STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION ALCAN POWER STATION, LYNEMOUTH NORTHUMBERLAND PROPOSED ASH LAGOONS AND SOIL STORAGE AREA JANUARY 1993

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SUMMARY

A Statement of Physical Characteristics and Agricultural Land Classification survey of 16.8ha of land at Lynemouth was carried out in December 1992.

At the time of survey 13.3ha of the site was or had recently been in agricultural production. 0.7ha of this falls within Grade 2. Topsoils and upper subsoils (generally consisting of medium clay loam) overlie slowly permeable lower subsoils (generally heavy clay loam) at depth. This land is limited to Grade 2 by slight soil wetness and workability restrictions.

The remainder of the agricultural land on the site (12.6ha) falls in Subgrade 3b. Typically medium clay loam topsoils overlie slowly permeable heavy clay loam or clay subsoils at around 35cm depth. Profiles are poorly drained (Wetness Class IV) and the land is, thus, restricted to this subgrade by soil wetness and workability limitations.

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1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 11Km north east of Morpeth town centre and 2Km south east of the village of Lynemouth. It is centred on Grid Reference NZ 303896 and covers a total of 16.8ha. Survey work was carried out in December 1992 when soils were examined by hand auger borings at 100m intervals predetermined by the National Grid. Extra borings were made where necessary to refine grade boundaries and one soil pit was dug to allow a detailed profile description to be made. Land quality was assessed using the methods described in "Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land" (MAFF, 1988).

1.2 Land Use and Relief

At the time of survey the area to the south of the mineral railway was principally in ley grass. The area to the north of the railway consisted of scrubland, much of which had previously been sown to cereals. The site lies at an altitude of 20m AOD and is flat to very gently sloping, with a north-easterly aspect.

1.3 Climate

Grid Reference	:	NZ 303896
Altitude (m)	:	20
Accumulated Temperature above 0°C (January-June)	:	1327 day°C
Average Annual Rainfall (mm)	:	636
Climatic Grade	:	1
Field Capacity Days	:	158
Moisture Deficit (mm) Wheat	:	101
Moisture Deficit (mm) Potatoes	:	90

1.4 Geology, Soils and Drainage

The site is underlain by Carboniferous coal measures and overlain by thick deposits of boulder clay. The soils are medium to heavy-textured, typically consisting of medium clay loam topsoils overlying heavy clay loam or clay subsoils. Profiles are generally poorly drained (falling in Wetness Class IV) except in the south-eastern corner of the site where they are moderately well drained (Wetness Class II).

The soils on the site correspond to the Dunkeswick Series as mapped by the Soil Survey and Land Resource Centre.

1.5 Soil Properties

One main soil type occurs on this site, a description of which is given below. Topsoil and subsoil resources are also shown on the accompanying maps along with soil thickness and volume information.

(a) Soil Type 1:- Medium to heavy textured soils (Unit T1/S1)
(Full Profile Description, Table 1)

This soil formed on boulder clay occurs over the whole site. It is characterised by a medium clay loam topsoil overlying a slowly permeable heavy clay loam or clay subsoil.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the whole site. It is typically medium textured and consists of medium clay loam which is very slightly stony (containing approximately 3% small and medium-sized hard stones). This topsoil has a moderately developed medium angular blocky structure and a median thickness of 30cm.

(ii) Subsoils

Unit S1 occurs over the whole site. It is heavy-textured, consisting of heavy clay loam or clay, and very slightly stony, containing approximately 2% small and medium-sized hard stones. This soil unit has a moderately developed medium prismatic structure and a mean thickness of 70cm.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Medium to heavy textured soil, T 1/S1

Profile Pit 1 (Near auger boring 3)

Slope:- 1°NE
Land Use:- Previously cereals
Weather:- Bright and cold

Depth cm	Horizon	Description
0-30		Dark greyish brown (2.5Y5/2) medium clay loam; no mottles; very slightly stony (approximately 3% small and medium subrounded and subangular hard stones); moist; moderately developed medium angular blocky structure; very firm soil strength; slightly porous; abundant fine and medium fibrous roots; moderately sticky; moderately plastic; non-calcareous; abrupt smooth boundary.
30-40		Brown (10YR5/3) medium clay loam; common fine indistinct yellowish brown (10YR5/4) mottles; stoneless to very slightly stony (0-2% small subrounded hard stones); moist; moderately developed medium angular and subangular blocky structure; very firm soil strength; moderately porous; many fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; abrupt smooth boundary.

Depth cm	Horizon Description
40-100	Grey (7.5YR5/6) clay; many fine and medium, distinct strong brown (7.5YR4/6 and 7.5YR5/6) mottles; very slightly stony (approximately 2% small subrounded hard stones); slightly moist; moderately developed medium prismatic structure; extremely firm soil strength; very slightly porous (<0.5% pores >0.5mm); common fine fibrous roots; moderately sticky; very plastic; non-calcareous.

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:-

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2	0.7	4.2
3a		
3b	12.6	74.9
4		
5		
(Subtotal)	(13.3)	(79.1)
Urban		
Non Agricultural	0.9	5.4
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed	2.6	15.5
(Subtotal)	(3.5)	(20.9)
TOTAL	16.8	100

3.1 Grade 2

Grade 2 land occurs in a small area in the south-east of the site. Profiles are moderately well drained (falling in Wetness Class II) and typically consist of medium clay loam topsoils and upper subsoils overlying heavy clay loam lower subsoils. Slowly permeable layers generally begin at around 70cm depth and the land is, thus, limited to Grade 2 by slight soil wetness and workability limitations.

3.2 Subgrade 3b

Subgrade 3b land occurs over most of the site. Profiles are poorly drained (falling in Wetness Class IV) and typically consist of medium clay loam topsoils overlying heavy clay loam or clay subsoils. Slowly permeable layers generally begin at around 35cm depth and the ALC grade is, thus, limited by soil wetness and workability restrictions.

3.3 Non-Agricultural

This consists of an area of gorse and scrub in the south-east of the site.

3.4 Area Not Surveyed

This refers to areas where the soil has been disturbed as a result of pipe laying operations.

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MAPS