Patrick Stephenson Ltd
Agricultural Consultants

LAND CLASSIFICATION FOR AGRICULTURE REPORT

Bonnyknox Solar Farm, Arbroath

Proposed Development

May 2025

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1.0 Introduction

Patrick Stephenson Limited was approached by Arthian on behalf of Renewable Energy Systems (RES), to undertake a detailed Land Classification for Agriculture (LCA) Survey of the agricultural land quality at Bonnyknox Farm, Arbroath. (Grid Ref NO 5708 4067)

Patrick Stephenson has a degree in Agriculture from Newcastle University, has undertaken the Ministry of Agriculture, Fisheries and Food (MAFF)[1] Agricultural Soil and Land Classification course and has the passed the BASIS Soil and Water exam. He has over 30 years' experience in Environmental Impact Assessments and LCA studies.

1.1 Method

The method used to create this report was primary research in the form of a detailed-on site ALC survey, following the guidelines and criteria as stated in the documents listed below.

- *The Revised Guidelines and Criteria for Grading the Quality of Agricultural Land* DEFRA 1988
- *The Macaulay Institute for Soil Research Aberdeen. 1984 Soil Survey of Scotland* outlined the method and organisation for the grading of land[2].
- "Specifications for Topsoil" British Standards Institute

The survey work was carried out on a much larger parcel of land covering approximately 140 ha in Appendix 3 and 4. Soil was examined using a one metre handheld Dutch Auger at one hundred metre intervals and GPS located. The soil profile at each sample location was described using the *Soil Survey Field Handbook: Describing and Sampling Soil Profiles* (Ed. J.M. Hodgson, Cranfield University, 1997)[2]. *The Macaulay Institute for Soil Research Aberdeen. 1984 Soil Survey of Scotland* outlined the method and organisation for the grading of the land. Representative soil samples were taken from the soil pits to confirm soil type and the physical and chemical characteristics (Appendix 8). Additional boring and soil pits were dug to confirm soil boundaries.

[1] The Ministry of Agriculture, Fisheries and Food (MAFF) was incorporated within the Department for Environment, Food and Rural Affairs (Defra) in June 2001

[2] Soil Survey Technical Monograph No 5 Soil Survey Handbook Describing and Sampling Soil Profiles J. M Hodgson 1974 1997

1.2 Secondary Research

Desktop research was conducted alongside the fieldwork as described in the method statement, to establish if the Proposed Development would have an effect on Prime Agricultural Land (PAL), which is defined by Macaulay as Grades 1, 2, 3 Division 1. The following sources were used to help in compiling the report.

- "The Soils Around Perth, Arbroath and Dundee" Sheet 49. D Laing 1976.
- Goole viewed on Google Maps (Tele Atlas 2012)
- Natural England MAGIC web site (http://magic.defra.gov.uk/website/magic)
- Handbook Soil Survey of Scotland. Book 5.
- The Ordnance Survey Explorer Map Series 1:25,000 (291))
- The British Geological Survey Digital Mapping (49)
- Land Capability for Agriculture in Scotland.
- National Soil Map of Scotland.
- Land Character Assessment 2019.

1.3 Planning Policy

Current planning policy is found in the National Planning Framework 4 (NPF4) (published 13th February 2023).

In **Policy 5**

a) Development proposals will only be supported if they are designed and constructed:

i. In accordance with the mitigation hierarchy by first avoiding and then minimising the amount of disturbance to soils on undeveloped land; and

ii. In a manner that protects soil from damage including from compaction and erosion, and that minimises soil sealing.

b) Development proposals on prime agricultural land, or land of lesser quality that is culturally or locally important for primary use, as identified by the LDP, will only be supported where it is for:

i. Essential infrastructure and there is a specific locational need and no other suitable site;

ii. Small-scale development directly linked to a rural business, farm or croft or for essential workers for the rural business to be able to live onsite.

iii. The development of production and processing facilities associated with the land produce where no other local site is suitable.

iv. The generation of energy from renewable sources or the extraction of minerals and there is secure provision for restoration; and

In all the above exceptions, the layout and design of the proposal minimises the amount of protected land that is required.

2.0 Location

"The Site" is located North of Bonnyton Smiddy, West of Kelly Moor plantation and South of Guynd Den. "The Site" is centred on Ordnance Survey (OS) grid reference NO 5708 4067 and covers approximately 95.45 Ha. Appendix 1 shows the Proposed Development and Site location.

2.1 Site characteristics

The topographical survey data shows that the site slopes from 123 metres above Ordnance Datum (mAOD) in the northwest corner to 92m AOD in the east of the site. The southern section is split by the Rottenraw Burn with steep sided slopes. The geology of the area is described in the *Soils of Scotland* as having parent material of either coastal raised beach deposits, mainly coarse sands and gravels derived from sediments and lavas of Old Red Sandstone age or water-modified layer, generally <60cm thick, over till derived from sediments (mainly sandstones, flags and mudstones) of Lower Old Red Sandstone age with some Dalradian Schist erratic's. The area along Rottenraw Burn is described as recent riverine and lacustrine alluvial deposits. The described soil types are, Balrownie brown soils imperfectly drained, Panbride freely drained mineral podzols, and alluvial soils by the Rottenraw Burn. "The British Geological" survey describes the area as Glacial Meltwater and Till.

2.2 Climate and Relief

Climate has a major, and in places overriding, influence on land quality affecting both the range of potential agricultural uses and the cost and level of production.

There is published agro-climatic data for Scotland provided by the Meteorological Office. Data for the area as used by The Macauley Institute provided the following data.

Table 1 - Agro-Climatic Data

Grid Reference	NO 5708 4067
Altitude (ALT)	102 M
Average Annual Rainfall (AAR)	670 mm
Accumulated temperature above 5-6 C° Lower Quartile Value	2259 1126
Growing Days	244
Moisture Deficit Wheat	120mm
Average Moisture Deficit Potato	98mm

The main parameters used in assessing the climatic limitation are average annual rainfall (AAR), as a measure of overall wetness; and accumulated temperature, as a measure of the relative warmth of a locality. The surveyed site would have restrictions and could not be classified as Grade 1.

Most of the site is not within a flood risk area however, Rottenraw Burn will have areas of localised flooding.

3.0 Land Use

The current cropping is Winter Oil Seed Rape, Winter Wheat, Spring Barley, Potatoes and Permanent Grass.

4.0 Land Quality

The Macaulay Institute for Soil Research Aberdeen. 1984 Soil Survey of Scotland outlined the method and organisation for the grading of land. This amalgamated the data available and completed the survey of all land in Scotland. The Lowland productive areas had largely been covered at a scale of 1:63 360 maps. These maps were made by taking samples of between 5 and 15 per 100 hectares and were used to comply the Land Use Capability maps and soil formations. The 1984 amalgamations produced an ALC system classifies land into 1 through to 7 classes, with Grade 3 and 4 having 2 divisions and Grades 5 and 6 three divisions. Prime Agricultural Land (PAL) is classed as land in Grades 1, 2, and 3 Division 1.The 1984 survey provides good guidance of the likelihood of finding PAL, RES used this analysis of the area provided by the James Hutton Institute data to select a site

where the soil was not Grade 1 or 2 and hence the location of this proposal. Further details regarding site selection can be found in the Design and Access Statement.

In line with the planning guidance a detailed survey was undertaken which sampled 1 ha grid with one sample point per hectare. This highlighted that the range of Grades was 2 to 4which is in keeping with the Macaulay soil survey of Scotland.

PAL is based on the long-term physical limitations of land for agricultural use. Factors affecting the Grade are climate, site and soil characteristics.

- **Climate:** temperature and rainfall; aspects, exposure and frost risk
- **Site:** gradient, micro relief and flood risk
- **Soil:** texture, structure, depth and stoniness; chemical properties which cannot be corrected

The combination of climate and soil factors determines soil wetness and droughtiness. Wetness and droughtiness influence the choice of crops grown and the level and consistency of yields, as well as use of land for grazing livestock. The PAL is also concerned with the inherent potential of land under a range of farming systems. The current agricultural use, or intensity of use, does not affect the PAL Grade. The physical limitations of land have four main effects on the way land is farmed. These are:

- the range of crops which can be grown
- the level of yield
- the consistency of yield
- the cost of obtaining the crop

Higher Grade land should provide greater flexibility in the range of crops that can be grown (its 'versatility') and require lower inputs. The higher Grades (1, 2, 3 Division 1) also consider the ability to produce consistently high yields of a narrower range of crops.

Definitions of Land Classification Grades

Land suited to arable cropping.

Class 1 - Land capable of producing a very wide range of arable crops. Cropping is highly flexible and includes the more exacting crops such as winter harvested vegetables. The levels of yield are consistently high.

Class 2- Land capable of producing a wide range of arable crops. Cropping is very flexible and a wide range of crops may be grown but difficulties with winter vegetables may be encountered in some years. The level of yield is high but less consistently obtained than in Class 1.

Class 3 - Land capable of producing a moderate range of crops.

Division I - The land can produce consistently high yields of a narrow range of crops (cereals and grass) or moderate yields of a wider range (potatoes, field beans and other vegetables and root crops). Grass leys of short duration are common.

Division 2 - The land is capable of average production, but high yields of grass, barley and oats are often obtained. Grass leys are common and longer than in Division 1.

Class 4 - Land capable of producing a narrow range of crops.

Division 1 - Long ley grassland is commonly encountered but the land can produce some forage crops and cereal for stock.

Division 2 - Primarily grassland with some limited potential for other crops.

The Macauley PAL survey summarised in 1984, shows the whole Site to be Grade 2 and 3 Division 1.

5.0 Published Survey Information

The Provisional PAL amalgamated organisation and method document 1984 carried out by *Macauley Institute for Soil Research Aberdeen*, (updated 19/06/2024) showed the whole surveyed site to be Grade 2 and 3 Division 1. These reports are based on assessments 1:65,000 or 1:250,000 and are purely for guidance purposes.

6.0 Survey Results

The field survey work was carried out in accordance with the method described in the PAL Guidelines. The presence of stones restricted auger borings to a maximum of 700mm. Confirmation of soil types and physical details was supported by the laboratory results in Appendix 8.

The following soil grades were found within the survey area. Appendix 3 has a description of the sample point profiles. Appendix 4 has a map showing the respective grades and details of auger boring points. Table 3 shows a summary of the ALC grades found on the site, a visual of this shown on a map can be found at Appendix 2.

Table 3 Summary of ALC Grades

Grade/Subgrade	Approximate Area Ha	Area %
2	46	48.9
3 Division 1	47	50.0
Non-Agricultural (tracks etc)	1	1.1

Total	94	100

The detailed survey showed that the topsoil's were predominantly silty sandy loam, silty to clay loam and varied between 350 and 500 mm in depth across the site. Sub-soils were predominantly sandy loams to sand. Medium stones were predominant in the central section. The main grade limits were droughtiness, stones and topsoil depth.

Grade 2

These soils made up 48.9% of the area. The soils had topsoil depth up to 500 mm and were predominantly sandy silty loams. Subsoils varied from clay loams to sandy silty loams. The restriction to grade was either due to topsoil depth, stone content or drought limitations.

3 Division 1:

This was the largest soil class accounting for 50% of the area. The difference in this grade compared to grade 2, was that the soils were of a more inconsistent depth. Topsoil is stony silty clay loam. Subsoils had more silt, clay and loam content and often restricted in depth by stone content. The main limitations to this grade remained the soil depth and wetness category.

7.0 Conclusion

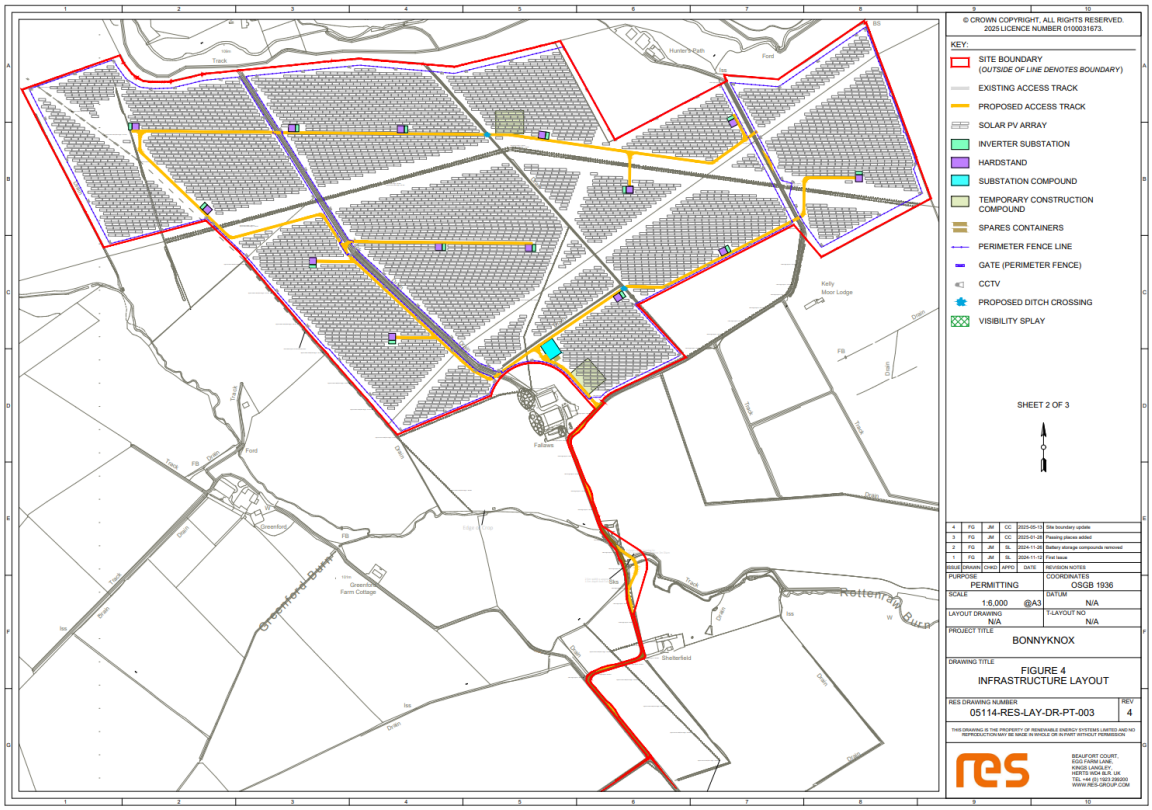
It should be noted that the Renewable and Low Carbon Energy Development Supplementary Guidance from Angus Council states that *"solar farms may be located on good quality agricultural land and where possible grazing options should be considered."*

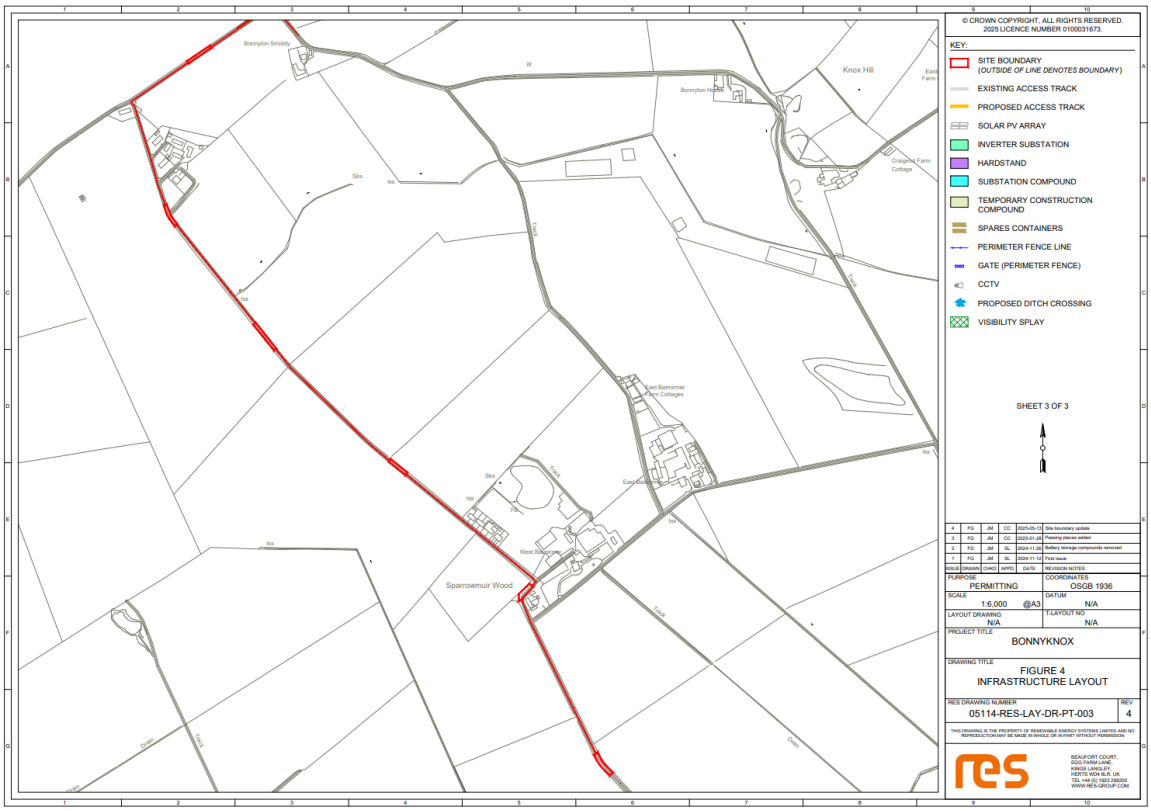
The published works shows the entire site to be Prime Agricultural Land. The detailed survey shows the shortcomings of the Macauley PAL survey summarised in 1984 survey both Class 3 Division 2 and Class 4 Division 1 being present in the surrounding area. Most of the site is classed as Lower Class 3 Division 1 (50%). It is worth noting that the soil division between Class 2 and Class 3 Division 1 can be affected by cropping practices.

Fields that are in potato production have undertaken a cultivation pass which is called de-stoning which involves removing stones from the ridged area and placing them in an adjoining furrow. Removing the impediment of stone gives an incorrect topsoil depth which is one of the criteria for land classification. In these areas, two thirds of the field would have artificially deep topsoil. Soil borings carried out between 103 and 122 could lead to interpretation issues as topsoil depth can be increased without the barrier of stones. This can then lead to an overestimate of land capability particularly from Grade 3.1 to Grade 2. The growing of potatoes subjects the soil to intensive

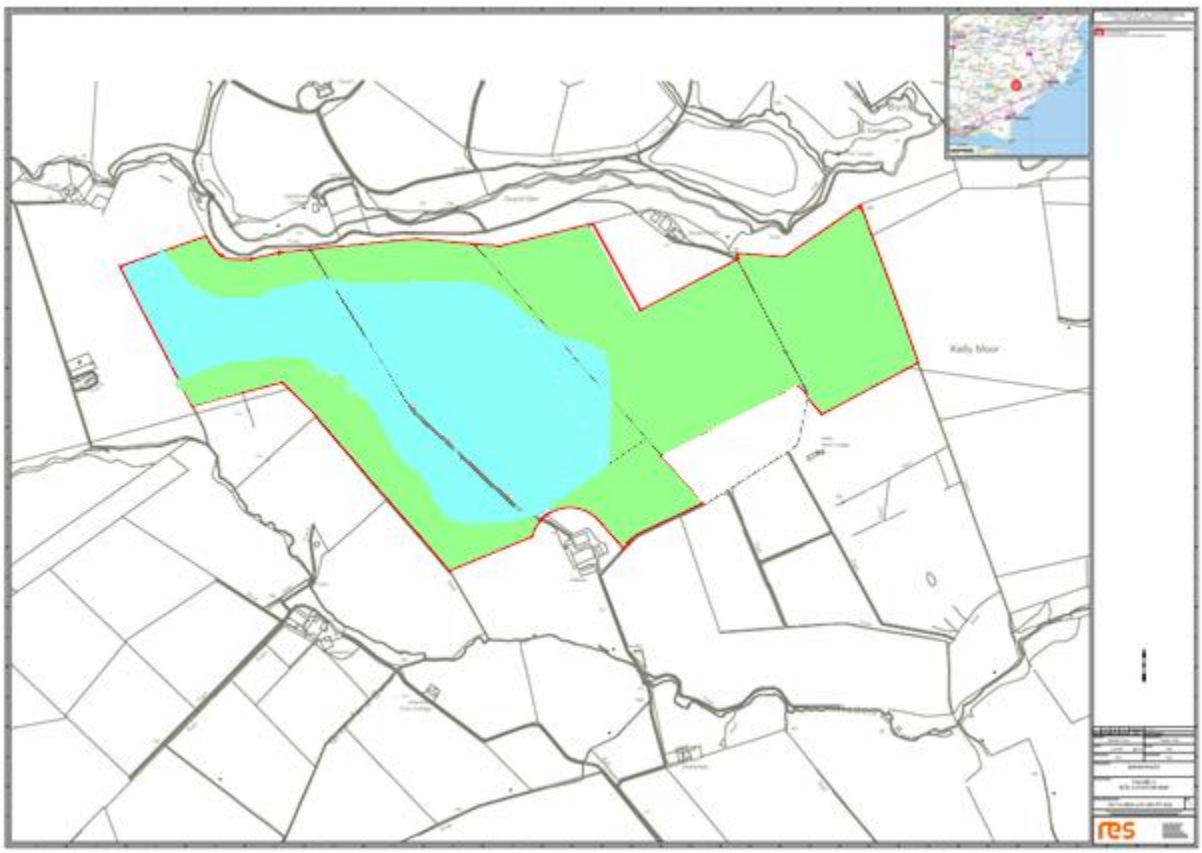
mechanical cultivations often taking several seasons to regain its structure and diversity. The use of the land for solar capture will mean that the soils will have 40 years to develop good structure and diverse fauna. On the return to arable farming, they will have improved resilience and productive potential helping to ensure the continued availability of good quality agricultural land for future generations.

Appendix 1 – Location of Development Site





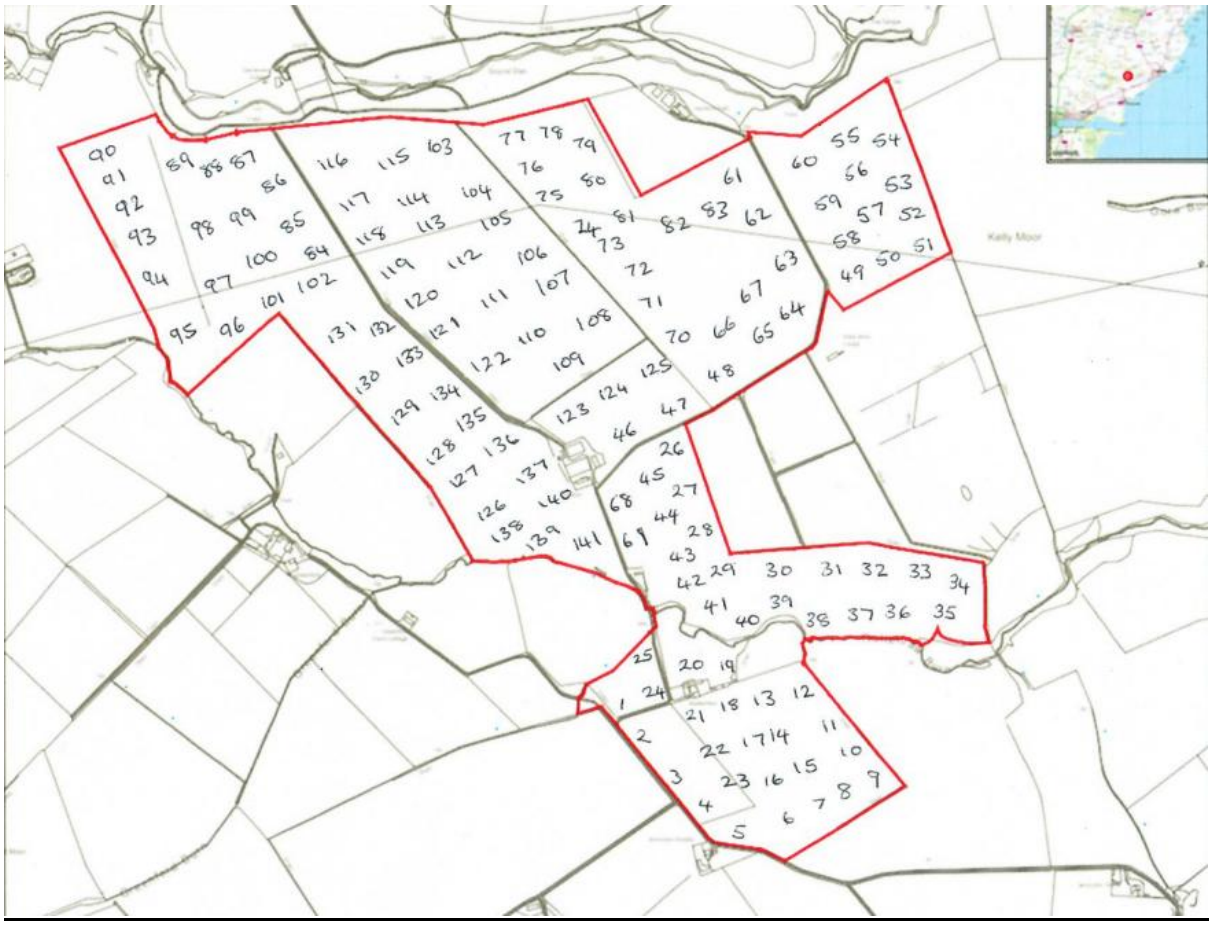
Appendix 2 - Detailed ALC map



Key

Grade 2 - 48.6%	
Grade 3 Division - 50%	

Appendix 3 Sample points



Appendix 4 - Sample Point Descriptions

SOIL PROFILE SURVEY RESULTS

Soil Type Key:
O- ORGANIC
C- CLAY
S- SAND
L- LOAM
Z- SILT
P- PEAT

Hole	Grid ref	Texture	Depth mm	Stones	Wetness Class
1 99M	N56° 33. 078 W002° 41. 955	SL Till	0-30 30+	Medium Stones Small medium stones Coarse sandy loam	III
2 100M	N56° 33. 058 W002° 41. 938	SZL Till	0-30 30+	Medium Stones Small medium stones Coarse sandy loam	III
3 101M	N56° 33. 009 W002° 41. 877	SL SZL Till	0-30 30-40 40+	Medium Stones	III
4 102M	N56° 32. 954 W002° 41. 782	SZL Till	0-30 30+	Medium Stones Small medium stones Coarse sandy loam	III
5 102M	N56° 32. 942 W002° 41. 707	SZL Till	0-30 30+	Medium Stones Small medium stones Coarse sandy loam	III

6 101M	N56° 32. 936 W002° 41. 635	SZL Till	0-40 40+	Less Stones Small stones Coarse sandy loam	III
7 101M	N56° 32. 951 W002° 41. 549	SZL Till	0-30 30+	Medium Stones Small medium stones Coarse sandy loam	III
8 99M	N56° 32. 980 W002° 41. 486	ZL Glacial Till Coarse Sand	0-35 35+	Medium Stones Small medium stones Coarse sandy loam	III
9 97M	N56° 33. 010 W002° 41. 422	SZL SZL Glacial Till	0-35 35-45 45+	Medium Stones Small medium stones Coarse sandy loam	III
10 97M	N56° 33. 048 W002° 41. 479	SZL CL Glacial Till	0-40 40-60	Small Stones Small medium stones Coarse sandy loam	III
11 98M	N56° 33. 085 W002° 41. 534	ZL Coarse Sandy Glacial Till	0-25 25+	Medium Stones Small medium stones Coarse sandy loam	III
12 99M	N56° 33. 116 W002° 41. 581	ZL SZL Glacial Till	0-25 25+	Medium Stones Small medium stones Coarse sandy loam	III
13 98M	N56° 33. 091 W002° 41. 650	SZL CL	0-35 35+	Medium Stones	III

		Glacial Till		Small medium stones Coarse sandy loam	
14 98M	N56° 33. 055 W002° 41. 596	SZL CL Glacial Till	0-40 40-60	Small Stones Small medium stones Coarse sandy loam	III
15 98M	N56° 33. 018 W002° 41. 538	SZL CL Glacial Till	0-40 40+	Medium Stones Small medium stones Coarse sandy loam	III
16 101M	N56° 32. 980 W002° 41. 593	SZL CL Glacial Till	0-35 35-50 50+	Medium Stones Small medium stones Coarse sandy loam	III
17 101M	N56° 33. 019 W002° 41. 653	SZL CL Glacial Till	0-30 30-50 50+	Medium Stones Small medium stones Coarse sandy loam	III
18 101M	N56° 33. 058 W002° 41. 711	SZL CL Glacial Till	0-40 40-60 60+	Small Stones Small stones Coarse sandy loam	III
19 102M	N56° 33. 127 W002° 41. 748	SL Stone	0-20 20+	Medium Large flat stones	II
20 99M	N56° 33. 130 W002° 41. 796	SL Stone	0-20 20+	Medium Large flat stones	II
21	N56° 33. 066	SL	0-20	Medium Stones	II

	W002° 41. 794	SZL Glacial Till	20-40 40+	Medium Large flat stones	
22 99M	N56° 33. 033 W002° 41. 744	SZL CL Glacial Till Glacial Till	0-30 35-50 50+	Less Stones Small stones Coarse sandy loam	III
23	N56° 32. 994 W002° 41. 685	SZL Coarse Sandy Loam Glacial Till	0-35 35+	Less Stones Small stones Coarse sandy loam	III
24 98M	N56° 33. 096 W002° 41. 864	SZL Stoney Glacial Till	0-25 25+	Small medium stones Coarse sandy loam	III
25 98M	N56° 33. 147 W002° 41. 896	SZL Glacial Till	0-30 30+	Small medium stones Coarse sandy loam	III
26 104M	N56° 33. 390 W002° 41. 844	SZL SL Glacial Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
27 102M	N56° 33. 346 W002° 41. 851	SZL SZL Stone	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
28 101M	N56° 33. 300 W002° 41. 851	SZL Coarse Gravel Glacial Till	0-35 35+		III

				Small medium stones Coarse sandy loam	
29 101M	N56° 33. 253 W002° 41. 754	SZL SZL - More Stones Glacial Till	0-25 25-35 35+	Lots of Large, Medium and Small stones	II
30 95M	N56° 33. 258 W002° 41. 669	SZL SZL - More Stones Glacial Till	0-25 25-35 35+	Lots of Large, Medium and Small stones	II
31 96M	N56° 33. 262 W002° 41. 572	SZL CSL – Less Stone Glacial Till	0-30 30-50 50+	Small stones Coarse sandy loam	III
32 96M	N56° 33. 267 W002° 41. 476	SZL Gravel Stone Glacial Till	0-30 30+	Small medium stones Coarse sandy loam	III
33 94M	N56° 33. 264 W002° 41. 375	SZL Coarse Sandy Till Stone	0-40 40-60 60+	Small medium stones Coarse sandy loam Large flat stones	III
34 91M	N56° 33. 255 W002° 41. 263	SL Gravel Coarse Sandy Loam	0-25 25+	Small medium stones Coarse sandy loam	II
35	N56° 33. 203	SZL	0-30		

93M	W002° 41. 203	Gravel Coarse Sandy Loam Glacial Till	30-50 50+	Small medium stones Coarse sandy loam	
36 92M	N56° 33. 212 W002° 41. 287	SZL SL Glacial Till	0-30 30-50 50+	Small stones Coarse sandy loam	II
37 94M	N56° 33. 219 W002° 41. 382	SZL SL Glacial Till	0-30 30-50 50+	Small stones Coarse sandy loam	II
38 97M	N56° 33. 220 W002° 41. 489	SZL SL Stone Till	0-25 25-35 35+	Small medium stones Coarse sandy loam	II
39 97M	N56° 33. 215 W002° 41. 589	SZL SL Stone Till	0-25 25-35 35+	Small medium stones Coarse sandy loam	II
40 98M	N56° 33. 214 W002° 41. 729	SZL SL Stone Till	0-25 25-35 35+	Small medium stones Coarse sandy loam	II
41 94M	N56° 33. 180 W002° 41. 742	SZL SL Stone Till	0-20 20-35 35+	Small medium stones Coarse sandy loam	II
42	N56° 33. 246	SZL	0-20	Small medium stones	II

100M	W002° 41. 814	SL Stone Till	20-35 35+	Coarse sandy loam very stoney	
43 104M	N56° 33. 289 W002° 41. 841	SZL Coarse SL Till	0-30 30-40 40+	Small medium stones Coarse sandy loam	III
44 106M	N56° 33. 328 W002° 41. 867	SZL Coarse SL & Till	0-25 25+	Small medium stones Coarse sandy loam	III
45 107M	N56° 33. 371 W002° 41. 894	SZL Coarse SL & Till	0-25 25+	Small medium stones Coarse sandy loam	II
46 105M	N56° 33. 393 W002° 41. 962	SZL Coarse SL & Till	0-25 25+	Small medium stones Coarse sandy loam	II
47	N56° 33. 425 W002° 41. 878	SZL Coarse SL Till	0-30 30-40 40+	Small medium stones Coarse sandy loam	III
48 106M	N56° 33. 451 W002° 41. 803	SCL Coarse SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam Gleying	III
49 101M	N56° 33. 587 W002° 41. 428	SZL CL Till	0-35 35-50 50+	Medium Stones Small medium stones Coarse sandy loam Gleying	III

50	N56° 33. 605 W002° 41. 359	SZL CL Till	0-35 30-50 50+	Small medium stones Coarse sandy loam	III
51 99M	N56° 33. 628 W002° 41. 298	SZL CL Till	0-35 30-50 50+	Small medium stones Coarse sandy loam	III
52 100M	N56° 33. 671 W002° 41. 333	SZL CL Coarse SL Till	0-25 25-40 40+	Small medium stones Coarse sandy loam	III
53 100M	N56° 33. 714 W002° 41. 363	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
54 101M	N56° 33. 774 W002° 41. 404	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
55 100M	N56° 33. 767 W002° 41. 487	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
56 98M	N56° 33. 718 W002° 41. 453	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III

57	N56° 33. 665 W002° 41. 417	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
58 102M	N56° 33. 617 W002° 41. 521	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
59 102M	N56° 33. 660 W002° 41. 559	SZL SZL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
60	N56° 33. 722 W002° 41. 603	SZL CL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
61	N56° 33. 736 W002° 41. 699	SZL CL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
62	N56° 33. 641 W002° 41. 589	SZL CL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III

63	N56° 33. 606 W002° 41. 571	SZL CL Till	0-35 35-60 60+	Small medium stones Coarse sandy loam	III
64	N56° 33. 571 W002° 41. 545	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
65 101M	N56° 33. 520 W002° 41. 572	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
66 102M	N56° 33. 490 W002° 41. 635	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
67 100M	N56° 33. 466 W002° 41. 705	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
68	N56° 33. 333 W002° 41. 972	SZL Till	0-25 25-50	Small medium stones Coarse sandy loam	III
69 100M	N56° 33. 281 W002° 41. 937	SZL Coarse SL Till	0-30 30-50 50+		III

				Small medium stones Coarse sandy loam	
70 104M	N56° 33. 495 W002° 41. 824	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
71 103M	N56° 33. 536 W002° 41. 915	SZL CL Till	0-25 25-50 50+	Less Stone Small medium stones Coarse sandy loam	III
72 105M	N56° 33. 570 W002° 41. 971	SZL CL Till	0-30 30-50 50+	Less Stone Small medium stones Coarse sandy loam	III
73 106M	N56° 33. 604 W002° 42. 026	SZL CL Till	0-30 30-50 50+	Less Stone Small medium stones Coarse sandy loam	III
74 107M	N56° 33. 655 W002° 42. 107	SZL CL Till	0-35 35-60 60+	Less Stone Small medium stones Coarse sandy loam	III
75 107M	N56° 33. 497 W002° 42. 179	SZL CL Till	0-35 35-60 60+	Less Stone	III

				Small medium stones Coarse sandy loam	
76 111M	N56° 33. 736 W002° 42. 243	SZL CL Till	0-25 25-40 40+	More Stone Small medium stones Coarse sandy loam	III
77 112M	N56° 33. 765 W002° 42. 264	SZL CL Till	0-25 25-40 40+	More Stone Small medium stones Coarse sandy loam	III
78 109M	N56° 33. 779 W002° 42. 178	SZL CL Till	0-25 25-40 40+	More Stone Small medium stones Coarse sandy loam	III
79 107M	N56° 33. 791 W002° 42. 091	SZL CL Till	0-30 30-50 50+	Less Stone Small medium stones Coarse sandy loam	III
80 105M	N56° 33. 759 W002° 42. 019	SZL CL Till	0-25 25-40 40+	More Stone Small medium stones Coarse sandy loam	III
81 102M	N56° 33. 698 W002° 41. 957	SZL CL	0-35 35-50	Less Stone	III

		Till	50+	Small medium stones Coarse sandy loam	
82 103M	N56° 33. 699 W002° 41. 876	SZL CL Till	0-25 25-40 40+	More Stone Small medium stones Coarse sandy loam	III
83 101M	N56° 33. 729 W002° 41. 770	SZL CL Till	0-25 25-40 40+	More Stone Small medium stones Coarse sandy loam	III
84 117M	N56° 33. 643 W002° 42. 585	SZL CL Till	0-35 35-50 50+	De-Stoned	III
85 118M	N56° 33. 682 W002° 42. 631	SZL CL Till	0-40 40-60 60+	De-Stoned Small medium stones Coarse sandy loam	III
86 122M	N56° 33. 727 W002° 42. 684	SZL CL Till	0-35 35-50 50+	De-Stoned Small medium stones Coarse sandy loam	III
87 123M	N56° 33. 750 W002° 42. 757	SZL SZL Till	0-35 35-50 50+		III

				Small medium stones Coarse sandy loam	
88 127M	N56° 33. 736 W002° 42. 862	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
89 126M	N56° 33. 762 W002° 42. 970	SZL CL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
90 126M	N56° 33. 743 W002° 43. 063	SZL CL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
91 124M	N56° 33. 699 W002° 43. 035	SZL SZL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
92 119M	N56° 33. 650 W002° 43. 006	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
93 115M	N56° 33. 598 W002° 42. 976	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III

94 114M	N56° 33. 544 W002° 42. 946	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
95 109M	N56° 33. 477 W002° 42. 861	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
96 115M	N56° 33. 517 W002° 42. 819	SZL SZL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
97 114M	N56° 33. 584 W002° 42. 854	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
98	N56° 33. 648 W002° 42. 891	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
99 119M	N56° 33. 697 W002° 42. 808	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
100 116M	N56° 33. 633 W002° 42. 771	SZL SZL	0-35 35-50		III

		Till	50+	Small medium stones Coarse sandy loam	
101 114M	N56° 33. 576 W002° 42. 738	SZL SL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
102 116M	N56° 33. 600 W002° 42. 652	SZL CL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
103 119M	N56° 33. 751 W002° 42. 417	SZL SZL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
104 115M	N56° 33. 702 W002° 42. 336	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
105 111M	N56° 33. 648 W002° 42. 247	SZL CL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
106 109M	N56° 33. 594 W002° 42. 158	SZL CL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
107	N56° 33. 539	SZL	0-30		III

104M	W002° 42. 069	CL Till	30-50 50+	Small medium stones Coarse sandy loam	
108 100M	N56° 33. 496 W002° 41. 997	SZL CL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
109 106M	N56° 33. 468 W002° 42. 096	SZL CL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
110 104M	N56° 33. 502 W002° 42. 152	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
111 104M	N56° 33. 546 W002° 42. 212	SZL SZL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
112 109M	N56° 33. 579 W002° 42. 280	SZL SZL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
113	N56° 33. 634 W002° 42. 370	SZL SZL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III

114 114M	N56° 33. 691 W002° 42. 461	SZL SZL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
115 120M	N56° 33. 745 W002° 42. 550	SZL SZL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
116 119M	N56° 33. 736 W002° 42. 650	SZL SZL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
117 116M	N56° 33. 696 W002° 42. 607	SZL SZL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
118 114M	N56° 33. 659 W002° 42. 556	SZL CL Till	0-20 20-40 40+	Small medium stones Coarse sandy loam	III
119 108M	N56° 33. 613 W002° 42. 479	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III

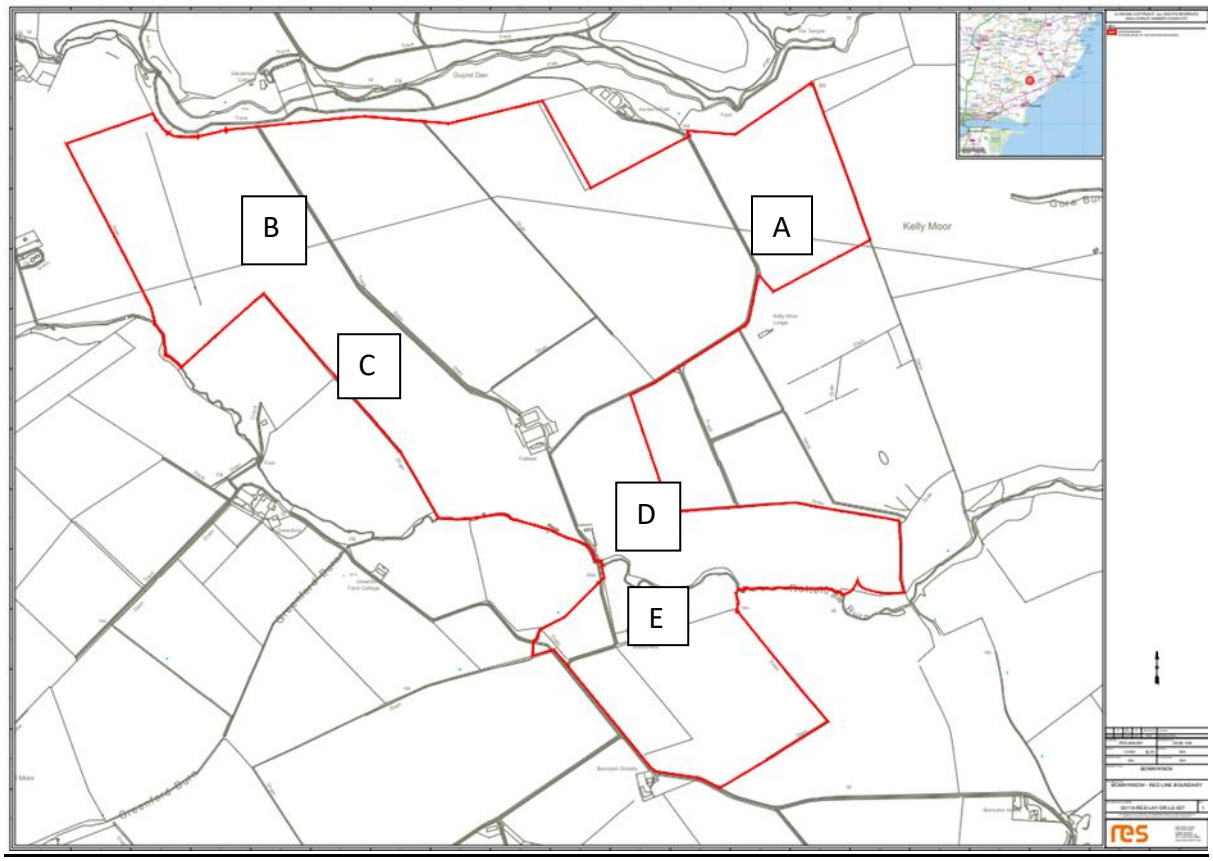
120 100M	N56° 33. 556 W002° 42. 386	SZL SZL Till	0-40 40-50 50+	Small medium stones Coarse sandy loam	III
121 110M	N56° 33. 512 W002° 42. 314	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
122 108M	N56° 33. 465 W002° 42. 237	SZL SZL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
123 109M	N56° 33. 411 W002° 42. 054	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
124	N56° 33. 435 W002° 41. 594	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
125 104M	N56° 33. 462 W002° 41. 925	SZL CL	0-30 30-50		III

		Till	50+	Small medium stones Coarse sandy loam	
126 111M	N56° 33. 366 W002° 42. 314	SZL CL Till	0-30 30-50 50+	Small medium stones Coarse sandy loam	III
127 109M	N56° 33. 399 W002° 42. 368	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
128 111M	N56° 33. 433 W002° 42. 420	SZL SZL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	II
130 113M	N56° 33. 509 W002° 42. 545	SZL SZL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	II
131 115M	N56° 33. 548 W002° 42. 603	SZL SL Till	0-40 40-50 50+	Small medium stones Coarse sandy loam	III
132 111M	N56° 33. 585 W002° 42. 520	SZL SL Till	0-40 40-50 50+	Small medium stones Coarse sandy loam	III

133 111M	N56° 33. 537 W002° 42. 455	SZL CL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
134 107M	N56° 33. 505 W002° 42. 392	SZL CL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
135 105M	N56° 33. 460 W002° 42. 315	SZL CL Till	0-25 25-50 50+	Small medium stones Coarse sandy loam	III
136 105M	N56° 33. 408 W002° 42. 230	SZL CL Till	0-35 35-50 50+	Small medium stones Coarse sandy loam	III
137 109M	N56° 33. 365 W002° 42. 137	SZL Gravel/Morrain	0-20 20+	Small medium stones through profile	II
138 105M	N56° 33. 338 W002° 42. 235	SZL Till	0-25 25+	Lots of small and medium stones	II
139 100M	N56° 33. 266 W002° 42. 037	SZL Gravel	0-20 20+	Small medium stones through profile	II

140	N56° 33. 305 W002° 42. 043	SZL Gravel	0-25 25+	Small medium stones through profile	II
141 98M	N56° 33. 237 W002° 42. 967	SZL Gravel	0-20 20+	Small medium stones through profile	II

Appendix 5
Soil Pit Location



Appendix 6

Soil Pit Details

Pit	Texture	Depth cm	Colour	Munsell	Comments	AP WW	AP Pots	Wetness	Grade
A Top	Sandy Silty Loam	0-30	Light Brown	Value 5 Chroma 4	Larger stones greater than 5% rounded few mottles fine to medium granular peds	110	94	III	3 Div 1
A Sub	Clay Loam	30-50	Reddish, Brown	Value 6 Chroma 12	Distinct boundary small and large stones 5-10% coarse peds Fine Mottling. Gleyed at 50 Till at depth				
B Top	Sandy Silty Loam	0-40	Light Brown	Value 5 Chroma 4	Very slightly stoney, medium granular peds, slight mottling	120	98	II	2
B Sub	Clay Loam	40-60	Reddish to light Brown	Value 6 Chroma 12	Slightly stoney, fine to Medium to angular blocky structure no gleying				
C Top	Clay loam	0-25	Light brown	Value 5 Chroma 4	Small to medium rounded stones less than 10% , Medium to fine granular	110	94	III	3 Div 1

					peds. Distinct boundary				
C Sub	Coarse Sandy Silty Loam	25-40	light Brown to reddish orange	Value 7 Chroma 10	Small medium stones less than 25% Moderately stoney Coarse to medium peds				
D Top	Sandy Silty Loam	0-20	Dark Reddish Brown	Value 4 Chroma 4	Small to medium stones cobbly. Moderately to very stoney. Fine to medium granular peds. Slight mottling	88	76	II	3 Div 2
D Sub	Sandy Silty Loam	20-40	Orange to Grey	Value 7 chroma 10	Small to medium stones cobbly. Moderately to very stoney. Medium granular peds. Slight mottling				
E Top	Sandy Silty Loam	0-20		Value 6 Chroma 12	Small stones. Fine to medium granular peds. Distinct sub soi area defined by flat stones soil very shallow.				4 Div 1

Appendix 7 - Soil Pit Description

Pit A Topsoil

Stones throughout profile small to medium, fine to medium granular peds, distinct sub soil boundary. Good root penetration.

Pit A Subsoil

Distinct boundary medium to coarse angular blocky peds depth limited by stoney sub soil. Slight mottling with some gleying

Pit B Topsoil

Fine to medium granular ped structure. Fine mottling with some stones small and medium in size. No stones. Roots throughout. De-stoning impacting on distribution.

Pit B Subsoil

Indistinct boundary. Slightly stoney, fine to medium to angular blocky structure no gleying.

Pit C Topsoil

Small to medium rounded stones less than 10%, Medium to fine granular peds. Distinct sub soil boundary with plough pan. Less colour boundary change.

Pit C Subsoil

Small medium stones less than 25%. Moderately stoney.
Coarse to medium peds. Distinct sub soil boundary coarse sandstone till.

Pit D Topsoil

Small to medium stones cobbly. Moderately to very stoney. Fine to medium granular peds. Slight mottling. Stones a mix of rounded and sub rounded. Occasional flat stones present.

Pit D Subsoil

Small to medium stones cobbly. Moderately to very stoney. Medium granular peds. Slight mottling. Limited cultivation depth.

Pit E Topsoil

Small stones. Fine to medium granular peds. Distinct sub soil area defined by flat stones. Soil very shallow.

Pit E Subsoil

Solid rock comprised of flat stones, rounded and sub rounded.

Appendix 8 - Lab results

Pit A Topsoil

Analysis Results (SOIL)

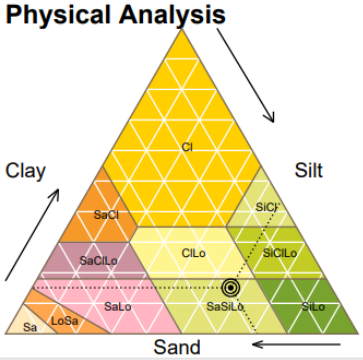
Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE A TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/01 / CARNOUSTIE	**Area**	8
Crop	WHEAT		

Analysis	Result	Guideline	Interpretation	Comments
pH	5.9	6.5	Low	Low. An acidic environment will reduce soil nutrient availability and the efficiency of any applied fertilisers or organic materials. A sub-optimum pH will also impact on soil microbial populations and rates of activity. Refer to lime requirement.
Lime Req. (t/ha)	6.0			
Phosphorus (ppm)	32	16	High	**(Index 3)** Adequate. Use soil analysis every 3-5 years to ensure level is maintained.
Potassium (ppm)	121	121	Normal	**(Index 2)** 85 kg/ha K2O (68 units/acre). Winter crop, straw removed. Maintenance.
Magnesium (ppm)	269	50	High	**(Index 5)** Possible interference with availability of Potassium.
Calcium (ppm)	1516	1600	Slightly Low	Low priority on this crop. Other crops may be affected.
Sulphur (ppm)	17	15	Normal	Adequate level.
Boron (ppm)	0.82	1.60	Low	Consider treatment with boron.
Copper (ppm)	4.8	4.1	Normal	Adequate level.
Iron (ppm)	1260	50	Normal	Adequate level.
Manganese (ppm)	17	15	Normal	Adequate level.
Molybdenum (ppm)	0.02	0.60	Very Low	Low priority on this crop. Other crops may be affected.
Sodium (ppm)	27	90	Very Low	Not a problem for this crop.
Zinc (ppm)	10.0	4.1	Normal	Adequate level.
C.E.C. (meq/100g)	13.7	15.0	Slightly Low	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	4.6	3.0	Normal	Good. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Ensure appropriate soil management practices are used to maintain organic matter levels.

Analysis Results (SOIL)

Customer	P STEPHENSON	**Distributor**	MR P STEPHENSON
Sample Ref	CARNOUSTIE A TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/01 / CARNOUSTIE	**Area**	8
Crop	WHEAT		

Physical Analysis



Analysis	Result (%)
Sand	28.55
Silt	56.35
Clay	15.10
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Biological Analysis

SOLVITA®

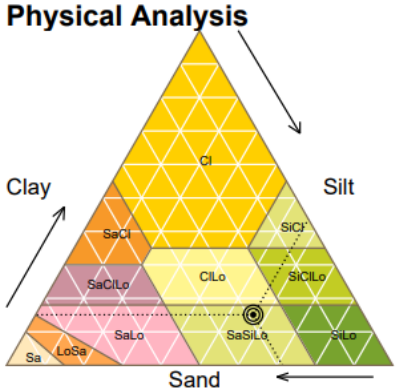
Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	N/A	>70
Organic Carbon (%)	N/A	
Total Nitrogen (%)	N/A	
C:N Ratio	N/A	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	N/A
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	N/A
Soil Assessment Score	N/A/100

Analysis Results (SOIL)

Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE A TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428A/01 / CARNOUSTIE	**Area**	8
Crop			

Physical Analysis



Analysis	Result (%)
Sand	28.56
Silt	56.35
Clay	15.09
Very Fine Sand	11.60
Fine Sand	11.08
Medium Sand	5.52
Coarse Sand	0.36
Very Coarse Sand	< 0.01
Stones >2mm	3.00
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Pit A Subsoil

Analysis Results (SOIL)

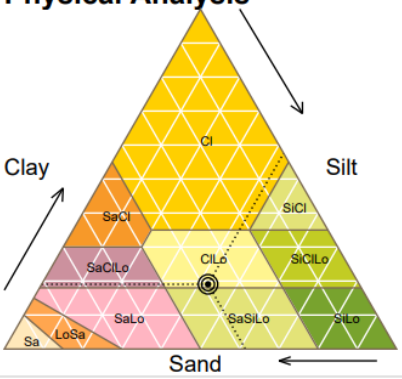
Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE A SUB	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/02 / CARNOUSTIE	**Area**	8
Crop	WHEAT		

Analysis	Result	Guideline	Interpretation	Comments
pH	6.7	6.5	Normal	Adequate level. Maintain pH to ensure optimum nutrient nutrient availability and ideal conditions for an active soil biology.
Phosphorus (ppm)	14	16	Low	**(Index 1)** 85 kg/ha P2O5 (68 units/acre). Winter crop, straw removed.
Potassium (ppm)	114	121	Low	**(Index 1)** 115 kg/ha K2O (92 units/acre). Winter crop, straw removed.
Magnesium (ppm)	372	50	High	**(Index 6)** Possible interference with availability of Potassium.
Calcium (ppm)	1748	1600	Normal	Adequate level.
Sulphur (ppm)	8	15	Low	PRIORITY FOR TREATMENT.
Boron (ppm)	0.56	1.60	Very Low	Consider treatment with boron.
Copper (ppm)	3.1	4.1	Slightly Low	PRIORITY FOR TREATMENT.
Iron (ppm)	630	50	Normal	Adequate level.
Manganese (ppm)	31	55	Low	PRIORITY FOR TREATMENT.
Molybdenum (ppm)	0.04	0.40	Very Low	Low priority on this crop. Other crops may be affected.
Sodium (ppm)	28	90	Very Low	Not a problem for this crop.
Zinc (ppm)	10.7	4.1	Normal	Adequate level.
C.E.C. (meq/100g)	14.8	15.0	Slightly Low	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	3.7	3.0	Normal	Good. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Ensure appropriate soil management practices are used to maintain organic matter levels.

Analysis Results (SOIL)

Customer	P STEPHENSON	**Distributor**	MR P STEPHENSON
Sample Ref	CARNOUSTIE A SUB	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/02 / CARNOUSTIE	**Area**	8
Crop	WHEAT		

Physical Analysis



Analysis	Result (%)
Sand	38.54
Silt	42.41
Clay	19.05
Soil Type	ClLo Clay Loam

Property	Assessment
Available Water	Medium to High
Drainage Rate	Medium to Slow
Inherent Fertility	Medium to High
Potential C.E.C.	Medium to High
Leaching Risk	Moderate to Low
Warming Rate	Medium

Biological Analysis

SOLVITA®

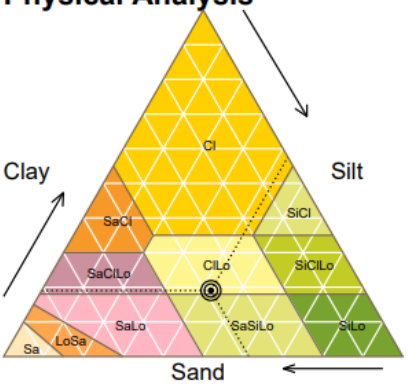
Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	N/A	>70
Organic Carbon (%)	N/A	
Total Nitrogen (%)	N/A	
C:N Ratio	N/A	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	N/A
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	N/A
Soil Assessment Score	N/A/100

Analysis Results (SOIL)

Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE A SUB	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428A/02 / CARNOUSTIE	**Area**	8
Crop			

Physical Analysis



Analysis	Result (%)
Sand	38.54
Silt	42.41
Clay	19.05
Very Fine Sand	11.43
Fine Sand	15.14
Medium Sand	10.59
Coarse Sand	1.38
Very Coarse Sand	< 0.01
Stones >2mm	7.40
Soil Type	ClLo Clay Loam

Property	Assessment
Available Water	Medium to High
Drainage Rate	Medium to Slow
Inherent Fertility	Medium to High
Potential C.E.C.	Medium to High
Leaching Risk	Moderate to Low
Warming Rate	Medium

Pit B Topsoil

Analysis Results (SOIL)

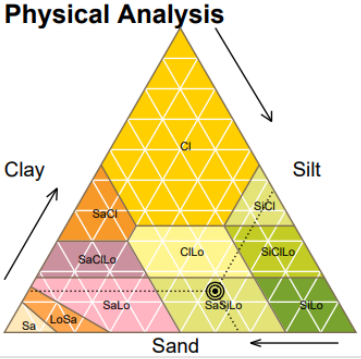
Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE B TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/03 / CARNOUSTIE	**Area**	14
Crop	POTATOES		

Analysis	Result	Guideline	Interpretation	Comments
pH	6.2	6.5	Slightly Low	Slightly low. An acidic environment will reduce soil nutrient availability and the efficiency of any applied fertilisers or organic materials. A sub optimum pH will also impact on soil microbial populations and rates of activity. Refer to lime requirement.
Phosphorus (ppm)	50	16	Very High	**(Index 4)** Possible interference with availability from the soil of Fe,Cu,Zn.
Potassium (ppm)	235	121	Normal	**(Index 2)** 300 kg/ha K2O (240 units/acre).
Magnesium (ppm)	223	51	Very High	**(Index 4)** Possible interference with the availability of Potassium.
Calcium (ppm)	1728	2000	Slightly Low	CONSIDER TREATMENT.
Sulphur (ppm)	11	10	Normal	Adequate level.
Boron (ppm)	0.97	1.60	Low	CONSIDER TREATMENT.
Copper (ppm)	3.0	2.1	Normal	Adequate level.
Iron (ppm)	916	200	Normal	Adequate level.
Manganese (ppm)	19	30	Low	PRIORITY FOR TREATMENT.
Molybdenum (ppm)	0.04	0.60	Very Low	Low priority on this crop. Other crops may be affected.
Sodium (ppm)	31	90	Very Low	Not a problem for this crop.
Zinc (ppm)	4.5	4.1	Normal	Adequate level.
C.E.C. (meq/100g)	13.5	15.0	Slightly Low	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	5.3	3.0	Normal	Good. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Ensure appropriate soil management practices are used to maintain organic matter levels.
Organic Carbon (LOI) (%)	3.1			

Analysis Results (SOIL)

Customer	P STEPHENSON	**Distributor**	MR P STEPHENSON
Sample Ref	CARNOUSTIE B TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/03 / CARNOUSTIE	**Area**	14
Crop	POTATOES		

Physical Analysis



Analysis	Result (%)
Sand	33.26
Silt	53.17
Clay	13.57
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Biological Analysis

SOLVITA®

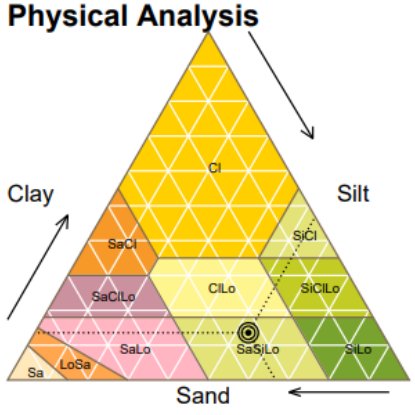
Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	N/A	>70
Organic Carbon (%)	N/A	
Total Nitrogen (%)	N/A	
C:N Ratio	N/A	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	N/A
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	N/A
Soil Assessment Score	N/A/100

Analysis Results (SOIL)

Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE B TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428A/03 / CARNOUSTIE	**Area**	14
Crop			

Physical Analysis



Analysis	Result (%)
Sand	33.26
Silt	53.17
Clay	13.57
Very Fine Sand	11.81
Fine Sand	13.29
Medium Sand	7.51
Coarse Sand	0.64
Very Coarse Sand	< 0.01
Stones >2mm	8.10
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Pit B Subsoil

Analysis Results (SOIL)

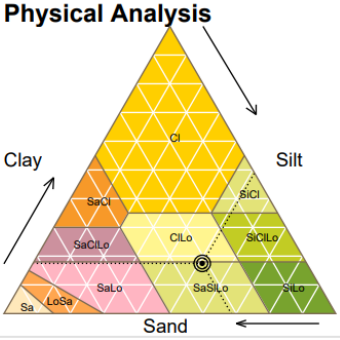
Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE B SUB	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/04 / CARNOUSTIE	**Area**	14
Crop	POTATOES		

Analysis	Result	Guideline	Interpretation	Comments
pH	6.2	6.5	Slightly Low	Slightly low. An acidic environment will reduce soil nutrient availability and the efficiency of any applied fertilisers or organic materials. A sub optimum pH will also impact on soil microbial populations and rates of activity. Refer to lime requirement.
Phosphorus (ppm)	12	16	Low	**(Index 1)** 210 kg/ha P2O5 (168 units/acre).
Potassium (ppm)	126	121	Normal	**(Index 2)** 300 kg/ha K2O (240 units/acre).
Magnesium (ppm)	208	51	Very High	**(Index 4)** Possible interference with the availability of Potassium.
Calcium (ppm)	1421	2000	Low	CONSIDER TREATMENT.
Sulphur (ppm)	7	10	Low	CONSIDER TREATMENT.
Boron (ppm)	0.65	1.60	Very Low	CONSIDER TREATMENT.
Copper (ppm)	2.3	2.1	Normal	Adequate level.
Iron (ppm)	497	200	Normal	Adequate level.
Manganese (ppm)	14	30	Very Low	PRIORITY FOR TREATMENT.
Molybdenum (ppm)	0.03	0.60	Very Low	Low priority on this crop. Other crops may be affected.
Sodium (ppm)	27	90	Very Low	Not a problem for this crop.
Zinc (ppm)	3.2	4.1	Slightly Low	Low priority on this crop. Other crops may be affected.
C.E.C. (meq/100g)	11.6	15.0	Slightly Low	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	2.5	3.0	Slightly Low	Slightly low. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Investigate soil conditions to establish if soil management practices can improve levels of organic matter.
Organic Carbon (LOI) (%)	1.4			

Analysis Results (SOIL)

Customer	P STEPHENSON	**Distributor**	MR P STEPHENSON
Sample Ref	CARNOUSTIE B SUB	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/04 / CARNOUSTIE	**Area**	14
Crop	POTATOES		

Physical Analysis



Analysis	Result (%)
Sand	31.49
Silt	51.03
Clay	17.48
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Biological Analysis

SOLVITA®

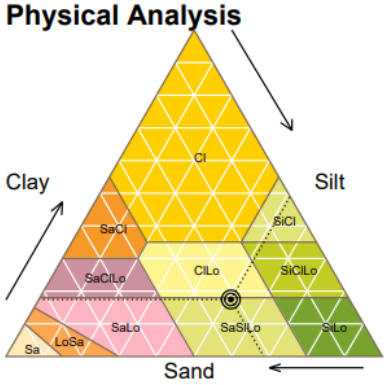
Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	N/A	>70
Organic Carbon (%)	N/A	
Total Nitrogen (%)	N/A	
C:N Ratio	N/A	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	N/A
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	N/A
Soil Assessment Score	N/A/100

Analysis Results (SOIL)

Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE B SUB	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428A/04 / CARNOUSTIE	**Area**	14
Crop			

Physical Analysis



Analysis	Result (%)
Sand	31.50
Silt	51.03
Clay	17.47
Very Fine Sand	11.63
Fine Sand	12.38
Medium Sand	6.90
Coarse Sand	0.06
Very Coarse Sand	< 0.01
Stones >2mm	5.50
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Pit C Topsoil

Analysis Results (SOIL)

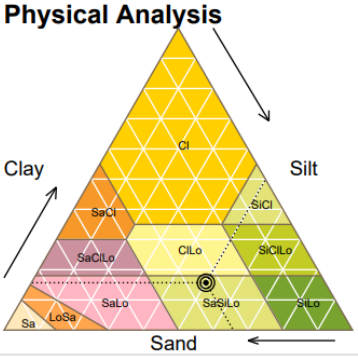
Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE C TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/05 / CARNOUSTIE	**Area**	12
Crop	BARLEY (SPRING)		

Analysis	Result	Guideline	Interpretation	Comments
pH	6.2	6.5	Slightly Low	Slightly low. An acidic environment will reduce soil nutrient availability and the efficiency of any applied fertilisers or organic materials. A sub optimum pH will also impact on soil microbial populations and rates of activity. Refer to lime requirement.
Lime Req. (t/ha)	4.0			
Phosphorus (ppm)	34	16	High	**(Index 3)** Adequate. Use soil analysis every 3-5 years to ensure level is maintained.
Potassium (ppm)	131	121	Normal	**(Index 2)** 65 kg/ha K2O (52 units/acre).
Magnesium (ppm)	269	50	Normal	**(Index 5)** Adequate level.
Calcium (ppm)	1553	1600	Slightly Low	Low priority on this crop. Other crops may be affected.
Sulphur (ppm)	11	10	Normal	Adequate level.
Boron (ppm)	0.75	1.60	Very Low	Consider treatment with Boron.
Copper (ppm)	3.3	4.1	Slightly Low	PRIORITY FOR TREATMENT.
Iron (ppm)	1384	50	Normal	Adequate level.
Manganese (ppm)	29	30	Slightly Low	PRIORITY FOR TREATMENT.
Molybdenum (ppm)	0.03	0.60	Very Low	Low priority on this crop. Other crops may be affected.
Sodium (ppm)	29	90	Very Low	Low priority on this crop. Other crops may be affected.
Zinc (ppm)	6.2	4.1	Normal	Adequate level.
C.E.C. (meq/100g)	12.7	15.0	Slightly Low	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	3.8	3.0	Normal	Good. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Ensure appropriate soil management practices are used to maintain organic matter levels.
Organic Carbon (LOI) (%)	2.2			

Analysis Results (SOIL)

Customer	P STEPHENSON	**Distributor**	MR P STEPHENSON
Sample Ref	CARNOUSTIE C TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/05 / CARNOUSTIE	**Area**	12
Crop	BARLEY (SPRING)		

Physical Analysis



Analysis	Result (%)
Sand	34.22
Silt	50.09
Clay	15.69
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Biological Analysis

SOLVITA®

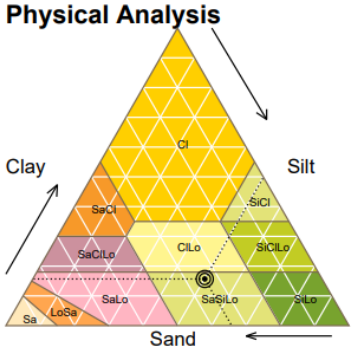
Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	N/A	>70
Organic Carbon (%)	N/A	
Total Nitrogen (%)	N/A	
C:N Ratio	N/A	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	N/A
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	N/A
Soil Assessment Score	N/A/100

Analysis Results (SOIL)

Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE C TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428A/05 / CARNOUSTIE	**Area**	12
Crop			

Physical Analysis



Analysis	Result (%)
Sand	34.19
Silt	50.12
Clay	15.69
Very Fine Sand	9.95
Fine Sand	12.92
Medium Sand	8.46
Coarse Sand	2.76
Very Coarse Sand	0.10
Stones >2mm	1.80
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Pit C Subsoil

Analysis Results (SOIL)

Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE C SUB	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/06 / CARNOUSTIE	**Area**	12
Crop	BARLEY (SPRING)		

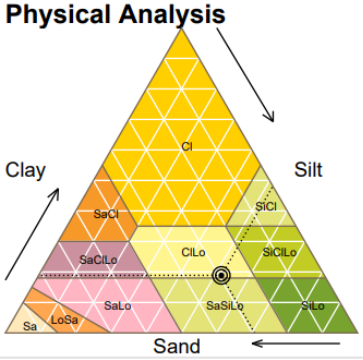
Analysis	Result	Guideline	Interpretation	Comments
pH	6.3	6.5	Slightly Low	Slightly low. An acidic environment will reduce soil nutrient availability and the efficiency of any applied fertilisers or organic materials. A sub optimum pH will also impact on soil microbial populations and rates of activity. Refer to lime requirement.
Lime Req. (t/ha)	3.0			
Phosphorus (ppm)	25	16	Normal	**(Index 2)** 45 kg/ha P2O5 (36 units/acre). Maintenance.
Potassium (ppm)	120	121	Low	**(Index 1)** 95 kg/ha K2O (76 units/acre).
Magnesium (ppm)	272	50	Normal	**(Index 5)** Adequate level.
Calcium (ppm)	1594	1600	Slightly Low	Low priority on this crop. Other crops may be affected.
Sulphur (ppm)	7	10	Low	CONSIDER TREATMENT.
Boron (ppm)	0.60	1.60	Very Low	Consider treatment with Boron.
Copper (ppm)	3.0	4.1	Low	PRIORITY FOR TREATMENT.
Iron (ppm)	1358	50	Normal	Adequate level.
Manganese (ppm)	35	35	Normal	Adequate level.
Molybdenum (ppm)	0.03	0.60	Very Low	Low priority on this crop. Other crops may be affected.
Sodium (ppm)	27	90	Very Low	Low priority on this crop. Other crops may be affected.
Zinc (ppm)	5.9	4.1	Normal	Adequate level.
C.E.C. (meq/100g)	12.9	15.0	Slightly Low	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	2.5	3.0	Slightly Low	Slightly low. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Investigate soil conditions to establish if soil management practices can improve levels of organic matter.
Organic Carbon (LOI) (%)	1.4			

Analysis Results (SOIL)

Customer P STEPHENSON
Sample Ref CARNOUSTIE C SUB
Sample No G093428/06 / CARNOUSTIE
Crop BARLEY (SPRING)

Distributor MR P STEPHENSON
Date Received 16/07/2024 (Date Issued: 19/07/2024)
Area 12

Physical Analysis



Analysis	Result (%)
Sand	29.25
Silt	51.87
Clay	18.88
Soil Type	ClLo Clay Loam

Property	Assessment
Available Water	Medium to High
Drainage Rate	Medium to Slow
Inherent Fertility	Medium to High
Potential C.E.C.	Medium to High
Leaching Risk	Moderate to Low
Warming Rate	Medium

Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	N/A	>70
Organic Carbon (%)	N/A	
Total Nitrogen (%)	N/A	
C:N Ratio	N/A	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	N/A
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	N/A
Soil Assessment Score	N/A/100

Analysis Results (SOIL)

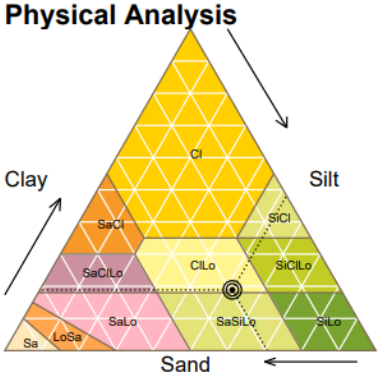
Customer P STEPHENSON
ARABLE ADVISOR
74 MIDDLETON RD
PICKERING
YO18 8NH

Distributor MR P STEPHENSON
SWAINSEA HOUSE
74 MIDDLETON ROAD
PICKERING
NORTH YORKSHIRE
YO18 8NH

Sample Ref CARNOUSTIE C SUB
Sample No G093428A/06 / CARNOUSTIE
Crop

Date Received 16/07/2024 (Date Issued: 19/07/2024)
Area 12

Physical Analysis



Analysis	Result (%)
Sand	29.24
Silt	51.87
Clay	18.89
Very Fine Sand	10.85
Fine Sand	12.77
Medium Sand	5.55
Coarse Sand	0.07
Very Coarse Sand	< 0.01
Stones >2mm	1.20
Soil Type	ClLo Clay Loam

Property	Assessment
Available Water	Medium to High
Drainage Rate	Medium to Slow
Inherent Fertility	Medium to High
Potential C.E.C.	Medium to High
Leaching Risk	Moderate to Low
Warming Rate	Medium

Pit D Topsoil

Analysis Results (SOIL)

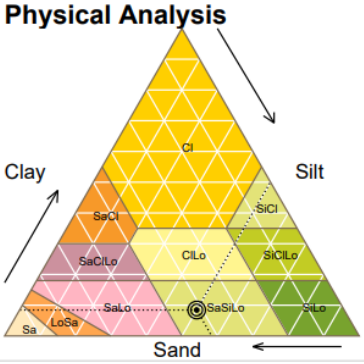
Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE D TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/07 / CARNOUSTIE	**Area**	8
Crop	WHEAT		

Analysis	Result	Guideline	Interpretation	Comments
pH	7.0	6.5	Normal	Adequate level. Maintain pH to ensure optimum nutrient nutrient availability and ideal conditions for an active soil biology.
Phosphorus (ppm)	47	16	Very High	**(Index 4)** Possible interference with availability of Fe,Cu,Zn.
Potassium (ppm)	221	121	Normal	**(Index 2)** 55 kg/ha K2O (44 units/acre). Winter crop straw removed. Maintenance.
Magnesium (ppm)	293	50	High	**(Index 5)** Possible interference with availability of Potassium.
Calcium (ppm)	2101	1600	Normal	Adequate level.
Sulphur (ppm)	23	15	Normal	Adequate level.
Boron (ppm)	1.19	1.60	Low	Consider treatment with boron.
Copper (ppm)	6.0	4.1	Normal	Adequate level.
Iron (ppm)	696	50	Normal	Adequate level.
Manganese (ppm)	60	70	Slightly Low	PRIORITY FOR TREATMENT.
Molybdenum (ppm)	0.03	0.30	Very Low	Low priority on this crop. Other crops may be affected.
Sodium (ppm)	30	90	Very Low	Not a problem for this crop.
Zinc (ppm)	6.5	4.1	Normal	Adequate level.
C.E.C. (meq/100g)	15.5	15.0	Normal	Cation Exchange Capacity indicates a soil with a good nutrient holding ability.
Organic Matter (LOI) (%)	6.3	3.0	Normal	Good. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Ensure appropriate soil management practices are used to maintain organic matter levels.
Organic Carbon (LOI) (%)	3.6	1.7	Normal	Normal (See Organic Matter comment). Organic carbon is the measurable component of organic matter. Organic carbon and organic matter can be broken into distinct 'pools'. These pools include labile/active (particulate, almost entirely decomposed, readily available microbe foodsource), humus carbon (decomposing carbon) and recalcitrant organic carbon (resistant to decomposition). Each of these pools are involved in different soil processes (see: Active Carbon).

Analysis Results (SOIL)

Customer	P STEPHENSON	**Distributor**	MR P STEPHENSON
Sample Ref	CARNOUSTIE D TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/07 / CARNOUSTIE	**Area**	8
Crop	WHEAT		

Physical Analysis



Analysis	Result (%)
Sand	41.61
Silt	49.95
Clay	8.44
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Biological Analysis

SOLVITA®

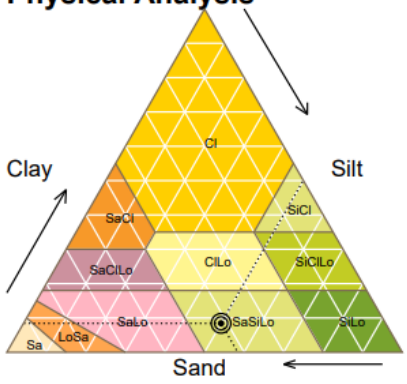
Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	N/A	>70
Organic Carbon (%)	N/A	
Total Nitrogen (%)	N/A	
C:N Ratio	N/A	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	N/A
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	N/A
Soil Assessment Score	N/A/100

Analysis Results (SOIL)

Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE D TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428A/07 / CARNOUSTIE	**Area**	8
Crop			

Physical Analysis



Analysis	Result (%)
Sand	41.61
Silt	49.95
Clay	8.44
Very Fine Sand	17.93
Fine Sand	16.27
Medium Sand	7.24
Coarse Sand	0.17
Very Coarse Sand	< 0.01
Stones >2mm	11.90
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Pit D Subsoil

Analysis Results (SOIL)

Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE D SUB	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/08 / CARNOUSTIE	**Area**	8
Crop	WHEAT		

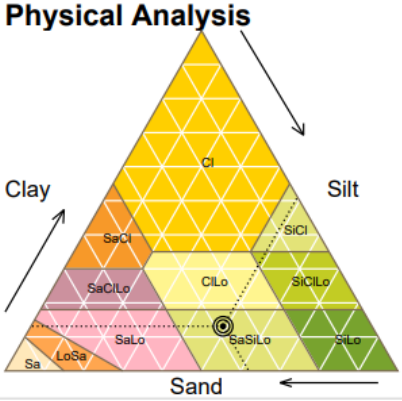
Analysis	Result	Guideline	Interpretation	Comments
pH	7.1	6.5	Normal	Adequate level. Maintain pH to ensure optimum nutrient nutrient availability and ideal conditions for an active soil biology.
Phosphorus (ppm)	35	16	High	**(Index 3)** Adequate. Use soil analysis every 3-5 years to ensure level is maintained.
Potassium (ppm)	138	121	Normal	**(Index 2)** 85 kg/ha K2O (68 units/acre). Winter crop, straw removed. Maintenance.
Magnesium (ppm)	244	50	High	**(Index 4)** Possible interference with availability of Potassium.
Calcium (ppm)	1764	1600	Normal	Adequate level.
Sulphur (ppm)	12	15	Slightly Low	CONSIDER TREATMENT.
Boron (ppm)	0.99	1.60	Low	Consider treatment with boron.
Copper (ppm)	4.6	4.1	Normal	Adequate level.
Iron (ppm)	624	50	Normal	Adequate level.
Manganese (ppm)	77	75	Normal	Adequate level.
Molybdenum (ppm)	0.02	0.30	Very Low	Low priority on this crop. Other crops may be affected.
Sodium (ppm)	28	90	Very Low	Not a problem for this crop.
Zinc (ppm)	8.1	4.1	Normal	Adequate level.
C.E.C. (meq/100g)	12.3	15.0	Slightly Low	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	3.8	3.0	Normal	Good. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Ensure appropriate soil management practices are used to maintain organic matter levels.

Analysis Results (SOIL)

Customer P STEPHENSON
Sample Ref CARNOUSTIE D SUB
Sample No G093428/08 / CARNOUSTIE
Crop WHEAT

Distributor MR P STEPHENSON
Date Received 16/07/2024 (Date Issued: 19/07/2024)
Area 8

Physical Analysis



Analysis	Result (%)
Sand	37.93
Silt	48.94
Clay	13.13
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	N/A	>70
Organic Carbon (%)	N/A	
Total Nitrogen (%)	N/A	
C:N Ratio	N/A	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	N/A
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	N/A
Soil Assessment Score	N/A/100

Analysis Results (SOIL)

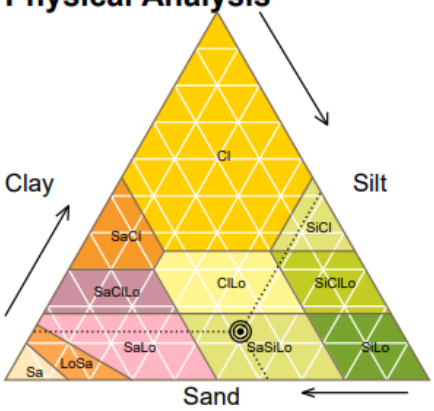
Customer P STEPHENSON
ARABLE ADVISOR
74 MIDDLETON RD
PICKERING
YO18 8NH

Distributor MR P STEPHENSON
SWAINSEA HOUSE
74 MIDDLETON ROAD
PICKERING
NORTH YORKSHIRE
YO18 8NH

Sample Ref CARNOUSTIE D SUB
Sample No G093428A/08 / CARNOUSTIE
Crop

Date Received 16/07/2024 (Date Issued: 19/07/2024)
Area 8

Physical Analysis



Analysis	Result (%)
Sand	37.93
Silt	48.94
Clay	13.13
Very Fine Sand	15.41
Fine Sand	13.49
Medium Sand	8.24
Coarse Sand	0.79
Very Coarse Sand	< 0.01
Stones >2mm	15.10
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Pit E Topsoil

Analysis Results (SOIL)

Customer	P STEPHENSON ARABLE ADVISOR 74 MIDDLETON RD PICKERING YO18 8NH	**Distributor**	MR P STEPHENSON SWAINSEA HOUSE 74 MIDDLETON ROAD PICKERING NORTH YORKSHIRE YO18 8NH
Sample Ref	CARNOUSTIE E TOP	**Date Received**	16/07/2024 (Date Issued: 19/07/2024)
Sample No	G093428/09 / CARNOUSTIE	**Area**	8
Crop	GRAZED GRASS (CATTLE)		

Analysis	Result	Guideline	Interpretation	Comments
pH	5.8	6.0	Slightly Low	Slightly low. An acidic environment will reduce soil nutrient availability and the efficiency of any applied fertilisers or organic materials. A sub optimum pH will also impact on soil microbial populations and rates of activity. Refer to lime requirement.
Lime Req. (t/ha)	2.0			
Phosphorus (ppm)	40	16	High	**(Index 3)** Adequate level.
Potassium (ppm)	492	121	Very High	**(Index 4)** Possible interference on availability of Magnesium.
Magnesium (ppm)	247	51	Very High	**(Index 4)** Possible interference with availability of Potassium.
Calcium (ppm)	1379	2000	Low	Below optimum level. If pH low, and Mg adequate, consider using calcium liming material.
Sulphur (ppm)	11	10	Normal	Adequate level.
Boron (ppm)	1.15	0.50	Normal	Adequate level.
Copper (ppm)	5.0	8.0	Low	PRIORITY FOR LIVESTOCK HEALTH.
Iron (ppm)	1062	50	Normal	Adequate level.
Manganese (ppm)	28	10	Normal	Adequate level.
Molybdenum (ppm)	0.04	<0.5	Normal	No problems anticipated.
Sodium (ppm)	35	90	Very Low	PRIORITY FOR LIVESTOCK HEALTH.
Zinc (ppm)	23.7	7.0	High	Possible interference with availability of Iron.
C.E.C. (meq/100g)	13.8	15.0	Slightly Low	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	9.3	3.0	High	High. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Ensure appropriate soil management practices are used to maintain organic matter levels.

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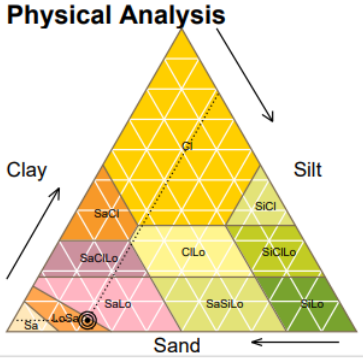
Physical Analysis



Analysis	Result (%)
Sand	75.04
Silt	21.24
Clay	3.72
Soil Type	LoSa
	Loamy Sand

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	N/A	>70
Organic Carbon (%)	N/A	
Total Nitrogen (%)	N/A	
C:N Ratio	N/A	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	N/A
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	N/A
Soil Assessment Score	N/A/100

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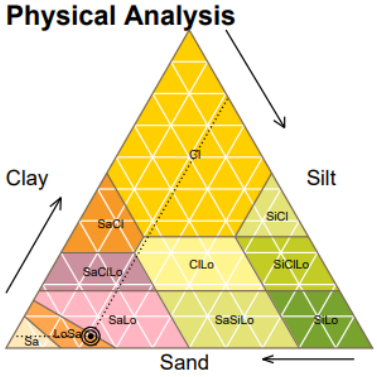

Analysis	Result (%)
Sand	75.04
Silt	21.24
Clay	3.72
Very Fine Sand	16.33
Fine Sand	29.82
Medium Sand	20.54
Coarse Sand	8.00
Very Coarse Sand	0.36
Stones >2mm	11.70
Soil Type	LoSa
	Loamy Sand

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid