

---

# Bexhill Town Hall Development Bexhill-on-Sea

Structural Engineering  
Feasibility Report

Prepared by: **Ben Sheterline MEng CEng MIStructE**  
Job Number: **29051**

Date	Revision	Notes/Amendments/Issue Purpose
July 2020	1	For Comment

# Contents

## Page

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>The Site</b>	<b>3</b>
	Description	
	Site History	
	Existing Buildings	
	Existing Infrastructure	
<b>3</b>	<b>Ground Conditions</b>	<b>6</b>
<b>4</b>	<b>Proposals</b>	<b>7</b>
	Option A	
	Option B	
	Renovation of Town Hall	
	Extension to the Town Hall	
	Job Centre Building on Amherst Road	
	Proposed New Buildings	
	Existing Constraints	

Contains Ordnance Survey material © Crown copyright. All rights reserved. Licence number 0100058197  
Contains British Geological Survey materials © NERC 2020 All rights reserved.

# 1 Introduction

Price & Myers are appointed by RX Architects on behalf of Rother District Council to provide structural engineering advice relating to the feasibility of the redevelopment of the current town hall site.

The team reviewing the feasibility options for the site include:

- RX Architects - Architect and Lead Consultant
- Price & Myers - Structural & Civil Engineers
- Robinson Low Francis - Cost Consultants

This document summarises the structural engineering considerations in relation to the redevelopment of the site, based on readily available desk study and historical record information available at the time. No site investigation had taken place, or intrusive investigation of the existing buildings. No specialist searches have been completed to check statutory services beneath the site, or potential environmental and contamination considerations relating to the site.

This report should be read in conjunction with the corresponding reports from RX Architects and Robinson Low Francis.

# 2 The Site

## Description

The Site is located in Bexhill-on-Sea, and is bounded by the London Road (A269) to the south and Amherst Road to the east. The approximate centre of the site is at OS Grid Reference TQ 74067 07613. Bexhill Railway Station is approximately 280m to the southeast. Refer to Figure 2.1

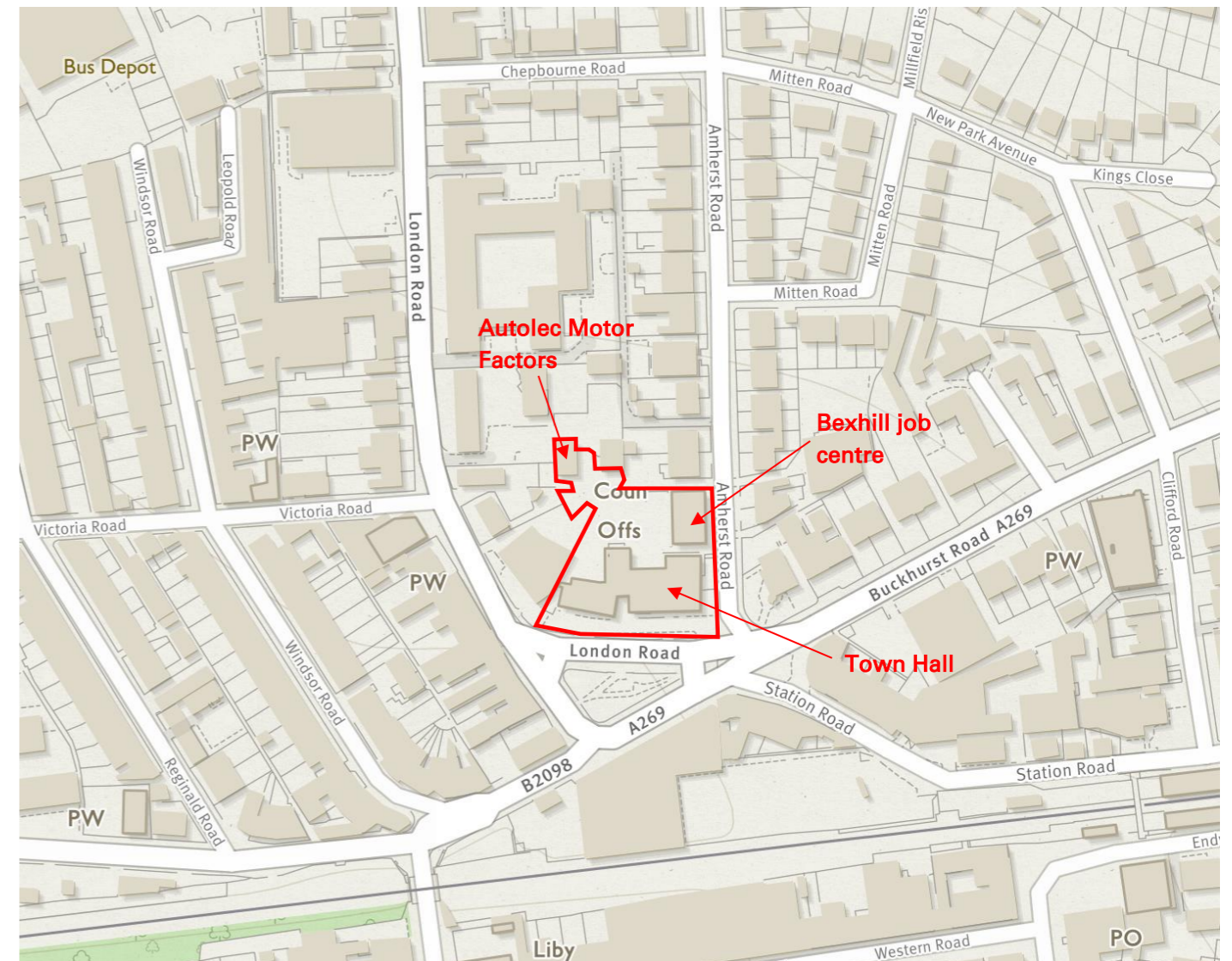


Figure 2.1: OS Map extract of The Site

The Site includes a number of existing buildings; the town hall along the southern edge, the Bexhill job centre to the east and the Autolec Motor Factors building to the north of the site. The site can be directly accessed from both the London Road, where there is a small area of parking to the front of the town hall, and from Amherst Road, where an access road leads to an area of car parking to the rear of the town hall and extends to the Autolec Motor Factors Building. There appears to be an electrical substation in the south east corner of site, which is accessed from the car park fronting the London Road. The Site slopes down north to south.



**Site History**



**Figure 2.2: The history of the site from old OS Map extracts**

The earliest available OS Map dates from 1875 and shows the site undeveloped. The 1878 OS Map also shows the site undeveloped.

The Town Hall is first identified on the 1899 OS Map. There is a small building on the north east corner of the town hall facing Amherst Road. There are a number of buildings to the north of the site, one of which is noted as the Fire Station. Amherst Road is largely undeveloped to the north of the site at this point.

The 1909 OS Map shows the town hall extended to the west. The small building to the north east corner is no longer identified. A building to the north of the site, which is likely to be the now Autolec Motor Factors building is present. Amherst Road is now shown developed to the north of the site.

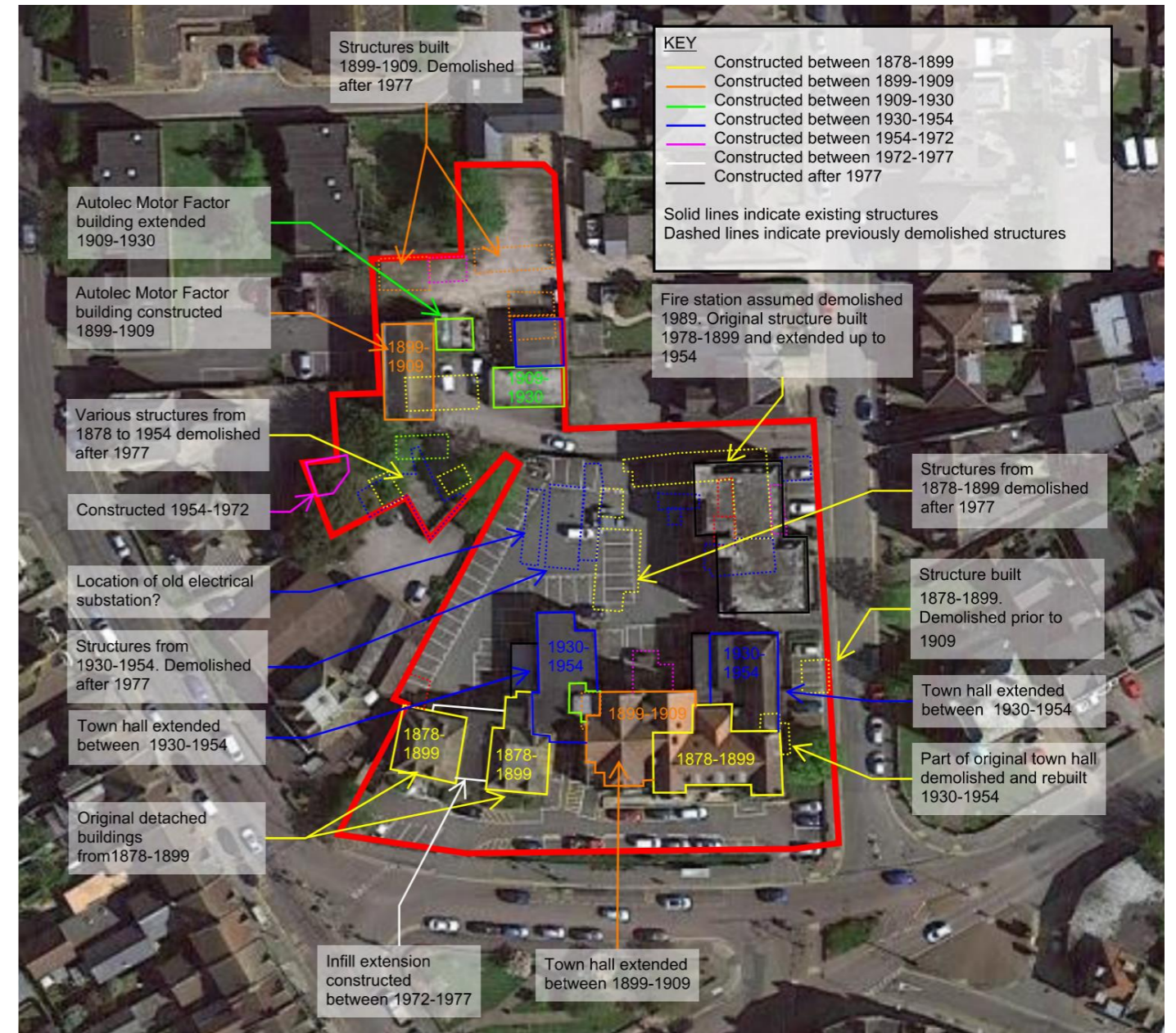
The 1930 OS Map does indicate new structures around the area of the Autolec Motor Factors building.

The 1954 OS Map shows the town hall extended to the north and now adjoining the detached building to its west. A zone of sloped ground is shown around the eastern edge of the town hall. An electrical substation is identified to the north west corner of the site. The Fire Station appears to have been redeveloped and enlarged. The area of the Autolec Motor Factors building is identified as 'Engineering Works'

The 1962-72 OS Map shows the site relatively unchanged from the previous

The 1976-77 OS Map shows the town hall further extended to the west, encompassing a further of the detached building first identified in the 1899 OS Map. The electrical substation is no longer identified.

A Planning Application relating to the job centre building suggests the fire station was demolished and replaced with the job centre building that currently occupies the site in 1989.



**Figure 2.3: Satellite image of site marked up to show approximate age of existing buildings and site history**

According to a 1944 Observer map there are a number of World War II incident locations recorded either within the site or within close proximity to it, which suggest high explosive bombing from the Luftwaffe. See Figure 2.4. The accompanying descriptions for the bombs that are indicated to have fallen within the site suggest that damage caused the Borough Accountant and Public Health Department to relocate to Garth Place. This bombing may explain the part rebuilding of the original parts of the town hall towards the eastern edge of the site.



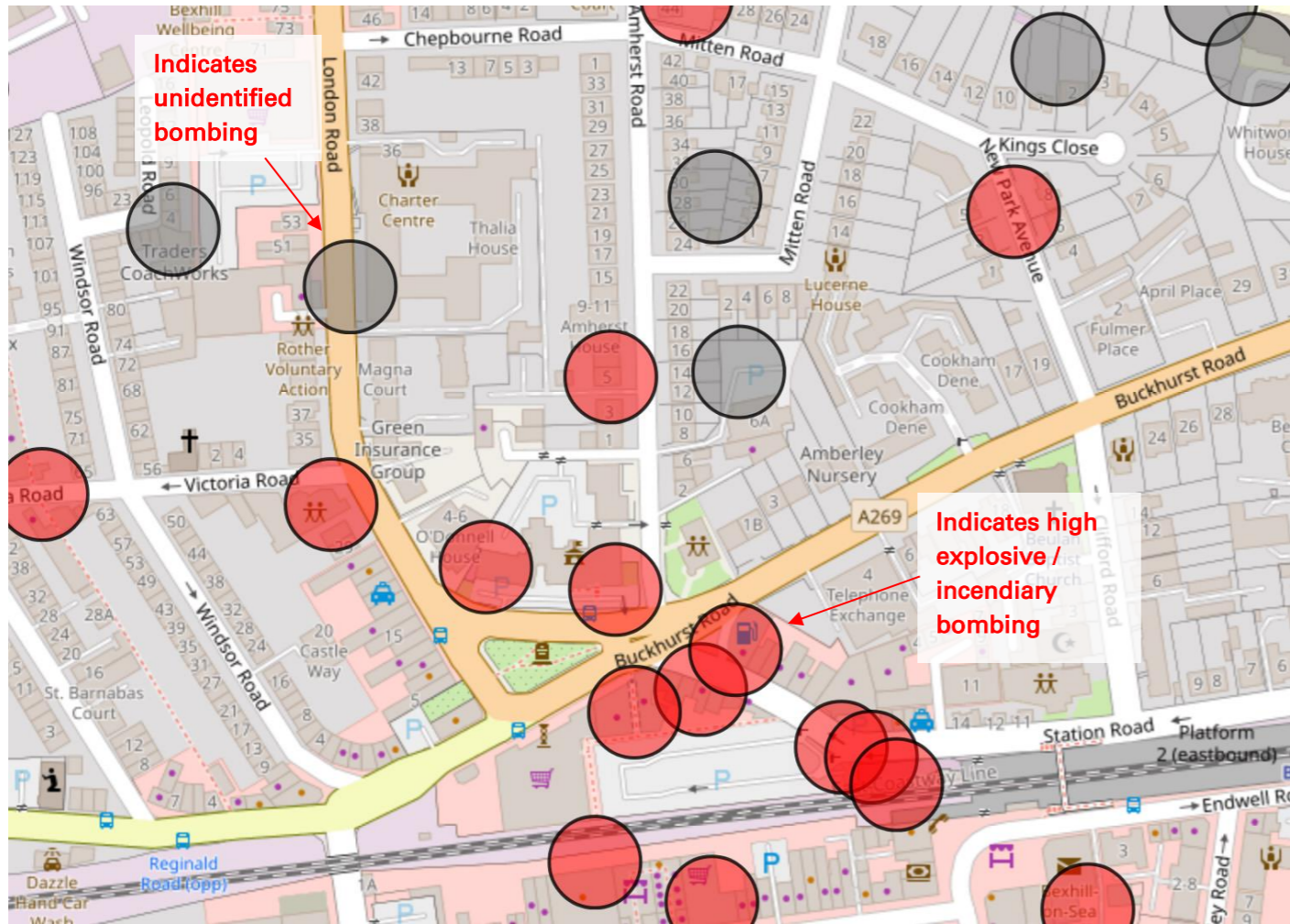


Figure 2.4: Extract from Bexhill Open Street Map showing WWII incident locations

### Existing Buildings

The existing buildings that occupy the site are described broadly below.

#### Town Hall

The town hall is a mixture of construction, originally dating from some point between 1878 and 1899, which includes the original town hall and two detached buildings to west (see Figure 2.2). The town hall was originally extended west, and then to the north, with links later being created with two Victorian detached buildings to the west of the original town hall. The buildings are generally of two to three storeys, with the third storey, where present, generally contained within the pitches of the roof spaces.

All the buildings relating to the town hall are typically load-bearing masonry structures, and assumed to have a mixture of timber joisted and concrete floors. Some form of concrete filler joist floor construction might be expected to the older parts of the building which have solid floors.

Due to sprawling nature in which the original town hall has been extended there are varying floor levels through the buildings and the structures that link them.

#### The Autolec Motor Factors Building

The two-storey building has not been inspected, but due to its age is expected to be of load-bearing masonry with timber floor construction. It is expected to have shallow brick corbelled foundations

#### The Job Centre Building

The Job Centre Building, also known as 'The Treasurer's Building' is understood to have been constructed around 1989. The building is a three storey steel framed structure with precast concrete floors. The roof is of a Mansard style, with the third storey contained with the pitch of Mansard. The steel frame continues to roof level and supports a galvanised metal deck.

The building has a rectangular grid of columns of 3.75-5.5m by 3.75m-4.75m with stair cores at either end of the building. See Figure 2.5

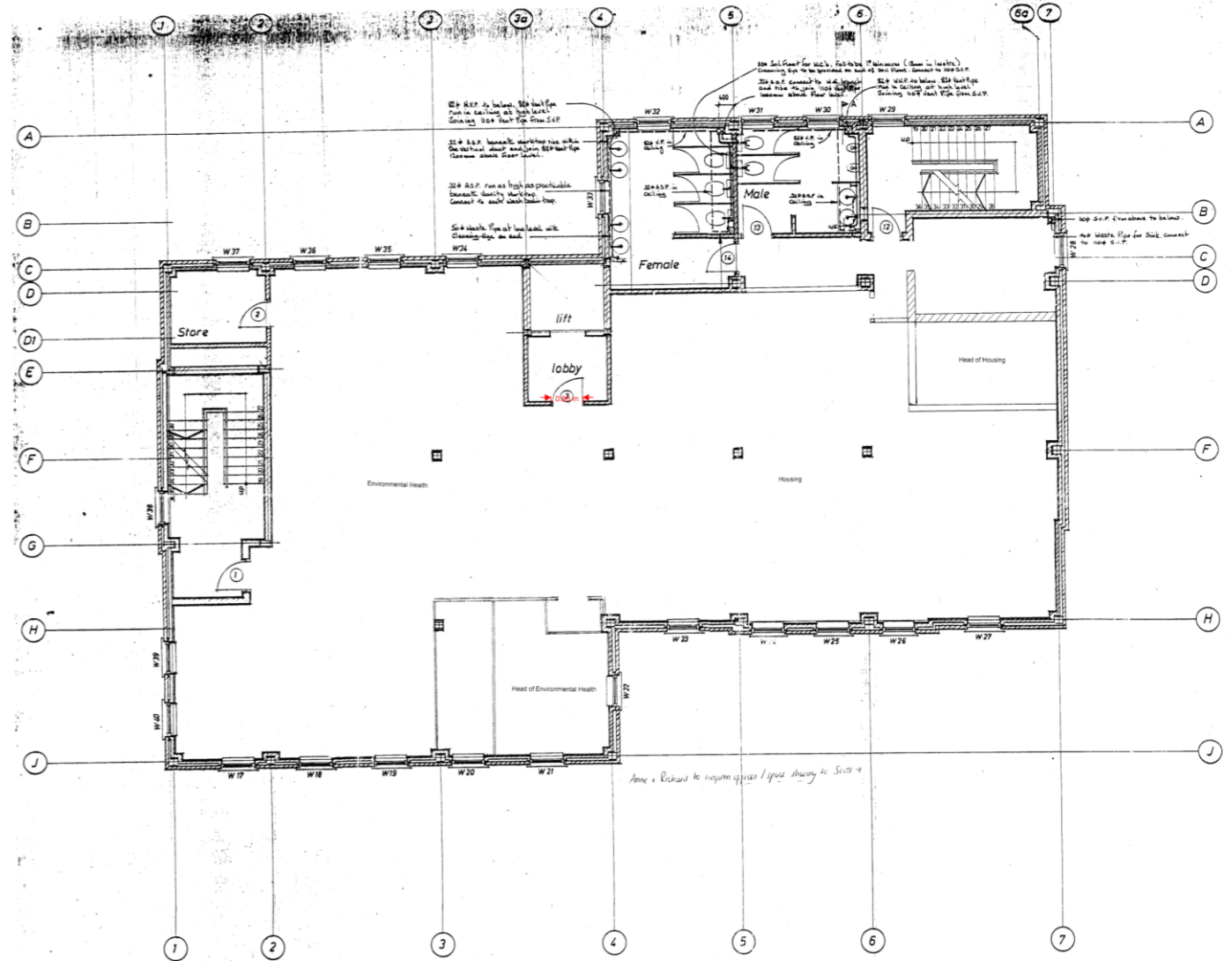


Figure 2.5: Extract from 1988 record drawing of first floor plan by John Gill Associates



## Existing Infrastructure

At this stage it is unknown what existing utilities serve the site, or their positions.

While any services themselves do not relate to the structural considerations of the buildings, any buried infrastructure below the site, either private or public, will need consideration in the design of new foundations.

There is an existing electrical substation to the south west of the site..

## 3 Ground Conditions

According to the British Geological Survey maps the site is underlain by Made Ground on the Tunbridge Wells Sand Formation, which is described as Siltstone, Mudstone and Sandstone (see Figure 3.1)

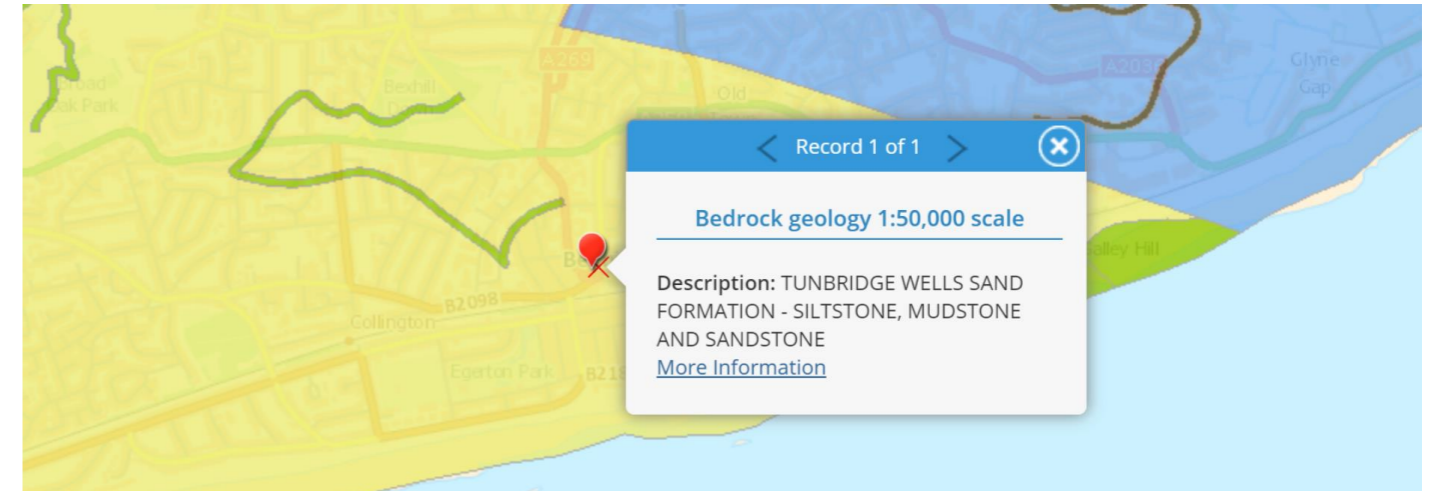


Figure 3.1: Extract from British Geological Survey Maps. Note: No superficial deposits recorded

Borehole records available from the British Geological Survey suggest a modest thickness of made ground on sandy clay, which likely forms the Tunbridge Wells Sand Formation. See Figure 3.2. Ground water is suggested to be encountered at around 7m below ground level.

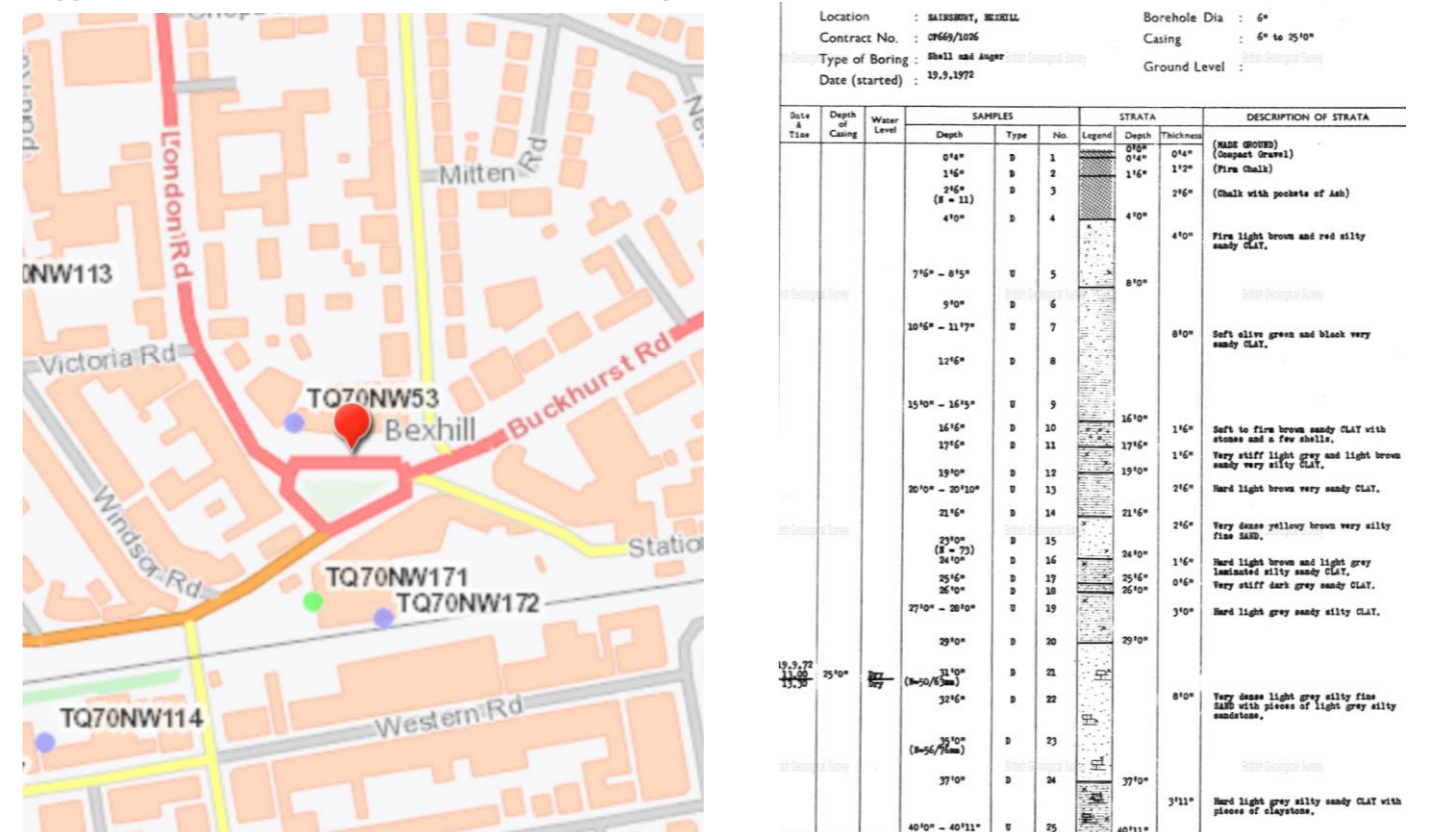


Figure 3.2: Extract from British Geological Borehole Records



# 4 Proposals

Two options are considered as part of this feasibility study, as presented by RX Architects.

## Option A

Option A provides a mixed use scheme including a full renovation and adaptation of the existing town hall, and a new purpose built office to the west, and an apartment development providing flats to the rear. The proposals include the redevelopment the job centre building on Amherst Road to convert it into residential flats.

The renovation and adaptation of the existing town hall involves the retention of the more original parts of the building, and demolition of the later circa 1950s subsequent extensions to the rear to help restore to building and open up the courtyard to the rear of the building. The roof between the gables that face south is proposed to be raised to provide more usable space at third floor level.



**PROPOSED OPTION A**

- Existing Town Hall building retained and refurbished/adapted  
Demolition of low quality rear parts, demolition of western converted houses.
- Proposed new commercial building  
Comprising of office space over 5 floor levels.
- Proposed new residential building  
Comprising of flats over 3 levels. 4 x 2 bed flats per floor = 12 x 2 bed flats total
- Existing building - Amherst Rd  
To be adapted and converted into residential units - Comprising of 4 x 1 Bed, 8 x 2 Bed & 2 x 3 Bed flats, 14 Flats total

Figure 4.1: RX Architects Option A

The existing Victorian buildings to the west that were later linked to the original parts of the town hall are also proposed to be demolished to make way for a new five-storey commercial building.

The Autolec Motor Factors building to the north of site is to be demolished and replaced with a three storey residential building.

## Option B

Option B provides a mixed use scheme including a full renovation and adaptation of the existing town hall, and a new purpose built office building to the west.. The proposals include the redevelopment of the job centre building on Amherst Road to convert it into residential flats.

As with option A the renovation to the town hall involves the retention of the more original parts of the building, and the demolition of the later additions and Victorian buildings linked to the west. Unlike option B the alterations to the roof structure at third floor level are not proposed.

A new five storey commercial building replaces the Victorian buildings on the west of the site, and extends north at two storeys, providing a more enclosed courtyard area for the buildings.



**PROPOSED OPTION B**

- Existing Town Hall building retained and refurbished/adapted  
Demolition of low quality rear parts, demolition of western converted houses.
- Proposed new commercial buildings  
comprising of office space over 5 floor levels on street front. Single storey rear western link. Two storey rear northern Commercial building
- Existing building - Amherst Rd  
To be adapted and converted into residential units - Comprising of 4 x 1 Bed, 8 x 2 Bed & 2 x 3 Bed flats, 14 Flats total

Figure 4.2: RX Architects Option B

The Autolec Motor Factors building to the north of the site is demolished and replaced with an area of dedicated to car parking for the buildings.

## Renovation of Town Hall

The structure to the existing building appears to be of reasonable condition for a building of its age, however as part of a full renovation some structural work should be anticipated.

A significant portion of any structural work may relate to the running new services through the building. Finding suitable routes to coordinate new services through existing structures can be difficult and often requires the tricky adaptation of existing structure.

Some repairs to a building of this age should also be anticipated, and may involve the local repair or strengthening of floors or roofs, and local repairs to masonry. This may be particularly relevant the external elevations, which have ornate stonework, some of which shows signs of spalling, and parapets and chimneys which are areas that often suffer from defects.

As described in Section 2 of this report, the building may have suffered from some WWII bomb damage. Defects may be present within the building that have previously gone unnoticed, and which only become evident after intrusive investigation, or as construction works uncover them

Where new services enter and exit the building, new trenches may need to be formed and require the removal of areas of slab and careful coordination with existing foundations.

Level access through the building is currently not available, and some modification to floor structures to improve this might be anticipated, where it does not interfere with the more historically valued areas of the building.

## Extension to the Town Hall

The proposals at this early stage include removing part of the existing roof and creating a new glazed link between the two gables that form the south elevation. New localised areas of steel framing are likely to be required to help strengthen the existing gable roof structures to allow the new glazed link to be cut into them, and also to support the new area of glazing and raised sections of roof.

The modest increase in load on the building from this link is unlikely to require any wholesale strengthening to the building, or its foundations. This should be checked in the next stages of work through intrusive investigation, once the proposals are more defined

## Job Centre Building on Amherst Road

It is anticipated that the conversion of the building, and layouts to the new residential flats within it, will be designed to work with the existing structural framing arrangement to avoid significant and costly alterations.

The structural capacity of the building is considered suitable for residential use, which has lower design loads than office space, which it is currently used for. The residual capacity in the structure after converting from office to residential use may provide the opportunity to add an additional storey to the building without significant strengthening to the current structures, providing a lightweight construction were adopted. If this

were considered appropriate it would need confirming through some intrusive investigations to confirm the existing framing arrangement.

New servicing to the building would need careful coordination to avoid the primary structural members. New trimming structures are likely to be required where new services pass through the existing precast concrete floors to ensure their integrity is not compromised. To avoid a significant number of new services routes through the building, bathrooms and kitchens should be stacked where possible to allow common service risers to provide a shared route for services entering and exiting the new residential units.

Some degree of trenching and alteration to the ground floor structure should be anticipated to allow for new services to the building. These will need careful coordination with the existing foundations.

## Proposed New Buildings

Various forms of construction will be appropriate to the new commercial and residential buildings that form the proposals in Option A and Option B. The most appropriate should consider the site access, building function and geometry, construction programme, cost, and the sustainability credentials of the building materials involved. Figure 4.3 outlines some of the structural strategies that would be suitable for each of the new buildings.

Three-storey residential building	Two-storey commercial building	Five-storey commercial building
Load-bearing masonry with timber joisted floors or precast concrete floors	Load-bearing masonry with timber joisted floors or precast concrete floors	Insitu concrete frame
Insitu reinforced concrete frame	Insitu reinforced concrete frame	Insitu reinforced concrete frame
Steel frame with insitu concrete floors on metal decking	Steel frame with insitu concrete floors on metal decking	Steel frame with insitu concrete floors on metal decking
Steel frame with precast concrete floors	Steel frame with precast concrete floors	Steel frame with precast concrete floors
Traditional timber framing	Traditional timber framing	Engineered timber framing with CLT walls and/or Glulam columns and beams and CLT floors
Engineered timber framing with CLT walls and floors	Engineered timber framing with CLT walls and/or Glulam columns and beams and CLT floors	

Figure 4.3: Possible structural strategies to new buildings

While the more traditional methods of construction would be appropriate for these buildings, there is also the opportunity for Rother District Council to consider the more sustainable construction methods associated with timber framed construction. Engineered timber solutions using prefabricated elements and modular construction can provide structures with little or no embodied carbon; timber can be considered to absorb carbon dioxide from the atmosphere and trap it within its cellular structure as it grows.

An arrangement of Glulam columns and beams could be designed to support cross-laminated timber (CLT) floor plates in a similar arrangement to what might be expected from a steel frame supporting concrete floors. Where the depth of Glulam beams impacts floor to ceiling heights, hybrid solutions using steel framing to support CLT floor plates could be explored.



As timber is a light weight material, when compared to concrete or steel it often means foundation requirements are also reduced.

Due to it's prefabrication and modular nature, construction periods on site can be reduced when compared to more traditional construction methods.

A full option study of appropriate structural materials would be considered in the next stage of work, when the layouts and specific requirements for the buildings are better know. Often the most sustainable solution is a building that can provide future flexibility to help prolong its useable life.

For buildings of two to three storeys it may be possible to adopt traditional pad and strip foundation solutions, depending on the construction of the superstructure. For the five storey commercial building, where heavier loads are anticipated, piled foundation solutions may be required. A full site investigation would be required to confirm suitable foundation solutions in due course.

### **Constraints and Other Considerations**

As described in Section 2 the site has had an active past, with areas redeveloped numerous times. As a consequence there may be remnants of previous buildings foundations, that could present buried obstacles when forming any new foundations. If any of these historic buildings had cellars there could be considerable depths of made ground before suitable bearing ground is encountered.

Similarly, the extent of any below ground services, either private or public are unknown at this stage and would need careful consideration and could lead to complexities when designing new foundation systems.

The area of the Autolec Motor Factors building is identified on the historic maps as 'Engineering Works'. There may be contaminants associated with the previous site usages that require ground remediation. This would be identified by a full Site Investigation in the next stages of work.

The existing substation to the south west of the site will need considering in the redevelopment of the site; whether this is retained or relocated or upgraded will need assessing by a MEP Engineer.

As the site suffered WWII bomb damage it may be considered at risk of encountering unexploded ordnance (UXO) during any groundworks. A detailed UXO threat assessment could help establish this risk.