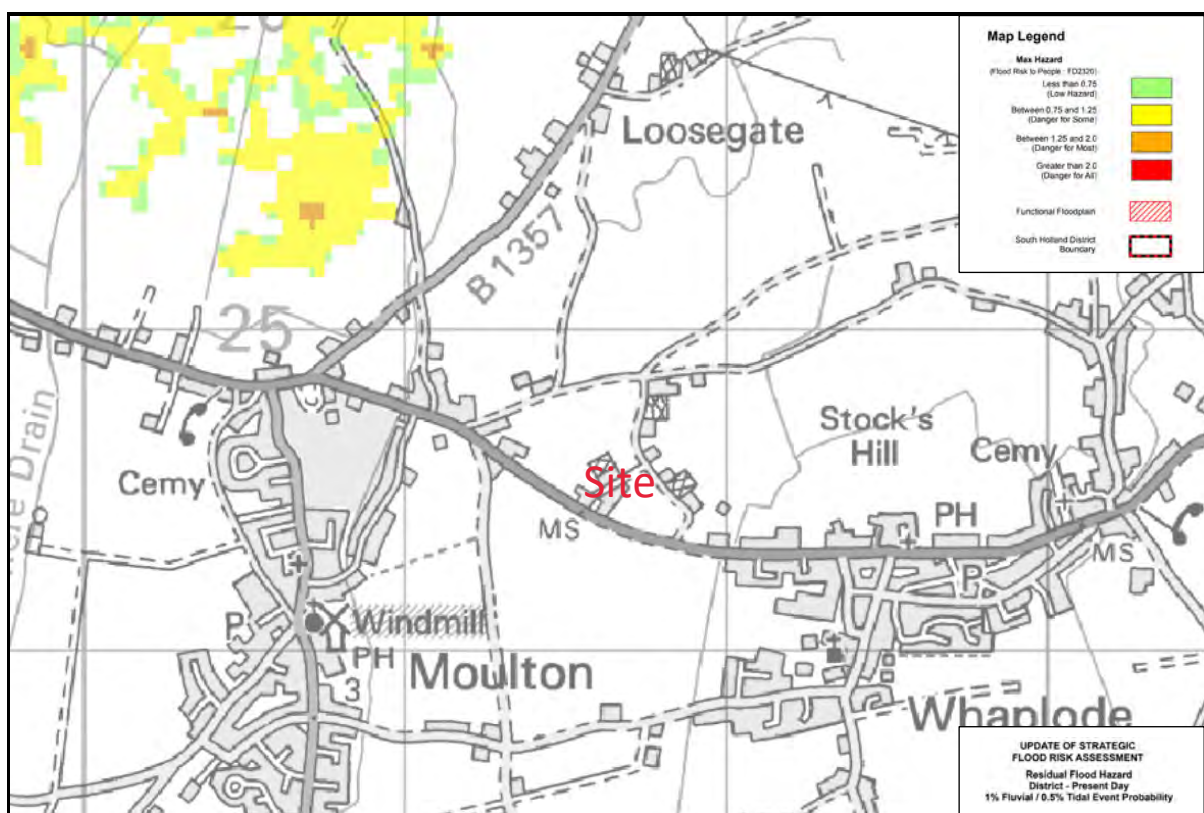
debris is swept along with the water. = 0.5 for depths <0.25 or 1.0 for depths.

For the degree of Flood Hazard to be classified as low HR must be <0.75

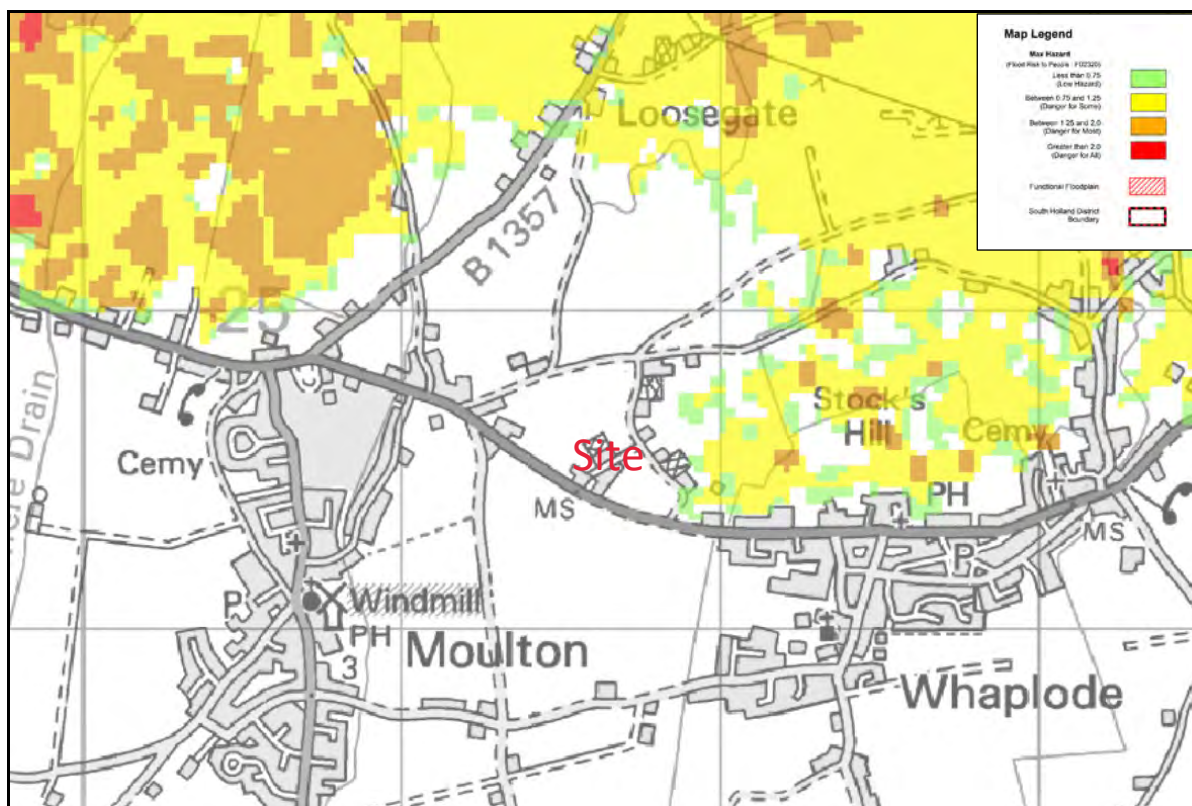
Flood Hazard			Description
	<0.75	Low	Caution – Flood Zone with shallow flowing water or deep standing water.
	0.75 – 1.25	Moderate	Danger for Some - (i.e. children) Danger Flood Zone with deep or fast flowing water.
	1.25 – 2.0	Significant	Danger for Most – Danger Flood Zone with deep fast flowing water.
	>2.0	Extreme	Danger for All – Extreme Danger Flood Zone with deep fast flowing water.

SOUTH HOLLAND SFRA

The 2017 Update to SHDC, SFRA has carried out a Tidal & Fluvial Hazard Mapping, for the district, following a breach to the defences. The present-day and for the climate change (2115), the Residual Flood Hazard, Depth and Velocity District 1% fluvial and 0.5% Tidal Event Probability Maps show that the site where the proposed development is located is within an area of no hazard.



Extract from the present-day SHDC Residual Flood Hazard Map



Extract from the Climate Change (2115) Residual Flood Hazard Map

Finished Floor Levels

As the site is not affected by a breach to the flood defences and that the proposal is for the reuse of existing buildings the floor level will remain at existing levels.

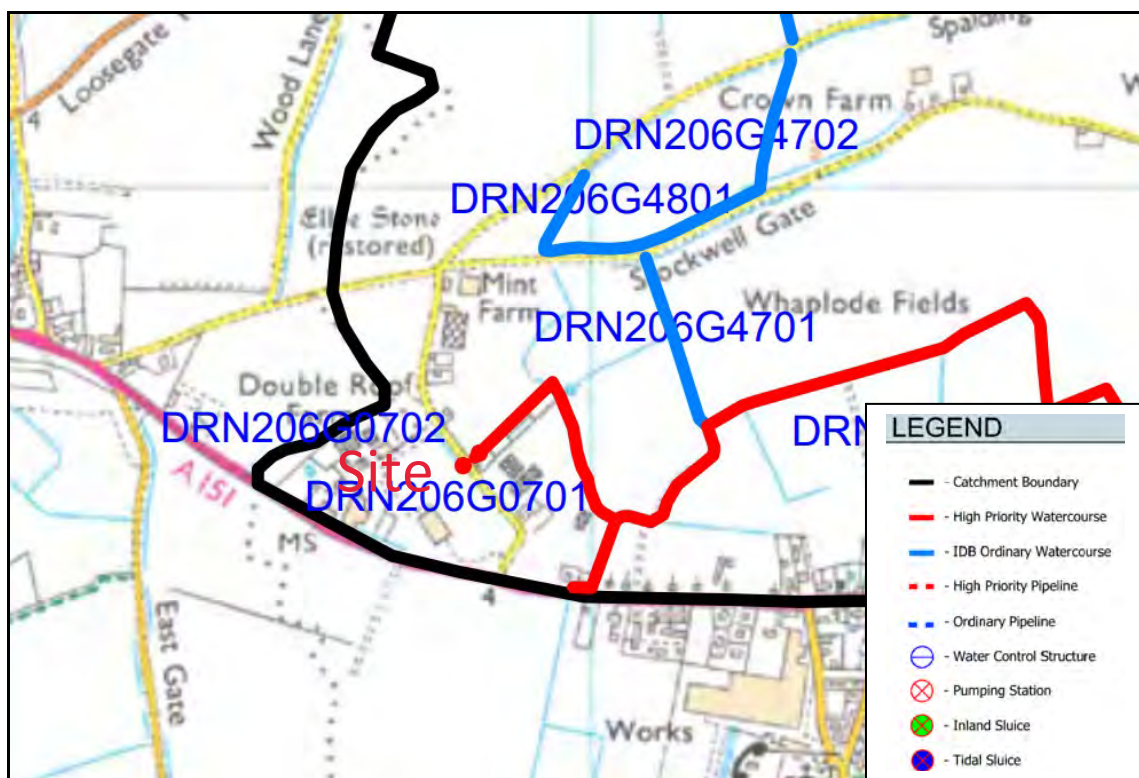
SOUTH HOLLAND INTERNAL DRAINAGE BOARD

The proposed development site is located just within Board's catchment Holbeach River South and the nearest watercourse to the site is Drain No DRN206G370, located to the north of the site.

The Board's prior written consent will be required for any of the following works:

- No person without the previous consent of the Board shall erect any building or structure, whether temporary or permanent, or plant any tree, shrub, willow or other similar growth within 9 metres of the landward toe of the bank where there is an embankment or wall or within 9 metres of the top of the batter where there is no embankment or wall, or where the watercourse is enclosed within 9 metres of the enclosing structure.
- No person shall, without the previous consent of the Board, for any purpose, by means of any channel, siphon, pipeline or sluice or by any other means whatsoever, introduce any water into the District or, whether directly or indirectly, increase the flow or volume of water in any watercourse in the District.

- The erection or alteration of any mill dam, weir or other like obstruction to the flow, or erection or alteration of any culvert within the channel of a riparian watercourse.



South Holland IDB Drainage Map

FLOODING FROM OTHER SOURCES

Flooding is a natural process and can happen at any time from sources other than watercourses and the sea.

- Flooding from land can occur from intense rainfall, often over short duration of time that is unable to soak into the ground or enter the drainage system. However, with the natural topographic nature of the ground being flat, with no high ground around the site this will not cause any rapid inundation of the site and is likely only lead to local ponding of shallow depth and low velocity following the natural land contours. It is concluded that flooding from this source is limited to minor isolated cases and is not of strategic significance as regards to flood risk.
- Groundwater flooding occurs when groundwater levels increase sufficiently for the water table to intersect the ground surface. Groundwater flooding can occur in a variety of geological settings including valleys, in areas underlain by chalk, and in river valleys with thick deposits of alluvium and river gravels. The area is not known to suffer from any groundwater problems.
- Flooding from sewers can occur from overloading from heavy rainfall caused by blockages or having inadequate capacity. There are no public sewers in the vicinity of the site.
- Non-natural or artificial sources of flooding such as reservoirs, lakes, or canals where water is stored

above natural ground level could cause flooding if the structure fails or is over topped. There are no known sources within the vicinity of the site.

SURFACE WATER FLOODING

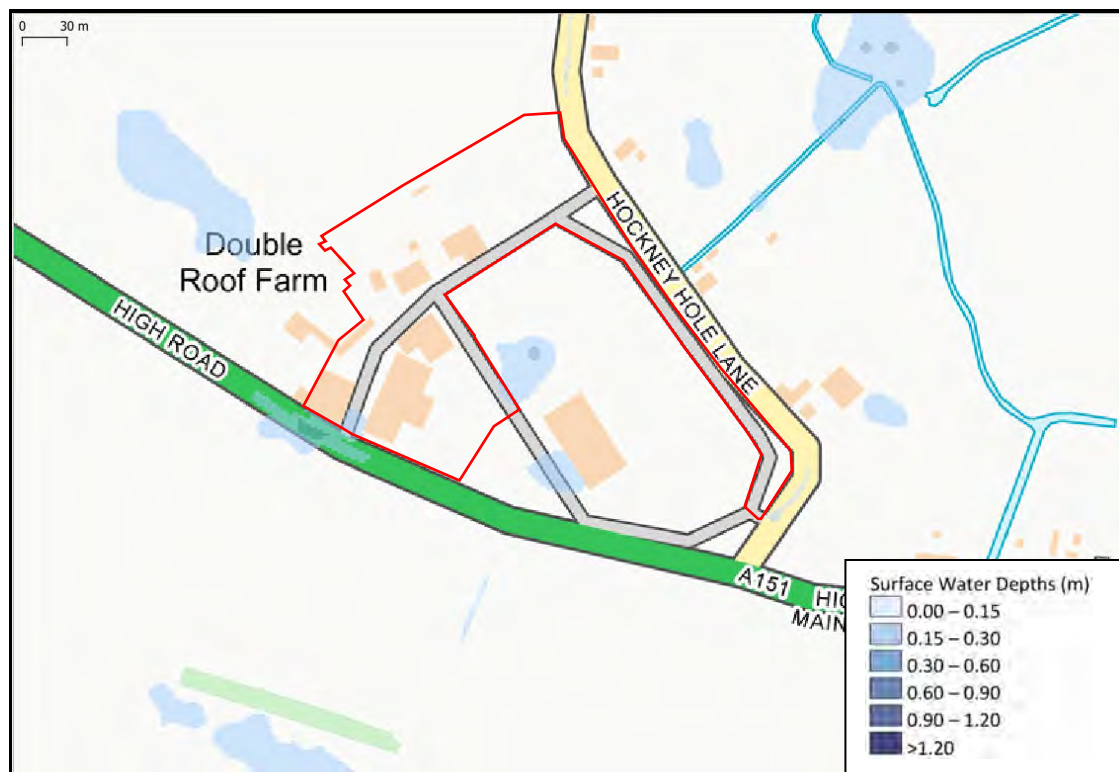
The site for the proposed development is not shown on the Low-Risk scenario Surface Water flood maps, for the 1 in 1000-year event, to be affected from surface water flooding. This type of flooding is usually short lived and associated with heavy downpours of rain, thunderstorms etc.

The maps for surface water and revised maps for river and sea flooding define the risk as High, Medium, Low and Very Low. The chance of flooding for the area defined in any given year is shown below:

- **High:** greater than 1 in 30 (3.3%).
- **Medium:** between 1 in 100 (1%) and 1 in 30 (3.3%).
- **Low:** between 1 in 1000 (0.1%) and 1 in 100 (1%).
- **Very Low:** less than 1 in 1000 (0.1%)

Unlike the fluvial mapping, which is based on a detailed hydraulic model, this mapping is based purely on applying rainfall to a digital terrain model. As such this mapping serves to represent a worst-case scenario which may well overstate the actual probability of flooding in this area.

There is a caveat on the Defra Data website, as to the use of these maps and that they are not to be used to identify that an individual property will flood. Because of the way they have been produced and the fact that they are indicative, these maps are not appropriate to act as the sole evidence for any specific planning or regulatory decision or assessment of risk in relation to flooding at any scale without further supporting studies or evidence.



Risk of Flooding from Surface Water Map (Source EA)

SEQUENTIAL APPROACH

When applying the sequential approach for flood risk in accordance NPPF majority of the site would fall into Flood Zone 1 and the remainder into Flood Zone 2 as shown on the Environment Agency's Flood Map without defences in place.

The Environment Agency categorise land into one of three Flood Zones.

- Flood Zone 1 is land outside the 0.1% floodplain (with a chance of flooding of less than 0.1% chance in any given year) – Low Probability.
- Flood Zone 2 is land that falls between the 1 in 100-year extent and the 1 in 1000-year extent (a chance of flooding between 1% and 0.1% in any given year) – Medium Probability.
- Flood Zone 3a is land which falls within the 1 in 100-year flood extent (has a 1% chance of a flood occurring in any given year) – High Probability.

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPG, the proposed development for industrial use is classified as, "Less Vulnerable" with Table 1 of NPPG stating that such uses are appropriate in this zone (as summarised in Table 3 NPPG).

Table 3: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Flood Zone 1	✓	✓	✓	✓	✓
	Flood Zone 2	✓	✓	Exception Test Required	✓	✓
	Flood Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
	Flood Zone 3b Functional Floodplain	Exception Test Required	✓	✗	✗	✗

Sequential Test and Exceptions Test

NPPF Guidance Paragraphs 159 – 173 requires development within high areas of flood risk be determined using a sequential risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account the impacts of climate change.

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. The NPPF states that development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. It is important to note that the Sequential Test

does not specifically mean that sites such as this cannot be developed, rather that sites at less risk should be developed first.

It is considered that as the whole of the site stands within an area which is not shown on the tidal breach maps to be affected from flooding following a breach to the defences, with climate change, that there is not a less vulnerable area where the proposal could be located.

Paragraph 168 of the updated NPPF states- *Applications for some minor development and **changes of use** should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments.*

This proposal which is to provide commercial floor space would also provide all year-round employment opportunities thereby supporting the local economy.

With the application being for a change of use for Less Vulnerable uses, the Exceptions test is not required.

CLIMATE CHANGE

Global warming is now recognised that it is likely to affect the frequency and severity of extreme events for both tidal and fluvial flooding. The Climate change allowances in the NPPF Guidance was updated on the 20th of July 2021. The sea level allowances were further revised on the 17th December 2019, the peak river flows were revised on the 20th July 2021 and peak rainfall allowances on the 10th May 2022

Peak River Flow Allowances

For flood risk assessments use the Management Catchment Climate Changes for the peak river flow map. Management catchments are sub-catchments of River Basin Districts.

The site is located within the Welland Management Catchment within the Anglian River Basin District, for sites within Flood Zone 2 or 3a and for “More Vulnerable” land uses, the Central allowances figures, in the Table below, should be used.

Peak River flow allowances within the Management Catchment Allowances				
River Basin District /Management Catchment	Allowance category	Total potential change anticipated for '2020s'. (2015 to2039)	Total potential change anticipated for '2050s'. (2040 to2069)	Total potential change anticipated for '2080s'. (2070 to2115)
Anglian/ Welland	Upper End	17%	28%	55%
	Higher Central	4%	10%	26%
	Central	4%	10%	22%

The effect of global warming on peak rainfall allowances is given in Table 1.

Table 1 Peak Rainfall Intensity

Table 1 Peak rainfall intensity allowance in small and urban catchments (1961 to 1990 baseline)			
Applies across all of England	Total potential change anticipated for 2010 to 2039	Total potential change anticipated for 2040 to 2059	Total potential change anticipated for 2060 to 2115
Upper End	10%	20%	40%
Central	5%	10%	20%

The annual sea rise due to climate change is given in NPPF and the recommended contingency allowances are stated in Table 2.

Table 2 Peak Sea Level Rise

Table 2 Peak Sea level allowance for each epoch in (mm) per year with cumulative sea level rise for each epoch in brackets (use 1981 to 2000 baseline)						
Area of England) (Use River Basin	Allowance	2000 to 2035	2036 to 2065	2066 to 2095	2096 to 2125	Cumulative Rise 2000 to 2125 (m)
Anglian	Higher Central	5.8 (203mm)	8.7 (261mm)	11.6 (348mm)	13 (390mm)	1.20m
Anglian	Upper End	7 (245mm)	11.3 (339mm)	15.8 (474mm)	18.1 (543mm)	1.6m

DRAINAGE STATEMENT

Applications for developments where the proposals will result in the increase the amount of surface water run-off require that an appropriate drainage strategy to be undertaken to ensure that the surface water discharge mimics the existing pre-development regime.

Any proposed surface water drainage system will need to be designed to account for the effects of climate change over the lifetime of the development. Based on the recommendations the proposed drainage systems should be sized for the critical 1 in 100-year storm event and to allow for a 40% increase in rainfall intensity for climate change.

In accordance with recognised guidance, Part H of the Building Regulations 2010 and National Planning Policy Framework, there is a hierarchy of where surface water should discharge. This hierarchy should be followed where practicable, and is as follows:

- 1) Infiltration
- 2) Watercourse
- 3) Public sewer

Surface Water Drainage and Foul Water Drainage

With the proposed development being a change of use of existing buildings from agriculture to industrial use with no increase to the footprint of any building or to any hardstanding area, the present surface water and foul drainage facilities will remain as existing, These have served the site for many years without giving rise to any problems.

As there is to be a positive drainage system capable of receiving flows from the development there is no likely

impact on neighbouring property.

FLOOD RESILIENCE CONSTRUCTION

Any impact of damage to the properties can be foreseen and mitigated against by relatively simple design and construction techniques. There are two forms of flood protection works: -

- **Flood-resistance or proofing works**- these try to reduce the amount of water entering a building.
- **Flood-resilient works**: - these reduce the amount of damage caused by water entering the building.

The proposed development will have the following resilient measures incorporated in the construction in accordance with "Improving the flood performance of new buildings" CLG (2007).

- o The ground floor level for the retained buildings shall remain at the existing levels.
- o Water, electricity, and gas meters: should be located above the predicted flood level. Electrical services: electrical sockets, heating systems: boiler units and ancillary devices should be installed at least 500mm above the ground floor level to minimise damage to electrical services. Electric ring mains should be installed at high level with drops to ground floor sockets and switches.
- o Avoid the use of mineral fibre insulation to the ground floor level (walls & floor) and use a rigid closed cell material as these retain integrity and have low moisture take-up.
- o Where possible, all service entries should be sealed (e.g., with expanding foam or similar closed cell material). Closed cell insulation should be used for pipes which are below the predicted flood level.
- o As this site is in an area that is capable of receiving flood warnings from the Environment Agency Floodline Warning Direct system. It is recommended that the property owner contact the Environment Agency's Floodline on 0345 988 1188 to register the property to receive advance warning of flooding by telephone, mobile, fax, SMS text, email or pager. The Environment Agency aim to issue a 'severe flood warning' approximately 2 hours before existing defences are overtopped.

CONCLUSION

- o The site does have the protection of tidal/fluvial flood defences which are well maintained by the Environment Agency.
- o Part of the site for the proposed development is shown to be within Flood Zone 2 as detailed on the Environment Agency's Flood Zone Maps without defences. Although this area is in flood zone 2, the actual risk of the site flooding from any Environment Agency source or IDB watercourse is very low, as the site is shown to be at no at risk of flooding if a breach occurs to the flood defences in 2115.

- o The Flood Risk Vulnerability Classification in Table 2 of NPPG the proposed industrial development is classified as “Less Vulnerable”, with Table 1 of NPPG stating that such uses are appropriate in this zone.
- o The 2017 Update to SHDC, SFRA has carried out a Tidal & Fluvial Hazard Mapping, for the district, following a breach to the defences. The present-day Residual Flood Hazard, Depth and Velocity District – present day 1% fluvial and 0.5%Tidal Event Probability Maps show that the site where the proposed development is to be located is within an area of no hazard. The Hazard, Velocity and Depth Maps, for year 2115, also shows that the site is not within a hazard area
- o The ground floor level for the buildings, to be retained, shall remain at the existing levels as the site is not affected from flooding following a breach to the flood defences.
- o Any impact of damage to the property can be foreseen and mitigated against by relatively simple design and construction techniques. They will be constructed using materials which are flood resilient construction as outlined in the report.
- o Flooding from other sources is unlikely to impact the site.
- o No obvious constraints have been identified that may impact the proposed development and the type of mitigation measures that can be used to reduce the flood risk, there is no increase in the flood risk to others.
- o It is therefore concluded that the proposed development can be constructed, safely and sustainably, to meet the requirements of the South Holland District Council Development Plan Policies, and the National Planning Policy Framework.

East Coast and Wash - 2018 Coastal Flood Boundary [CFB] Dataset

Key Node Points

Map 1



East Coast and Wash: Immingham to the West Lighthouse

2018 Coastal Flood Boundary Extreme Sea Levels

CFB REF	LOCATION	EASTING	NORTHING	ANNUAL CHANCE (1 IN X) OF TIDE LEVEL IN METRES ODN																						
				1			10			50			100			200			300			1000				
				Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound				
				2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%
3888	Immingham	520440	417625	4.16	4.17	4.19	4.50	4.53	4.62	4.73	4.80	5.00	4.83	4.93	5.19	4.93	5.06	5.41	4.98	5.14	5.55	5.15	5.38	6.01		
3890	Haborough Marsh	522100	416512	4.14	4.15	4.17	4.48	4.51	4.60	4.70	4.77	4.97	4.80	4.90	5.16	4.90	5.03	5.38	4.94	5.10	5.51	5.11	5.34	5.97		
3898	Grimsby	529295	413162	3.98	3.99	4.01	4.31	4.34	4.43	4.53	4.60	4.80	4.61	4.71	4.97	4.71	4.84	5.19	4.74	4.90	5.31	4.88	5.11	5.74		
3906	Buck Beck	534709	407369	3.87	3.88	3.90	4.19	4.23	4.31	4.41	4.50	4.68	4.50	4.61	4.86	4.61	4.75	5.10	4.64	4.82	5.22	4.80	5.05	5.66		
3910	Tetney	538035	405537	3.85	3.86	3.89	4.17	4.22	4.30	4.40	4.50	4.67	4.49	4.61	4.86	4.60	4.75	5.10	4.63	4.82	5.21	4.80	5.06	5.66		
3918	Donna Nook	544641	401997	3.82	3.83	3.86	4.14	4.19	4.27	4.38	4.48	4.65	4.47	4.60	4.85	4.58	4.74	5.10	4.63	4.82	5.22	4.81	5.08	5.68		
3928	Saltfleet	549131	393360	3.78	3.79	3.82	4.11	4.16	4.26	4.36	4.46	4.64	4.47	4.59	4.86	4.57	4.74	5.11	4.63	4.83	5.25	4.83	5.11	5.74		
3942	Boygrift	555131	380860	3.72	3.74	3.77	4.06	4.11	4.22	4.33	4.43	4.65	4.43	4.57	4.87	4.56	4.73	5.13	4.62	4.83	5.28	4.85	5.15	5.82		
3968	Gibraltar Point	557652	356181	4.16	4.17	4.20	4.51	4.56	4.67	4.76	4.85	5.08	4.85	4.97	5.27	4.94	5.10	5.49	4.99	5.18	5.63	5.14	5.41	6.09		
3992_14	Hobhole	535990	340116	4.96	4.97	5.01	5.40	5.44	5.56	5.66	5.76	5.98	5.78	5.90	6.20	5.88	6.04	6.44	5.92	6.11	6.57	6.03	6.31	6.99		
	Grand Sluice*	532366	344510	4.93	4.94	4.98	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3		
3992_9	Boston Barrier	532754	342852	4.93	4.94	4.98	5.41	5.45	5.57	5.73	5.83	6.05	5.85	5.97	6.27	5.93	6.09	6.49	5.94	6.13	6.59	5.98	6.26	6.94		
3992_5	Fosdyke Bridge	531886	332234	4.87	4.88	4.92	5.31	5.35	5.47	5.58	5.68	5.90	5.71	5.83	6.13	5.82	5.98	6.38	5.87	6.06	6.52	6.01	6.29	6.97		
4008	West Lighthouse	550094	329971	4.87	4.88	4.91	5.21	5.26	5.37	5.46	5.56	5.78	5.56	5.68	5.98	5.66	5.82	6.21	5.71	5.90	6.35	5.86	6.14	6.81		
-	Marsh Road	525988	324065	-	5.04	-	-	5.44	-	-	5.73	-	-	5.85	-	-	5.98	-	-	-	-	-	-	-		
-	Wisbech	546110	309940	-	4.83	-	-	5.25	-	-	5.53	-	-	5.66	-	-	5.78	-	-	-	-	-	-	-		
-	Dog-in-a-Doublet	527200	299287	-	3.67	-	-	4.00	-	-	4.22	-	-	4.32	-	-	4.42	-	-	-	-	-	-	-		

See next page for notes

2018 Coastal Flood Boundary Extreme Sea Levels

NOTES:

The following notes apply to all CFB sites (ie all on table excluding Marsh Road, Wisbech, Dog-in-a-Doublet)

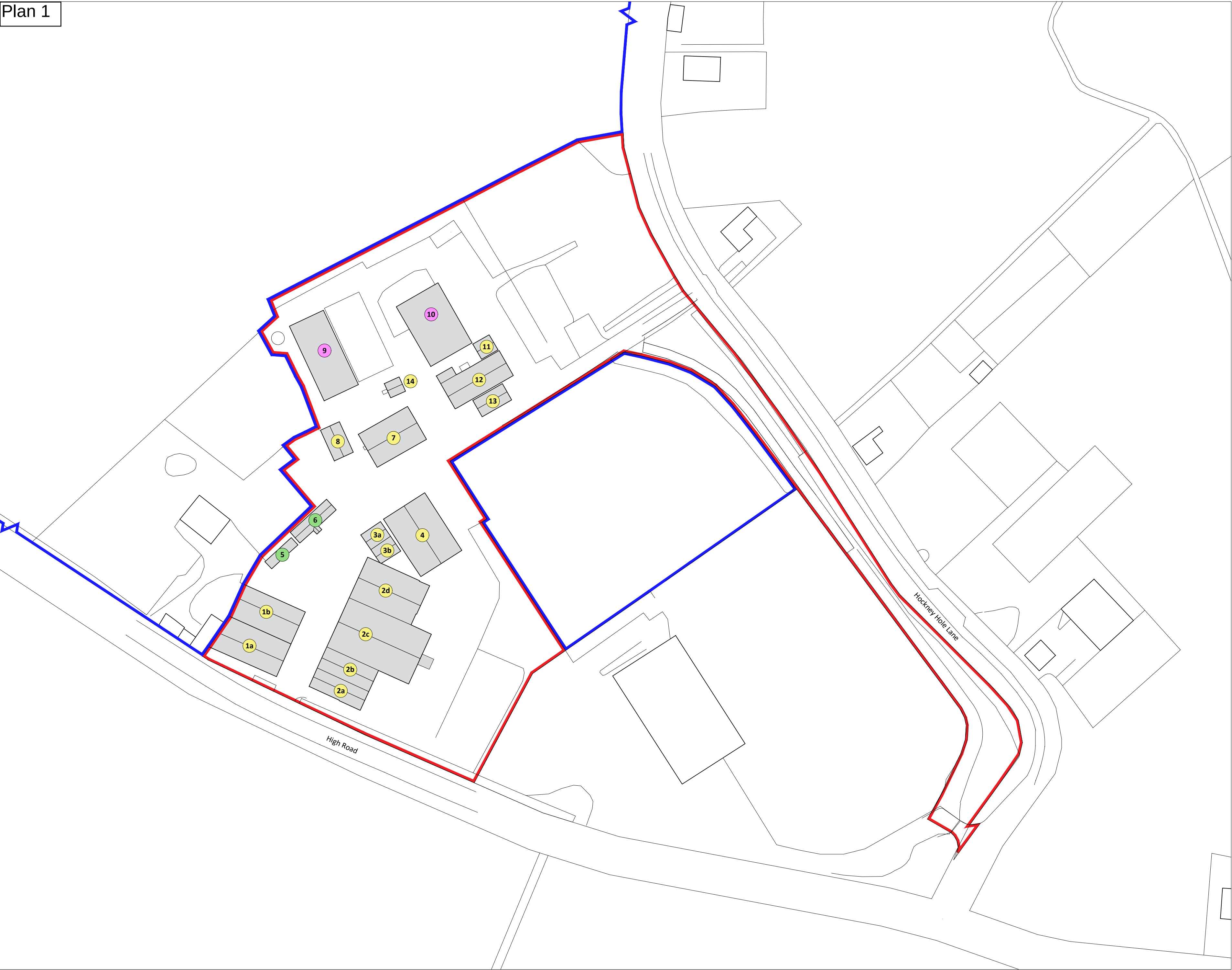
- The base date for the data is 2017.
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- Levels for other annual chance probabilities are available if required.
- For additional information relating to the 2018 Coastal Flood Boundary Extreme Sea Levels or to access the full dataset for the above sites or intermediate locations refer to the Defra Metadata Catalogue at <https://deframetadadata.com/geonetwork/srv/eng/catalog.search#/metadata/84a5c7c0-d465-11e4-b0bd-f0def148f590>

The following notes apply to all Marsh Road, Wisbech, Dog-in-a-Doublet

- The base date for the data is 2006
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- Levels for other annual chance probabilities are available if required.
- These levels will be updated as their respective tidal river models are updated.

The following notes apply to Grand Sluice

- The data is based on CFB 2018 data for Boston Barrier site, capped at 5.3mAOD to reflect use of the barrier.
- The base date for the data is 2017
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- For additional information relating to the 2018 Coastal Flood Boundary Extreme Sea Levels or to access the full dataset for the above sites or intermediate locations refer to the Defra Metadata Catalogue at <https://deframetadadata.com/geonetwork/srv/eng/catalog.search#/metadata/84a5c7c0-d465-11e4-b0bd-f0def148f590>



Notes

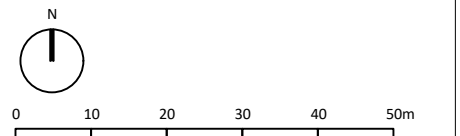
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- Buildings subject to change of use
1a,1b,2a,2b,2c,2d,3a,3b,4,7,8,11,12,13,14
- Buildings to be demolished
9,10
- Existing building use to be retained
5,6



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Client F Dring & Son		
Project High Road Moulton, Whaplode		
Drawing Site Plan		
Scale @ A2 1: 1000		Date 07/07/23
Drawn By WW		Checked By LMS
Job Number 1539-1	Status SK	Purpose of Issue Discussion
Drawing No. 1539-1_SK_SP01		Rev -



Floor Plan

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012345m

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F Dring & Son

Project

High Road
Moulton, Whaplode

Drawing

Shed 1a - Existing floor plan

Scale @ A3

1: 100

Date

07/07/23

Drawn By

WW

Checked By

LMS

Job Number

1539-1

Status

SK

Purpose of Issue

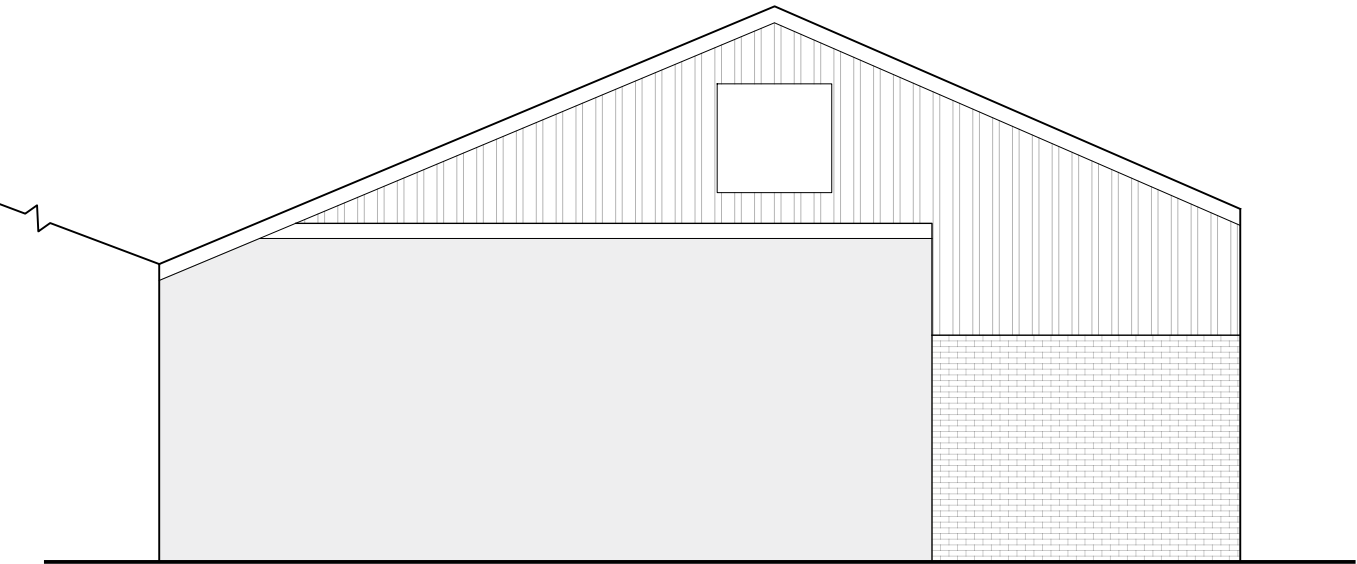
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Drawing No.

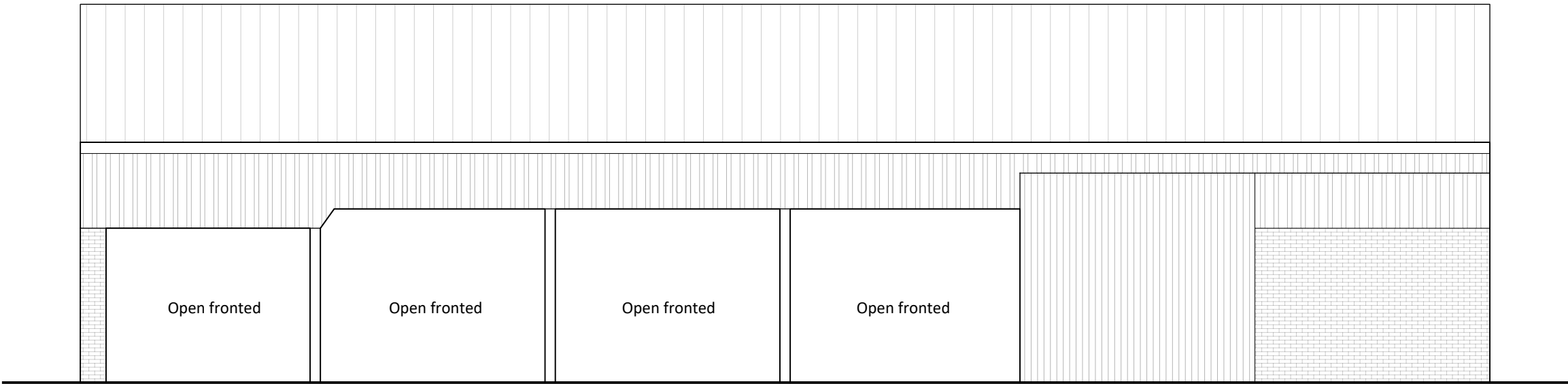
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Rev

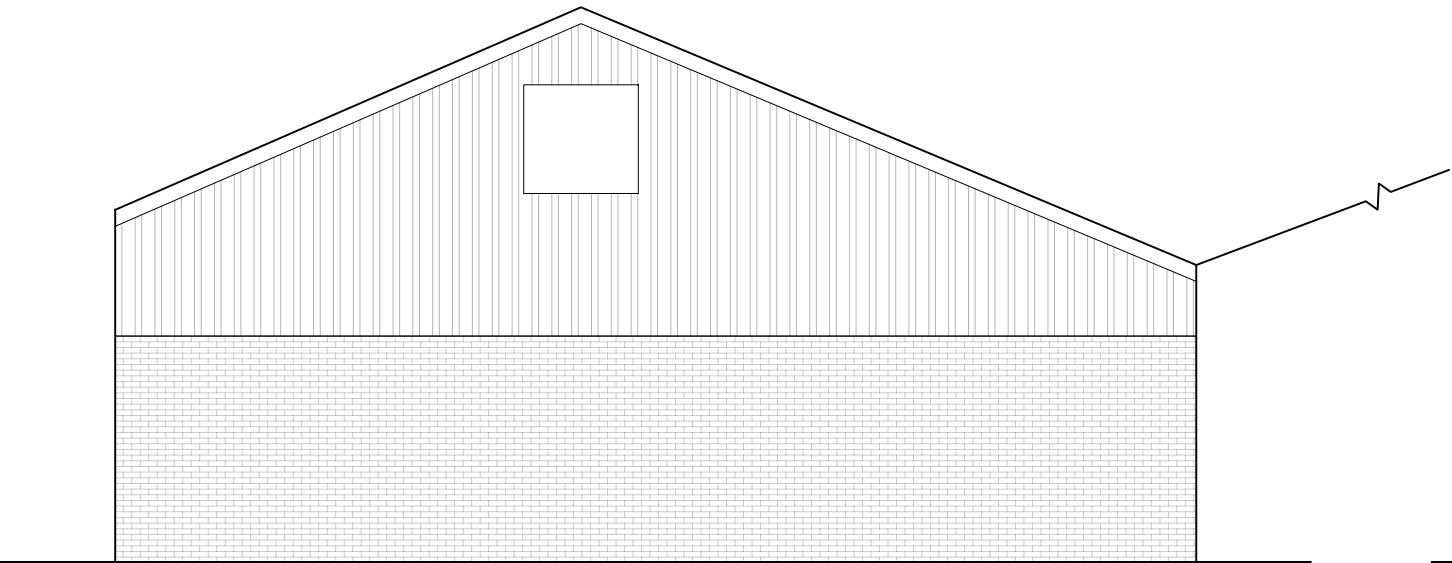
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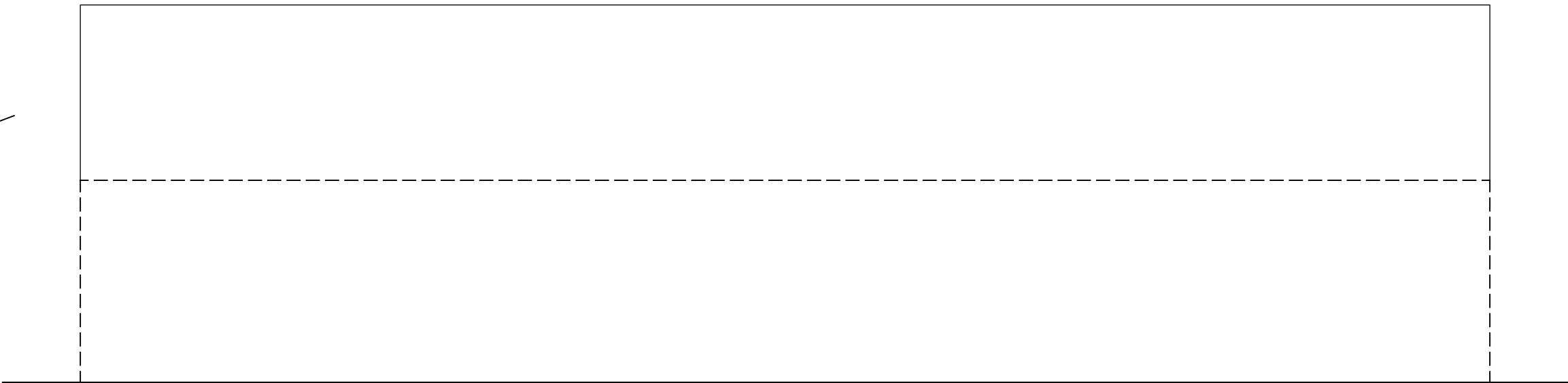
East Elevation



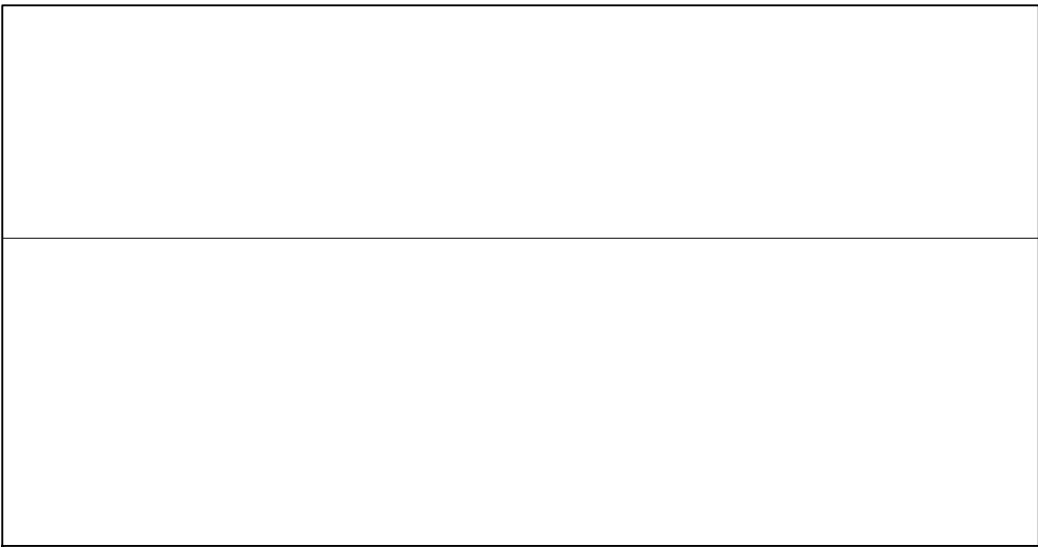
North Elevation



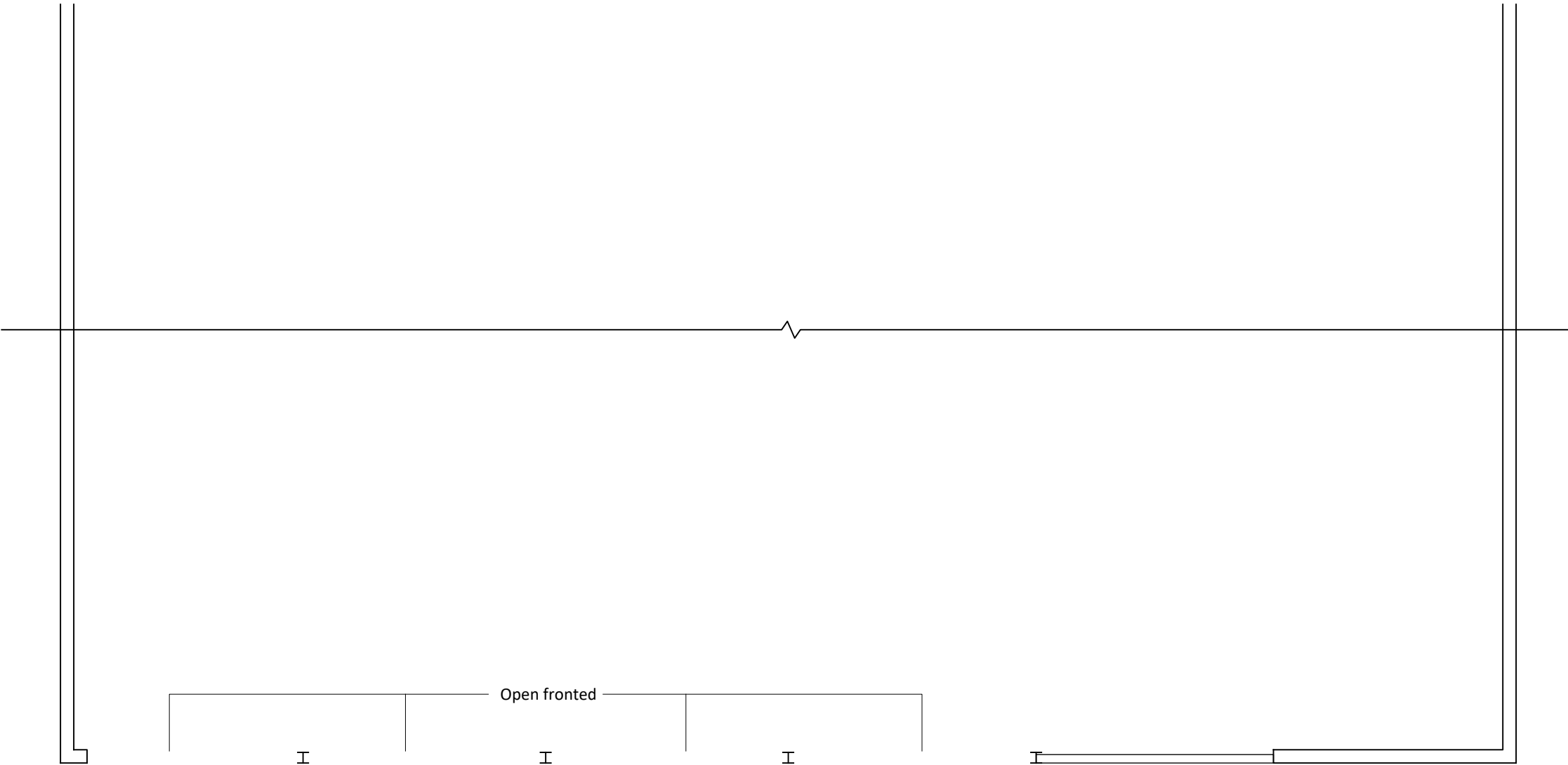
West Elevation



South Elevation (abuts adjacent shed)



Roof Plan (1:200)



Floor Plan

Notes

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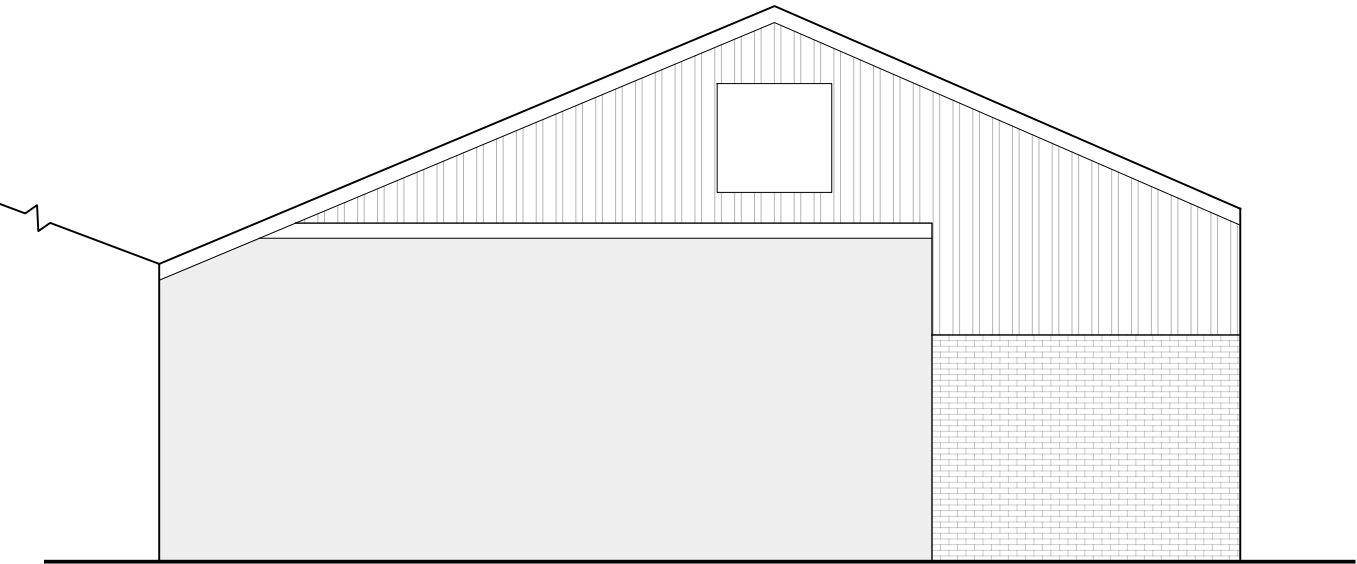
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Shed 1b - Existing Plans and Elevations

Scale @ A2 1: 100	Date 16/02/23
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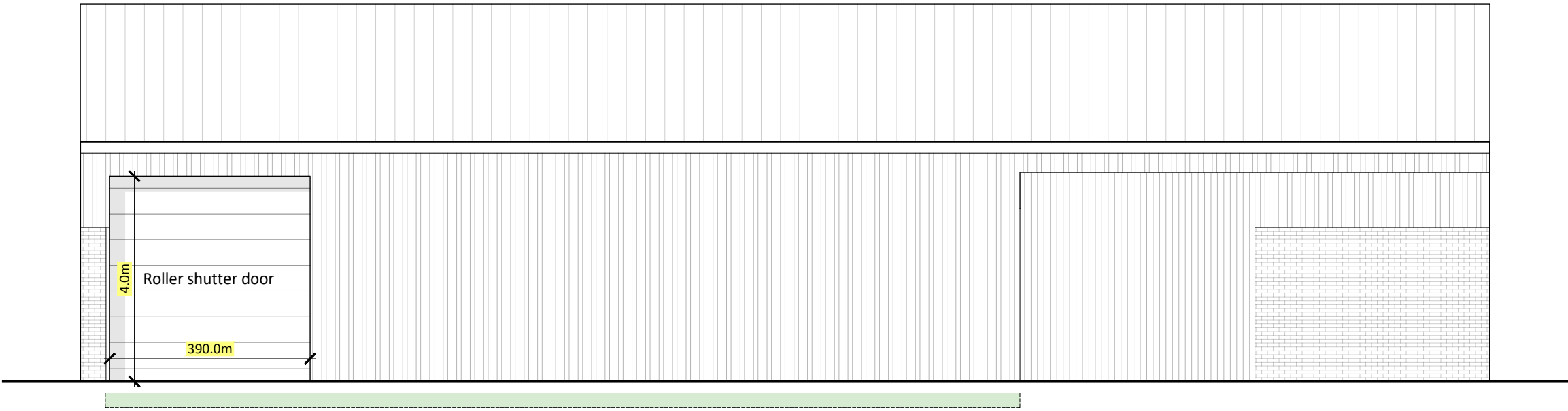
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Job Number 1539-1	Status SK	Purpose of Issue Discussion
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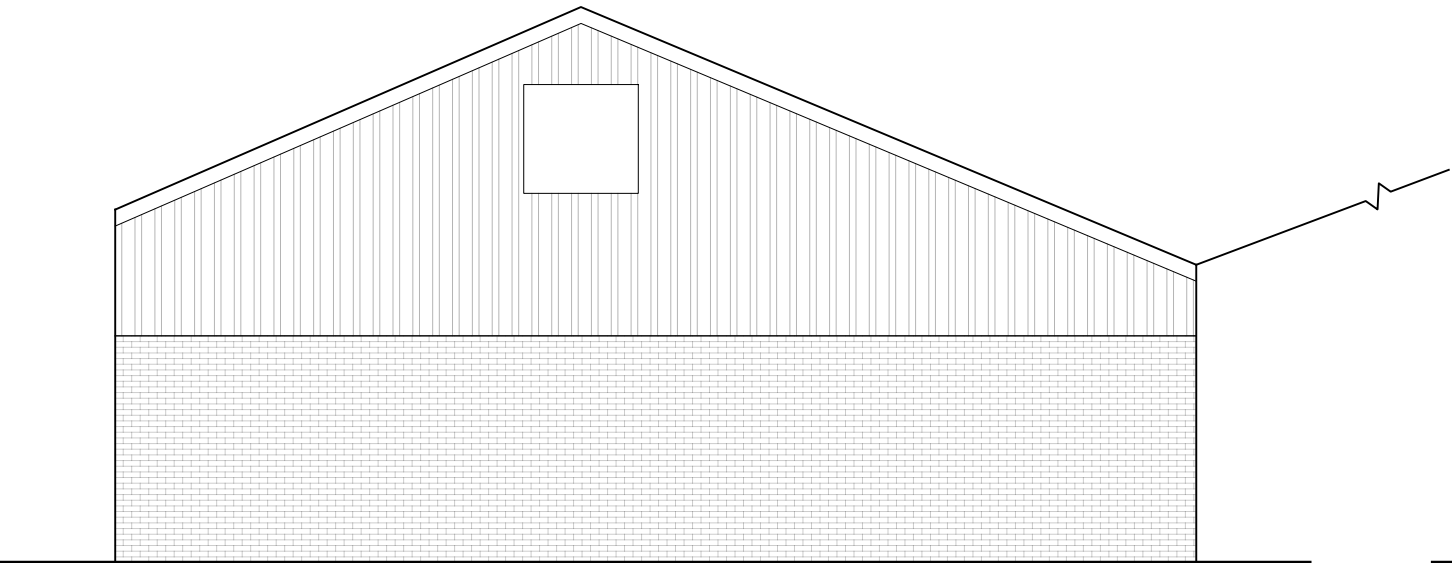
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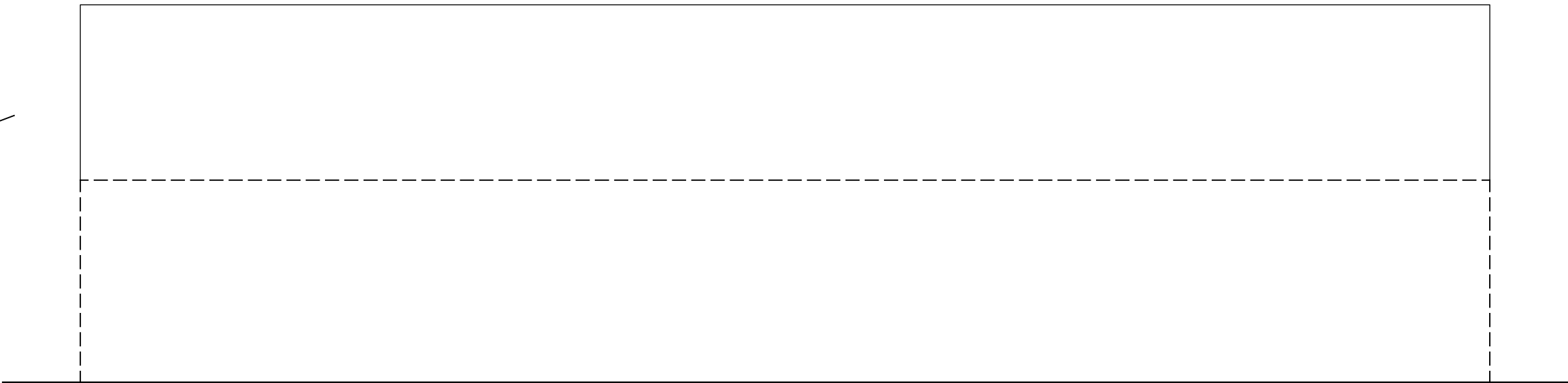
East Elevation



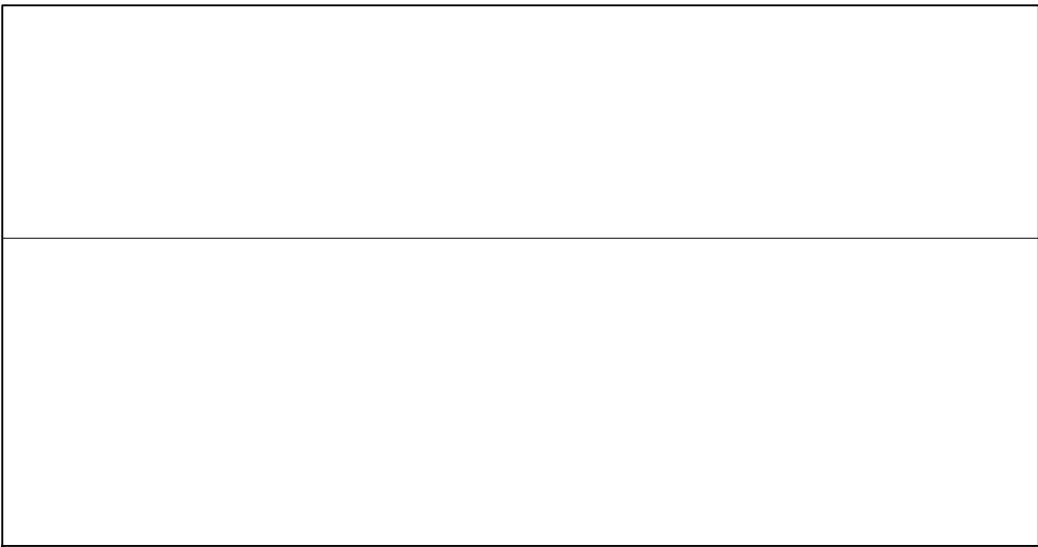
North Elevation
Cladding to open fronted elevation



West Elevation

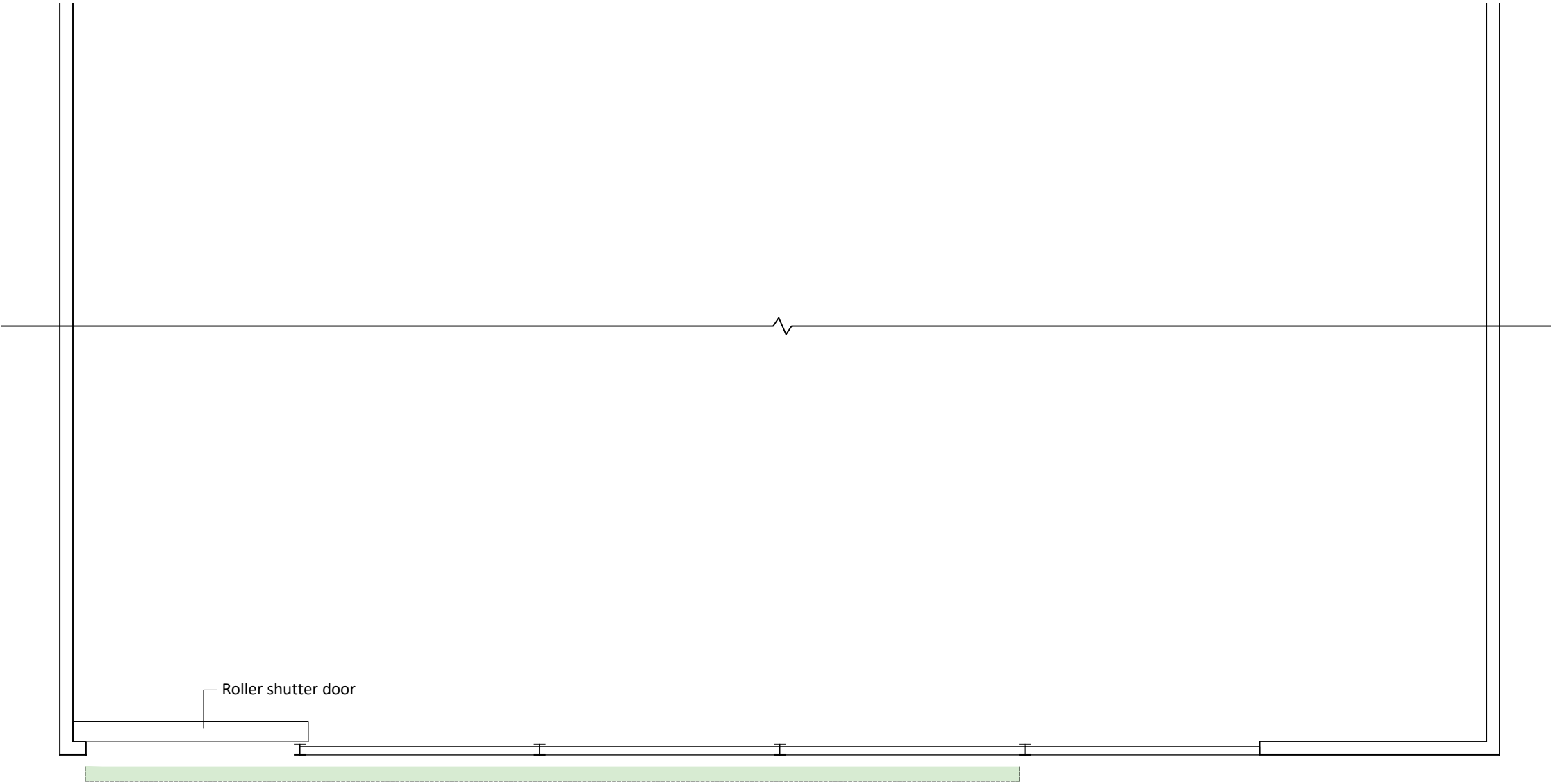


South Elevation (abuts adjacent shed)



Roof Plan (1:200)

0 2 4 6 8 10m



Floor Plan
Cladding to open fronted elevation

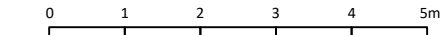
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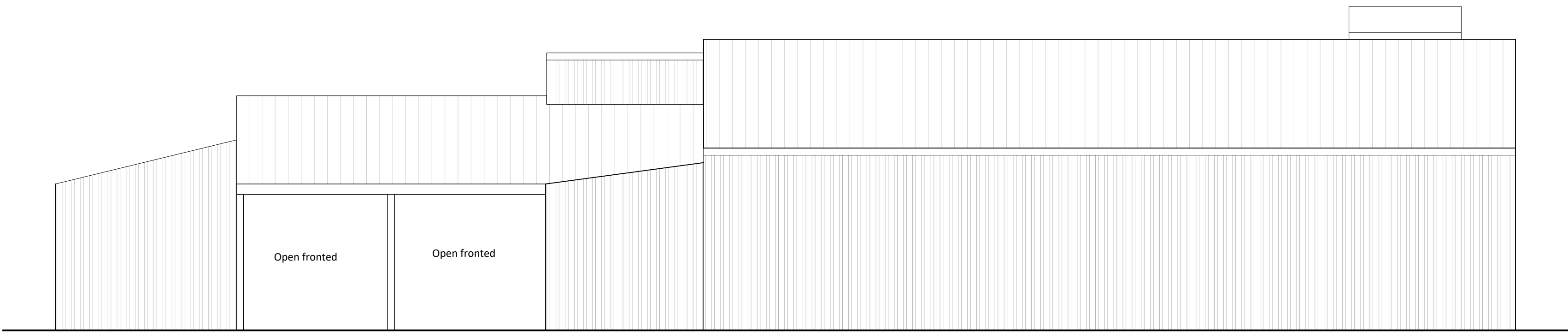
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Shed 1b - Proposed Plans & Elevations

Scale @ A2 1: 100	Date 16/02/23
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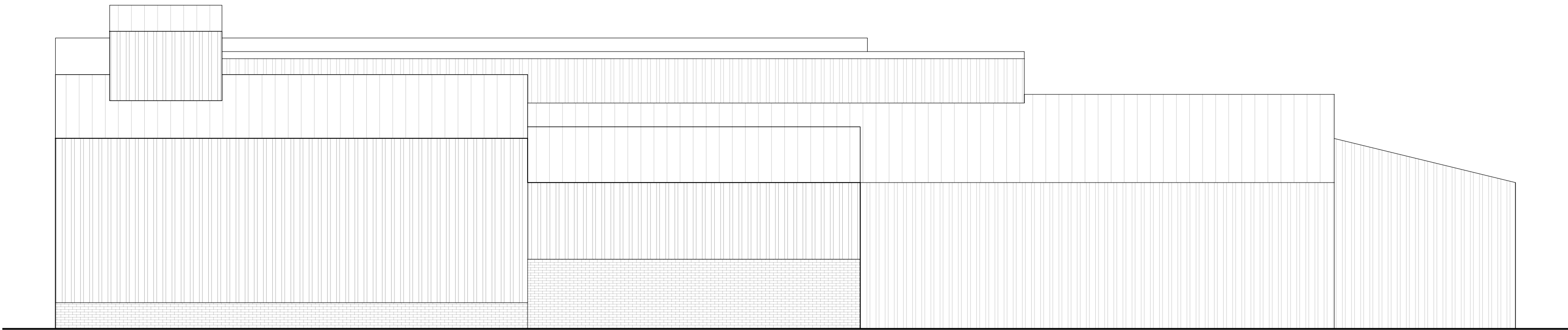
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Job Number 1539-1	Status SK	Purpose of Issue Discussion
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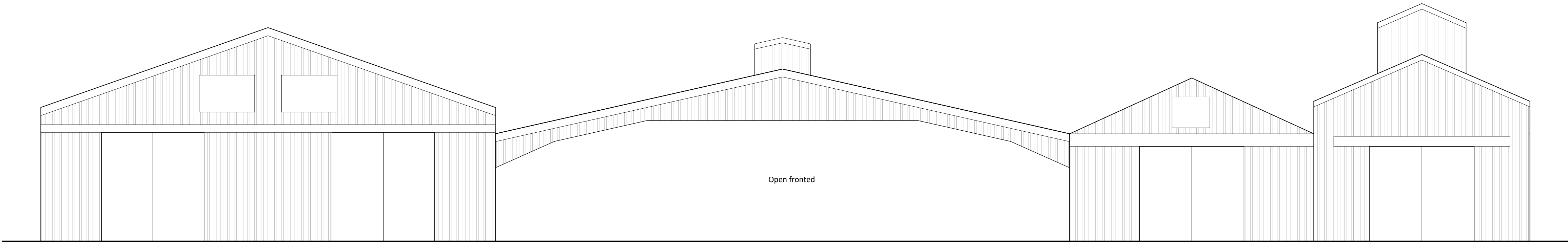
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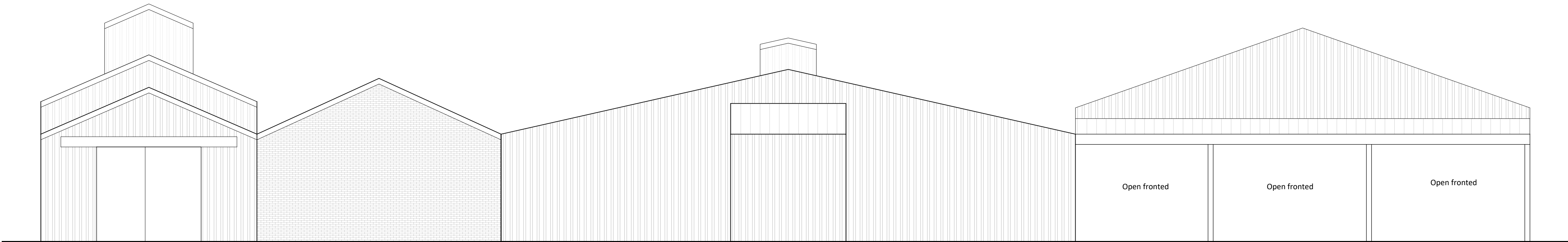
North East Elevation



South West Elevation



North West Elevation



South East Elevation

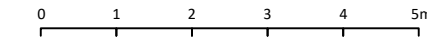
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Project
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Moulton, Whaplode

Drawing
Shed 2 - Existing Elevations

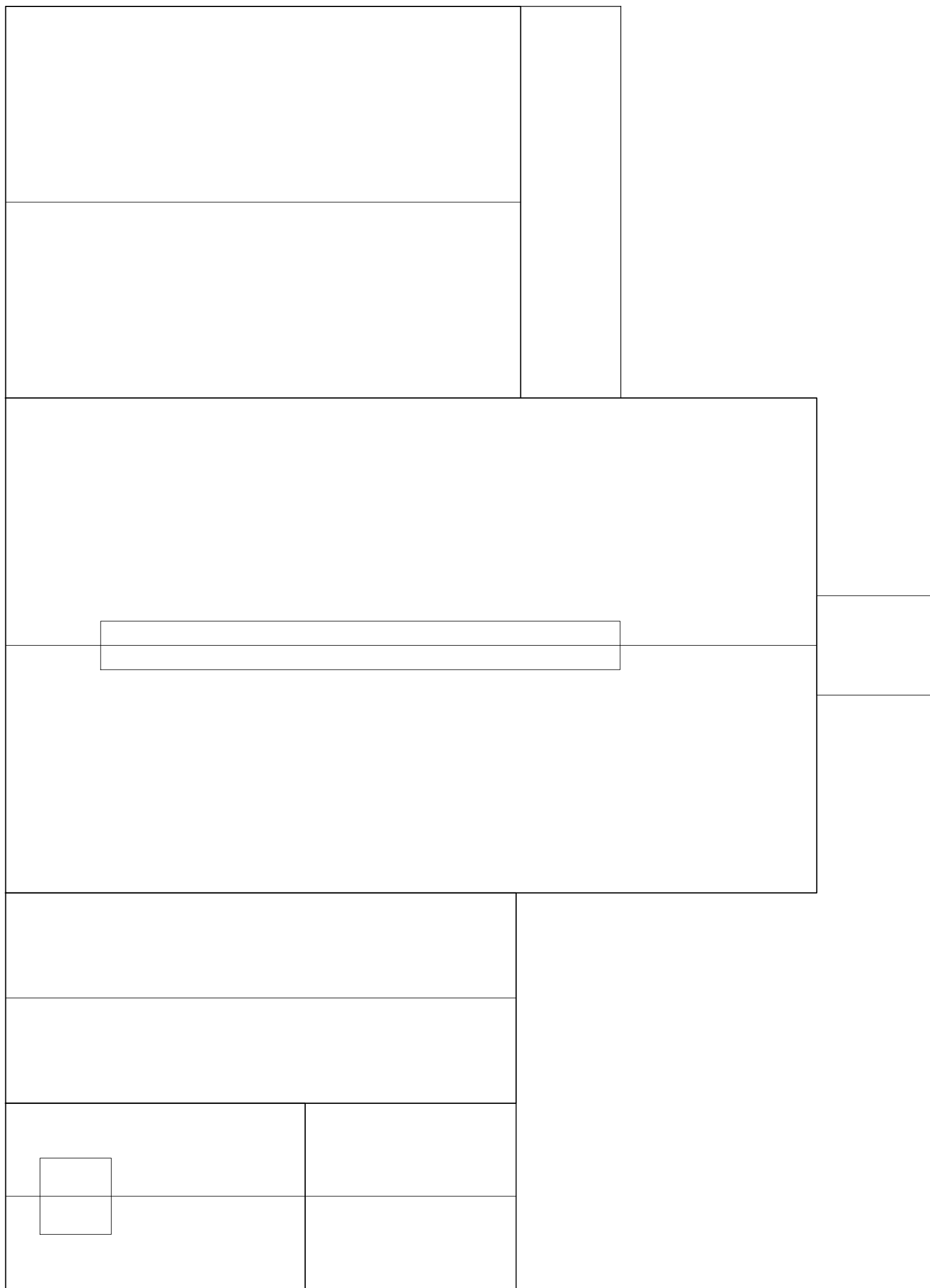
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Drawn By WW	Checked By LMS
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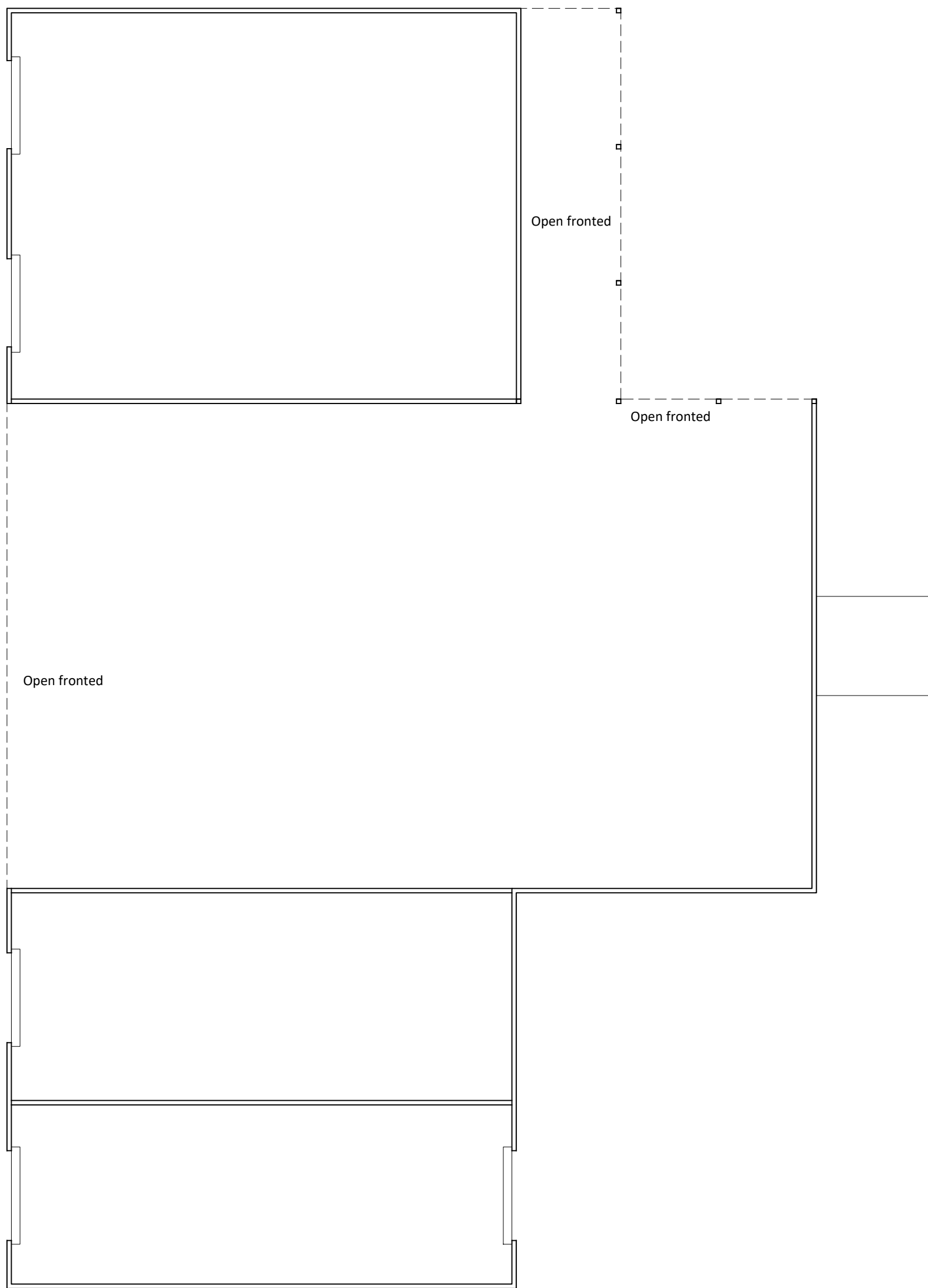
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Drawing No. 1539-1_SK_GA02	Rev
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Plan 6



Roof Plan



Floor Plan

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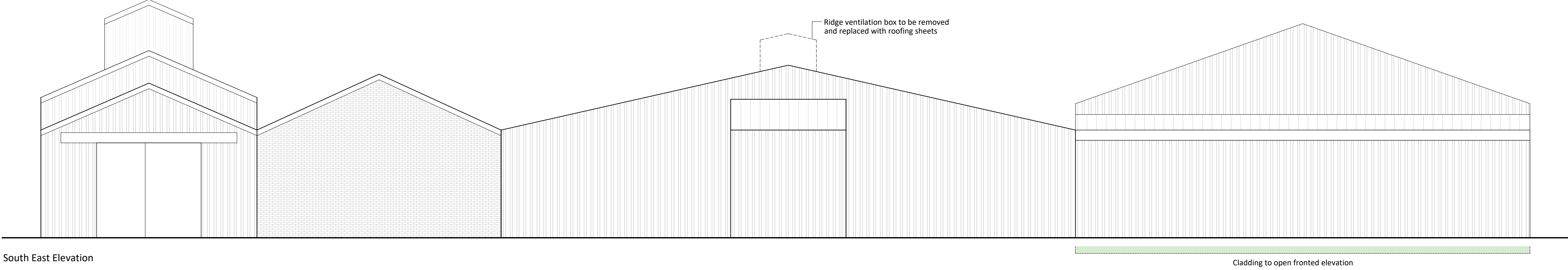
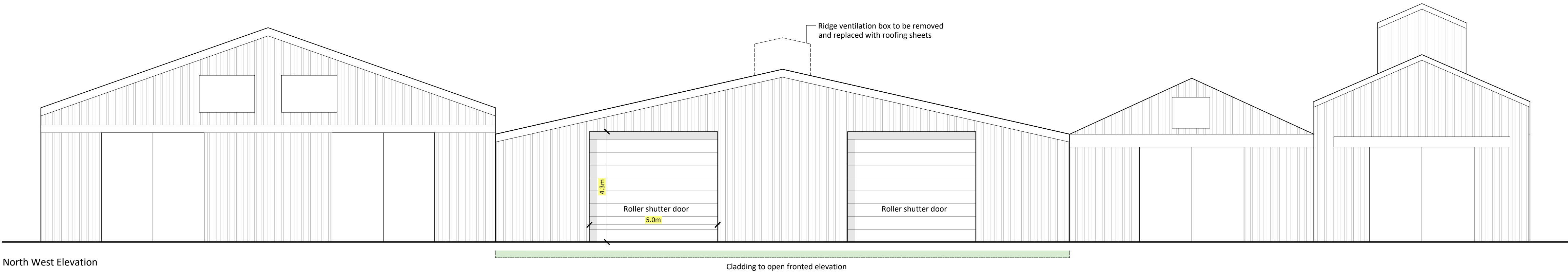
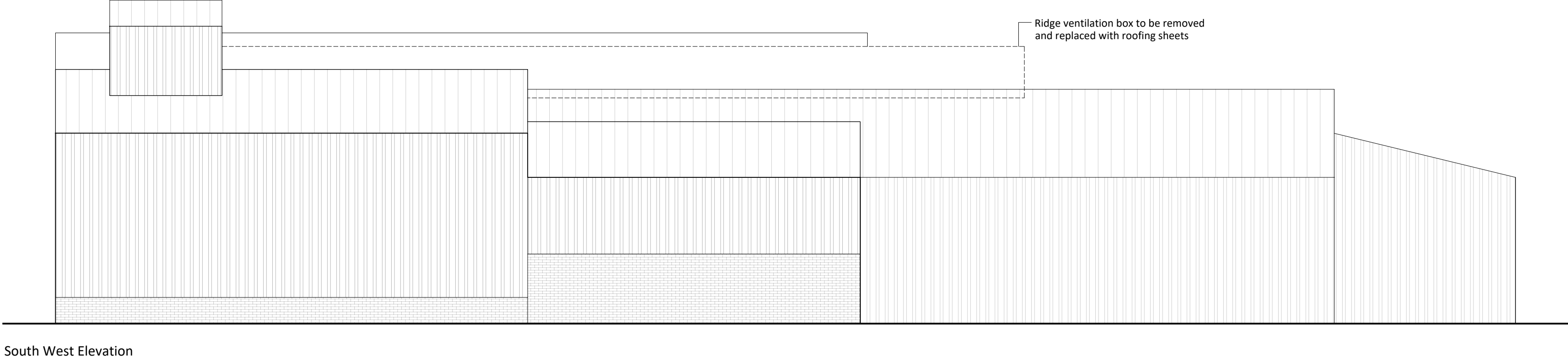
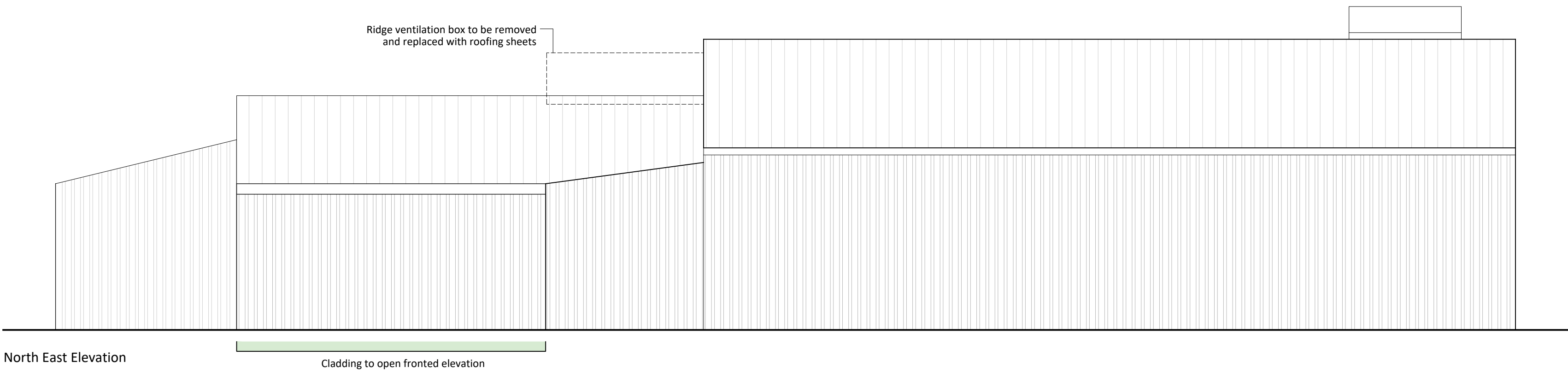
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Client		
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Project		
High Road		
Moulton, Whaplode		
Drawing		
Shed 2 - Existing Plans		
Scale @ A2		Date
1: 200		16/02/23
Drawn By		Checked By
WW		LMS
Job Number	Status	Purpose of Issue
1539-1	SK	Discussion
Drawing No.		Rev
1539-1_SK_GA03		-



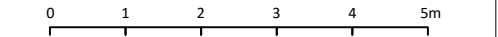
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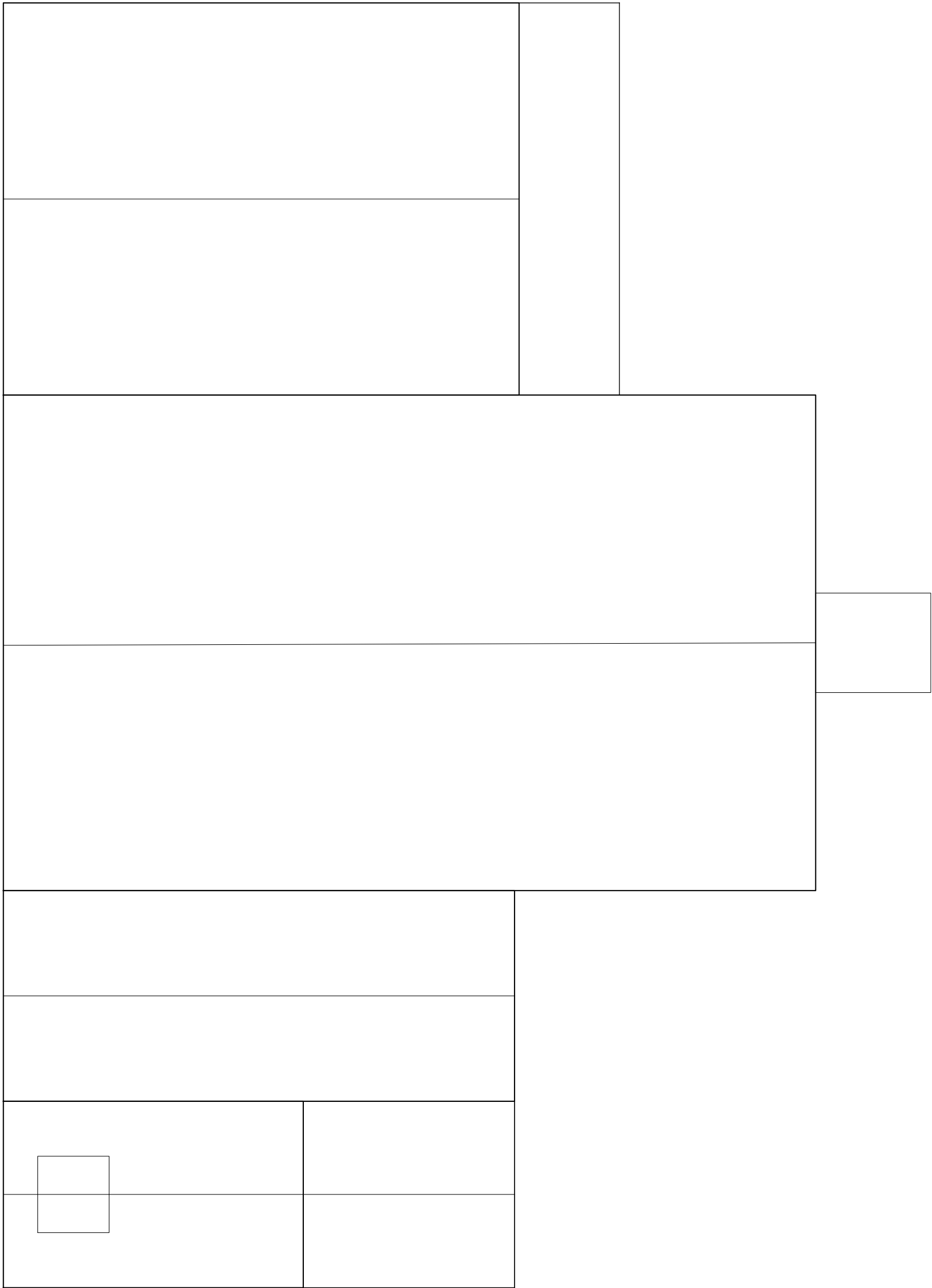
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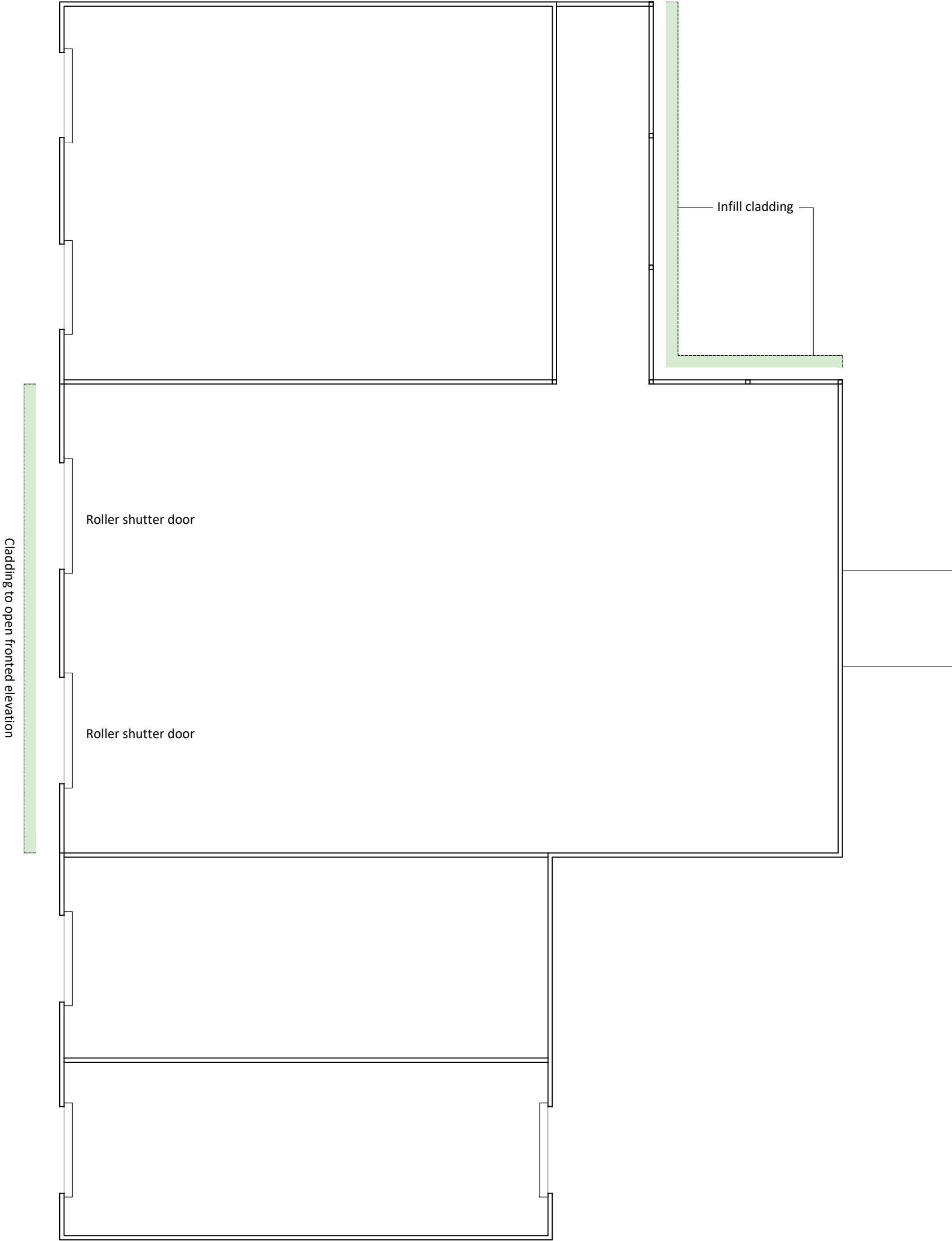
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Client F Dring & Son		
Project High Road Moulton, Whaplode		
Drawing Shed 2 - Proposed Plans & Elevations		
Scale @ A1 1: 100		Date 16/02/23
Drawn By WW		Checked By LMS
Job Number 1539-1	Status SK	Purpose of Issue Discussion
Drawing No. 1539-1_SK_GA07		
		Rev -



Roof Plan



Floor Plan

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0 2 4 6 8 10m

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rdc

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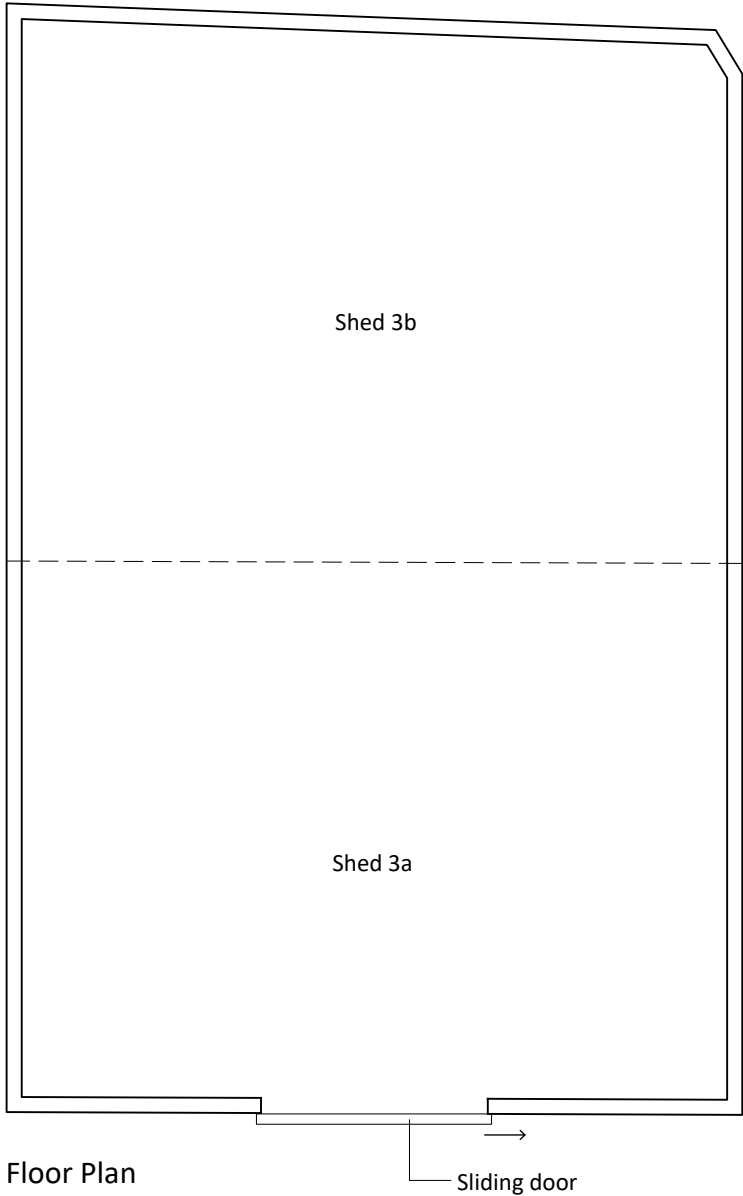
Client
F Dring & Son

Project
High Road
Moulton, Whaplode

Drawing
Shed 2 - Proposed Plans

Scale @ A2 1: 200		Date 16/02/23
Drawn By WW		Checked By LMS
Job Number 1539-1	Status SK	Purpose of Issue Discussion

Drawing No. 1539-1_SK_GA08	Rev -
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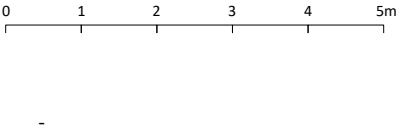
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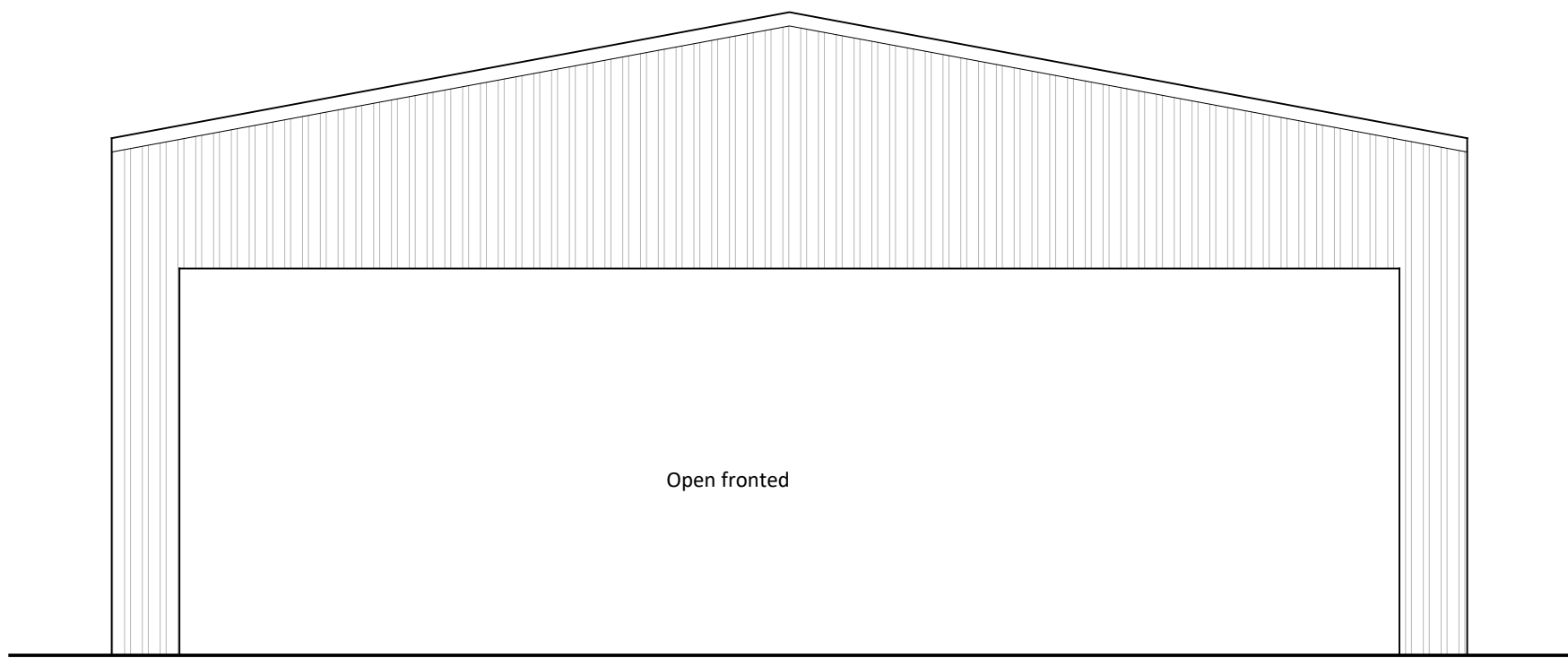
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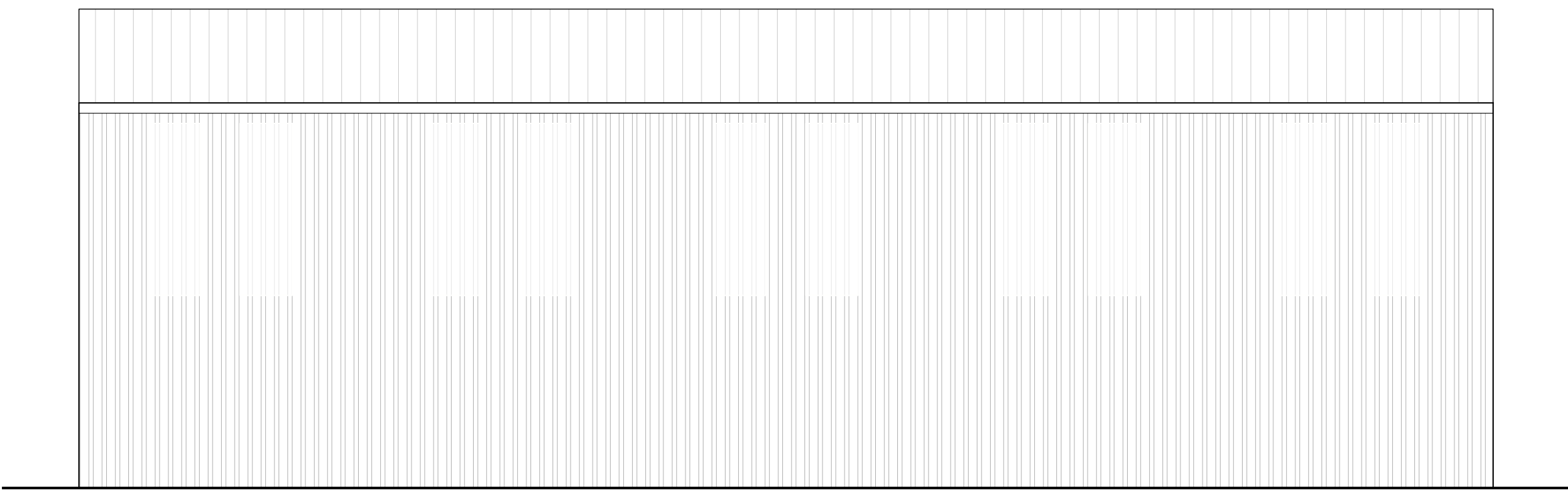
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Email: admin@rdc-landplan.co.uk
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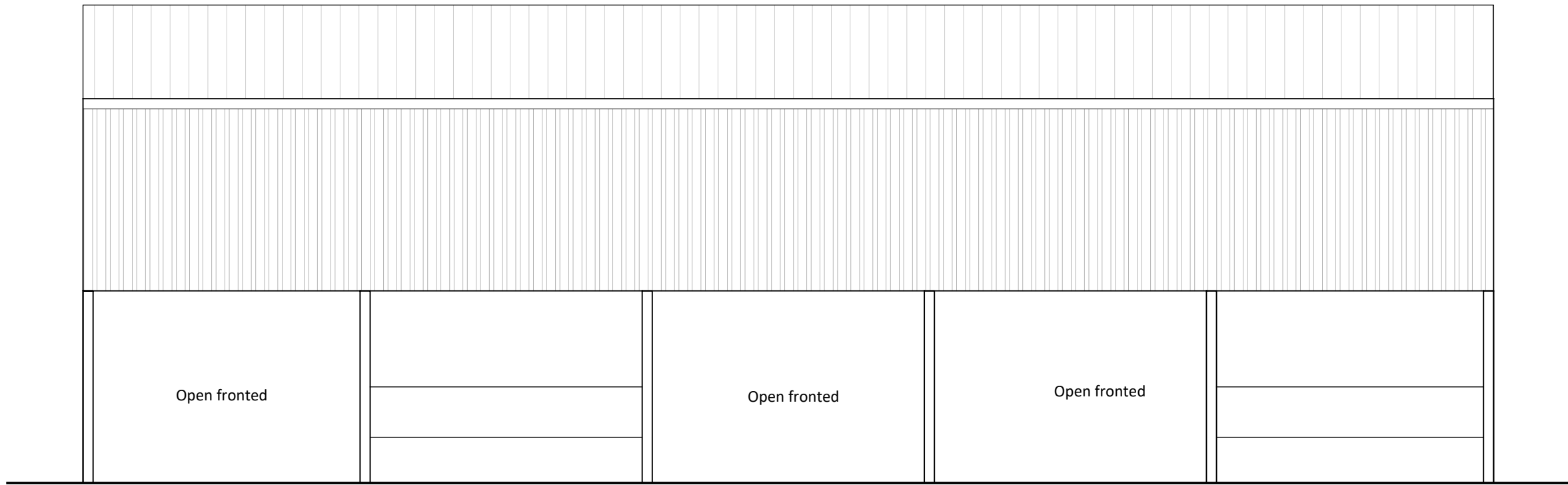
Client F Dring & Son		
Project High Road Moulton, Whaplode		
Drawing Shed 3a/ 3b - Existing floor plan		
Scale @ A3 1: 100		Date 07/07/23
Drawn By WW		Checked By LMS
Job Number 1539-1	Status SK	Purpose of Issue Discussion
Drawing No. 1539-1_SK_GA12		Rev -



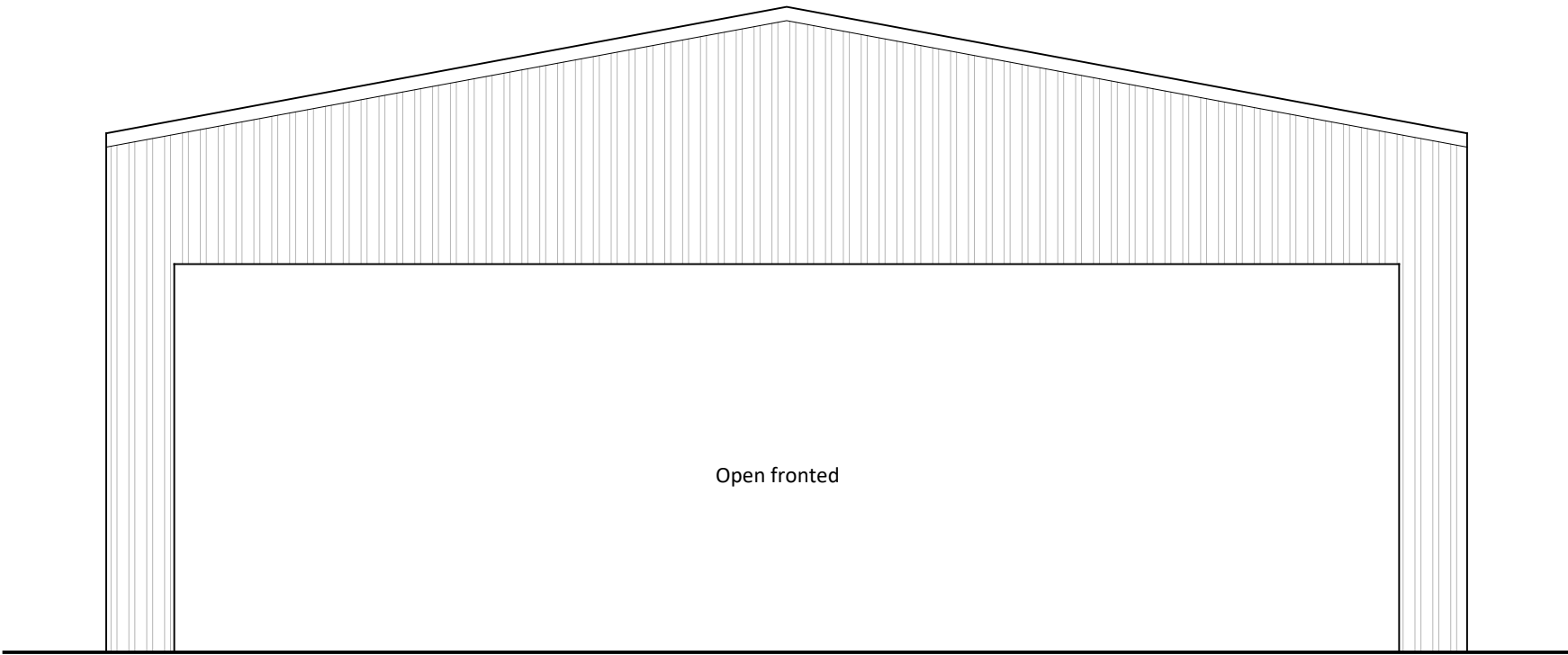
North West Elevation



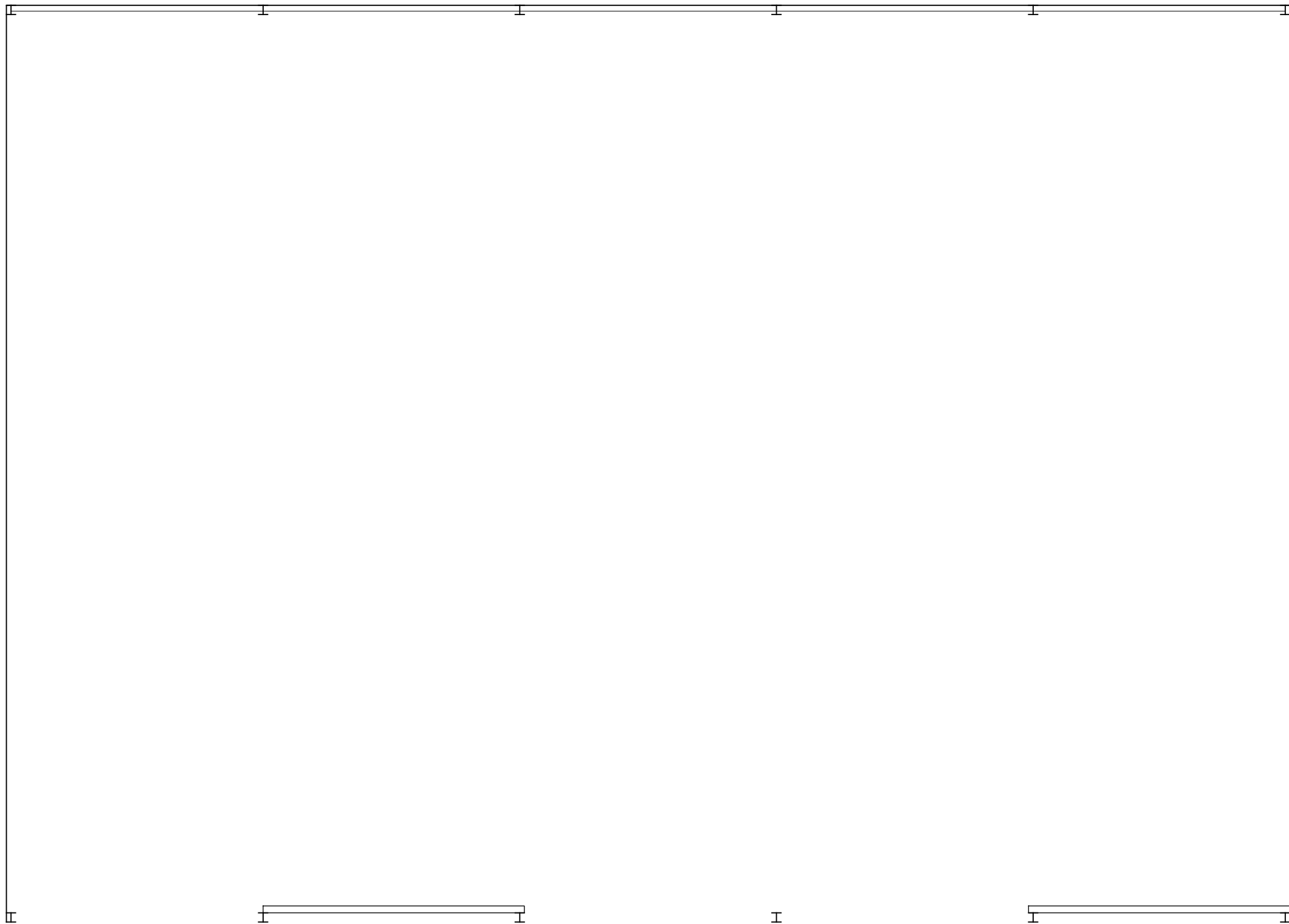
North East Elevation



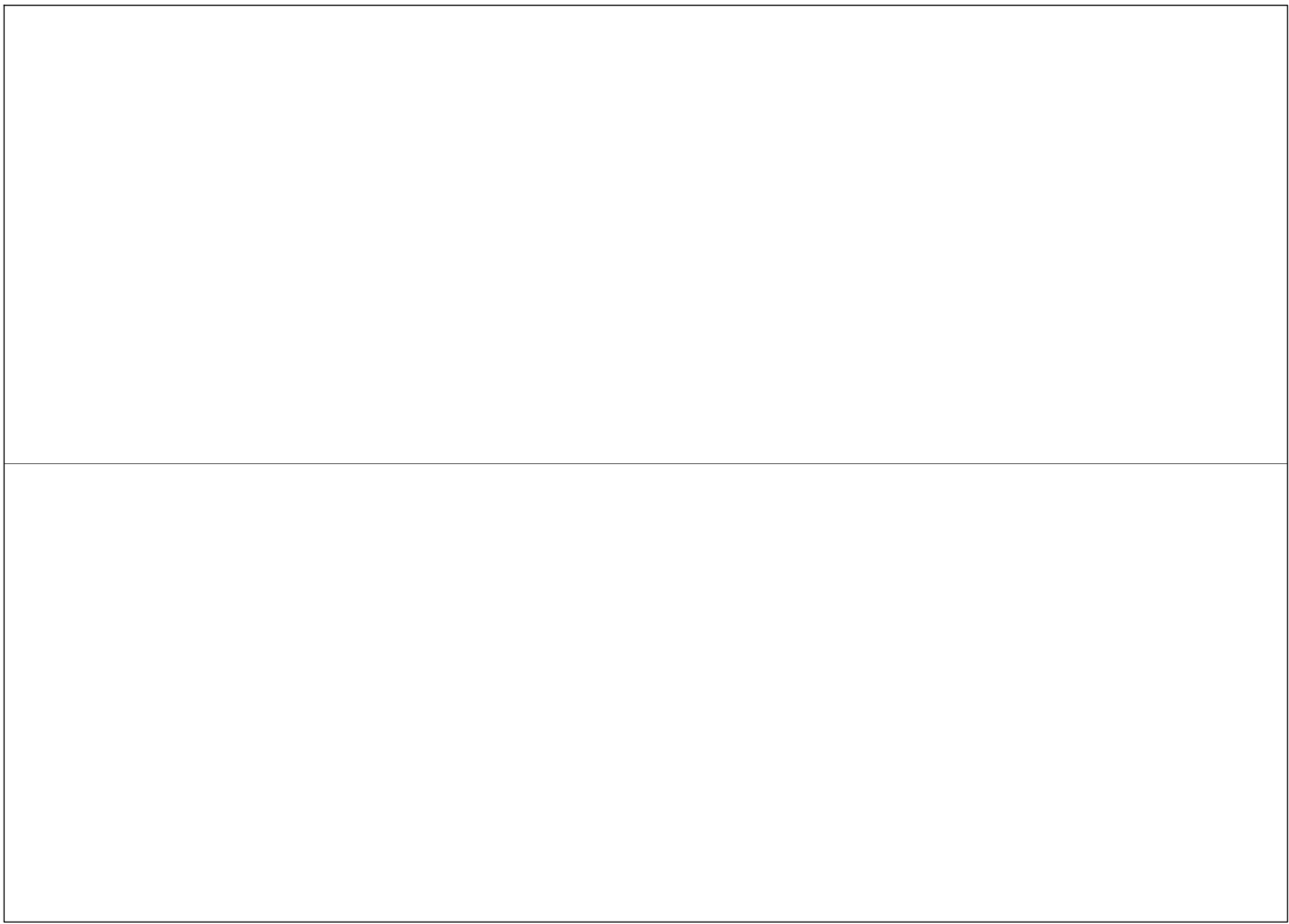
South West Elevation



South East Elevation



Floor Plan



Roof Plan

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012345m

Rev

Description

Date

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Client
F Dring & Son

Project
High Road
Moulton, Whaplode

Drawing
Shed 4 - Existing Plans and Elevations

Scale @ A1
1: 100

Date
16/02/23

Drawn By
WW

Checked By
LMS

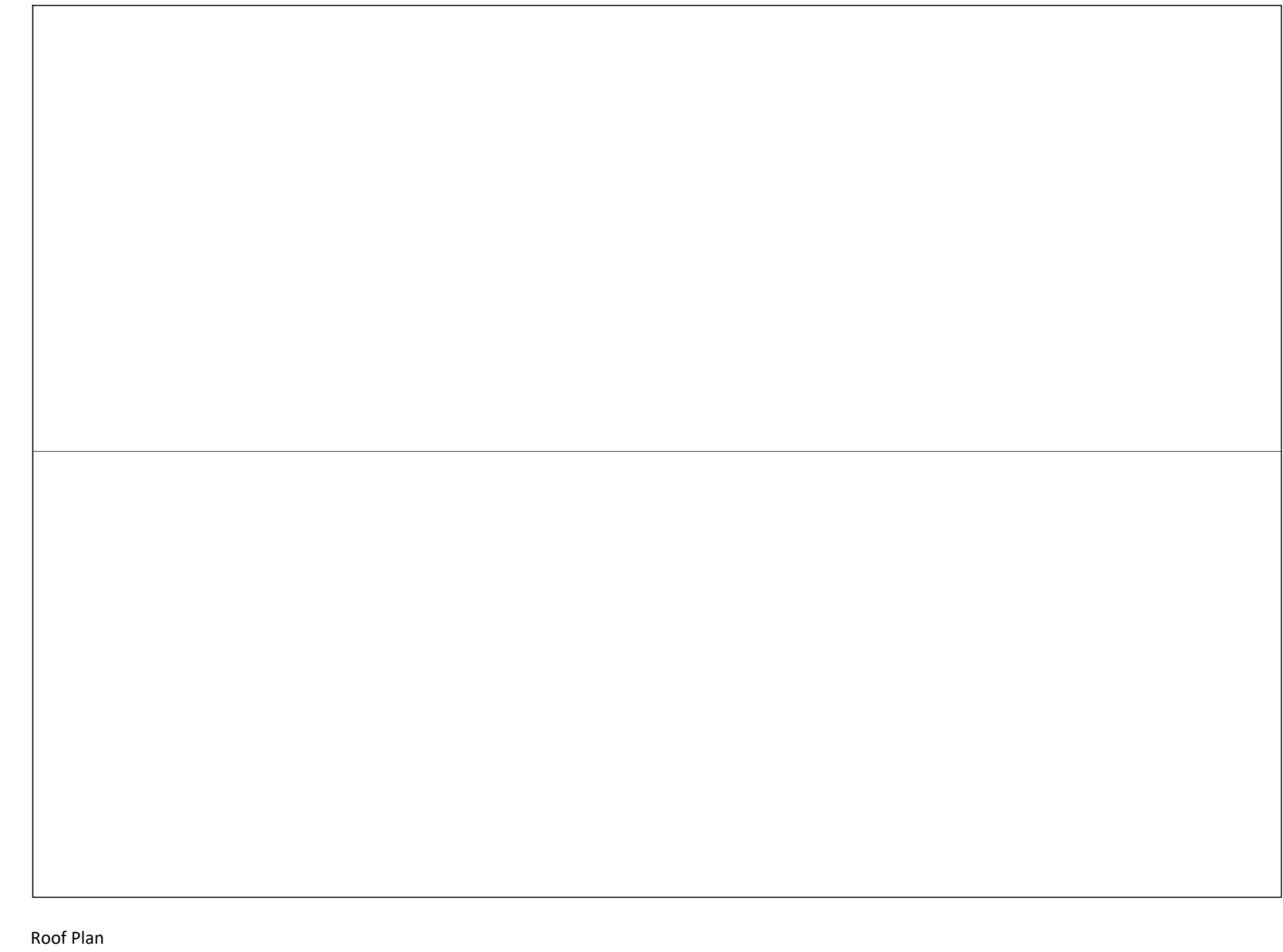
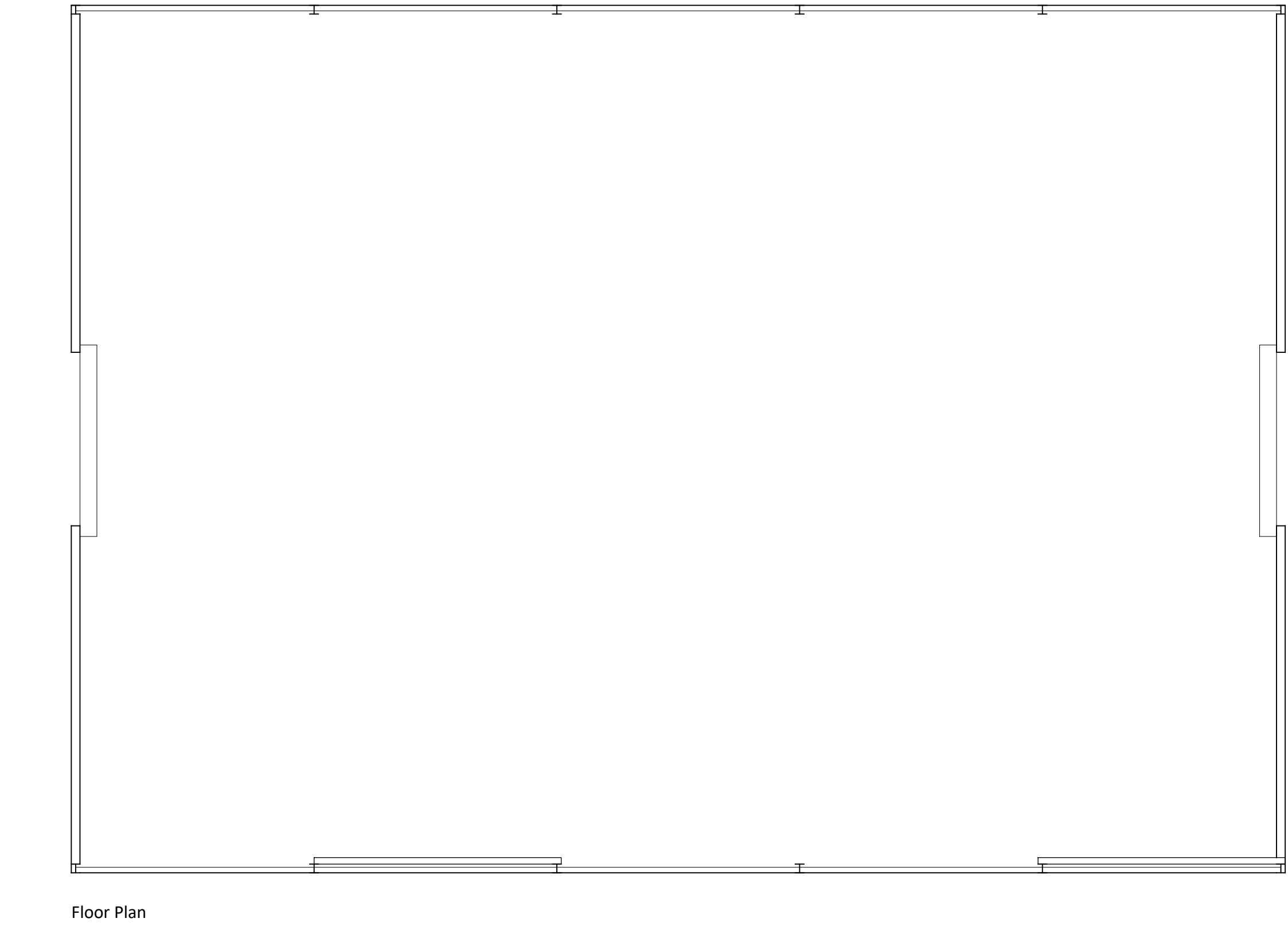
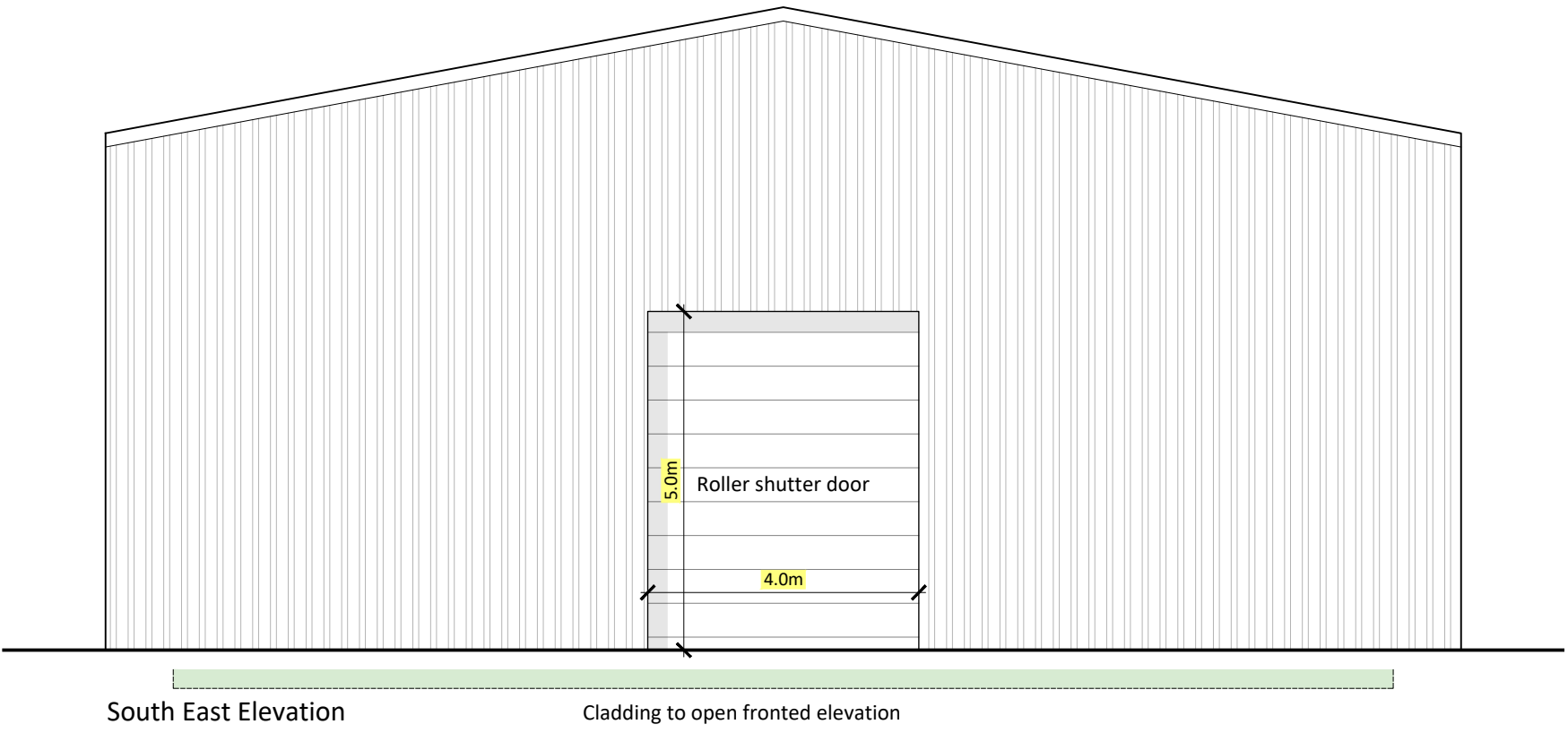
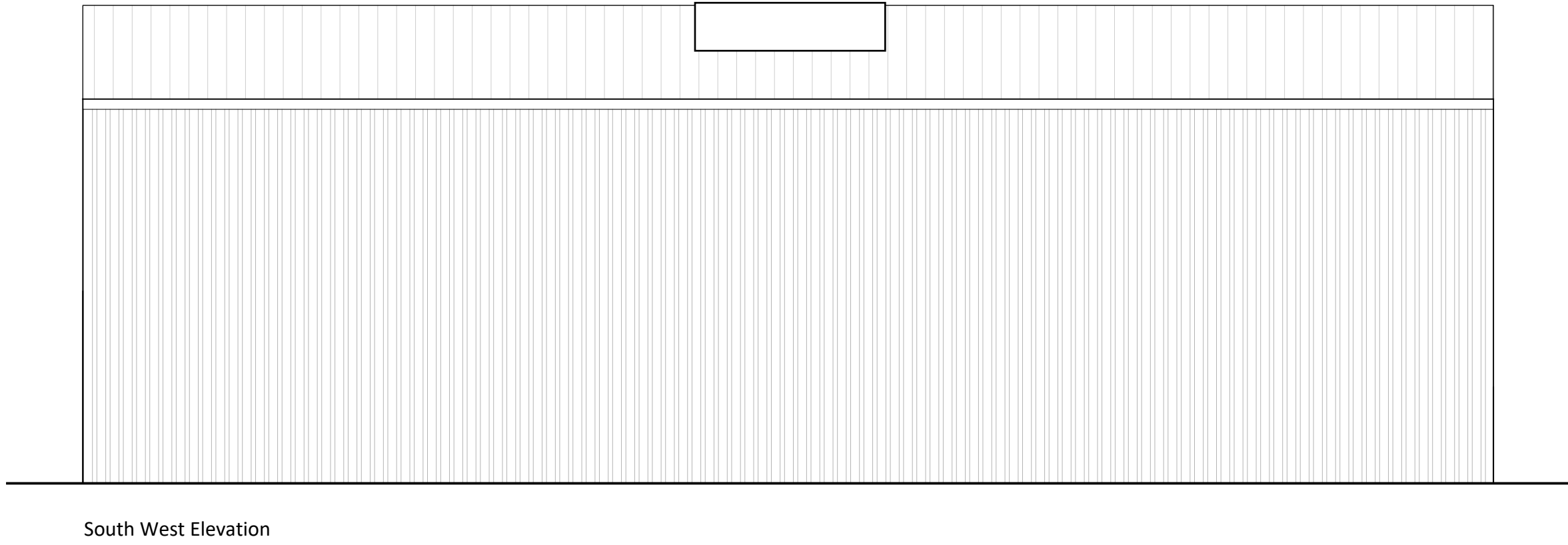
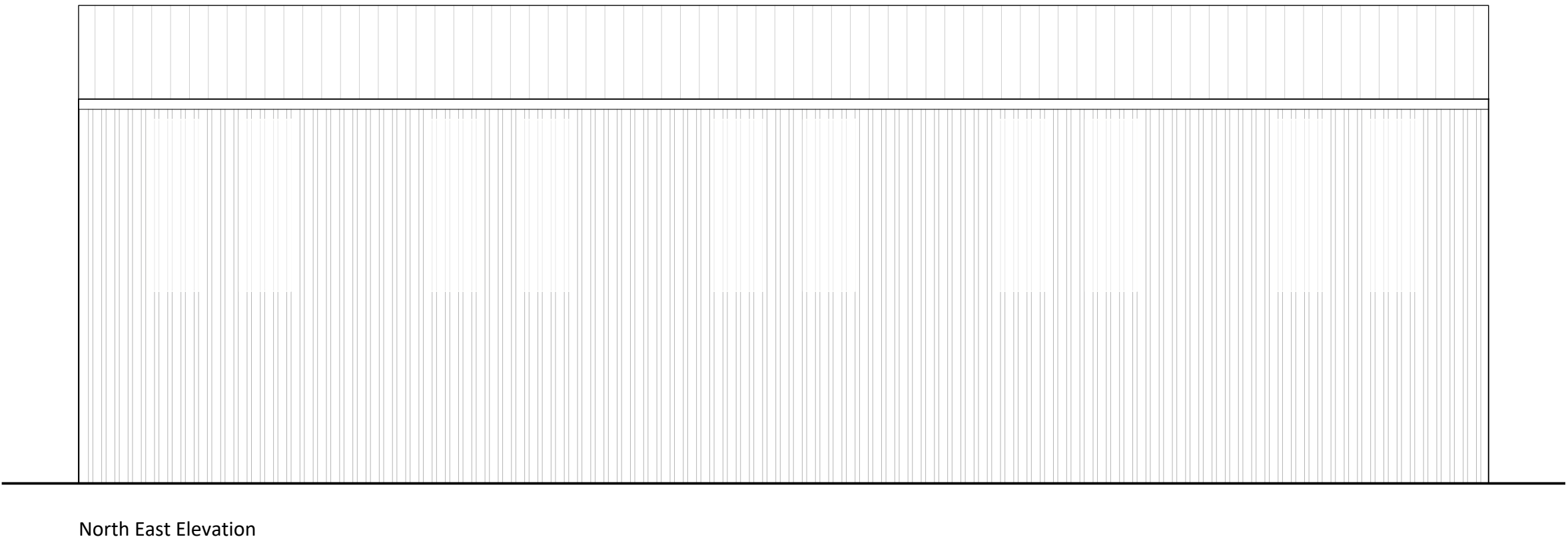
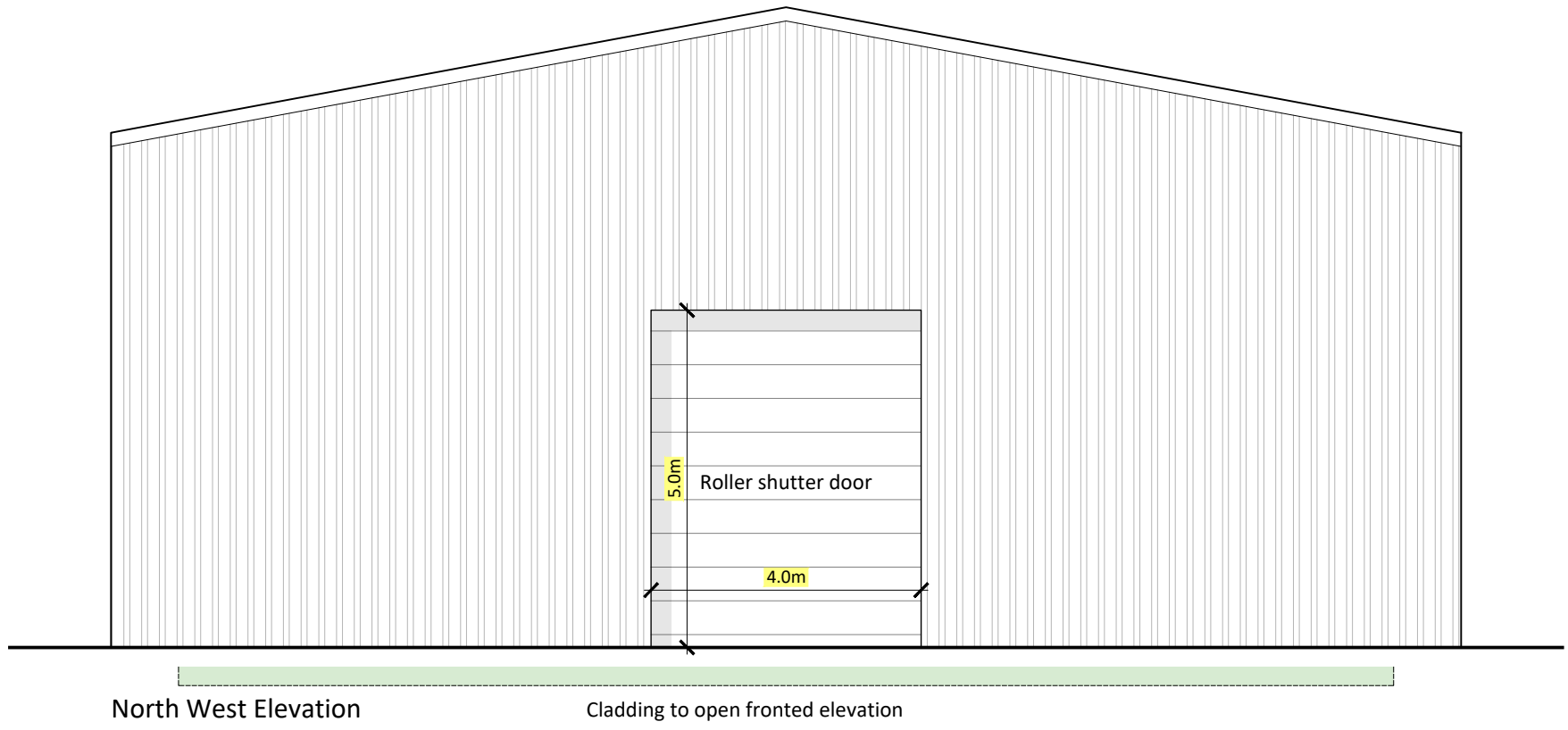
Job Number
1539-1

Status
SK

Purpose of Issue
Discussion

Drawing No.
1539-1_SK_GA04

Rev
-



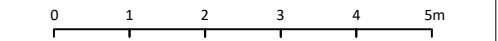
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A	S/W Elevation fully clad	29.03.23
Rev	Description	Date

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Client
F Dring & Son

Project
High Road
Moulton, Whaplode

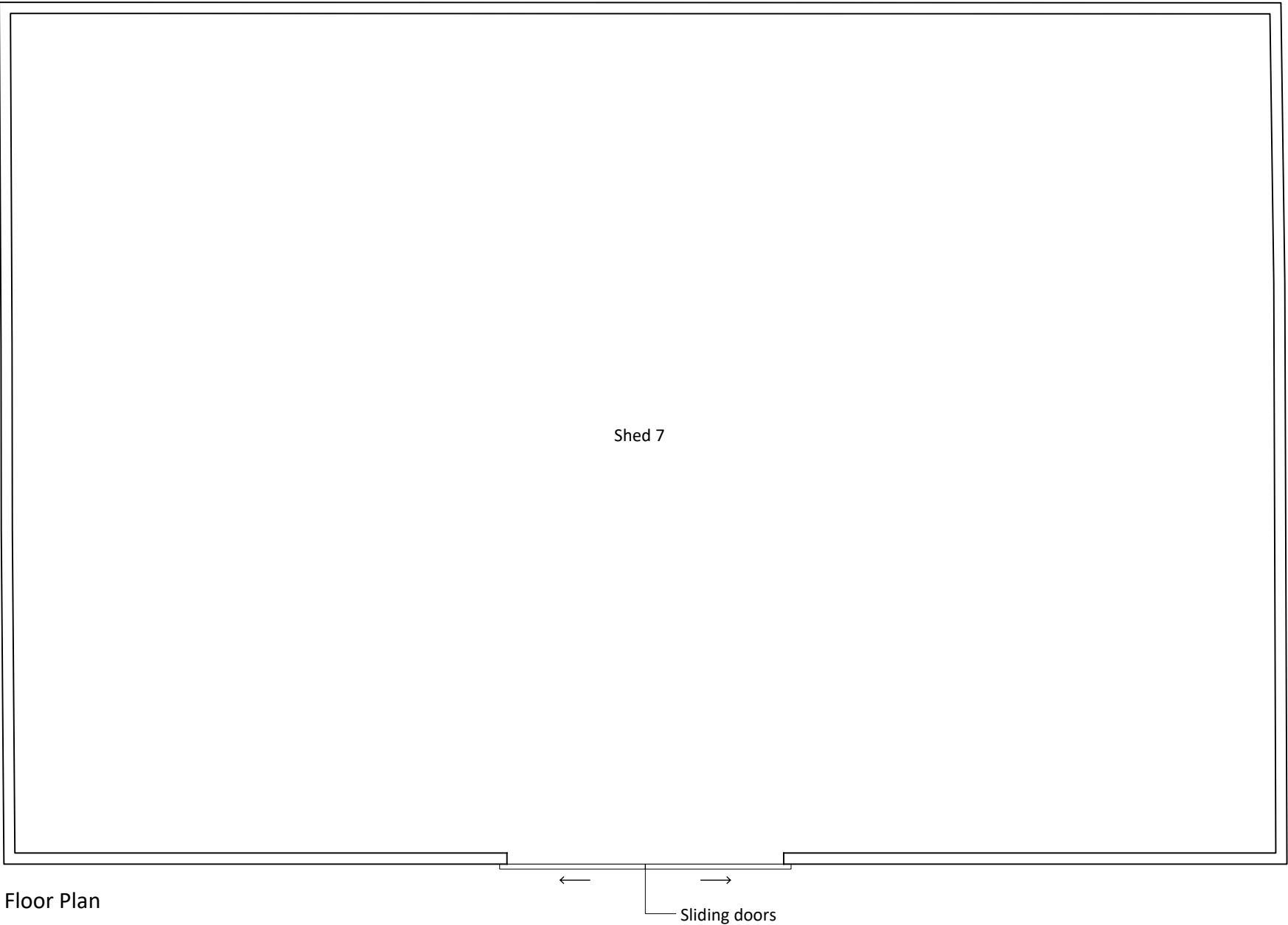
Drawing
Shed 4 - Proposed Plans and Elevations

Scale @ A1 1: 100	Date 16/02/23
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Drawn By WW	Checked By LMS
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Job Number 1539-1	Status SK	Purpose of Issue Discussion
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Drawing No. 1539-1_SK_GA09	Rev A
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012345m

- - -

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rdc Robert Doughty Consultancy 32 High Street, Helpringham Sleaford, Lincolnshire, NG34 0RA Tel: 01529 421646 Email: admin@rdc-landplan.co.uk Web: www.rdc-landplan.co.uk		

Client
F Dring & Son

Project
High Road
Moulton, Whaplode

Drawing
Shed 7 - Existing floor plan

Scale @ A3
1: 100

Drawn By
WW

Job Number
1539-1

Date
07/07/23

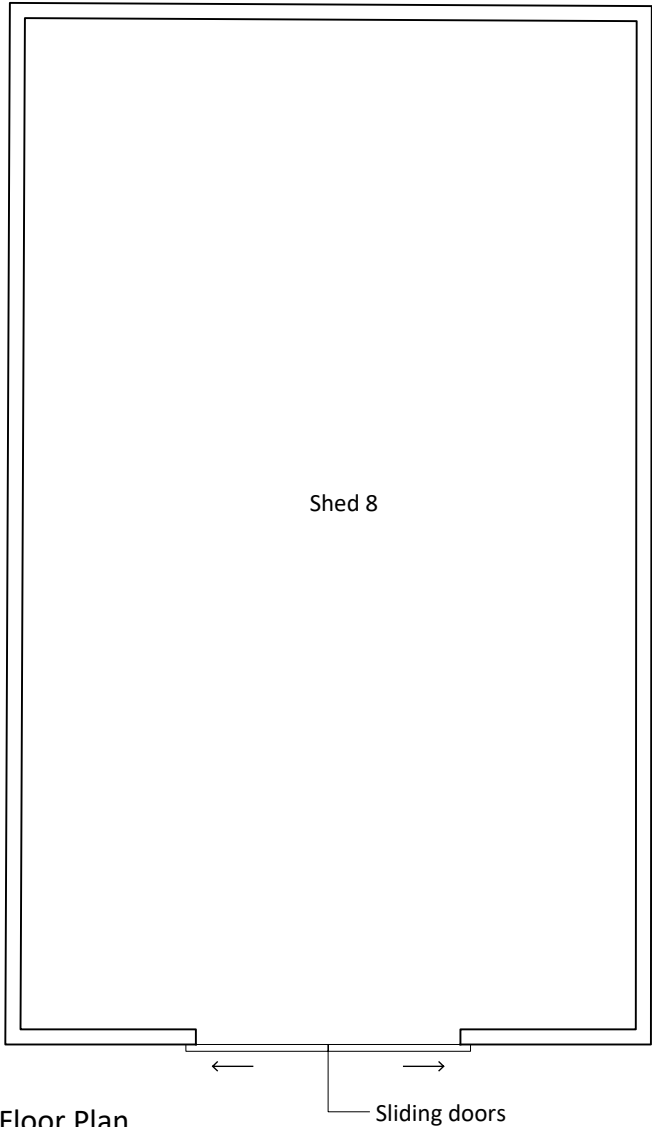
Checked By
LMS

Status
SK

Purpose of Issue
Discussion

Drawing No.
1539-1_SK_GA13

Rev
-



Floor Plan

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Client F Dring & Son		
Project High Road Moulton, Whaplode		
Drawing Shed 8 - Existing floor plan		
Scale @ A3 1: 100		Date 07/07/23
Drawn By WW		Checked By LMS
Job Number 1539-1	Status SK	Purpose of Issue Discussion
Drawing No. 1539-1_SK_GA14		Rev -



Floor Plan

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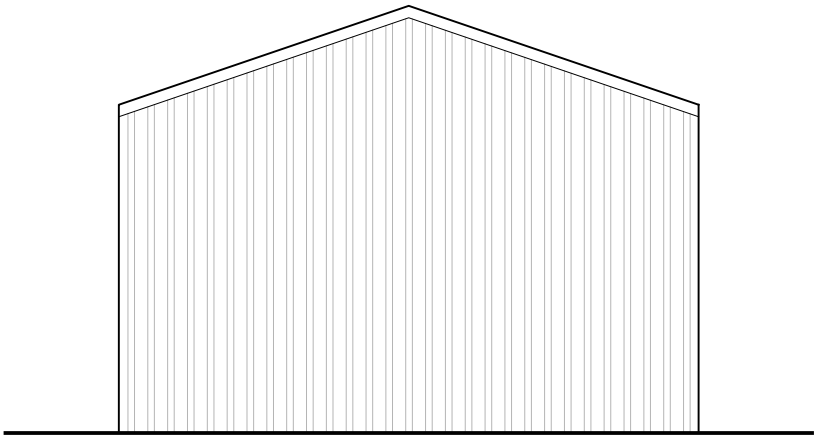
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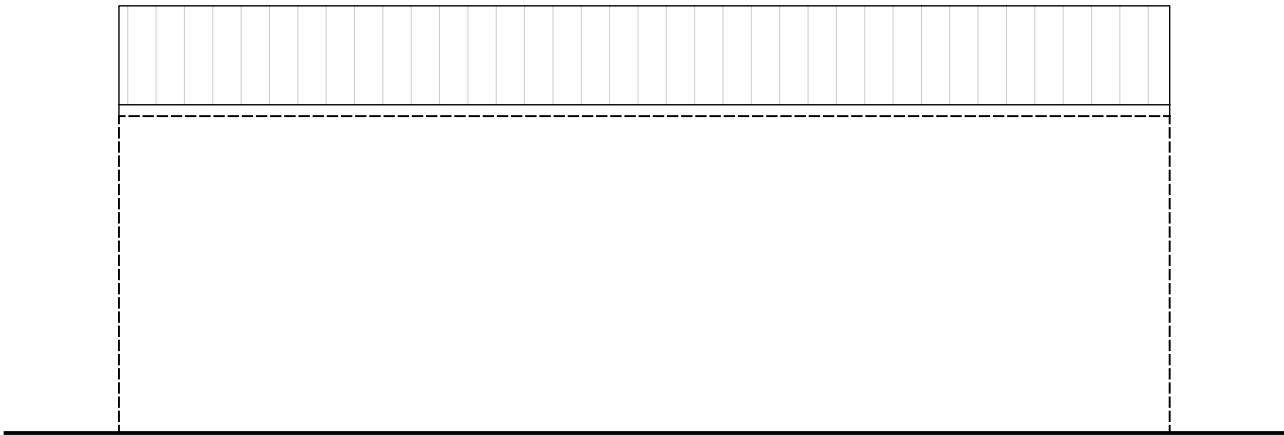
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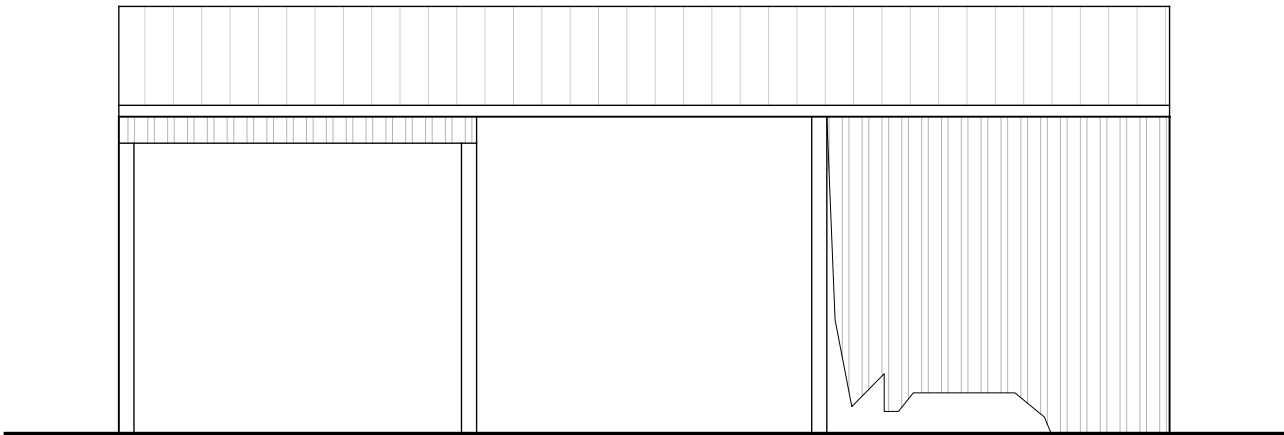
Rev	Description	Date
rdc Robert Doughty Consultancy 32 High Street, Helpringham Sleaford, Lincolnshire, NG34 0RA Tel: 01529 421646 Email: admin@rdc-landplan.co.uk Web: www.rdc-landplan.co.uk		
Client F Dring & Son		
Project High Road Moulton, Whaplode		
Drawing Sheds 11 & 12 - Existing floor plans		
Scale @ A3 1: 100		Date 07/07/23
Drawn By WW		Checked By LMS
Job Number 1539-1	Status SK	Purpose of Issue Discussion
Drawing No. 1539-1_SK_GA15		Rev -



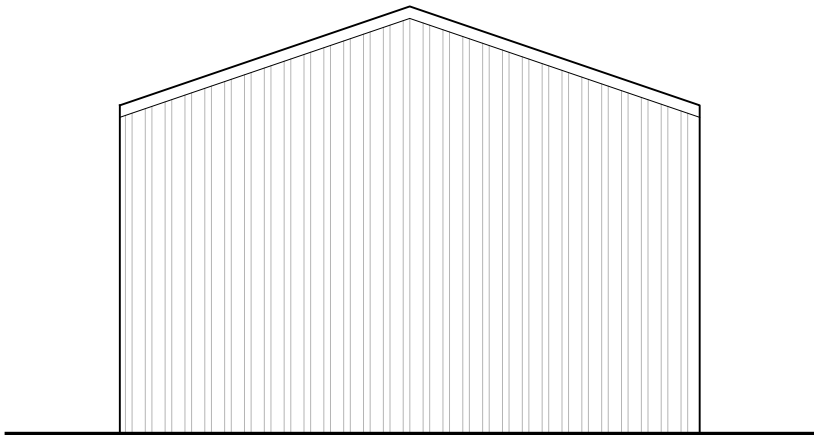
East Elevation



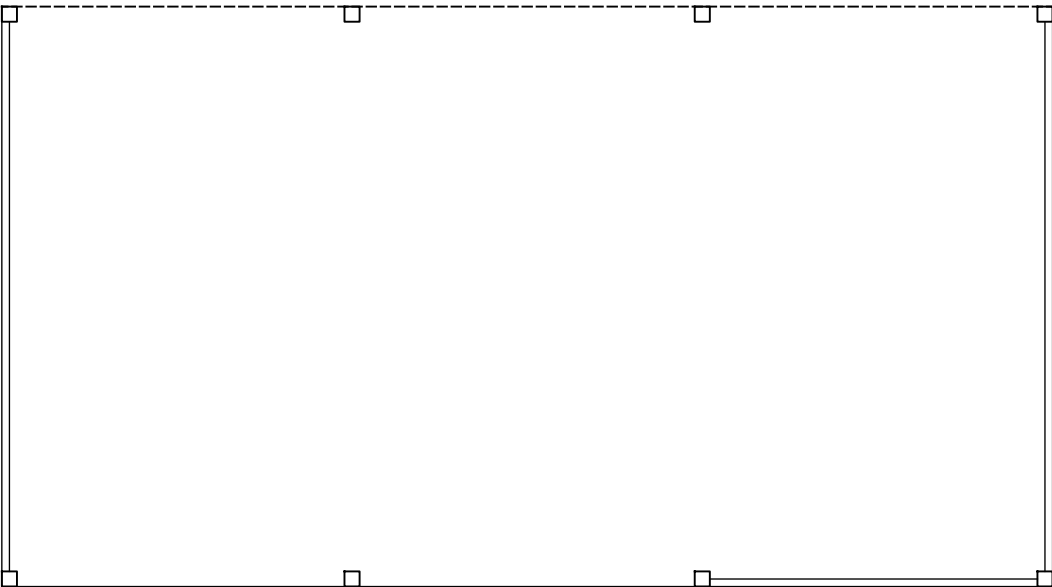
North Elevation (abuts adjacent shed)



South Elevation



West Elevation



Floor Plan



Roof Plan

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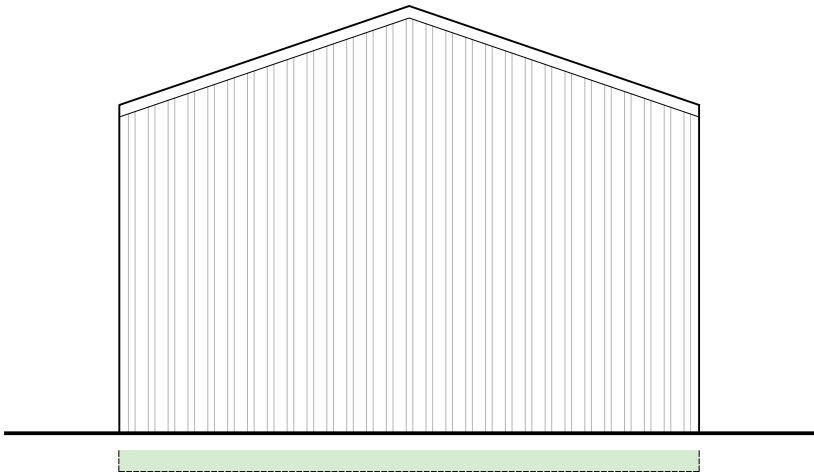
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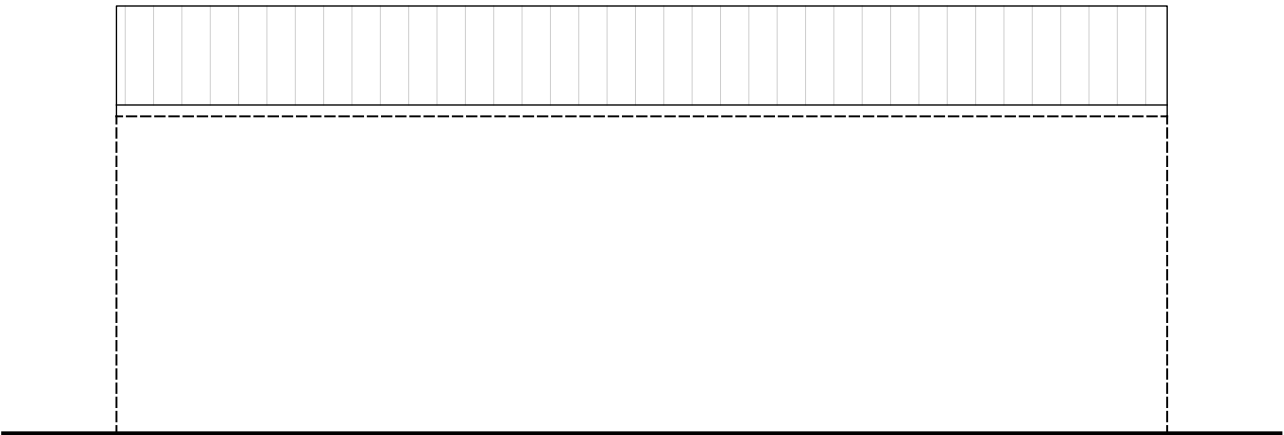
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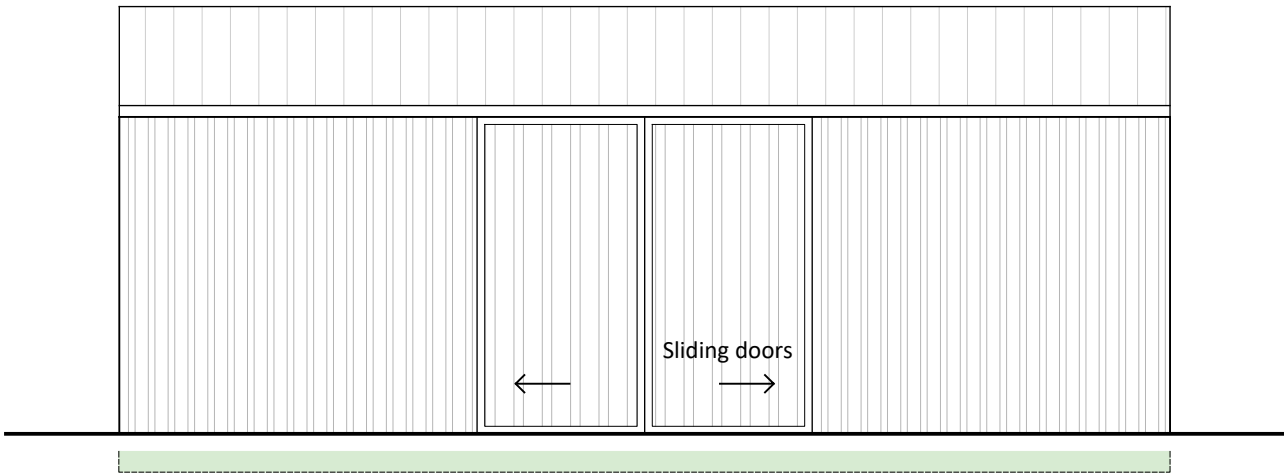
Rev	Description	Date
 Robert Doughty Consultancy 32 High Street, Helpringham Sleaford, Lincolnshire, NG34 0RA Tel: 01529 421646 Email: admin@rdc-landplan.co.uk Web: www.rdc-landplan.co.uk		
Client F Dring & Son		
Project High Road Moulton, Whaplode		
Drawing Shed 13 - Existing Plans and Elevations		
Scale @ A3 1: 100		Date 16/02/23
Drawn By WW		Checked By LMS
Job Number 1539-1	Status SK	Purpose of Issue Discussion
Drawing No. 1539-1_SK_GA05		Rev -



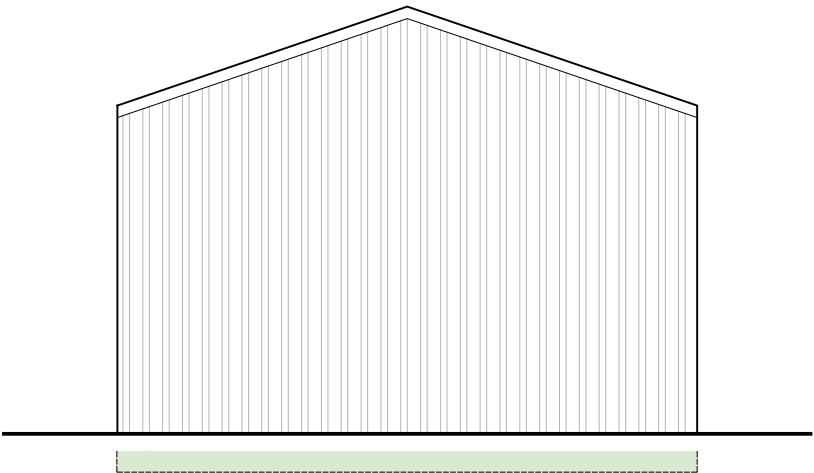
East Elevation New/ replacement cladding



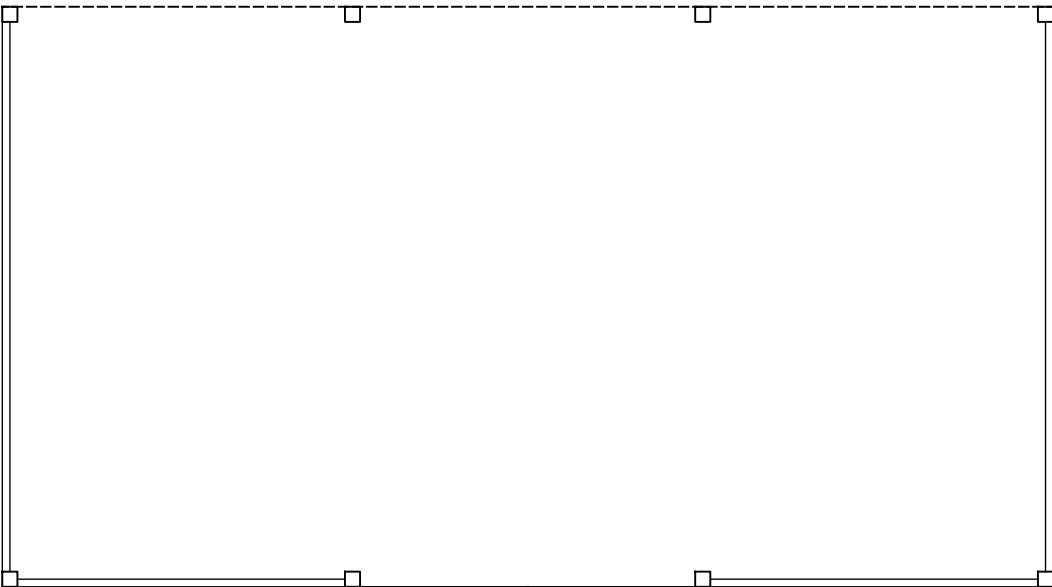
North Elevation (abuts adjacent shed)



South Elevation New/ replacement cladding to partially open fronted elevation



West Elevation New/ replacement cladding



Floor Plan Sliding doors



Roof Plan

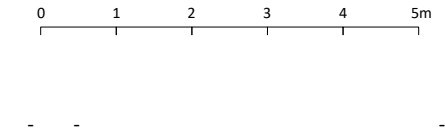
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Rev	Description	Date
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Client
F Dring & Son

Project
High Road
Moulton, Whaplode

Drawing
Shed 13 - Proposed Plans and Elevations

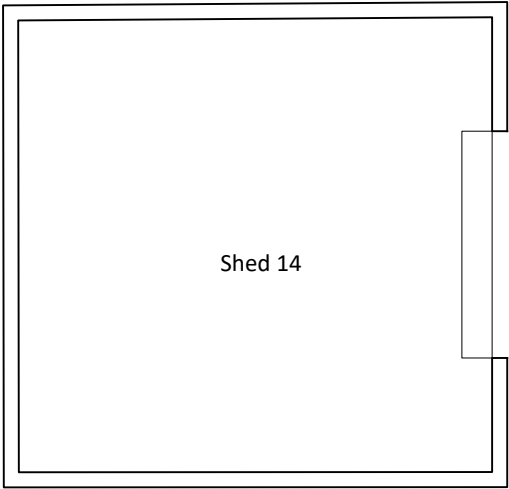
Scale @ A3 1: 100	Date 16/02/23
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Drawn By WW	Checked By LMS
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Job Number 1539-1	Status SK	Purpose of Issue Discussion
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Drawing No. 1539-1_SK_GA10	Rev -
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Floor Plan

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Project
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Moulton, Whaplode

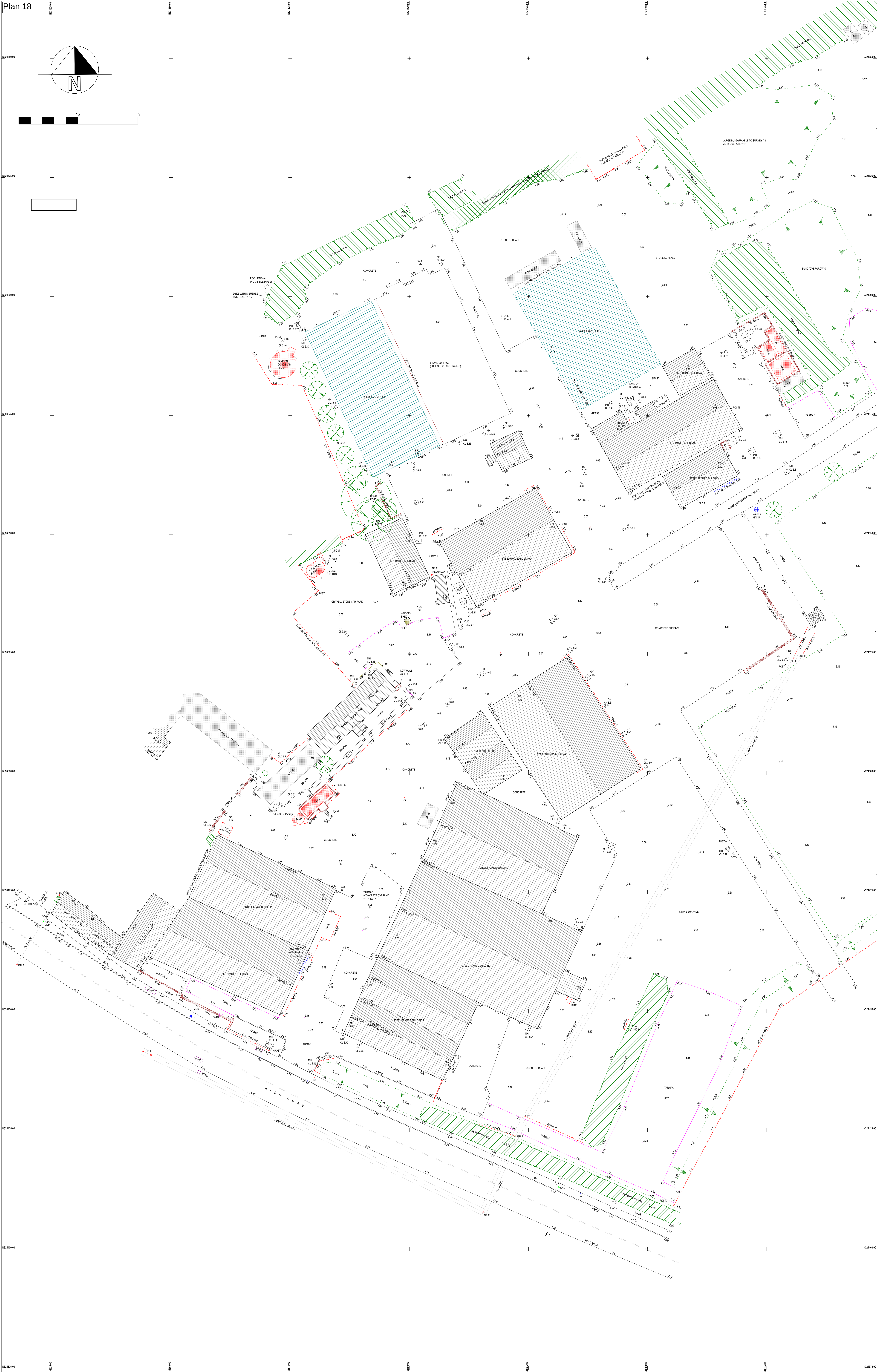
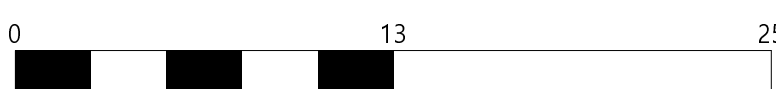
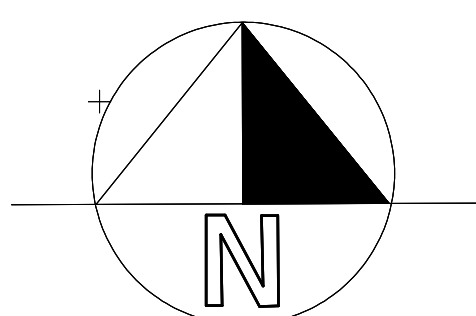
Drawing
Sheds 14 - Existing floor plans

Scale @ A3 1: 100		Date 07/07/23
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Drawn By WW		Checked By -
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Job Number 1539-1	Status SK	Purpose of Issue Discussion
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Drawing No. 1539-1_SK_GA14		Rev -
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[illegible]

 ROBERT DOUGHTY CONSULTANCY		
Project Title: F. DRING & SONS LTD HIGH ROAD WHAPELOE LILCPS PE12 6NT		
Drawing Title: TOPOGRAPHICAL SURVEY 1 (1 of 2)		
Scale of A1: 1: 250	Date: 09 / 09 / 2022	
Drawing no: ORH 2-215-6-1	Rev#	
C.A.D. Title: rds high road whapeolo/topo (p/s 2215-00).rps		
Drawn by: SRW	Checked by: CT	


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