NHBRC
TECHNICAL AND OPERATIONS SUBSIDY SECTOR
GEOTECHNICAL EVALUATION

PROVINCE:
REF. NO:
PROJECT:

PHASE 1 GEOTECHNICAL INVESTIGATION REPORT

1. **Minimum requirements** in accordance with the Geotechnical Site Investigations for Housing Development, Generic Specification (GFSH-2).

Table 1: Fieldwork requirements

DESCRIPTION	YES	NO	COMMENTS
1. CONDITION OF THE REQUIRED INFORMATION FROM A COMPETENT PERSON:			
1.1 Geotechnical Site Investigation with ground profile to minimum depth of 3,0 m or machine refusal			
1.2 Trenching frequency - Figures 1a & 1b of the GFSH-2 document			
1.3 Representative soil sampling (Table 4)			
1.4 Laboratory testing and analysis of soil properties (Table 4)			
2. FIELDWORK PROCESS INCLUDES			
2.1Trial pits with (coordinate) positioning			
2.2Trenching by TLB or excavator, with soil sampling			
2.3Penetrometer probe with sample recovery			
2.4Large diameter (> 750 mm) auger holes			
2.5Hand dug pits supplemented by other methods			
2.6Dynamic Cone Penetrometer (DCP)			
2.7Percussion drilling with sample recovery supplemented by other methods			
2.8 Rotary core sample drilling with sample recovery			
3. SOIL PROFILING SHOULD BE DONE ACCORDING TO THE MCCSSO METHOD OF JENNINGS *ET AL*.			
3.1 Moisture			
3.2 Colour			
3.3 Consistency			
3.4 Structure			
3.5 Soil type			
3.6 Origin			
3.7Any other detail relevant to the engineering assessment of the in-situ soil conditions			
4.LABORATORY TESTS ON SAMPLES (DISTURBED & UNDISTURBED) RECOVERED DURING FIELD WORK			
4.1 Particle size distribution/grading			
4.2 Atterberg limits			
4.3 Moisture content			
4.4 Compressibility/potential collapse			

4.5 Swell under load			
4.6 PH & conductivity			
4.7 Compaction (moisture : density relationship)			
4.8 CBR			

TABLE 2: OTHER INFORMATION REQUIRED

DESCRIPTION	YES	NO	COMMENTS
1. THE INFORMATION GATHERED DURING THE SITE INVESTIGATION PROCESS MUST INCLUDE:			
1.1 Soil conditions with respect to recommendations on foundations and structural nature of residential housing			
1.2 Construction of roads (surfaced and gravel)			
1.3 Excavations for & construction of buried services including appropriate trench backfills			
1.4 Present and past mining activity			
2. MINE-RELATED LAND – EFFECT OF POTENTIAL SETTLEMENT DUE TO:			
2.1 Water-bearing service disruptions arising from loss of positive gradient, rapture due to ground settlement			
2.2 Loss of positive storm water run-off from zones of substantial settlement & resulting flooding, infiltration & exacerbated water-induced settlement			
2.3 Loss of serviceability in structures due to rotation/tilt or settlement even where structural distress is controlled by adequate foundation stiffness			
2.4 Restrictions that will inevitably be placed on housing development to mitigate the negative impacts of the settlement process			

2. REPORTING REQUIREMENTS

TABLE 3: REPORT STRUCTURE AND CONTENTS

Executive summary			
1. Introduction			
2. Information			
2.1 Description and list of information assimilated and used in the study			
2.2 General location and description of site			
2.2.1 Locality plan showing extent of site, site boundaries and co-ordinates			
2.2.2 Site description			
2.2.3 Physical description of surface soil conditions (e.g. floodplains, gullies, depressions etc.)			
2.2.4 Comments on prominent water-courses and preferred drainage routes			
2.3 Evaluation procedures used in the investigation			
2.4 Geology and hydrogeology of the site			
2.4.1 Scaled map indicating topographic and geological conditions			
2.5 Geotechnical conditions and constraints including discussion, where relevant, of:			

2.5.1 Ground conditions (outcrops, soil cover etc.)			
2.5.2 Ground water conditions			
2.5.3 Soil profile by Site Classification unit			
2.5.4 Geotechnical interpretation of each soil profile unit			
2.5.5 Assessment of stability & geotechnical parameters			
• Inundation/flooding			
• Active Soils (change in volume)			
• Excavatibility (to 1.5 m)			
• Slope instability (natural & man-made slopes)			
• Sinkhole/doline formation			
• Collapse potential (soils with collapse grain structure)			
• Subsidence/consolidation (undermined land, dumping sites, unconsolidated fill, etc.)			
• Erodability			
• Dispersivity			
• Contaminated soil (e.g. mine related, slimes dams, etc.)			
• Groundwater table			
• Permeability			
2.5.6 Engineering and material characteristics			
2.5.7 Earthworks (materials) and excavation classification with respect to services			
2.5.8 Mining related problems			
2.5.9 Comment on potential sources of construction materials			
2.5.10 Comments on the structural conditions of any buildings or improvements on the land			
2.6 Terrain mapping units and site classification			
2.6.1 Units according to:			
(a) GFSH-2 (Table 3) and NHBRC Site Class			
2.6.2 Discussion of process followed to arrive at terrain mapping units			
3. Impact of the geotechnical character of the site on subsidy housing developments			
3.1 Land use			
3.2 Foundations recommendations by site classification units and solutions			
3.3 Installation of services			
3.4 House construction			
3.5 Housing subsidy variations			
3.6 Special precautionary measures			
4. Conclusions and recommendations			
5. Appendices			

Table 4: General

Description	Yes	No	Comments
Were the report and drawings submitted in electronic format?		X	Electronic format required
Does the author (or co-author) appear to fulfill the requirements defined for a **Competent Person (Geotechnics)**?	X		