

FLOOD RISK ASSESSMENT

NPPF & PPG compliant

Existing community operation
Extension to existing building & internal
changes

Extension floor level no lower than existing

No other land level changes

Flood resilient building measures:

Results in better protected and flood future-proofed community building

at

Kedington Community Centre, Arms Lane, CB9 7QQ

January 2024

ARK Environmental Consultancy Ltd

Table of Contents

If this report has been released electronically, the appendices referred to herein can be found in the annexed zip folder/s as .pdf or .dwg files. If this report has been released in hard copy the appendices will be bound into the back of this report. Plans may be annexed separately as A1 or A0 copies where a bound-in A3 copy is not appropriate.

Contents

| | | |
|-----|--|----|
| 1.0 | Scope | 4 |
| 2.0 | Executive Summary | 4 |
| 3.0 | Introduction | 5 |
| 4.0 | Purpose of the Report | 5 |
| 5.0 | Report Information Sources | 5 |
| 6.0 | Overview of British Legislation | 5 |
| 6.1 | National Planning Policy | 5 |
| 6.2 | Local Policy | 6 |
| 7.0 | Site Status and Environmental Setting | 6 |
| 7.1 | Site Location and Status | 6 |
| 7.2 | Existing Flood Risk Posed to the Site / from Scheme | 6 |
| 7.3 | Fluvial River Stour / Undefended and Flood Data Requirements | 8 |
| 7.4 | Geology / Hydrogeology | 9 |
| 7.5 | SFRA Summary | 9 |
| 7.6 | Flood Compensation | 9 |
| 7.7 | EA 2023 Surface Water Hazard | 9 |
| 7.8 | Existing drainage | 10 |
| 8.0 | Assessment of Proposed Development | 11 |
| 8.1 | Proposed Development | 11 |
| 8.2 | LLFA Drainage Requirements | 11 |
| 8.3 | SUDS Formal Storage: not required of policy or this assessment | 12 |
| 8.4 | SUDS Specifications | 12 |
| 8.5 | Maintenance | 12 |
| 8.6 | SUDS Hierarchy Check | 13 |
| 8.7 | Flood Resilience | 14 |
| 9.0 | Flood Response Management | 15 |

| | | |
|------|-------------------------------|----|
| 9.1 | Evacuation and refuge | 15 |
| 9.2 | Flood Risk Vulnerability..... | 15 |
| 10.0 | Conclusion..... | 15 |
| 10.1 | Recommendations | 15 |
| 11.0 | Appendices..... | 16 |

1.0 Scope

This report contains the details of a Flood Risk Assessment carried out by Ark Environmental Consulting Limited (“ARK Ltd”) for Kedington Community Centre, Arms Lane, CB9 7QQ, henceforth referred to as “the site” in this report.

This report has been prepared for Derek Raine and must not be relied upon by any other party without the explicit written permission of ARK Ltd. All parties to this report do not intend any of the terms of the Contracts (Right of Third Parties Act 1999) to apply to this report. Please note this report does not purport to provide definitive legal advice nor can it be used to demonstrate that the site will never flood in the future. The Executive Summary contains an overview of key findings and conclusions. However, no reliance should be placed on the Executive Summary until the whole of the report has been read. Other sections of the report may contain information which puts into context the findings noted within the Executive Summary.

All rights reserved. No part of this report may be copied, edited, transmitted, reproduced, hired, lent, sold or disclosed without the prior written consent of ARK Ltd. Any action taken or omitted to be taken in reliance upon the content of this report is not permitted and may be unlawful. Copyright © ARK Ltd 2024.

2.0 Executive Summary

This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF) & PPG. It is to be used to assist the Local Planning Authority (LPA) and Environment Agency (EA) when considering the flooding issues of the proposed development as part of a planning application.

The proposed development comprises an extension to an existing community pavilion and associated internal changes; **no change to site operations or sensitivity.**

The worst case flood category for the community building is “More Vulnerable” use if the facility were considered to provide an education element. The site is located majority in EA FZ1, with the extension partly in FZ2 / FZ3 and thus the potential new climate change future FZ3. Hence it is considered appropriate development in accordance with the NPPF but with the need to pass the Exception Test; however this is an existing operation.

The extension is to provide increased community facilities including toilets and storage. This assessment considers the Exception Test to be passed for all uses.

Site is not within council and EA surface water risk area; the scheme results in betterment regardless.

The correct approach has been followed by the scheme:

- Ground extension floor level no lower than existing; no additional raising of floor levels is necessary
- Modern flood resilience required for ground floor extension
 - Just assume the full height of the ground floor is to be resilient
- Additional SUDS will manage surface water including for climate change

Results in better protected and flood future-proofed property than existing.

Informal pragmatic and truly sustainable Source Control SUDS are the correct measures for this site and scheme specifically. No additional formal SUDS are considered necessary to still be compliant with policy. Given the residual risk flood setting, the level, extent and depth of flooding on the site can be managed in terms of continued refuge for all site users for the lifetime of the development.

Based on the likely flooding risk, it is considered that the proposed development can be constructed and operated safely in flood risk terms, without increasing flood risk elsewhere and is therefore appropriate development in accordance with the NPPF.

3.0 Introduction

The site boundary is provided in the location plan in Appendix A.

The FRA combined a desktop study, review of available information, consultations and an assessment of all sources of flooding posed to and from the site and proposed development, in accordance with National Planning Policy Framework (NPPF). Appropriate flood mitigation measures were then considered, either as already incorporated within the scheme or recommended for inclusion at detailed design stage. The suitability of the proposed development was also reviewed in the context of the NPPF and the technical guidance accompanying the NPPF.

4.0 Purpose of the Report

This FRA has been carried out in accordance with National Planning Policy Framework (NPPF). It is to be used to assist the Local Planning Authority (LPA) and Environment Agency (EA) when considering the flooding issues of the proposed development as part of a planning application.

The report provides the following information:

- An assessment of the flood risk posed to the site based on flood information and mapping provide by the EA and Strategic Flood Risk Assessment (SFRA);
- An assessment of the proposed development in terms of surface water run-off; and
- Proposals for measures to mitigate the flood risks posed to and from the development where appropriate.

5.0 Report Information Sources

The information source used to undertake this FRA has been collected from the following sources:

- EA Website and Data
- British Geological Survey Website and iGeology App
- West Suffolk District Council Strategic Flood Risk Assessment: Evidence Base for the Local Plan
- West Suffolk District Council Drainage and SUDS Policies and Guidance
- Suffolk County Council as the Lead Local Flood Authority (LLFA) SUDS Policies and Guidance
- Internet mapping and searches.

6.0 Overview of British Legislation

6.1 National Planning Policy

The National Planning Policy Framework (NPPF) and PPG supercede all Planning Policy Statements (PPS's) and remaining Planning Policy Guidance (PPG's). Flood risk is retained as a key development consideration.

The Sequential and Exception Tests are retained as part of the NPPF. The accompanying NPPF Technical Guidance also includes Tables 2 and 3 to assist with flood risk vulnerability classifications and development suitability. This report provides the flood risk assessment element of both tests where appropriate. It is the decision of the planning authority as to whether the tests can be fully passed.

6.2 Local Policy

Local Authorities consider flood risk through relevant environmental and climate change policies which enforce the requirements of the NPPF.

The Strategic Flood Risk Assessment (SFRA) is a key source of flood risk specific information for the area. The SFRA provides a more detailed review of flood risks and recommendations for ensuring developments can be constructed and operated safely in accordance with the NPPF. Greater detail of the SFRA is provided in the report. Lincolnshire County Council Lead Local Flood Authority (LLFA) SUDS requirements.

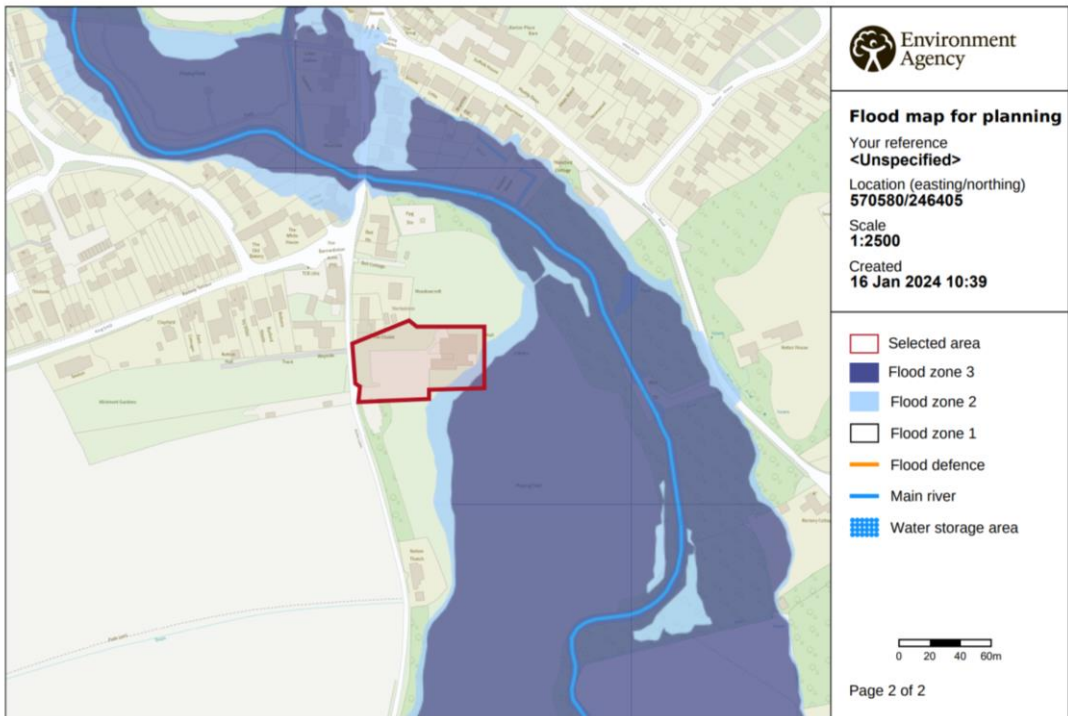
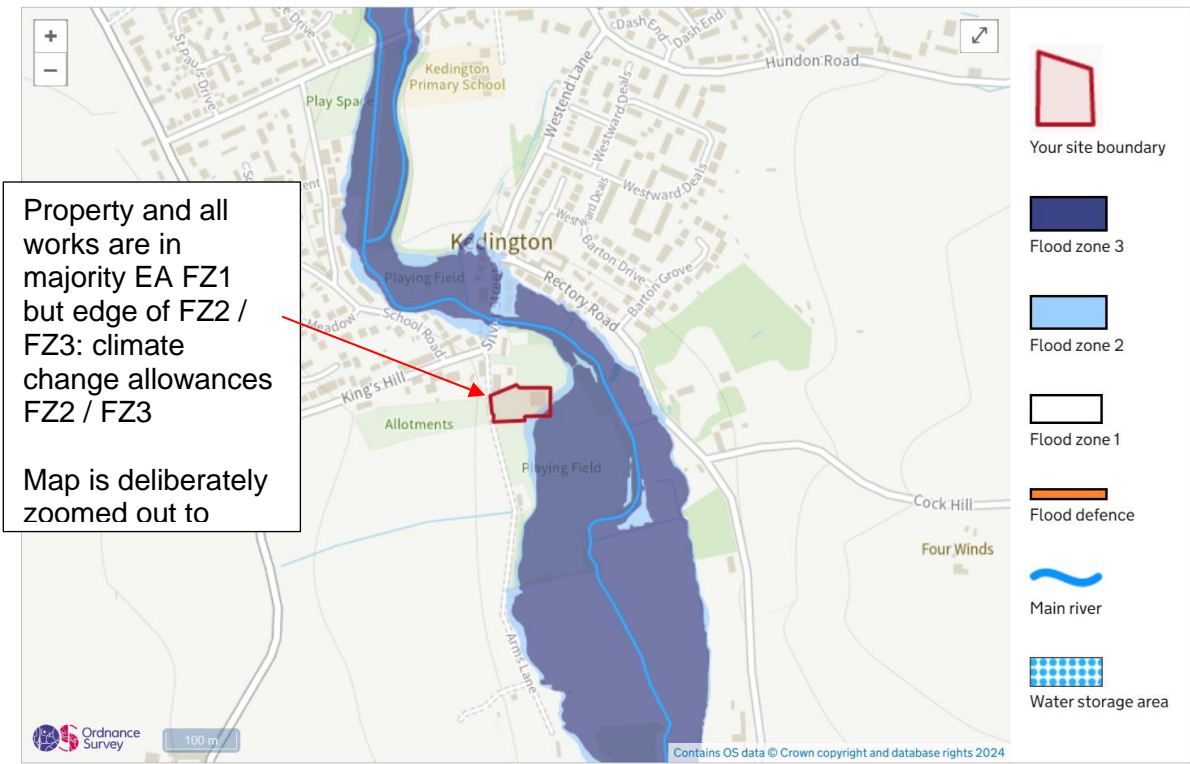
7.0 Site Status and Environmental Setting

7.1 Site Location and Status

The following description is based on information made available from internet mapping, architects drawings and aerial photography. The site comprises an existing community pavilion, associated hardstanding for access and paving slabs (impermeable make-up) adjacent to the property and soft landscaping . The location plan can be seen in Appendix A and mapping extracts.

7.2 Existing Flood Risk Posed to the Site / from Scheme

| Flood Sources | Site Status | Comment on flood risk posed to / from the development |
|--------------------------------|---|---|
| Fluvial / Tidal | Site is in majority FZ1 but this does not include climate change Southeast of site partly inundated by FZ2 and FZ3 Fluvial: River Stour Undefended: no breach events affect the site | No highly vulnerable uses No footprint closer to the River Stour than existing Exception Test considered passed. No change to site operations or sensitivity No flood compensation required for extensions in FZ1 / FZ2 / potential new climate change flood extents from SFRA |
| Groundwater | SFRA indicates site is not in an area of groundwater flooding / incidents. | The proposed development will not increase the risk of groundwater flooding. Low Risk |
| Artificial Sources | Site is now within the general EA Reservoir Flood Warning area: managed and maintained to appropriate standards No other artificial sources with likely flood flowpaths that could reach the site | Low Risk Not relevant to the scheme as residential use at the site is not in question |
| Surface Water / Sewer Flooding | Site is not located in a Critical Drainage Area but is within a surface water flood extent from the council and the EA Not within the high risk scenario flooding extents Condition, depth and location of surrounding infrastructure uncertain | No increase in flood risk: no flood compensation required Minimal increase in impermeable areas No additional drainage assessment required Results in better protected and flood future-proofed property than existing. Low Risk |
| Climate Change: new allowances | Not included in the EA flood modelling extents Hence assessment considers the worse case of the extension being in FZ2 / climate change extent | Development will not increase the peak flow and volume of discharge from the site Climate change incorporated in the SFRA modelling Low risk posed to and from the development |
| Historic Flooding | Included in the EA / council data where appropriate | Site is not in an area of historic flooding based on available data |



© Environment Agency copyright and / or database rights 2022. All rights reserved. © Crown Copyright and database right 2022. Ordnance Survey licence number 100024198.

7.3 Fluvial River Stour / Undefended and Flood Data Requirements

Source: The Stour; overtopping / surcharging.

There are no formal raised defences; hence there are no breach events.

Does the scheme need to use site specific flood levels?

The scheme comprises extension to an existing community pavilion.

There is no need to compare the site and floor levels to any specific flood levels.

The data would not alter the designs or suitability of the specific scheme given the site specific flood setting.

No additional flood levels data assessment is required.

Does the scheme need to respond to the EA's data?

The suitability of the site for a community pavilion is not being questioned.

The EA data would not alter this assessment or the design input or the recommendations; this is an extension to an existing community pavilion associated with the existing use of the site.

There is no other location for the scheme because it is an extension to the existing pavilion which must be in this location because the function is associated with the site only. This is a more sustainable approach than a full new build in another location.

There should not be an objection because we have not used the very detailed EA flood data; they are simply not required for this assessment because of the nature of the scheme.

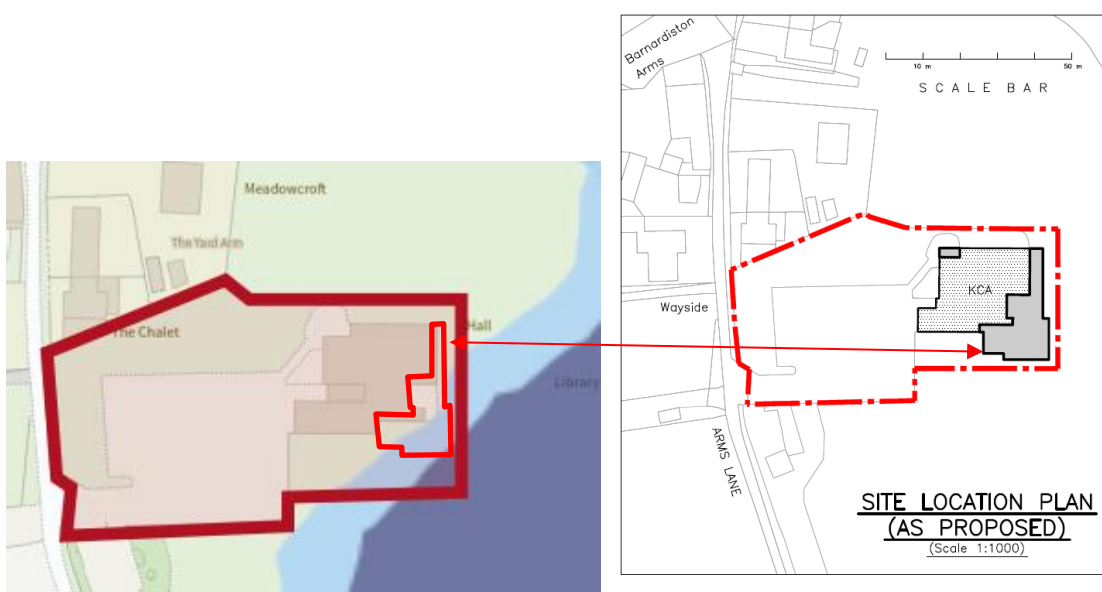
What about the using the flood levels to set the flood resilient heights?

There is no need to compare the flood resilient heights to any specific flood levels because the ground floor extension will simply be full height flood resilient.

This is the appropriate policy compliant, pragmatic site specific and scheme specific response.

It is not possible for even the extreme future flood levels to be close to the full height of the extension at this site based on an understanding of the specific flood setting and the fact that there is no unique topographic difference at this site compared to the surrounding residential structures.

For the reasons above, no site specific full topographic survey is required; the flood risk assessment does not need to use site levels relative to ordnance datum.



7.4 Geology / Hydrogeology

- **Bedrock:** Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation and Culver Chalk Formation - Chalk
- **Potential superficial deposits:** Head – Clay / Silt

Given the nature of the scheme, the bedrock geology, the proximity to the Soar and hence any porous material would be in direct hydraulic connectivity with the Soar, soakaways are not considered appropriate; infiltration testing is not required for this site.

7.5 SFRA Summary

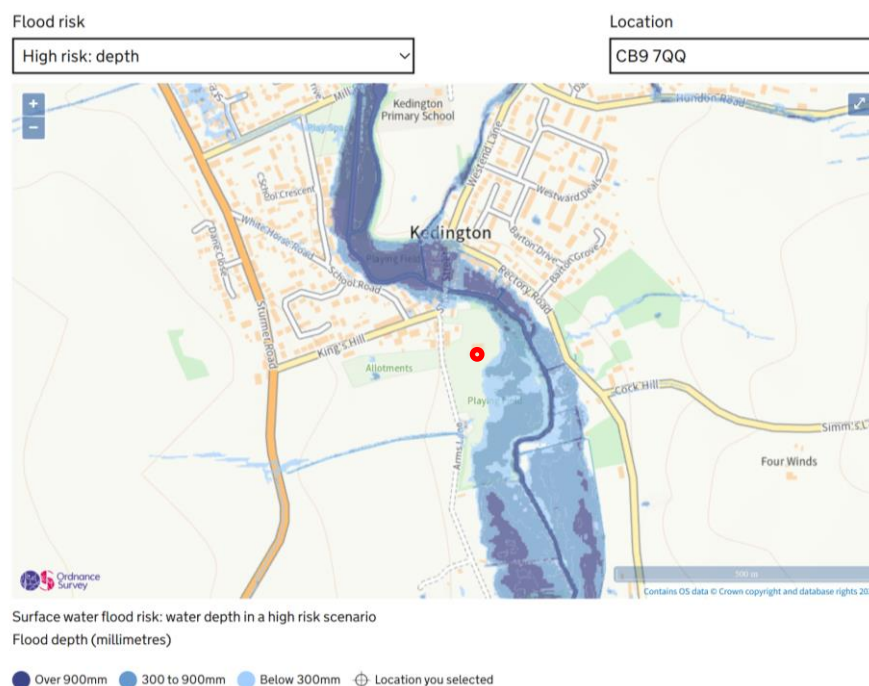
Where appropriate (eg: groundwater) the SFRA is referenced above. The SFRA does not indicate any other significant sources of flooding.

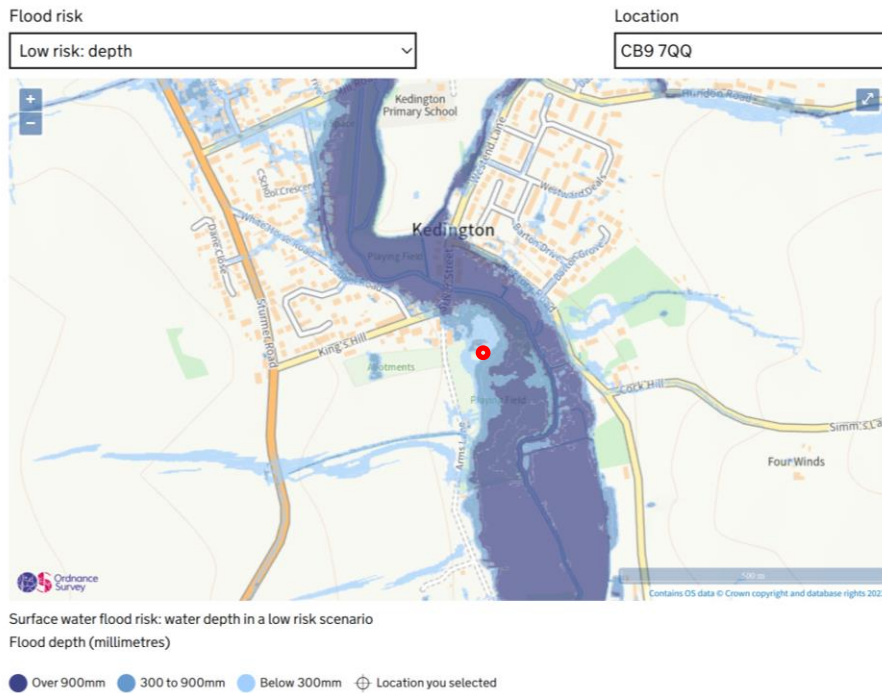
7.6 Flood Compensation

This report and the data presented demonstrate that the site and the surrounding area are within EA statutory fluvial majority FZ1 with a part of the site in undefended FZ2 / FZ3; this is a residual risk hence no flood compensation is required; this is EA and NPPF guidance. There is no proposed footprint located closer to the Soar than existing.

7.7 EA 2023 Surface Water Hazard

- Area of works (extension in south adjacent to existing footprint) is in VERY LOW - LOW hazard in all the EA risk scenarios
- Suitability of the community pavilion at the site is not in question and no flood compensation is required for surface water residual risk
- Correct approach and policy compliant approach is: standard to use modern flood resilient measures
 - **Results in better protected and flood future-proofed property than existing.**





7.8 Existing drainage

The site has no formal SUDS; the site currently drains 100% of roof and hardstanding surface water likely to an historic discharge to the watercourse / adjacent land. This is appropriate given the scope of the scheme.

The scope of the scheme does not and cannot change the existing connections.

No restriction devices are required or permitted; it is appropriate to re-use the existing infrastructure where appropriate and use informal SUDS storage where feasible to delay the surface water discharge (this performs the restriction).

8.0 Assessment of Proposed Development

8.1 Proposed Development

The proposed development can be seen in Appendix A. The proposed development comprises:

- Remove existing impermeable areas where appropriate
- Erect extension for new facilities including toilets / storage
- Internal changes
- Use full ground floor height flood resilient measures (see section below)
- No change to operation at the site
- No change to sensitivity of the site: remains a community pavilion function (plus other subservient uses)
- No proposed footprint close to the Soar than existing
- No additional formal SUDS considered necessary given scope of the scheme

Scheme results in better protected and flood future-proofed property than existing.

Note: any works within the floodplain could require a Flood Risk Activity Permit (FRAP) once planning has been secured.

8.2 LLFA Drainage Requirements

The scheme comprises a relatively small ground floor extension of interest to the SUDS requirements:

- Any additional new landscaping will be maximised to be permeable or porous surfacing with an additional depth of suitable granular material
- This will be source control and storage SUDS
- This is following the EA Specifications for Front and Rear Gardens

There is no policy trigger to incorporate additional formal SUDS other than to seek a betterment for all schemes no matter the size.

Furthermore, incorporating additional SUDS at this site would not necessarily be the most sustainable approach due to the need to use additional resources and energy which would be not commensurate with the scale and lifetime of the scheme.

8.3 SUDS Formal Storage: not required of policy or this assessment

The Qbar for the property is <0.10 l/s.

- It is not possible to restrict to ~0.10 l/s.
- It is not possible to restrict to 3 times the Qbar of ~0.30 l/s.

This is because the size of the aperture required for this restriction would represent a flood risk in itself.

This is an industry standard and cannot be objected to; if there are comments on restriction to Qbar then the drainage officer has not read the report.

8.4 SUDS Specifications

The scheme is a minor scheme to an existing community pavilion building. Additional formal extensive SUDS would not be commensurate with the scale and sensitivity of the scheme.

- Maximise porous planting areas
- Include rain garden planters / planter beds where feasible with direct connection from rainwater downpipes

However, to meet council policy, use the EA's specific **"Guidance on the permeable surfacing of front gardens"**

- Any new permeable surfacing can be constructed following the guidance if the ground conditions / local water table fluctuations permit:

<http://www.communities.gov.uk/publications/planningandbuilding/pavingfrontgardens>


8.5 Maintenance

With respect to maintenance, the proposed SUDS techniques should be maintained in accordance with the appropriate regimes set out within the SUDS manual and will be the responsibility of the owner / management company.

Given the SUDS required for this site are new porous / grass areas and if new patio areas are included, for them to have an extra subbase of granular material: no further maintenance or management measures are required given these are minimal intervention and no maintenance, for them to still operate as SUDS measures.

8.6 SUDS Hierarchy Check

Site Specific SUDS Appraisal

| SUDS Hierarchy | SUDS Technique | Potential Benefits | | | Site Specific | | | |
|---|--|--------------------|---------------------|------------------------------|---------------|---|------------------|--|
| | | Flood Reduction | Pollution Reduction | Landscape & Wildlife Benefit | ? | Scheme Specific Appraisal and Comment | SUDS Suitability | |
| Most Sustainable  Least Sustainable | Living Roofs | • | • | • | X | Not likely feasible given nature of roof construction. (Blue, Green and Brown roofs) | | |
| | Ponds / Basins | • | • | • | X | Not suitable in this flood setting / size of site or scheme | | |
| | Swales | • | • | • | X | Not suitable in this flood setting / size of site or scheme | | |
| | Infiltration Techniques | • | • | | X | Not required given scale of scheme and hydrogeology | | |
| | Maximise porous / permeable areas / rain garden planters | • | • | | ✓ | Included to meet council policy | | |
| | Tanked Systems | • | | | X | Not required given scale of scheme (This is not a truly sustainable option regardless as it does not appropriately reduce embodied carbon in balance with the likely sustainability gains for this site and scheme) | | |

Key:
 Potentially suitable at the site: * Incorporated in the scheme: ✓ Not suitable / possible at the site: X

8.7 Flood Resilience

The following elements for the ground floor extension will be undertaken using the most resilient approaches:

- All new electrics to be installed roof to floor (top down) where feasible
- Use low smoke halogen free (LSHF) type twin and earth cables rather than PVC cables and solid conductors rather than stranded conductors.
- Any new units eg: boilers and ancillary wiring (programmer and stats) if required to be placed on the ground floor will all be located as high within the ground floor level as feasible
- Wiring for telephone, TV, Internet and other services will be protected by suitable insulation to minimise damage.
- The new ground floor slab / block and beam system will be concrete in order to minimise damage and reduce the turnaround time for returning the property to full operation after a flood event
- No change to site levels outside of the new footprint
- Waterproofing to be tied in to the existing and proposed ground floor slab as appropriate to reduce the turnaround time for returning the property to full operation after a flood event; details to be provided at detailed design to building regulations requirements
- New waterproofing where feasible will be extended to an appropriate level as high as is feasible, above existing ground levels.
- Plasterboards will be installed in horizontal sheets rather than conventional vertical installation methods to minimise the amount of plasterboard that could be damaged in a flood event
- Wall sockets where possible will be raised to as high (minimum of 450mm above existing ground levels) as is feasible and practicable in order to minimise damage if flood waters inundate the property
- Any wood fixings on ground floor will be robust and/or protected by suitable coatings in order to minimise damage during a flood event

9.0 Flood Response Management

9.1 Evacuation and refuge

A precautionary approach has been taken.

The scheme does not change any operation at the site.

The property is in majority FZ1 with access & egress in FZ1 away from the flood source. Part of the building is in part FZ3 / FZ2 undefended / future climate change extents.

The site is an existing community pavilion with associated uses operation.

No additional formal evacuation plan is required.

No persons need to be at the site before, during or after a flood event.

If evacuation is deemed necessary

- Take the access to the west within and to unrestricted FZ1
 - least flood hazard route always in FZ1

9.2 Flood Risk Vulnerability

According to the NPPF retained Flood Risk Vulnerability Classification, the proposed worse case category would classify the site as “More Vulnerable.”

The NPPF also retained Flood Risk Vulnerability and Flood Zone “Compatibility” Classification; this states that a worse case “More Vulnerable” development even partly within FZ3 is appropriate but with the need to pass the Exception Test. It is considered the scheme passes the Exception Test.

10.0 Conclusion

The scheme comprises extensions for an existing community pavilion; no change to site operation or sensitivity.

The site is considered to be generally at a low risk from all sources of flooding except for potential residual fluvial flooding in extreme events / surface water flooding. The scheme addresses this residual hazard with the appropriate response: flood resilience to the full height of the new ground extension.

- **The scheme results in better protected and flood future-proofed property than existing.**

The proposed development is categorised as a worst case as “More Vulnerable” in accordance with the NPPF; it is therefore an appropriate type of development given the Exception Test is considered passed given the scope of the works and this assessment.

Based on the likely flooding risk, it is considered that the proposed development can be constructed and operated safely in flood risk terms, without increasing flood risk elsewhere and is therefore appropriate development in accordance with the NPPF / PPG.

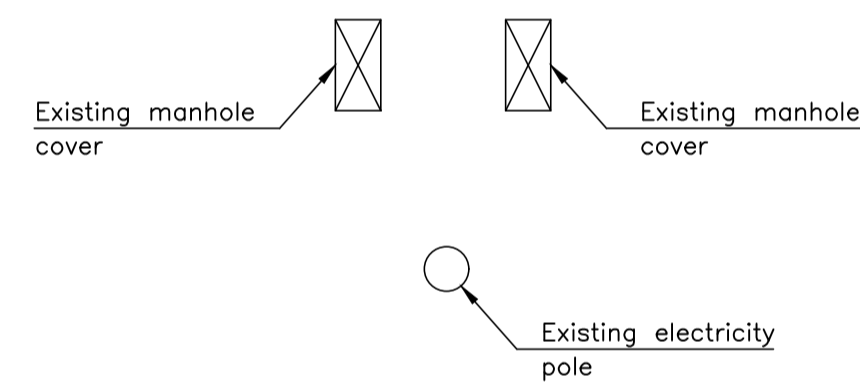
10.1 Recommendations

1. Use EA guidance for constructing any new permeable paving areas if appropriate
2. Provide SUDS designs if required by the council post planning

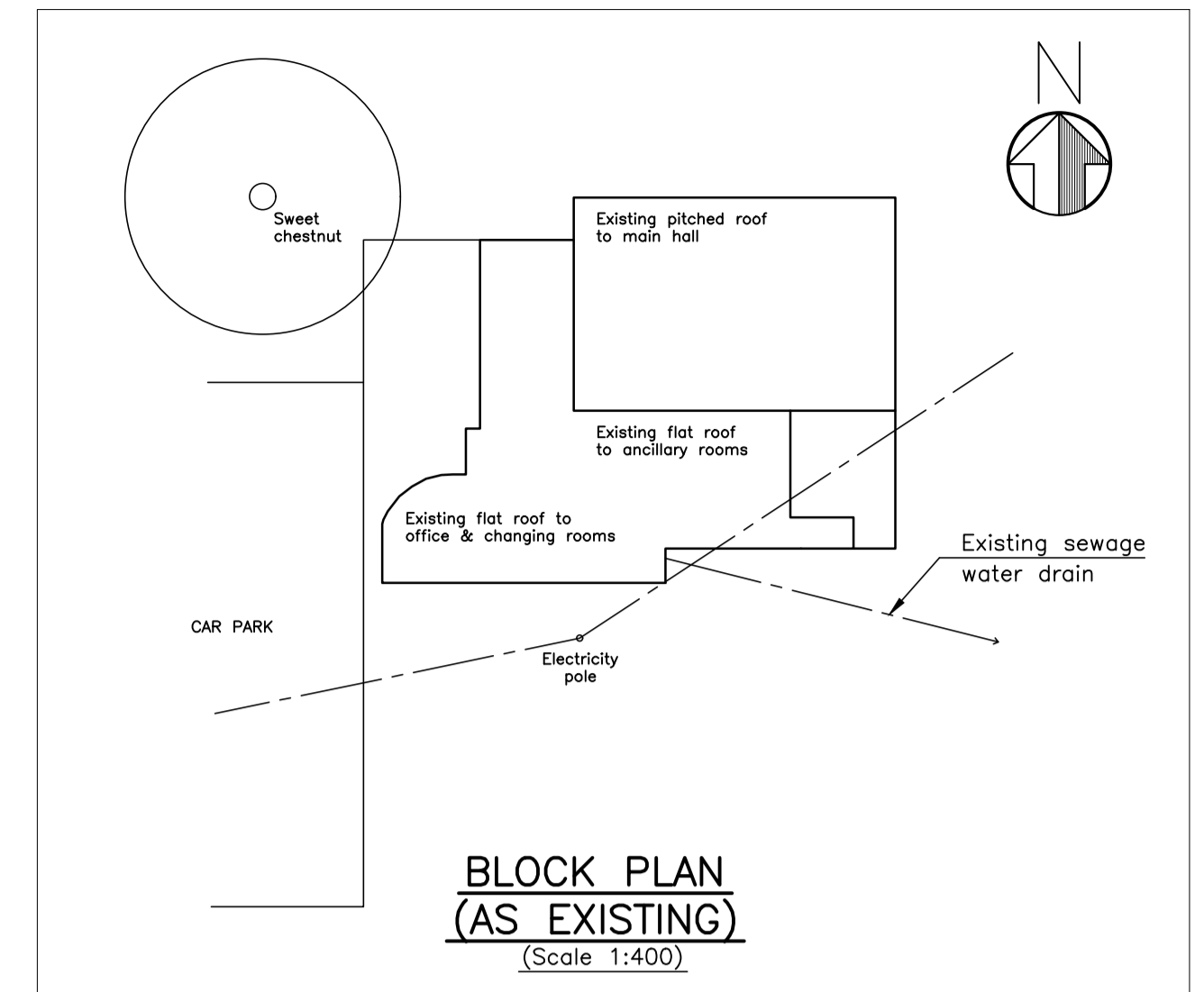
11.0 Appendices

- A. Location and Ex Layout
- B. Proposed Layout & Floor Plans

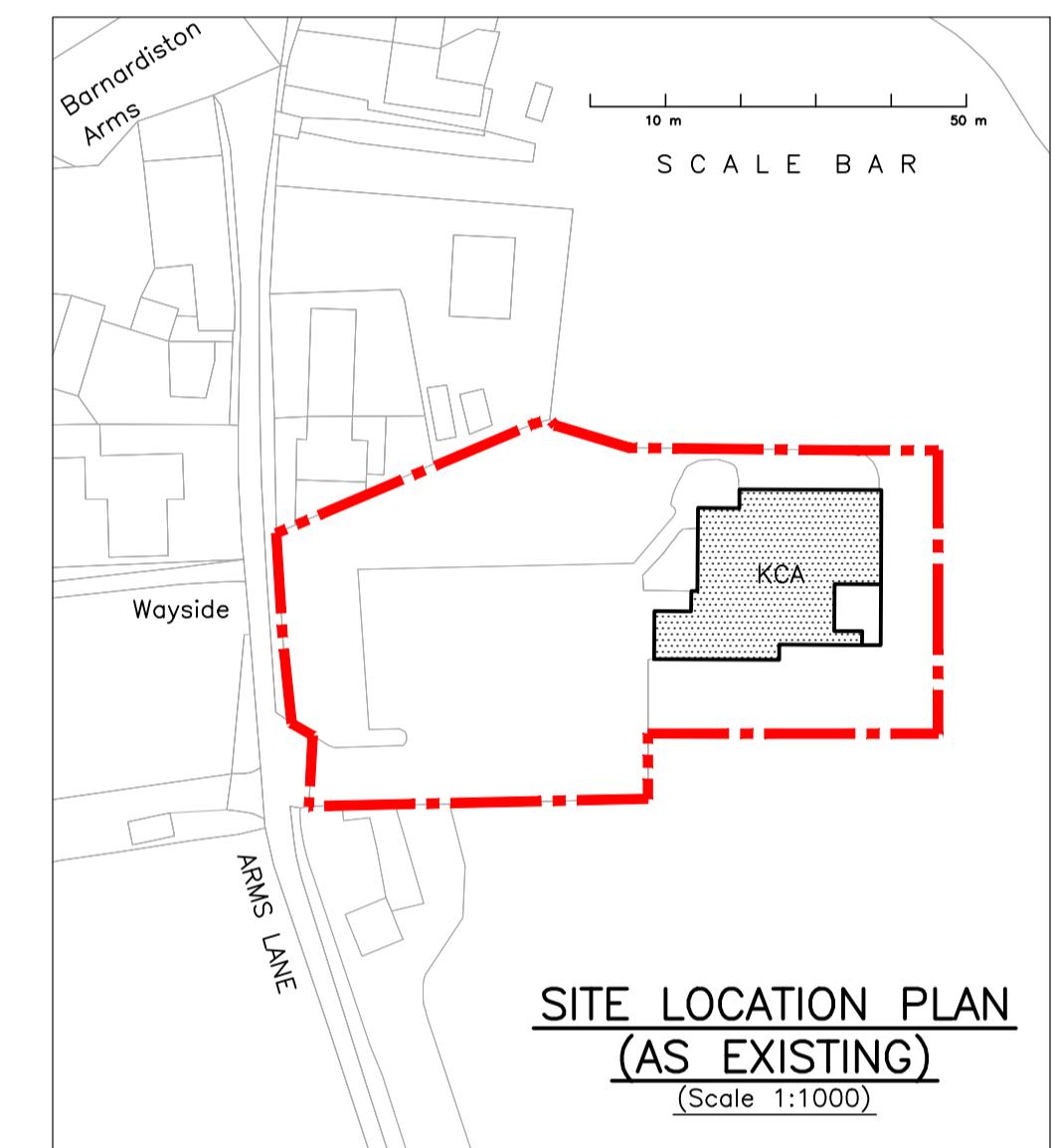
Appendix A



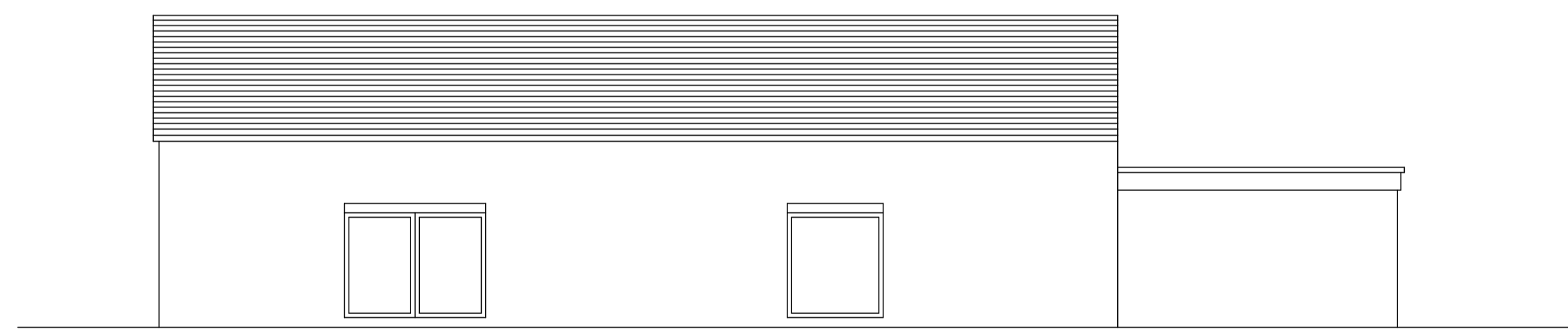
GROUND FLOOR PLAN AS EXISTING



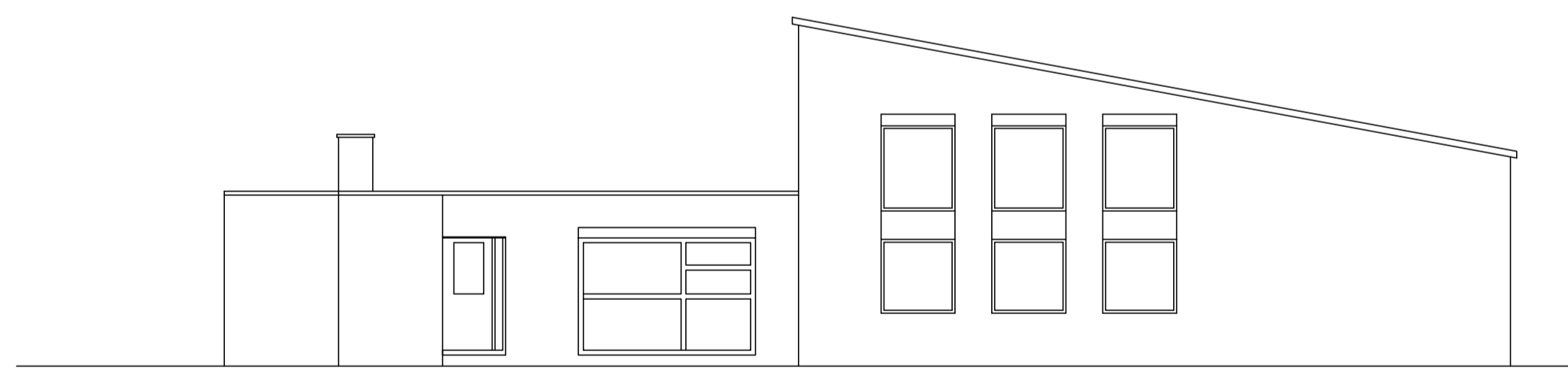
BLOCK PLAN (AS EXISTING)
(Scale 1:400)



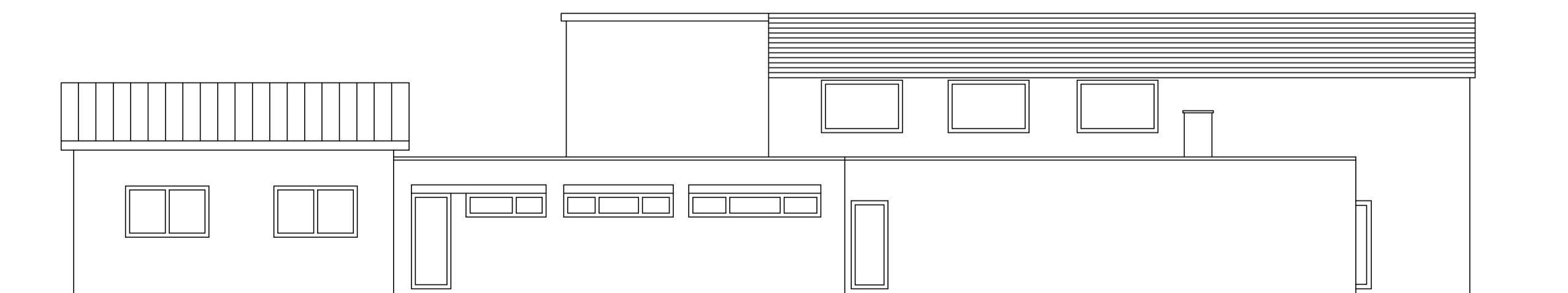
SITE LOCATION PLAN (AS EXISTING)
(Scale 1:1000)



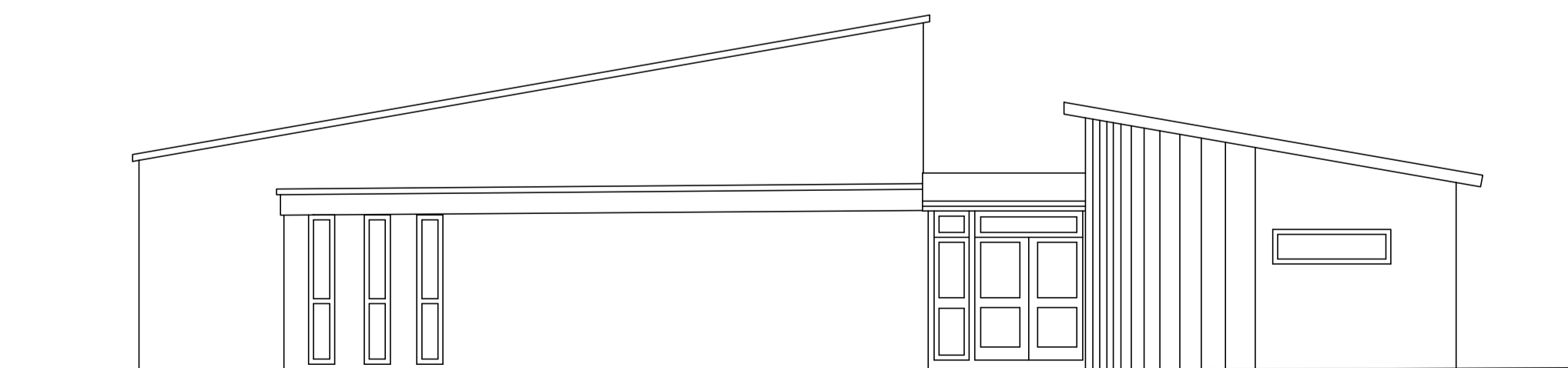
NORTH ELEVATION AS EXISTING



EAST ELEVATION AS EXISTING



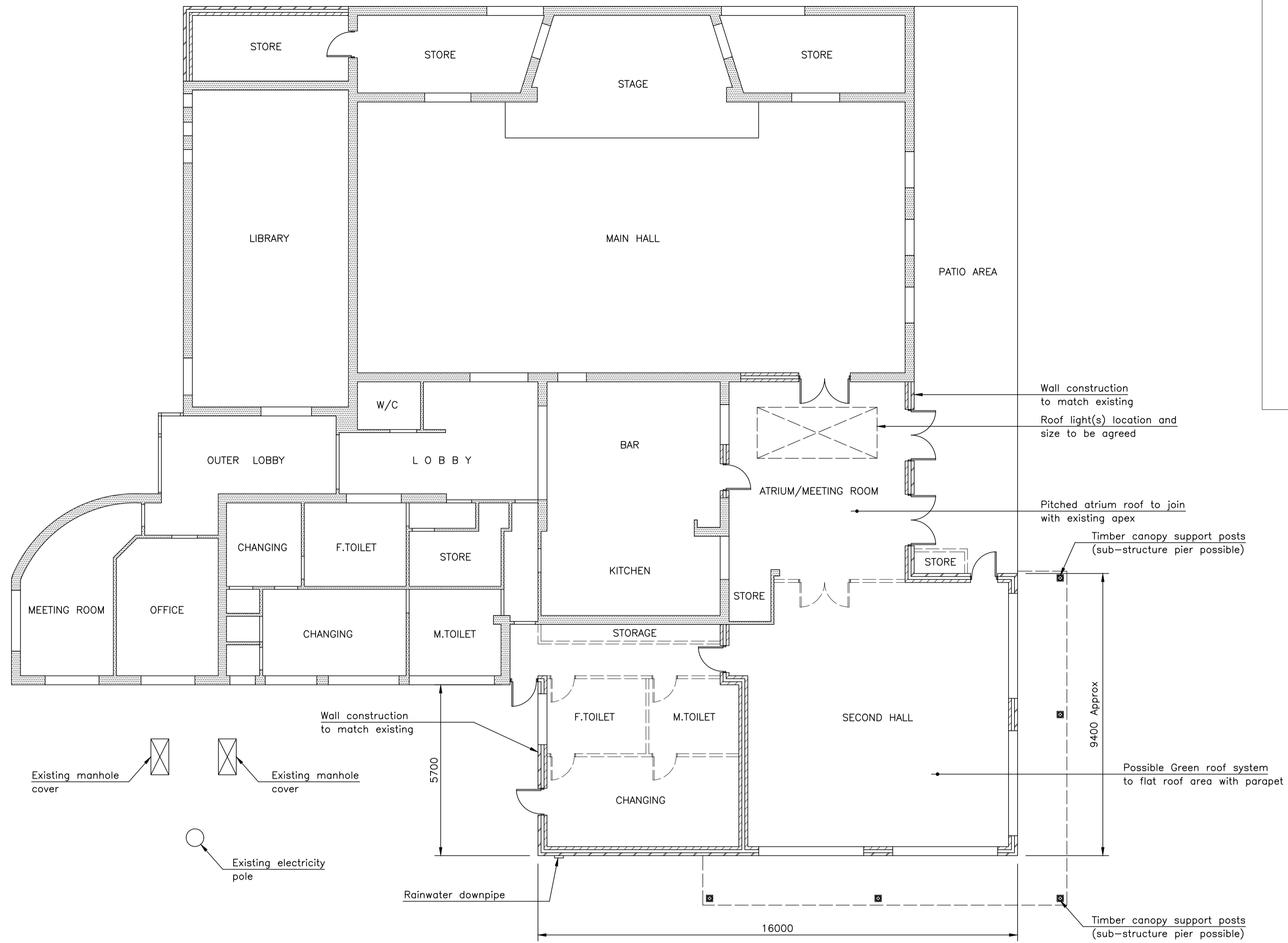
SOUTH ELEVATION AS EXISTING



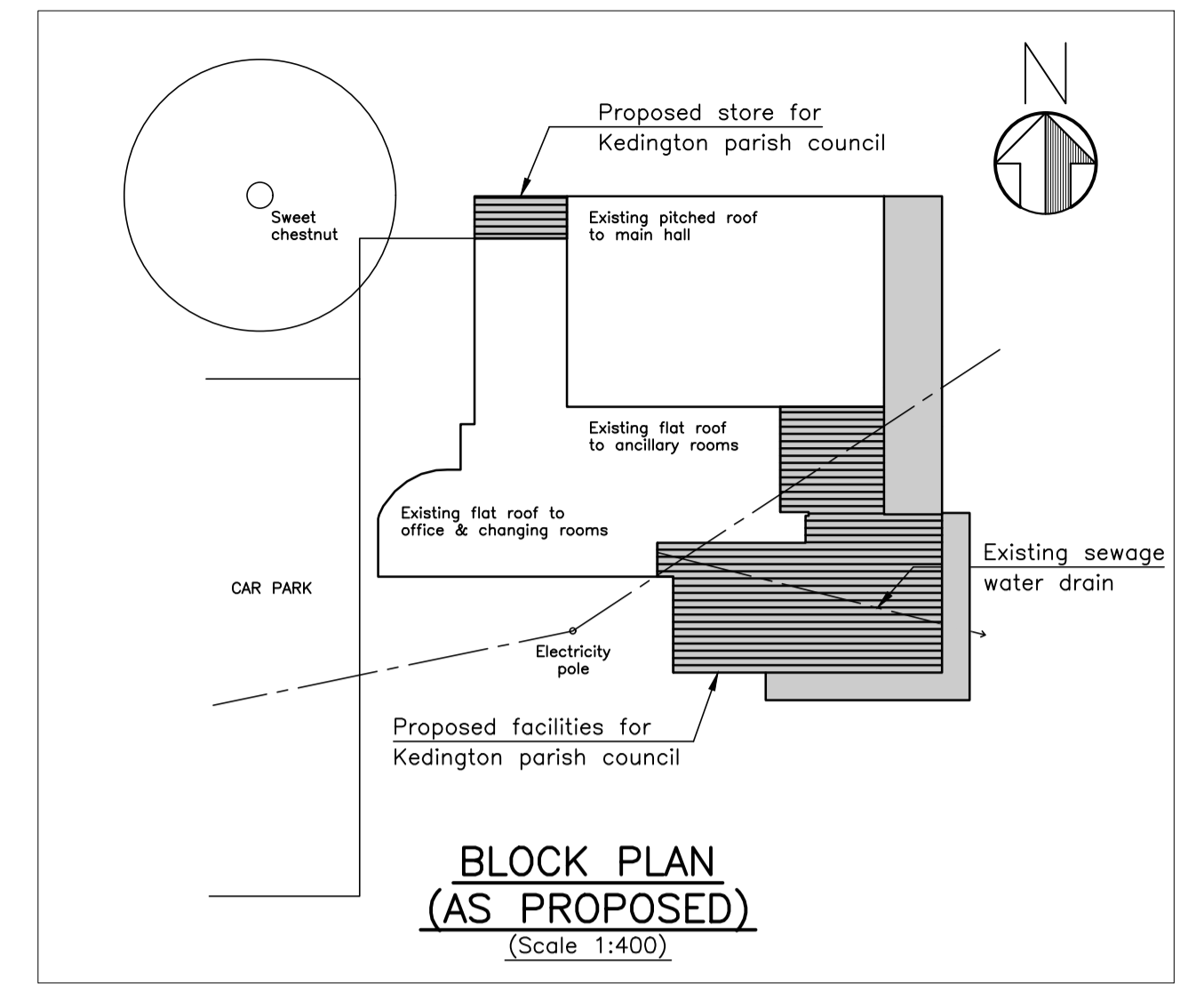
WEST ELEVATION AS EXISTING

| | |
|--|------------------|
| Project GREAT MEADOW, ARMS LANE, KEDINGTON | |
| Title KEDINGTON COMMUNITY CENTRE PLANS AND ELEVATIONS - EXISTING | |
| Drawn CF | Checked CF |
| Scale 1:100 @ A1 | Date MAY 2023 |
| Drawing No KCA-CP-01 | Rev |

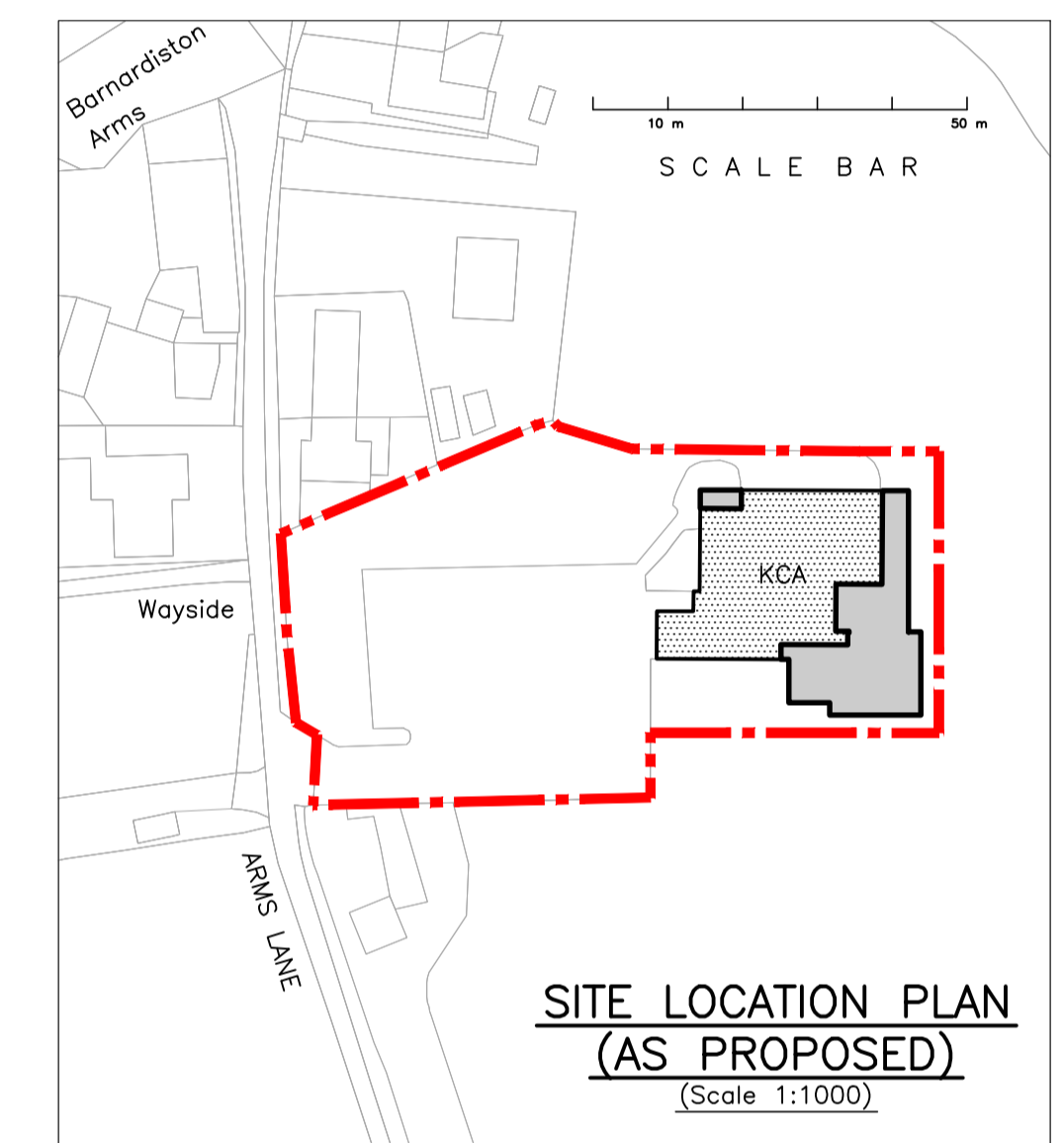
Appendix B



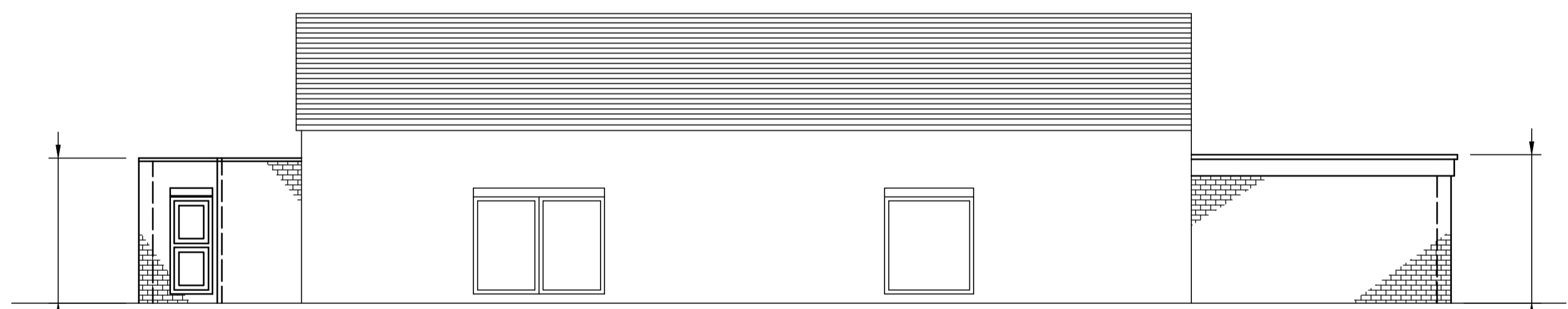
GROUND FLOOR PLAN AS PROPOSED



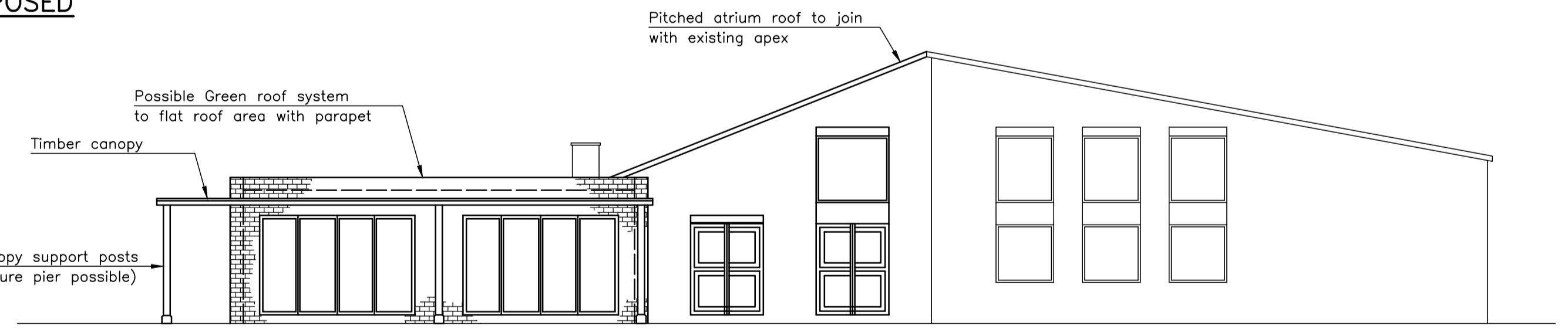
BLOCK PLAN (AS PROPOSED)
(Scale 1:400)



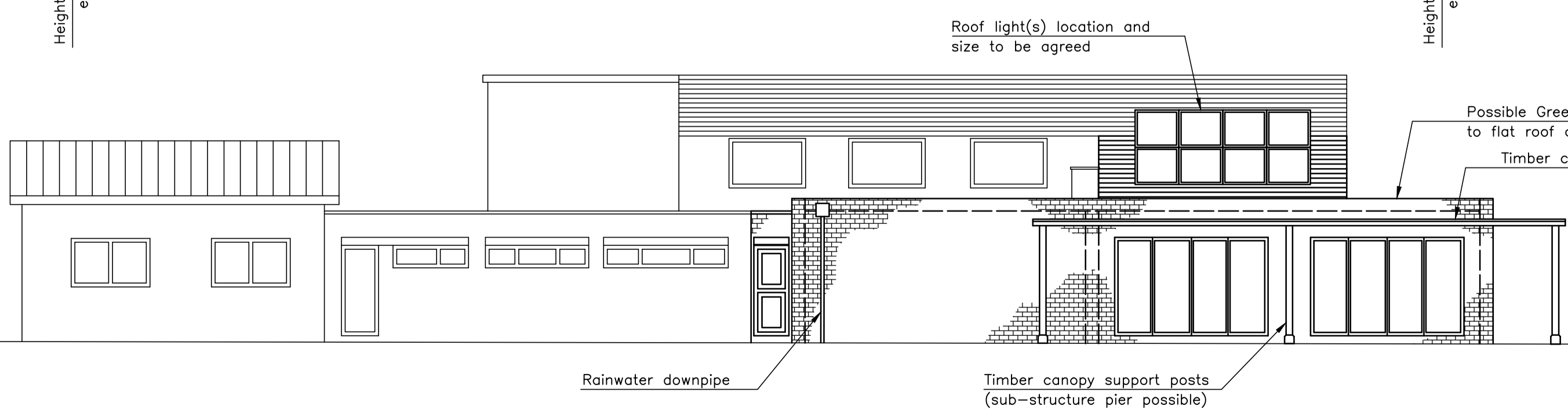
SITE LOCATION PLAN (AS PROPOSED)
(Scale 1:1000)



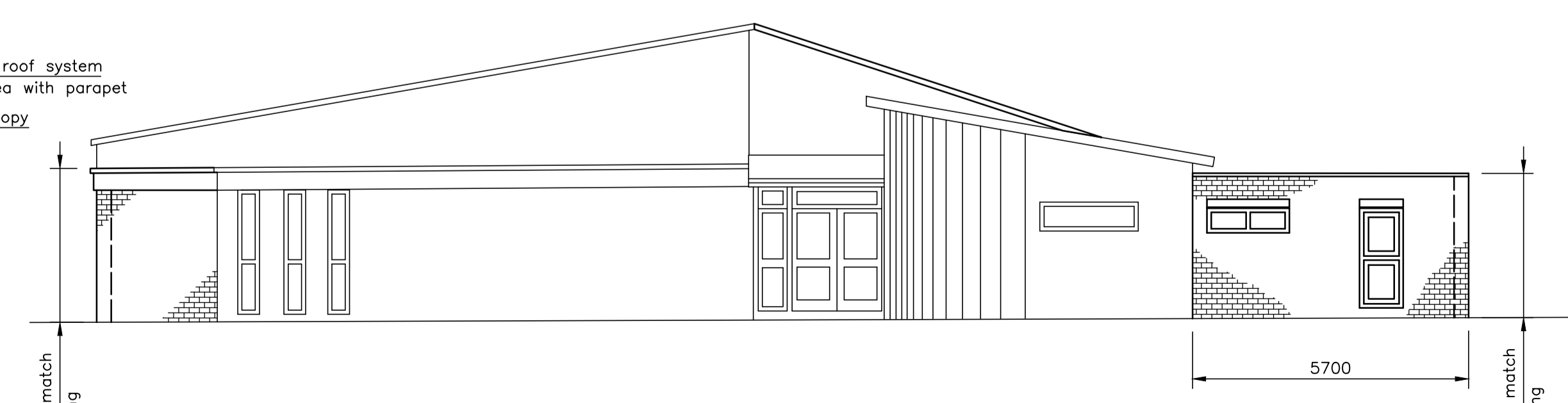
NORTH ELEVATION AS PROPOSED



EAST ELEVATION AS PROPOSED



SOUTH ELEVATION AS PROPOSED



WEST ELEVATION AS PROPOSED

| | |
|--|------------------|
| Project GREAT MEADOW, ARMS LANE, KEDINGTON | |
| Title KEDINGTON COMMUNITY CENTRE PLANS AND ELEVATIONS – PROPOSED | |
| Drawn CF | Checked CF |
| Scale 1:100 @ A1 | Date MAY 2023 |
| Drawing No. KCA-CP-02 | Rev |