

Investigation

Report

Relating to

23 Old End,
Padbury,
Buckinghamshire
MK18 2BB

Report date: 30th October 2019



Project preface



Client(s) name: All Souls College C/o Savills Estate Management

Client(s) address: Wytham Court
11 West Way
Oxford
OX2 0QL

Prepared at: Allcott Associates LLP
Unit 3, The Fosse
Fosse Way
Radford Semele
Leamington Spa
CV31 1XN

Document prepared by: Eur.Ing. David J Allcott BSc (Hons), C.Eng, C.Build.E,
MICE, FCABE, MIWEM, AssocRICS

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Reviewed by: Timothy Allcott



View of the Front Elevation

Table of contents

Project preface	ii
1 Introduction	3
1.1 Instructions	3
1.2 Brief	3
1.3 Site inspection	3
1.4 Terminology	4
2 General Description of Property	5
3 Investigation	6
4 Discussion	11
5 Conclusion	13
6 Rights of Originator	14

1 Introduction

1.1 Instructions

In accordance with instructions received from Savills Estate Management on behalf of All Souls College we have carried out a below ground investigation at the property known as 23 Old End, Padbury, Buckingham, MK18 2BB

The investigation was carried out October 2020.

1.2 Brief

Further to our initial report on the damage to the property in February 2020, we have been requested to carry out below ground investigations in relation to movement occurring to the rear right hand corner of the property.

1.3 Site inspection

Where the terms “right hand” or “left hand” are used, they assume that the reader is facing the front of the property with the main access reception door is situated within the front elevation.

1.4 Terminology

Where the expressions immediate, short term, medium term, long term and very long term are used they generally mean the following:

Immediate:	within 1 year
Short Term:	within the next 1 to 3 years
Medium Term:	within the next 4 to 10 years
Long Term:	within 11 to 20 years
Very Long term:	over 20 years

Where relating to structural damage and crack widths the expressions negligible, very slight, slight, moderate, severe and very severe are used they generally mean the following:

Category 0	"negligible"	< 0.1mm
Category 1	"very slight"	0.1 - 2mm
Category 2	"slight"	>2 but < 5mm
Category 3	"moderate"	>5 but < 15mm
Category 4	"severe"	>15 but < 25mm
Category 5	"very severe"	>25 mm

Table 1. BRE Digest 251

Classification of damage to buildings based on crack widths

2 General Description of Property

23 Old End, Padbury, Buckingham is a two-storey part timber framed with brick infill and part brick along with part what may well be rendered rubble stone finish beneath a timber pitched and gabled roof with a thatched finish.

The right-hand gabled wall appears of older construction being rubble stonework which projects around the rear of the property by approximately 1.0m

A lean-to timber store was connected to the rubble stone wall on right-hand side of the property.

All walls externally are finished with paint.

The drainage system was noted to collect around the front of the property evidenced by manholes, and we believe connects to the main public sewerage system situated within the public highway although this cannot be confirmed.

No trees of any significance were noted within influencing distance of the property.

3 Investigation

Three trial holes were excavated in total as per the Investigation contractor's diagrammatic location plan.

One trial hole was excavated on the brick section of the wall at the rear of the property with two further trial holes excavated on both the rear and front right-hand corner of the rubble stone gabled wall.

Trial hole 1 was excavated on the rear right hand corner which appears to be the original stonework to the gabled wall.

The foundation was again stone, but founded at 300mm below ground level onto an organic type fill material.

The trial was extended and at 800mm the ground changed to a grey mottled clay again.

The trial hole was extended with a 50mm hand auger upto 2.0m below ground level with ground being a constant grey mottled clay.





A Mackintosh Probe (a cone penetrometer) gave a result of 10 blows for a 75mm penetration of the ground beneath the foundation which is a soft soil of low bearing capacity.

At 2.0m the Mackintosh Probe (a cone penetrometer) gave a result of 42 blows for a 75mm penetration of the ground beneath the foundation which is a firm clay of medium bearing capacity.

Trial hole 2 adjacent the rear brick section of the property was stone, founded at 800mm below ground level having an over sail corbel of 150mm.



The brick corbel started 300mm below ground level.

The soil excavated through was an organic fill material with a grey mottled clay at 800mm below ground level which was the founding level.



The trial hole was extended with a 50mm hand auger upto 2.3m below ground level with ground being a constant grey mottled clay.

A Mackintosh Probe (a cone penetrometer) gave a result of 15 blows for a 75mm penetration of the ground beneath the foundation which is a soft soil of low bearing capacity.

At 2.0m the Mackintosh Probe (a cone penetrometer) gave a result of 42 blows for a 75mm penetration of the ground beneath the foundation which is a firm clay of medium bearing capacity.

Trial hole 3 was excavated on the front right hand corner which appears to be the original stonework to the gabled wall and similar to trial hole 2.

The foundation was again stone but founded at 300mm below ground level onto an organic type fill material containing fragments of brick.



The trial was extended and at 800mm the ground changed to a grey mottled clay again.

The trial hole was extended with a 50mm hand auger upto 2.0m below ground level with ground being a constant grey mottled clay.



A Mackintosh Probe (a cone penetrometer) gave a result of 9 blows for a 75mm penetration of the ground beneath the foundation which is a soft soil of low bearing capacity.

At 2.0m the Mackintosh Probe (a cone penetrometer) gave a result of 38 blows for a 75mm penetration of the ground beneath the foundation which is a firm clay of medium bearing capacity.

4 Discussion

The property may have originally been 2 cottages as the construction at the rear is different with a half-timbered section to the left-hand side and plain brickwork to the right.



This is even more complicated where it appears that the gabled wall to the right hand side and small return to the rear is original and the brick section to the left of the rear return may have been rebuilt at some time and not tied to the stone so as the gabled wall sank the separation cracking has appeared.

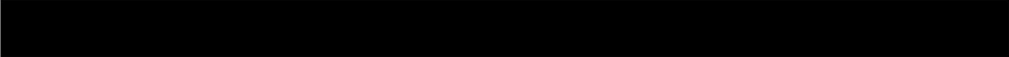


The stone section including the gabled wall has negligible foundations and founded on an organic material whereas the brick section has a more reasonable foundation onto what appears to be a natural clay.

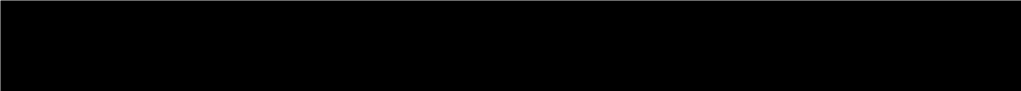
Over a period of time consolidation has occurred to the right hand gabled wall as the organic material beneath the foundation continues to degrade, consequently this has caused a slight sinking resulting in differential movement and the cracking between the brick and stone areas which do not appear to be tied together.

Unless the foundation is stabilised, we consider that movement will continue to occur.

Stabilisation in the form of shallow underpinning will need to be to the stone gabled wall section down to 1300mm below ground level with transition zones at either end of the underpinning section, due to the weight of the stone gable.



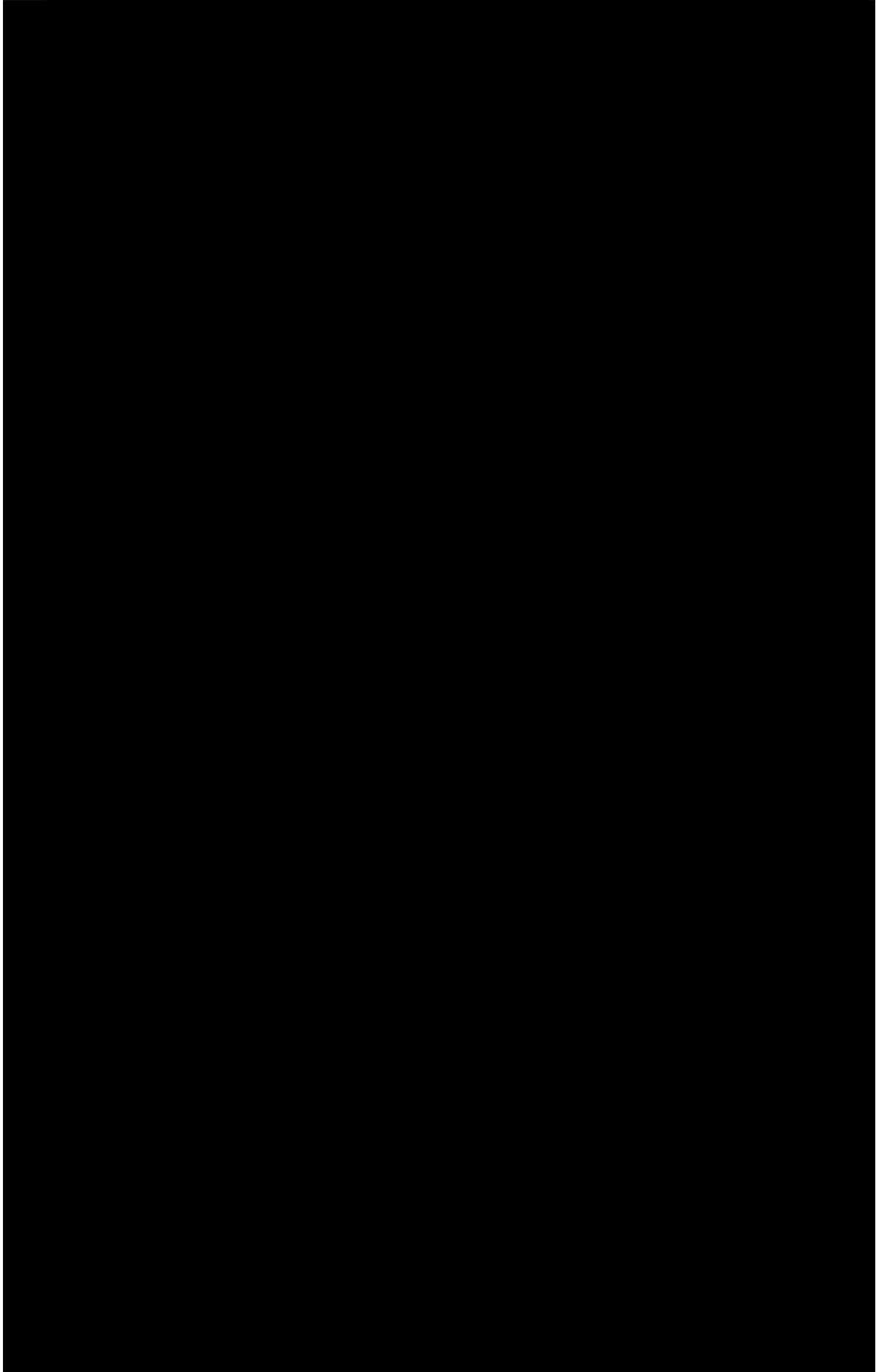
Super structure repairs will then be required, and as the property is listed we would suggest 'Helifix' restraint bars are installed across the cracked areas both internally and externally, however advice from a specialist installer should be taken due to connecting stone to brickwork as to the best 'helifix' technique.



5 Conclusion

We consider the damage has occurred due to possible rebuilding of part of the rear wall at some time in the past where a different foundation depth has been used as the gabled wall is founded in a fill material containing an organic topsoil, where as the rebuilding section is founded in a clay.

We have no option but to advise that the stone gable wall is underpinning to take the foundations down into a suitable founding stratum.

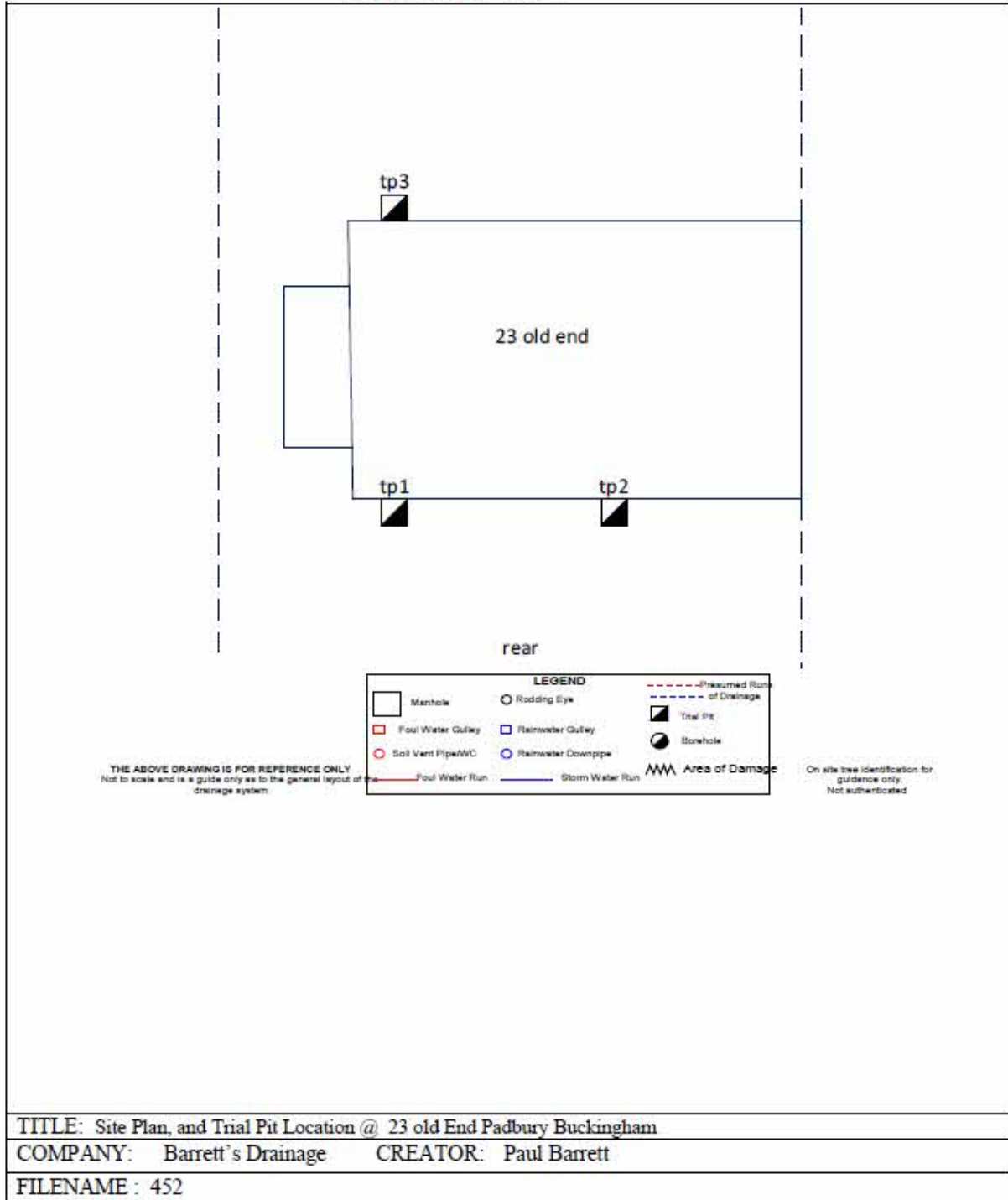


Appendix 1

Investigation Contractors Results

Barretts DRAINAGE LTD

3 Jephson Place, Leamington Spa. CV31 1BU
Tel : 07973 720547 Email : paulgbarrett@hotmail.com
VAT REGN 254 4878 72



Barretts**DRAINAGE LTD**

3 Jephson Place, Leamington Spa. CV31 1BU
Tel : 07973 720547 Email : paulgbarrett@hotmail.com
VAT REGN 254 4878 72

INSURED :

ADDRESS/LOCATION : 23 Old End Padbury Buckingham

JOB NO : 452

DATE : 31/10/2020

RIG MANAGER : Paul Barrett

TRIAL HOLE REPORT**Trial Pit 1**

Underside 300 mm

Over sail None

Footing Stone

Mac at underside 10 blows = 75 mm

Mac at 2000 mm 42 blows = 75 mm

Made ground organic material to underside of footing changes to a mottled / grey clay at 800mm which continued up to the end of the borehole at 2.0 m

Trial Pit 2

Underside 800 mm

Over sail 150 mm stone corbel

Footing Stone

Mac at underside 15 blows = 75 mm

Mac at 2000 mm 42 blows = 75 mm

Made ground organic material to underside changes to a mottled / grey clay at 800mm which continued up to the end of the borehole at 2.3 m

Trial Pit 3

Underside 300mm

Over sail None

Footing stone

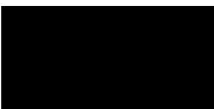
Mac at underside 9 blows = 75 mm

Mac at 2000 mm 38 blows = 75 mm

Made ground organic material to underside changes to a mottled / grey clay at 800mm which continued up to the end of the borehole at 2.0 m

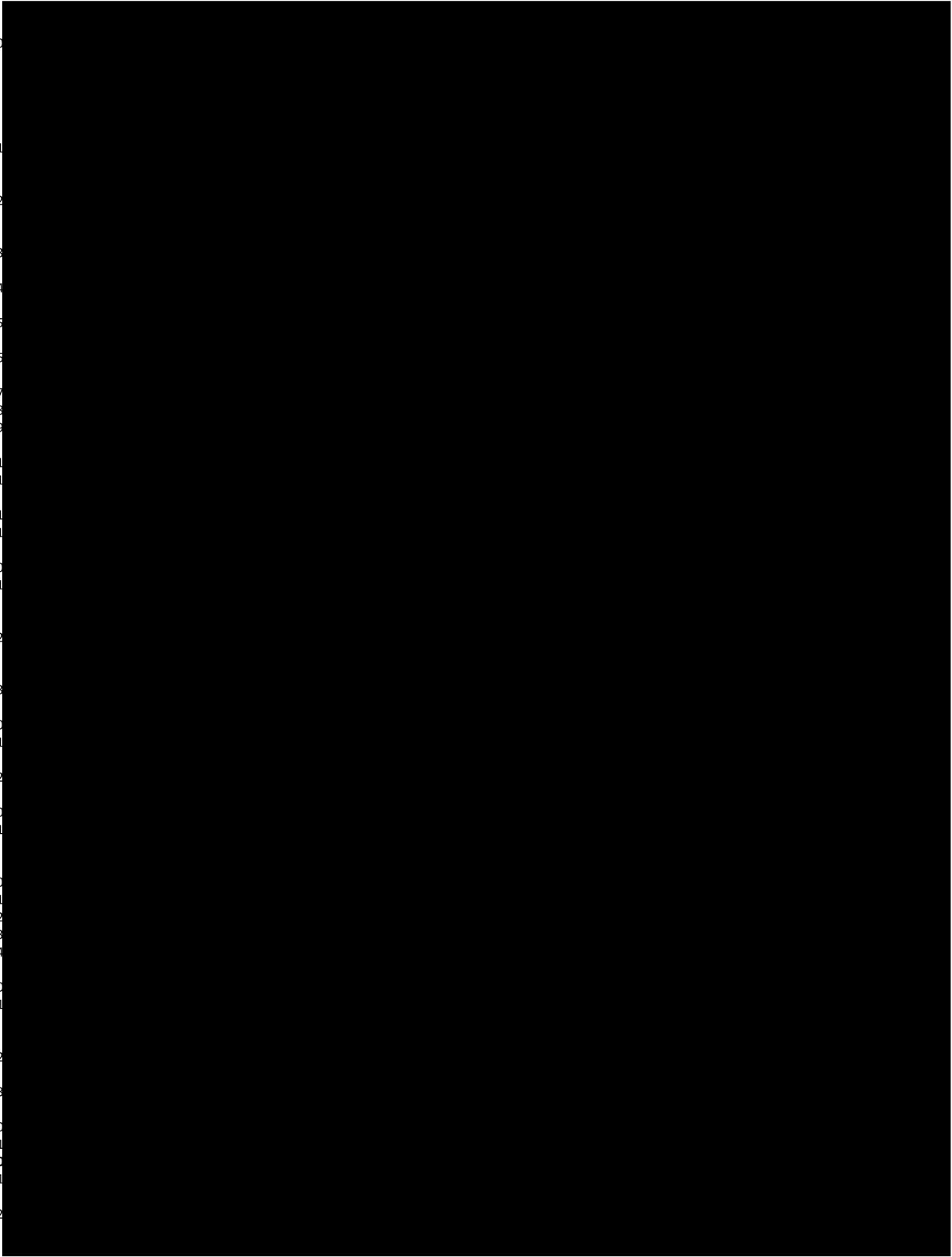
I hope that you will find the above information acceptable and I look forward to hearing from you in the near future.

Yours faithfully,



P G BARRETT

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Birmingham Office

2 Victoria Works
Vittoria Street,
Birmingham, B1 3PE
0121 718 7008

London Office

6th Floor, First Central 200
2 Lakeside Drive, Park Royal
London, NW10 7FQ
0208 212 7967

Milton Keynes Office

494 Midsummer Boulevard
Milton Keynes
MK9 2EA
01865 479 670

Nottingham Office

15 Wheeler Gate
Nottingham
NG1 2NA
0115 901 7074

