NOTES ON EXPLORATORY HOLE RECORDS

GENERAL NOTES

1 OPERATING PROCEDURES

The procedure used for cable percussion boring, rotary drilling, trial pitting, sampling, in situ and laboratory testing and sample descriptions are generally in accordance with BS5930:1999 'Code of practice for site investigations', BS EN ISO 14688-1:2002 'Geotechnical investigation and testing – Identification and classification of soil – Part 1 Identification and description', BS EN ISO 14689-1:2003 'Geotechnical investigation and testing – Identification and classification of rock – Part 1 Identification and description' as appropriate, and BS1377:1990 'Methods of test for soils for civil engineering purposes', unless stated otherwise. Sampling is carried out in general accordance with EN ISO 22475-1 and Standard Penetration Testing (SPT) is carried out to EN ISO 22476-3:2005.

2 GROUNDWATER

Exploratory hole water levels are recorded together with the depths at which seepages or inflows of water are detected. These observations are noted on the Records, but may be misleading for the following reasons:

a) The exploratory hole is rarely left open at the relevant depth for a sufficient time for the water level to reach equilibrium.

b) A permeable stratum may have been sealed off by the borehole casing.

c) Water may have been added to the borehole to facilitate progress.

d) The permeability may have been altered by the excavation/boring/drilling process.

Standpipes or piezometers should be installed when an accurate record of groundwater level is required, however, it should be noted that groundwater levels may vary significantly due to seasonal, climatic or man made effects. Water levels recorded during the investigation and any advice or comment made accordingly may, therefore, not be appropriate to particular foundation, geotechnical design, or temporary works solutions. Long term monitoring of standpipes or piezometers is always recommended when water levels are likely to have a significant effect on design.

3 CHISELLING

The remarks in the Borehole Records contain information on the time spent advancing the borehole by 'Chiselling Techniques', and the depth of borehole over which it was required. Such information may be affected by a wide range of variable factors, unrelated to the geotechnical properties of the strata. Such factors include, but are not restricted to: plant, equipment and operator. The data should, therefore, only be used subjectively and with extreme caution.

4 IDENTIFICATION AND DESCRIPTION OF SOILS - SEE SEPARATE SHEET

The identification system follows the Company's Engineering: Geotechnical Procedures Manual which is based on BS EN ISO 14688-1:2002 and appropriate clarifications in the National Foreword, BS 5930:1999 and BS EN ISO 14689-1:2003

Relative density terms are given where supported by SPT N values, with the exception of Made Ground. The field assessment of compactness or relative density for coarse grained soils is only given on trial pit records where appropriate assessment of the soils has been undertaken.

Where the terms 'soft to firm', 'firm to stiff' etc. are used they indicate a strength which is close to the borderline between the two terms and cannot be precisely defined by inspection only, and/or which is indicated as borderline or ranging between the two terms after consideration also of in situ and laboratory test results. Consistencies may have been amended in the light of test results

Where 'to' links two terms, as in 'slightly sandy to sandy' this again represents a borderline case or a range, where the precise proportions cannot be determined as outlined previously.

The name of the geological formation is only given where this has been requested and can be determined with confidence (see Clause 41.5 of BS 5930:1999).

5 INTERPRETATION OF THE RESULTS OF THE INVESTIGATION

The description of ground conditions encountered and any engineering interpretation included in the report are based on the results of the boreholes and trial pits and the field and laboratory testing carried out. There may be ground conditions at the site which have not been revealed by the investigation and consequently have not been taken into account.

Any interpolation or extrapolation of strata between exploratory holes shown on any cross sections or site plans is an estimate only of the likely stratification based on general experience of the ground conditions and is subject to the interpretation of the reader.

The term "TOPSOIL" is used in this report to describe the surface, usually organic rich, layer including turf, subsoil and weathered material with roots. The use of this term may not imply that the soil satisfies the requirements of Clause 3 of BS 3882:1994, 'Specification for topsoil', or is suitable for general horticultural and agricultural purposes.

Laboratory test results in this report give the soil properties of individual specimens tested under specified conditions. Individual results or groups of results may not be appropriate for use as design parameters for some geotechnical analyses. The samples may be non-representative, disturbed internally, or prepared and tested under conditions suited for different geotechnical applications. Unless the selection of design parameters is discussed in this report, it is recommended that the advice of a Geotechnical Specialist is sought.

NOTES ON EXPLORATORY HOLE RECORDS

IN SITU TESTING AND SAMPLING

STANDARD PENETRATION TESTS

S( )&C( ) Standard Penetration Test (SPT). S( ) denotes a 50mm diameter split barrel sampler, normally undertaken in cohesive and mixed soils and C( ) indicates the test was carried out using a 50mm diameter, 60 degree apex, solid cone normally used in coarse granular soils and weak rock. The tests are carried out in accordance with EN ISO 22476-3:2005

The distance that the SPT assembly sinks into the ground prior to the start of the test is measured and reported as Static Weight Penetration (SWP). The sampler or cone is driven up to 450mm into the soil using a 63.6kg hammer with a 760mm drop. An initial seating drive of 150mm (or 25 blows whichever is less) is undertaken to penetrate through any ground which may be disturbed at the base of the borehole. For the test drive, the number of blows required to obtain an additional 300mm penetration (or penetration for 50 / 100 blows) is recorded as the penetration resistance (also known as the 'N' value). The test is usually completed when the test drive attains the 300mm penetration or the number of blows recorded during the 'test drive' only reaches 50 in soils or 100 in weak rock.

If the sampler advances below the bottom of the borehole under the static weight of the drive rods with the hammer assembly on top, the corresponding penetration is not included as seating drive but the information is reported separately as SWP. The test is terminated in all cases before the non return valve reaches the level of the material at the base of the borehole, in effect about 600mm total penetration. If SWP (Static Weight Penetration) is greater than 150mm then test increments of 75mm are undertaken with the final increment being completed at less than 600mm total penetration including SWP.

If a sample is not recovered in the sampler, or the cone is used, a disturbed sample of appropriate size for the material is taken on completion of the test over the depth of the test zone. The sample is given the same depth as the top of the Standard Penetration Test drive.

The depth on the Borehole Record at the left hand side of the 'Depth' column is that at the start of the test Where full penetration of the test drive is obtained, the penetration resistance ('N' value) is reported in the 'SPT Blows/N' column. If full penetration in the test drive is not obtained, then the length of drive (test length in mm) and the penetration resistance (number of blows) are both reported. Full results, including the cone or barrel type, static weight penetration, blows and penetration of each of the Seating Drive and Test Drive increments, the calibration reference number for the SPT hammer assembly, the energy ratio and the 'N' value, as well as start and end depths and water and casing levels are given on the separate Standard Penetration Test Summary

* in the 'Test Length' column denotes that the blows and penetration include the initial Seating Drive blows.

OTHER IN SITU TESTS

The following in situ tests are reported on the **Exploratory Hole Records**, in the 'Test' or 'Type' and 'Results' columns where appropriate.

k In situ Permeability Test - refer to detailed test results for permeability values

PMT Pressuremeter Test - refer to detailed test results for modulus values, etc.

FVN/R Borehole Shear Vane Test (undrained shear strength - c_u - in kPa) - refer also to detailed test results, N - 'Natural' or peak shear strength, R - Remoulded shear strength

HVN/R Hand Shear Vane Test (Direct reading of undrained shear strength in kPa). 'N' and 'R' as above. The values are indicative and should not be taken as being equivalent to laboratory test results. The Pilcon vane results have a factor varying from about a sixth for the 33mm vane to a third for the 19mm vane which reduces the BS1377 shear vane value. The values presented are therefore approximate and should be treated with great caution if used for design purposes

PP Pocket Penetrometer. Unconfined Strength (UCS) reported in kg/cm^2 to the nearest 0.25 kg/cm^2 or kPa with the same accuracy. Equivalent c_u in kPa is very approximately UCS x 50. Pocket Penetrometers are an aid to logging of cohesive soils, the results are indicative and should not be relied upon. The equipment used is not calibrated

CBR California Bearing Ratio Test (CBR%) - refer also to detailed test results

PID Photo-Ionisation Detector Readings in headspace of small disturbed chemical samples. Result given in ppm by volume

NOTES ON EXPLORATORY HOLE RECORDS

IN SITU TESTING AND SAMPLING

UNDISTURBED SAMPLES

All samples recovered are recorded and handled in accordance with EN ISO 22475-1.

U/UT General purpose open tube sample. Sample normally taken with open tube sampler approximately 0.1m diameter and 0.45m long and driven with an 80kg sinker bar and 56kg sliding hammer, unless noted otherwise. "XX" in U100 blows column denotes the number of hammer blows. The height of hammer drop can be variable depending on operator technique. Depths are given of the top of the sample if full penetration and recovery are achieved, otherwise actual lengths of penetration and recovery are given in the appropriate columns.

'U' denotes steel or plastic liner sample in general use up to year 2010 designated OS/TKW in accordance with BS EN ISO 22475-1 with an area ratio greater than 25%. 'UT' denotes thin wall open tube sampler designated OS/TW with an area ratio less than 15%, available from 2010.

U/UT(X) General purpose open tube sample (X) mm diameter

TW(X) Thin wall (push) sample (X) mm diameter

P(X) Piston sample (X) mm diameter

DISTURBED AND CORE SAMPLES

CBR	Sample taken in CBR Mould
D	Small disturbed sample (plastic tub or jar with air tight lid)
B	Bulk disturbed sample (polythene bag, tied at neck - size dependent on purpose)
LB	Large Bulk disturbed sample (normally several bulk samples of the same material - size dependent on purpose)
W	Water sample
C	Core sample
CS	Short core, generally about 100mm
CL	Long core, generally 250mm to 300mm
#	Sample not recovered

ENVIRONMENTAL SAMPLES

CD	Sample for chemical analysis in a plastic tub
K	Sample for chemical analysis in an amber glass jar
V	Sample for chemical analysis in a glass vial
CDKV	Set of samples for chemical analysis as above
WAC	Sample for Waste Acceptance Criteria
ES	Environmental Soil Sample
EW	Environmental Water Sample

NOTES ON EXPLORATORY HOLE RECORDS

KEY TO BOREHOLE AND TRIAL PIT RECORDS

Soil Types

Coarse grained, Non cohesive

- Boulders
- Cobbles
- Gravel
- Sand

Fine grained, Cohesive

- Silt
- Clay

Other Soil Types

- Topsoil
- Peat
- Made Ground

Note: Composite soil types may be signified by combined symbols.

Rock Types

Sedimentary

- Sandstone
- Siltstone
- Conglomerate
- Chalk
- Limestone
- Breccia
- Coal
- Mudstone/Claystone/Shale

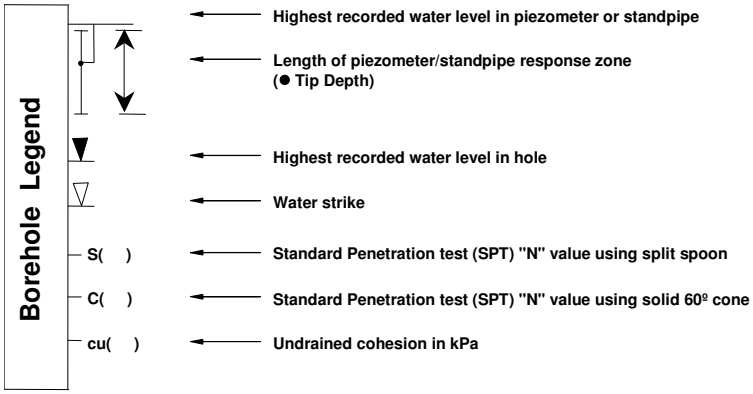
Metamorphic

- Coarse/Medium grained
- Fine grained

Igneous

- Coarse grained
- Medium grained
- Fine grained

KEY TO SITE PLANS AND CROSS SECTIONS



- Highest recorded water level in piezometer or standpipe
- Length of piezometer/standpipe response zone (● Tip Depth)
- Highest recorded water level in hole
- Water strike
- Standard Penetration test (SPT) "N" value using split spoon
- Standard Penetration test (SPT) "N" value using solid 60º cone
- Undrained cohesion in kPa

- Borehole Position
- Trial Pit Position

A — A

Line of Section

NOTES ON EXPLORATORY HOLE RECORDS

DESCRIPTION OF ROCK CORES

DESCRIPTIVE ORDER

Strength, Structure, Colour, Texture, Grain Size, ROCK NAME. Minor constituents and additional information. (Geological formation - see comments under identification and description of soils). Mass characteristics - factual description of weathering state (if appropriate) and description of discontinuities and fracture state (if appropriate).

Term	Field identification	Strength (MPa)
Extremely weak	Can be indented by thumbnail. Gravel sized lumps crush between finger and thumb.	<1.0
Very weak	Crumbles under firm blows with point of geological hammer. Can be peeled by a pocket knife.	1 – 5
Weak	Peeled by a pocket knife with difficulty. Shallow indentations made by firm blow with point of geological hammer.	5 – 25
Medium strong	Cannot be scraped with pocket knife. Can be fractured with a single firm blow of geological hammer.	25 – 50
Strong	Requires more than one blow of geological hammer to fracture.	50 – 100
Very strong	Requires many blows of geological hammer to fracture.	100 – 250
Extremely strong	Can only be chipped with geological hammer.	> 250

DISCONTINUITIES

Bedding Spacing & Planar Structures *	Spacing (mm)		Discontinuity Spacing
		>6000	Extremely widely spaced
Very thickly bedded	>2000	2000-6000	Very widely spaced
Thickly bedded	600	- 2000	Widely spaced
Medium bedded	200	- 600	Medium spaced
Thinly bedded	60	- 200	Closely spaced
Very thinly bedded	20	- 60	Very closely spaced
Thickly laminated (Sedimentary) narrow (Metamorphic & Igneous)	6 – 20	<20	Extremely closely spaced
Thinly laminated (Sedimentary) Very narrow (Metamorphic & Igneous)	<6		

* For igneous and metamorphic rocks the appropriate descriptive term for planar structure should be used e.g. medium foliated gneiss, very narrowly cleaved slate, very thickly flow banded diorite.

WEATHERING

Standard descriptions of weathered rocks for engineering purposes should always include comments on the degree, extent and nature of any weathering effects at material or mass scales. This may allow subsequent classification and provide information for separating rock into zones of like character. Indications of weathering include

- changes in colour
- changes in fracture state
- reduction in strength
- presence, character and extent of weathering products

If a systematic classification following the guidelines given in the Standard can be applied unambiguously, this is described in the text of the report. Otherwise, the rocks are not classified in terms of weathering beyond the approach described above.

Weathering terms that may be used for description of rock material and these terms may be qualified or combined.
Discoloured - The degree and type of colour change from original is described, and if for mass or particular mineral constituents
Disintegrated - Fragmentation by physical weathering, bonding lost but material fabric intact. Material friable, not decomposed
Decomposed - Chemical alteration of mineral grains so material fabric is intact but some or all grains are decomposed

For rock mass weathering the following terms may be used
Slightly - Discolouration on surfaces and / or of material
Moderately - Less than half of mass decomposed/disintegrated. Fresh/discoloured rock as continuous material or corestones
Highly - More than half decomposed/disintegrated. Fresh/discoloured rock as discontinuous framework or corestones
Completely - All rock material decomposed and/or disintegrated. Original mass structure largely intact
Residual Soil - All material converted to soil, structure and fabric destroyed, may be volume change but material not moved
The term 'Fresh' is used to indicate that there is no visible weathering or alteration, except possibly slight discolouration on major surfaces.

NOTES ON EXPLORATORY HOLE RECORDS

ROCK CORES

ROCK CORE SIZES

The core barrels commonly used by the Company in site investigations are as follows:

Core Barrel Type	Borehole Diameter (mm)	Standard Core Size (mm)	Core Size using Rigid Plastic Liner (mm)	Casing Size or Type	Casing O.D (mm)	Casing I.D (mm)
STANDARD BRITISH SIZES						
NWM	75.7	54.7	51	NX	88.9	76.2
HWF	98.8	76.2	72	HX	114.3	100.0
HWAF	99.5	70.9	-	HX	114.3	100.0
PWF	120.0	92.1	87	PX	139.7	122.3
SWF	145.4	112.8	107	SX	168.3	147.7
UWF	173.7	139.8	132	UX	193.7	176.2
WIRELINE SIZES						
BQ	59.9	36.4	35			
NQ	75.7	47.6	45			
HQ	96.1	63.5	61			
PQ	122.7	85.0	82			
GEOBOR S	146.0	102.0	102	SX	168.3	147.7
THINWALL SIZES						
TNX	75.7	60.8	-	NX	88.9	76.2
T2 66	66.1	51.9	-	74	74.3	67.3
T2 76	76.1	61.9	-	84	84.3	77.3
T2 86	86.1	71.9	68	98	98.0	89.0
T2 101	101.1	83.9	80	113	113.0	104.0
T6 116	116.1	92.9	89	128	128.0	118.0
T6 131	131.1	107.9	104	143	143.0	133.3
NON STANDARD BARRELS						
4.12F TRIEFUS	105.2	74.7	72	PX	139.7	122.3
5.5x4C SINGLE TUBE	139.7	101.6	-	SX	168.3	147.7
B116	116	102	-	PX	139.7	122.3
B146	146	132	-	SX	168.3	147.7

Note: Core diameters may vary when different lining systems are in use.

ROCK CORE CHARACTERISTICS

TCR **Total Core Recovery.** The length of the total amount of core sample recovered, expressed as a percentage of the length of the core run.

SCR **Solid Core Recovery.** The length of solid core recovered, expressed as a percentage of the length of the core run. Solid core is defined as that length of core which has a full diameter, but not necessarily a full circumference. Only natural fractures are considered. Drilling or handling induced fractures are ignored.

RQD **Rock Quality Designation.** The length of solid core recovered in pieces each more than 100mm long as a percentage of the core run length.

I_f **Fracture Index.** The number of discontinuities expressed as 'fractures per metre', measured over any convenient length of consistent fracture characteristics. Fracture index is normally measured axial along the core.

F_s Fracture Spacing. The minimum, average and maximum spacing of discontinuities in mm, measured over any convenient length of consistent fracture characteristics. Fracture spacing is normally measured perpendicular to the discontinuity plane unless indicated otherwise.

AZCL Assumed Zone of Core Loss

Zones of atypical fracturing of restricted extent which occur within a rock unit of uniform fracture characteristics are identified within the Description of Strata, but not given a separate I_f / F_s.

NI - Not Intact NR - No Recovery NA - Not Applicable DI – Drilling Induced

I_s Corrected **Point Load Strength Index** $I_{s(50)}$ which is given in MPa

NOTES ON EXPLORATORY HOLE RECORDS

IDENTIFICATION AND DESCRIPTION OF SOILS

	Basic Soil Type	Particle Size (mm)		Visual Identification
VERY COARSE SOILS	BOULDERS		200	Large Boulders >630mm. These soils only seen complete in pits or exposures. Often difficult to recover from boreholes.
	COBBLES			
COARSE SOILS (Typically over 65% Sand and Gravel Sizes)	GRAVEL	coarse	63	Easily visible to naked eye; particle shape can be described, grading can be described. Well graded: wide range of grain sizes, well distributed. Poorly graded: not well graded. (May be uniform: size of most particles lies between narrow limits; or gap graded; an intermediate size of particle is markedly under represented).
		medium	20	
		fine	6.3	
	SAND	coarse	2	Visible to naked eye; no cohesion when dry; grading can be described. Well graded and poorly graded: as above
		medium	0.63	
		fine	0.2	
FINE SOILS (Typically over 35% Silt and Clay Sizes)	SILT	coarse	0.063	Only coarse silt visible with hand lens; exhibits little plasticity and marked dilatancy; slightly granular or silky to touch. Disintegrates in water; lumps dry quickly; possesses cohesion but powders easily between fingers. Term "SILT" or "CLAY" must be used, "SILT/CLAY" not allowed. Dry lumps can be broken but not powdered between the fingers; they also disintegrate under water but more slowly than silt; smooth to the touch; exhibits plasticity but no dilatancy; sticks to the fingers and dries slowly; shrinks appreciably on drying usually showing cracks. Intermediate and high plasticity clays show these properties to a moderate and high degree, respectively.
		medium	0.02	
		fine	0.0063	
	CLAY		0.002	
ORGANIC SOILS	ORGANIC CLAY, SILT or SAND	Varies		Contains varying amounts of organic vegetable matter - defined by colour: grey - slightly organic; dark grey – organic; black – very organic.

Composite Soil Types
(Mixtures of basic soil types)

Scale of secondary constituents with coarse and very coarse soils. Term before, description after principal

Term before (term in ' [ ] ' may be used for 2nd'ry parts, matrix etc)	Principal Soil Type	Description after	Approx % 2nd'ry soil type
Slightly (sandy*) [occasional / little]	SAND, GRAVEL; (COBBLES or BOULDERS See Notes)	Used to describe components of secondary constituents. e.g. Gravel is fine and medium subangular fine sandstone and mudstone.	<5
--(sandy*) [some]			5 – 20
Very (sandy*) [much / many]			20 to 40†
--		and (sand*) or and (cobbles+)	50†

* Fine or coarse soil type as appropriate
\+ Very coarse soil type – see Notes
† described as fine soil depending on behaviour

Scale of secondary constituents with fine soils. Terms before, description after principal constituent.

Term before	Principal Soil Type	Description after	Approx % 2nd'ry soil type
Slightly (sandy*)	CLAY or SILT	Used to describe components of secondary constituents e.g. sandy gravelly CLAY. Gravel is coarse rounded quartzite	<35
-- (sandy*)			35 to 65†
Very (sandy*)			>65†

* Coarse soil type as appropriate
† or described as coarse soil depending on mass behaviour

EXAMPLES OF COMPOSITE TYPES
(indicating preferred order for description)

Loose brown very sandy subangular coarse GRAVEL with many pockets (<5mm across) of soft grey clay.

Firm thinly interlaminated brown SILT and CLAY.

Dense light brown clayey fine and medium SAND.

Density / Consistency / Peat Condition

For very coarse soils qualitative description by inspection of voids and particle packaging.

Standard Penetration Test in Boreholes for Coarse Soils

No of blows	Relative Density
<4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
>50	Very Dense
Slightly cemented	Visual Examination: pick removes soil in lumps which can be abraded.

Silty CLAY or clayey SILT – use prefix only when secondary constituent has significant affect on material characteristics. Terms 'slightly' or 'very' not applicable.

Consistency

Very soft	Finger easily pushed in up to 25mm. Exudes between fingers
Soft	Finger pushed in up to 10mm. Moulded by fingers
Firm	Thumb makes impression easily. Rolls to thread
Stiff	Can be indented slightly by thumb. Crumbles if rolled
Very Stiff	Indented by thumbnail. Cannot be moulded
Hard	Can be scratched by thumb nail
Firm Peat	Fibres compressed together
Spongy Peat	Very compressible, open
Plastic Peat	Moulded in hand, smears

Structure

Term	Field Identification
Homo-geneous	Deposit consists essentially of one type
Interbedded or interlaminated	Alternating layers of varying types. Pre-qualified by thickness term if in equal proportions. Otherwise thickness of, and spacing between, subordinate layers defined
Hetero-geneous	A mixture of types
Weathered (granular)	Particles may be weakened and may show concentric layering
Weathered (cohesive)	Usually has crumb or columnar structure
Fissured	Breaks into blocks along unpolished discontinuities
Sheared	Breaks into blocks along polished discontinuities
Intact	No fissures
Fibrous Peat	Plant remains recognisable and retain some strength. When squeezed only water, no solids
Pseudo-fibrous Peat	Plant remains recognisable, strength lost. Partial decomposition. Turbid water when squeezed, <50% solids
Amorphous Peat	Recognisable plant remains absent, full decomposition. When squeezed only paste with >50% solids
Gyttja	Decomposed plant & animal remains, maybe inorganic constituents
Humus	Plant remains, living organisms & inorganic constituents in topsoil

Interval Scales

Scale of Bedding Spacing	Mean Spacing (mm)	Scale of Spacing of Other Discontinuities / [Blocks]
Very thickly bedded	over 2000	Very widely spaced / [Very large]
Thickly bedded	2000-600	Widely spaced / [Large]
Medium bedded	600-200	Medium spaced / [Medium]
Thinly bedded	200-60	Closely spaced / [Small]
Very thinly bedded	60-20	Very closely / [Very small]
Thickly laminated	20-6	Extremely closely spaced
Thinly laminated	under 6	

Spacing terms may also be used for distance between partings, isolated beds or laminae, desiccation cracks, rootlets etc. Terms such as partings or dustings may be used for laminae less than 2mm and less than 0.6mm respectively.

Discontinuity Shape (See Standard for Persistence/Openness)	Small scale (mm's) rough, smooth Medium scale (cm's) planar, stepped, undulating Large scale (m's) wavy, curved, straight

Particle Nature

Particle Shape & Form

Very angular
(Sub) angular
(Sub) rounded
Well rounded

Low Sphericity
Flat or Elongate

High Sphericity
Cubic

Particle Surface Texture

Rough

Smooth

Polished

NOTES Identification and descriptive method, and descriptions, generally in accordance with BS5930:1999 Section 6 clauses 41 and 43 and BS EN ISO 14688-1:2002
Additional notes relating to BS EN ISO 14688-2:2004 – modified terms for content of secondary fraction given in Annex B Table B1 are not comparable to 5930 and are not be used.
Organic Content :- Low – 2 to 6%; Medium - 6 to 20%; High - >20%. Terms not used on borehole records
Carbonate content :- Only noted if field test with dilute HCl undertaken – Carbonate free if no effervescence; Calcareous if slight effervescence; Highly calcareous if strong reaction
Undrained shear strength :- terms from laboratory or in situ tests not given on borehole records.
Very Coarse Soils – described by initially removing very coarse materials and describing residue before adding back the very coarse soils. If residue is cohesive then described as '…….(COBBLES / BOULDERS) with low (cobble / boulder) content with (some / much etc) matrix of ……' If residue is granular then described as ' with matrix of ' or as a coarse soil.
Cobbles :- <10% - low cobble content; 10 to 20% - medium content; >20% - high content; **Boulders** <5% - low boulder content; 5 to 20% - medium content; >20% - high content