NKC Geotech Ltd
engineering geologist specialising in the investigation and treatment of disused mineworkings

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Coal Mining Risk Assessment



Bernfels Court, Ponciau

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1942/2
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Site

Two plots for residential development on Bernfels Court at the rear of 11 Stanley Road, Ponciau, Wrexham.

Risk Assessment by
Neil Catlow B.Sc F.G.S Engineering geologist.

Summary of relevant mining information
Publication CIRIA32 'Construction over Abandoned Mineworkings'
Coal Authority Report 51000371963001 dated 16th September 2013
Ordnance Survey 1:2500 First Edition 1875
Geological Survey 1:10560 plans
Nkc Geotech investigation report 1942/1 dated 1 September 2020

Nkc Geotech Ltd investigations with relevance to this site:
1942/1 Stanley Road September 2020
0540 Stanley Road June 2005
9048 Bernfels Court August 1990
9313 Stanley Road March 1993
3582. Bernfels, Fennant Road. July 1983

Abbreviations
MRA Mining Remediation Authority, trading name of the Coal Authority, formerly British Coal 1987-1994.
NCB National Coal Board 1947-1987
GS Geological Survey
OS Ordnance Surve

Assessment of risk that coal mining poses to the proposed development

Geology
The site lies on Carboniferous Westphalian rocks that form the Wrexham Coalfield, dipping to the east at 1 in 8. These rocks are predominantly shales and sandstones laid down in a tropical delta environment when Europe lay on the equator as part of the continent of Pangea. Westphalian strata contains seams of coal upto 4.5m in thickness at vertical intervals typically varying from 4.0m to 20.0m. Those coal seams which were of economic importance were given an identity when they were of sufficient quality and thickness to justify extraction by mining. Typical names for local coal seams reflect primarily on quality and thickness, for example Main Coal, Yard Coal and Wall & Bench Coal.

The deepest worked coal seam recorded as being mined is the Wall & Bench Coal at 110m below the site, but there are three shallower coal seams known to have been mined here. The shallowest seam is the Main Coal, 2.5m thick. From my previous investigations in Ponciau, including the immediately adjacent site, this seam could be present at a possible depth of 25m below the site. The Nkc site 9048 at Bernfels Court in 1990 proved the Main Coal to be deeper than 30m. The next deepest coal seam is 6m below the Main Coal and locally known as the Brassey Coal, I have encountered extensive workings in both the Main and the Brassey Coals in Ponciau in the past 40 years.

Past underground coal mining
Coal mining in Rhos is recorded in 1410, most probably in the Main Coal at the Delph immediately east of High Street when the area was part of the medieval Bersham Waste, ie common land. Industrial mining deeper than the outcrop workings and simple bell pits of the ‘cole farms’ in the Waste dates from the 16th century. The last legal coal mining in Rhos was at Coppi Brickworks where the Llwyneinion Half Yard Coal was mined in conjunction with the underlying fireclay in 1971. The Wall & Bench Coal was mined illegally by robbing historic old workings and sold locally during the miners’ strike of 1985 from outcrops at Llwyneinion.



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There are no records of past mining activity under the site of workings which pre-date the 1887 Coal Mine Regulations which required colliery owners to keep and preserve plans of their workings. The coal seams deeper than the Brassey Coal were principally worked in the 19th century to supply Ponciau Furnace at Gutter Hill.

Present underground coal workings
There is no current coal mining within 20km of the site.

Future underground coal workings
There are no current coal mining proposals within 20km of the site.

Recorded mine entries on or within 20m of the site boundary
There is one recorded mine entry on or within 20m of the site. Shaft 329346-488, Ruabon Colliery No 9 Chain Pit, is shown 20m east of the site close to the adjacent Bernfels Court access road. I located this shaft in July 1983 during an investigation into serious subsidence of the former dwelling Bernfels. This property was demolished and shaft treated by the NCB in February 1986. The shaft lining brickwork found at shallow depth immediately under the house foundations at the gable wall. The shaft was subsequently proved by drilling by NCB contractors to be sunk to the Main Coal and is 39.6m deep.

Coal mining geology
The MRA have no records of any damage caused by geological faults.

Past opencast mining
There are no former opencast coal mining sites within 200m of the site.

Present opencast mining
There are no current opencast coal mining sites within 200m of the site.

Future opencast mining
There are no proposed opencast coal mining sites within 800m of the site.

Mine gas emissions
There are no recorded mine gas emissions within the site boundary.

Surface hazards
There are no recorded remedial works being carried out by the MRA on the site nor any subsidence claims.

Further information

The risk to any proposed development is subsidence caused by the collapse of shallow mining tunnels where there is less than 25m of rock cover to underground workings in the Main Coal. As the Main Coal is known to have been extensively mined in the past, with the deeper Brassey Coal only 6m below the Main, there is a risk of potential instability due to past shallow coal mining activity unless there is over 25m of rock cover the Main Coal workings.

My investigation for the adjacent 2 plots at Bernfels Court in September 2020 proved the Main Coal to lie deeper than 30m and an intrusive investigation by rotary drilling of an additional borehole to 30m depth will be required to prove the stability of the 2 plots.

The location of Shaft 329346-488 has been proved to be off the site and no shaft investigation will be required.

The depth of 39.6m to the Main Coal at Shaft 488 correlates with the results of my investigations further north on Stanley Road and confirms there is a risk, until proved otherwise by drilling as on the previous plots here, that the the Main Coal workings are shallow and affecting surface stability.



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Mitigation measures

If the Main Coal is proved to be under 25m deep, the site will require remedial works by drilling and grouting the old workings under the bearing areas of the proposed buildings to prevent collapse.

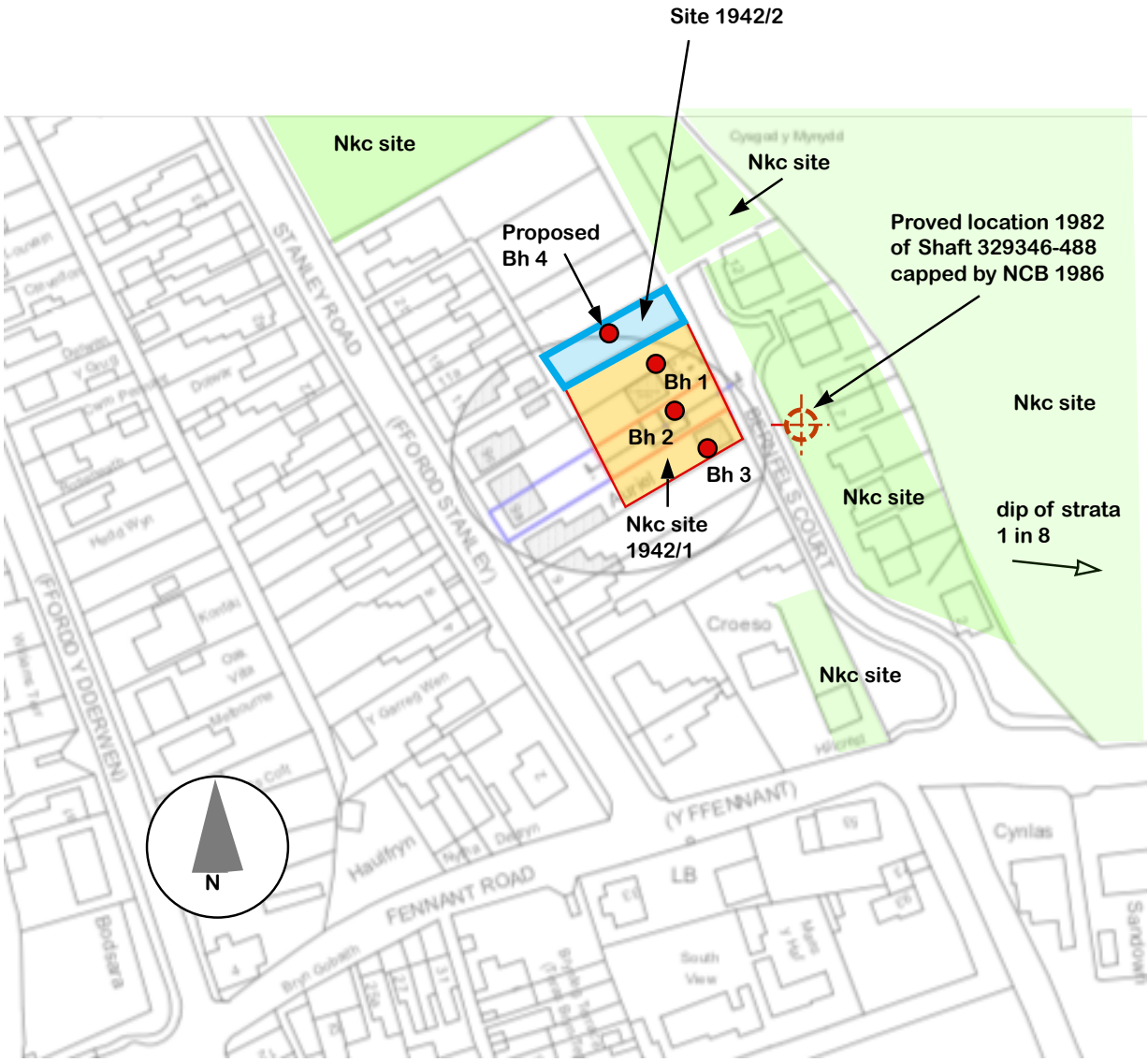
An MRA Permit will be required for the intrusive investigation drilling, and a further Permit required if remedial stabilisation works are necessary.

For Nkc Geotech Ltd

Neil Catlow, B.Sc, F.G.S

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Geological plan of the locality
Scale 1:1250 @ A4



● rotary boreholes

Investigation in progress on the adjacent plots in September 2020



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Plan of proposed development

