Combroke Parish Council

Consultation for Application 19/00361/FUL

At: The Little House, Combrook, CV35 9HP

Proposed: Enlargement of parking area, erection of retaining wall

Representation

This is a further representation from the Parish Council in response to several amendments made to the original application.

This document comments only on the amendments. All comments made previously on details that have not been changed still apply.

In making comments we follow the headings used by the Agent in their letter dated 20/5/19 advising the amendments.

1. <u>The application site</u>

1.1. The location plan now shows the multi-vehicle garage as part of the site but it fails to identify the lane as not being in the ownership of the applicant. This matter has become highly relevant following the latest amendment to the drainage proposals which show the need to dig up and install drains in the road surface. This is dealt with further under "Drainage".

1.2. With regard to the lane, it is understood the County Council has recently decided to extend the 'highway maintainable at the public expense' up to the gate at Keepers Cottage on the northern side of The Little House. This means that the proposed work on the lane will require consultation and approval from the County Council Highway Authority.

1.3. The location plan also fails to show an area immediately adjacent to the site classed as "replanted ancient woodland". This should have been known to the applicant had they made a planning application in advance of undertaking the work. They would also have been made aware of all the restrictions imposed in a 15m buffer zone around a protected site. These restrictions have been made clear as a result of a letter from the Woodland Trust as a consultee. This is dealt with further under "Trees".

2. <u>The proposal</u>

2.1. It is noted that the proposal is essentially unchanged in terms of the location and scale of the development. Necessary corrections have been made to errors in height and cross section of the retaining wall. Inexplicably the height of the parking area is still shown as being level with the top of the base of the retaining wall when photos show it to be 300 – 350mm lower. Calculations made by the Structural Engineer using the amended height have been submitted whereas none were previously supplied. Regrettably there are inconsistencies in the calculations which suggest that the wall does not provide acceptable factors of safety. These are examined under "Structural matters"

2.2. The surface of the parking area has now been changed from "porous material" to "tarmac finish over a concrete base". The reason given is that during construction the sub-soil was found to be clay, which being non porous, would not have allowed the porous material to drain adequately. The amendment to a totally non permeable material introduces the necessity to provide suitable disposal of the additional surface water to comply with SUDS regulations. A welcome amendment to the proposal is inclusion on the new layout plan of a completely revised drainage scheme which is examined under "Drainage".

2.3. However the finding during construction that the sub-soil at the depth of the base of the parking area was clay, means that the sub-soil at the same depth on which the base of the retaining wall is built is also clay. Therefore the Structural Engineer's statement that the use of the soil properties of clay was a "worst case" scenario is likely to be the actual scenario and no additional safety factors can be assumed or implied.

3. Structural Matters

3.1. Together with the amended drawing 412 42 RevA showing the corrected cross section and height of the retaining wall, a revised letter is submitted from the structural engineer and a copy of her revised calculations. Calculations had not previously been submitted with the original application so this was the first time there had been an opportunity to review them.

3.2. Both the amended drawing 412 42 RevA and the sketch included with the structural engineer's calculations continue to show the top of the base of the retaining wall to be level with the top surface of the parking area implying that the base of the wall is a foundation below ground level.

3.3. This is NOT the case as has been shown previously in photographs and is still evident where stone cladding has not been fixed to the wall. The surface of the parking area is some 300 -350 mm below the height shown and the base of the wall is built directly on the top of the excavated surface which is now known to be clay as discovered by the builders in November 2018 and revealed in the Agent's letter.

3.4. However, closer analysis of the design calculations reveals that the structural engineer has not relied on any part of the wall being below ground and contrary to her original statement that "The wall retains 1.6m height of garden" has acknowledged that the whole height of the wall (2.25m) is retaining the ground behind.

3.5. The purpose of reviewing the design calculations was simply to confirm that they applied to the wall "as built"; it was not to question the validity of the calculations themselves. Unfortunately, in the process of scrutinising the calculations some apparent errors have been revealed which appear to have serious consequences for the safety of the structure. These are summarised below and supporting evidence is provided in the attached appendix.

- ➡ The weight of the 150mm thick natural stone cladding added to the front face of the wall is not taken into account in any calculations. The fact that there is no toe to the base of the wall means that the cladding contributes an overturning moment that must be added to lateral forces arising from the active pressure from the retained soil . If all other figures proposed by the structural engineer are used, the additional consideration of the cladding alone results in a revised factor of safety of 1.89 which is a FAIL if the generally accepted minimum value of 2 is used.(See Appendix 1)

- ➡ The calculation presented to test resistance to sliding identifies an incorrect value for friction, and then fails to use it. The equation as presented simply compares a horizontal force with a vertical force. The value of friction presented is the internal friction angle of the soil. The soil has been found to be clay so the "worst case scenario" is actually the true scenario and the value that must be used is the coefficient of sliding friction between the underside of the cast concrete base and the clay soil. A typical value for this pair of materials is 0.3 (Ref. StructX.com). Again using all other figures proposed by the structural engineer, but accounting for the additional weight of the stone cladding which helpfully provides an *increase* in the friction force opposing sliding, the factor of safety is only 1.22 which is a FAIL using the accepted criterion. (See Appendix 1)

- ➡ The calculation of lateral earth pressure acting on the wall assumes that soil is in direct contact with the wall. But the sketch shows gravel backfill which must be present in significant quantity to provide the necessary drainage route into the land drain. Without knowledge of the backfill profile, or the slope being retained, it is unclear how this figure is justified.

In view of these issues the Parish Council is not convinced that the retaining wall as proposed and constructed has been demonstrated to be safe and requests that further analysis is undertaken and the appropriate remediation is proposed.

4. <u>Drainage</u>

4.1. The amended drainage strategy shown in 412 40 revF demonstrates a very welcome proposal to deal not only with the additional surface water arising from this development, but also to improve the unsatisfactory arrangement that pre-existed and which led to flooding in the adjacent property.

4.2. The proposed change from "porous material" to "tarmac finish over a concrete base" provides a requirement under SUDS regulations to discharge surface water into a watercourse in the absence of any suitable soakaway.

4.3. The proposal involves the need to dig up the road to insert a channel drain across the road and within the road in front of Coombe Cottage. It is clear that the channel drain running the full length in front of The Little House will abut the road but lie within the verge area adjacent to The Little House.

4.4. We note that WCC Highway Authority have previously been consulted on this application and raised no objection. However this was prior to the recent adoption of the lane. The need to dig up the road and the insertion of new drainage will have implications for the "operation of the highway" particularly concerning the maintenance of road gullies. This issue will require consultation with WCC Highway Authority, including the proposed use and type of channel drain. The Agent's letter suggests that a smaller size channel drain would be adequate for the predicted flow rate. No detailed analysis for such prediction is given, merely stating that a larger size is "of a more commercial nature". This road provides the only access to Keepers Cottage which has regular deliveries of heating oil by large tanker and should have access maintained for other HGV's. In addition to the proposed channel drain crossing the road, of particular concern is the proposed channel drain in front of Coombe Cottage, part of which must lie in the wheel tracks of any large vehicles accessing The Little House or Keepers Cottage.

4.5. The Parish Council would anticipate that WCC Highway Authority will require conditions to approve the specification of drainage equipment, the installation process and the maintenance provision so that "operation of the highway" is not compromised.

4.6. The Agent's letter states that the proposed channel drains have a capacity of 11 litres per second per metre. The proposal is to use more than 40 metres of channel drains which in theory could collect 440 litres/second of surface water, but only if the pipework to which they are connected has the equivalent capacity. It is seen from drawing 412 40F that the main area is served by what appears to be an existing drain running to the north of the building and discharging into the stream. This drain is presumed to be already carrying water from the rainwater pipes from the roof of the building and so its capacity needs to be checked.

4.7. The new channel drain in front of Coombe Cottage appears to connect to the existing circular gully and then to an existing drain (dotted green) running to the south side of the building. This existing drain already serves the downpipe from the roof of the large garage opposite as well as the existing channel drain in front of the garage. When Coombe Cottage floods it is not known if the existing gully grating becomes blocked, or the silt trap is full, or the capacity of the drain carrying the water to the stream is inadequate. The new channel drain will only alleviate the first of these problems and it is anticipated that the other two causes would need to be investigated before anything is implemented.

4.8. It is noted that the Structural Engineer, in their letter dated 13/05/19, has properly declined to offer further advice about drainage for this project. It is clear that a qualified professional is required with the experience to fully investigate drainage matters more comprehensively than has been done so far.

5. Trees

5.1. The agent's letter states that 2 trees "in a perilous state" have been removed. One on a neighbouring boundary, the other belonging to a neighbouring property. It must not be overlooked that the harm to these trees, was caused wholly by the deep excavations adjacent to their roots and was entirely predictable.

5.2. The letter received from the Woodland Trust as a consultee identifies the area adjacent to the site to the north to be ancient woodland. The map (copy attached Appendix 2) taken from www.magic.defra.gov.uk shows that the retaining wall lies within 3 – 4 metres of the ancient woodland and that one of the trees harmed by the excavations was part of the ancient woodland.

5.3. The Woodland Trust describe the importance of ancient woodland and highlight NPPF para 175 and SDC policy CS 5 as grounds for refusal on the basis of both national and local policy. They further quote Natural England's standing advice that buffer zones could be used to mitigate effects of development and recommend a buffer of 15m to protect the woodland from impacts of development. The Woodland Trust are totally unambiguous in their opinion that the proposed development should not be approved and that there are no extenuating circumstances.

6. Conclusion

6.1. If this application had been made prior to starting the development, it could have received the scrutiny it is now receiving which has revealed aspects of its design which have done, and could do, harm. This harm is in the form of damage to habitat, risk of damage from failure of the retaining wall, and increased risk of flooding due to inadequate drainage provision.

6.2. This matter was raised with SDC Enforcement as soon as the extent of the work was realised and before any damage to trees had begun. It is understood that the applicant was informed that if he continued with the work before permission was granted, it was at his own risk.

6.3. This application must therefore be assessed as though no work had yet begun and it remains the view of the Parish Council that permission should be refused.
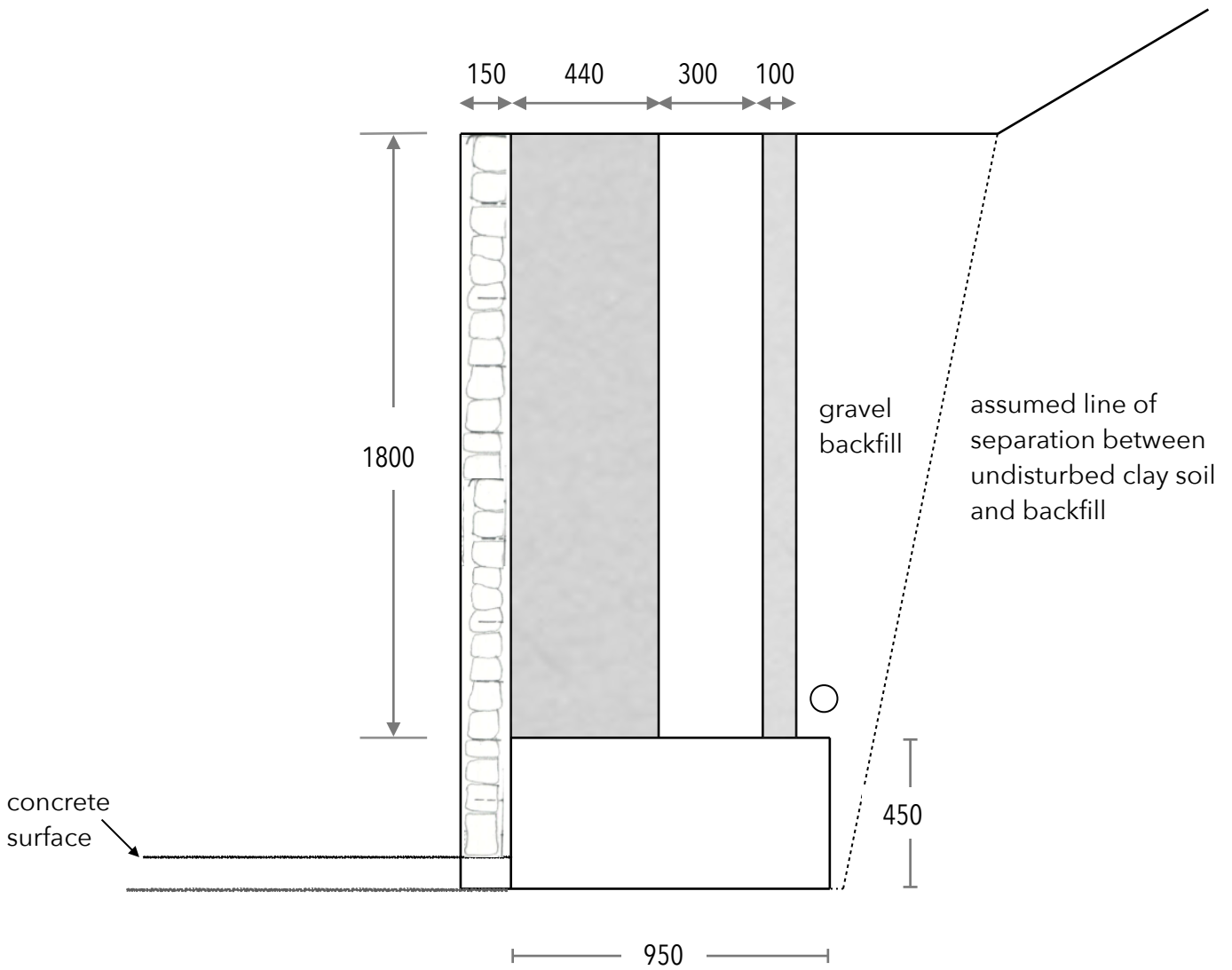
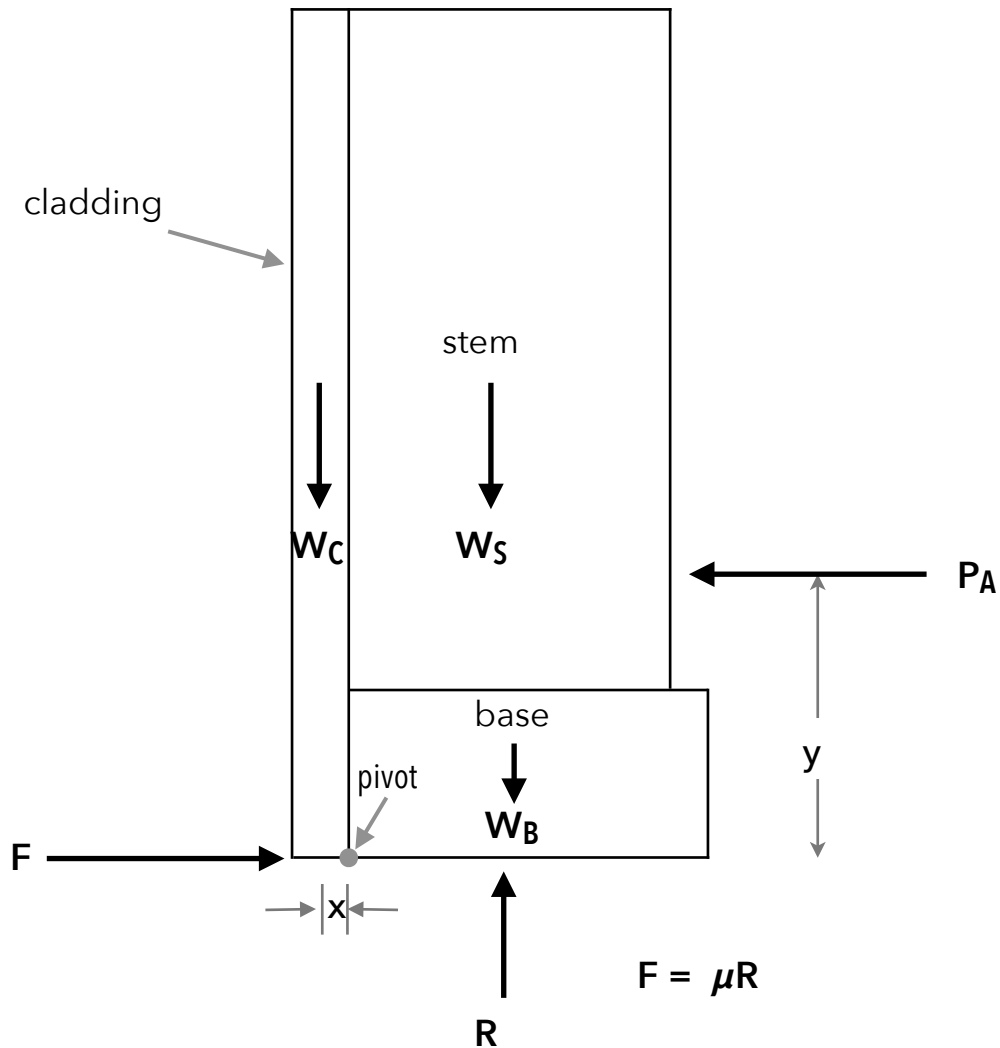3 June 2019

Appendix 1

The Little House, Combrook

Retaining Wall
Dimensions (mm), as given by applicant

150   440   300   100

1800

gravel
backfill

assumed line of
separation between
undisturbed clay soil
and backfill

concrete
surface

450

950

The Little House, Combrook

Retaining Wall   - Forces

cladding

stem

W_C W_S P_A

base

pivot

W_B y

F $F = \mu R$

x

R

P_A is the lateral load on the whole wall
W_S is force due to weight of stem
W_B is force due to weight of base
W_C is force due to weight of cladding
R is reaction force of ground due to combined weight of elements
F is friction force opposing sliding

P_A acts at centre of pressure ⅓ of wall height from ground

Resistance to sliding

Assume force causing sliding is correct as per Structural Engineer's calculation

i.e P_A = 13.4 KN/m

Downward load **must** include weight of cladding in addition to weight of stem and base

Force due to cladding/m   = area x density

= (0.15 x 2.25) x 24

W_C =   8.1 KN/m

Using values from Structural Engineer's calculations :

W_S = 36.3 KN/m; W_B = 10.3 KN/m

Total load due to weight of all elements   = W_C + W_S + W_B

=   54.7 KN/m

Therefore reaction force, R, at ground resisting total load = 54.7 KN/m

Friction force, F, opposing sliding between underside of the cast concrete base and
the clay soil is   = μR   where μ is the coefficient of friction between these two surfaces.

Assume μ = 0.3   (ref. structX.com),

F = μR

= 0.3 x 54.7 KN/m

= 16.4 KN/m

Factor of safety   =   force opposing sliding
                                        force causing sliding

=   16.4 / 13.4

=   1.22   < 2   therefore is a **FAIL**

Resistance to overturning

Assume cladding is only held by mortar on to the front face of wall.

In the case of overturning, the wall will pivot about the point shown on the reinforced concrete base.

However the cladding provides a moment about the pivot point tending to overturn the wall.
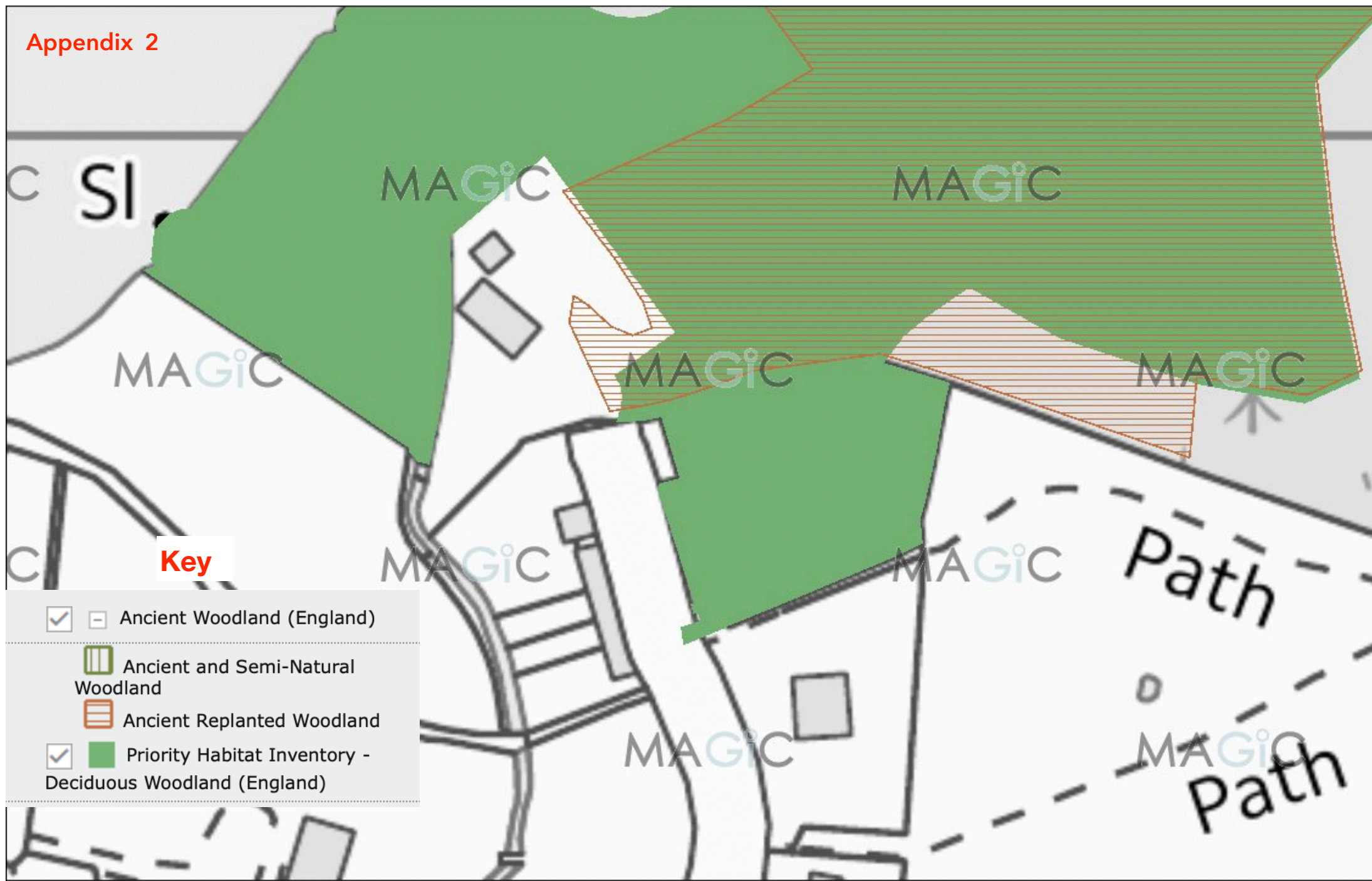
Taking moments about the pivot point,

$$
\begin{aligned}
\text{Overturning moment} \;=\; & (P_A \times y) + (W_C \times x) \\
=\; & (13.4 \times 2.25/3) + (8.1 \times 0.075) \\
=\; & 10.05 \;+\; 0.61 \\
=\; & 10.66 \; \text{KNm/m}
\end{aligned}
$$

$$
\begin{aligned}
\text{Restoring moment} \;=\; & (W_S \times 0.42) + (W_B \times 0.475) \\
=\; & (36.3 \times 0.42) + (10.3 \times 0.475) \\
=\; & 15.25 \;+\; 4.89 \\
=\; & 20.14 \; \text{KNm/m}
\end{aligned}
$$

$$
\begin{aligned}
\text{Factor of safety} \;=\; & \frac{\text{overturning moment}}{\text{restoring moment}} \\[6pt]
=\; & \frac{20.14}{10.66} \\[6pt]
=\; & 1.89 \; < 2 \quad \text{therefore is a } \textbf{FAIL}
\end{aligned}
$$

Appendix 2

Key

☑	⊟	Ancient Woodland (England)
	▥	Ancient and Semi-Natural Woodland
	▤	Ancient Replanted Woodland
☑	▩	Priority Habitat Inventory - Deciduous Woodland (England)

SI

Path

Path

0   0.015   0.03
km