Summary of Decisions of the Structural Engineering Committee
SEC 10/2009 held on 23.10.2009

(a) Case 10/2009

Issue: Rational design of bored pile with enhanced vertical pressure values on Category 1(b) and 1(c) rock

Recommendation: To accept the proposed rational design approach for large diameter bored piles using combined shaft friction and enhanced end bearing on rock, subject to the following conditions:

(a) The maximum allowable end bearing pressure for the following categories of rock:
- Category 1(b) shall be limited to 10 MPa; and
- Category 1 (c) shall be limited to 7.5 MPa

(b) Testing on rock samples extracted from pre-drilling for each pile shall be carried out to ascertain the following criteria are met:

	Category 1(b)	Category 1(c)
Total Core Recovery (TCR)	≥ 95%	≥ 85%
Uniaxial Compressive Strength (UCS)	≥ 75 MPa	≥ 50 MPa
Equivalent Point Load Index Strength (PLI_{50})	≥ 3 MPa	≥ 2 MPa
Discontinity Joint Spacing	> 100 mm	> 100 mm
Aperture size of joint	Extremely narrow or narrower (<2mm)	Very narrow to extremely narrow or narrower (<6mm)

(c) The socket length used in the calculation of frictional resistance in accordance with Cl. 5.3.2 (2) of Code of Practice for Foundations 2004 (i.e. not exceed 2 pile diameters or 6 m, whichever is the shorter).

(d) Allowable bond or friction between rock and concrete for piles in accordance with Table 2.2 of Code of Practice for Foundations 2004.

(e) Upon the completion of the bored pile works, a settlement analysis of the foundation taking due account of the as-constructed length of piles and soil-structure interaction shall be carried out.

(f) The building structures shall be assessed to confirm the structures can tolerate the settlements determined at (e) above.

Decision:

1. RSE submitted a full response on the factor of safety used in the rational design and the maximum test loads used in the static load test on the trail piles and members confirmed no objection to the response.

2. RGE confirmed that GEO had indicated no objection to the assessment by RMR method for which the proposed allowable bearing pressure were safe but exceeded the recommended values given in Table 6.5 of GEO publication 1/2006.

3. Subject to the paragraphs above, Members endorsed the recommendations.