Vibro Improvement

Vibro stone columns or concrete columns may be suitable at the site where the made ground is present in thick deposits. However the presence of timber, metal and concrete in the material at the former pond area may preclude the use of stone columns in this part of the site.

The columns densify the ground and provide a more solid support platform upon which reinforced strip foundations can then be constructed. A suspended slab is likely to be required wherever vibro improvement is adopted.

The advice of a specialist contractor should be sought on the suitability of the fill materials for their proprietary techniques.

Pile Foundations

Should deep foundations be required for higher loading conditions, it is recommended that further geotechnical advice be sought prior to final detailed design.

However, for the purpose of preliminary design of deep foundations, it is considered that some form of bored pile or CFA piling is likely to be the most suitable pile type for the site, although this comment does not preclude consideration being given to the use of other pile types provided that environmental issues are addressed in the selection. The Local Authority should be consulted in regard to the potential issue of noise and vibration in the area, which may determine whether driven piles are suitable at the site.

Given the thickness of made ground and superficial deposits present, if it is considered that groundwater may cause significant ingress, continuous flight auger piles or continuous helical displacement piles are likely to be the most suitable bored pile type due to the presence of Lynch Hill Gravel.

Based on the limited geotechnical information for the site, preliminary assessment of the safe working loads of 300, 450 and 600mm diameter CFA piles designed to a factor of safety of 3.0 are given in the Table 8.2 The concrete stress in the pile shaft has not been checked.

Table 8.2: Summary of preliminary pile capacities

Pile Penetration mbgl	Safe Working Load kN 300mm dia	Safe Working Load kN 450mm dia	Safe Working Load kN 600mm dia
6	50	100	150
8	75	125	200
9	100	150	225

* Ground conditions assume firm clay to 2.0m bgl, dense gravel to 5m bgl and stiff clay to base of pile, 1m deep pile cap.