

FLOOD RISK ASSESSMENT

Proposed Change of Use of an Agricultural Barn to Residential
Broadgate Nurseries,
Bullock's Short Gate
Gedney Broadgate,
Holbeach,

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RMA

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FLOOD RISK ASSESSMENT FOR PROPOSED CHANGE OF USE OF AN AGRICULTURAL BARN TO RESIDENTIAL, BROADGATE NURSERIES, BULLOCKS SHORT GATE GEDNEY BROADGATE, HOLBEACH,

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 off Bullock's Short Gate, Gedney Broadgate, PE12 0BG within the administrative area of South Holland District Council. The National Grid Reference is TF 40053 21549, **Plan 1**

This flood risk assessment has been prepared for a planning application for a change of use of a two-storey brick agricultural Barn to Class C3 (dwellinghouses). **Plans 2, 3, 4, & 5**

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 proposed development site is shown to be within Flood Zone 3a “High 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 3- High Probability
Definition Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year. The water-compatible and less vulnerable uses of land are appropriate in this zone. The highly vulnerable uses should not be permitted in this zone. The more vulnerable and essential infrastructure uses should only be permitted in this zone if the Exception Test is passed. Essential Infrastructure permitted in this zone should be designed and constructed to remain operational and safe for uses in times of flood. Flood Risk Assessments requirements All proposals in this zone should be accompanied by a Flood Risk Assessment. Policy aims. 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 techniques. • relocate existing development to land with a lower probability of flooding. • create space for flooding to occur by allocating and safeguarding open space for flood storage.

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPG, the proposed residential use for the site is classified as “More Vulnerable,” Table 1 of NPPG states that such uses are permitted in this zone, subject to the exception test.

Table 2: Flood Risk Vulnerability Classification

More Vulnerable
• Hospitals • Residential institutions such as residential care homes, children’s homes, social services homes, prisons, and hostels. • Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels. • Non-residential uses for health services, nurseries, and educational establishments • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravan and camping, subject to a specific warning and Evacuation Plan.

Site Levels

The topographical survey shows that the site is generally a flat rectangular plot, with an average ground level around the Barn of 2.80mODN with a FFL of 2,79mODN. the invert of the steam along the frontage is 0.52mODN Bullock’s Short Gate road level is slightly higher at circa 3.02mODN. **Plan 6**

DRAINAGE AUTHORITIES

Environment Agency

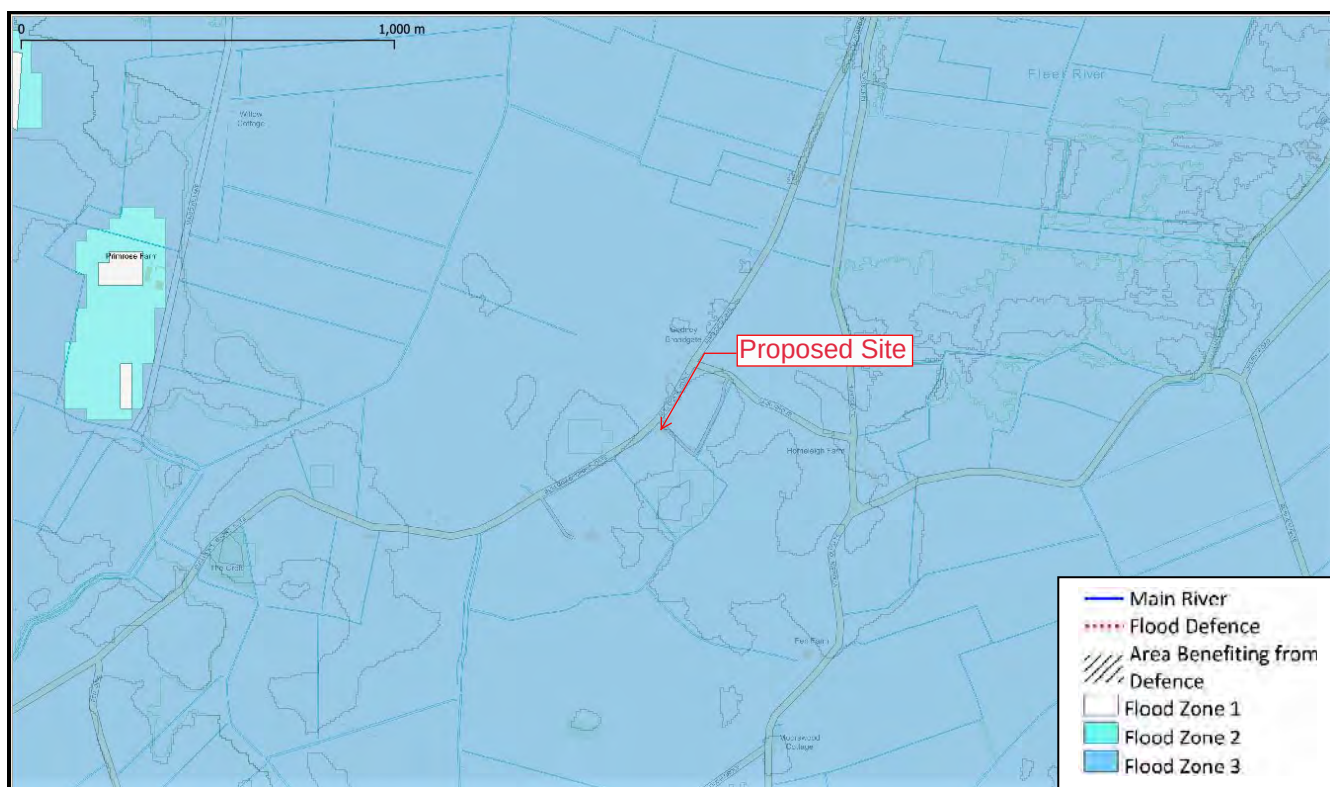
The Environment Agency has permissive powers for reducing the risk of flooding from designated main rivers and from the sea.

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

- The Wash (Tidal)
- River Nene (Tidal)
- South Holland IDB Drains (Fluvial)

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 Zones

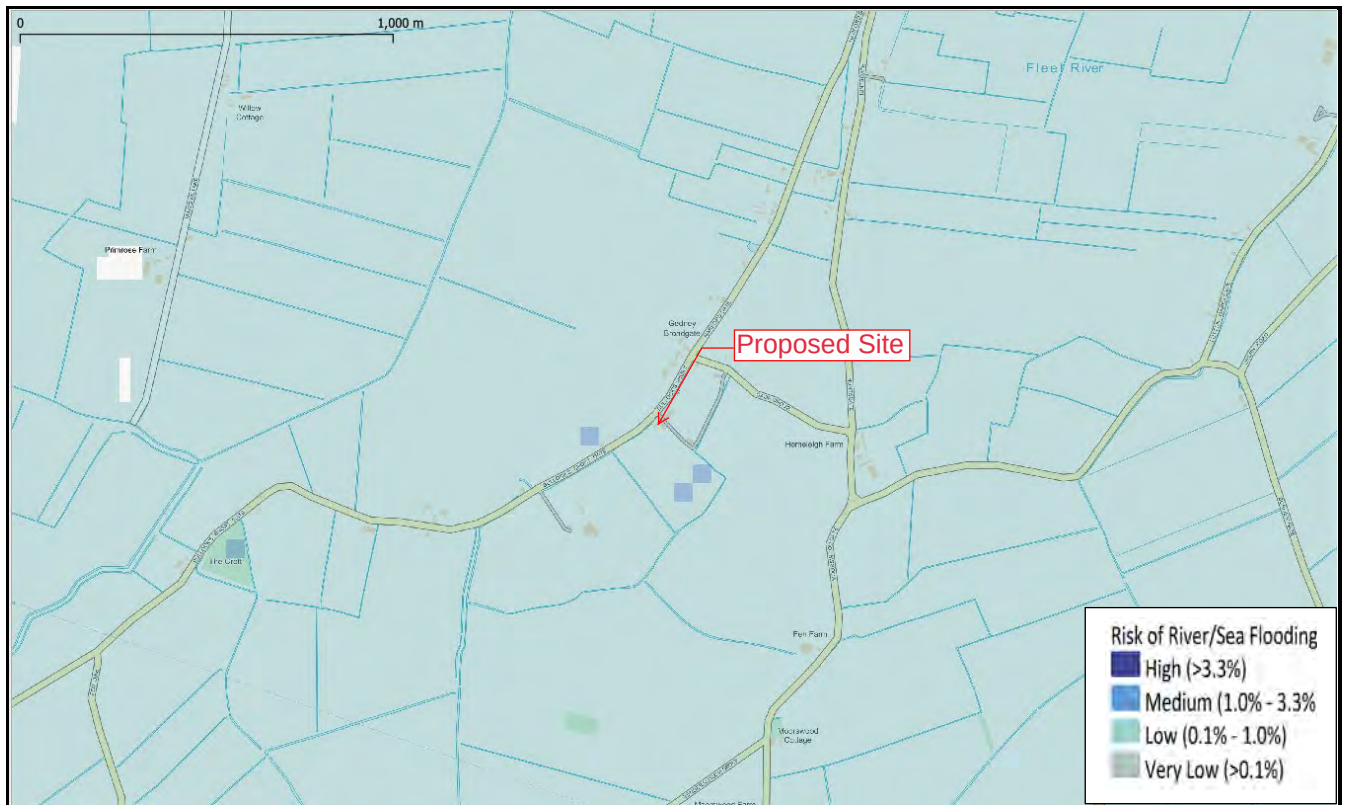


Flood Map for Planning (Source EA)

These maps show that the site is considered at risk from tidal/fluvial flooding as it is all located within an area zoned

as Flood Zone 3a. 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)

Risk of Flooding from Rivers & Sea



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

The Risk of flooding from Rivers and Sea map shows the site to be at Low Risk. Low means that each year, this area has a chance of flooding between 0.1% and 1%. This takes into account the effect of any flood defences that may be in this area. Flood defences reduce, but do not completely stop the chance of flooding as they can be overtopped or fail.

Fluvial Flood Risk

The site is not considered to be at risk of flooding from any Main River (Fluvial).

Tidal Flood Risk

The main risk of flooding at the site is therefore from a breach to the tidal defences.

The Tidal Defences

The existing tidal defences protecting this site consist of earth embankments, which, in some cases are, supplemented by saltmarsh. They are in fair 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 the Tidal Defences

The base date for the data is 2017 for the East Coast and Wash: Immingham to the West Lighthouse Peak tide levels. The base date for the data is 2017 for the still water levels, the Peak tide levels Present Day (2017) at West lighthouse for the 50% confidence bound 0.5% (1 in 1000year) is 6.14mODN. With climate change from Table 3 (2117 – 2020) 1089mm = 7.23mODN **Map 1**

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.

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.

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

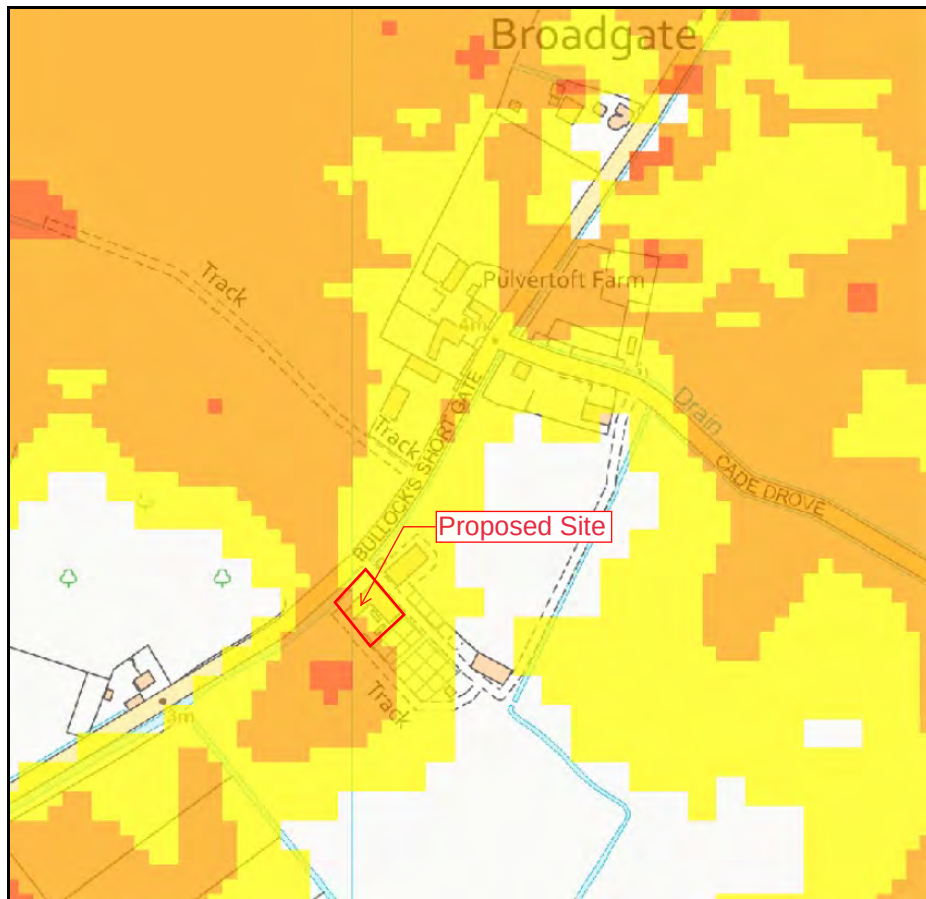
Where V = Flood flow velocity (m/sec) D = Flood depth (m)

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.

The Environment Agency has carried out a Tidal Hazard Mapping for the East Coast following a breach to the defences. Following a breach to the defences, the Lincolnshire & Northampton shire Area Tidal Hazard Maps Scenario year 2006, for the 1 in 200-year event, shows that the site is not within a Hazard rating area. **Map 2**

With climate change up to year 2115 the maps show that for Scenario annual chance 1 in 200-year that the site is within a Hazard rating area Less than 0.75 (Low Hazard), depth of flow 0 – 0.25m and velocity 0 – 0.3m/sec. **Map 3**



Extract from 2115 1 in 200year Depth Map

The Environment Agency has also produced maps based on computer modelling of simulated overtopping of defences along the coastline for specific tidal scenarios. The maps only consider the consequences of overtopping of defences and do not show the possible consequences of breaches of the tidal defences. For future climate change scenarios, it is assumed that the defences remain at 2006 heights.

For the scenario years 2006 & 2115 site is not affected by overtopping of the defences.

Finished Floor Levels

The proposed development is classified as “More Vulnerable” residential development and therefore it can be considered in accordance with details contained in the Standard Advice Matrix in the South East Lincolnshire Local Plan.

The maximum hazard on the site is less than 0.75 (Low Hazard) and therefore the site can be considered to be in cell F8.

The Environment Agency advice shown for cell F8 is as follows:

“The NPPF requires that the proposal is accompanied by a Flood Risk Assessment which contains evidence that appropriate mitigation measures/flood resilience techniques have been incorporated into the development

Please refer to the following document for information on flood resilience and resistance techniques to be included
“Improving Flood Performance of New Buildings – Flood Resilient Construction (DCLG 2007)”

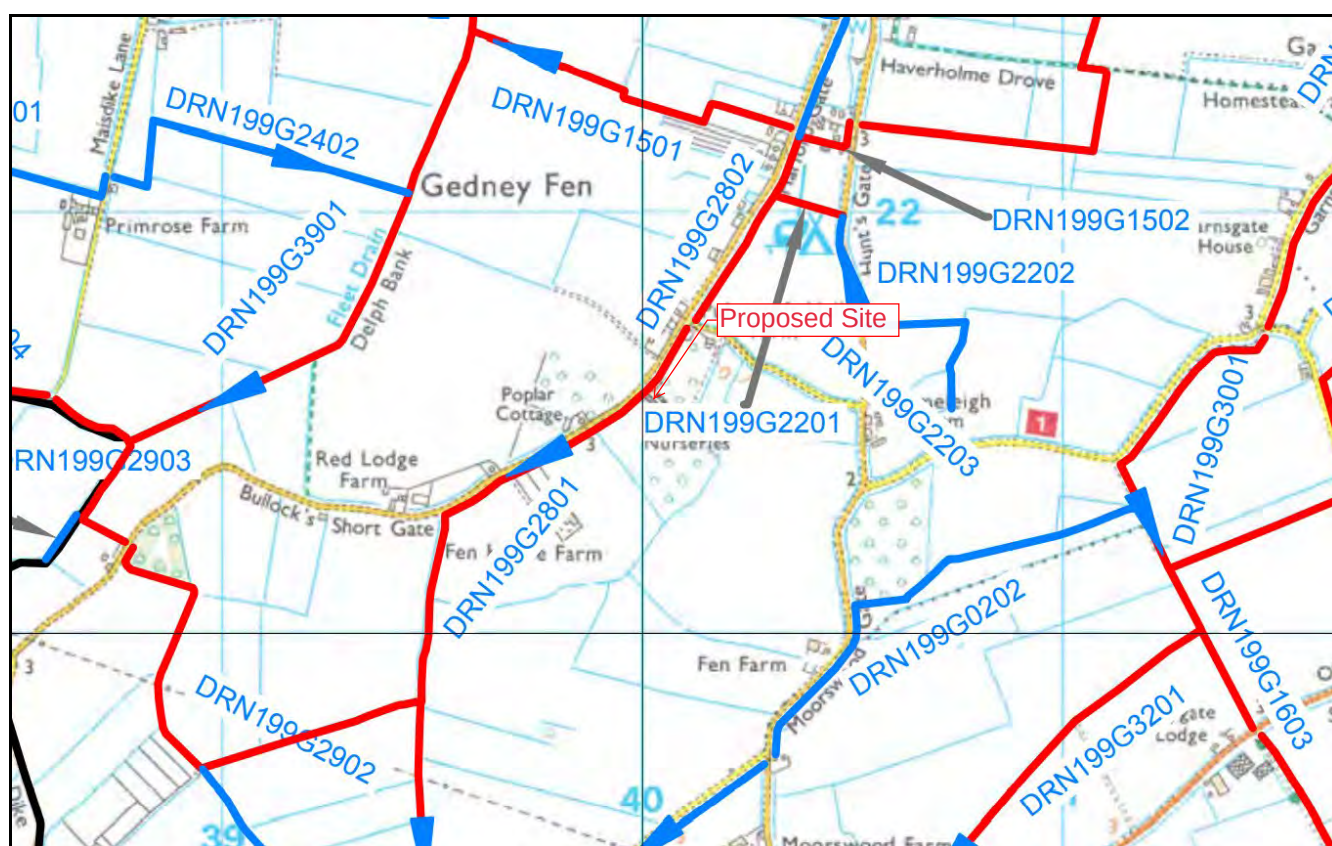
Finished floor levels must be set 300mm above ground level for two storey properties. Single storey proposals must set FFL above the 0.1% event breach depth in 2115 scenario.

It is proposed that the minimum ground floor level for the proposed two-storey dwelling be raised 300mm above the surrounding ground level (2.80mODN) set at a level of 3.10mODN and the flood resilient measures stated in this report are incorporated into the development.

South Holland Internal Drainage Board

The proposed development site is located within the catchment area H (Free Discharge) of South Holland Internal Drainage Board.

The Board are therefore responsible to operate and maintain the arterial fluvial system. The Board's nearest maintained drain DRN199G2802 is Drain H28 (Lowland Drain) which is along the front boundary of the site.



Extract from South Holland IDB Drainage Map

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.

When planning approval has been obtained an application to discharge the effluent from the onsite treatment plant into the Drain will be submitted to the Board.

FLOODING FROM OTHER SOURCES

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

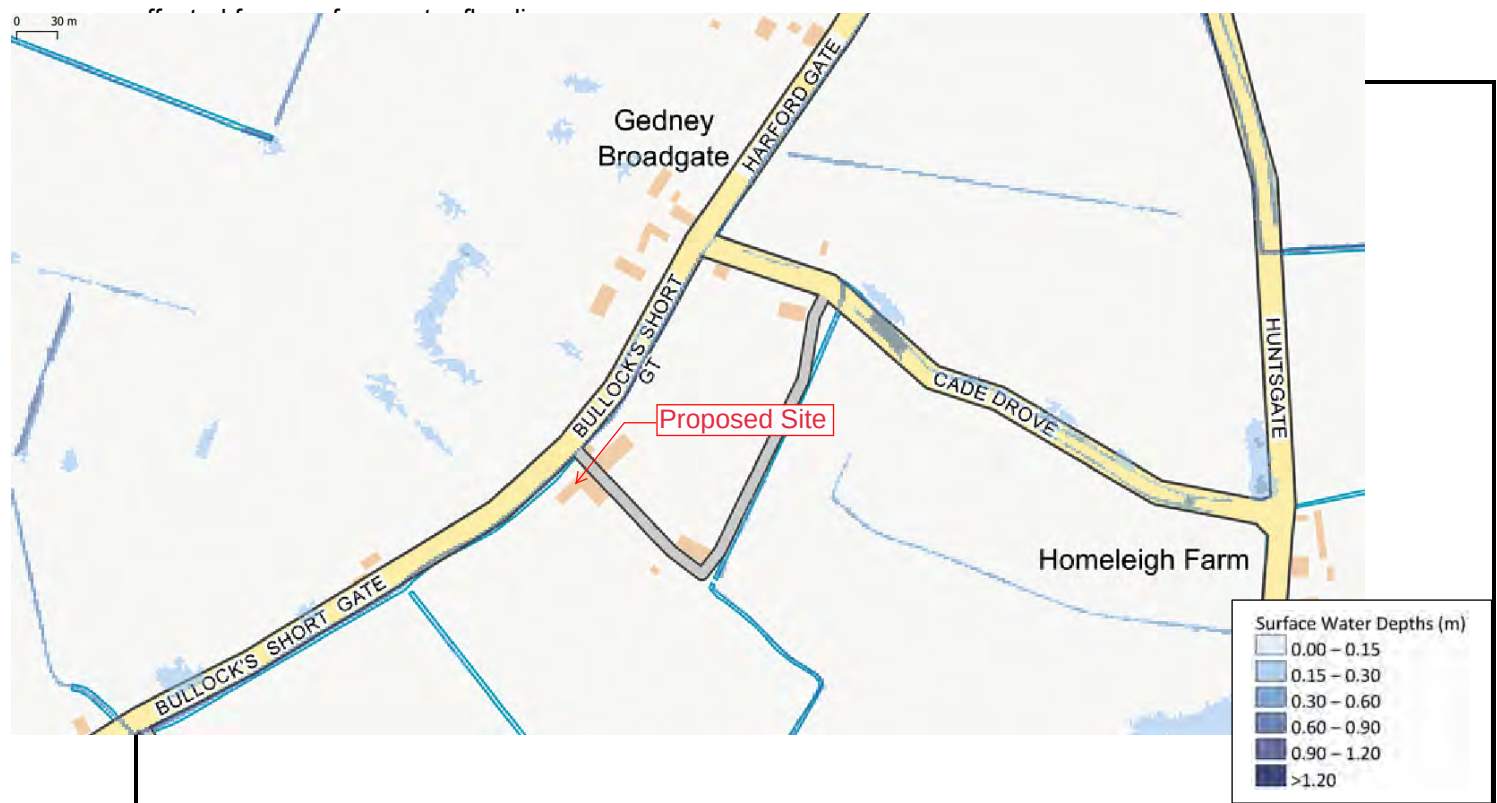
- Flooding from land can occur from intense rainfall, often over short duration of time that is unable to soak into the ground or enter the drainage system. However, with the natural topographic nature of the ground being flat, with no high ground around the site this will not cause any rapid inundation of the site and is likely only lead to local ponding of shallow depth and low velocity. The ground floor level for the proposed property is to be raised 300mm above the existing ground level. 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.
- 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 close to 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.

RESIDUAL RISKS

There is always a possibility of a flood more than that allowed for which might conceivably cause some flooding to the properties. However, such an event would have a very low probability and the risk of flooding to the property would be extremely small. It is therefore considered that the residual risks associated with flooding are not significant.

SURFACE WATER FLOODING

The site is shown on the Low-Risk scenario Surface Water flood maps, for the 1 in 1000-year event, not to be



Risk of Flooding From Surface Water Map (Source EA)

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.

SEQUENTIAL APPROACH

When applying the sequential approach for flood risk in accordance NPPF the site of the development would fall

into Flood Zone 3 (High Probability) as the site is shown to be within the tidal flood plain 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) (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3).
- 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). (Land shown in light blue on the Flood Map).
- 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). (Land shown in dark blue on the Flood Map).

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

NPPF 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.

As set out in the National Planning Policy Framework (para.168), change of use should not be subject to the sequential and exception tests but will still need to meet the requirements of a site-specific flood risk assessment.

CLIMATE CHANGE

Global warming is now recognised that it is likely to affect the frequency and severity of extreme events as both tidal and fluvial flooding. The Climate change allowances in the NPPF Guidance was updated on the 20th of July 2021.

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 Nene 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/ Nene	Upper End	18%	17%	36%
	Higher Central	4%	0%	13%
	Central	-2%	-7%	4%

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 to1990 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 1981to 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

Surface Water Drainage

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.

The surface water from the roof of the new dwelling will be utilise the existing outlets serving the barn, which have operated for many years without creating any problems, these will be cleaned out and renewed as necessary . A water butt of at least 220L internal capacity shall be installed to intercept rainwater draining from the roof of the building, to reduce the risk of flooding and demand for water by recycling and to increase the level of sustainability of the development.

Driveways and parking areas will be constructed from permeable materials to infiltrate into the ground.

These arrangements are the same as those which have served the existing barn without causing any problems

Foul Water Drainage

A private gravity foul drainage system from the proposed units, will be designed in accordance with Building Regulations. Doc. H, which will be connected into a package treatment plant as there are no public sewers within the vicinity of the site.

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 for the proposed dwelling is to be set above the existing ground level, set at a minimum of 3.10mODN.
- 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 The ground floor to be constructed with a solid concrete floor with no voids beneath and no low-level wall vents.
- 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 proposed site for the proposed dwelling is shown to be within Flood Zone 3 'High Probability' as detailed on the Environment Agency's Flood Zone Maps without defences.
- o The site does have the protection of tidal flood defences which are well maintained by the Environment Agency.
- o The Flood Risk Vulnerability Classification in Table 2 of NPPG the proposed residential development is classified as "More Vulnerable", with Table 1 of NPPG stating that such uses are appropriate in this zone, subject to the exceptional test.
- o As set out in the National Planning Policy Framework (para.168), change of use should not be subject to the sequential and exception tests but will still need to meet the requirements of a site-specific flood risk assessment.
- o The ground floor for the dwelling is to be raised 300mm above the existing ground level set at a minimum of 3.10mODN.
- o In the event of a flood incident, the safest option would be for residents to remain in the building and use the internal staircases to make their way to the upper floor area, which would provide a safe haven. Residents should not attempt to leave the building and make their way through flood water, unless instructed to do so by the emergency services.
- 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 affect 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 NPPF & South Holland Local Plan Policies..

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

Key Node Points

Map 1



Scale 1:550,000



▲ East Coast and Wash

See separate data sheet for predicted flood levels

Created by the Partnerships and Strategic Overview Team, Lincoln

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)

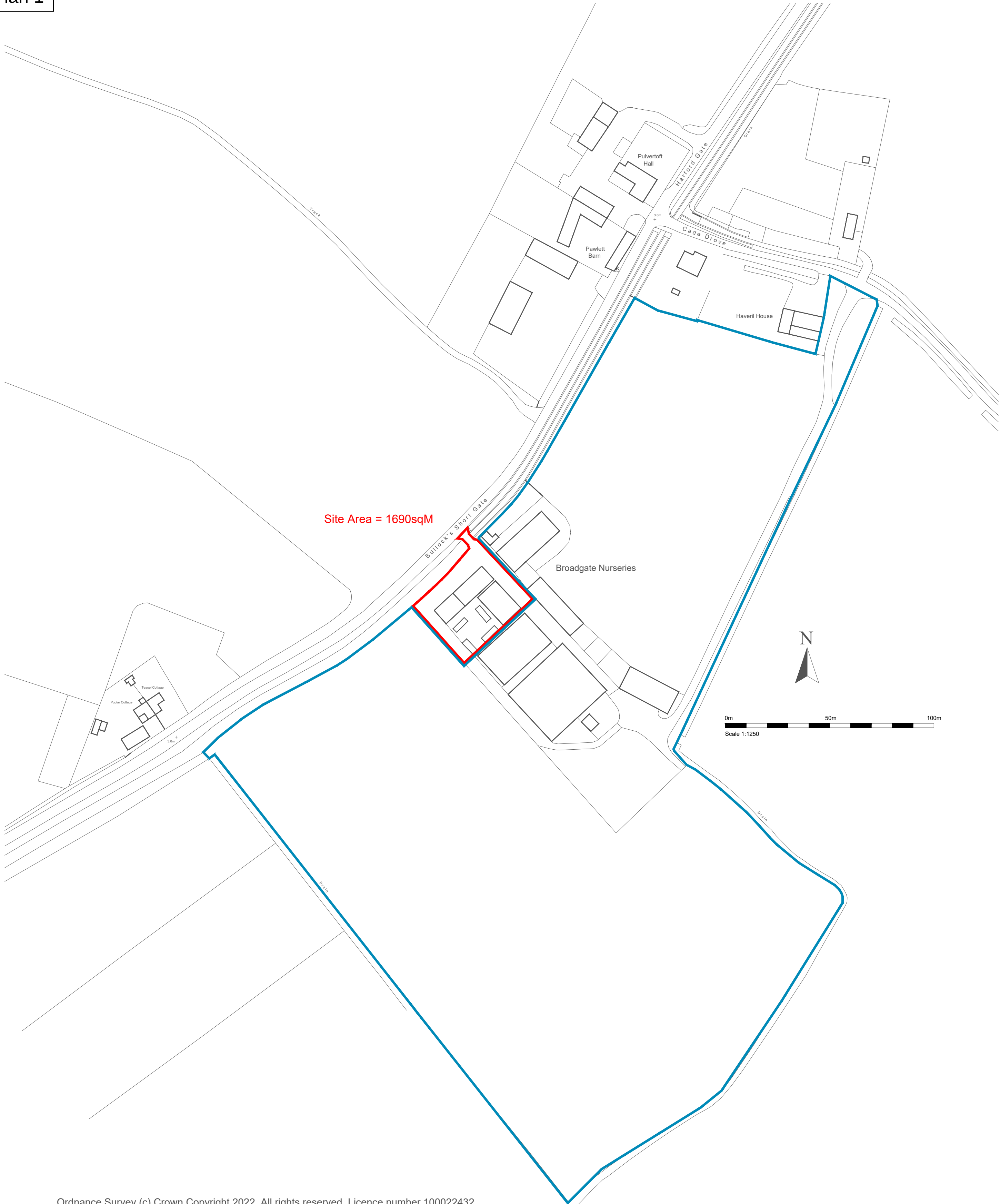
- The base date for the data is 2017.
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- Levels for other annual chance probabilities are available if required.
- 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://deframetadata.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://deframetadata.com/geonetwork/srv/eng/catalog.search#/metadata/84a5c7c0-d465-11e4-b0bd-f0def148f590>



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BROWN & CO JHWalter

Traditional Barn Conversion
Broadgate Nurseries, Bullock's Short Gate, Gedney Broadgate

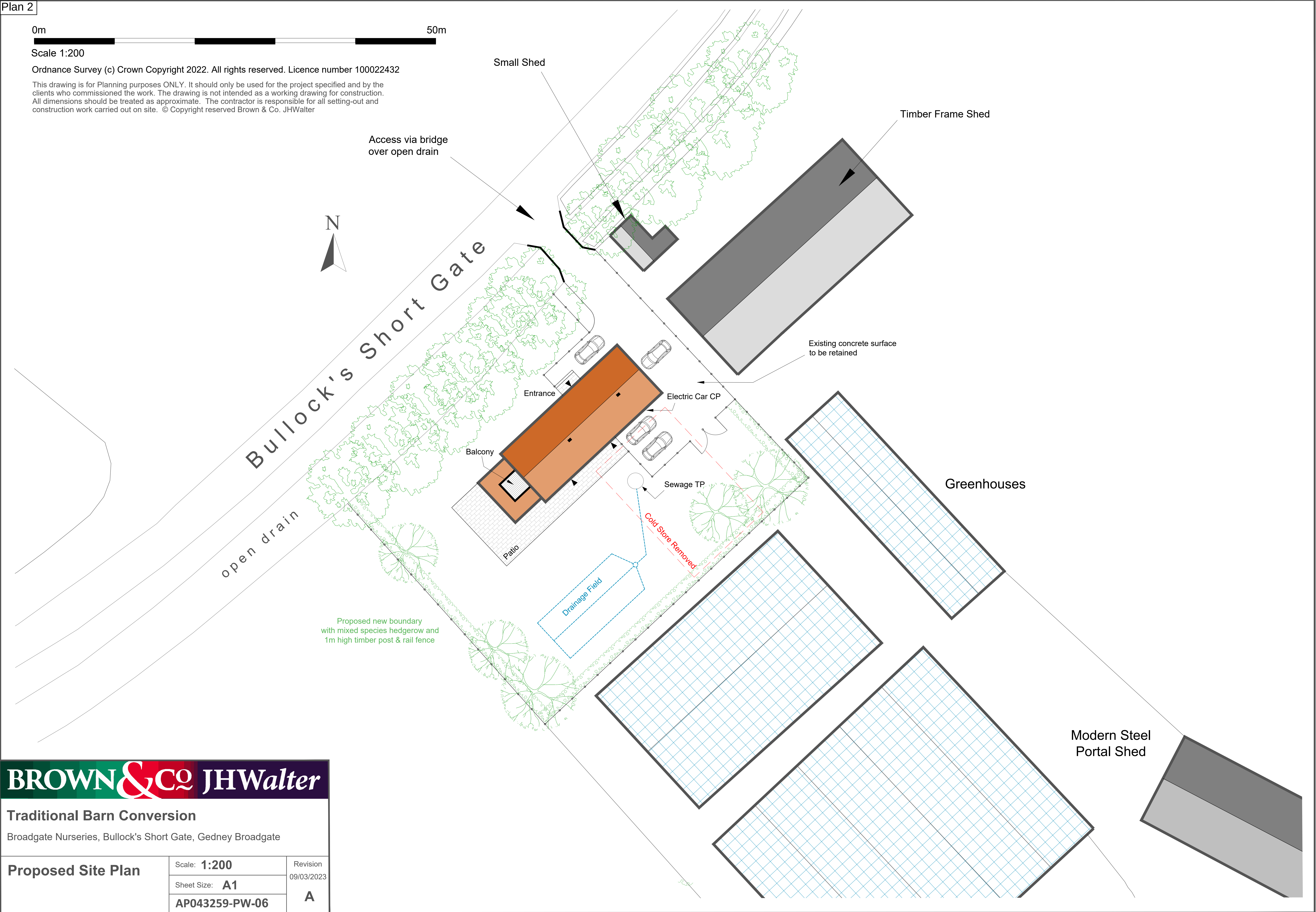
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	Sheet Size: A2	09/03/2023
	A043259-PW-01	A

0m 50m

Scale 1:200

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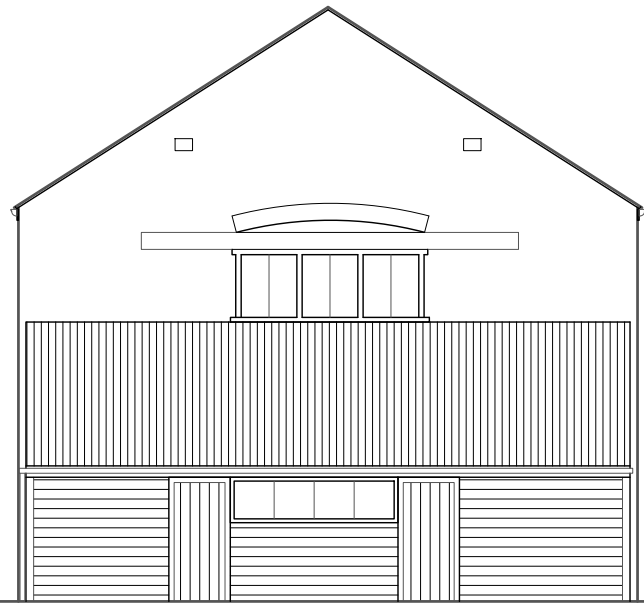
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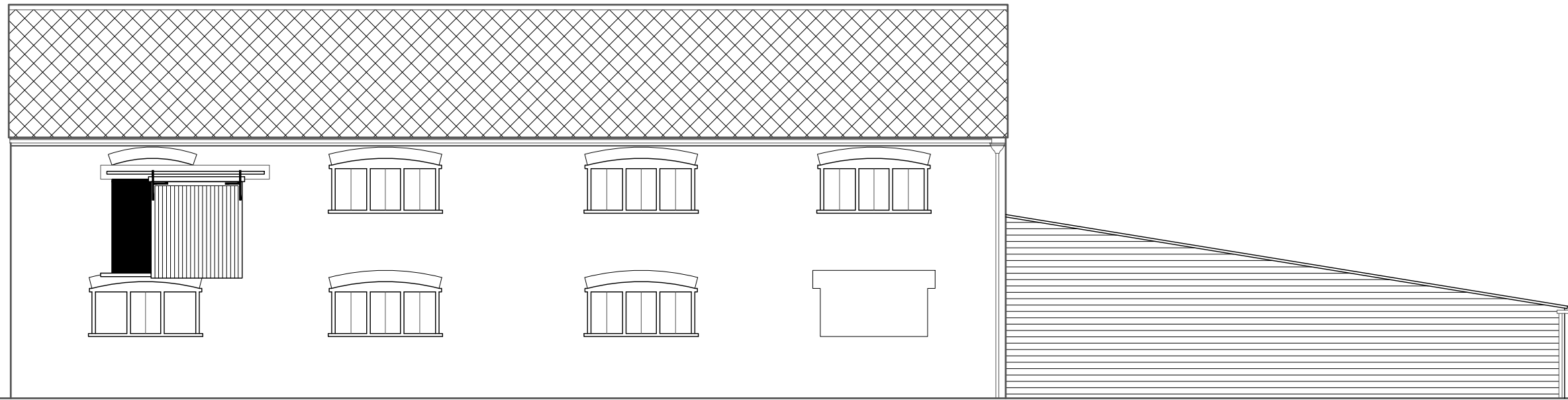
BROWN & CO JHWalter

Traditional Barn Conversion
Broadgate Nurseries, Bullock's Short Gate, Gedney Broadgate

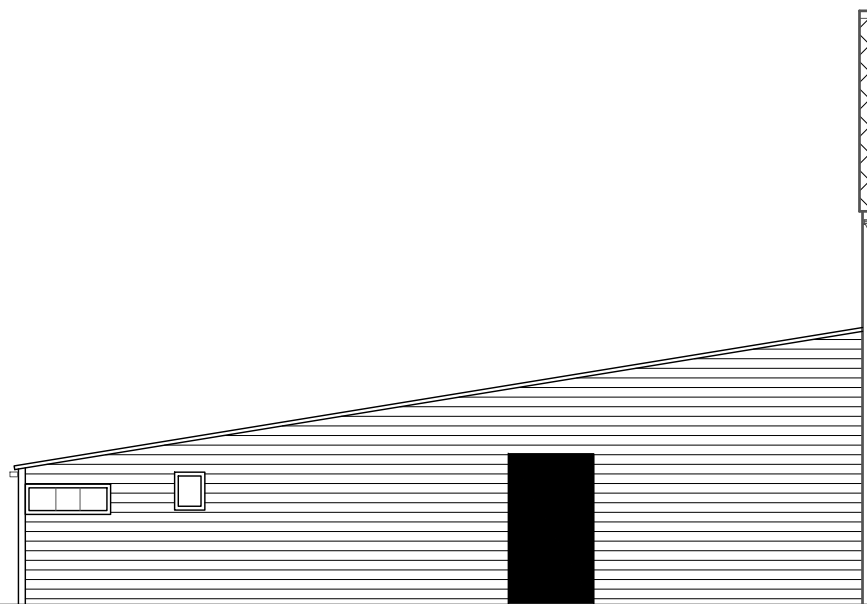
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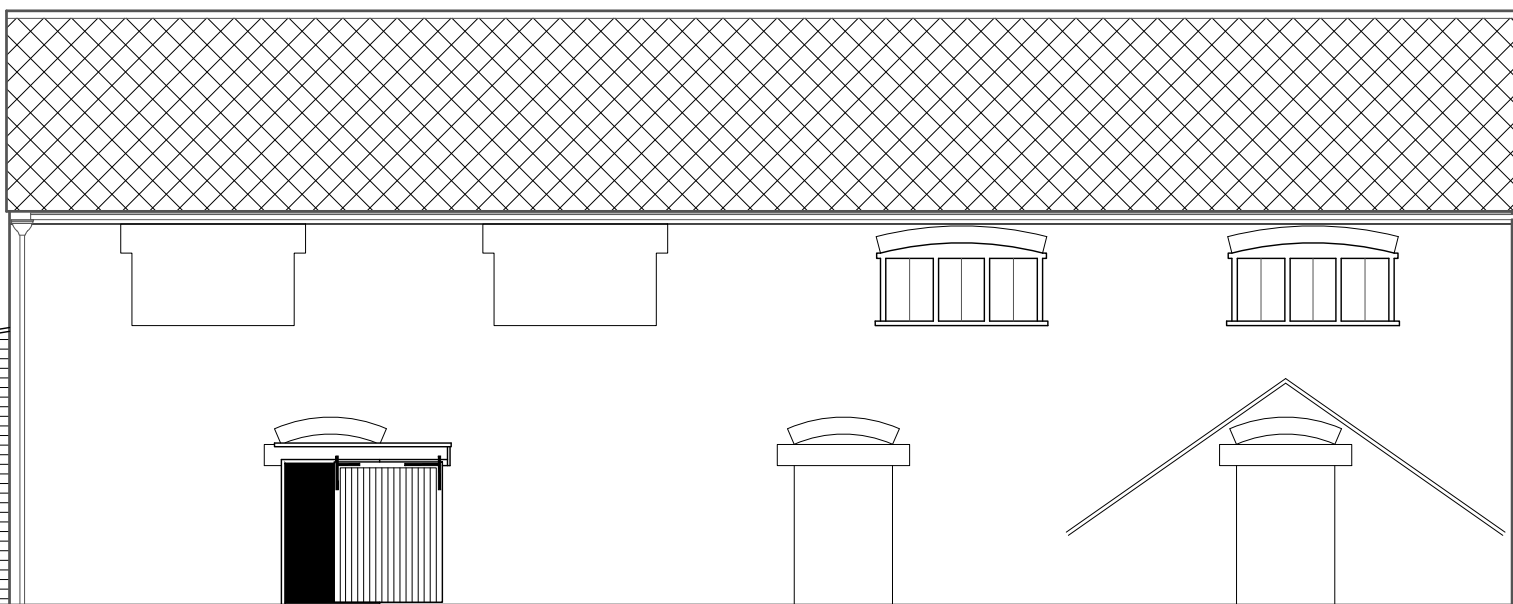
South West Elevation



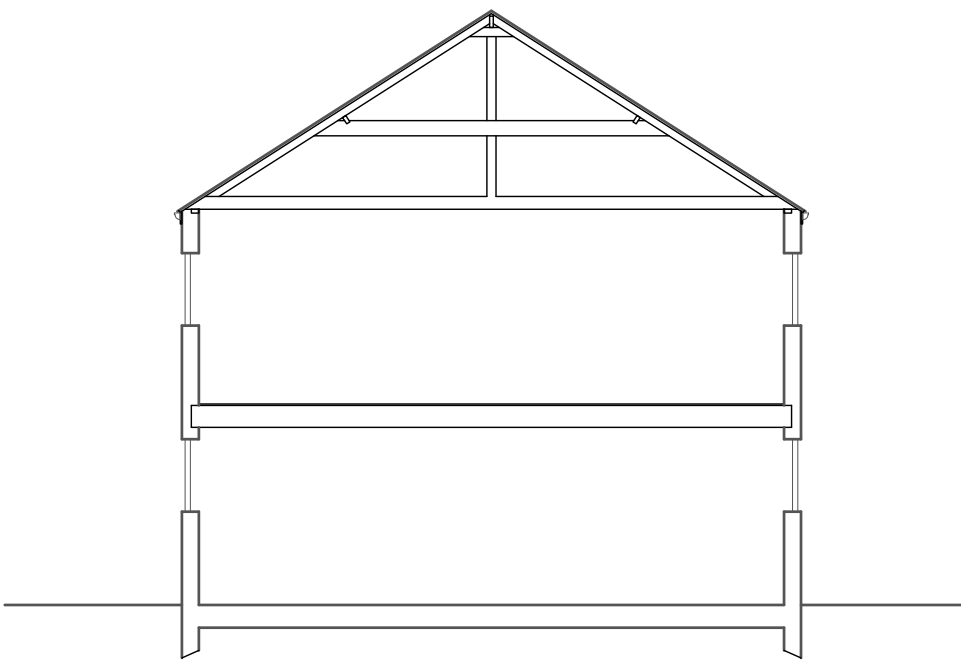
North West Elevation



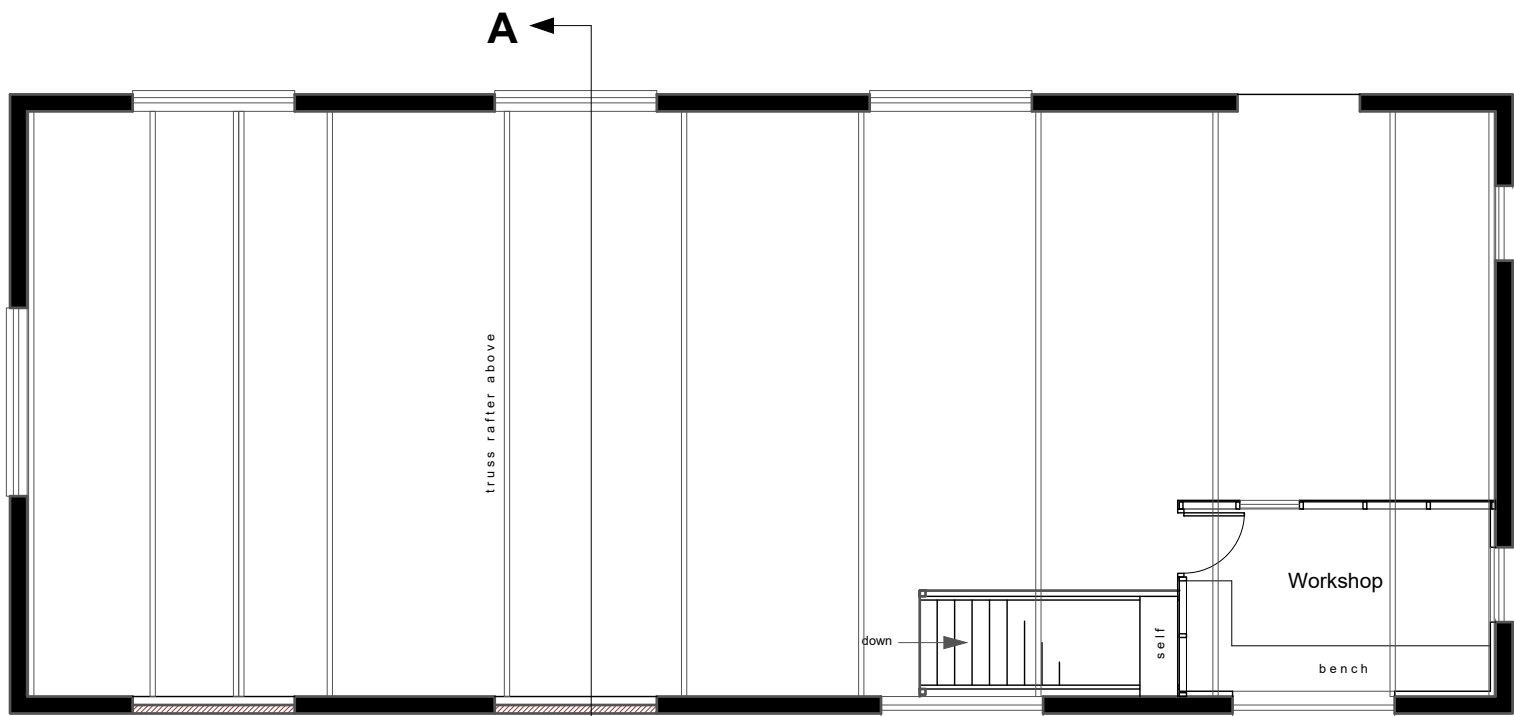
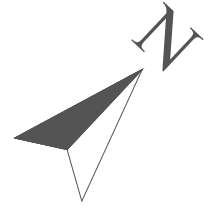
South East Elevation



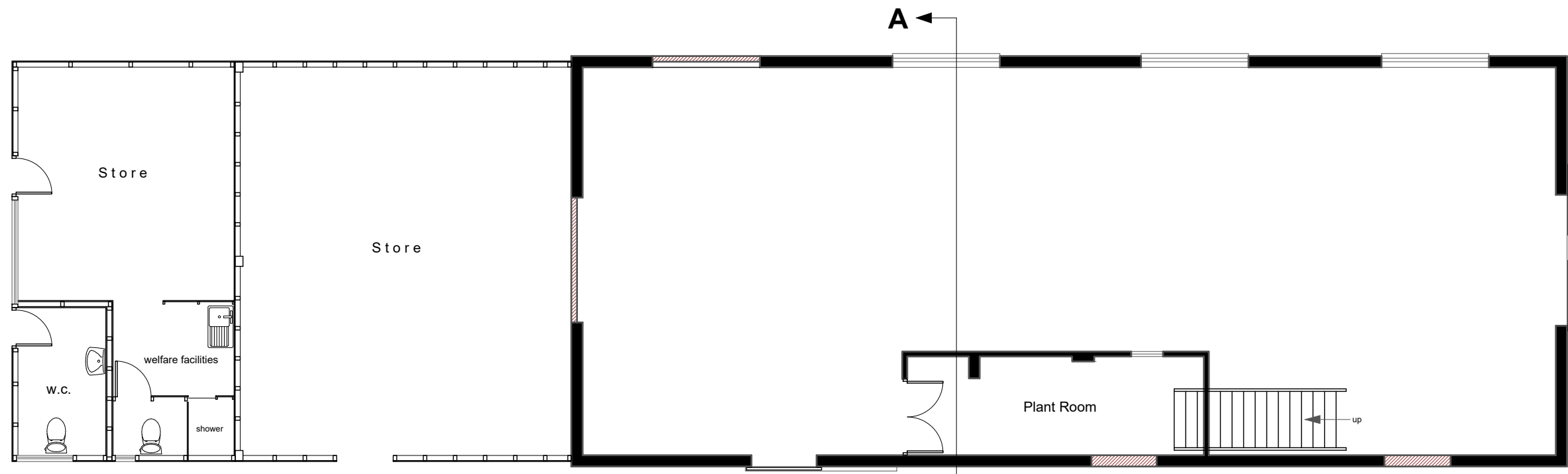
North East Elevation



Section A-A



First Floor Plan



Ground Floor Plan



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BROWN & CO JH Walter

Traditional Barn Conversion
Broadgate Nurseries, Bullock's Short Gate, Gedney Broadgate

Existing Building	Scale: 1:100	Revision 09/03/2023
	Sheet Size: A1	A
	AP043259-PW-03	

Traditional Barn Conversion

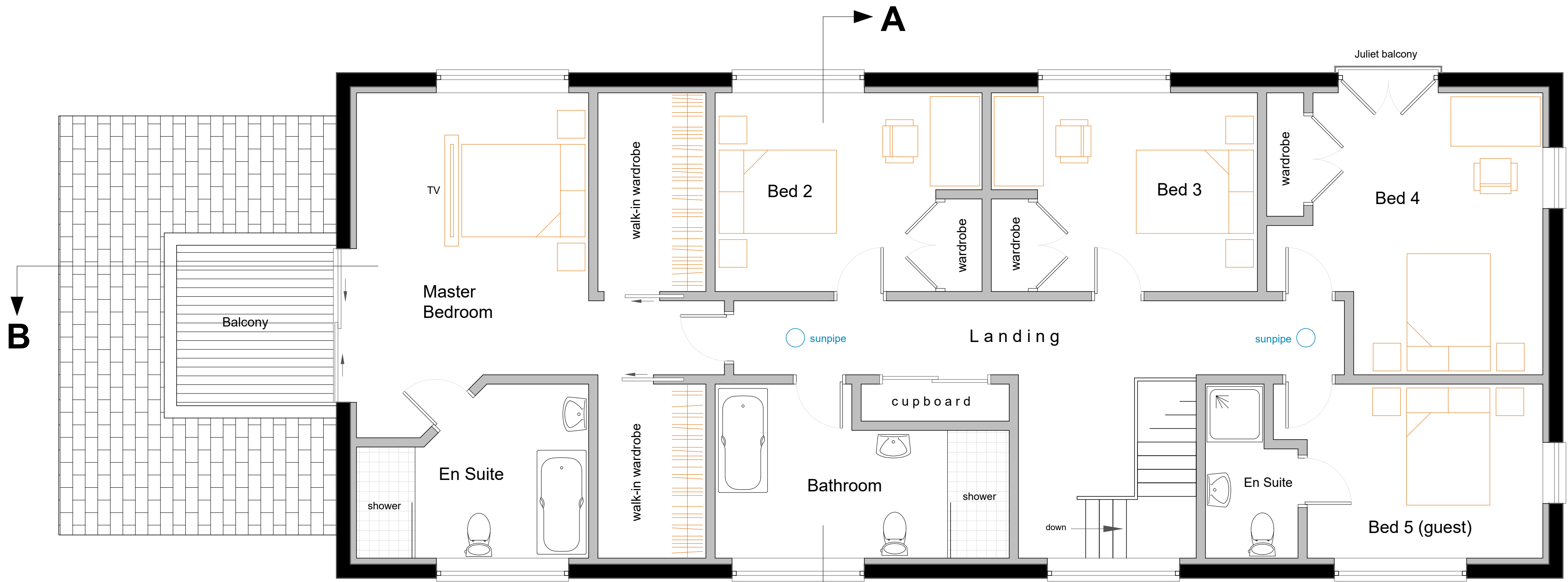
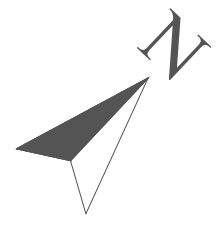
Broadgate Nurseries, Bullock's Short Gate, Gedney Broadgate

Proposed Floor Plans

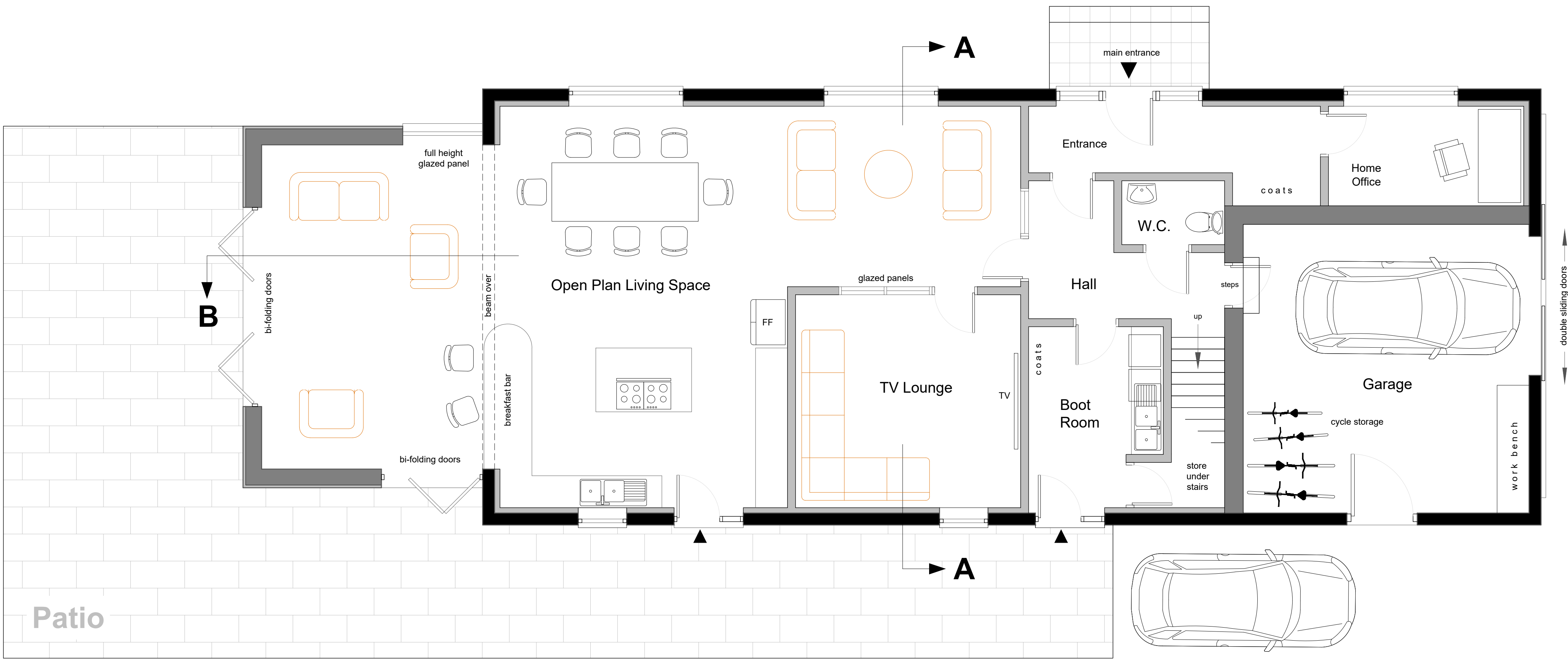
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AP043259-PW-04	

Plan 4

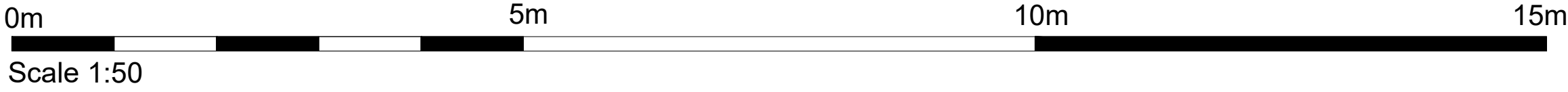
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First Floor Plan



Ground Floor Plan



Traditional Barn Conversion

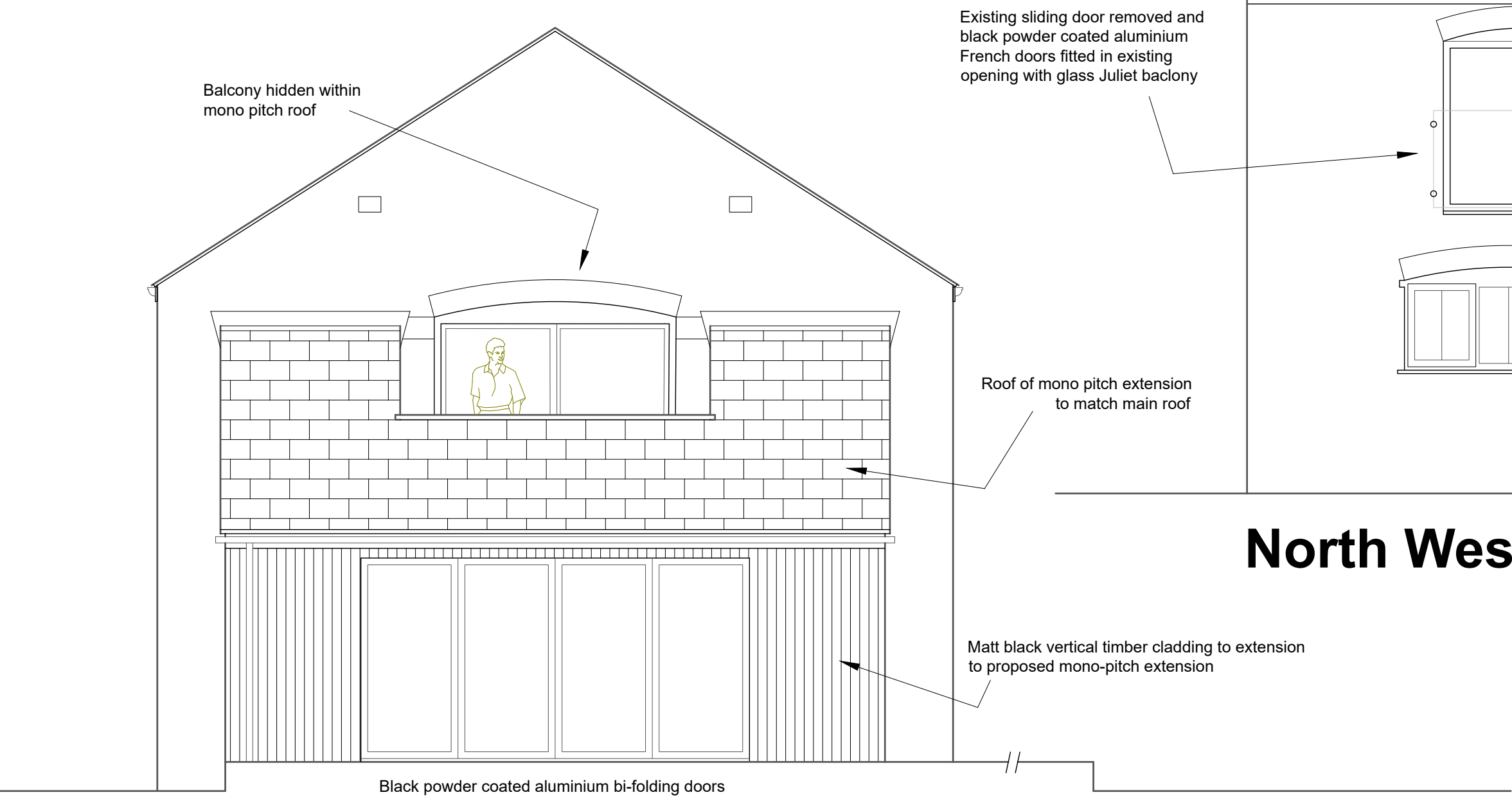
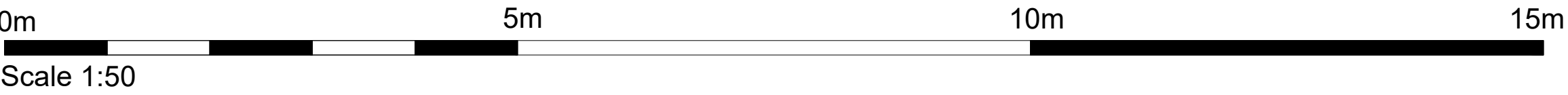
Broadgate Nurseries, Bullock's Short Gate, Gedney Broadgate

Proposed Elevations

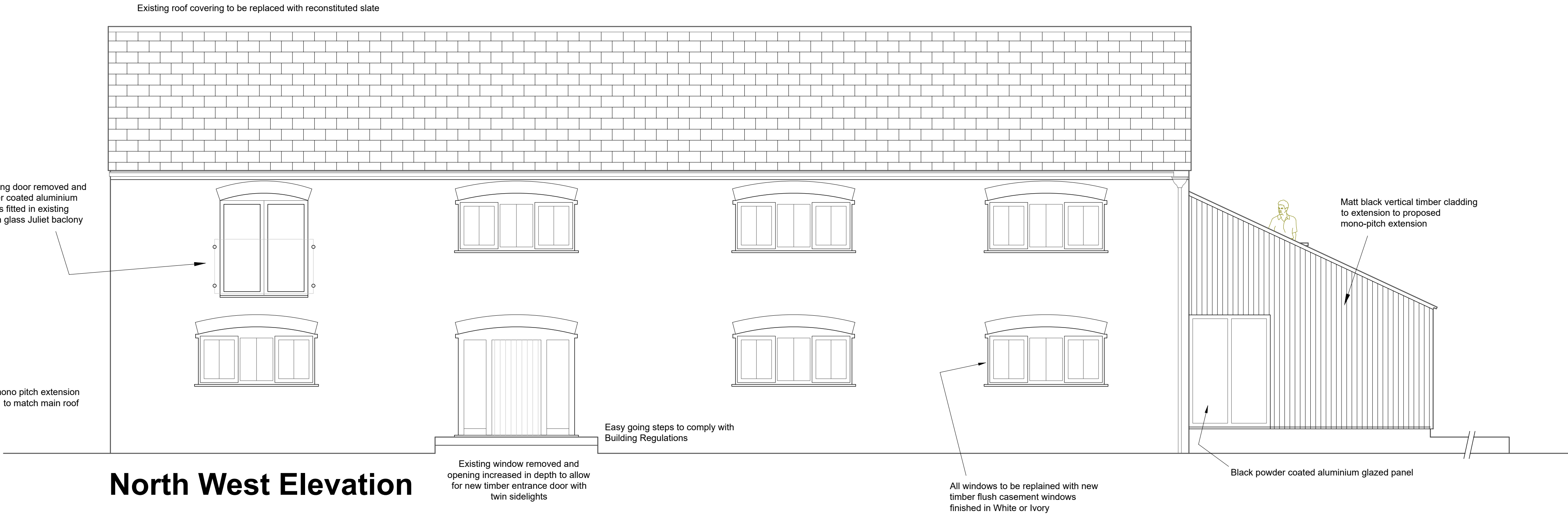
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Plan 5

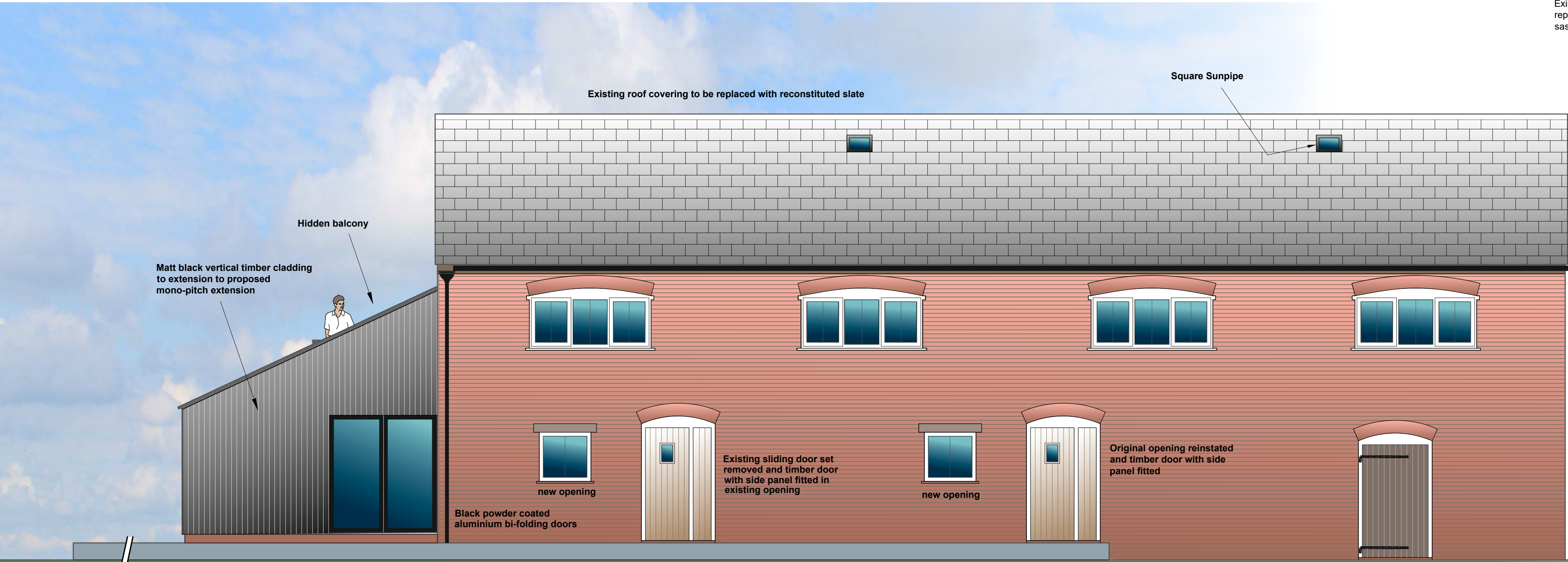
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South West Elevation



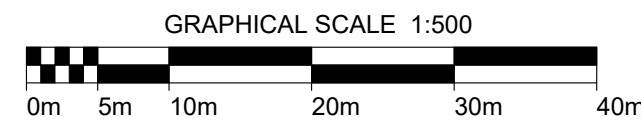
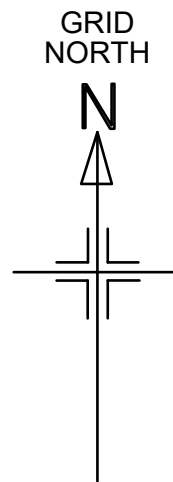
North West Elevation



South East Elevation



North East Elevation



Station Coordinates to OSGB36 (via OSTN15):				
Name	Easting	Northing	Height	Remark
BASE	540002.603	321528.336	2.963	Temp

Survey Legend:

Bank Top / Bottom	Building
Canopy / Shrub line	Building canopy
Trunk line	Surface changes
Hedge	Well defined
Wall	Poorly defined
Fence	Undefined
Sewer - Foul	Overhead electric
Sewer - Surface	Overhead telephone
Borehole	Survey Station
BO Bollard	GP Gate Post
CT Cable TV	IL Invert Level
CL Cover Level	KO Kerb Offset
EL Electric Cover	LP Lamp Post
EP Electric Post	MH Man Hole
ER Earth Point	MP Marker Post
FFL Floor Level	PO Post
FH Fire Hydrant	RE Rodding Eye
FP Flag Pole	RS Road sign
G Gully	Rwp Rain water pipe
GA Gas Cover	SP Sign Post
	SPL Sign Post Lit
	SV Stop Valve
	Svp Soil Vent Pipe
	TC Telecom Cover
	TL Traffic Light
	TP Telegraph Pole
	UTL Unable to Lift
	VP Vent Pipe
	WM Water Meter
	WO Wash Out

Notes:

- Survey undertaken November 2022.
- All manhole / chamber pipe sizes and inverts are estimations made from surface level only. Pipe inverts shown are outgoing pipe unless otherwise stated.
- Whilst every effort has been made to locate all visible features it should be noted that at the time of survey some items may have been obscured and therefore not located.
- Physical boundary features shown on this survey do not necessarily represent the legal boundaries.
- Levels are orthometric heights relative to Ordnance Datum Newlyn measured by GPS and transformed via OSGM15. Antenna phase centre offsets: Rinex data = OS supplied, Site data = IGS.
- Survey orientated to Ordnance Survey National Grid. OSGB36 (via OSTN15).
- Transverse Mercator Projection scale factor applied to this survey = 1.0000

Topographical Survey
Broadgate Nurseries
Gedney Broadgate, PE12 0DG

Client : Fletcher Salads

Date : 07.11.22 Scale : 1:500 Size : A1

Project : 2157 Drawing : 001 Rev : -

shire surveys shire

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website : www.shiresurveys.com