

Report Title**Flood Risk Assessment****Property Address**

12/14 Main Street
Haverigg
Millom
LA18 4EX

Client

MVC Design Ltd

Our Reference

20-165r001

Date

4th July 2020

Prepared by

Colin Aimers
BEng Hons CEng MICE CEnv
Director
colin.aimers@kingmoorconsulting.co.uk

Contents

| | |
|---|-----------|
| SITE LOCATION AND PROPOSED DEVELOPMENT | 2 |
| INITIAL FLOOD RISK | 2 |
| DETAILED FLOOD RISK ASSESSMENT | 2 |
| Flood Risk Assessment Criteria | 2 |
| Historic Flooding | 3 |
| Sources of Flooding | 4 |
| Flooding from Rivers / Watercourses | 4 |
| Flooding from Reservoirs | 4 |
| Flooding from the Sea | 4 |
| Flooding from the Land | 5 |
| Flooding from Groundwater | 5 |
| Flooding from Sewers | 5 |
| Summary | 6 |
| Increase to Off Site Flooding | 7 |
| Flood Risk Vulnerability | 7 |
| Assessment | 7 |
| Mitigation Measures | 8 |
| Flood Resilience and Resistance | 8 |
| Emergency Access | 8 |
| APPENDICES | 10 |

SITE LOCATION AND PROPOSED DEVELOPMENT

The site is located on Main Street, Haverigg, Millom, LA18 4EX in the Copeland Borough Council area.

The existing property is a hair studio and vacant shop and it is proposed to convert the properties to 2 bed dwellings within the existing footprint of the site. There is no material change in the size or impact of the property associated with the conversion.

INITIAL FLOOD RISK

An initial flood risk assessment was undertaken adopting mapping available at <https://flood-map-for-planning.service.gov.uk/> and this identified the area of the site to be within a Flood Zone 3: Areas benefiting from flood defences.

It is therefore recommended that a more detailed flood risk assessment is undertaken.

DETAILED FLOOD RISK ASSESSMENT

Flood Risk Assessment Criteria

A Flood Risk Assessment Report was requested from the Environment Agency and identified that the site is considered in a Flood Zone 3.

The Flood Zone classifications are as follows :

- Flood Zone 1 - land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
- Flood Zone 2 - 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.

- Flood Zone 3 - 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.

In respect to the proposed development, this is classified as More Vulnerable and as such the flood risk assessment is required to address :

- Surface water management
- Access and evacuation
- Floor levels

A request was made to the Environment Agency for site specific Product 4 data and at the time of writing, and information has been provided.

Historic Flooding

The site has not experienced direct flooding from either surface water or foul water although there has been a number of flood events near the site associated with the overwhelming of watercourses and drains in the area of the Old Tannery area of Haverigg. Since this event in 2017, United Utilities and others have undertaken significant work to identify and resolve these issues.

Sources of Flooding

As part of the risk assessment, consideration shall be given to the following sources of flooding and what effect these could have on the development:

Flooding from Rivers / Watercourses

There are a number of watercourses classified by the Environment Agency as Main Rivers around the site. This includes the Haverigg Pool approx 75m from the site to the eastern boundary of the site. It is noted that this is tidal and connected hydrologically to the wider Cumbrian coast.

As the site is developed and part of the original construction of the wider Haverigg Hamlet, formal drainage is present around the property which would limit or provide a pathway for water to pass back toward the property.

Due to the presence of the fluvial channels, we consider the risk associated with flooding from rivers and watercourses to be **MEDIUM / HIGH**. More information shall be presented in later sections relating to the Flooding from the Sea.

Flooding from Reservoirs

Not applicable.

Flooding from the Sea

From a review of the information obtained from the Environment Agency, it has identified that the site is within the flood zone 3 associated with coastal flooding.

The information obtained includes flood levels for the 1 in 200 year, 1 in 200 year + climate change allowance, events for both defended and non defended scenarios.

The following table provides a summary of the flood levels presented by the Environment Agency associated with the site.

| Event | Defended / Undefended | Flood Level (m AOD) |
|--|-----------------------|---------------------|
| 1 in 100 Year | Defended | Outside flood risk |
| 1 in 200 Year | Defended | 5.24 |
| 1 in 200 Year (+Climate Change to Year 2115) | Defended | 6.62 |
| 1 in 30 Year | Undefended | 5.86 |
| 1 in 75 Year | Undefended | 6.01 |
| 1 in 100 Year | Undefended | 6.06 |
| 1 in 200 Year | Undefended | 6.16 |
| 1 in 200 Year (+Climate Change to Year 2115) | Undefended | 6.85 |

From a topographic survey undertaken on the site, the floor levels present are between 5.3m AOD and 5.35m AOD.

We consider the risk associated with flooding from the sea to be **HIGH**.

Flooding from the Land

The area around the site is developed and as such no land is likely to discharge water to the site resulting in flooding. We consider the risk associated with flooding from the land to be **LOW**.

Flooding from Groundwater

The site has been developed over a number of years and any affect on groundwater would be negligible. Therefore, we consider the flood risk associated with groundwater to be **LOW**.

Flooding from Sewers

There are a number of foul and surface water sewers located near the site, and following flooding events and failures of pumping stations on the sewer network, United Utilities have upgraded this infrastructure to resolve any issues and have a high maintenance regime for the plant to eliminate any potential issues occurring again. We consider that the flood risk to be **LOW**.

Summary

The following table indicates a summary of the risks and control measures required:

| Source of Flooding | Risk | Control Measures |
|-----------------------|------|---|
| Rivers / Watercourses | High | <ul style="list-style-type: none">• Mitigation measures regarding the construction of the facility• Site Evacuation Plan |
| Reservoirs | n/a | - |
| Sea | High | <ul style="list-style-type: none">• Mitigation measures regarding the construction of the properties• Site Evacuation Plan |
| Land | Low | As above |
| Groundwater | Low | As above |
| Sewers | Low | As above |

Increase to Off Site Flooding

The proposed development in its nature is the same footprint than the historic structure present on the site. It is not proposed to enlarge this structure or modify the existing arrangements associated with the site to accommodate the change of use. It would be proposed therefore that the existing surface water runoff from the site would connect to the existing systems on the site and be no worse than existing.

Flood Risk Vulnerability

Assessment

The vulnerability of the proposed development is assessed in accordance with the Technical Guidance to the National Planning Policy Framework published by the Ministry of Housing, Communities and Local Government published on 27 March 2012 and updated on 19 February 2019.

The proposed development is for the conversion of former retail spaces to dwellings, as 'Minor Development'. From the NPPF, it considers that minor developments are unlikely to raise significant flood risk issues unless:

- They would have an adverse effect on a watercourse, floodplain or its flood defences;
- They would impede access to flood defence and management facilities, or;
- Where the cumulative impact of such developments would have a significant effect on local flood storage capacity or flood flows.

We consider that the proposed conversion of the properties would have no effect on the existing flood risk to the site and the wider area around the site.

Mitigation Measures

We consider that the development should consider the following mitigation measures associated with the management of the residual flood risk on the site.

- Flood resilience and resistance
- Emergency Access

Flood Resilience and Resistance

It would be anticipated that the detailed design of the proposed structure would include flood resilience and resistance measures. These may include :

- Management of potential pathways for water
- Raising of critical services and infrastructure
- Incorporation of suitable building materials and details.

Guidance published by CIRIA¹ should be adopted alongside the requirements to meet the Building Regulations associated with the new structure.

These may include the following suitable construction techniques shall be adopted including :

- Concrete floors and masonry construction associated with the substructure.
- Overhead electrical supplies to the building.
- Locating electrical equipment and other plant at raised levels.
- Adoption of water resisting materials where appropriate.

More detailed considerations to these aspects can be identified as part of the Building Control process and adopted as required during construction.

Emergency Access

An emergency access plan should be adopted for the site and include the following procedures for the property.

- Early Warning Alert system (EA Notifications etc)

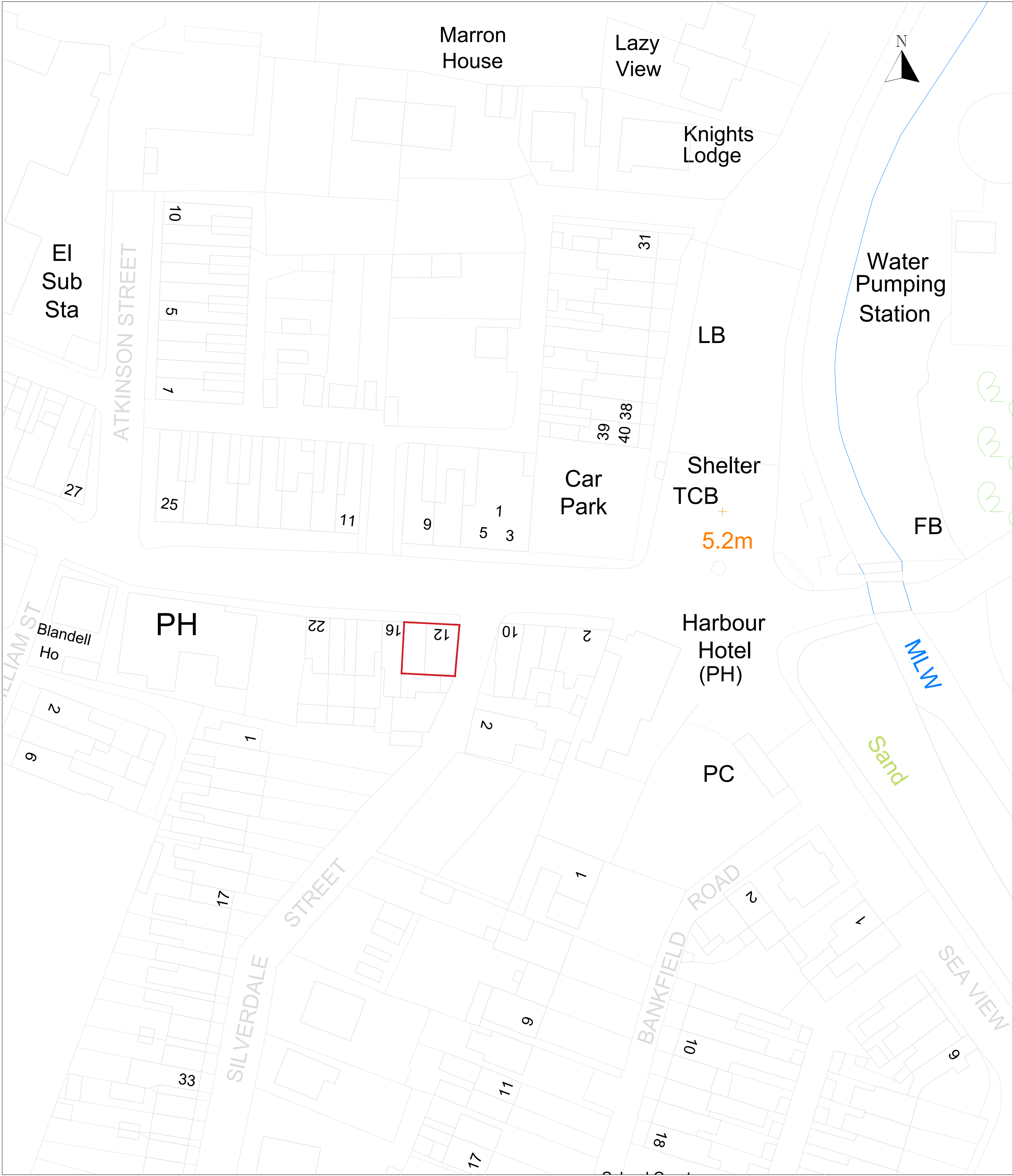
¹

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

- Safe isolation of electrical feeds to the property.
- Safe evacuation of the residents
- Process for site attendance post flood waters

APPENDICES


- Drawings
 - Site Location and Block Plan
 - Site Layout
- Environment Agency Information

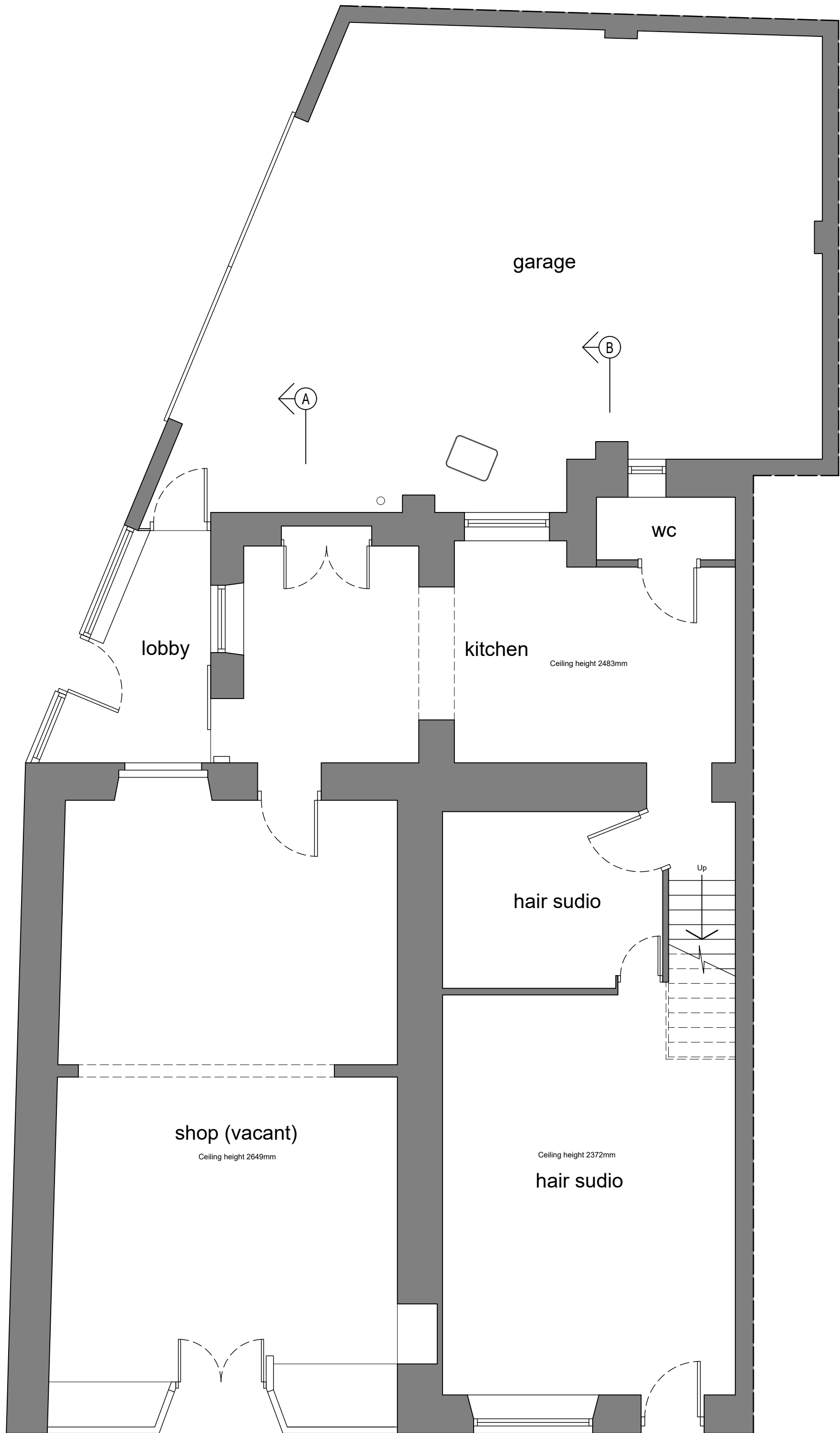


BLOCK PLAN
SCALE 1:500



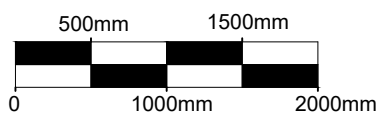
LOCATION PLAN
SCALE 1:2500

| | | | |
|--|--|---|-------------------------------------|
| <div>ENGINEER</div> <div>KINGMOOR CONSULTING</div> <div>6B CLIFFORD COURT, PARKHOUSE, CARLISLE, CUMBRIA, CA3 0JG T: 01228 915900 E: hello@kingmoorconsulting.co.uk</div> | | <div>CLIENT</div> | |
| <div>PROJECT</div> <div>12-14 MAIN STREET, HAVERIGG, MILLOM, LA18 4EX</div> | | | |
| <div>TITLE</div> <div>BLOCK AND LOCATION PLAN</div> | | | |
| <div>SCALE</div> <div>AS NOTED</div> | | | |
| <div>DRAWN BY</div> <div>C AIMERS</div> | | <div>CHECKED AND APPROVED</div> <div>C AIMERS</div> | |
| <div>PROJECT PHASE</div> <div>BUILD</div> | | <div>DATE</div> <div>MAY 2020</div> | <div>DATE</div> <div>MAY 2020</div> |
| <div>DRAWING NUMBER</div> <div>20-165-DWG001</div> | | | <div>REVISION</div> <div>A</div> |



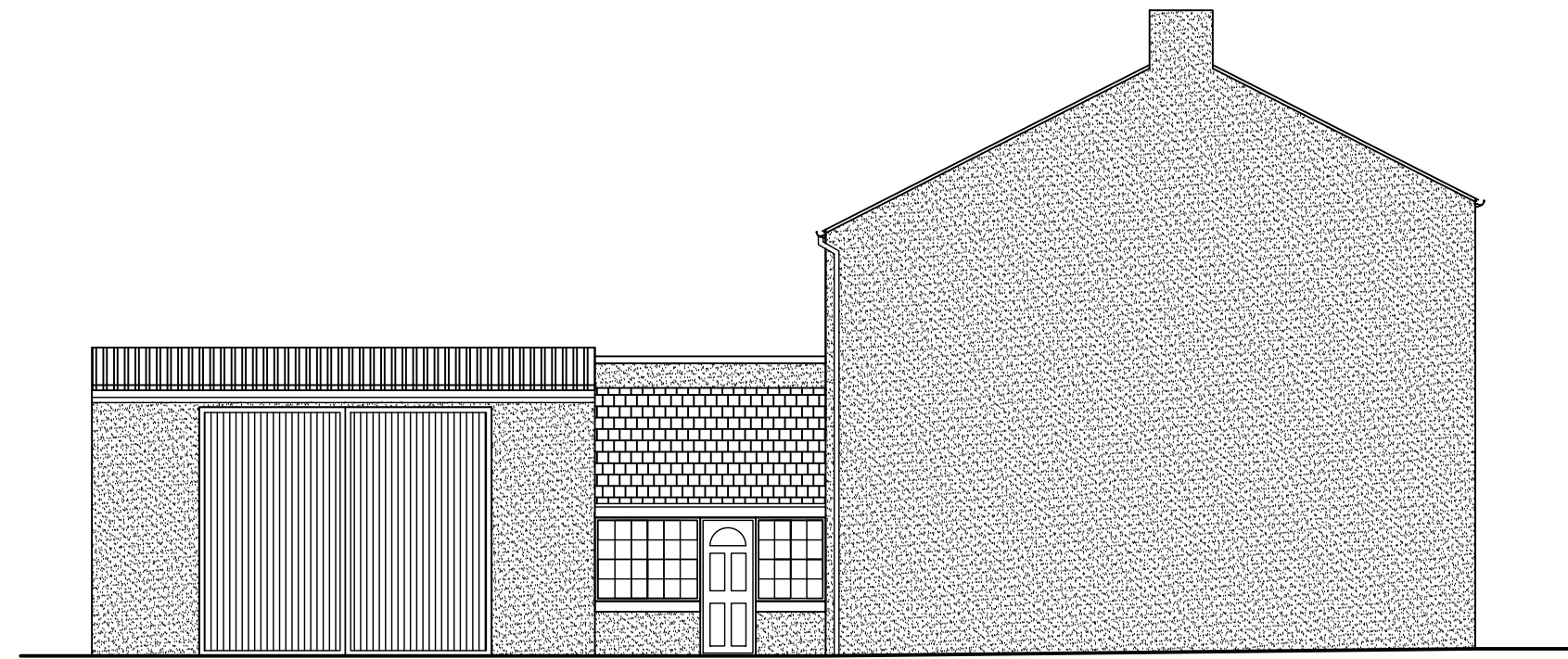
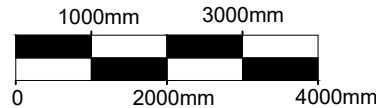
EXISTING GROUND FLOOR PLAN

Scale 1:50



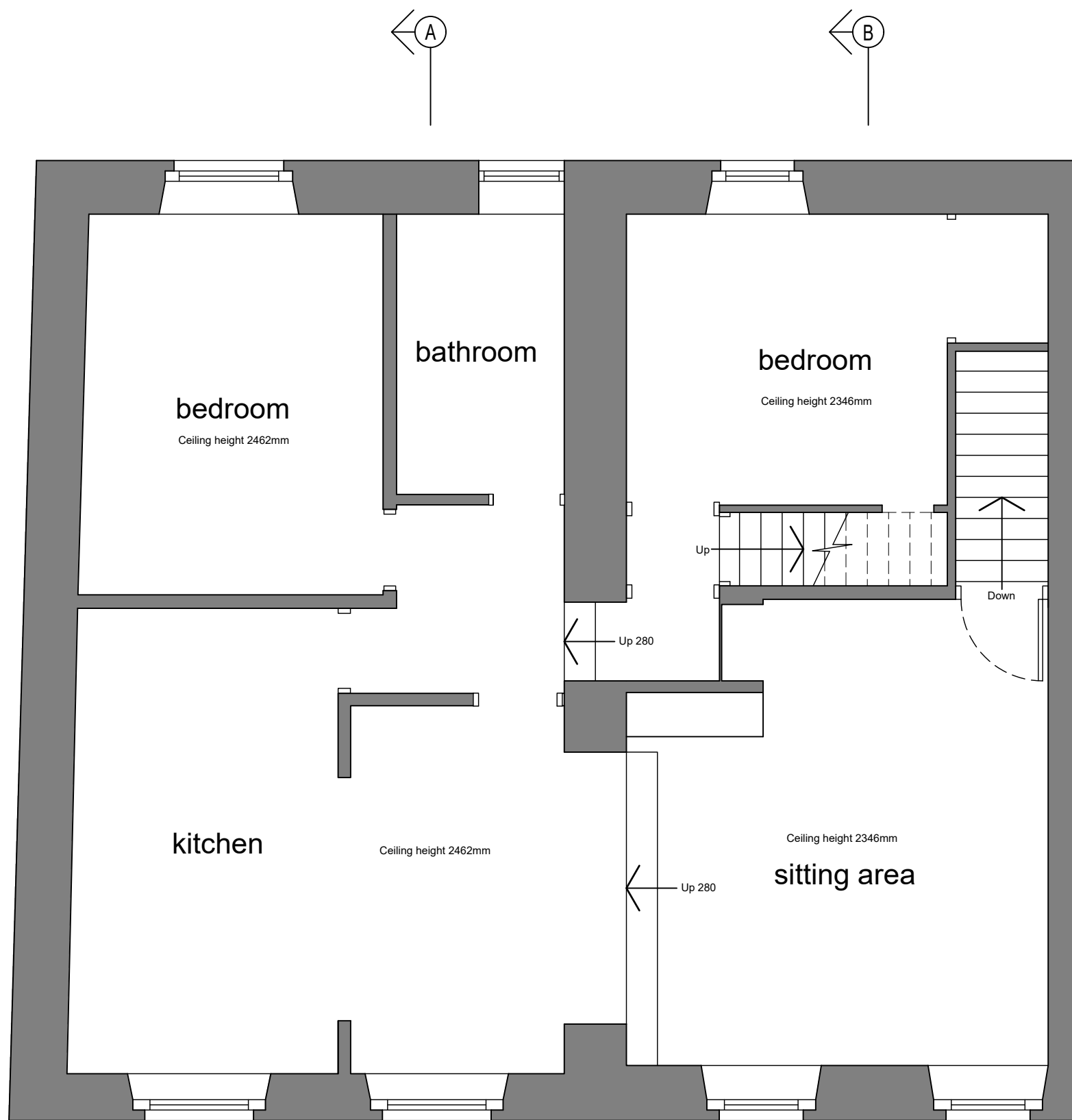
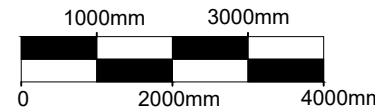
EXISTING FRONT ELEVATION

Scale 1:100



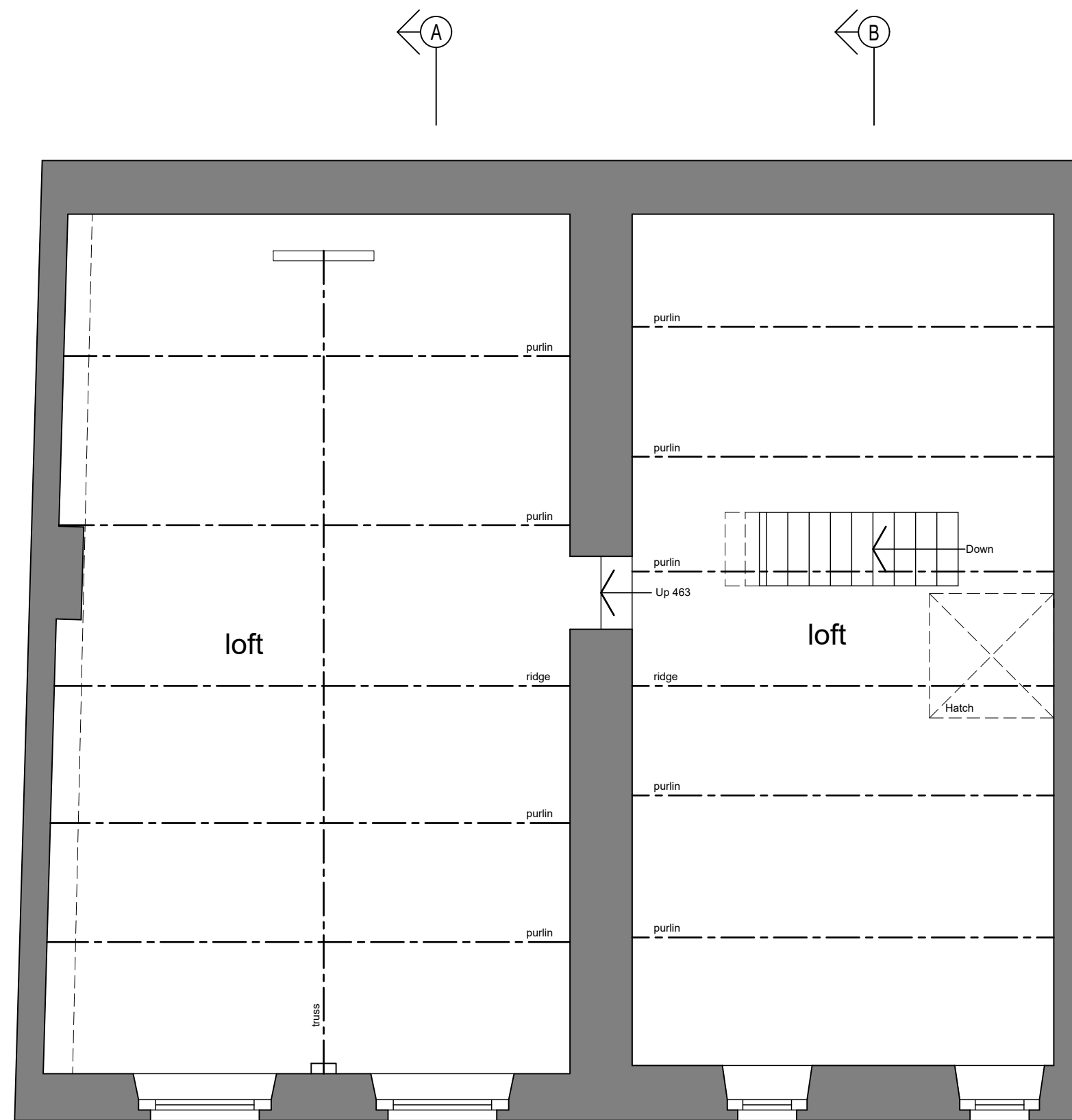
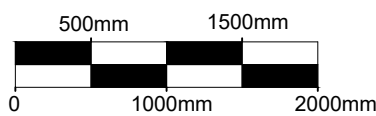
EXISTING SIDE ELEVATION

Scale 1:100



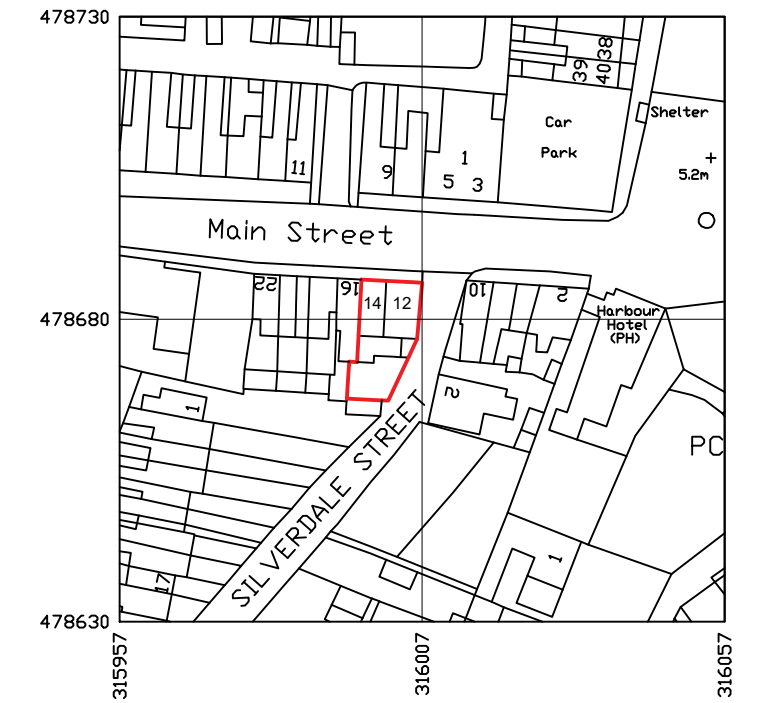
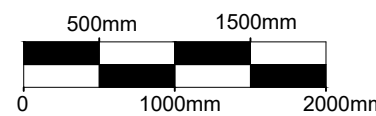
EXISTING FIRST FLOOR PLAN

Scale 1:50



EXISTING LOFT PLAN

Scale 1:50



Location plan

Scale 1:1250

© Crown copyright 2019. UKPlanningMaps.com 100054135.

THIS DRAWING IS COPYRIGHT:
The copyright of this drawing is held by MVC Design and no reproduction is allowed without prior permission by MVC Design. This drawing is for Planning and Building Regulations approval only and is not a working drawing.
It is agreed this drawing will be checked and verified by you prior to work commencing on site. We shall not be liable for any defects in this drawing unless prior to work commencing this drawing and all its dimensions has been so checked and verified.
Whether or not indicated on the drawing:-
All workmanship and materials shall comply with current Building Regulations, British Standards, Codes of Practice, NHBC and Employers requirements. All materials shall be fixed, applied or mixed in accordance with Manufacturers' Instructions or Specifications. Any discrepancy shall be immediately reported to us and resolved prior to work commencing. The contractor shall take into account everything necessary for the proper execution of the works, to the satisfaction of the "Inspector" whether or not indicated on the drawing.
Subject to confirmation of the Principal Designer / Contractor - similar "approved" materials of equal performance may be substituted where those specified are not available.

| No. | Revision/Issue | Date |
|-----|-------------------------------------|---------|
| B | Elevations and location plan added. | 18/5/20 |
| A | Draft issue | 20/4/20 |

Site location

12 & 14 Main Street
Haverigg
Millom
LA18 4EX

Project

Change of use from
shops and dwelling to
two 3 bedroom houses.

Drawing title

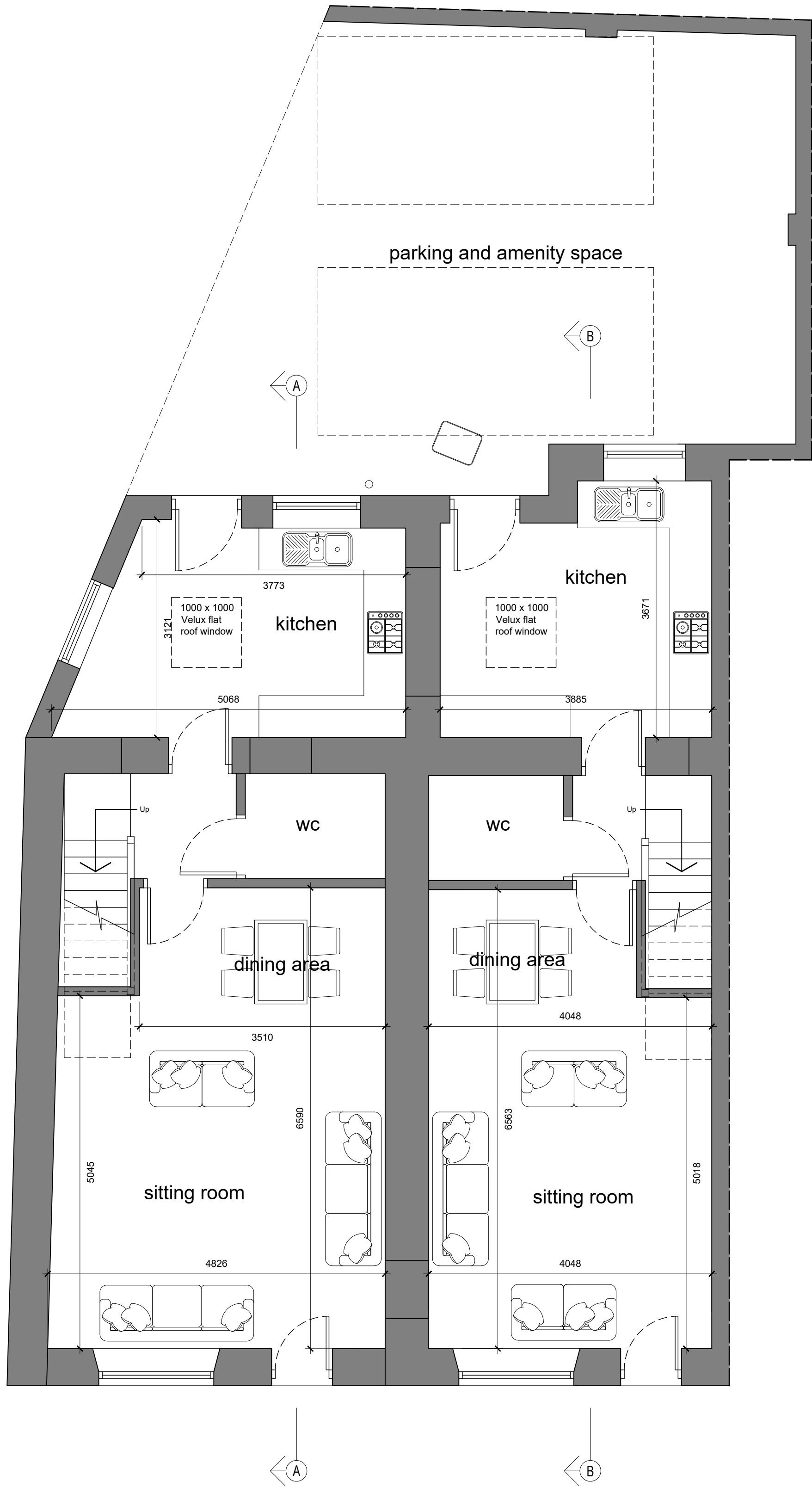
Existing plans, elevations
and location plan.

MVC Design Ltd
ARCHITECTURAL DESIGN

11 Meadowside
Swarthmoor
Ulverston
Cumbria
LA12 0XD

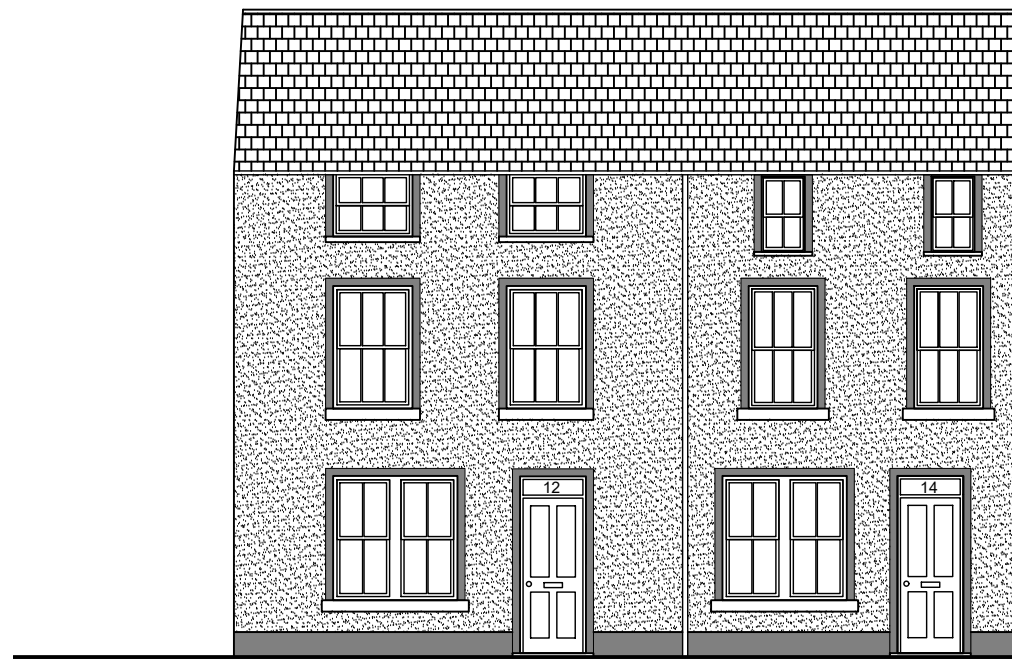
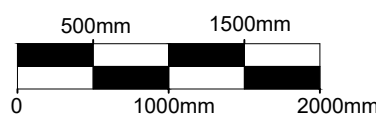
Mob: 07730661656
Tel: 01229 588208
Email: mark@mvcdesign.co.uk

| | | |
|---------|----------------|-----|
| Dwg No. | MVC445-01 | Rev |
| Date | 20.4.20 | B |
| Scale | As shown at A1 | |



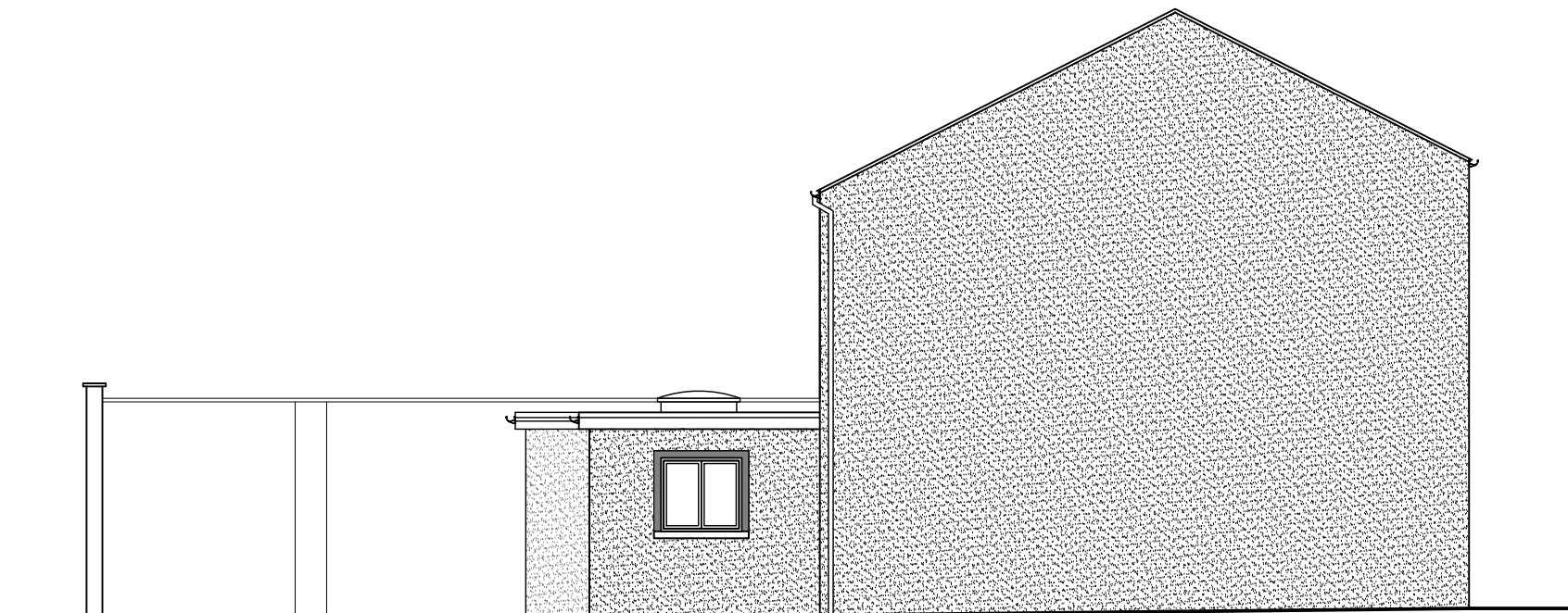
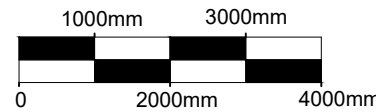
PROPOSED GROUND FLOOR PLAN

Scale 1:50



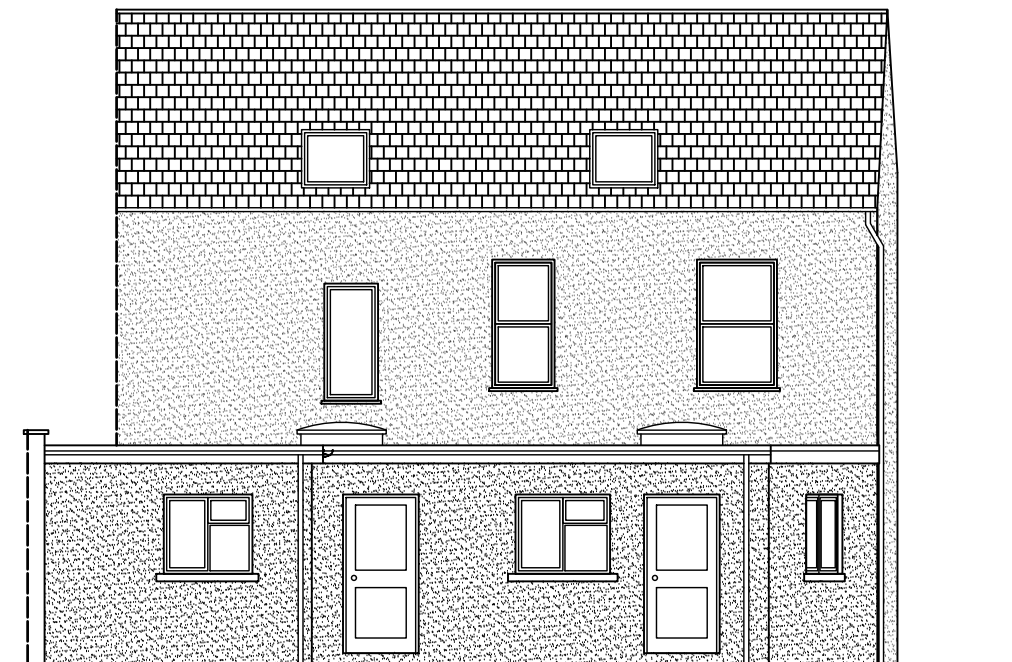
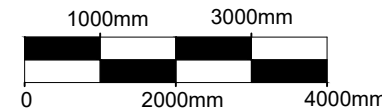
PROPOSED FRONT ELEVATION

Scale 1:100



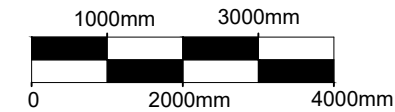
PROPOSED SIDE ELEVATION

Scale 1:100



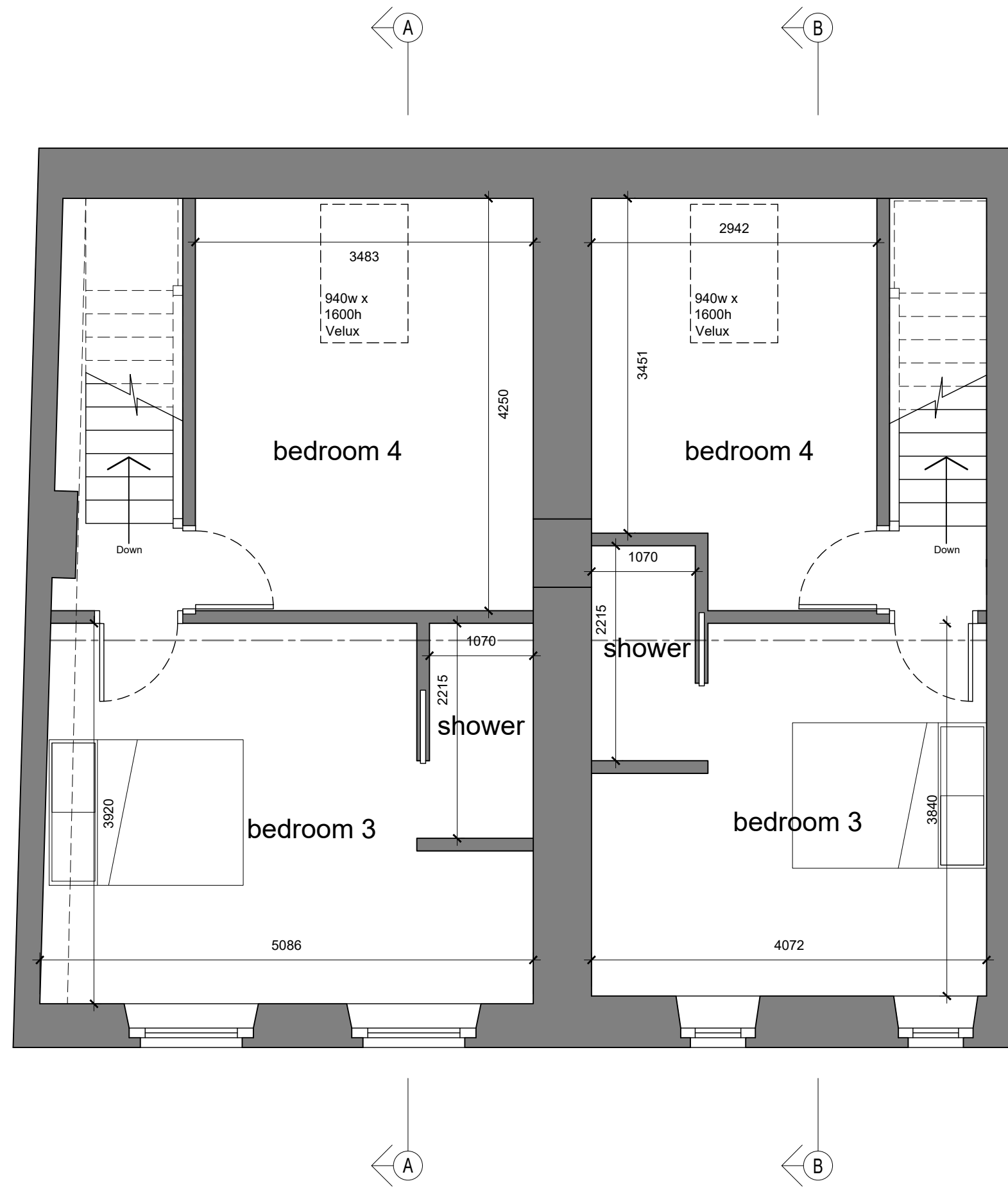
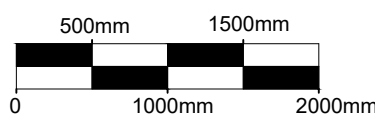
PROPOSED REAR ELEVATION

Scale 1:100



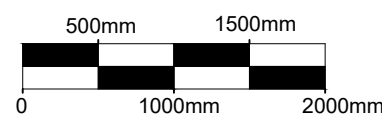
PROPOSED FIRST FLOOR PLAN

Scale 1:50



PROPOSED LOFT PLAN

Scale 1:50



THIS DRAWING IS COPYRIGHT:
The copyright of this drawing is held by MVC Design and no reproduction is allowed without prior permission by MVC Design. This drawing is for Planning and Building Regulations approval only and is not a working drawing.
It is agreed this drawing will be checked and verified by you prior to work commencing on site. We shall not be liable for any defects in this drawing unless prior to work commencing this drawing and all its dimensions has been so checked and verified.
Whether or not indicated on the drawing:-
All workmanship and materials shall comply with current Building Regulations, British Standards, Codes of Practice, NHBC and Employers requirements. All materials shall be fixed, applied or mixed in accordance with Manufacturers' Instructions or Specifications. Any discrepancy shall be immediately reported to us and resolved prior to work commencing. The contractor shall take into account everything necessary for the proper execution of the works, to the satisfaction of the "Inspector" whether or not indicated on the drawing.
Subject to confirmation of the Principal Designer / Contractor - similar "approved" materials of equal performance may be substituted where those specified are not available.

| | | |
|-----|-------------------|---------|
| C | Elevations added. | 18/5/20 |
| B | Draft issue | 4/5/20 |
| A | Draft issue | 20/4/20 |
| No. | Revision/Issue | Date |

Site location

12 & 14 Main Street
Haverigg
Millom
LA18 4EX

Project

Change of use from
shops and dwelling to
two 3 bedroom houses.

Drawing title

Proposed plans and
elevations.

MVC Design Ltd
ARCHITECTURAL DESIGN
11 Meadowside
Swarthmoor
Ulverston
Cumbria
LA12 0XD
Mob: 07730661656
Tel: 01229 588208
Email: mark@mvcdesign.co.uk

| | | |
|---------|----------------|-----|
| Dwg No. | MVC445-02 | Rev |
| Date | 20.4.20 | C |
| Scale | As shown at A1 | |

Flood map for planning

Your reference
20-165

Location (easting/northing)
315990/478681

Created
20 May 2020 8:30

Your selected location is in flood zone 3 – an area with a high probability of flooding that benefits from flood defences.

This means:

- you may need to complete a flood risk assessment for development in this area
- you should ask the Environment Agency about the level of flood protection at your location and request a Flood Defence Breach Hazard Map (You can email the Environment Agency at: enquiries@environment-agency.gov.uk)
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (find out more at www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>



Flood map for planning

Your reference

20-165

Location (easting/northing)









315990/478681


Scale

1:2500

Created






20 May 2020 8:30

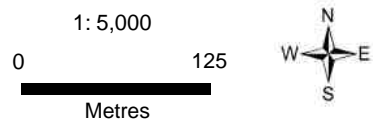
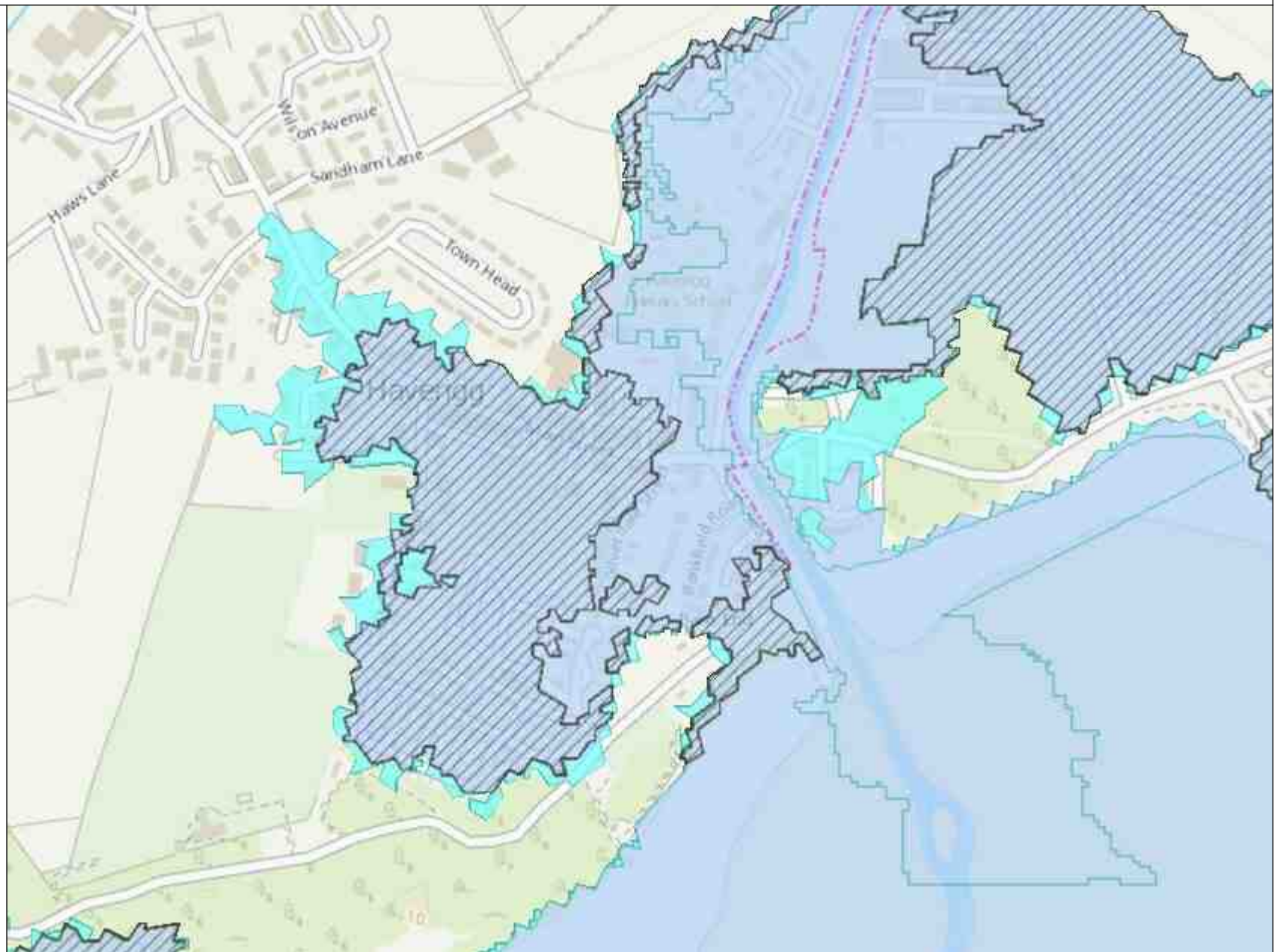
-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area


 0 20 40 60m

Flood Map for Planning

Legend

-  Defences
-  Flood Storage Areas
-  Areas benefiting from flood defence
-  Flood Zone 3
-  Flood Zone 2

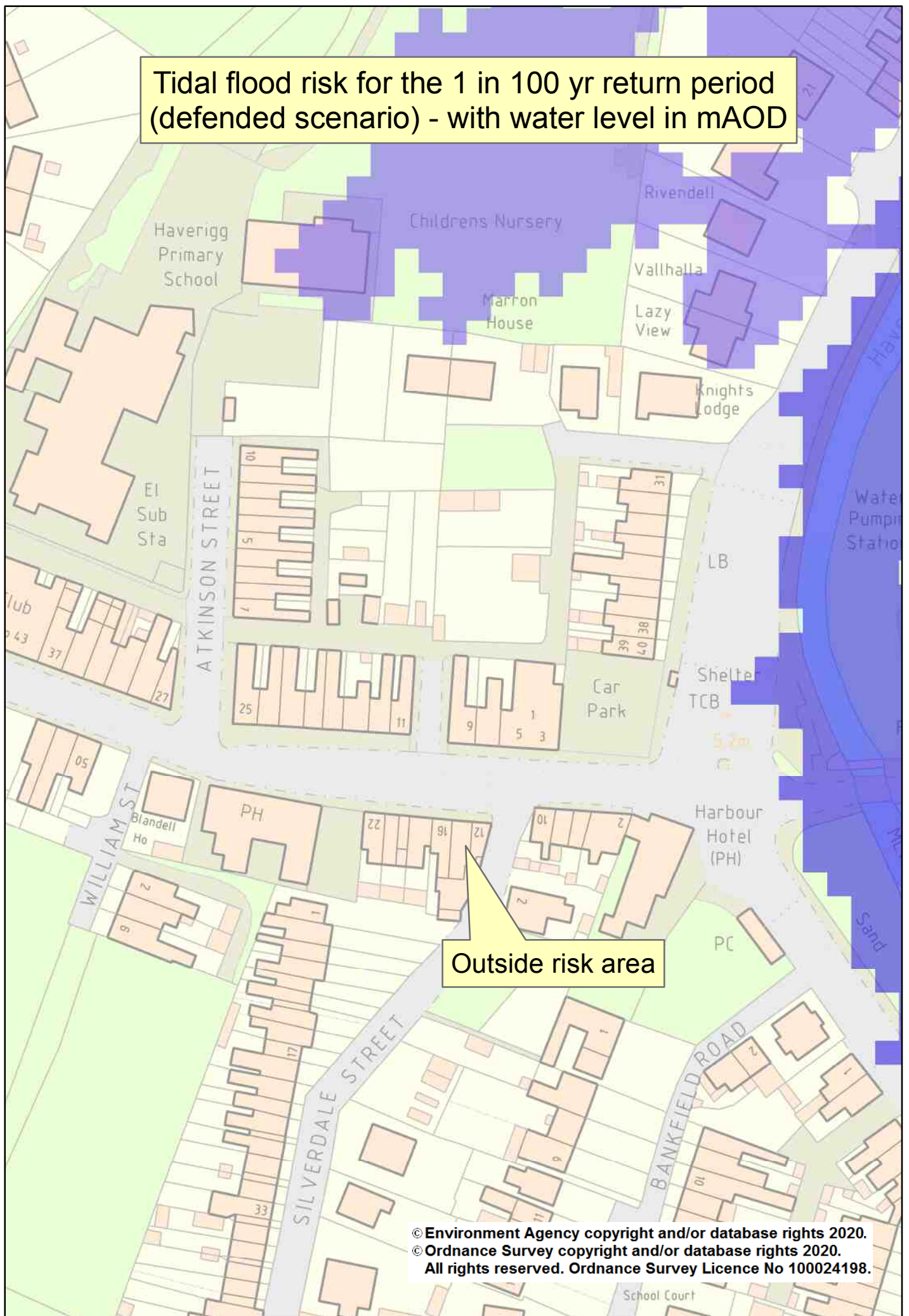


Maximum extent of modelled fluvial flood risk
(undefended scenario)

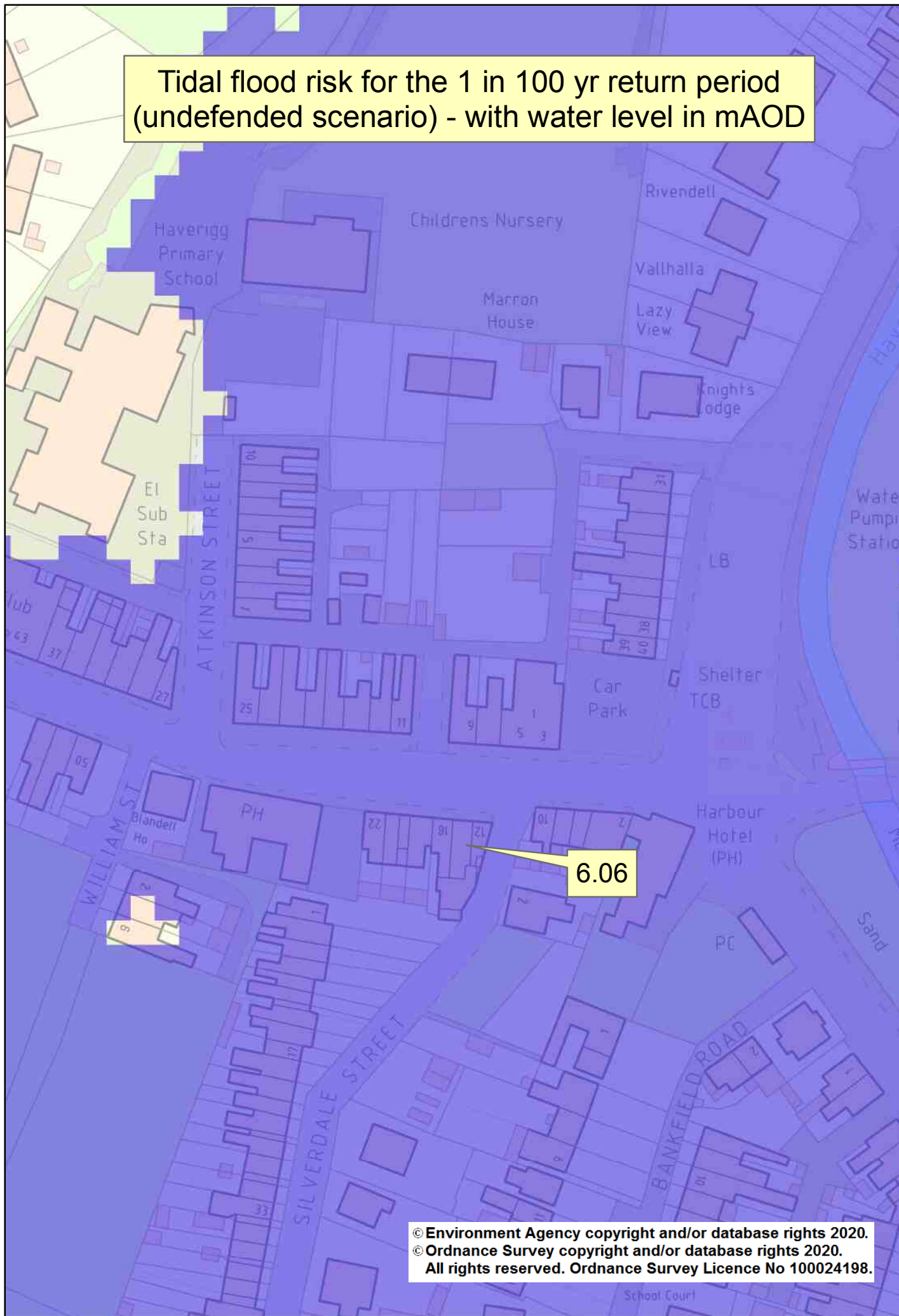


© Environment Agency copyright and/or database rights 2020.
© Ordnance Survey copyright and/or database rights 2020.
All rights reserved. Ordnance Survey Licence No 100024198.

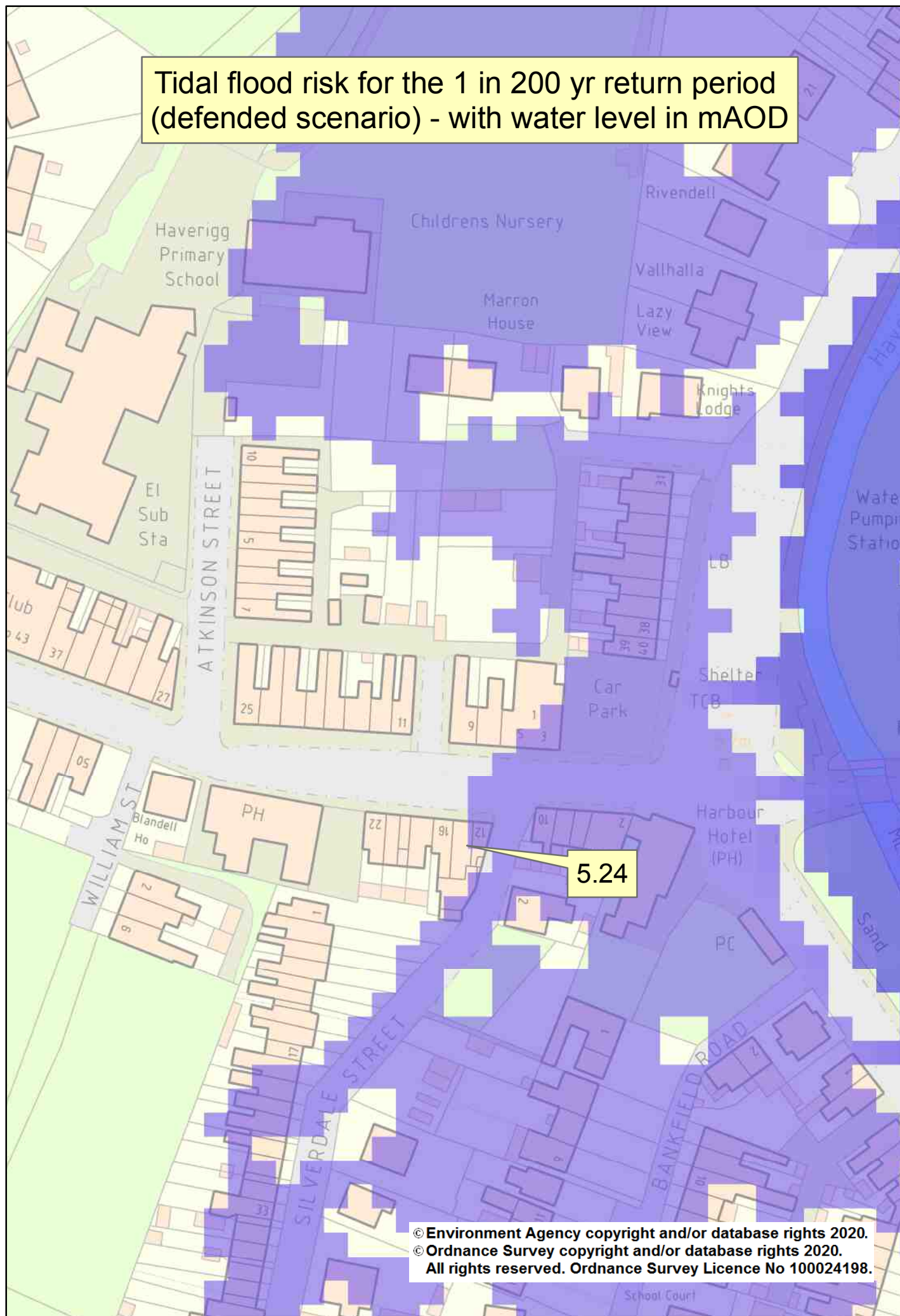
Tidal flood risk for the 1 in 100 yr return period
(defended scenario) - with water level in mAOD



Tidal flood risk for the 1 in 100 yr return period
(undefended scenario) - with water level in mAOD



Tidal flood risk for the 1 in 200 yr return period
(defended scenario) - with water level in mAOD



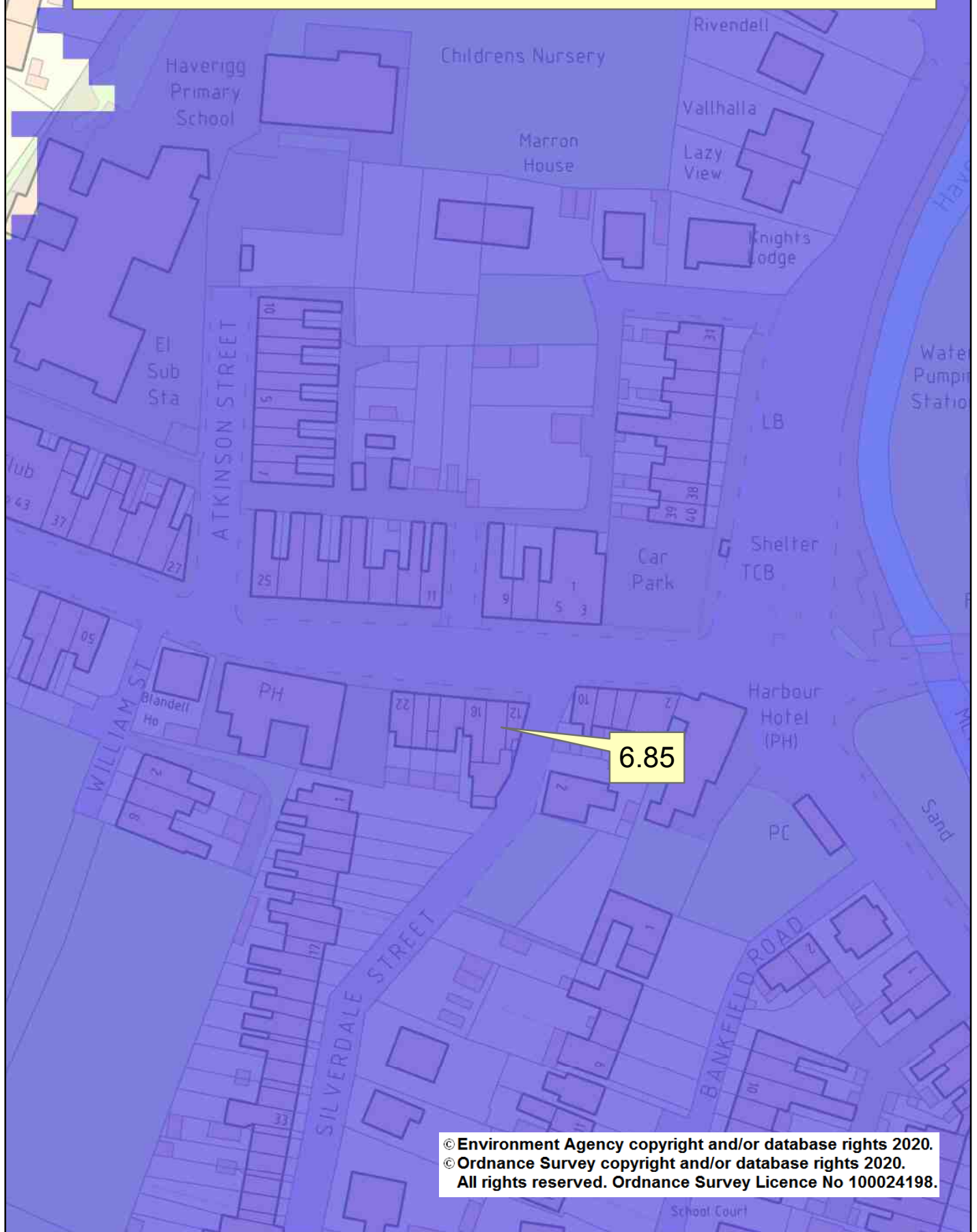
Tidal flood risk for the 1 in 200 yr return period plus climate change as projected for the year 2115 (defended scenario) - with water level in mAOD

6.62

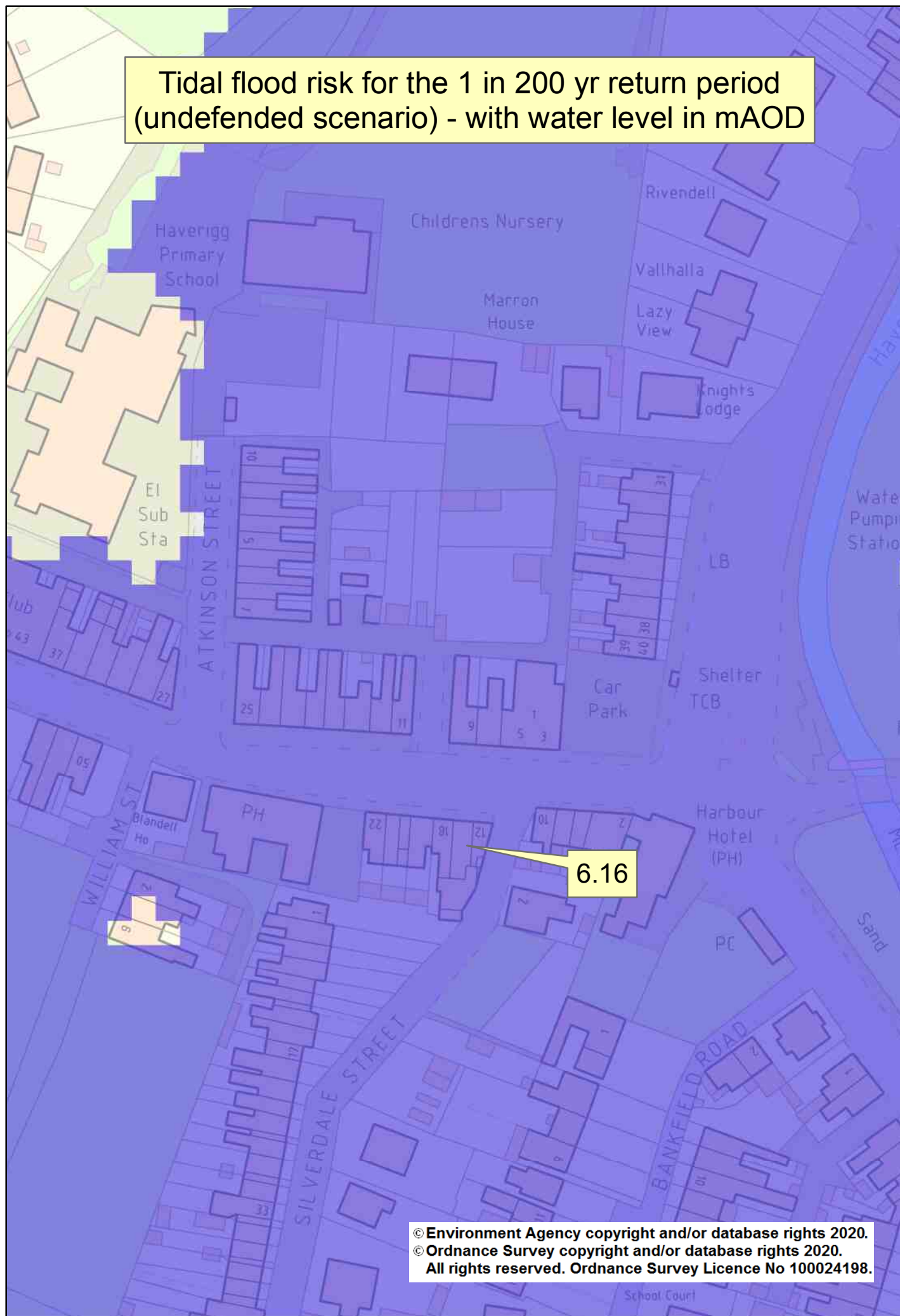
© Environment Agency copyright and/or database rights 2020.
© Ordnance Survey copyright and/or database rights 2020.
All rights reserved. Ordnance Survey Licence No 100024198.

© Environment Agency copyright and/or database rights 2020.
© Ordnance Survey copyright and/or database rights 2020.
All rights reserved. Ordnance Survey Licence No 100024198.

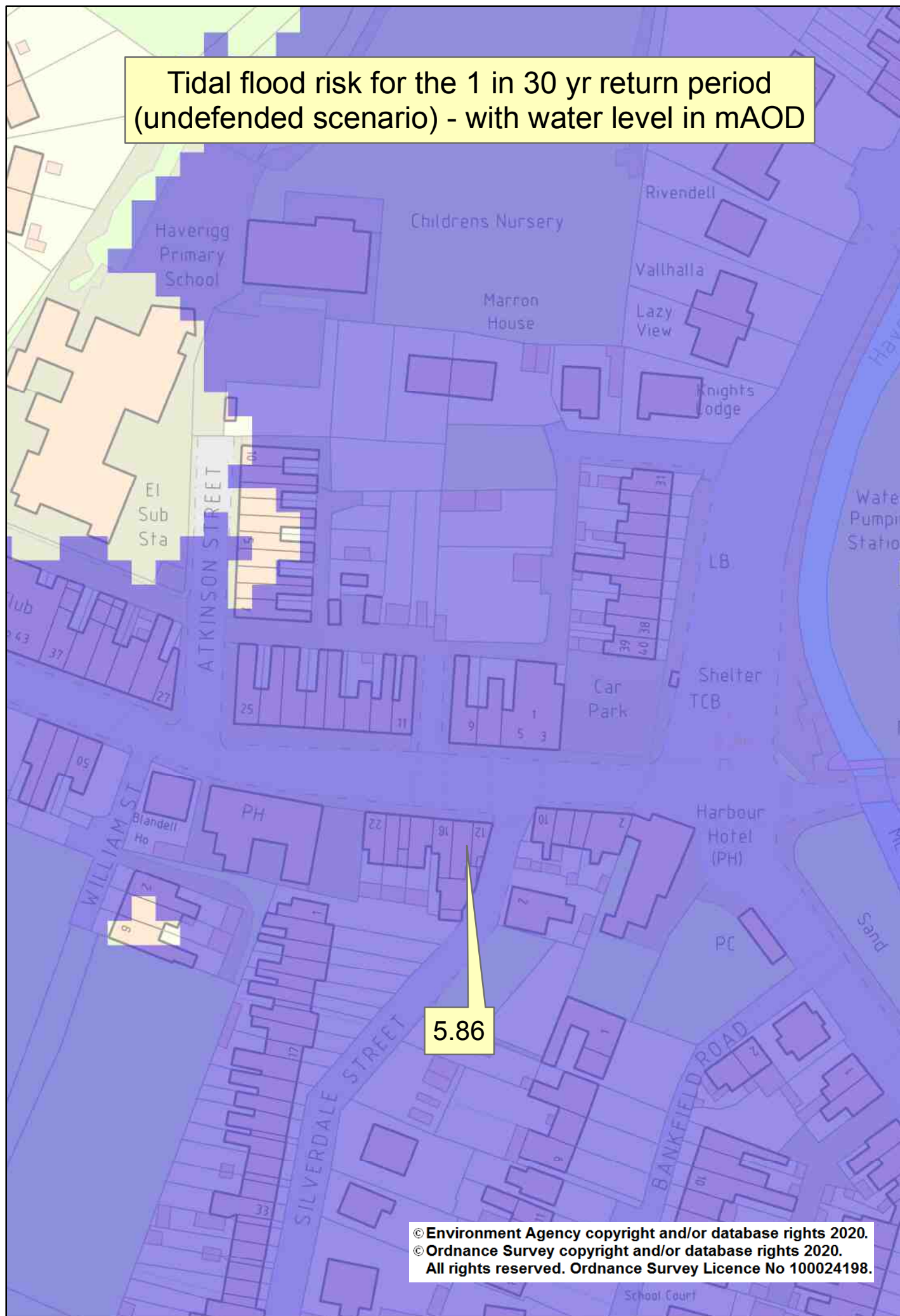
Tidal flood risk for the 1 in 200 yr return period plus climate change as projected for the year 2115 (undefended scenario) - with water level in mAOD



Tidal flood risk for the 1 in 200 yr return period
(undefended scenario) - with water level in mAOD



Tidal flood risk for the 1 in 30 yr return period
(undefended scenario) - with water level in mAOD



Tidal flood risk for the 1 in 75 yr return period (undefended scenario) - with water level in mAOD

6.01

© Environment Agency copyright and/or database rights 2020.
© Ordnance Survey copyright and/or database rights 2020.
All rights reserved. Ordnance Survey Licence No 100024198.

6.01