PRE-PLANNING GROUND STABILITY REPORT
&
MINING RISK ASSESSMENT (MRA)

PROPOSED RESIDENTIAL DEVELOPMENT

GREENFOOT LANE
BARNSLEY
S75 2SY

(i) Terms of Reference

In June 2015, on the instructions of Mr Robert Agus (White Agus Partnership), acting on behalf of the client (Richfield Developments Ltd), a pre-planning *Mining Risk Assessment* and *Ground Stability Appraisal* was requested on the proposed development site at 24-26 Greenfoot Lane, Barnsley, S75 2SY.



The development proposals consist of a new build residential housing scheme to build 12No. properties arranged in semi-detached pairs in a cul-de-sac format. The Local Planning Authority (LPA) required further information regarding the suitability of the site for the construction of the proposed development, with particular reference to the history of the site and the coal mining heritage of the wider area, and specifically the LPA has requested a coal *Mining Risk Assessment* (MRA). There are three recognised key stages to making an assessment of this type;

- Obtain detailed ground stability and coal mining information for the proposed development site.
- Identify what risk, if any, is present from ground instability and/or past coal mining.
- Identify how ground instability and/or coal mining issues might influence the development and describe any mitigation required.

(ii) The Parties

Site	24Greenfoot Lane, Barnsley, S75 2SY
Client/Owner	Richfield Developments Ltd
Architect/Designers	White Agus Partnership Contact: Mr Robert Agus E: info@whiteaguspartnership.co.uk T: 01226 208482

(iii) The Site

The site is located immediately off Greenfoot Lane, opposite Palm Street and Thornton Lane, about 100yards north of the junction with Gawber Road and Pogmoor Road, in Barnsley, South Yorkshire. A walk-over topographical survey was carried out by Mr T. M. Hyett M.Sc FGS MIEI MCIOB (Earth-Tech Consulting Ltd) on the 9th June 2015. The site is well bounded to the sides and rear and is presently very overgrown with extensive shrubbery, trees and young vegetation. The site area is approximately 0.55a, and is situated within an established residential area with mainly housing and some light commercial property on three sides. There is an extensive road frontage to the east, with more established trees (to be retained) on the south and west.

The proposed works are described in more detail in the planning application being prepared by *White Agus Partnership*, to be submitted in accordance with the Town and Country Planning Act, 1990 and as detailed on dwng Ref: 14-106(02) at Appendix A.

(iv) Available Information

The following information was made available during the course of this appraisal;

a. Copies of the site plan & schematic showing the general site location and the proposed development of two commercial structures (Dwng No.14-106/02).
b. An Ordinance Drawing depicting the site and its environs.
c. Access to the site to carry out a walk over survey.

PART 1 GROUND STABILITY & COAL MINING RISK

1.1 BRITISH GEOLOGICAL SURVEY (BGS) - NATURAL GROUND STABILITY

Due to the general location of the site, and its history, a *Natural Ground Stability Report* was commissioned from the British Geological Survey (BGS) as part of a separate *Initial Site Investigation (SI) Report* to further investigate the underlying geology based on an archive analysis of records and geological maps held in the National Geo-science Data Centre (NGDC).

This report confirms that the development is within a location known to be overlying coal measures rock, and that specifically coal seams at a depth of between 130m and 380m exist, that may/may not have been worked within the last 50 years. The British Geological Survey Report (Ref : GR_211453/2) is enclosed in the appendix of the Initial Site Investigation (SI) Report , that concludes;

Significant natural ground instability is possible in the area. On a scale of A to E (low to high) the level of hazard on the project site is C. There are natural geological hazards in the vicinity of the project site that might contribute to ground instability, and in particular, sand can be washed away during excavation and could flow into holes or fissures due to presence of water (*Running Sand*).

This means that the project site is situated in a location where there is potential ground instability from weak, water-bearing sands that can "run" causing some properties to suffer subsidence damage. It does not necessarily mean that the proposed dwellings on the site will be affected by subsidence, or indeed that the small enclosed site itself at Greenfoot Lane is in any way affected by unstable soils identified in the BGS report - it is just that such conditions are known to exist in the general area

Past coal mining activity I also recorded, but the BGS data confirms that the site is not influenced by *shrink-swell factors, landslides/slope instability, soluble rocks, compressible ground* and/or *collapsible deposits*. The risk for *running sand* whilst identified in the BGS report, is lowered by the fact that the zone where this material is ordinarily found only just falls within the 50m buffer zone outside the site boundary. Trial holes carried out across the site also confirmed that no *running sand* was present.

1.2 THE COAL AUTHORITY – NON-RESIDENTIAL COAL MINING REPORT

In addition to the BGS data, a *Non-Residential Coal Mining Report* and an *Enviro All-in-One Geo Report* was commissioned from the Coal Authority to consider if the property is within an area that is in the likely zone of influence from past mine workings. The full *Coal Authority Enviro Report* is attached at Appendix B. The Report confirms the site is within the likely zone of influence from workings in 4 seams of coal at 130m to 380m, last worked in 1977. Any ground movement from these coal seams should have stopped by now.

The site is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past.

The Report also confirms that;

There are no known mine entries within, or within 20m of the boundary of the site and there has been no notice of the risk of the land being affected by subsidence issued under section 46 of the Coal Mining Subsidence Act 1991.

In addition, The Coal Authority confirms that they have not received a damage notice or claim for the subject property, or any property within 50m of the site, since 31st October 1994.

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the site, and the property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

The Coal Authority Report – *Non-Residential Coal Authority Mining Report* (No. 51000892197001) is enclosed at the back of the full *Enviro All-in-One Geo Report*.

PART 2 RISK TO THE PROPOSED DEVELOPMENT & MITIGATION MEASURES

2.1 RECOMMENDATIONS

a. The Coal Authority has identified that the site lies within an area where there is coal at or close to the surface, and that this could have been worked at some time in the past. There are no definitive records of mine entries within the site, but some features (notably two 1904 mine shafts) are within 500m of the site.

b. There are no recorded mining cavities or natural cavities, but due to the identified risk (albeit slight) of near surface coal, it is recommended that (post-planning) the developer carries out a program of probe-drilling (or) mechanical excavation to bedrock at the corner and centre of each of the proposed dwellings on the site, and record the findings. [*note – *the drilling should be supervised by a qualified geologist/engineering geologist, and at least 2No.rotary cored boreholes should be drilled and recorded, with appropriate laboratory testing to enable the design of the foundations of the buildings. Soil classification and description should be to BS 5930, and soil sampling and laboratory testing as deemed appropriate*].

c. In addition, a general program of trial-hole excavations should be carried out in the first part of the earthworks phase. Nominal trial hole excavations were carried out at four locations on 9th June 2015, however the ground proved to be very hard digging, and depths greater than 1.2m proved to be beyond the capability of a 3 tonne mini-excavator. Given the nature of the hard sub-soils, a more comprehensive trail-hole exercise should be carried out with larger equipment capable of proving the potential for any near surface mine adits, entries or shallow features.

d. In the unlikely event that shallow mine workings or buried features are encountered, mitigation measures may be required and could include ground stabilisation, grout injection and/or piled or raft foundations instead of conventional strip footings, however if this is the case this is unlikely to necessitate a re-submission of the detailed planning application to the LA under the *Town and Country Planning Act, 1990*.

2.2 INFLUENCE ON THE PROPOSED DEVLOPMENT - CONCLUSIONS

From my inspection of the proposed development site at 24-26 Greenfoot Lane, Barnsley, S75 2SY, and from detailed consultation with information held by the *Coal Authority* (CA) and the *British Geological Survey* (BGS), I can confirm to Barnsley District Council Planning Authority (and any other third party), that the geological conditions on the site are adequate for carrying out the proposed development works as described on Drawing Number Ref: 14-106(02) produced by the architects *White Agus Partnership* subject to the necessary provision of further detailed and intrusive site investigation by borehole drilling, and the adoption (as required) of mitigation measures during construction, and additional foundation design as neecssary.

This report has been commissioned by and written for and on behalf of the client, Richfield Developments Ltd, in support of their architects applications and submissions to the Local Authority, and for presentation to other agency bodies at the client's discretion only. It may not be used for any other purpose.

2.3 TESTIMONY OF INDEPENDENCE

I am a professionally qualified Chartered Building Engineer and Consultant Engineering Geologist. I am a Fellow of The Geological Society (FGS), Member of the Institute of Engineers Ireland (MIEI); Member of the Chartered Institute of Building (MCIOB) and a Member the British Tunnelling a Society (MBTS). I hold a post-graduate Masters degree in Engineering Geology (UOL1993), a Bachelor degree in Mathematics and Physics (MMU1989) and under-graduate qualifications in Civil Engineering (LU1986). I have more than 30 years of experience working in the sub-surface and mining industry and specialise in the fields of underground space engineering, tunnelling and foundations. I also work as a Court appointed Expert Witness in the (RCoJ), London. A detailed CV is available upon request.

I confirm that under para. 2.E.2 of Appendix 2E of *Planning Policy Guidance Note 14 (PPG14) – Development on Unstable Land, DoE, 1990* I am suitably qualified to make these statements, and I understand that my overriding duty is to present independent and impartial expert analysis, and I believe I have complied with that duty. The facts I have stated in this report are true and the opinions I have expressed are correct and they are entirely my own, based upon the evidence I have been shown and my own observations.

Signed



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Timothy M. Hyett M.Sc FGS MIEI MCIOB
Consultant Engineering Geologist
Earth-Tech Consulting Ltd
15th June 2015

Appendix A

Drawing No. 14-106 (02) – Site Layout

Appendix B

Coal Authority (incorporating *Groundsure*)
Enviro All-in One Geo Report (RRUID: 454010983)