

## ***Cliff Face Inspection Report (including external structures)***



Client: Mr J and Mrs E Brown

Property: The Chalet  
31 Fore Street  
Port Isaac  
Cornwall  
TR7 1DZ

Report by: Nick Datson  
BEng(Hons) MSc(Mining) CEng MICE MCSM

Date: 31<sup>st</sup> May 2017

**Datson Consulting Ltd**  
Point Villa, Point Mills, Bissoe, TRURO, Cornwall TR4 8RA

t 01872 863292  
f 01872 300110  
m 07894 809061  
e [info@datsonconsulting.co.uk](mailto:info@datsonconsulting.co.uk)  
w [www.datsonconsulting.co.uk](http://www.datsonconsulting.co.uk)

Mr N M Datson is a Member of the Institution of Civil Engineers (MICE)

Registered Office : Point Villa, Point Mills, Bissoe, Truro, Cornwall TR4 8RA  
Company Registration Number : 692250 VAT Registration Number : 972 9444 77

## ***CONTENTS***

1. INTRODUCTION
2. BRIEF DESCRIPTION OF SITE
3. SCOPE OF WORK
4. GENERAL INFORMATION
5. INSPECTION
6. DISCUSSION
7. CONCLUSIONS
8. RECOMMENDATIONS
9. LIMITATIONS

### 1. INTRODUCTION

Mrs E Brown commissioned the report. The brief is to carry out a cliff face inspection report of the property and the surrounding coastline of the plot to include any noted significant structural movement of any structures.

The report is to comment on the possible presence of any visible structural defect or other sign of damage that may require remedial works in the future.

Please note that no other survey reports have been viewed. We cannot therefore make any comment upon any observed items observed in any other earlier reports.

The inspection was carried out at 2:15pm on the 31<sup>st</sup> May 2017 and the weather was clear and dry.

### 2. BRIEF DESCRIPTION OF SITE

The site consists of a small bungalow built near the edge of a coastline cliff face which is approximately half surrounded by an up to 15.0 to 20.0 metre high near vertical rock face. In the absence of any other information we have assumed that the mean high water mark is the extent of the boundary to the property on the coastline edge and the parking place and 29 Fore Street are the boundaries inland. The seaward facing elevation of the bungalow directly faces to the west southwest.

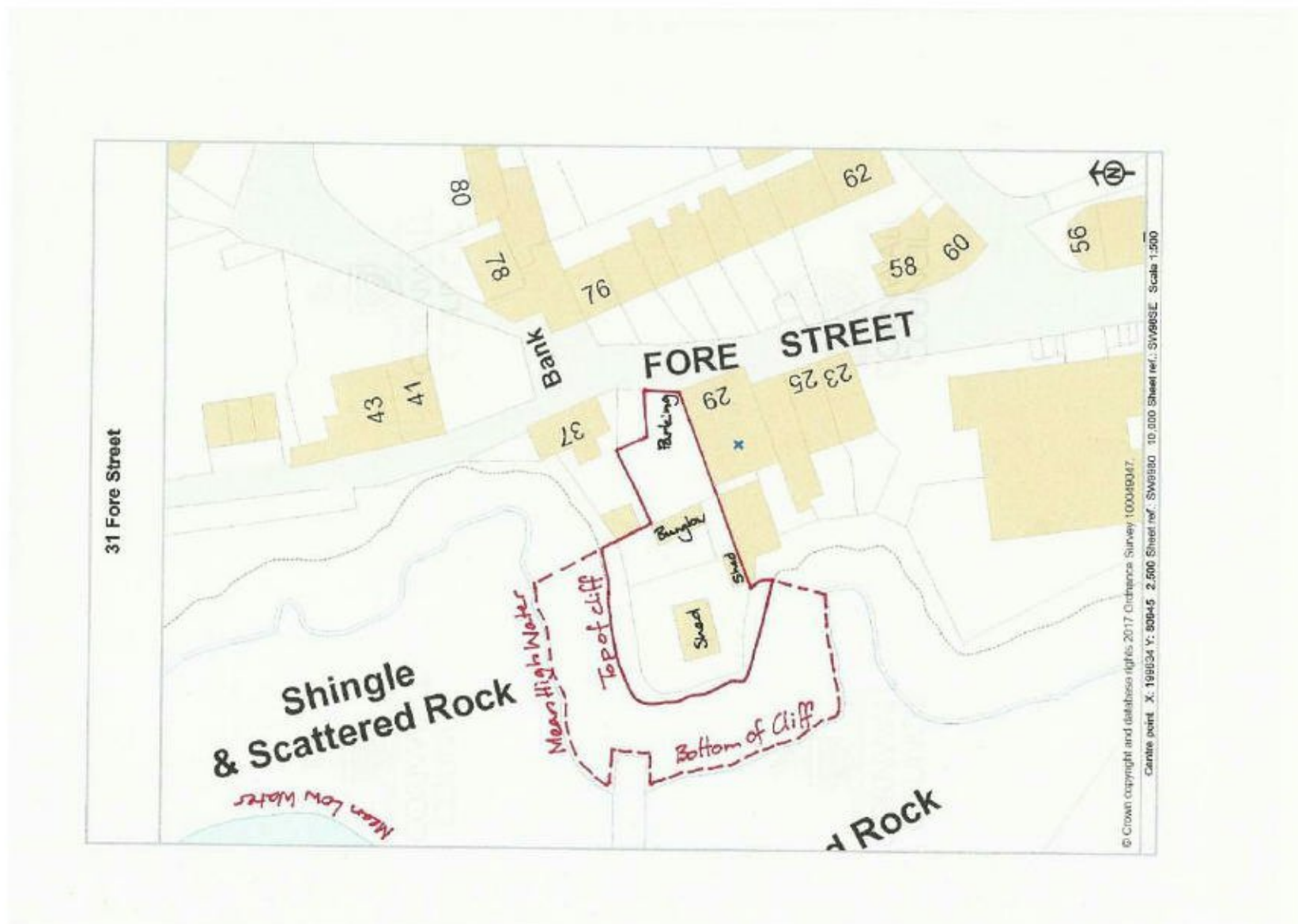


Figure 1 – Approximate site boundaries

The cliff face is mainly slate bedrock intruded with various other minerals such as quartz veins.

To the lower end of the site to the west there is a large timber shed. On the southern cliff edge there is a small blockwork shed.



Photograph 1 – Site looking from Fore Street

### **3. SCOPE OF WORK**

This report presents and interprets the purely visual observations made at the time of the inspection and, where available, assimilates any relevant information provided.

This visual inspection is made in order to assess the property for any signs of settlement or subsidence, for any recent storm damage or other degradation of the cliff face, structures or unstable ground conditions.

As a conclusion, an opinion is given as to the presence of past or ongoing movements, to the level of risk of any damage being an issue in the foreseeable future. Recommendations are also given where further any precautionary measures are considered to be advisable.

The main buildings and other outbuilding structures were also inspected generally as part of

this inspection.

**4. GENERAL INFORMATION**

Within this report, the general sea wall structure is described as looking toward the structure from the beach, with the geographical orientation given where known. For example “..... the left side stone wall .....”.

Crack widths are described as per the Building Research Establishment – Assessment of Damage in Low Rise Buildings (BRE Digest 251, 1990) and are summarised in the following table:-

<b>Crack Description</b>	<b>Crack Width</b>	<b>Damage Category</b>		
Hairline	less than 0.1mm	BRE Category 0	Minor	
Very slight	0.1mm to 1.0mm	BRE Category 1	↓	
Slight	1.0mm to 5.0mm	BRE Category 2		Moderate
Moderate	5.0mm to 15.0mm	BRE Category 3	↓	
Severe	15.0mm to 25.0mm	BRE Category 4		
Very severe	Greater than 25.0mm	BRE Category 5		Major

A simple risk factor is used in the conclusion to describe an overview of the situation with regard to obtaining a buildings insurance proposal. The different categories are summarised in the following table:-

<b>Risk Factor</b>	<b>Example Situation</b>	<b>Summary</b>
NO Risk	No structural or cliff face issues noted. No remedial works required.	Insurable
LOW Risk	Minor structural and cliff face issues noted. Only minor remedial works recommended as part of the ongoing maintenance of the structure.	Insurable
MEDIUM Risk	Structural or cliff face issues noted. Investigation and remedial works recommended as part of the ongoing maintenance of the structure.	Further investigation required
HIGH Risk	Serious cliff face or structural issues noted. Investigation and major remedial works recommended.	Significant investigation and securing works required

## 5. INSPECTION

### Main bungalow

The bungalow at the property dates back to approximately 1960's. There was no previous buildings as shown on Ordnance Survey maps 1<sup>st</sup> Edition (circa 1879) or the 2<sup>nd</sup> Edition (circa 1907). It is interesting to note the general coastline of the immediate area has also not significantly changed in over nearly 140 years.



Photograph 2 – Main bungalow

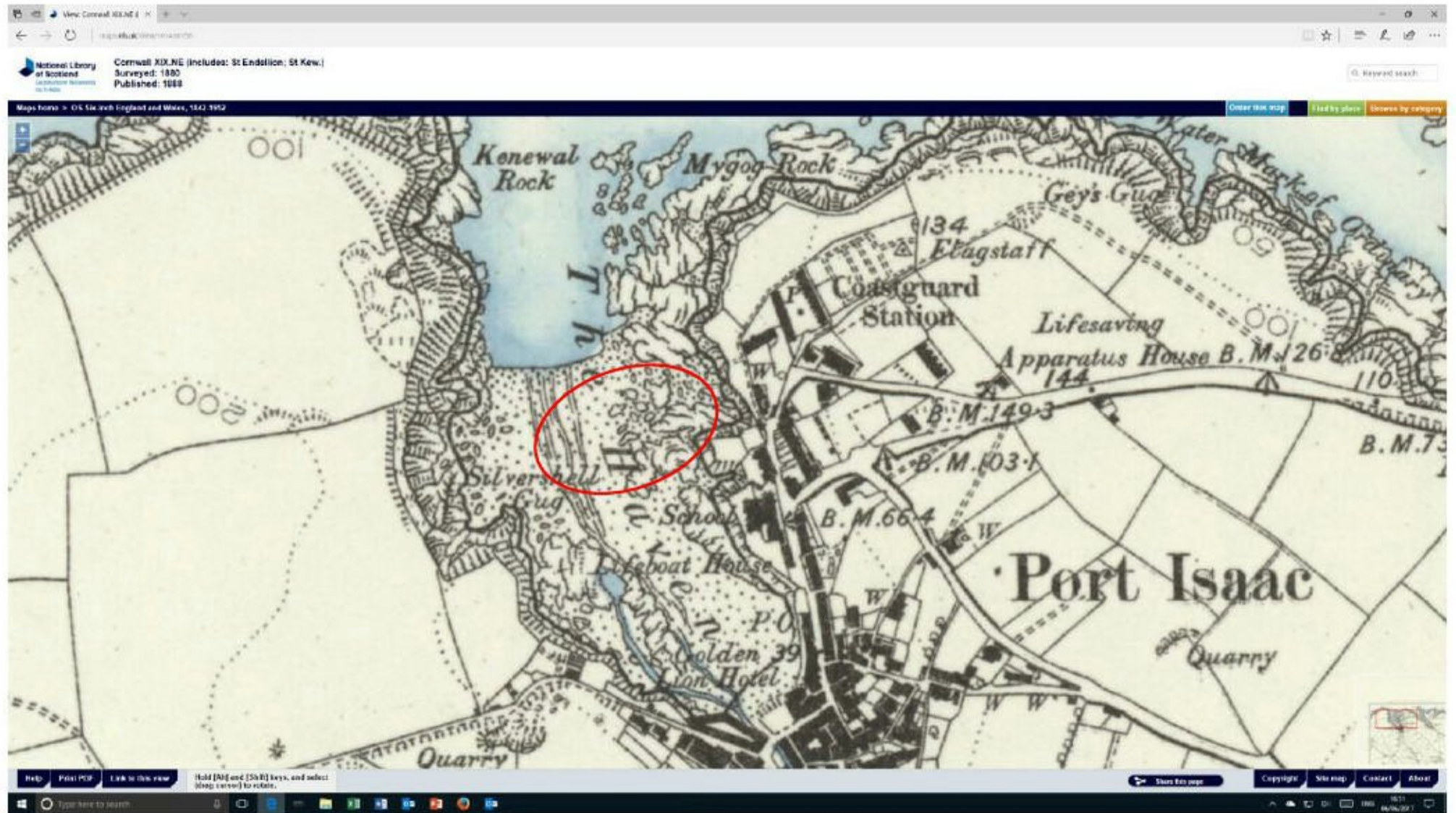


Figure 2 – Ordnance Survey 1<sup>st</sup> Edition (Surveyed 1880)

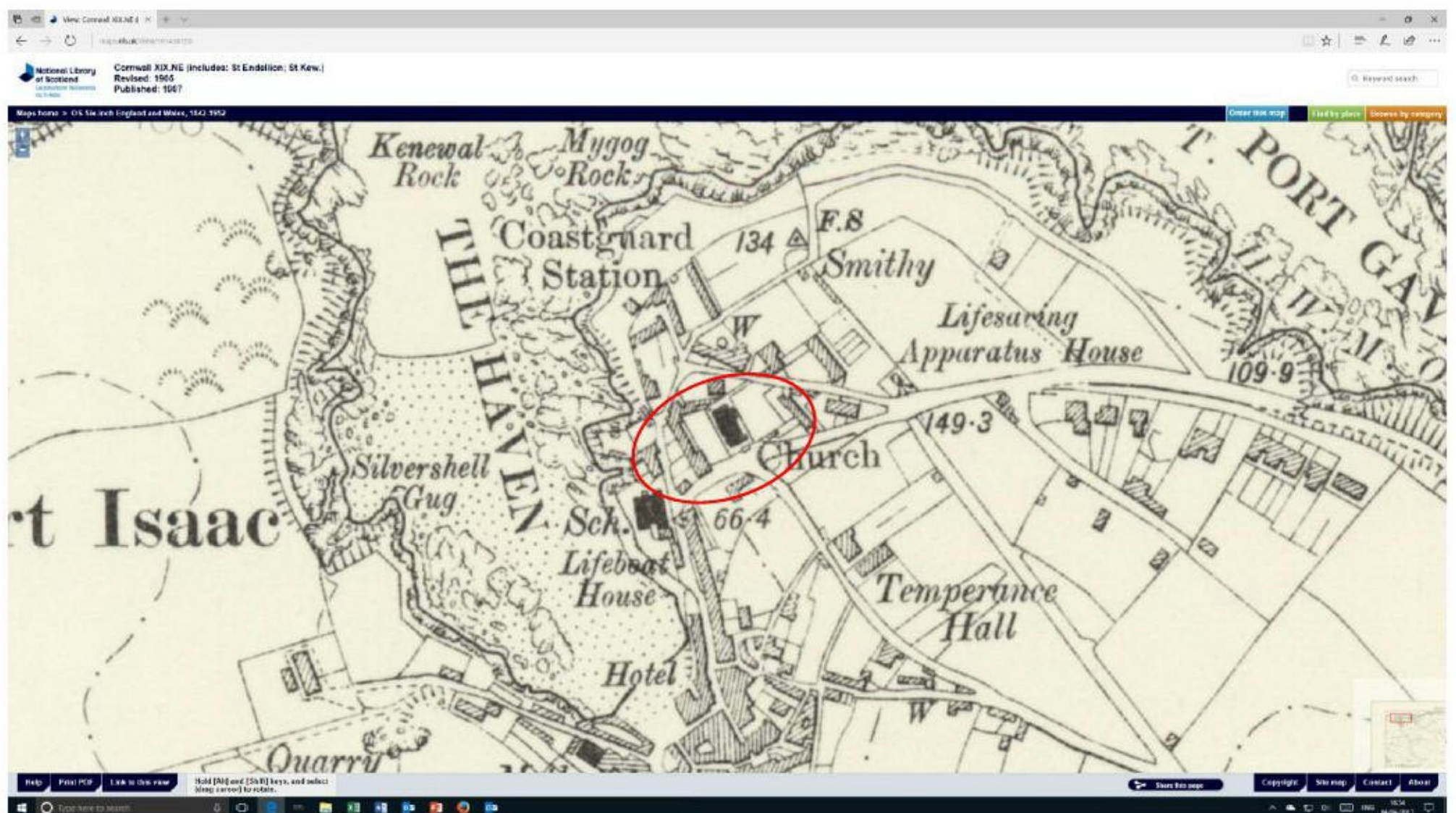


Figure 3 – Ordnance Survey 1<sup>st</sup> Edition (Revised 1905)

The property is currently constructed of assumed blockwork which has been rendered supporting a flat and felted roof. The overall condition of the property would be regarded as good.

The main building has various generally vertical and horizontal cracks of mainly hairline width (BRE Category 0) around some openings and to changes of construction material or direction. These are due to differential movement, initial settlement or thermal shrinkage and expansion and are not structurally significant. Minor repairs are recommended on the assumption they are likely to return in time.

No internal inspection was made to the main building due to time constraints and being outside the initial scope of the survey. No comment can therefore be made on the structural condition internally. However, with a lack of damage externally this would not be considered important.

### Outbuildings

To the west of the site is a large timber frame workshop which is clad in corrugated metal with an asbestos sheeting roof. The building is showing sign of age and significant wear and tear. However, no significant structural damage or signs of subsidence or landslip was noted.



Photograph 3 – Crack to southern elevation to junction of extension

To the southern part of the plot there is a small blockwork shed with a mono pitched and asbestos corrugated roof. There was no significant damage noted to this building.

### Footways



The main building north elevation is relatively close to the cliff face but is estimated at being approximately 4.0 to 6.0 metres away. No evidence of significant movement was noted to the main building in this area. Other parts of the footway were displaced horizontally by up to 25mm but this is likely due to poor construction coupled with poor drainage.

Elsewhere there was small signs of movement in different surface finishes but again no mass movement was detected.



Photograph 4 – Old footway cracking to front and right of main bungalow



Photograph 5 – Footway in front of property in relatively good condition



Photograph 6 – Footway in front of internal garden wall showing some signs of old lateral movement towards the cliff

### **Upper Level Boundaries**

A rudimentary timber fence is constructed around the property. This was showing signs of age and significant wear and tear.



Photograph 7 – Fencing around north of site showing signs of age and wear and tear

### **General Cliff Face**

As previously stated, as a general overview, the cliff face compared to the earliest Ordnance Survey map 1<sup>st</sup> Edition dated 1879 shows minimal change in terms of location of the general coastline in the past 140 years.

At the bottom at the sea level, the rock outcrop beach has large sections of eroded slate bedrock characterised by mid grey thinly bedded (less than 10mm) bedding planes. Rising up from the beach is a competent slate which is dark grey in colour and then changing to a dark brown to brown. The upper 2.0 to 5.0 metres is a less competent slate which is highly fractured and weathered. The broken down slate is then described as a shillet (slate and clay mixture) which has some minor vegetation in this zone with some topsoil in the uppermost areas near the top.

The general angle of the slate bedrock bedding planes variable but is generally is less than 20 degrees to the horizontal and rises up toward the west in direction (rock dipping down to the east). At random positions the slate is interbedded generally on the same direction as the bedding planes with intrusions of quartz and other minerals of generally less than 75mm width. In addition, there are some discontinuities of a more vertical nature consistent with minor fault lines or folding pressure creating fractures of which some are also filled with quartz and other minerals.



Photograph 8 - Main rock outcrop under property looking up (note tip of roof of timber shed to left side)

**a) Southern area of cliff face**

This area is characterized by a narrow cut back area of generally less than 10 metres width at the mouth down to zero with a small cave caused by water/storm erosion over thousands/millions of years. Some of the rock is highly weathered and undercut with some fresh rock faces (light brown areas) showing erosion is active in this area. However, there was no recent rock debris in the cove to suggest this was relatively recent.



Photograph 9 – Rock face to south on left of photograph with cave in centre

**b) Western area of cliff face**

This area has a roughly rectangular cliff line generally facing west southwest. No significant recent erosion was noted in this area. There was no rock debris at the base of the cliff to suggest any recent instability. The upper reaches of weathered rock is partially vegetated generally in the top 1.0 to 2.0 metres near the cliff top. The western tip has a section of sprayed concrete that was undertaken in the past when the breakwater was improved.



Photograph 10 – Northern eastern face



Photograph 11 – Western face showing rock outcrop and concrete breakwater to the left

**c) Northern area of cliff face**

This area has a relatively vertical cliff line generally facing north. The upper reaches of weathered rock is partially vegetated generally in the top 1.0 to 1.5 metres near the cliff top. No recent falls of rock were noted to suggest instability of the rock faces.



Photograph 12 – Breakwater with north face beyond

**6. DISCUSSION**

The main building and sheds do not appear to have suffered any significant recent movement or subsidence/landslip issues. The various minor defects present are consistent with the age and construction, and relate to normal wall movements that could be expected to occur, such as for initial and possibly some later footing consolidation settlement, thermal movement effects, and general deterioration effects.

It is confirmed the outcrop of slate/shale bedrock would be suitable for construction of a new building in the location of "The Chalet" and moving forward to the location of the shed. Trial holes at construction would determine foundation depth but we suspect from the cliff face

inspection that good decent shillet will be found within 1.0 metres of the surface. The worst case scenario would be that the property could be placed on ODEX piles which would then give an opportunity to construct cantilever sections (not beyond the cliff face itself as this would alter the appearance of the area) to ensure any outside living areas were completely safe to use. Boundary walls or some form of screening could then be placed on this edge structure. As it is difficult to see anything from the beach itself we doubt this would change the appearance from the ground within the cove. A structural design engineer would be able to assist with the design and calculations for such a structure.

It is indicated from the above observations that the cliff face is in relatively good condition and this has not significantly changed over hundreds, possibly thousands or years. However, minor instability of the rock outcrop is possible by weathering/storm meaning small localised failures are probable over time. Larger major landslip failures would seem very unlikely, albeit possible, based on the past history. However, in risk terms we would categorise this as being "minimal" meaning that major instability, whilst not likely, is still possible with the right climatic or ground conditions. As such the condition of the cliff face is deemed to be an acceptable risk at this time.

## **7. CONCLUSIONS**

With all the known facts of the property, and in particular, the cliff face put into perspective it is clear it appears free from significant erosion progression or damage at present. However, it should be noted that the "perfect storm" coming from the right angle and intensity may cause a cliff face failure.

The site is suitable for a replacement property subject to the necessary planning consent from Cornwall Council.

In light of the above we have no hesitation in recommending the plot as suitable for new building purposes. Whilst we cannot rule out future storm damage we can confirm the cliff face and larger property area is suitable for purpose and presents a relatively LOW risk to lenders insurance underwriters.

## **8. RECOMMENDATIONS**

It is recommended that no further requirements are needed with regard the cliff face at this time in the form of any stabilisation. However, serious consideration should be given to inspecting the cliff face at regular intervals going forward bearing in mind the location and exposure to the sea in this location. Further inspections should be undertaken at biennial intervals (preferably in the spring after the winter) unless there is a major storm. If this occurs we would recommend additional interim visits to confirm if there has been any significant



change or damage.

Consideration should be given to the type of foundation design. Depending on the competency of the rock level it could be that either traditional or piled foundations could be utilised. This could be determined either on site prior to construction or at the time of construction.

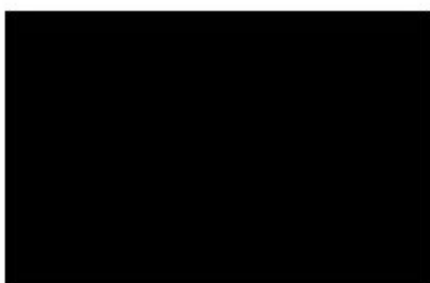
## **9. LIMITATIONS**

Datson Consulting Ltd cannot be held responsible for any such future damage effects that may result from the occurrence of storm conditions.

The inspection should not be considered as being a Building Survey nor a full Structural Survey. Datson Consulting Ltd has not inspected parts of the cliff face or main property which are inaccessible and also the visit has been conducted from the ground with no scaffolding access or abseiling equipment. We cannot therefore comment on damage that cannot be seen from the ground.

This report should also not be considered as an Environmental Study.

This report is for the benefit of the clients and insurers, and is confidential to them and their professional advisers. It may not be disclosed to any other third parties without written permission, and no liability whatsoever will be accepted by Datson Consulting Ltd in relation to disclosure to such third parties who rely on this report entirely at their own risk.



Nick Datson BEng(Hons) MSc(Mining) CEng MICE MCSM  
Datson Consulting Ltd  
*Director*