GUBEON FARM

PROPOSED OPENCAST
COAL SITE

MAFF
Leeds Regional Office

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MAPS

GUBEON FARM - PROPOSED OPENCAST COAL SITE

1. STATEMENT OF PHYSICAL CHARACTERISTICS

A. GENERAL INTRODUCTION

The 25.4 hectare site is located 2 km west of the A1 at Morpeth on the B6524 around National Grid reference NZ 172833.

The survey was carried out in February 1991 when soils were examined by hand auger borings at a density of one boring per hectare at 25 points predetermined by the National Grid. Detailed soil profile description to provide information on soil characteristics were carried out at two locations.

Average annual rainfall is approximately 783 mm per year and the accumulated temperature above $0^{o}C$ (January to June) is 1232 days $0^{o}C$. Soils are at field capacity for approximately 198 days per year. The rainfall and temperature figures indicate that there is an overall climatic limitation of Grade 2.

Geology and Soils

All soils are developed over Boulder Clay Drift deposits. They have medium clay loam topsoils over heavy clay loam to clay subsoils. All profiles are slowly permeable, falling into soil wetness class IV. A small area has been restored to agriculture after opencast coal workings in 1957 (see soil maps).

B. SOIL PROPERTIES

One soil type occurs on the site, it consists of sandy clay loam to medium clay loam topsoils over gleyed, slowly permeable heavy clay loam to clay subsoil. Soil in the areas designated as "restored opencast coal site" have a more compact subsoil.

I. TOPSOILS

Unit 1

Soils in this unit are medium textured with a well developed medium subangular blocky structure. Mean soil thickness is 27 cm.

II. SUBSOILS

Unit S1

This unit consists of heavy textured material that has a weakly developed coarse angular blocky structure.

Mean soil thickness is 73 cm.

2. AGRICULTURAL LAND CLASSIFICATION

The ALC grades on the site are as follows:

Grades	Hectares (ha)	Percentage of total Area
3b	25.4	100%
TOTAL	25.4	100%

SUBGRADE 3b

All land on the site is included in this grade. Topsoils are usually of medium clay loam over slowly permeable heavy clay loam or clay subsoils. These soils fall into wetness class IV. Soil wetness and workability are the limiting factors.

TABLE 1 Soil Profile description of Restored Soil

CROP: Cereal

SLOPE: 2° N

WEATHER: Sunny, no wind

Depth cm	
0-30	Very dark greyish brown (10YR3/2) stoneless medium clay loam; unmottled; well developed medium subangular blocky; moist; few fissures and pores; firm, slightly sticky, non plastic; many fine fibrous roots; non calcareous; diffuse irregular boundary.
30-100	Dark greyish brown (2.5Y4/2) heavy clay loam with medium stones of mixed lithology; common district light yellowish brown (2.5Y6/4) mottles; weekly developed coarse angular blocky; moist; non porous firm; sticky; slightly plastic; common fine fibrous roots; non calcareous.

TABLE 2 Soil profile description of Boulder Clay Soil

CROP: Cereal

SLOPE: 2^{o} N

WEATHER: Sunny, no wind

Depth cm	
0-25	Dark grey (10YR4/1) stoneless medium clay loam; unmottled; moderately developed medium sub-angular blocky; moist; few fissures and pores; firm; slightly sticky; non plastic; many fine fibrous roots; non calcareous; clear wavey boundary.
25-65	Greyish brown (2.5Y5/2) stoneless clay with common distinct pinkish grey (7.5YR6/2) mottles; weakly developed coarse angular blocky; moist; non porous; firm; sticky slightly plastic; few fine fibrous roots; non calcareous; clear wavey bounday.
65-100	Dark greyish brown (2.5Y4/2) stoneless clay with common distinct reddish yellow (7.5YR6) mottles; weakly developed coarse angular blocky; moist; non porous; firm; sticky; slightly plastic; few fine fibrous roots; non calcareous.

SCHEDULE OF SOIL AUGER BORINGS

TEXTURE

CS	Coarse sand
FS	Fine sand
MS	Medium sand
LCS	Loamy coarse sand
LFS	Loamy fine sand
LMS	Loamy medium sand
CSL	Coarse sandy loam
FSL	Fine sandy loam
MSL	Medium sandy loam
FSZL	Fine sandy silt loam
CSZL	Coarse sandy silt loam
MSZL	Medium sandy silt loam
MZ	Marine light silts
MZCL	Medium silty clay loam
CZCL	Coarse silty clay loam
FZCL	Fine silty clay loam
SCL	Sandy clay loam
MCL	Medium clay loam
ZL	Silty loam
HCL	Heavy clay loam
HZCL	Heavy silty clay loam
C	Clay
SC	Sandy clay
ZC	Silty clay
O	Prefix 'O' for organic
FP	Fibrous peat
HP	Humose peat
LP	Loamy peat
PL	Peaty loam
PS	Peaty sand
SP	Sandy peat
X	Rock

MOTTLES

O	Ochreous
G	Grey

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BORING	WET CLASS	TEXTURE	TOPSOIL STONES >2	TOPSOIL STONES >6	DEPTH	COLOUR	CaCO3	MOTTLES	
1	4	mcl			0-30	10YR32 00			
		hcl			30-40	10YR42 00		common	10YR56 00
		hcl			40-55	10YR53 00		common	10YR52 56
		c			55-100	10YR43 00		common	10YR56 00
2	4	mcl			0-30	10YR32 00			
		hcl			30-100	10YR43 00		common	10YR52 56
3	4	mcl			0-25	10YR42 00			
		c			25-50	10YR52 00		common	10YR56 00
		c			50-100	10YR61 00		common	10YR56 00
4	4	mcl			0-35	10YR42 00			
		scl			35-55	10YR53 00		common	10YR52 56
		c			55-100	10YR61 00		common	10YR56 00
5	4	mcl			0-25	10YR31 00			
		c			25-100	10YR51 00		common	10YR56 00
6	4	mcl			0-30	10YR32 00			
		hcl			30-60	10YR53 00		common	10YR52 56
		c			60-100	10YR42 00		common	10YR56 00
7	4	mcl			0-30	10YR32 00			
		hcl			30-100	10YR53 00		common	10YR51 56
8	4	mcl			0-30	10YR42 00			
		c			30-100	10YR62 00		common	10YR56 00
9	4	mcl			0-30	10YR42 00			
		c			30-100	10YR61 00		common	10YR56 00
10		mcl			0-27	10yr42-			
		c			27-100	10yr51-		common	75yr66-
11	4	mcl			0-30	10YR42 00			
		c			30-100	10YR31 00		common	10YR56 00
12	4	mcl			0-30	10YR32 00			
		hcl			30-50	10YR43 00		common	10YR42 56
		c			50-100	10YR42 00		common	10YR56 00
13	4	mcl			0-30	10YR33 00			
		hcl			30-100	10YR53 00		common	10YR51 56
14	4	mcl			0-30	10YR33 00			
		hcl			30-100	10YR52 00		common	10YR56 00
15	4	mcl			0-25	10YR41 00			
		c			25-100	10YR61 00		common	10YR56 00

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BORING	WET CLASS	TEXTURE	TOPSOIL STONES >2	TOPSOIL STONES >6	DEPTH	COLOUR	CaCO3	MOTTLES
16	4	mcl			0-25	10YR32	00	
		c			25-100	10YR61	00	common 10YR56 00
17	4	mcl			0-30	10YR32	00	
		c			30-100	10YR71	00	common 10YR56 00
18	4	mcl			0-30	10YR32	00	
		hcl			30-100	10YR53	00	many 10YR52 56
19	4	mcl			0-30	10YR32	00	
		hcl			30-100	10YR53	00	many 10YR52 56
20	4	mcl			0-30	10YR32	00	
		hcl			30-100	10YR51	00	common 10YR56 00
21	4	mcl			0-30	10YR32	00	
		hcl			30-60	10YR53	00	common 10YR52 56
		c			60-100	10YR42	00	common 10YR56 00
22	4	mcl			0-30	10YR32	00	
		hcl			30-50	10YR53	00	common 10YR52 56
		hcl			50-100	10YR42	00	common 10YR56 00
23	4	mcl			0-30	10YR32	00	
		hcl			30-100	10YR53	00	many 10YR51 56
24	4	mcl			0-22	10YR32	00	
		c			22-100	10YR61	00	common 10YR56 00
25	4	mcl			0-30	10YR32	00	
		hcl			30-65	0YR53	000	R51 56C
		c			65-100	10YR42	00	common 10YR56 00