



Planning Application P2020/0433

Plot 1 Former Wernddu Bungalow Site Neath SA10 7DZ

Supporting Document 01

30th June 2020

Substructure Calculation Over Existing Mine Shaft Cap

Dear Andrea,

Further to our recent planning application P2020/0433 (validated on 15th June 2020) please find appended to this letter the Structural Engineer's Substructure Calculations.

The existing mine shaft cap was designed for an imposed load of 40 kN/m² and a dead load of 54 kN/m², totalling 94 kN/m². The surcharge from the designed raft foundation is 7.5 kN/m² and the surcharge from soil is 54 kN/m², totalling 61.5 kN/m²; easily within the mine shaft cap designed loads.

As you will be aware the CMRA from the Coal Authority requests these substructure calculations to ensure our proposals mitigate the risks associated with building over an existing mine shaft cap.

We would be grateful if you can issue this correspondence to the Coal Authority, through your consultee process, for agreement and so that the CMRA risk rating can be amended accordingly.

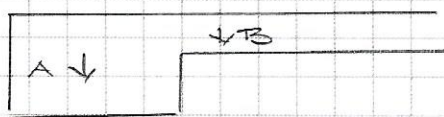
Kind regards,

A handwritten signature in black ink, appearing to be 'G Owen', followed by a period.

Gareth Owen
Director

RAFT DESIGNED FOR 3.0M SOFT-SPOT.
PILE SHAFT DESIGNED FOR IMPOSED LOAD
OF 40 KN/m² + DEAD LOAD 500 KN/m²
(DESIGNED BY OTHER).

LINE LOAD FROM FRAME = 50 KN/m
50 KN/m × (1.5) = 75 KN/-



LOAD FROM THICKENING (A)

$$W_{ULT} = (0.45 \times 24 \times 0.675) \times (1.4) = 10.2 \text{ KN/m}$$

LOAD FROM SLAB

$$W_{ULT} = (0.15 \times (1.4) + 1.5 \times (1.6)) \times 0.6 = 1.6 \text{ KN/-}$$

Total load = 86.8 KN/-

$$M_{max} = \frac{86.8 \times (3.0)^2}{8} = 98 \text{ KN-m}$$

From BS 8110 : Part 1

$$K = \frac{M}{b d^2 f_{cu}} = \frac{98 \times 10^3}{675 \times 400^2 \times 35} = 0.0002$$

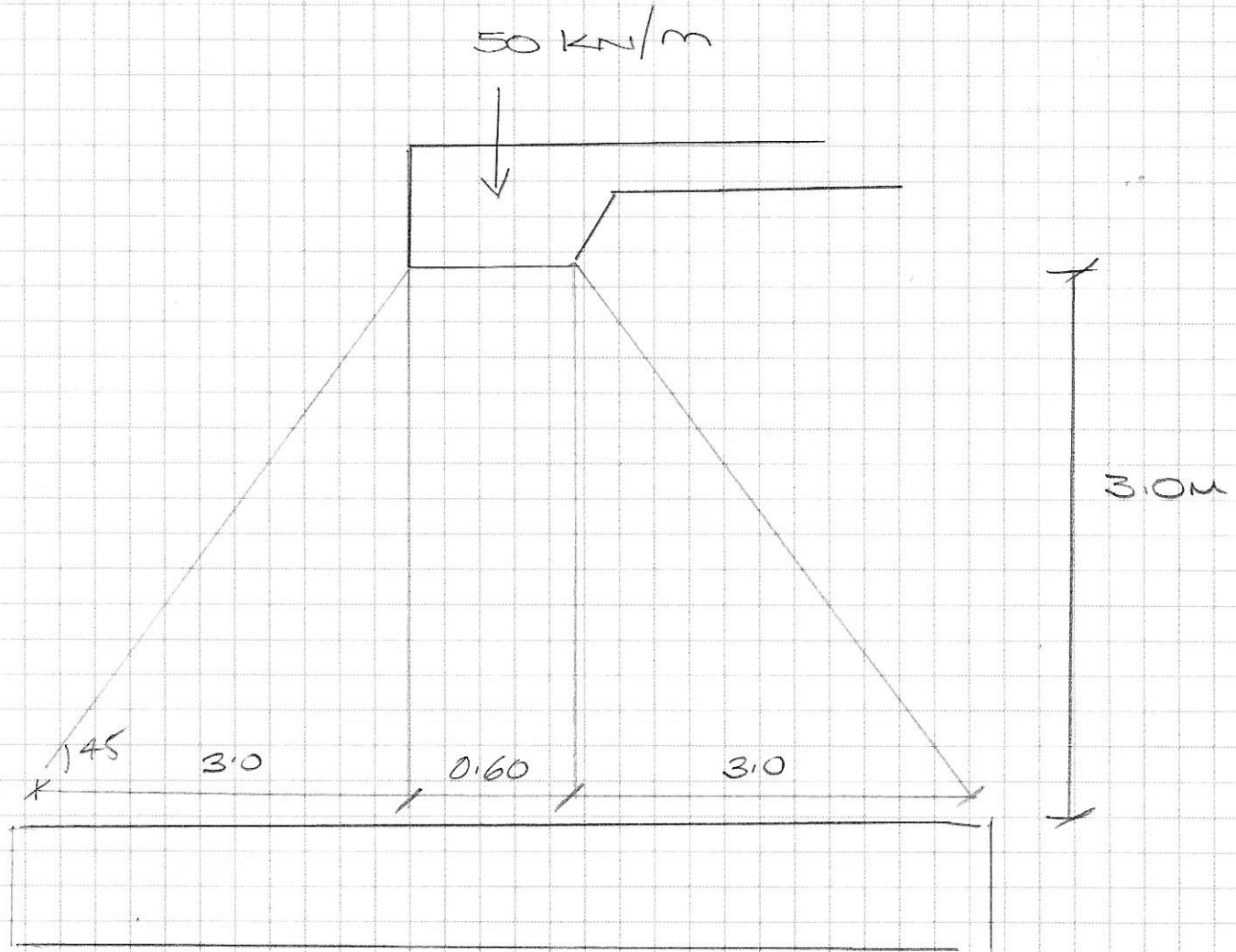
USE ϕ 0.95 d

$$A_s = \frac{M}{0.95^2 f_{yd}} = \frac{98 \times 10^6}{0.95^2 \times 500 \times 400} = 542 \text{ mm}^2$$

PROVIDE 4T16
(T8)
3

STIRRUP - LINKS PROVIDE H10 @ 200 CENTRE

LOAD ON REINFORCED CAP



SURCHARGE FROM RAFT $\frac{50}{6.6} = 7.5 \text{ kN/m}^2$

SURCHARGE FROM SOIL $18 \times 3 = 54.0 \text{ kN/m}^2$

TOTAL :- $61.5 \text{ kN/m}^2 < 94 \text{ kN/m}^2$